

**GOVT. HOLKAR (MODEL AUTONOMOUS)  
SCIENCE COLLEGE, INDORE**



(An ISO 9001:2015 & ISO 14001:2015 Certified Institution)



# SSR DOCUMENT

2017-18 TO 2021-22

## CRITERION -1

### Curricular Aspects

**Metric No.:1.3.3**

#### Document Title:

**Sample Evaluated project report/field work report  
submitted by the students**



## **Report Submitted to**

Department of Botany

Govt Holkar Science College , Indore

Towards Partial fulfillment for the award of MASTER OF  
SCIENCE

Degree with specialization in Botany

## **Submitted to**

Dr. Amiya Pahare sir

Prof. of Department of Botany

Govt. Holkar Science College,

## **Submitted by**

Sagar Chouhan

M.Sc. Botany (IVSem.)

Enrollment -DS1707608



## CERTIFICATE

This is to certify that the project work entitled “Micro propagation of **NERIUM**” has been carried out jointly by **SAGAR CHOUHAN** students of **M.Sc. BOTANY (IVth SEM.)** under our supervision and guidance. They have submitted this project report towards partial fulfillment for the award of the Master of Science degree in Botany **Govt. Holkar Science College, Indore** during the academic year

2021-2022

**HOD Name**

**Guidance Name**

**Supervision Name**

Dr. SANJAY VYAS

Dr. AMIYA PAHARE

Dr. JAYSHRI SUKHWANI

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1. **Introduction:-** Tissue culture could be defined as the method of 'in Vitro' culture of plant or animal



cells, tissue, or organ on nutrient medium under aseptic conditions usually in a glass container. It is also sometimes referred to as 'sterile culture' or 'in vitro culture'. The culture media is provided with water, minerals, vitamins, hormones, carbon sources, and certain antibiotics depending upon the plant being cultured. It should be noted that most plant cells are totipotent and scientists use this characteristic to manipulate plant cells by genetic engineering to regenerate an entire plant. Tissue culture techniques are used to generate large numbers of genetically identical plants for agricultural applications and also grow rare plants.

2. **Selection Of Explant** :-A suitable explant is chosen and excised from the donor plant and the explant is sterilized using disinfectants.
3. **Nutritional Requirement:-**The culture media for plant tissue culture consists of various nutritional components to sustain the plant's growth. Different plants do need different media, however, specific media have been devised for specific tissue and organs. Some of the important **media are:-**

- ❖ MS (Murashige and Skoog) Medium
- ❖ B5 (Gamborg's) Medium
- ❖ LS (Linsmaier and Skoog) Medium

- *Some of the Organic Nutritional Components are:*

- ❖ Vitamins like thiamine (B1), Pyridoxin (B6), Nicotinic Acid (B3), etc.
- ❖ Antibiotics like Streptomycin, Kanamycin
- ❖ Amino Acids like Arginine, Asparagine

- *Inorganic Nutrients that are added are: Macronutrients-* This includes elements like nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), sulfur (S) which is required for proper growth and morphogenesis.
- *Micronutrients* –Elements like iron (Fe), manganese (Mn), zinc (Zn) etc., which are also crucial to the growth of tissues.
- *Carbon or Energy source*– This is one of the most crucial ingredients of the nutrient media. Sucrose is the most widely used carbon source among other carbohydrates that serve to provide C, H, and O.

- *The Components that are used as Carbon and Energy Sources:*

- ❖ Lactose
- ❖ Maltose
- ❖ Galactose
- ❖ Raffinose
- ❖ Cellobiose

- *Growth Hormones:*

- ❖ **Auxins**-Generally used to induce cell division.
- ❖ **Cytokinins**- Used for modifying apical dominance and shoot differentiation.
- ❖ **Abscisic Acid (ABA)**-Used occasionally.
- ❖ **Gibberellins**-Used occasionally

4. **Sterilization** :-Sterilization is a process used for elimination of any contamination or microbial agents and to maintain an aseptic environment during the in-vitro culture of plants cells or tissues . In Tissue Culture Laboratory includes different kinds of materials like vessels, instruments, medium; culture room, etc., used in culture work

must be freed from microbes to achieved success in plant tissue culture.

- *Sterilization of Explant :-*

- ❖ In the sterilization process, first of all, surface sterilization of the explant is done.
- ❖ In surface sterilization, the explant is first placed in running tap water for 2 to 3 hours.
- ❖ Surface sterilization is done with a mild detergent such as soft shampoo,wimliquid,bodywash,t-pol,labolene, quine 20.
- ❖ After surface sterilization, it is washed with distilled water 2 to 3 time.
- ❖ Then the explant is kept for 10 to 15 minutes in 2% to 3% Bavistin solution to remove the fungicide Then again it is washed 2 to 3 time off with distilled water.
- ❖ Now wash the explant back with 2 to 3% HgCl for 5 minutes. and again wash it off with distilled water.Now the explants is ready for inoculation.



*Fig : Surface sterilization of explant*

- **Sterilization Of Instrument:-** Sterilization of lab instrument is done in hot air oven.

## 5. Media preparation:-

- **Requirements:-**
  - ❖ Murashige and Skoog (MS) medium (Powdered form)
  - ❖ 800 ml of distilled water

- ❖ 30 g of sucrose
- ❖ 20ml Cytokinin (coconut water) As favourable hormones.
- ❖ 20ml NAA (auxin) As favourable hormones.
- ❖ 1 Multi-vitamine tablet.
- ❖ 10 ml Iron (apple juice).
- ❖ 1 Calcium tablet.

• **APPARATUS:-**

- ❖ Sodium hydroxide (NAOH)
- ❖ Hydrochloride acid (HCL)
- ❖ Breaker and test tubes
- ❖ Spatula
- ❖ Volumetric flask
- ❖ Autoclave
- ❖ Sterile tube
- ❖ Electronic balance
- ❖ magnetic stirrer
- ❖ PH meter or paper
- ❖ Cotton

• **Preparation of MS basal medium (without hormone):-**

- ❖ 800 ml of distilled water is filled in a beaker.

- ❖ 4.4 g of MS powdered medium (slowly added), 30 g of sucrose, and 8 g of agar technical are added accordingly to the beaker.
- ❖ The medium is made up to 1 litre using volumetric flask by adding 200 ml of distilled sterile water.
- ❖ The PH of medium is adjusted to 5 by using sodium hydroxide or hydrochloride acid.
- ❖ The medium is then autoclaved.
- ❖ The melting medium is dispensed into sterile culture tubes for about one-third tubes' height, in laminar flow and each tube is labelled.
- ❖ The condition of prepared medium is observed and used for culture a week later.

#### • **METHODS:-**

- ❖ A packet of MS medium (in powdered form) is used for preparation of 1 litre medium.
- ❖ 800 ml of distilled water is filled in a beaker.
- ❖ MS powdered medium is slowly added into the beaker.

- ❖ 30 g of sucrose is added.
- ❖ PH is set at 5.8. 5.8 g agar technical is added to the beaker.
- ❖ Hormone is added.
- ❖ The media is made up to 1 litre by using volumetric flask by adding 200 ml of distilled water.
- ❖ The media is autoclaved.
- ❖ The melting media is dispensed into sterile tubes. Each tube is labeled.

## 6. *Instruments:-*

- ❖ **Hot Air Oven :-** Hot air ovens are electrical devices which use dry heat to sterilize. They were originally developed by Pasteur. Generally, they use a thermostat to control the temperature. Their double walled insulation keeps the heat in and conserves energy, the inner layer being a poor conductor and outer layer being metallic. There is also an air filled space in between to aid insulation. An air circulating fan helps in uniform distribution of the heat. These



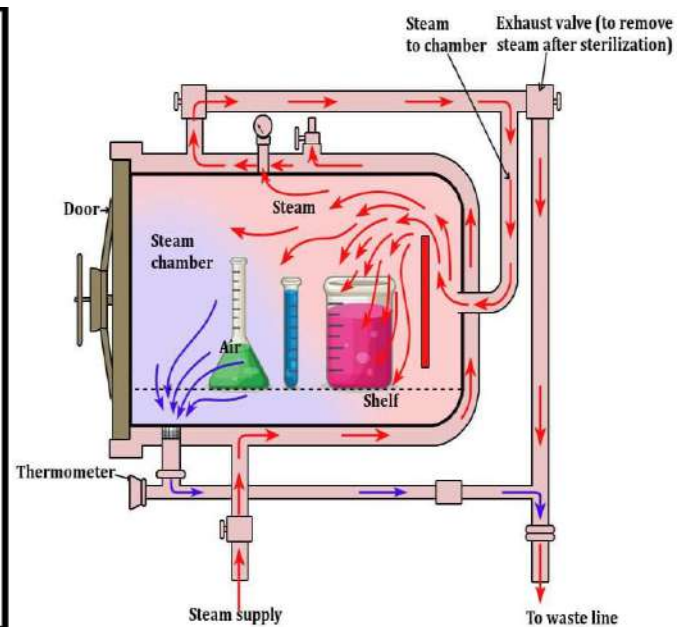
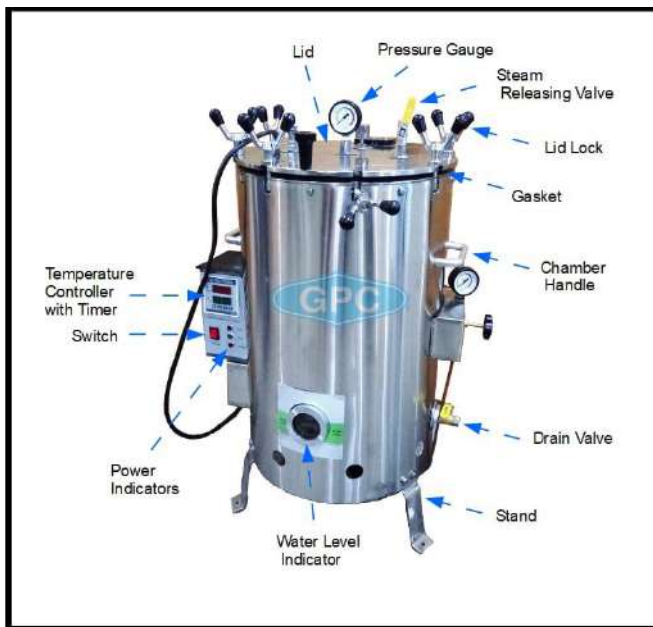
are fitted with the adjustable wire mesh plated trays or aluminium trays and may have an on/off rocker switch, as well as indicators and controls for temperature and holding time. The capacities of these ovens vary. Power supply needs vary from country to country, depending on the voltage and frequency (hertz) used. Temperature sensitive tapes or biological indicators using bacterial spores can be used as controls, to test for the efficacy of the device during use.



***Fig: Hot air oven***

- ❖ **Autoclave:-** An autoclave is a machine that provides a physical method of sterilization by killing bacteria, viruses, and even spores present in the material put inside of the vessel using steam under pressure. Autoclave sterilizes the materials by heating them up to a particular temperature

for a specific period of time. The autoclave is also called a steam sterilizer that is commonly used in healthcare facilities and industries for various purposes. The autoclave is considered a more effective method of sterilization as it is based on moist heat sterilization.



(A) (B)

**Fig: (A)- A vertical autoclave**

**(B)-Working diagram of horizontal autoclave**

❖ **Laminar Air Flow:-** A Laminar flow cabinet or hood is an enclosed workspace that creates an environment free of contaminants by using filters to remove all particles that enter the cabinet.

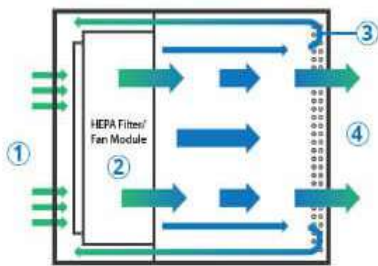
They are made to shield the work from the elements and are suitable for the aseptic distribution of certain media as well as pouring plates. Laminar flow cabinets can be compared to biosafety cabinets, with the only difference being that in these flow cabinets, the air that is emitted is drawn directly into the person's face. In a biosafety cupboard, both the user and the test sample are

protected ,while in a laminar flow cabinet only the sample is secured but not the user.

## Laminar Flow hood / cabinet

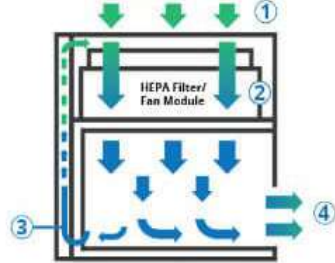


Horizontal Laminar Flow Hood Diagram (Cutaway Side View)



www.Laboratory-Supply.net

Vertical Laminar Flow Hood Diagram (Cutaway Side View)



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**Fig: laminar air flow**



(A)

(B)

(C)

(D)

**Fig: A-D Aseptic manipulation in a laminar airflow cabinet**

7. **Inoculation:-** The sterilized plant is inoculated on the culture medium under aseptic conditions.
8. **Incubation:-** The cultures are then incubated in the culture room with appropriate conditions of light, temperature, and humidity for successful culturing.
9. **Sub-Culturing:-** Cultured cells are transferred to a fresh nutrient medium to obtain the plantlets.
10. **Transfer of Plantlets:-** After the hardening process (i.e., acclimatization of plantlets to the environment), the plantlets are transferred to the greenhouse or in pots.





**Fig : Inoculation , Primary and Secondary Hardning**

### 11. **Application of Plant Tissue Culture:-** *The uses of tissue culture are:-*

- ❖ In-plant biotechnology, the useful product is a plantlet and they are used for many purposes.
- ❖ All the cells in callus or suspension plant tissue culture are derived from a single explant by mitotic division.
- ❖ Hence, all plantlets regenerated from a callus or suspension culture have the same genotype and

constitute a clone. These plantlets are utilized in rapid clonal propagation.

- ❖ A genetic variation that is observed amongst plant cells of culture is called somaclonal variation.
- ❖ A gene that is transferred into an organism by genetic engineering is known as a transgene and it can be introduced into individual plant cells.
- ❖ An organism that contains and expresses a transgene is called a transgenic organism.
- ❖ The plantlets can be generated from these cells and give rise to highly valuable transgenic plants. Mutagens are added to single-cell liquid cultures for the induction of mutations.
- ❖ Tolerance to stress like toxins, salts, drought, pollutants, flooding, etc. can also be obtained by providing them in a culture medium by increasing dosage. The surviving healthy cells are taken to a solid medium for raising resistant plants.

**12 CONCLUSION :-** After reading this write-up you are in a position to answer any question asked in the exam related to Plant Tissue Culture - Nutritional Requirements, Culture Steps, and Application. Here

we have discussed the definition of plant tissue culture, its requirements, steps of growing such a culture, and its applications. After learning so much about plant tissue culture and its impact on various developing nations, one can easily say that this new development in the field of biotechnology is here to stay. It can help in increasing the productivity of various crops thereby meeting the demands of an ever-increasing population. Also, it is understood that there is a large scope of further research and development in this field and a lot remains to be discovered.

### **13 Reference:-**

<https://www.vedantu.com/biology/plant-tissue-culture>

[https://en.m.wikipedia.org/wiki/Plant\\_tissue\\_culture](https://en.m.wikipedia.org/wiki/Plant_tissue_culture)

Book : S.S Bojwani, M.K Rajdan

# GOVT. HOLKAR SCIENCE COLLEGE INDORE



Project Report On

## **BlogBits: Blogging Website**

This is a major project for the partial fulfilment of the award of degree of

### **Master in Computer Science**

Head Of Department  
Dr. Pradeep Sharma  
Department of Computer Science

**Submitted To:**

**Dr. Pradeep Sharma Sir (Guide)**  
**Prof. Jaya Sharma Ma'am (Co-guide)**

**Submitted By:**

**Ms. Gargi Bisen**  
**Ms. Sakshi Vaidya**  
**Mr. Abhishek Sharnagat**

Department of Computer Science,  
Govt. Holkar Science College Indore  
(Affiliated to D.A.V.V. Indore)  
2021-22



GOVT. HOLKAR SCIENCE COLLEGE  
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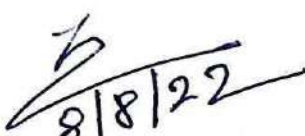
2021-22

GOVT. HOLKAR SCIENCE COLLEGE  
INDORE




CERTIFICATE

This is to certify that work entitle "BlogBits: Blogging Website" is an original research work done by Ms. Gargi Bisen , Ms. Sakshi Vaidya, Mr. Abhishek Sharnagat under my guidance and supervision for the award of Master of Computer Science degree from Govt . Holkar Science College, affiliated to Devi Ahilya Vishwa vidhyalaya, Indore [M.P.] India. It is certified that candidate has put in more than 75% attendance with me.

  
Signature of

Internal Examiner

  
Signature of  
External Examiner

Department of Computer Science,  
Holkar Science College  
Indore

## CERTIFICATE

Indore, 18-June- 2022

This is to certify that **Ms. Gargi Bisen, MSc 4th Semester (CS)** student from **Government Holkar (Model Autonomous) Science College, Indore (M.P.)** has done Internship Training in Our Organization. During the Internship Period she worked on project **“Blogging Website” in PHP Technology** from **1st April 2022 to 15th June 2022**. During Internship Period her Performance was found Satisfactory. We wish her best of luck for future.

**Future Multimedia**



*Vsingh*

**Authorized Signatory  
Head Operations & HR**

## CERTIFICATE

Indore, 18-June- 2022

This is to certify that **Ms. Sakshi Vaidya, MSc 4th Semester (CS)** student from **Government Holkar (Model Autonomous) Science College, Indore (M.P.)** has done Internship Training in Our Organization. During the Internship Period she worked on project **“Blogging Website” in PHP Technology** from **1st April 2022 to 15th June 2022**. During Internship Period her Performance was found Satisfactory. We wish her best of luck for future.

**Future Multimedia**



*Vsingh*

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**Head Operations & HR**

## CERTIFICATE

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This is to certify that **Mr. Abhishek Sharnagat, MSc 4th Semester (CS)** student from **Government Holkar (Model Autonomous) Science College, Indore (M.P.)** has done Internship Training in Our Organization. During the Internship Period he worked on project **“Blogging Website”** in **PHP Technology** from **1st April 2022 to 15th June 2022**. During Internship Period his Performance was found Satisfactory. We wish him best of luck for future.

**Future Multimedia**



*Vsingh*

**Authorized Signatory**  
**Head Operations & HR**



# GOVT. HOLKAR SCIENCE COLLEGE INDORE




## DECLARATION BY THE CANDIDATE

We declare that the project entitled "BlogBits: Blogging Website" is our own project work conducted under the guidance of Dr. Pradeep Sharma (Guide), Prof. Jaya Sharma (Co-Guide) at Govt. Holkar Science College, affiliated to Devi Ahilya Vishwa vidyalaya, Indore [M.P.], India approved by Master of science Degree Committee. I have put in more than 75 percent attendance with the supervisor at the center.

I further declare that to the best of my knowledge the report does not contain any matter partially or wholly which has already been submitted for the award of any degree either to this University/ any other University/ Deemed University and if it does it is done with proper citation.

  
Signature Of Guide

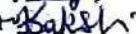
Dr. Pradeep Sharma

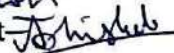
  
Signature Of Co-Guide

Prof. Jaya Sharma

Signature Of Candidates

Ms. Gargi Bisen- 

Ms. Sakshi Vaidya- 

Mr. Abhishek Sharnagat- 



**HEAD**  
Department of Computer Science  
Govt. Holkar Science College  
INDORE (M.P.)

Signature of Head of the Department

Dr. Pradeep Sharma

Department of Computer Science— Holkar Science College,  
Indore

## ACKNOWLEDGEMENT

From the start of the Application , the journey to finish this Application without the help of the many individuals we will mention below this work would have never been accomplished.

First and fore most we would like to thank Dr. Pradeep Sharma , Head , Department of Computer Science, Govt. Holkar Science College, Indore for taking us on as a students and supporting us the whole time we have been under him. Their support enabled us to finish our dissertation.

Furthermore , we would like to thank my family and staff members of Department of Computer Science , Govt. Holkar Science College , without their support we would not be able to accomplish this task.

### Student Names

Ms. Gargi Bisen

Ms. Sakshi Vaidya

Mr. Abhishek Sharnagat

*Gargi*  
*Sakshi*  
*Abhishek*

## ABSTRACT

### AIM:

The purpose of designing BlogBits: Blogging Website is to provide informational blogs related to youth in a more interesting way with multiple features

### SCOPE:

The scope of the BlogBits: Blogging Website includes:

The project is designed as website that can be accessed from anywhere using internet and a wide range of blog can be utilised by related audience. The Template and design of the website is such that it opens up various scope of usage like in formational website, news portal, publishing website etc.

### OBJECTIVE:

The objective of our project is to provide Information using blogs which are relatable to youth where blogs can be added by blogger, admin can monitor website and user can access and response to the information at any time anywhere.

### FORMAL DESCRIPTION:

This project developed in PHP, HTML, CSS, JS and Bootstrap is basically Blogging Website" which provides the user to read blogs and give response on the blogs.

### TECHNICAL DETAILS:

This project has been developed on the Htm15, CSS3, PHP, Bootstrap Platform technology using VS code Editor. We have MySQL (XAMPP Server) for our data base requirement and APACHE (XAMPP Server) for webserver requirement.



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## INTRODUCTION

BlogBits: Blogging Website developed for daily students, youth for information. It facilitates to access the blogs of particular category. The information is sorted by the admin, which will be provided by the bloggers. This system will also help in evaluating reach, response of blogs. The Website also contains features like audio blogs, games, like dislike, comments etc.

BlogBits: Blogging Website basically has three main modules for proper functioning: -

First module is admin which hold the key for editing and updating information. The admin has absolute right to all the users which are the bloggers and blogs. It has the most privilege over system by providing his username and password.

Second module is handled by the user which can be a reader. This user has a right to read and response on the blogs and to play games. Reader is the one who enjoys the content and has the least privilege over system without any registration.

Third is handled by a Blogger which is the writer, he has less privilege than admin to the access of the system limited to its own blogs only. The Blogger can only view his own record by providing his username and password.

## HARDWARE AND SOFTWARE REQUIREMENT

### SOFTWARE REQUIREMENT:

Operating System	Windows 10
Web Server	Xampp Server
Browser	Google Chrome/ Microsoft Edge
Development Environment IDE	HTML 5, PHP, CSS 3 VS code
Backend Database	MySQL

### HARDWARE REOUIREMENTS

Processor	.9 gigahertz (GHz)x64-bit Dual core processor (Minimum)
Display	Super VGA with a resolution of 1024 x 768
RAM Capacity	4GB(Minimum)
Hard Disk	500GB
Keyboard	Standard Keyboard
Mouse	Optical
Screen	Tab, Laptop, Desktop

# WEBSITE

A website (also written as web site) is a collection of web pages and related content that is identified by a common domain name and published on at least one web server. Examples of notable websites are Google, Facebook, Amazon, and Wikipedia.

All publicly accessible websites collectively constitute the World Wide Web. There are also private websites that can only be accessed on a private network, such as a company's internal website for its employees.

Websites are typically dedicated to a particular topic or purpose, such as news, education, commerce, entertainment, or social networking. Hyperlinking between web pages guides the navigation of the site, which often starts with a home page. Users can access websites on a range of devices, including desktops, laptops, tablets, and smartphones. The app used on these devices is called a web browser.

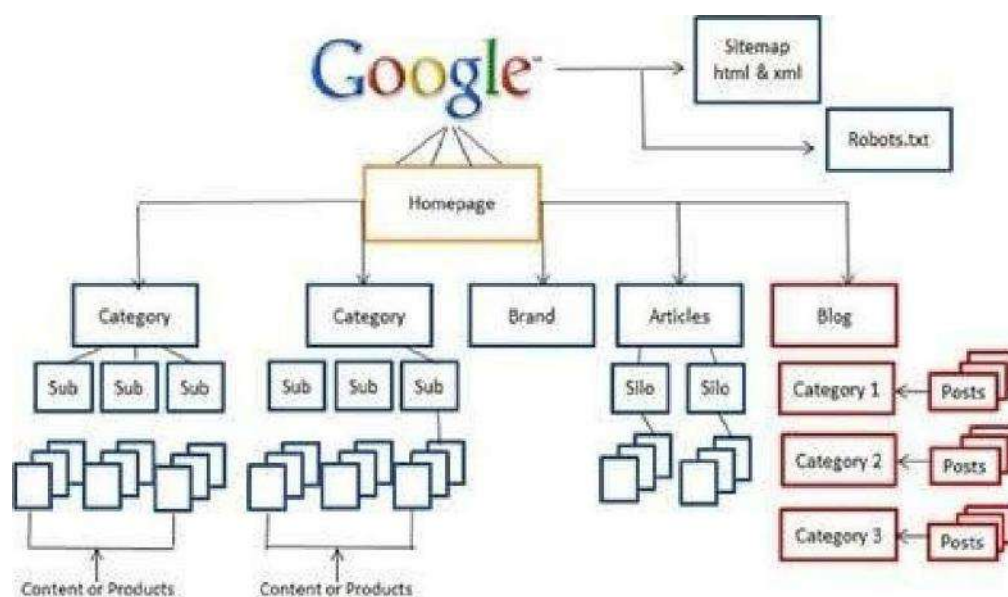
Websites can be used in various fashions: a personal website, a corporate website for a company, a government website, an organization website, etc. Websites can be the work of an individual, a business or other organization, and are typically dedicated to a particular topic or purpose. Any website can contain a hyperlink to any other website, so the distinction between individual sites, as perceived by the user, can be blurred.

Some websites require user registration or subscription to access content. Examples of subscription websites include many business sites, news websites, academic journal websites, gaming websites, file-sharing websites, message boards, web-based email, social networking websites, websites providing real-time stock market data, as well as sites providing various other services.

# WEBSITE ARCHITECTURE

The architecture of the website contains the logical layout of the website. A complete website has many different elements which are required and must be defined properly according to the business and user requirements.

Designers work on the design of the website (visuals, graphics, typography), developers take care of the backend stuff but architecture is the thing which keeps all these things together and makes a website functional. Web architecture includes everything required to run and start a website. Usually, website architectures are developed for very large website projects.



## ● WORKING OF WEBSITES:-

Before you begin creating your own website and launch it to the Internet, it's important to know how websites work

Here are some basic terms:

A website is simply a collection of web pages of codes — codes that describes the layout, format and content on a page.

The web server is a internet-connected computer that receives the request for a web page sent by your browser.

The browser connects your computer to the server through an IP address. The IP address is obtained by translating the domain name. (Don't worry, this part is all done automatically by your browser so you don't have to look up the IP addresses yourself.)

In other words, in order to display your website on the Internet, you will need: A website, A domain name and A web server

## **A website**

A website is typically a collection of web pages, images and other elements that are linked together to form a larger, structured document. Think of a website as a book and each individual page is a web page.

A website can be made up of a single page or it could have thousands of pages. Each page will have its own text, images and other elements. All web pages and elements are then placed in a folder and stored on your web host server.

Each web page is written in codes and these codes describe the layout, format and content on the page. The most common coding language used to create web pages is HTML.

## **A domain name**

A domain name is the address that you type into your web browser address bar to get to a website. An example of a domain name is [www.blogbits.com](http://www.blogbits.com). A domain name is unique to a website. In other words, no two websites can have the same domain name.

While it is true that you don't necessarily need a custom domain name for your website. Many website builders offer free plans that comes with a free website address. But these free website addresses come in the form of a sub-domain. . For example, if your website builder is "example.com" your free web address may be <http://yourname.example.com>.

This type of web address poses many problems:

Your website becomes a "hostage" — because you don't own example.com, you also don't own any sub-domain or sub-folder variations of that domain name. The website builder has the right to create and delete any sub-domains and/or sub-folders they wish, with or without warning.

Many customers do not want to do business with a company that doesn't have its own domain name. A custom domain name (and a custom domain email address) gives you the professionalism, credibility and trust that you and your business needs.

Search engines such as Google and Bing give preferences to domain names rather than subdomains.

Custom domain names are not free, but nowadays you can easily get one for free from many service providers when you signup for an annual service plan.

## **A web server**

A web server is the computer that receives the request for a web page sent by your browser.

Consider this: your company is hiring for a position that has just opened up and you are in charge of writing the job ad. You may have crafted the most compelling ad but unless you post the ad on a job board, no one will see it.

This is the same with websites. You could create the most stunning website but unless it's uploaded to a web server, it is not accessible or viewable on the Internet.

You can certainly set up your own server at home, but it would require a huge amount of knowledge, time and resources (i.e. power and Internet connection). Paying a web hosting service provider would be the more logical, economical and practical thing to do. Think of it like renting a space on a web host's server. For a monthly fee, web hosting providers let you use space on their servers to host your website, and because it's their server, they take care of all the technical aspects of setting up and maintaining the server, as well as all the resources needed to run the server, so you don't have to worry about anything.

## **How it all comes together**

Each website will have a website address, or a domain name, and each domain name is tied to the IP address of the web server it resides on. IP addresses are managed and tracked via the Domain Name Server (or DNS for short).

DNS works very similarly to the Contacts app on your mobile phone — you open up the Contacts app, type in a person's name and your mobile phone returns with the person's phone number and other contact information you might have entered. You can then decide if you want to call, email or text that person.

When you type in a domain name in your web browser, your web browser is actually conducting a series of inquiries that include looking up the IP address of the domain name, locating the web server that hosts the web pages of the domain name, submitting a request to that server for a copy of the web page(s), receiving the web page(s) from the server and finally translating the codes on the web page to present the information on your screen.

## AN EXAMPLE OF HOW IT WORKS

You find this cool new website and you want to create an account, so you decide to click the "sign up" button. You are then redirected to a page where you find a form asking you to enter your information . After you are done filling the form you are redirected to the profile section and you can now use the app.

In this example, the sign-up form is on the client-side, where data is collected from the user. On the other hand, all the actions that are happening behind the scenes like adding the user to the database, checking if the email is unique and valid, redirecting the user to different pages, etc., are the backend of our Web app.

## BENEFITS OF A WEBSITE

Zero install - all PCs have a browser

Reduce business costs - less time spent talking to customers over the phone; eliminate printed materials; allow users to update their own details.

Centralized data is secure and easy to backup.

Reach anybody, anywhere in the world.

Available 24 hours a day, 7 days a week.

Low spec PCs or smart phones can be used.

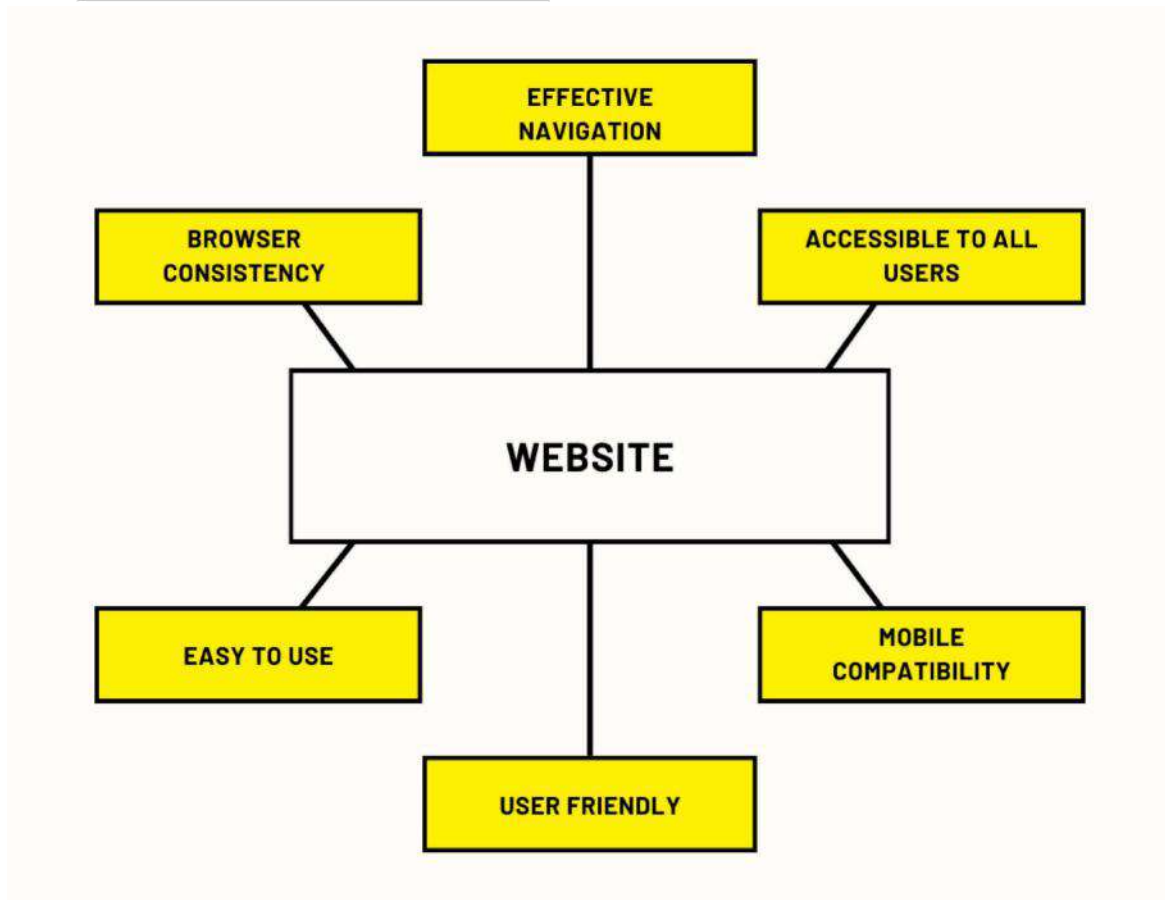
Online training can be completed at user's own time and pace.

Direct access to latest information

Always up-to-date.



- **FEATURES OF WEBSITE:-**



- **THE EVOLUTION OF WEB DEVELOPMENT**

**Web Development** was previously only known for the development of web pages and websites for both intranet and internet. However, nowadays it is more like creating **web applications** that surpass the complexity as well as the size of typical mobile and desktop applications. It can be said, web application development is the artsy method to develop complex business applications to both business and customers.

The web that we see today is the outcome of regular ongoing efforts of an open community of web that assists in designing the latest technologies. Some of the technologies that are being used today for web development are CSS3, WebGL, HTML 5, Java, React JS, Angular JS, PHP, etc. These technologies also ensure that the website or web app is supported in all web browsers.



## • **STAGES OF WEB DEVELOPMENT EVOLUTION**

During the start of web development evolution from the 90s to the current date, several things have changed and some of the features that were incorporated in its features:

- The sites were text-based
- Rise of Flash
- Sites were table-based with online page builders
- CSS Hits Web
- The Rise of JavaScript
- Semantic Web has come into view
- Web 2.0 was out
- Web Designs started embedding background images.
- Web Pages were divided into columns to aid numerous other customizations of the sites.
- Different graphic elements began incorporating in the web applications
- Real-time visitor counters have become common on websites or web apps.
- Scrolling Marquee came into the picture
- GIF appearance started on the website

## **FRONT-END DETAILS**

- **HTML**

**HTML** stands for **Hyper Text Markup Language**, which is the most widely used language on Web to develop web pages. **HTML** was created by Berners-Lee in late 1991 but "HTML 2.0" was the first standard HTML specification which was published in 1995. HTML 4.01 was a major version of HTML and it was published in late 1999. Though HTML 4.01 version is widely used but currently we are having HTML-5 version which is an extension to HTML 4.01, and this version was published in 2012.

**HTML** is a **MUST** for students and working professionals to become a great Software Engineer especially when they are working in Web Development Domain. I will list down some of the key advantages of learning HTML:

- **Create Web site** - You can create a website or customize an existing web template if you know HTML well.
- **Become a web designer** - If you want to start a career as a professional web designer, HTML and CSS designing is a must skill.
- **Understand web** - If you want to optimize your website, to boost its speed and performance, it is good to know HTML to yield best results.
- **Learn other languages** - Once you understand the basic of HTML then other related technologies like JavaScript, php, or angular are become easier to understand.

- **BASIC HTML**

Tag	Description
<u><a href="#"><b>&lt;!DOCTYPE&gt;</b></a></u>	Defines the document type
<u><a href="#"><b>&lt;html&gt;</b></a></u>	Defines an HTML document
<u><a href="#"><b>&lt;head&gt;</b></a></u>	Contains metadata/information for the document
<u><a href="#"><b>&lt;title&gt;</b></a></u>	Defines a title for the document
<u><a href="#"><b>&lt;body&gt;</b></a></u>	Defines the document's body
<u><a href="#"><b>&lt;h1&gt; to &lt;h6&gt;</b></a></u>	Defines HTML headings
<u><a href="#"><b>&lt;p&gt;</b></a></u>	Defines a paragraph
<u><a href="#"><b>&lt;br&gt;</b></a></u>	Inserts a single line break
<u><a href="#"><b>&lt;hr&gt;</b></a></u>	Defines a thematic change in the content
<u><a href="#"><b>&lt;!--...--&gt;</b></a></u>	Defines a comment

- **FORMS AND INPUT**

Tag	Description
<u><a href="#"><b>&lt;form&gt;</b></a></u>	Defines an HTML form for user input
<u><a href="#"><b>&lt;input&gt;</b></a></u>	Defines an input control
<u><a href="#"><b>&lt;textarea&gt;</b></a></u>	Defines a multiline input control (text area)
<u><a href="#"><b>&lt;button&gt;</b></a></u>	Defines a clickable button
<u><a href="#"><b>&lt;select&gt;</b></a></u>	Defines a drop-down list
<u><a href="#"><b>&lt;optgroup&gt;</b></a></u>	Defines a group of related options in a drop-down list
<u><a href="#"><b>&lt;option&gt;</b></a></u>	Defines an option in a drop-down list
<u><a href="#"><b>&lt;label&gt;</b></a></u>	Defines a label for an <input> element

<a href="#"><u>&lt;fieldset&gt;</u></a>	Groups related elements in a form
<a href="#"><u>&lt;legend&gt;</u></a>	Defines a caption for a <fieldset> element
<a href="#"><u>&lt;datalist&gt;</u></a>	Specifies a list of pre-defined options for input controls
<a href="#"><u>&lt;output&gt;</u></a>	Defines the result of a calculation

- **IMAGES**

Tag	Description
<a href="#"><u>&lt;img&gt;</u></a>	Defines an image

- **LINKS**

Tag	Description
<a href="#"><u>&lt;a&gt;</u></a>	Defines a hyperlink
<a href="#"><u>&lt;link&gt;</u></a>	Defines the relationship between a document and an external resource (most used to link to style sheets)
<a href="#"><u>&lt;nav&gt;</u></a>	Defines navigation links

- **LISTS**

Tag	Description
<a href="#"><u>&lt;ul&gt;</u></a>	Defines an unordered list
<a href="#"><u>&lt;ol&gt;</u></a>	Defines an ordered list
<a href="#"><u>&lt;li&gt;</u></a>	Defines a list item
<a href="#"><u>&lt;dir&gt;</u></a>	Not supported in HTML5. Use <ul> instead. Defines a directory list
<a href="#"><u>&lt;dl&gt;</u></a>	Defines a description list
<a href="#"><u>&lt;dt&gt;</u></a>	Defines a term/name in a description list
<a href="#"><u>&lt;dd&gt;</u></a>	Defines a description of a term/name in a description list

- **TABLES**

Tag	Description
<u><a href="#">&lt;table&gt;</a></u>	Defines a table
<u><a href="#">&lt;th&gt;</a></u>	Defines a header cell in a table
<u><a href="#">&lt;tr&gt;</a></u>	Defines a row in a table
<u><a href="#">&lt;td&gt;</a></u>	Defines a cell in a table
<u><a href="#">&lt;tbody&gt;</a></u>	Groups the body content in a table

- **STYLES AND SEMANTICS**

Tag	Description
<u><a href="#">&lt;style&gt;</a></u>	Defines style information for a document
<u><a href="#">&lt;div&gt;</a></u>	Defines a section in a document
<u><a href="#">&lt;span&gt;</a></u>	Defines a section in a document
<u><a href="#">&lt;header&gt;</a></u>	Defines a header for a document or section
<u><a href="#">&lt;footer&gt;</a></u>	Defines a footer for a document or section
<u><a href="#">&lt;main&gt;</a></u>	Specifies the main content of a document
<u><a href="#">&lt;section&gt;</a></u>	Defines a section in a document

- **PROGRAMMING**

Tag	Description
<u><a href="#">&lt;script&gt;</a></u>	Defines a client-side script

## • CSS (Cascading Style Sheets )

Cascading Style Sheet (CSS) is used to set the style in web pages that contain HTML elements. It sets the background color, font-size, font-family, color etc. property of elements on a web page. The major points of CSS are given below:

- CSS stands for Cascading Style Sheet.
- CSS is used to design HTML tags.
- CSS is a widely used language on the web.
- HTML, CSS and JavaScript are used for web designing. It helps the web designers to apply style on HTML tags.

➤ There are three types of CSS which are given below:

- Inline CSS
- Internal or Embedded CSS
- External CSS

<b><u>background</u></b>	A shorthand property for all the <i>background-*</i> properties
<b><u>background-color</u></b>	Specifies the background color of an element
<b><u>background-image</u></b>	Specifies one or more background images for an element
<b><u>background-position</u></b>	Specifies the position of a background image
<b><u>background-size</u></b>	Specifies the size of the background images
<b><u>border</u></b>	A shorthand property for <i>border-width</i> , <i>border-style</i> and <i>border-color</i>
<b><u>border-bottom</u></b>	A shorthand property for <i>border-bottom-width</i> , <i>border-bottom-style</i> and <i>border-bottom-color</i>
<b><u>border-bottom-color</u></b>	Sets the color of the bottom border
<b><u>border-collapse</u></b>	Sets whether table borders should collapse into a single border or be separated
<b><u>border-color</u></b>	Sets the color of the four borders
<b><u>border-image</u></b>	A shorthand property for all the <i>border-image-*</i> properties



<b><u>border-radius</u></b>	A shorthand property for the four <i>border-*-radius</i> properties
<b><u>border-style</u></b>	Sets the style of the four borders
<b><u>border-top</u></b>	A shorthand property for <i>border-top-width</i> , <i>border-top-style</i> and <i>border-top-color</i>
<b><u>bottom</u></b>	Sets the elements position, from the bottom of its parent element

<b><u>color</u></b>	Sets the color of text
<b><u>columns</u></b>	A shorthand property for <i>column-width</i> and <i>column-count</i>
<b><u>display</u></b>	Specifies how a certain HTML element should be displayed
<b><u>flex</u></b>	A shorthand property for the <i>flex-grow</i> , <i>flex-shrink</i> , and the <i>flex-basis</i> properties
<b><u>float</u></b>	Specifies whether or not a box should float
<b><u>font</u></b>	A shorthand property for the <i>font-style</i> , <i>font-variant</i> , <i>font-weight</i> , <i>font-size/line-height</i> , and the <i>font-family</i> properties
<b><u>font-family</u></b>	Specifies the font family for text
<b><u>font-size</u></b>	Specifies the font size of text
<b><u>font-style</u></b>	Specifies the font style for text
<b><u>font-weight</u></b>	Specifies the weight of a font
<b><u>justify-content</u></b>	Specifies the alignment between the items inside a flexible container when the items do not use all available space
<b><u>margin</u></b>	Sets all the margin properties in one declaration
<b><u>margin-bottom</u></b>	Sets the bottom margin of an element

<u><a href="#">margin-left</a></u>	Sets the left margin of an element
<u><a href="#">margin-right</a></u>	Sets the right margin of an element
<u><a href="#">margin-top</a></u>	Sets the top margin of an element
<u><a href="#">min-height</a></u>	Sets the minimum height of an element
<u><a href="#">min-width</a></u>	Sets the minimum width of an element
<u><a href="#">padding</a></u>	A shorthand property for all the padding-* properties
<u><a href="#">padding-bottom</a></u>	Sets the bottom padding of an element
<u><a href="#">padding-left</a></u>	Sets the left padding of an element
<u><a href="#">padding-right</a></u>	Sets the right padding of an element
<u><a href="#">padding-top</a></u>	Sets the top padding of an element
<u><a href="#">table-layout</a></u>	Defines the algorithm used to lay out table cells, rows, and columns
<u><a href="#">text-align</a></u>	Specifies the horizontal alignment of text
<u><a href="#">text-decoration</a></u>	Specifies the decoration added to text
<u><a href="#">text-decoration-color</a></u>	Specifies the color of the text-decoration
<u><a href="#">text-shadow</a></u>	Adds shadow to text

## BACK-END DETAILS

### PHP

PHP is a general-purpose scripting language geared toward web development. It was originally created by Danish-Canadian programmer Rasmus Lerdorf in 1994. The PHP reference implementation is now produced by The PHP Group. PHP originally stood for Personal Home Page ,but it now stands for the recursive initialism PHP: Hypertext Pre-processor. PHP code is usually processed on a web server by a PHP interpreter implemented as module, a daemon or as a Common Gateway Interface ( CGI) executable. On a web server, the result of the interpreted and executed PHP code — which may be any type of data, such as generated HTML or binary image data — would form the whole or part of an HTTP response. Various web template systems, web content management systems, and web frameworks exist which can be employed to orchestrate or facilitate the generation of that response. Additionally, PHP can be used for many programming tasks outside the web context, such as standalone graphical applications and robotic drone control PHP code can be directly executed from the command line.

The standard PHP interpreter, powered by the Zend Engine, is free software released under the PHP License. PHP has been widely ported and can be deployed on most web servers on a variety of operating systems and platforms.

The PHP language evolved without a written formal specification or standard until 2014, with the original implementation acting as the de facto standard which other implementations aimed to follow. Since 2014, work has gone on to create a formal PHP specification.

W3 Techs reports that, as of January 2022, "PHP is used by 78.1% of all the websites whose server-side programming language we know. "PHP version 7.4 is the most used version. Support for version 7.3 was dropped on 6 December 2021.

## PHP

### PHP Standard Functions

Function	Description
<code>isset (el)</code>	Will return false if <code>el</code> has been assigned the constant NULL, <code>el</code> has not been set to any value yet (undefined) <code>el</code> has been deleted using the <code>unset</code> function
<code>print str echo str</code>	Prints <code>str</code>
<code>time()</code>	Returns the current time in seconds
<code>date (format, time)</code>	Converts an optional time in seconds to a date based on format
<code>mt_rand(min, max)</code>	Returns a random integer between <code>min</code> and <code>max</code> (inclusive)
<code>header (string)</code>	Sends a raw HTTP header. Examples include: <code>header("HTTP/1.1 400 Invalid Request");</code> <code>header("Content-type: text/plain");</code> <code>header("Contenttype: application/json");</code>
<code>die (message)</code>	Ends execution and sends back optional message
<code>include "path"</code>	Includes and evaluates the specified file path such as "hidden/config.php"

### PHP String Functions

Function	Description
<code>strlen(s)</code>	Returns the length of a string <code>s</code>
<code>strpos(str, substr)</code>	Returns the position of the first occurrence of <code>substr</code> in <code>str</code> , or FALSE if not found
<code>substr(s, start, len)</code>	Returns a substring of <code>s</code> starting at <code>start</code> and up to <code>len</code> characters in length. If <code>s</code> is less than <code>start</code> characters long, FALSE will be returned
<code>trim(s)</code>	Strips whitespace characters from both ends of a string <code>s</code>
<code>strtolower(s)</code>	Returns a lowercase version of <code>s</code>
<code>strtoupper(s)</code>	Returns an uppercase version of <code>s</code>
<code>explode(delimiter, s)</code>	Returns an array of substrings of <code>s</code> split by <code>delimiter</code>

## PHP File Functions

Function	Description
<code>file(path, [int flags = 0])</code>	Reads entire file path into an array. Optional flags parameter can be passed in such as  <code>FILE_IGNORE_NEW_LINES</code> or <code>FILE_SKIP_EMPTY_LINES</code>
<code>file_exists(path)</code>	Returns whether a file or directory path exists
<code>file_get_contents(path)</code>	Reads entire file path into a string
<code>file_put_contents(path, data)</code>	Writes a string data to a file path
<code>scandir(path)</code>	Returns an array of all files and directories inside the specified path including . and ..
<code>glob(pattern)</code>	Returns an array of path names matching pattern
<code>basename(path)</code>	Given a filename path, this function will strip any leading directory from a file path and return just the filename

## PHP PDO Functions (with mysql)

Note that for some PDO object \$db, you can call some function fxn using \$db->fxn(...).

Function	Description
<code>new PDO('mysql:dbname=database;host=yourhost', username, password)</code>	Constructor, connecting to the database using the given yourhost host value, username, and password
<code>setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION)</code>	Sets PDO error-handling properties
<code>query(sqlquery)r</code>	Returns a PDOStatement (that contains a result set) after executing sqlquery in the PDO's connected database
<code>exec(sqlquery)</code>	Executes a SQL statement. Returns the number of affected rows.

<code>prepare(statement)</code>	Prepares an SQL statement to be executed by the <code>execute(arr)</code> method. The SQL statement can contain zero or more named <code>(:name)</code> parameter markers for which real values will be substituted when the statement is executed.
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## PDO Statement Functions

A `PDOStatement` represents a prepared statement and, after the statement is executed, an associated result set. You can retrieve the rows using a `foreach` loops, `fetch()`, or `fetchAll()`. These functions are also used with `$stmt->fxn(...)` syntax.

Function	Description
<code>execute(arr)</code>	Executes the prepared statement, filling in the named or question mark parameters with real values from the associative array. Returns <code>TRUE</code> if database was changed as a result, otherwise <code>FALSE</code> .
<code>columnCount()</code>	Returns the number of columns in the result set.
<code>fetch()</code>	Returns the next row from the result set.
<code>fetchAll()</code>	Returns all of the rows in an array of arrays representing each row from the set.
<code>fetchColumn(number)</code>	Returns the next column from the result set.
<code>rowCount()</code>	Returns the number of rows in the result set.

## PHP Regex Functions

Function	Description
<code>preg_match(regex, str)</code>	Returns whether <code>str</code> matches <code>regex</code>
<code>preg_replace(regex, repl, str)</code>	Returns a new string with all substrings of <code>str</code> that match <code>regex</code> replaced by <code>repl</code>
<code>preg_split(regex, str)</code>	Returns an array of strings from given <code>str</code> split apart using given <code>regex</code> as delimiter

## PHP Superglobals Reference

Variable	Description
<code>\$_GET</code>	Superglobal array which contains query parameters passed in via a GET request
<code>\$_POST</code>	Superglobal array which contains POST parameters passed in via a POST request

## Regex Reference

<code>[abc]</code>	A single character of: a, b, or c	<code>.</code>	Any single character	<code>(...)</code>	Capture everything enclosed
<code>[^abc]</code>	Any single character except: a, b, or c	<code>\s</code>	Any whitespace character	<code>(a b)</code>	a or b
<code>[a-z]</code>	Any single character in the range a-z	<code>\S</code>	Any non-whitespace character	<code>a?</code>	Zero or one of a
<code>[a-zA-Z]</code>	Any single character in the range a-z or A-Z	<code>\d</code>	Any digit	<code>a*</code>	Zero or more of a
<code>^</code>	Start of line	<code>\D</code>	Any non-digit	<code>a+</code>	One or more of a
<code>\$</code>	End of line	<code>\w</code>	Any word character (letter, number, underscore)	<code>a{3}</code>	Exactly 3 of a
<code>\A</code>	Start of string	<code>\W</code>	Any non-word character	<code>a{3,}</code>	3 or more of a
<code>\Z</code>	End of string	<code>\b</code>	Any word boundary	<code>a{3,6}</code>	Between 3 and 6 of a

options: `i` case insensitive   `m` make dot match newlines   `x` ignore whitespace in regex   `o` perform `#{...}` substitutions only once

**Special characters that need to be escaped to match as literals:** `[] ^ $ . | ? * + ( ) { } \`

## JAVASCRIPT

JavaScript (js) is a light-weight object-oriented programming language which is used by several websites for scripting the webpages. It is an interpreter, full-fledged programming language that enables dynamic interactivity on websites when applied to an HTML document. It was introduced in the year 1995 for adding programs to the webpages in the Netscape Navigator browser. Since then, it has been adopted by all other graphical web browsers. With JavaScript, users can build modern web applications to interact directly without reloading the page every time. The traditional website uses js to provide several forms of interactivity and simplicity.



## DATABASE

A database is a separate application that stores a collection of data. Each database has one or more distinct API's for creating, accessing, managing, searching and replicating the data it holds. The name indicates what the database is. A database is one of the important components for many applications and is used for storing a series of data in a single set. In other words, it is a group/package of information that is put in order so that it can be easily accessed, manage and update.

There are different types of databases. They are:

- Bibliographic
- Full- text
- Numeric
- Images

In a database, even the smallest portion of information becomes the data. Example, Blog is a data, description is a data, and the blog audio is a data, blog picture, blogger name everything is data. In brief, all the living and non- living objects in this world is a data. In this chapter of the database, you will learn about the basic terminologies that are used in DBMS.

## RELATIONAL DATABASE MANAGEMENT SYSTEM (RDMS)

A Relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model. An important feature of relational system is that a single database can be spread across several tables. This differs from flat file database in which each database is self-contained in a single table.

### Rules for Relational Databases

In order for a relational database to function, a number of basic rules need to be followed:

- Each table has a unique name.
- Each table contains multiple rows.
- Each row in a table is unique.
- Every table has a key to uniquely identify the rows.
- Each column in a table has a unique attribute name.

These rules are implemented as part of the overall database design.

## MYSQL

MySQL is an open-source relational database management system (RDBMS).

Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL" the abbreviation for Structured Query Language.

A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational database and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

### **FEATURES OF MySQL**

#### **Open-Source**

MySQL is open-source, which means this software can be downloaded, used and modified by anyone. It is free-to-use and easy-to-understand. The source code of MySQL can be studied, and changed based on the requirements. It uses GPL, i.e. GNU General Public license which defines rules and regulations regarding what can and can't be done using the application.

#### **Quick and Reliable**

MySQL stores data efficiently in the memory ensuring that data is consistent, and not redundant. Data access and manipulation using MySQL is quick

#### **Scalable**

Scalability refers to the ability of systems to work easily with small amounts of data, large amounts of data, clusters of machines, and so on. MySQL server was developed to work with large databases.

#### **Data Types**

It contains multiple data types such as unsigned integers, signed integers, float (FLOAT), double (DOUBLE), character (CHAR), variable character ( VARCHAR), text, blob, date, time, datetime, timestamp, year, and so on.

#### **Character Sets**

It supports different character sets, and this includes latin1 (cp1252 character encoding), German, Ujis, other Unicode character sets and so on.

## **Secure**

It provides a secure interface since it has a password system which is flexible, and ensures that it is verified based on the host before accessing the database. The password is encrypted while connecting to the server.

## **Support for large databases**

It comes with support for large databases, which could contain about 40 to 50 million records, 150,000 to 200,000 tables and up to 5,000,000,000 rows.

## **Client and Utility Programs**

MySQL server also comes with many client and utility programs. This includes Command line programs such as 'mysqladmin' and graphical programs such as 'MySQL Workbench'.

MySQL client programs are written in variety of languages. Client library (code encapsulated in a module) can be written in C or C++ and would be available for clients that have C bindings.

## **SYSTEM REOUIREMET ANALYSIS**

- **INFORMATION GATHERING:-**

It is a depth study of end user information requirement that is needed before the design of new information system can be completed. System analyst traditionally involved in the following activities.

Meeting: For this we meet our Guide prof. Jaya Sharma whenever need. They suggested us about including some new features to our project.

- **SYSTEM FEASIBILITY:-**

### **Economic feasibility:**

There must be sufficient benefit in creating the system to make the cost acceptable. A system can be developed technically and that will be used if installed must still be a good investment for the organization. Financial benefit must equal or exceed the cost. The financial and economical question raised by analyst during the preliminary investigation is for the purpose of estimating the following:

- (a)The cost to conduct the full system investigation.
- (b)The cost of hardware and software.

## **Technical Feasibility:**

Technical feasibility center on the existing computer hardware and software, it deals with the feasibility of the required technology for implementing the proposed system. The system is developed in windows environment using PHP,HTML,CSS.

MySQL (Xampp Server), the project is technically feasible because there is no need to have very high configured system.

## **Behavioural Feasibility:**

Our system follows behavioural feasibility because of its friendliness in nature. Anyone can operate easily for this we have developed user interface and user friendly web app.

## **TECHNOLOGY USED:**

The system should be developed such that deployment of the system easy and effortless. Also the technology should very easy and user friendly.

We had plenty of option select the technology and tools . The selection criteria we set are decided below:

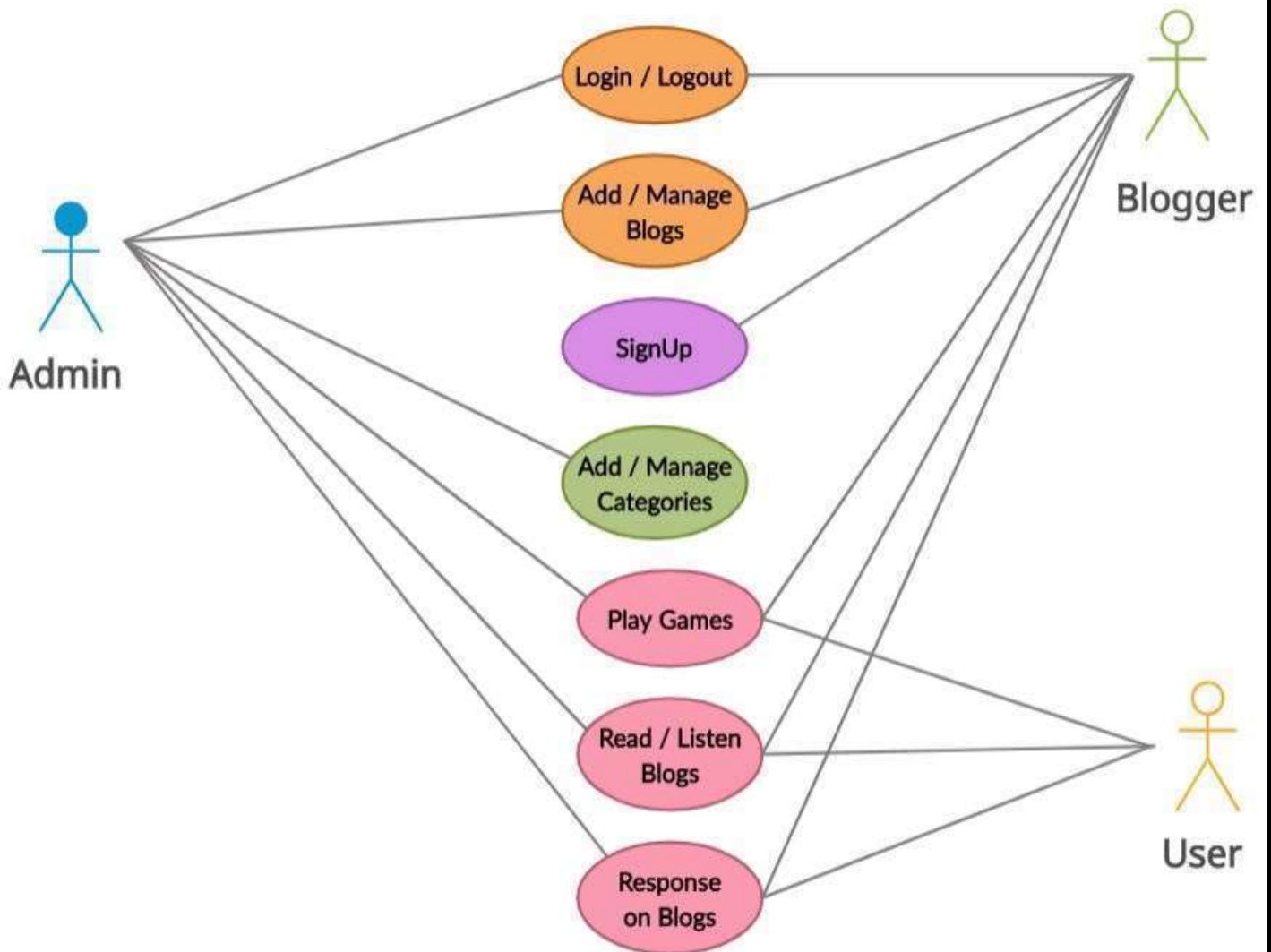
The technology should be widely accepted in industry.

The platform should be easy to develop and allow rapid development.

The technology selected should be performs independent.

## SYSTEM ANALYSIS TOOLS

### USE CASE DIAGRAM:

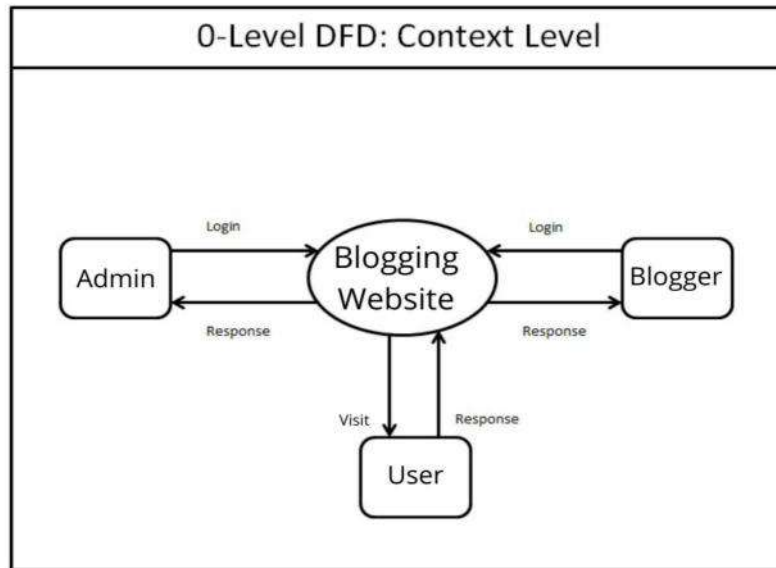


**BlogBits : Blogging Website**



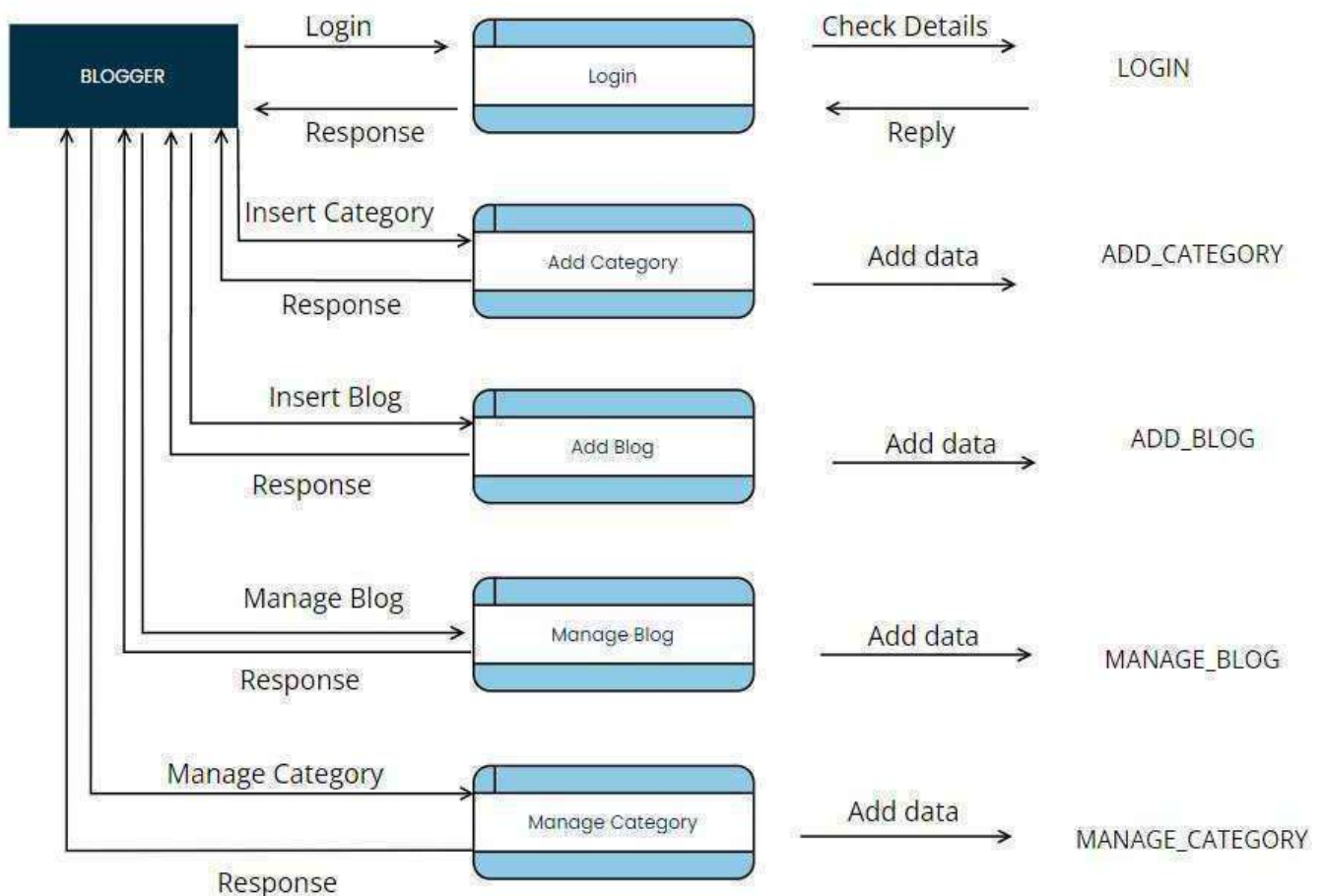
## DATA FLOW DIAGRAM (DFD)

### LEVEL - 0



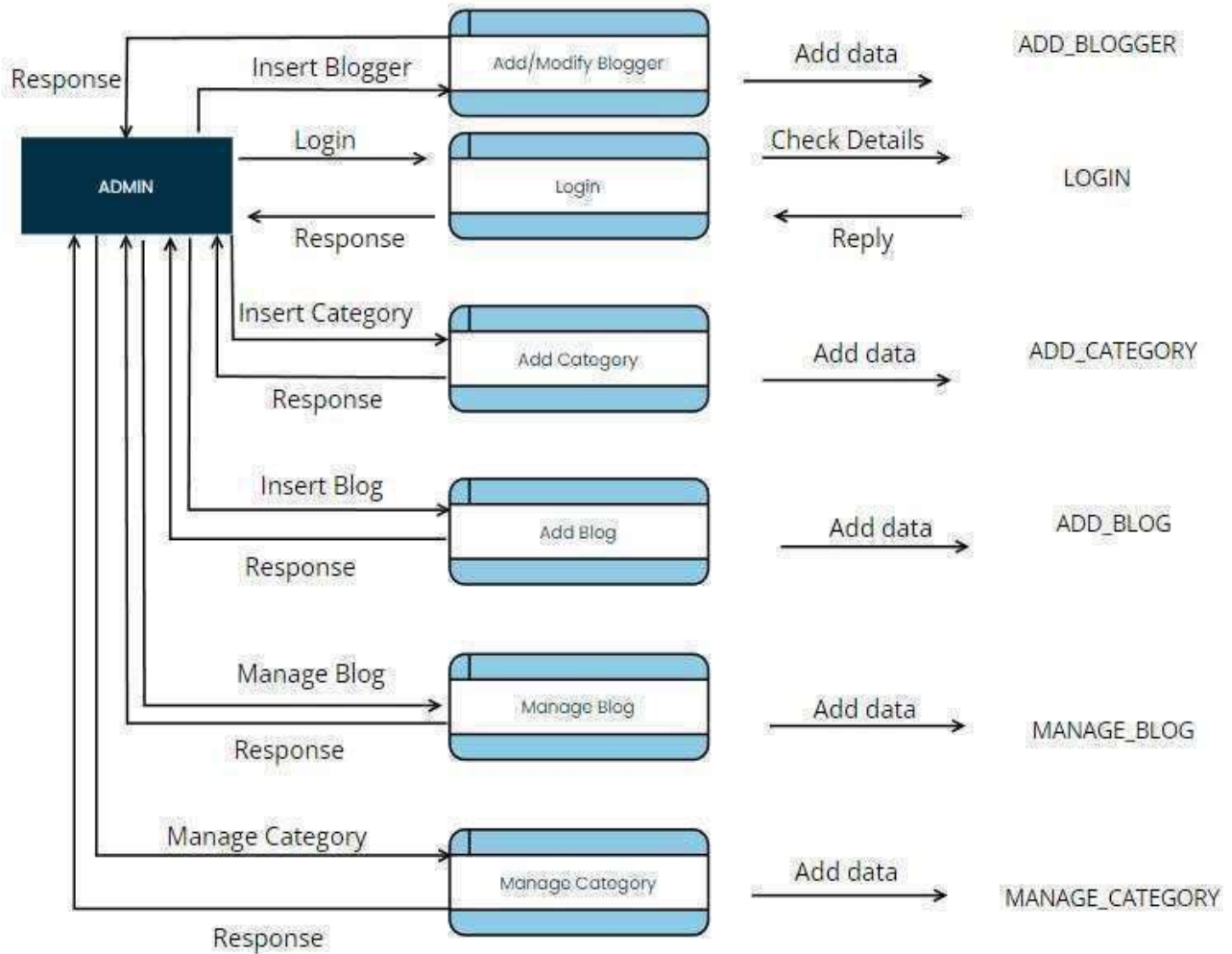
### LEVEL - 1

#### Blogger 1-Level DFD



## LEVEL - 1

**Admin 1-Level DFD**

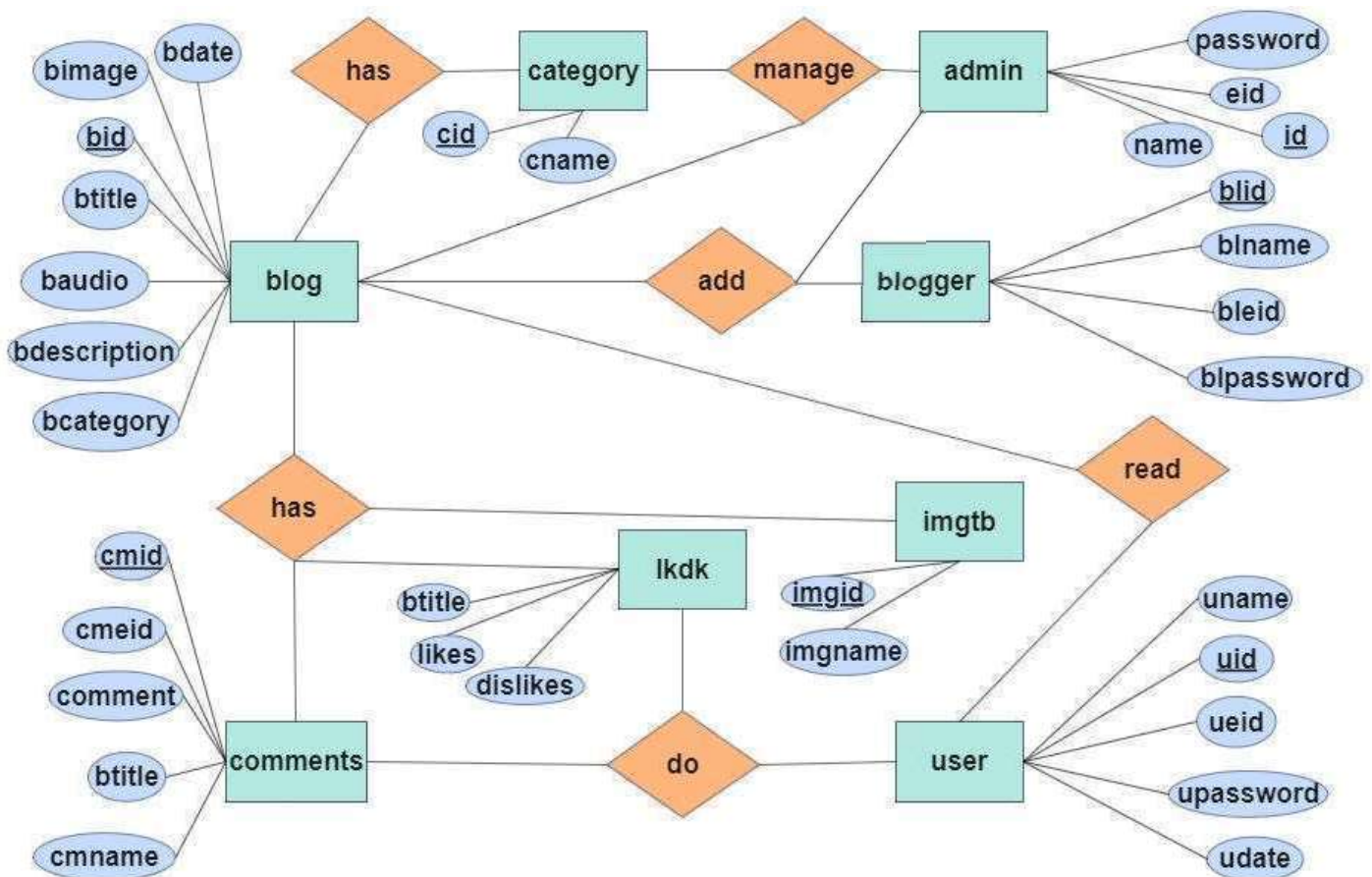


**User 1-Level DFD**



## ER- DIAGRAM

ER diagram of BlogBitts: Blogging Website is here in which tables are denoted by rectangle, attributes are denoted by ellipse, relationships are denoted by diamond and primary keys are denoted by underlined text.



ERD : BlogBits (Blogging Website)

# **TESTING**

## **• TESTING PLAN**

Once source code has been generated, software must be tested to uncover (and correct) as many errors as possible before delivery to customer. Our goal is to design a series of test cases that have a high likelihood of finding errors. To uncover the errors software techniques are used. These techniques provide systematic guidance for designing test that Exercise the internal logic of software components, and Exercise the input and output domains of the program to uncover errors in program function, behavior and performance.

## **TESTING – TECHNIQUES USED:**

### **1. Functionality Testing**

- We have verified there is no dead page or invalid redirects.
- We have checked all the validations on each field.
- We have taken Wrong inputs to perform negative testing.
- We have verified the workflow of the system.

### **2. Usability testing -**

- We have tested the navigation and controls.
- We have checked Content.
- Checked for user intuition.

### **3. Interface testing –**

- Performed this technique to verify the interface and the data is flowing from one system to other.

### **4. Compatibility testing-**

- Browser compatibility
- Operating system compatibility
- Compatible to various devices like notebook, mobile, etc.

## **5. Performance testing–**

- We have performed this testing to verify the server response time and throughput under various load conditions.

## **6. Security testing –**

- We have performed to verify if the application is secured on web as data theft and unauthorized access are more common issues

### **TESTED ITEMS:**

- Check for Server and Internet Connections
- Check for valid Source and Destination points entered by user
- Orientation changes handling
- Transitions between two activities and passing data
- Database connections and updates handling.

### **TESTING SCHEDULE:**

We have tested each procedure back-to-back so that errors and omissions can be found as early as possible. Once the system has been developed fully we have tested it on different devices, and browsers which differs in configuration.

### **BLACK BOX TESTING**

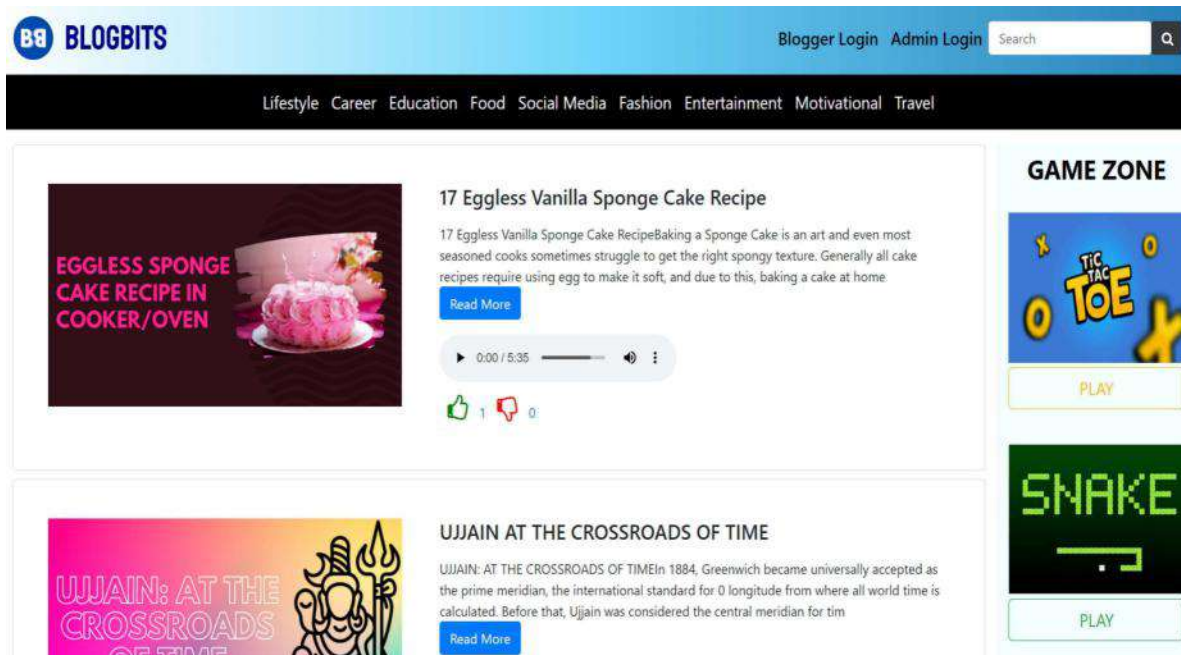
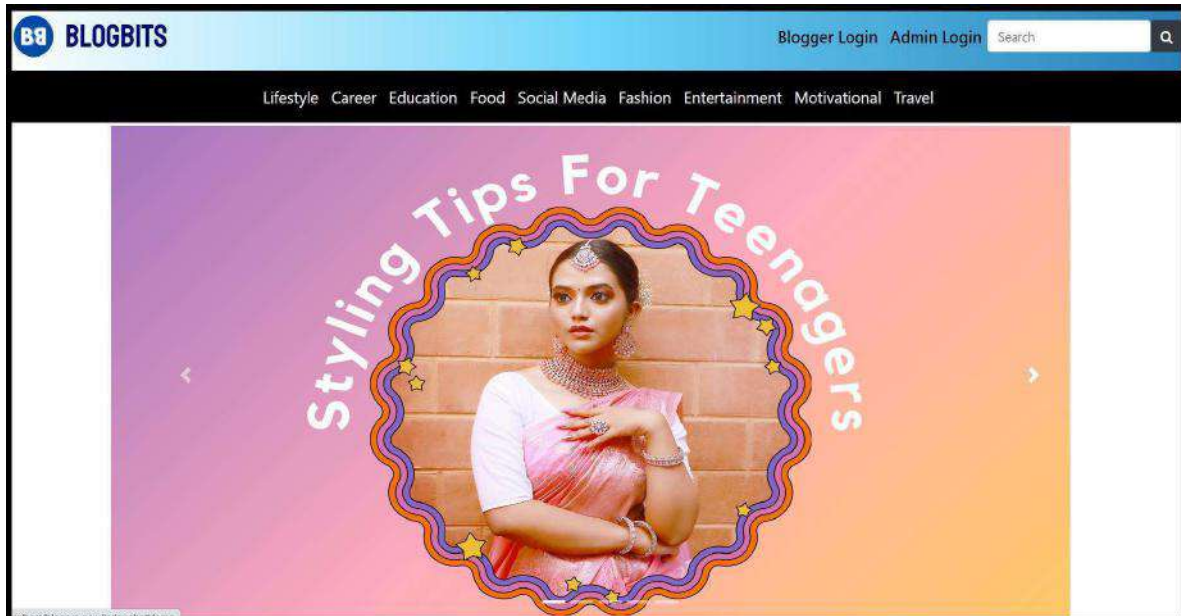
This is a software testing method in which the functionalities of software applications are tested without having knowledge of internal code structure, implementation details and internal paths. Black Box Testing mainly focuses on input and output of software applications and it is entirely based on software requirements and specifications. It is also known as Behavioral Testing.

### **WHITE BOX TESTING**

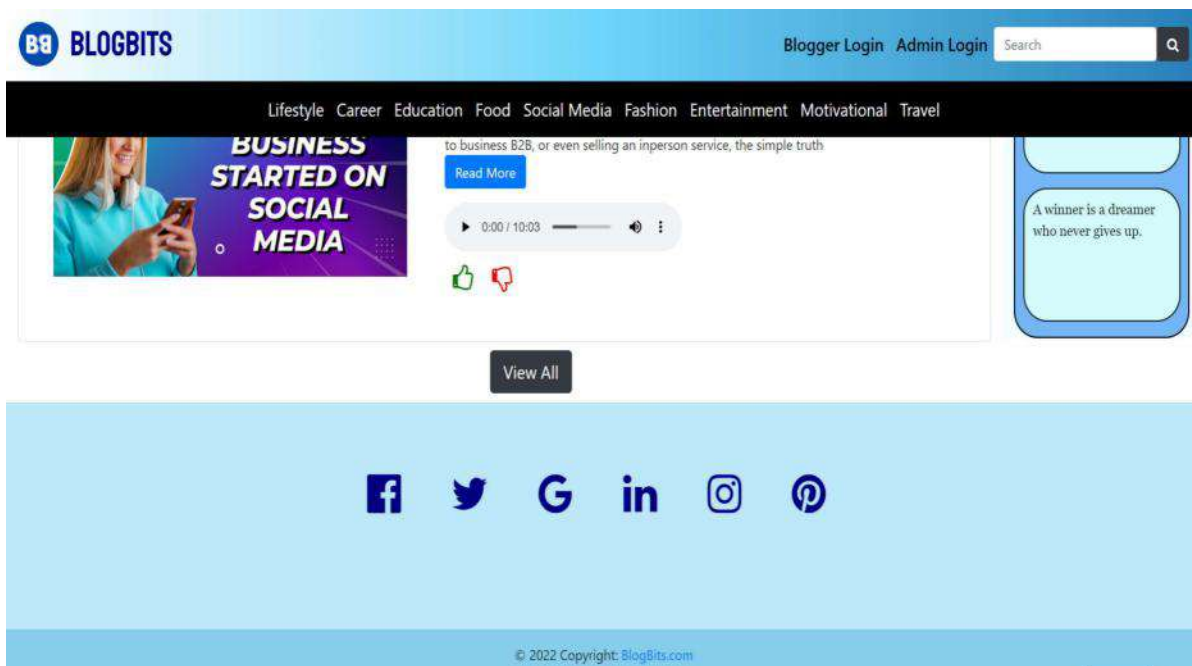
This is software testing technique in which internal structure , design and coding of software are tested to verify flow of input-output and to improve design, usability and security . In white box testing, code is visible to testers so it is also called Clear box testing, open box testing, transparent box testing, Code-based testing and Glass box testing.

## INPUT/OUTPUT SCREEN

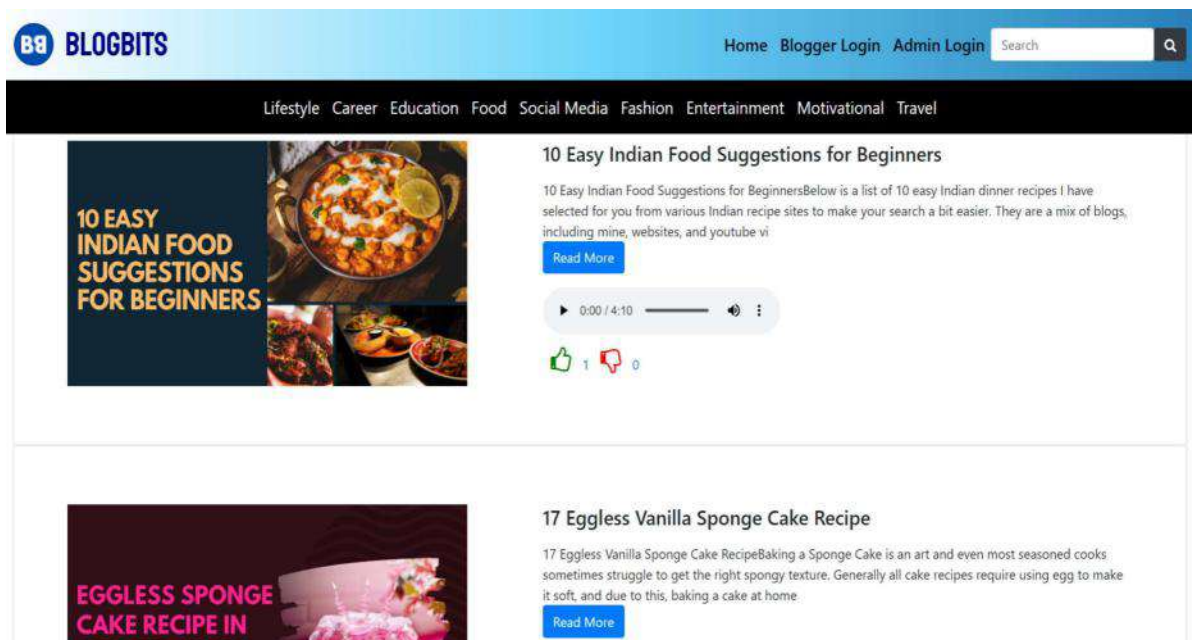
### 1. FRONT PAGE








## 2. CATEGORY WISE BLOG






### 3. READ MORE


 **BLOGBITS**

Home Blogger Login Admin Login

Lifestyle Career Education Food Social Media Fashion Entertainment Motivational Travel



# UJJAIN: AT THE CROSSROADS OF TIME

 **BLOGBITS**

Home Blogger Login Admin Login


Lifestyle Career Education Food Social Media Fashion Entertainment Motivational Travel

## UJJAIN AT THE CROSSROADS OF TIME

▶ 0:00 / 8:23

UJJAIN: AT THE CROSSROADS OF TIMEIn 1884, Greenwich became universally accepted as the prime meridian, the international standard for 0 longitude from where all world time is calculated. Before that, Ujjain was considered the central meridian for time in India. Even today, wherever you may be born, when a panchang or horoscope as per the Hindu almanac is drawn up, it is always based on Ujjain time roughly 29 minutes behind IST. Perhaps the best place to get a firsthand experience of Ujjains timekeeping techniques is the Vedshala Observatory, now called the Government. Jiwaji Observatory. We got there early, and as the call of peacocks rent the morning air, observatory guide Piyush Nikam deconstructed for us Ujjains obsession with time. As per the Surya Siddhanta, a 4th century astronomical treatise, Ujjain is geographically situated at the precise spot where the zero meridian of longitude and the Tropic of Cancer intersect. This is why it was considered the navel of the earth, and is called the Greenwich of India. On a large globe outside the Ujjain Vedshala we see Ujjains location pinpointed on the Tropic of Cancer. The Tropic of Cancer is significant because, as the earth revolves around the sun, this latitude marks the northernmost position at which the sun can be seen directly overhead. The Tropic of Cancer crosses the spire of Mahakal Temple in Ujjain, as it does the Sornath Temple in Gujarat. This imaginary line is also said to pass through Ujjains temple of Mangalnath, considered in Hindu cosmogony to be the birthplace of Mangal Mars and the closest point from Earth to Mars, explained Piyush. The origins of this observatory are interesting. It was built between 1725-30 by Maharaja Sawai Jai Singh II of Jaipur, while he was the governor of Malwa. According to legend, in 1719, Jai Singh witnessed a heated debate in the Mughal court of Muhammad Shah, on how to make astronomical calculations to determine an auspicious date when the emperor could start a journey. Jai Singh, who had great knowledge of mathematics, architecture, and astronomy, felt the country needed to be educated on the subject. The Sultan asked him to build an observatory along the lines of the one in Samarkand built by Timurs grandson Ulugh Beg. Recognizing Ujjains geographically significant location, Sawai Jai Singh created the first of his vedshalas here, even before the ones at Jaipur, Delhi, Mathura, and Varanasi were built. Ujjains tryst with time is not coincidental. Long before this observatory was built, Ujjain was a leading centre for astronomy and mathematics in ancient India. The Surya Siddhanta provides one of the earliest known descriptions of standard time in India. Postulating a spherical Earth, the book describes the prime meridian or zero longitude, as passing through Avantika Ujjain and Rohitaka Rohitak in Haruana. According to the Jyotisha Upanishad, an ancient Indian text on astronomy, keeping time was

## 4. COMMENTS

 **BLOGBITS**

Home Blogger Login Admin Login

Lifestyle Career Education Food Social Media Fashion Entertainment Motivational Travel

print every 30 minutes minimum 10 people per show. Fee: Adults 20 children 10 foreigners 100.

Comment your thoughts

Message

Wonderful blog.....Thanks for giving such a information about UJJAIN


Name

Ritu Soni

Email

ritu@gmail.com


Post Comment


 **BLOGBITS**


Home Blogger Login Admin Login


Lifestyle Career Education Food Social Media Fashion Entertainment Motivational Travel


Recent Comments.....


 **Minal Thakur**  
Har Har Mahadev.....


 **Abhi Shukla**  
I am waiting for such a wonderful blog ....Thank you Thank you for this blog

 **Abhi Shukla**  
I am waiting for such a wonderful blog ....Thank you Thank you for this blog

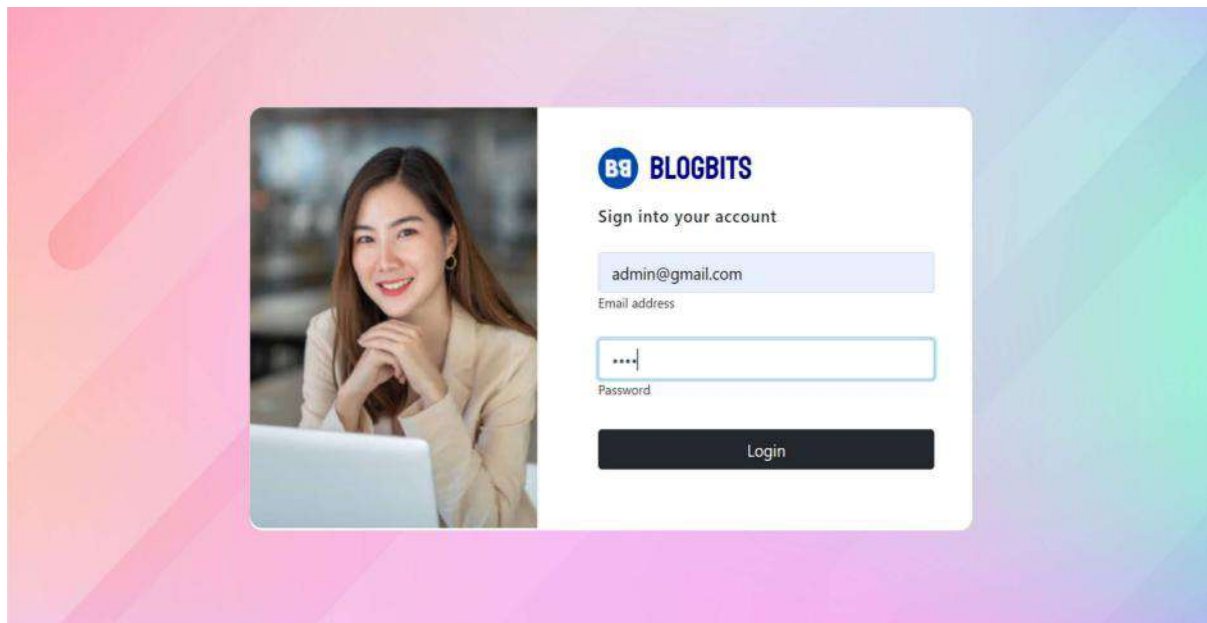
 **Amit jain**  
Jai ho jai ho Shnkara.....

 **Ritu Soni**  
Wonderful blog.....Thanks for giving such a information about UJJAIN

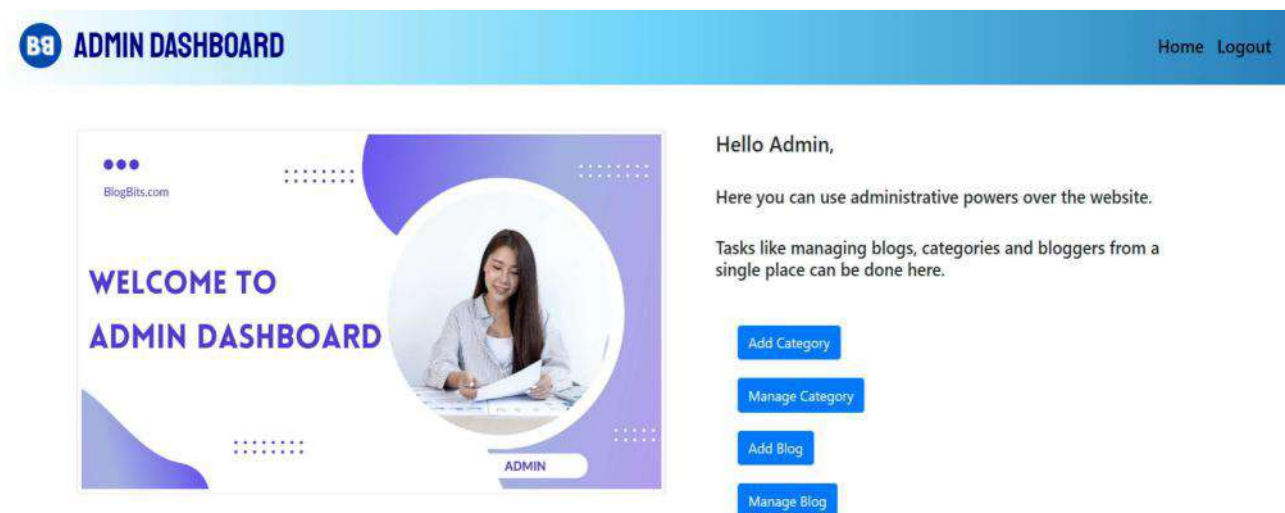
 **Ritu Soni**  
Wonderful blog.....Thanks for giving such a information about UJJAIN

 **Naman Chandra**  
Om Namah Shivaay.....

## 5. ADMIN LOGIN



## 6. ADMIN DASHBOARD



Add Category

Category name

ADD

demo  
College  
Job  
Food  
Career  
Colleges

Manage Category

Category Name	Action
Lifestyle	<a href="#">DELETE</a> <a href="#">EDIT</a>
Career	<a href="#">DELETE</a> <a href="#">EDIT</a>
Education	<a href="#">DELETE</a> <a href="#">EDIT</a>
Food	<a href="#">DELETE</a> <a href="#">EDIT</a>
Social Media	<a href="#">DELETE</a> <a href="#">EDIT</a>
Fashion	<a href="#">DELETE</a> <a href="#">EDIT</a>
Entertainment	<a href="#">DELETE</a> <a href="#">EDIT</a>
Motivational	<a href="#">DELETE</a> <a href="#">EDIT</a>

localhost/blogpro-new/deletecategory.php?uid=50

localhost says  
Are you sure to want to Delete?

[OK](#) [Cancel](#)

Manage Category

Category Name	Action
Lifestyle	<a href="#">DELETE</a> <a href="#">EDIT</a>
Career	<a href="#">DELETE</a> <a href="#">EDIT</a>
Education	<a href="#">DELETE</a> <a href="#">EDIT</a>
Food	<a href="#">DELETE</a> <a href="#">EDIT</a>
Social Media	<a href="#">DELETE</a> <a href="#">EDIT</a>
Fashion	<a href="#">DELETE</a> <a href="#">EDIT</a>
Entertainment	<a href="#">DELETE</a> <a href="#">EDIT</a>
Motivational	<a href="#">DELETE</a> <a href="#">EDIT</a>

localhost/blogpro-new/deletecategory.php?uid=50

Edit Category

CID :

50

Category name:

Lifestyle

Edit

Add Blog

Select category

Travel

Title











Description

Upload Picture : Choose File No file chosen

Upload Audio : Choose File No file chosen

Submit

Manage Blog

Blog Category	Blog Title	Blog Description	Blog Image	Blog Audio	User Name	Action
Food	17 Eggless Vanilla Sponge Cake Recipe	17 Eggless Vanilla Sponge Cake RecipeBaking a Spo			Abhishek Sharnagat	<a href="#">DELETE</a> <a href="#">EDIT</a>
Travel	UJJAIN: AT THE CROSSROADS OF TIME	UJJAIN: AT THE CROSSROADS OF TIMEIn 1884, Greenwic			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>
Entertainment	Most Watched Bollywood Movies In Cinemas	Most Watched Bollywood Movies In CinemasThese days			Ravi Yadav	<a href="#">DELETE</a> <a href="#">EDIT</a>
Education	Top Websites CS Student Must Know	Top Websites CS Student Must Know1. Stanford engin			Madhubala Rastogi	<a href="#">DELETE</a> <a href="#">EDIT</a>
Social Media	40 Tips to Get	40 Tips to Get			Subodh	<a href="#">DELETE</a>



**ADMIN DASHBOARD**

[Manage Category](#)
[Add Blog](#)
[Manage Blog](#)
[Home](#)
[Logout](#)

localhost says

Are you sure to want to Delete?

OK

Cancel

Manage Blog

Blog Category	Blog Title	Blog Description	Blog Image	Blog Audio	User Name	Action
Food	17 Eggless Vanilla Sponge Cake Recipe	17 Eggless Vanilla Sponge Cake RecipeBaking a Spo		0:00 / 5:35	Abhishek Sharnagat	<div>DELETE</div> <div>EDIT</div>
Travel	UJJAIN: AT THE CROSSROADS OF TIME	UJJAIN: AT THE CROSSROADS OF TIMEIn 1884, Greenwic		0:00 / 8:23	Gargi Bisen	<div>DELETE</div> <div>EDIT</div>
Entertainment	Most Watched Bollywood Movies In Cinemas	Most Watched Bollywood Movies In CinemasThese days		0:00 / 1:40	Ravi Yadav	<div>DELETE</div> <div>EDIT</div>
Education	Top Websites CS Student Must Know	Top Websites CS Student Must Know1. Stanford engin		0:00 / 7:46	Madhubala Rastogi	<div>DELETE</div> <div>EDIT</div>

**ADMIN DASHBOARD**

[Add Category](#)
[Manage Category](#)
[Add Blog](#)
[Manage Blog](#)
[Home](#)
[Logout](#)

Edit Blog

BID :

69

Blog Title:

17 Eggless Vanilla Sponge Cake Recipe

Blog Description:

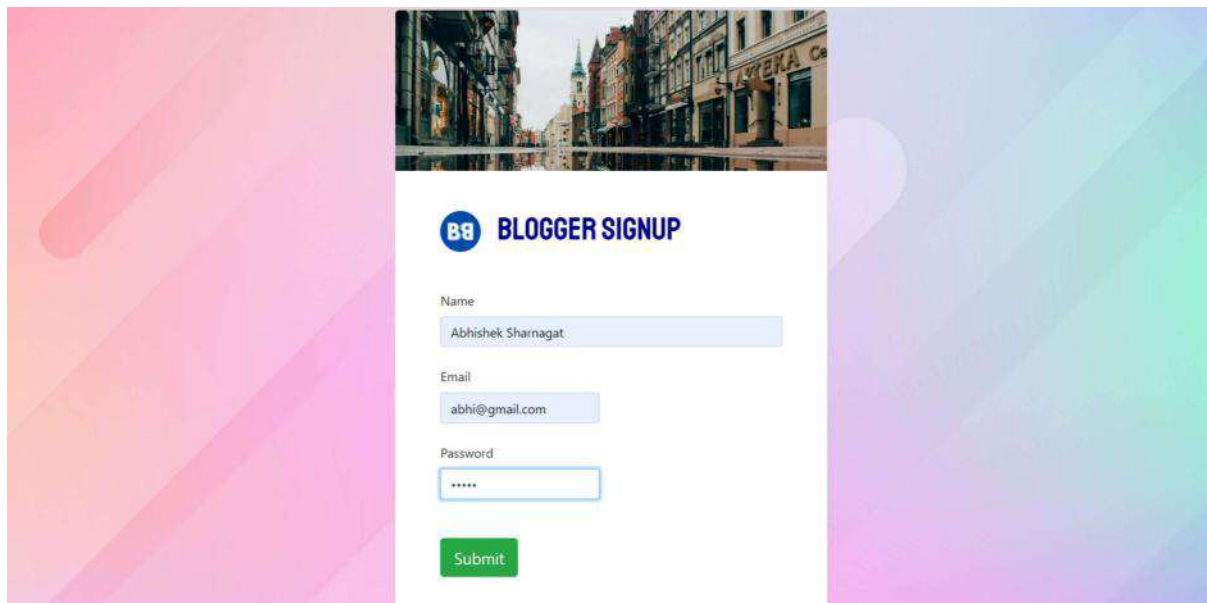
17 Eggless Vanilla Sponge Cake RecipeBaking a Sponge Cake is an art and even most seasoned cooks sometimes struggle to get the right spongy texture. Generally all cake recipes require using egg to make it soft, and due to this, baking a cake at home becomes prohibitive if you dont prefer to use egg or follow strict vegetarian food diet. With this Eggless Vanilla Sponge Cake Recipes, carefully measured ingredients and detailed explanation of process, making a soft and spongy cake at home is very easy. Unlike other Vanilla Cake Recipes, this recipe doesnt use butter or condensed milk. Instead, it uses plain curd yogurt, baking soda and baking powder to make the cake spongy and fluffy. Plain curd and baking soda reacts with one another which makes cake soft while baking powder makes it raise during baking, giving it a light and fluffy texture.Preparation Time: 15 minutes.Cooking Time: 40 minutes.Serves: 4 servings.Ingredients:1 cups All Purpose Flour Maida approx. 200 gms.1 cup Curd Plain Yogurt 250 ml.34 cup Granulated Sugar or 12

Blog Image:

Choose File

No file chosen

## 7. BLOGGER SIGNUP



The image shows a 'Blogger Signup' form. At the top, there is a header image of a European street scene. Below the header, the form has a title 'B8 BLOGGER SIGNUP'. It contains three input fields: 'Name' with the value 'Abhishek Sharnagat', 'Email' with the value 'abhi@gmail.com', and 'Password' with masked characters '\*\*\*\*\*'. A green 'Submit' button is at the bottom.

**B8 BLOGGER SIGNUP**

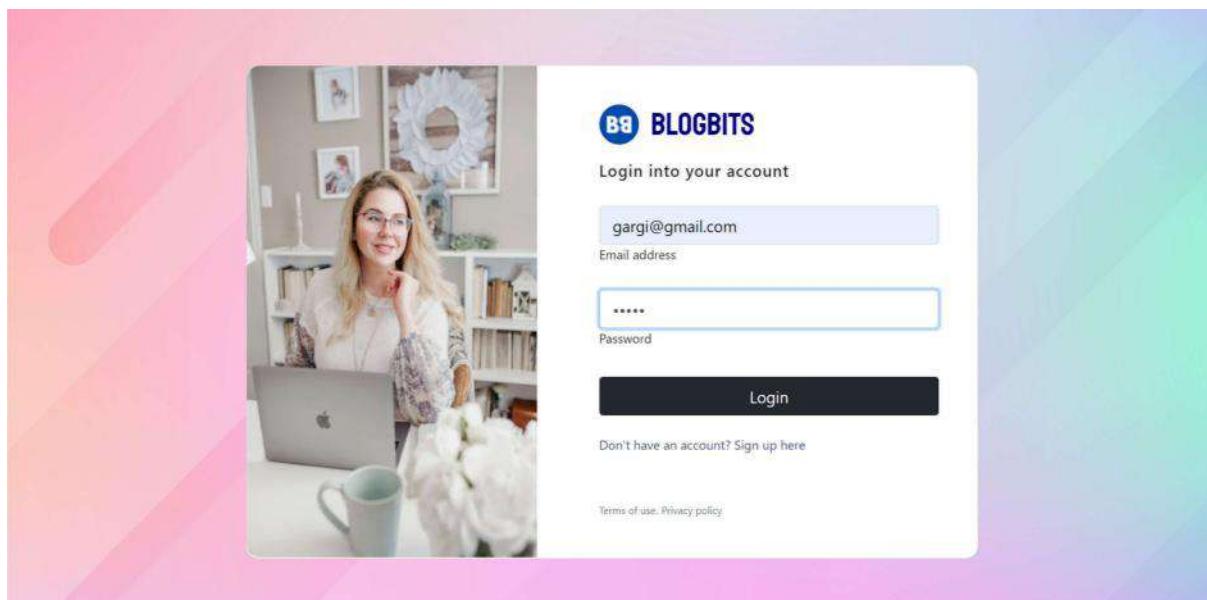
Name  
Abhishek Sharnagat

Email  
abhi@gmail.com

Password  
\*\*\*\*\*

Submit

## 8. BLOGGER LOGIN



The image shows a 'Blogbits Login' form. On the left, there is a photo of a woman sitting at a desk with a laptop. The form has a title 'B8 BLOGBITS' and a subtitle 'Login into your account'. It contains two input fields: 'Email address' with the value 'gargi@gmail.com' and 'Password' with masked characters '\*\*\*\*\*'. A black 'Login' button is at the bottom. Below the button, there is a link 'Don't have an account? Sign up here' and a link 'Terms of use. Privacy policy'.

**B8 BLOGBITS**

Login into your account

Email address  
gargi@gmail.com

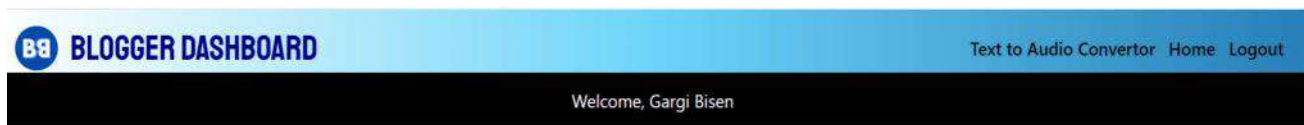
Password  
\*\*\*\*\*

Login

Don't have an account? [Sign up here](#)

[Terms of use.](#) [Privacy policy](#)

## 9. BLOGGER DASHBOARD



Hello Blogger,

Here you can add and manage your blogs.

Tasks like managing blogs, adding blogs from a single place can be done here.









Add Blog

Manage Blog

The image shows the 'Add Blog' form in the Blogger dashboard. It has a blue header bar with the 'B8' logo and 'BLOGGER DASHBOARD' on the left, and links for 'Add Blog', 'Manage Blog', 'Home', and 'Logout' on the right. The form itself is light blue and contains the following elements: a title 'Add Blog', a 'Select category' dropdown menu with 'Travel' selected, a 'Title' text input field, a 'Description' text input field, an 'Upload Picture' section with a 'Choose File' button and 'No file chosen' text, an 'Upload Audio' section with a 'Choose File' button and 'No file chosen' text, and a 'Submit' button at the bottom.



## Manage Blog

Blog Category	Blog Title	Blog Description	Blog Image	Blog Audio	User Name	Action
Travel	UJJAIN: AT THE CROSSROADS OF TIME	UJJAIN: AT THE CROSSROADS OF TIMEIn 1884, Greenwich			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>
Entertainment	10 Annoying Stereotypes You Will Find In Almost Every Bollywood Movie	10 Annoying Stereotypes You Will Find In Almost Ev			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>
Education	HOW TO PREPARE FOR NEET EXAM?	HOW TO PREPARE FOR NEET EXAM?Is becoming a doctor			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>
Lifestyle	3 Simple Yoga Poses After Dinner That Can Boost Digestion	3 Simple Yoga Poses After Dinner That Can Boost D			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>








localhost says

Are you sure you want to Delete?

OK

Cancel

## Manage Blog

Blog Category	Blog Title	Blog Description	Blog Image	Blog Audio	User Name	Action
Travel	UJJAIN: AT THE CROSSROADS OF TIME	UJJAIN: AT THE CROSSROADS OF TIMEIn 1884, Greenwich			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>
Entertainment	10 Annoying Stereotypes You Will Find In Almost Every Bollywood Movie	10 Annoying Stereotypes You Will Find In Almost Ev			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>
Education	HOW TO PREPARE FOR NEET EXAM?	HOW TO PREPARE FOR NEET EXAM?Is becoming a doctor			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>
Lifestyle	3 Simple Yoga Poses After Dinner That Can Boost Digestion	3 Simple Yoga Poses After Dinner That Can Boost D			Gargi Bisen	<a href="#">DELETE</a> <a href="#">EDIT</a>

## Edit Blog

BID :

68

Blog Title:

UJJAIN: AT THE CROSSROADS OF TIME

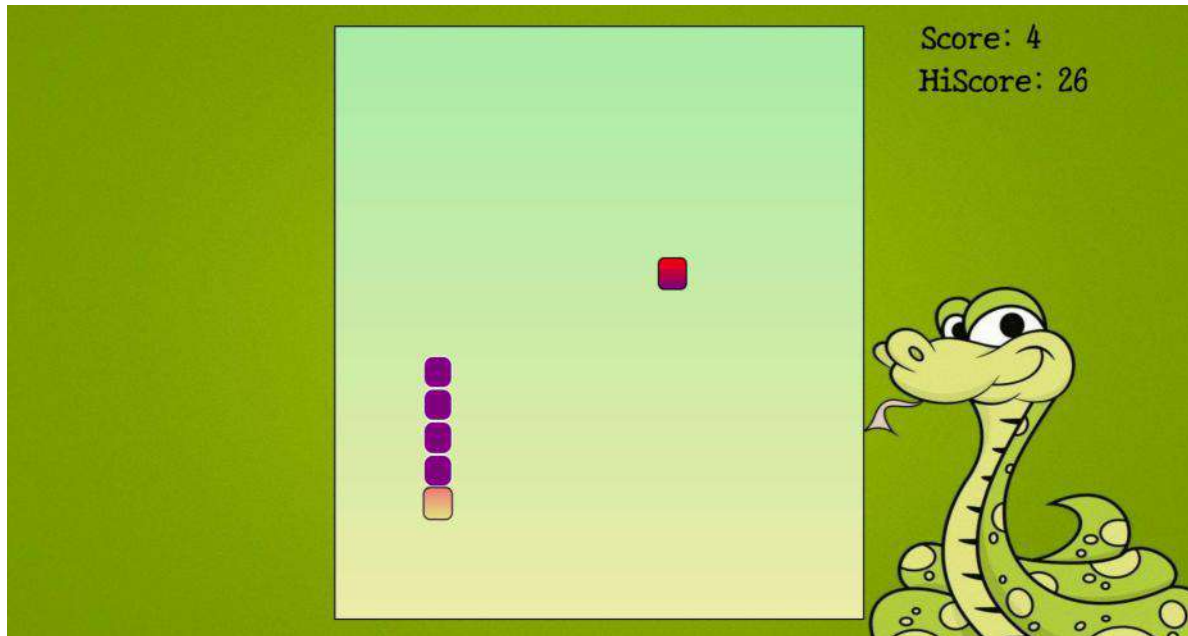
Blog Description:

UJJAIN: AT THE CROSSROADS OF TIMEIn 1884, Greenwich became universally accepted as the prime meridian, the international standard for 0 longitude from where all world time is calculated. Before that, Ujjain was considered the central meridian for time in India. Even today, wherever you may be born, when a panchang or horoscope as per the Hindu almanac is drawn up, it is always based on Ujjain time roughly 29 minutes behind IST.Perhaps the best place to get a firsthand experience of Ujjains timekeeping techniques is the Vedshala Observatory, now called the Government Jiwaji Observatory. We got there early, and as the call of peacocks rent the morning air, observatory guide Piyush Nikam deconstructed for us Ujjains obsession with time.As per the Surya Siddhanta, a 4thcentury astronomical treatise, Ujjain is geographically situated at the precise spot where the zero meridian of longitude and the Tropic of Cancer intersect. This is why it was considered the navel of the earth, and is called the Greenwich of India.On a large globe outside the Ujjain Vedshala we see Ujjains location pinpointed on the Tropic of Cancer. The Tropic of Cancer is significant because, as the earth revolves around the sun, this latitude marks the northernmost position at which the sun can be seen directly overhead. The Tropic of Cancer crosses the spire of Mahakal Temple in Ujjain, as it does the Somnath Temple in Gujarat. This imaginary line is also said to pass through Ujjains temple

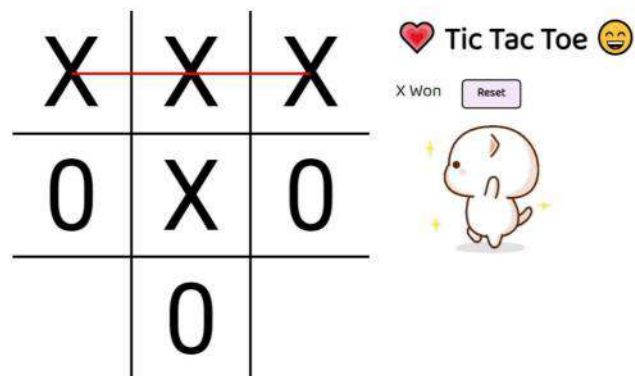
Blog Image:

Choose File No file chosen

## 10. GAMES



Welcome to TicTacToe



# DATABASE TABLE

The screenshot shows the phpMyAdmin interface for a database named 'blogdb'. The left sidebar displays a tree view of the database structure, including tables like 'admin', 'blog', 'blogger', 'category', 'comments', 'imgtb', 'lkd', and 'user'. The main panel shows the 'Structure' tab for the 'blogdb' database. It lists 8 tables: 'admin', 'blog', 'blogger', 'category', 'comments', 'imgtb', 'lkd', and 'user'. Each table entry includes a checkbox, a star icon, and links for 'Browse', 'Structure', 'Search', 'Insert', 'Empty', and 'Drop'. The 'admin' table is selected, and its details are shown below the table list. The 'Create table' button is visible, along with a 'Name' field and a 'Number of columns' field set to 4. The console at the bottom shows the URL: 'localhost/phpmyadmin/index.php?route=/database/structure&server=1&db=blogdb'.

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> admin		1	InnoDB	utf8mb4_general_ci	16.0 K	-
<input type="checkbox"/> blog		24	InnoDB	utf8mb4_general_ci	240.0 K	-
<input type="checkbox"/> blogger		8	InnoDB	utf8mb4_general_ci	16.0 K	-
<input type="checkbox"/> category		9	InnoDB	utf8mb4_general_ci	16.0 K	-
<input type="checkbox"/> comments		9	InnoDB	utf8mb4_general_ci	16.0 K	-
<input type="checkbox"/> imgtb		1	InnoDB	utf8mb4_general_ci	16.0 K	-
<input type="checkbox"/> lkd		36	InnoDB	utf8mb4_general_ci	16.0 K	-
<input type="checkbox"/> user		3	InnoDB	utf8mb4_general_ci	16.0 K	-
<b>8 tables</b>	<b>Sum</b>	<b>91</b>	<b>InnoDB</b>	<b>utf8mb4_general_ci</b>	<b>352.0 K</b>	<b>0</b>

The screenshot shows the phpMyAdmin interface for the 'admin' table in the 'blogdb' database. The left sidebar shows the database structure, and the main panel shows the 'Browse' tab for the 'admin' table. A message indicates that 1 row is shown out of 1 total, with a query time of 0.0004 seconds. The SQL query 'SELECT \* FROM `admin`' is displayed. Below the query, there are options for 'Show all', 'Number of rows' (set to 25), and 'Filter rows'. The table data is shown with columns 'id', 'name', 'email', and 'password'. The first row is '1', 'admin', 'admin@gmail.com', and 'info'. The 'Query results operations' section includes links for 'Print', 'Copy to clipboard', 'Export', 'Display chart', and 'Create view'.

id	name	email	password
1	admin	admin@gmail.com	info

phpMyAdmin

Server: 127.0.0.1 - Database: blogdb - Table: blog

Showing rows 0 - 23 (24 total, Query took 0.0010 seconds)

SELECT \* FROM `blog`

Options: Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

		bid	bcategory	btittle	bdescription	bimage	baudio	bdate	uname
<input type="checkbox"/>	Edit Copy Delete	43	Career	How to Answer Why Should We Hire you	How to Answer "Why Should We Hire you?" for Freshers	2dp.png	2aud.mp3	2022-06-16 15:00:08	Madhubala Rastogi
<input type="checkbox"/>	Edit Copy Delete	44	Travel	9 Places to Visit in Indore at Night	9 Places to Visit in Indore at Night is...	5dp.png	5aud.mp3	2022-06-16 15:02:57	Madhubala Rastogi
<input type="checkbox"/>	Edit Copy Delete	45	Motivational	The Hidden Secret All Successful People Have but	The Hidden Secret All Successful People Have but...	12dp.png	12aud.mp3	2022-06-16 15:06:44	Gourav Gupta
<input type="checkbox"/>	Edit Copy Delete	46	Lifestyle	HOSTEL LIFESTYLE: A Story To Tell About Living in	HOSTEL LIFESTYLE: A Story To Tell About Living in...	9dp.png	9aud.mp3	2022-06-16 15:16:13	admin
<input type="checkbox"/>	Edit Copy Delete	47	Career	How to get an internship	How to get an internship is a question of peak int...	4dp.png	4aud.mp3	2022-06-16 15:22:18	admin
<input type="checkbox"/>	Edit Copy Delete	48	Career	7 Tips for Freshers to Ace an Interview for Job	1 Be well researched 2 Dress to impress 3 Prepare an...	3dp.png	3aud.mp3	2022-06-16 15:26:27	Nikita Nema
<input type="checkbox"/>	Edit Copy Delete	49	Motivational	50 Powerful Mike Tyson Quotes To Motivate You	50 Powerful Mike Tyson Quotes To Motivate You Mike...	13dp.png	13aud.mp3	2022-06-16 15:32:09	Nikita Nema
<input type="checkbox"/>	Edit Copy Delete	50	Social Media	Instagram launches 1 Minute Music featuring loca	Instagram launches 1 Minute Music featuring loca...	23dp.png	23aud.mp3	2022-06-16 15:45:55	Aditya Dhar
<input type="checkbox"/>	Edit Copy Delete	51	Education	TOP 10 PROFESSIONAL COURSES AFTER GRADUATION (HIG	TOP 10 PROFESSIONAL COURSES AFTER GRADUATION HIGH...	7dp.jpg	7aud.mp3	2022-06-16 15:50:27	Aditya Dhar
<input type="checkbox"/>	Edit Copy Delete	52	Entertainment	Hindi Web Series of 2022 Worth Watching	Hindi Web Series of 2022 Worth Watching Indian cin...	IMG-20220616-WA0018.jpg	22aud.mp3	2022-06-16 16:14:58	Ravi Yadav
<input type="checkbox"/>	Edit Copy Delete	53	Education	How To Select The Right College For You?	How To Select The Right College For You? Finding ...	8dp.png	8aud.mp3	2022-06-16 16:17:25	Ravi Yadav

phpMyAdmin

Server: 127.0.0.1 - Database: blogdb - Table: blogger

Showing rows 0 - 7 (8 total, Query took 0.0005 seconds)

SELECT \* FROM `blogger`

Options: Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

		blid	blname	bleid	blpassword
<input type="checkbox"/>	Edit Copy Delete	10	Abhishek Sharma	abhi@gmail.com	abhi
<input type="checkbox"/>	Edit Copy Delete	11	Sakshi Vaidya	sakshi@gmail.com	sakshi
<input type="checkbox"/>	Edit Copy Delete	47	Aditya Dhar	ad@gmail.com	aditya
<input type="checkbox"/>	Edit Copy Delete	48	Gargi Bisen	gargi@gmail.com	gargi
<input type="checkbox"/>	Edit Copy Delete	49	Gourav Gupta	gourav@gmail.com	gourav
<input type="checkbox"/>	Edit Copy Delete	50	Ravi Yadav	ravi@gmail.com	ravi
<input type="checkbox"/>	Edit Copy Delete	51	Nikita Nema	nik@gmail.com	nikita
<input type="checkbox"/>	Edit Copy Delete	52	Madhubala Rastogi	mr@gmail.com	madhu

Query results operations: Print | Copy to clipboard | Export | Display chart | Create view

localhost/phpmyadmin/index.php?route=/sql&server=1&db=blogdb&table=blogger&pos=0



phpMyAdmin

Server: 127.0.0.1 - Database: blogdb - Table: category

Showing rows 0 - 8 (9 total, Query took 0.0004 seconds)

SELECT \* FROM `category`

Options

	cid	cname
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	33	Travel
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	36	Motivational
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	38	Entertainment
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	39	Fashion
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	41	Social Media
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	42	Food
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	43	Education
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	45	Career
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	50	Lifestyle

Query results operations

Print Copy to clipboard Export Display chart Create view

localhost/phpmyadmin/index.php?route=/sql&server=1&db=blogdb&table=category&pos=0

phpMyAdmin

Server: 127.0.0.1 - Database: blogdb - Table: comments

Showing rows 0 - 8 (9 total, Query took 0.0005 seconds)

SELECT \* FROM `comments`

Options

	cmid	cmname	cmemail	comment	bttitle
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	23	Riya Bhardwaj	riya@gmail.com	Yumm... tasty with easy recipe... Great	17 Eggless Vanilla Sponge Cake Recipe
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	24	jk	jk@gmail.com	shine dream shine	17 Eggless Vanilla Sponge Cake Recipe
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	25	Naman Chandra	nc@gmail.com	Om Namah Shivasy....	UJJAIN AT THE CROSSROADS OF TIME
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	31	Ritu Soni	ritu@gmail.com	Wonderful blog... Thanks for giving such a infor...	UJJAIN AT THE CROSSROADS OF TIME
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	32	Amit jain	amit@gmail.com	Jai ho jai ho Shnkara....	UJJAIN AT THE CROSSROADS OF TIME
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	34	Abhi Shukla	ab@gmail.com	I am waiting for such a wonderful blog.... Thank y...	UJJAIN AT THE CROSSROADS OF TIME
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	35	Minal Thakur	minu@gmail.com	Har Har Mahadev....	UJJAIN AT THE CROSSROADS OF TIME
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	36	Aarti Shukla	arti@gmail.com	Nice Blog....	UJJAIN AT THE CROSSROADS OF TIME
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	38	Jigyasa Rastogi	jiya@gmail.com	Nice Blog.... such a helpful website for youth	How To Select The Right College For You?

Query results operations

Print Copy to clipboard Export Display chart Create view

localhost/phpmyadmin/index.php?route=/sql&server=1&db=blogdb&table=comments&pos=0

phpMyAdmin

Server: 127.0.0.1 - Database: blogdb - Table: ikdk

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.

Showing rows 0 - 24 (36 total, Query took 0.0003 seconds)

SELECT \* FROM `ikdk`

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

1 > >> ☐ Show all Number of rows: 25 Filter rows:  Search this table

Options

bttitle	likes	dislikes
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	0	1
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	0	1
Interview Body Language Dos And Don'ts	0	1
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	0	1
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	0	1
Interview Body Language Dos And Don'ts	0	1
Interview Body Language Dos And Don'ts	1	0
50 Powerful Mike Tyson Quotes To Motivate You	1	0
50 Powerful Mike Tyson Quotes To Motivate You	1	0
50 Powerful Mike Tyson Quotes To Motivate You	1	0
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	1	0
Interview Body Language Dos And Don'ts	0	1

Console: Body Language Dos And Don'ts

phpMyAdmin

Server: 127.0.0.1 - Database: blogdb - Table: user

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

Showing rows 0 - 2 (3 total, Query took 0.0004 seconds)

SELECT \* FROM `user`

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

☐ Show all Number of rows: 25 Filter rows:  Sort by key: None

Options

	uid	uname	uemail	upassword	update
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	gargi	gargi@gmail.com	123	2022-04-12 15:28:31
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	jiyoti	jiyoti@gmail.com	1432	2022-04-13 14:26:09
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	Gargi Bisen	gargibisen7178@gmail.com	gargi7178	2022-05-06 08:57:44

☐ Check all With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

☐ Show all Number of rows: 25 Filter rows:  Sort by key: None

Query results operations

localhost/phpmyadmin/index.php?route=/sql&server=1&db=blogdb&table=user&pos=0

## **LIMITATION**

- Only Admin can add new categories.
- Viewer unable to create their own profile
- Blogger cannot search for other blogger's profile.
- Viewer and blogger cannot change certain descriptions of database.

## **FUTURE SCOPE**

1. New Additions.
  - Adding audiobook and podcasts.
  - More blogs and blog categories.
  - Dark mode and downloadable blog in pdf format.
  - Usage of the website as news portal, info. websites, publishing website.
2. Updating on false entry.
3. Making contact page so that new users can apply for blogger's post.
4. In future the limitation can be removed and the proposed system may work better.

## **CONCLUSION**

Finally , in the BlogBits :blogging website , the outcome of all the hard work done for blogging website is here. It is website that helps the user to interact with the blogs.

In this blogging website the goal was to create platform where talented bloggers can write blogs which are relatable and practically useful for the user, that is youth audience. Unlike other monotonous blogging website, BlogBits: Blogging Website provides blogs which are interesting to read , the pictures and graphics used in the website are designed with the aim to make them more attractive. Our website provides another useful feature of listening the blog in audio format. Blogs covers different topics from different categories , blogs can also be accessed in category wise manner also. Website offers a fun zone where user can play games also.

The User Interface is very friendly and can be easily used by anyone.

Bloggers can easily add or modify blogs anytime using login process.

Admin can perform administrative operations over blogs and bloggers.

In the end, we can say that this website is performing all the tasks accurately and is doing work for which its made and this system can be implemented whenever needed.



## **BIBLIOGRAPHY**

### **BOOKS:**

- Learning PHP, MySQL & JavaScript with j Query, CSS &HTML 5 by Robin Nixon
- HTML & CSS: The Complete Reference, Fifth Edition by Thomas Powell

### **WEBSITES:**

- [www.Google.com](http://www.Google.com)
- [www.javatpoint.com](http://www.javatpoint.com)
- [www.w3schools.com](http://www.w3schools.com)
- [www.tutorialspoint.com](http://www.tutorialspoint.com)
- [www.stackoverflow.com](http://www.stackoverflow.com)
- [www.youtube.com](http://www.youtube.com)

# COMPARISON OF HANDWRITING CHARACTERISTICS OF UNACCUSTOMED HAND

A  
Project submitted to  
**THE DEPARTEMNT OF FORENSIC SCIENCE**



In partial fulfillment of the requirement for the Degree of  
**MASTERS OF FORENSIC SCIENCE**  
Session – 2021-2022

INTERNAL GUIDE	EXTERNAL GUIDE	SUBMITTED BY
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## CERTIFICATE

This is to certify that **Miss Anjali Chouhan**, M.Sc. 4<sup>th</sup> Semester, has carried out her project work based on her research entitled " **Comparison of handwriting characteristics of unaccustomed hand** " at workplace **Central Forensic Science Laboratory (CBI), CGO Complex, Lodhi Road, New Delhi** being submitted to Department of Forensic Science, Govt. (Model, Auto.) Holkar Science College, Indore in the partial fulfillment of the requirement for the Degree of Masters of Forensic Science. The work was carried out by the student under the supervision of an External Guide **Shri Anil Sharma, HOD and SSO Grade-I (Documents Division) cum Chemical Examiner to Govt. of India** and an Internal Guide **Prof. Harshita Sonkar**.

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## **DECLARATION**

I hereby declare that the work entitled " **Comparison of handwriting characters of unaccustomed hand**" presented in this project is an original piece of work carried out under the guidance of internal guide **Prof. Harshita Sonkar** and external guide **Shri Anil Sharma, HOD and SSO Grade-I (Documents Division) cum Chemical Examiner to Govt. of India** in the name of external institute **Central Forensic Science Lab. (CBI) CGO Complex, New Delhi** which is being submitted to the Department of Forensic Science, Govt. (Auto.) Holkar Science College, Indore for partial fulfillment of the requirement for the award of Degree of Bachelor in Science. This is further certified that this project work has not been submitted in part or full for any other degree or diploma of this or any other institute.

Date-  
Place-

Anjali Chouhan  
M.Sc. Forensic Science

## **ACKNOWLEDGEMENT**

I would like to express my deepest appreciation to my workplace guide **Sh. Anil Sharma** for leading and supporting me throughout my project with his gentle behavior and patience and knowledge.

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I extend my sincere gratitude to **Dr. Geetha Sarasan, Head of the Department, Department of Forensic Science, Govt. (Auto.) Holkar Science College, Indore** for invigorating me.

I record my humble thanks to my internal guide Prof. **Harshita Sonkar** for encouraging me during my entire study.

I would like to record many thanks in the name of all the members of **Central Forensic Science Laboratory (CBI)** for helping, supporting and providing me resources and knowledge throughout my work, including **Priya Sharma**. I would like to take this opportunity to thank laboratory staff of department who never let me run out for the resources and supported me whole heartedly. This project made me realize the value of working together as a team and I found a new experience in working in different environment with different people, yet importantly, I would like to express my heartfelt thanks to my beloved **parents** for their blessings and my friends for being with me and supporting me for the successful completion of this project.

Anjali Chouhan  
M.Sc. Forensic Science

# DAILY ATTENDANCE DURING PROJECT WORK

**बी.एस.सी. अंतिम वर्ष एवं बी.सी.ए. षष्ठम सेमेस्टर इंटरमीडिएट कार्यक्रम**

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प्रशिक्षण संस्था का नाम : CFSI CBI

निर्देशक प्रशिक्षक का नाम : Shri Anil Sharma (HOD & SSO-I)

निर्देशक प्राध्यापक का नाम : Sh. Prem Shankar Pandey, LA

## कार्यानुभव प्रशिक्षण दैनिक उपस्थिति

क्र.	दिनांक	छात्र/छात्रा के हस्ताक्षर	प्रशिक्षण के हस्ताक्षर	क्र.	दिनांक	छात्र/छात्रा के हस्ताक्षर	प्रशिक्षण के हस्ताक्षर
1	—	Sunday	—	21	—	Saturday	—
2	2-05-22	Anjali	—	22	—	Sunday	—
3	—	Holiday	—	23	—	leave	—
4	04-05-22	Anjali	—	24	24-05-22	Anjali	—
5	05-05-22	Anjali	—	25	25-05-22	Anjali	—
6	06-05-22	Anjali	—	26	26-05-22	Anjali	—
7	07-05-22	Saturday	—	27	27-05-22	Anjali	—
8	08-05-22	Sunday	—	28	—	Saturday	—
9	09-05-22	Anjali	—	29	—	Sunday	—
10	10-05-22	Anjali	—	30	30-05-22	Anjali	—
11	11-05-22	Anjali	—	31	31-05-22	Anjali	—
12	12-05-22	Anjali	—	32			
13	13-05-22	Anjali	—	33			
14	—	Saturday	—	34			
15	—	Saturday	—	35			
16	—	Holiday	—	36			
17	17-05-22	Anjali	—	37			
18	18-05-22	Anjali	—	38			
19	19-05-22	Anjali	—	39			
20	20-05-22	Anjali	—	40			

  
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 cum-Asstt. Chemical Examiner to the Govt. of India  
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File No. 9-7/2021/CFSL-TRG-III/1840

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Central Bureau of Investigation  
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Lodhi Road, New Delhi – 110003

**Dated: 31-05-2022**

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Ms. Anjali Chouhan** D/o **Shri Dinesh Chouhan** a student of M.Sc. (Forensic Science), Department of Forensic Science, Govt. Holkar Science College, Indore (Madhya Pradesh) has undergone training/ internship in the Document Division of CFSL (CBI), New Delhi from **02<sup>nd</sup> May, 2022 to 31<sup>st</sup> May, 2022**. During this period, she has been exposed to theoretical as well as practical aspects of Document examination.

I wish all success in her future endeavours.

  
21/05/2022

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**1.1 Abstract:** In this digital world, although all documents are digitized with almost very less use of paper, still paper writings and handwritten documents hold a precious value in the criminal justice system. Documents and writing when seen from a forensic perspective determine the authorship and ownership of documents based on individual and class characteristics of the writer. This research paper discusses such unique characteristics among comparison of handwriting samples written from 2 different hands of an author. It also focuses on deriving a conclusion for the same based on study of these characters and properties.

**Keywords:** Unaccustomed, class characteristics, individual characteristics, alteration, spacing, metrics.

### 1.2 Introduction

Questioned documents are an ancient science dealing with examination of documents that are unsure of the author who composed them or lack authenticity of data enclosed in them over a period of time. It entails the facts and art of matching the documents with scenarios and cases of past and present to verify sequence of events in accordance with creation, circulation dissemination and preservation of such documents.

#### 1.2.1 What is handwriting Identification and its Principles?

The identification of handwriting takes great importance in the courts of law where the authenticity of the signature is disputed. Even when the text itself is in doubt, the circumstances under which it was written sometimes become a great moment. Questions such as whether the author's hand was compelled or directed and whether changes made after the text was completed should usually be answered by an expert. One of the first steps in investigating a suspected or controversial text is to find out the actual text of the object being challenged for comparison. The writing features used by experts in determining authenticity suggest that each handwriting has certain permanent features where the available handwriting sample may be different, and the question is whether the observed differences are within the expected limits or above them. Many ingenious methods have been developed to verify the authenticity of a particular text: to compare the dates and years of a paper, to determine whether side-by-side

writing preceded or followed design, and to chemical and physical examination of paper and ink to determine its origin, date of production, and date of writing. The presence of vibrations, types of final punctuation marks, and other aspects of handwriting are also used by handwriting professionals for diagnostic purposes. However, handwriting experts are often limited to diagnostic questions and do not begin to analyse the type of human speculation seen in graphology.

The handwriting identification is the most important branch of the questioned document. It may be necessary to identify signature or the handwriting in the document is genuine, traced, or disguised. However, before identifying the handwriting, you should know about its principles as well. In this article, we will be discussing the principles of Handwriting Identification.

The three main principles of handwriting identification are:-

1. No two skilled writers can exhibit identical handwriting even after giving them sufficient time and handwriting.
2. Even the same individual cannot write identical handwriting. There is some presence of variations that occur naturally and is called “natural variation.”
3. No writer can exceed their skills level. It means that we cannot expect a perfect form of handwriting even from a person who knows about the basics skills of handwriting.

Along with the principles of handwriting, we will also cover a detailed version about natural variations to ease the level of understanding of the principles of handwriting identification.

### **1.2.2 Factors Affecting Handwriting**

- **Vision:** Visual impairment will interfere with the child's hand-eye interaction required in the area of motor and motor control. Visual impairment is often the cause of many learning disabilities, so adults should be sensitive to emerging patterns.
- **Visibility / Location:** Handwriting has many local requirements such as direction, size, shape, slope, and position. Local problems can make it very difficult for children to make legible writing. Visual discrimination is necessary to distinguish between the same characters and mirrors. Sound discrimination is required to associate oral information with explicit forms.

- **Attitude:** A negative attitude and the inability to care or respond to one's actions are undoubtedly the main reason for children's poor writing. Children should be trained to take responsibility - and parents and teachers should expect it. Lack of self-help is the behaviour of some children who grow up writing handwriting and elsewhere if they are not encouraged to take responsibility for them. The boys seem to be the biggest victims.
- **Visual Vehicle Integration:** This refers to a child's ability to reproduce situations accurately. It is a process that combines what the eye sees with what the hand produces. Without adequate development in this area, the child will have difficulty reproducing the complexity of letter formation and their local needs.
- **Attention / Memory:** Without paying attention to a task, the child will remember little, if any, and any learning efforts are in vain. It is well-known that young children respond well to new and colourful rejuvenation. Because of the shortness of their focus time, it is important that our efforts to teach children to write are enjoyable and short.
- **Emotions:** Our emotional state can affect our handwriting in an amazing way. For example, if a child feels strong and stressed, it is reflected in his handwriting. We cannot expect children to be robots and produce the same quality of everyday written work. As their emotional state fluctuates, so can their writing.

#### 2.1A Review of the authorship of disguised handwriting written with the unaccustomed hand:

A preliminary study 2021

**Anita Rani (Formerly Senior Research Fellow, Department of Forensic Science Punjabi University, Patiala) , Mohinder Singh (Formerly Government Examiner of Questioned Documents Central Forensic Science Laboratory, Hyderabad, India) Om Prakash Jasuja (Department of Forensic Science, Chandigarh University Gharua, Punjab, India)**

Sometimes, a writer may try to disguise their normal handwriting to hide their identity. One of the most effective and less frequent modes of disguise is to write with the unaccustomed hand. In this type of disguise, due to a sudden loss of pen control, pictorial appearance of handwriting changes to such an extent that the writer assumes success and gets convinced that the disguised handwriting they have produced cannot be attributed to them by comparison with their normal writing style. In the present study, handwriting samples of several persons, both with the normal hand and the unaccustomed hand, were obtained and an attempt has been made to find out and identify those features that survive the hazards of disguise and could be helpful to accurately determine the authorship of such disguised handwriting in comparison with one's normal handwriting samples. A detailed study of letter-forms, the connecting strokes between letters, and t-crossing written by several persons has been carried out. It has been found that, despite pictorial dissimilarities, there are certain unconscious features that are rarely disguised which could either form the basis for their association with a particular writer or indicate its probability for further investigation. The analysis, comparison, and evaluation of features unconsciously left by the writer, including the parameters selected for the present study, can be carried out by a trained forensic document examiner; and they can give whatever opinion is possible and justifiable in facts and circumstances of a case.

#### 2.2 Comparative Study of Habitual with Left and Right Handwritings

**Anongnath Soison-, Dr. Montip Tiensuwan Dr. Suda Riengrojpitak, Pitsanu Fupleum** in April - June 2008n for Handwriting document examination is one of the important knowledge in forensic science. Forensic Handwriting features examination is feature comparison between question and known documents. One method that suspects use to change their handwriting habitual is to disguise by unaccustomed handwriting. By researcher observation, there was stability in some feature. In this study, researcher collected accustomed and unaccustomed

handwritings from the elementary school teachers in Bangkok. The examined features were slant, size of wide letter, size of narrow letter, size of normal letter, space, alignment and height. These features were measured by video microscope. The data was analyzed by two independent t-test and the percentage of each feature similarity was computed. The result was shown that 75% of the subjects have similarity in narrow-size letter.

### **2.3 The authorship of disguised handwriting written with the unaccustomed hand: A preliminary study**

**Anita Rani Mohinder Singh (Central Forensic Science Laboratory), Hyderabad, O P Jasuja (Chandigarh University)** . In the present study, handwriting samples of several persons, both with the normal hand and the unaccustomed hand, were obtained and an attempt has been made to find out and identify those features that survive the hazards of disguise and could be helpful to accurately determine the authorship of such disguised handwriting in comparison with one's normal handwriting samples. A detailed study of letter-forms, the connecting strokes between letters, and t-crossing written by several persons has been carried out. It has been found that, despite pictorial dissimilarities, there are certain unconscious features that are rarely disguised which could either form the basis for their association with a particular writer or indicate its probability for further investigation. The analysis, comparison, and evaluation of features unconsciously left by the writer, including the parameters selected for the present study, can be carried out by a trained forensic document examiner; and they can give whatever opinion is possible and justifiable in facts and circumstances of a case.

### **2.4 Disguised handwriting. A statistical survey of how handwriting is most frequently disguised**

**The authorship of disguised handwriting written with the unaccustomed hand: A preliminary study** Rani, Mohinder Singh, O. Jasuja Psychology 2021 Sometimes, a writer may try to disguise their normal handwriting to hide their identity. One of the most effective and less frequent modes of disguise is to write with the unaccustomed hand. In this type of disguise, due to a sudden loss of pen control, pictorial appearance of handwriting changes to such an extent that the writer assumes success and gets convinced that the disguised handwriting they have produced cannot be attributed to them by comparison with their normal writing style. In the present study, handwriting samples of several persons, both with the normal hand and the unaccustomed hand, were obtained and an attempt has been made to find out and identify those features that survive the hazards of disguise and could be helpful to accurately determine the authorship of such disguised handwriting in comparison with one's normal handwriting samples. A detailed study of letter-forms, the connecting strokes between letters, and t-crossing written by several persons has been carried out. It has been found that, despite pictorial dissimilarities, there are certain unconscious features that are rarely disguised which could either form the basis for their association with a particular writer or indicate its probability for further investigation. The analysis, comparison, and evaluation of features unconsciously left by the writer, including the parameters selected for the present study, can be carried out by a trained forensic document examiner; and they can give whatever opinion possible and justifiable in facts and circumstances of a case.

### 3.1 Features of Handwriting

#### Class and individual handwriting

The interviewed document specialist examines two aspects, namely, the category and individual aspects of handwriting in order to draw conclusions about the identity of the handwriting. Let's learn more about what these things mean.

**Class Characteristics** are those typical features that are common in a group i.e. the usual pattern of handwriting, letters, their limited form in group, age or language. In simple terms, it is not a thing but a copy of a copy book that is the model we are taught when we read the writing process which is almost identical to the class of people (children in a particular district school.)

Individual features, on the other hand, occur when a book is out of its ordinary copy form. These writing elements form the basis of all handwriting identification. Those are certain features or features of writing that are unusual for a particular author.

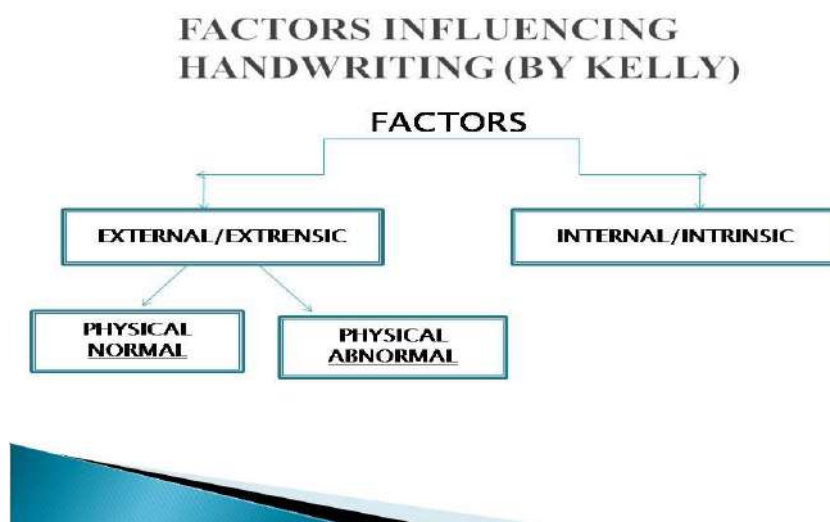


Figure 1: Factors affecting handwriting by Kelly

**3.1.1 Class Characteristics:** are those typical features that are common in a group i.e. the usual pattern of handwriting, letters, their limited form in group, age or language. In simple terms, it is nothing but a copy of the textbook format that is the model we are taught when we

study the writing process which is almost identical to the class of people (children in a particular district school).

- **Complete Form** - Includes visual features of handwriting, namely, shape, inclination, strokes, and letter size. The inclination of the letters may be right, left, vertical, or horizontal. The lashes may be continuous, continuous, or nonexistent. Character format can be disabled, complete, or combined. Character size can be large, small, or a combination of both.
- **Line Features** - Includes typing speed, pressure applied, punctuation and alphabetical order. Writing speed can be fast, slow, or medium. Speed depends on the length of time required for you to write. The pressure applied by our fingers when writing can be up, down, or between you both. High pressure causes retardation. The spacing between letters and words may vary or be incompatible. The connection between the letters indicates the connecting rods.
- **Margins and Formats** - The space left when writing from the left and right edges can be rotated or inconsistent. It is clearly seen in the first test.
- **Line Quality** - Shows how your Handwriting looks all the way. Your Handwriting Look is our line quality. We can check for this linear flow (lashes formation, free writing, common handwriting practice), tremors (presence or absence of tremors), and abnormalities (frequently written or not). Indicates your typing speed, copied, duration or modified writing.
- **Names and Character Spacing** - Spacing between characters and words, i.e. the space between characters and internal characters, is variable or constant.
- **Size Consistency**- A measure of length: the width of a letter formed while writing. It can be large, small, or medium. The counterfeit will never copy the similarity in size. If they try to do it, we can see the vibration of the lashes.
- **Pen Lifts**- It is a pencil sharpener while writing on paper. A forgery document contains an unusual pen lift, that is, a pencil lift in an unexpected position.

- **Connecting Strokes-** The strokes that exist between the letters to merge. It may be present or absent depending on the person's writing.
- **Book Complete** - Specialist checks whether the characters formed are complete or incomplete. It may also indicate the speed of writing.
- **Cursive and Printed Letters-** The expert detects whether letter formation is cursive, printed, or combined. According to cursive, writing is continuous and makes writing faster.
- **Pen Pressure-** The pressure applied by our finger while writing can be up, down, or between you both. High pressure causes back pain, which can be a stroke upwards, downwards, or both.
- **Slant-** It is a letter guide when writing. The inclination of the letters may be right, left, vertical, or horizontal.

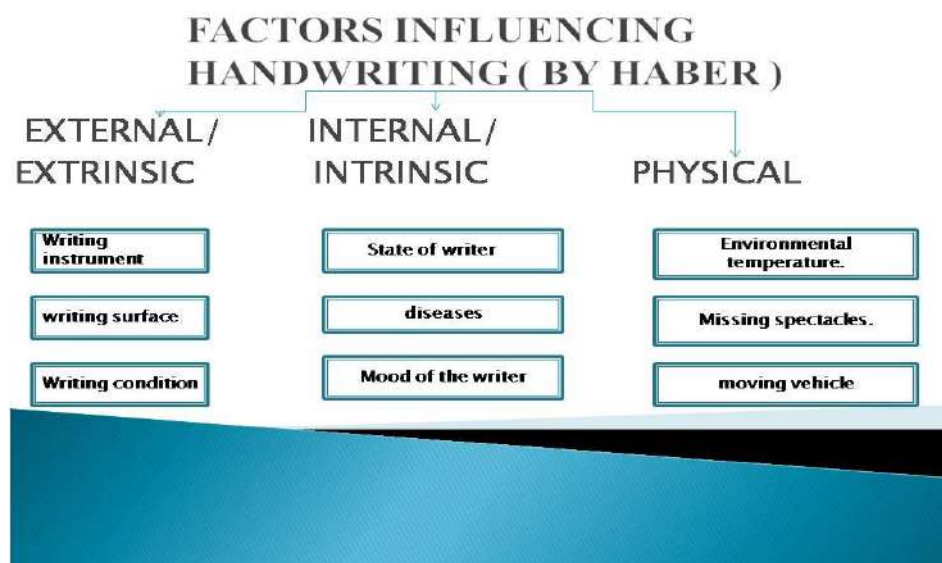


Figure 2: Factors affecting handwriting by Haber



**3.1.2 Individual characteristics:** On the other hand, these occur when a book is out of its ordinary copy form. These writing elements form the basis of all handwriting identification. Those are certain features or features of writing that are unusual for a particular author.

Individual features are deviations from the instructional writing system and are therefore strong identification factors when comparing handwriting samples.

Individual features can be categorized as:

- ✓ Consciously acquired habits
- ✓ Subconscious acquisitions.
  
- **Flourisher and Decorations-** Fine curls, loops, or any unusual character shapes can be in the first strokes or terminals.
  
- **Diacritic Placement-** Minutes and outstanding book writing practices. The dot location in the letter “I” or the location of the bar that crosses the letter “t”.
  
- **Spelling and Grammar Errors-** Not everyone is perfect with grammar. They make mistakes which are not uncommon for everyone. Spelling errors while not everyone writes. It differs from person to person.
  
- **Content** - At the time of writing, not everyone is used to adding punctuation such as commas, stops, colon, semicolon, etc. In fact, not everyone has a grammar. They make mistakes which are not uncommon for everyone. The use of words by the author also varies with the combination of preferences.
  
- **Initial and Terminal Strokes-** The first and last strokes of any man-made book will never be the same. These passages describe a person's personality. There is always a difference in the design of these pieces with a different pen pressure and pen lift.

- **Abbreviations-** Most of us have a habit of writing short forms of some words while writing. The structure of those abbreviations varies from person to person. For example - 'and' can be spelled '&' or in a different style.
- **Character Structure** - The style of writing different characters varies from person to person. Even if two people have the same style of writing a letter, the difference may continue in size, inclination, etc.

**Consciously acquired:** The habits that are acquired consciously are those that the writer develops in his writing. Habits established consciously are easy to change, although the writer may forget to do so when trying to conceal his manuscript.

Obvious deviations developed by recognizing unusual letter designs, inclination, writing speed, and skill level acquired by the author. Authors will practice writing until they are satisfied with their progress. Authors often make changes without thinking about it. The use of space is such an example.

The author must edit his text to enter the available space. He may not think about this while doing so, even though the author can adjust the text size.

**The subconscious habits** creep into handwriting without conscious awareness. Because the author does not know these elements of ignorance, they cannot be changed or removed from his handwriting. The development of ignorance is very hidden. Many writers do not know that these elements are present in their writings.

Hooks and ticks can get into their ants. Pressure patterns grow without realizing it. The more unconscious the practice, the more convincing the object due to the author's difficulty in transforming the elements of ignorance.

### **3.1.3 How does Handwriting become a natural one?**

- **Form** - A form not only consists of the letters of the alphabet but also includes the method of constructing and connecting letters, including the first and last strokes.
- **Character Designs** - Letters incorporate lines and curves in different directions, forming the shape of each letter. Lines can be vertical, horizontal, or diagonal. Curves are traps, circles, or parts of circles. Character designs are an easily recognizable feature

of handwriting. The designers copied the letter designs while ignoring other aspects of writing.

- Each letter has a distinctive feature that makes it unique. Many writers use more than one design for each book. It is not uncommon to see two or three different letter designs in individual writing and a slight variation in the style of each letter.
- Diversity is in every author's handwriting. Everyone has a mental picture of the designs of the characters learned.
- An author may experiment with a variety of letter designs until he finds the desired one or he may create a design that represents the type of character that is intoxicating.

**3.1.4 How to Build** - Designers will copy alphabetical forms, but fail to follow the same alphabetical form when doing so. Authors develop consistent practices regarding the construction of book forms. They start their letters almost in the same place or base, above or below it. They move the writing tool to the same direction and combine strokes in the same place each time. They cut their books the same way. The document examiner must carefully follow the line-of-writing instruction to determine the construction method.

- a) **First Strokes** - The first strokes are found at the beginning of letters and words. They may be straight, bent or tied, long or short.
- b) **Terminal Strike** - A terminal strike is the elimination of strokes on letters and words. He may also straighten, bend, or tie, long or short and correspond to the authors. These are also ignored by the designers unless the fatal stroke is very different.
- c) **Medial Strokes** - Intermediate strokes are found between the first and last strokes. They include the letters of the alphabet and the strokes used to connect the letters in the compound word.
- d) **Connecting Strokes**- Connecting strokes include letters in words. They are also called ligatures. Letters in the name may be linked or disconnected. Connectors may include arches, garlands, angles, or a communication cable.

- e) **Decorations** - additional strokes are added to the books to enhance their appearance. These plants are curved and wave lines are added at the beginning or end of the letters. Small stroke hooks are made with a sudden turn of events, killed by the author unknowingly. Hooks can be found at the beginning or end of words, although some will appear in the middle.
- f) **Grammar** - Spelling and punctuation are important aspects of handwriting identification, as well as grammar rules. Spelling and punctuation can not only be used to identify handwriting, but can also be helpful in identifying.

Effective scientific investigation of any subject depends upon the development of a highly reliable and differentiating set of measures which will form the means by which specified aspects of the problem at hand may be formulated and checked and gradually a body of dependable information can be accumulated. This is true of handwriting as of any other subject. It was felt to be necessary to examine the whole field by achieving some sort of systematic order. The routine work required to complete a classification for handwriting has taken years, but the results of such measures are beginning to show up and may be interesting to workers who approach handwriting from many angles.

A classification is arrived at by determining, first of all, those things that -do not belong together. A process of analysis and separation has to take place, and for handwriting this was a prolonged and complicated task. Considerable experimentation showed that six major divisions, adaptable to measurement, but not necessarily always measured by a ruler, proved to be an adequate break down of the first set of graphic factors, which together make up any writing anywhere. These factors are speed, size, slant, spacing, pressure, and form. The method of comparison was resorted to, due to the limitation of experimental conditions. To set up a series of scales of millimetre measures would so enlarge the field as to make practical work impossible.

## **3.2 HANDWRITING CLASSIFICATIONS**

### **1. Pressure**

- a. Four categories of pressure strength-all even
- b. Four categories of pressures-all uneven

### **2. Form**

- a. Ten simple forms
- b. Four variations of simple forms
- c. Three form-combinations

### **3.3 DEVELOPED FACTORS**

#### **3. Speed**

- a. Excessively rapid
- b. Rapid
- c. Temperate
- d. Slow
- e. Drawn
- f. jerky (containing elements of both speed and slowness-four degrees of this measure)

#### **4. Spacing**

- a. Perfect (too good to be true)
- b. Good (nothing touching anywhere)
- c. Fair (most common measure-four degrees)
- d. Poor (four degrees of this measure)
- e. Bad (four degrees)

### **3.3 SURFACE FACTORS**

#### **5. Size**

- a. Large
- b. Medium (standard school copy size)
- c. Small
- d. Large ..... with extended long letters
- e. Medium ..... with extended size-ratios
- f. Small ..... with extended size proportions
- g. All Sizes

#### **6. Slant**

- a. Forward (tipping to the right as in school copy)

- b. Backward (tipping to the left, opposed to school recommendation)
- c. Upright (uncompromisingly perpendicular. Rare even in Manuscript print writing)
- d. All Slants (writing tips one way and then Another-Four degrees of this measure)

Applying these 6 factors to any writing, and it will be possible to draw up some very positive codes. There will be formulas such as these:

- |  |  |
|--|--|
| ➤ light in pressure                    | ➤ wavy- indistinct forms                   |
| ➤ round writing (clockwise)            | ➤ made in jumps and starts                 |
| ➤ extremely rapid                      | ➤ spacing badly confused                   |
| ➤ poor and ragged spacing              | ➤ exceptionally small                      |
| ➤ very large in size                   | ➤ tipping to the right abnormally          |
| ➤ exaggerated backhand                 | ➤ conflicting pressure strengths           |
| ➤ exaggerated pressure strength        | ➤ angular writing                          |
| ➤ arcade writing (counterclockwise)    | ➤ all sizes shown as if on purpose         |
| ➤ temperately written                  | ➤ drawn as for a poster                    |
| ➤ well arranged                        | ➤ spacing measured by ruler                |
| ➤ medium in size                       | ➤ unfailing, rigid upright                 |
| ➤ mildly all-slants                    | ➤ weak pressure, weaker in spots           |
| ➤ strong and reliable in pressure      | ➤ forms indistinct                         |
| ➤ angular writing                      | ➤ slowly, lazily drawn out                 |
| ➤ good normal temperate speed          | ➤ lower loops pass through two lines below |
| ➤ ideal spacing                        | ➤ all-size                                 |
| ➤ medium with extended size-ratios     | ➤ all-slants                               |
| ➤ normal forward slant                 |  |
| ➤ half-light and half dark in pressure |  |

### **3.4 Study of writing habits based on biological factors**

#### **Visual-Motor Integration (VMI) and Handwriting**

**Visual-motor integration** and **specific fine motor** skills have found by various studies to be the most important factors affecting handwriting ability. Visual-Motor Integration (VMI) enables the **hands to correctly replicate what the eyes see**. This enables a person to be able to accurately copy numbers, and letters.

During preschool days' individuals need lots of practice in tracing and copying basic shapes such as diagonal lines, circles, squares, triangles and intersecting lines. This is an important foundation **before** learning number and letter formations.

## **Fine Motor Skills and Handwriting**

People often think that a person's pen grip affects handwriting. However, the actual position of the fingers on the pen could be less important than we think.

**Finger movements** and **in-hand manipulation skills** are the important fine motor factors affecting handwriting. A **poor sitting posture** will also affect handwriting in individuals, as the smaller muscles of the hands are not freed up to work properly when the body is not sitting in a good position!

## **Eye-Hand Coordination and Handwriting**

A person needs good eye-hand coordination to **guide their pen between the lines** and ensure their letters don't go over the lines or touch each other. Eye-hand coordination is therefore an important factor in developing neat handwriting.

## **Spatial Perception and Handwriting**

Spatial perceptual skills help individuals to lay their work out neatly on the page, and to size and space their letters and words correctly. When spatial perception is poor, then their handwriting may look messy because of the **irregularly sized letters, and the haphazard spacing of work** on the page. This is common in individuals who are still learning to write, but may signify a problem by the second and third grade.

## **Directionality, Reversals and Handwriting**

One of the factors affecting handwriting is whether a person can consistently work from left to right, and whether words are written in the right direction. Directionality and problems with left-right discrimination can affect letter **reversals** and **transcription** (writing "saw" as "was").



**Starting on the wrong side of the page** or writing in the **wrong direction** is affected by poor directionality skills as well as avoiding crossing the midline.

## **Sensory Feedback and Handwriting**

Getting good **tactile (touch) feedback**, as well as proprioceptive and kinaesthetic feedback from the hands and joints plays an important role in helping develop good handwriting for individuals.

Individuals who have poor sensory feedback from their hands may **hold the pen too tightly**, or **press too hard** on the paper when writing.

Sometimes they may scribble "uncontrollably" to give themselves the extra sensory feedback that they crave, much to the frustration of their teacher in childhood! They may also feel the need to keep their heads close to their work to watch while they write, trying to get as much visual feedback as possible to compensate for their poor sensory input.

## **Orthographic Coding and Handwriting**

Orthographic coding skills enables a person **to remember** what a word or letter looks like, and then **to write it down** as needed. Individuals with poor orthographic coding skills **easily forget** how a letter is formed and may thus **form it differently** each time they write it, even writing it different ways within the same writing task!

Or they may **retrace parts** of the letter trying to figure out where the next part goes. This is an important factor contributing to untidy handwriting. Individuals with poor orthographic coding may struggle to **figure out where to start the letter**, and may **hesitate a lot** while writing.

They take a **long time** to put their thoughts on the page as they are just trying to figure out where to start to form the letters or how to write the word. Orthographic coding delays may affect reading and spelling as well as handwriting skills.



Figure 3: Letter formation types in individuals

## Visual Perceptual Skills and Handwriting

Visual perception enables individuals to understand what they see. The different visual perceptual skills are all factors affecting handwriting in different ways.

Here are some examples:

A person with poor visual discrimination skills may not see that writing an “**t**” is different to writing and “**n**” or a “**h**”. And this may be reflected in a person’s handwriting, where those letters all look the same!

A person with poor visual closure skills may not realize that an “**o**” which is not closed properly looks like “**u**”, and this would affect the neatness and legibility of their handwriting.

## Motor Planning Skills and Handwriting

Motor planning is one of many factors that affect how a person develops handwriting skills:

- figuring out **how to hold** the pen and how to put it to paper
- planning the **layout of work** on the page and carrying it out
- establishing the **motor memory** of remembering how letters are formed
- **carrying over the memory** from one task to the next

When individuals have poor motor planning skills, a handwriting lesson is like a brand new lesson for them each time – they may really **struggle to carry over what they have learned in previous lessons**.

You may also see a person with poor motor planning skills struggling with **other classroom tasks**, like figuring out how to use a ruler to draw a line, figuring out how to cut around a complex shape with scissors, etc. even if they have done the task before. Poor motor planning (also called dyspraxia) can thus affect all the other areas discussed here (such as fine motor skills, visual motor coordination, orthographic coding, etc.)

## **Organization, Problem Solving and Handwriting**

Organization and problem solving skills **include motor planning** and the **spatial perceptual ability** to lay work out well on the page.

The resulting **general disorganization** and failure to understand and follow **instructions**, are factors affecting handwriting output.

**4.1.** The first case involved the misappropriation of bank loans, as the same person who had filled in the loan vouchers had also signed for and received the money. The writing in Hindi on the vouchers was compared with specimen handwriting from the suspected person. It showed rhythm and fluency in the formation of strokes, and the presence of features common to both sets of writing showed that they had been executed by the same person. The endorsement, however, was written with heavy pen pressure with a different alignment; the movements of the strokes appeared uncertain, and the rhythm and slant of the writing was disturbed. Although the endorsement signatures appeared abnormal, they showed some similarities with the writing on the body of the vouchers. Critical examination of the four vouchers showed an essential resemblance in the formation of certain letters and words, suggesting that whereas the body writings were written with the normal hand, the endorsements were executed with the unaccustomed hand by the same person. In another case, the allegation was that money had been fraudulently withdrawn in a sub-post office by forgery of the signatures of the account holder. The writing on the warrant for payment exhibited the general qualities of the writing of a skilled writer, but the writing on the receipt for payment and the application for withdrawal appeared at first to be that of an unskilled writer; however, closer examination showed that there were similarities between the writing on the warrant of payment and the receipt, including the relative size of the letters and their proportion in the words, along with other common qualities in the formation of particular letters.

**4.2.** In a case relating to the misappropriation of bank loans, four paid vouchers, supposedly written by one person and endorsed in token of the receipt of Rs 5000 by another, were submitted for examination. It was suspected, however, that the same person who had filled in the vouchers had also signed for, and received, the money. The writing in Hindi on the vouchers was therefore compared with specimen handwriting (cheques and other documents) from the suspected person. It showed rhythm and fluency in the formation of strokes, and the presence of features common to both sets of writing indicated that they had been executed by the same person. Examination of the signatures, however, showed that the endorsement in Hindi (Razak Khan Cycle Works Lukvasa) over the revenue stamp was written with heavy pen pressure with a different alignment; the movements of the strokes appeared uncertain, and the rhythm and slant of the writing very much disturbed. The direction of the strokes in the formation of the

letter 'Ka' with the vowel sign 'ekar' in 'Cycle' and in 'works', and the formation of the letter 'va' in 'works' and 'Lukvasa' differed from the formation of the same letters in the normal writing. Similarly, the loop in the letter 'La' and the vowel sign 'ukar' differed from their counterparts in the normal writing. In an extreme case, the formation of the word 'sa; in 'works' and Lukvasa' was completely different in design.

However, although the overall look of the signatures was somewhat abnormal, they showed some similarities with the body writing on the vouchers. Critical examination of the four vouchers showed an essential resemblance in the formation of certain letters and words, suggesting that whereas the body writings were written with the normal hand, the endorsements were executed with the unaccustomed hand by the same person. Further investigation proved that the suspect had prepared the vouchers and also received the money.

**4.3.** In another case, an application for withdrawal from the Postal Department was submitted to the authors for examination. It was alleged that money had been fraudulently withdrawn in a sub-post office by forgery of the signatures of the account holder. The signatures on both sides of the form for withdrawal of Rs 2500, written in Oriya script, appeared to be the writing on the receipt for payment and the application for withdrawal (Figure 2) appeared at first to be that of an unskilled writer, written in a halting manner, with heavy pen pressure, poor alignment and formation of letters. However, closer examination showed that there were similarities between the writing of two thousand five hundred only, in words and figures on the warrant of payment and the receipt, including the relative size of the letters and their proportion in the words, the formation of the letter 't' and its crossing, the manner of writing letters 'h', 'd', etc. This suggested that the warrant for payment might have been written by the Postal Assistant with the normal hand, and the writing on the application form and the receipt by the Postal Assistant with the unaccustomed hand. This was subsequently verified by the Postal Assistant who was thus shown to be actively involved in the fraudulent payment.

### 4.1 Material Required

#### ❖ For Sample Collection-

- Plain A4 Sized Papers
- Pen
- Support Pad
- Specimen for writing

#### ❖ For Analysis-

- Strong Light Source
- Magnifying Glass
- Scanner
- Pen
- Writing Pad for noting down the observations



Scanner



Magnifying Glass

## **4.2 Methodology-**

The following analysis was done in CFSL CBI, Delhi on given 20 samples collected.

### **➤ For Sample Collection**

- A paragraph for specimen writing was selected which probably contained all letters.
- A writer was made to write a given specimen on A4 size blank white paper.
- 40 such samples were collected from 20 different writers in their original handwriting and their unaccustomed hand
- There was no biological relation between identities of people whose samples were collected.

### **➤ For Analysis**

- Each and every sample was observed carefully and thoroughly using magnifying glass under proper light source.
- All the class and individual characteristics were identified.
- Observation were noted taking different characteristics into consideration in tabulated form.



## CHAPTER -5

### SAMPLE COLLECTION

#### Sample-1

Right hand.

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are sketches and taking photographs and videographs.

Name - Ajay Pandey  
Age - 21

*Aj Pandey*

Left Hand.

The condition at crime scene including both the individual items of evidence and the overall scene must be documented to provide vital information for investigation and for courts. The most common documentation method are sketches, drawing and taking photographs and videographs.

Name - Ajay Pandey

*Aj Pandey*

#### Sample-2

Right hand

The condition at crime scene including both the individual items of evidence & the overall scene, must be documented to provide vital information for investigation & for courts. The most common documentation method are drawing, sketches & taking photographs & videographs.

Name - Rishu Sharma  
Age - 23  
Place - Delhi  
Mob. no - 8527831885

*Rishu Sharma*

Left hand

The condition at crime scene including both the individual items of evidence & the overall scene, must be documented to provide vital information for investigation & for courts. The most common documentation method are drawing, sketches & taking photographs & videographs.

Name - Rishu Sharma  
Age - 23  
Place - Delhi  
Mob. no. - 8527831885

*Rishu Sharma*

#### Sample-3

Right Hand:-

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Name - Rani Verma  
Age - 22  
Place - Delhi

*Rani Verma*

Left hand :-

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Name - Rani Verma  
Age - 22  
Place - Delhi

*Rani Verma*

## Sample-4

~~Left~~  
Right Hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts.

The most common documentation method are drawing, sketches and taking photographs and videographs.

Name → Renu Kachhawa  
Age → 23  
Place → Indore  
Mob. No. → 7732033874

*Renu Kachhawa*

Left Hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts.

The most common documentation method are drawing, sketches and taking photographs and videographs.

Name → Renu Kachhawa  
Age → 23  
Place → Indore  
Mob. No. → 7732033874

*Renu Kachhawa*

## Sample-5

Right hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Name → Yash Patel  
Age → 22  
Place → Haldwari  
Mob. No. → 8279507329

*Yash Patel*

Left hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

## Sample-6

Right Hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts.

The most common documentation method are drawing, sketches and taking photographs and videographs.

Name → Mehraj Kaur  
Age → 21  
Place → Delhi  
Ph → 9478557955

*Mehraj Kaur*

Left Hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts.

The most common documentation method are drawing, sketches and taking photographs and videographs.

Name → Mehraj Kaur  
Age → 21  
Place → Delhi  
Ph → 9478557955

*Mehraj Kaur*

## Sample-7

Right Hand

The condition at crime scene including both the individual items of evidence & the overall scene, must be documented to provide vital information for investigation & for courts.

The most common documentation method are drawing, sketches & taking photographs & videography.

Name - Shweta Jain

Age - 21

Place - Delhi

Ph - 7703940233

*Shweta Jain*

Left hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts.

The most common documentation method are drawing, sketches and taking photographs and videography.

Name - Shweta Jain

Age - 21

Place - Delhi

Ph - 7703940233

*Shweta Jain*

## Sample-8

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigators and for the courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Pritam Pandit

Age - 23

Bhamburda, Dist. Odisha,

State - Maharashtra.

C - 7875140659.

Right Hand.

The condition at a crime scene including both the individual items of evidence and the overall scene, must be documented to provide information for investigators and for the courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Pritam Pandit

Age - 23

Bhamburda, Dist. Odisha,

State - Maharashtra.

C - 7875140659

Left Hand

## Sample-9

Right Hand

The Condition at Crime scene including both the individual items of evidence and the overall scene must be recorded to provide vital information for investigation and for courts.

The most common documentation method are drawing, sketches and taking photographs and videography.

Name - Kunal

Age - 23

Place - Maharashtra

Ph - 9875093620

*Kunal Singh*

Left Hand

The condition at Crime scene including both the individual items of evidence and the overall scene must be documented to provide vital information for investigation and for courts. The most common documentation method are sketches, drawing and taking photographs and videography.

Name - Kunal Singh

*Kunal Singh*

## Sample-10

Right hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Name - Shijelle Chauhan  
Age - 23  
Place - Indore  
Mob - 9647036601

Shijelle

The condition at crime scene including both individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches & taking photographs and videographs.

Name - Shijelle Chauhan  
Age - 23  
Place - Indore  
Mob - 9647036601

## Sample-11

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for the courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Name - Supriya Kumari  
Age - 21  
Place - Ranchi  
Mob - 7667220016

Supriya Right handed

The condition at a crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for the courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Name - Supriya Kumari  
Age - 21  
Place - Ranchi  
Mob - 7667220016

Left handed

## Sample-12

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for the courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Supriya Kumari

Left hand

The condition at crime scene including both the individual items of evidence and the overall scene must be documented to provide vital information for investigation and for the courts. The most common documentation method are drawing, sketches and taking photographs and videographs.

Supriya Kumari



## Sample-13

### Right hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:- Pooja Sahani  
Age:- 27  
Place:- Delhi  
Mob. No:- 9717872176

*[Signature]*

### Left Hand

The condition at crime scene both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:- Pooja Sahani  
Age:- 27  
Place:- Delhi  
Mob. No:- 9717872176

*[Signature]*

## Sample-14

The condition at the crime scene including both the individual items of evidence and the overall scene must be documented to provide vital information for investigation and for the courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:-  
Age:-  
Place:-  
Mob. No:-

### Left Hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for the courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:-  
Age:-  
Place:-  
Mob. No:-

## Sample-15

### Right hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:- Kajal Kumari  
Age:- 24  
Place:- Ghaziabad  
Mob. No:- 9130554330

*[Signature]*

### Left hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:- Kajal Kumari  
Age:- 24  
Place:- Ghaziabad  
Mob. No:- 9130554330

*[Signature]*

## Sample-16

### Right hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:- Priya Sharma  
Age:- 27  
Place:- Delhi  
Mob. No:- 7905882914

*[Signature]*

### Left hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name:- Priya Sharma  
Age:- 27  
Place:- Delhi  
Mob. No:- 7905882914

*[Signature]*

## Sample-17

The Condition at the Crime Scene including both the individual item of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common "documentation" method are drawing, sketches and taking photographs and videography.

Name - Aruj Sharma  
Age - 21 yr.  
Place - Jammu Jammu & Kashmir  
Mob - 910346761  
Right handed

The Condition at the Crime Scene including both the individual item of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common "documentation" method are drawing, sketches and taking photographs and videography.

Name - Aruj Sharma  
Age - 21 yr.  
Place - Jammu Jammu & Kashmir  
Mob - 910346761  
Right handed

## Sample-18

The condition at the crime scene including both the individual item of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing sketches & taking photographs & videography.

Name - Honey Chohan  
Age - 23  
Place - Dhare  
Right hand

The condition at the crime scene including both the individual item of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing sketches & taking photographs & videography.

Name - Honey Chohan  
Age - 23  
Place - Dhare  
Left handed

## Sample-19

Right hand

The Condition at crime scene including both the individual items of evidence and the overall scene must be documented to provide vital information for investigation and for courts. The most common documentation are drawing, sketches and taking photographs and video graphs.

Name - Nandani Dharwa  
Age - 20  
Place - Indore  
Mob - 9833715562 Right

Left hand

The Condition of crime scene including both the individual items of evidence and the overall scene must be documented to provide vital information for investigation and for courts. The most common documentation are drawing, sketches and taking photographs and video graphs.

Name - Nandani Dharwa  
Age - 20  
Place - Indore  
Mob - 9833715562 Right

## Sample-20

Right hand

The condition at crime scene including both the individual items of evidence and the overall scene must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name :- Dinesh Sonwane  
Age :- 22  
Place :- Indore  
Mob :- 934092312 Right

Left hand

The condition at crime scene including both the individual items of evidence and the overall scene, must be documented to provide vital information for investigation and for courts. The most common documentation method are drawing, sketches and taking photographs and videography.

Name :- Dinesh Sonwane  
Age :- 22  
Place :- Indore  
Mob :- 934092312 Right

The comparison based on 20 samples revealed some interesting factors mentioned in this paper. Based on the samples collected from individuals it was observed that some characteristics were distinct in handwriting while some were common in most samples. The correct analysis of following handwriting samples are mentioned below:

### **6.1 General / Class Writing Characteristics**

The Following Class Characteristics were taken into consideration while analyzing sample:

1. **Line Quality:** Smooth, poor and defective
2. **Relative Size:** Small, Medium and Large
3. **Speed:** Slow, Medium and fast
4. **Slant:** Vertical, Forward and Backward
5. **Alignment:** Straight, Ascending, Descending, Arched and Irregular
6. **Skill:** Poor, Medium, Good
7. **Rhythm:** Fluent, Non-Fluent
8. **Pressure:** Light, Medium, Heavy

<b>Sample 1</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Smooth
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Left	Left
	<b>Alignment</b>	Horizontal	Horizontal
	<b>Skill</b>	Good	Medium
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light



<b>Sample 2</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Medium	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Ascending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 3</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>LEFT HANDED</b>	<b>Line Quality</b>	Smooth	Smooth
	<b>Relative Size</b>	Medium	Small
	<b>Speed</b>	Slow	Medium
	<b>Slant</b>	Right	Vertical
	<b>Alignment</b>	Descending	Horizontal
	<b>Skill</b>	Medium	Good
	<b>Rhythm</b>	Non- Fluent	Fluent
	<b>Pressure</b>	Medium	Heavy
<b>Sample 4</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>LEFT HANDED</b>	<b>Line Quality</b>	Smooth	Smooth
	<b>Relative Size</b>	Medium	Small
	<b>Speed</b>	Slow	Medium
	<b>Slant</b>	Right	Vertical

	<b>Alignment</b>	Ascending	Horizontal
	<b>Skill</b>	Medium	Good
	<b>Rhythm</b>	Non- Fluent	Fluent
	<b>Pressure</b>	Medium	Heavy
<b>Sample 5</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Medium	Large
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Right	Left
	<b>Alignment</b>	Horizontal	Ascending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 6</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Right	Left
	<b>Alignment</b>	Horizontal	Ascending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 7</b>	<b>Characteristics</b>	Right Hand	Left Hand

<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Horizontal
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 8</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Descender
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 9</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Horizontal

	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	High
<b>Sample 10</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Medium	Large
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Right	Left
	<b>Alignment</b>	Horizontal	Horizontal
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 11</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Medium	Large
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Right	Left
	<b>Alignment</b>	Horizontal	Descending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 12</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor

	<b>Relative Size</b>	Medium	Large
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Descending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 13</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Horizontal
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 14</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Horizontal
	<b>Skill</b>	Good	Poor

	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 15</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Right
	<b>Alignment</b>	Horizontal	Ascending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 16</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Horizontal
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 17</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium

	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Descending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light
<b>Sample 18</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>LEFT HANDED</b>	<b>Line Quality</b>	Poor	Smooth
	<b>Relative Size</b>	Large	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Right	Vertical
	<b>Alignment</b>	Ascending	Horizontal
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non-Fluent
	<b>Pressure</b>	Medium	Heavy
<b>Sample 19</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Descending
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent




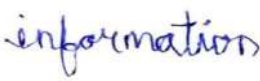




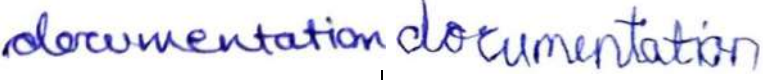








	<b>Pressure</b>	Medium	Light
<b>Sample 20</b>	<b>Characteristics</b>	Right Hand	Left Hand
<b>RIGHT HANDED</b>	<b>Line Quality</b>	Smooth	Poor
	<b>Relative Size</b>	Small	Medium
	<b>Speed</b>	Medium	Slow
	<b>Slant</b>	Vertical	Left
	<b>Alignment</b>	Horizontal	Horizontal
	<b>Skill</b>	Good	Poor
	<b>Rhythm</b>	Fluent	Non- Fluent
	<b>Pressure</b>	Medium	Light

## 6.2 Individual Writing Characteristics

The following individual writing characteristics were taken into consideration while analyzing sample:












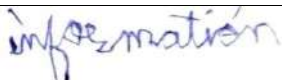


1. Letter Design
2. Connecting Strokes
3. Start and Finish of letters
4. Direction of curvature of strokes
5. Length, Angularity and Direction of strokes
6. Appearance, Size and Shape of loops
7. Presence of hook or tick at the Start or Finish Stroke
8. Embellished Writing
9. Nature of I- Dot
10. Nature of T-Bar










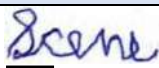

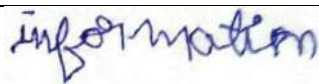




Sample 1	Characteristics	Right Hand	Left Hand
RIGHT HANDED	Letter Design		
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		
	Length, Angularity and Direction of strokes		
	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Right To Stem	Circular
	Nature of T-Bar	Light/in center	Light/in center
Sample 2	Characteristics	Right Hand	Left Hand
RIGHT HANDED	Letter Design		

	Connecting Strokes	information	information
	Start and Finish of letters	sketches	sketches
	Direction of curvature of strokes	for	for
	Length, Angularity and Direction of strokes	documentation	documentation
	Appearance, Size and Shape of loops	both	both
	Presence of hook or tick at the Start or Finish Stroke	items	items
	<b>Embellished Writing</b>	<b>Not Present</b>	<b>Not Present</b>
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 3</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>LEFT HANDED</b>	Letter Design	<u>scene</u>	<u>scene</u>

	Connecting Strokes	information	information
	Start and Finish of letters	sketches	sketches
	Direction of curvature of strokes	for	for
	Length, Angularity and Direction of strokes	documentation	documentation
	Appearance, Size and Shape of loops	both	both
	Presence of hook or tick at the Start or Finish Stroke	items	items
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Right To Stem
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 4</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>LEFT HANDED</b>	Letter Design	<u>scene</u>	<u>Scene</u>
	Connecting Strokes	information	information

	Start and Finish of letters	sketches	Sketches
	Direction of curvature of strokes	for	for
	Length, Angularity and Direction of strokes	documentation	documentation
	Appearance, Size and Shape of loops	both	both
	Presence of hook or tick at the Start or Finish Stroke	items	items
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Right To Stem
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 5</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	<u>scene</u>	<u>scene</u>
	Connecting Strokes	information	information
	Start and Finish of letters	sketches	sketches

	Direction of curvature of strokes		
	Length, Angularity and Direction of strokes		
	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Right To Stem
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 6</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design		
	Connecting Strokes		
	Start and Finish of letters		










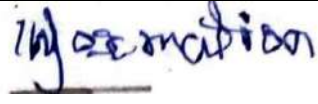






	Direction of curvature of strokes		
	Length, Angularity and Direction of strokes		
	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 7</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design		
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		

	Length, Angularity and Direction of strokes	documentation	documentation
	Appearance, Size and Shape of loops	both	both
	Presence of hook or tick at the Start or Finish Stroke	items	items
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 8</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	scene —	scene —
	Connecting Strokes	information	information
	Start and Finish of letters	sketches	Sketches
	Direction of curvature of strokes	for	Dot
	Length, Angularity and	documentation	documentation



	Direction of strokes		
	Appearance, Size and Shape of loops	b+th	bath
	Presence of hook or tick at the Start or Finish Stroke	items	items
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 9</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	<u>Scure</u>	<u>Scure</u>
	Connecting Strokes	information	information
	Start and Finish of letters	scatch	scatch
	Direction of curvature of strokes	for	for
	Length, Angularity and Direction of strokes	documentation	documentation

	Appearance, Size and Shape of loops	<i>both</i>	<i>both</i>
	Presence of hook or tick at the Start or Finish Stroke	<i>items</i>	<i>items</i>
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 10</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	<i>scene</i> —	<i>scene</i> —
	Connecting Strokes	<i>information</i>	<i>information</i>
	Start and Finish of letters	<i>sketches</i>	<i>sketches</i>
	Direction of curvature of strokes	<i>for</i>	<i>for</i>
	Length, Angularity and Direction of strokes	<i>documentation</i>	<i>documentation</i>













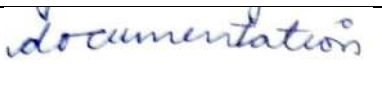
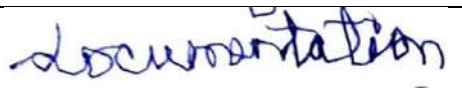
	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing		
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 11</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	 —	 —
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		
	Length, Angularity and Direction of strokes		

	Appearance, Size and Shape of loops	<i>both</i>	<i>both</i>
	Presence of hook or tick at the Start or Finish Stroke	<i>items</i>	<i>items</i>
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 12</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	<i>scene</i> —	<i>scene</i> —
	Connecting Strokes	<i>information</i>	<i>information</i>
	Start and Finish of letters	<i>sketches</i>	<i>sketches</i>
	Direction of curvature of strokes	<i>for</i>	<i>for</i>
	Length, Angularity and Direction of strokes	<i>documentation</i>	<i>documentation</i>


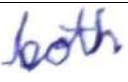






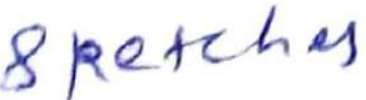



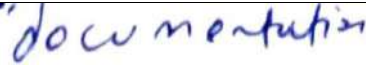

	Appearance, Size and Shape of loops	<i>both</i>	<i>both</i>
	Presence of hook or tick at the Start or Finish Stroke	<i>items</i>	<i>item</i>
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 13</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	<i>scene</i> —	<i>scene</i> —
	Connecting Strokes	<i>information</i>	<i>information</i>
	Start and Finish of letters	<i>etches</i>	<i>sketches</i>
	Direction of curvature of strokes	<i>for</i>	<i>for</i>
	Length, Angularity and Direction of strokes	<i>documentation</i>	<i>documentation</i>







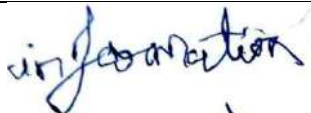
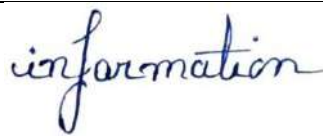




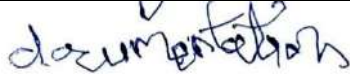
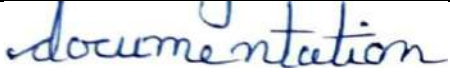
	Appearance, Size and Shape of loops	<i>both</i>	<i>both</i>
	Presence of hook or tick at the Start or Finish Stroke	<i>items</i>	<i>items</i>
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Left to Stem	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 14</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	<i>Scene</i> —	<i>Scene</i> —
	Connecting Strokes	<i>information</i>	<i>information</i>
	Start and Finish of letters	<i>Sketches</i>	<i>Sketching</i>
	Direction of curvature of strokes	<i>for</i>	<i>for</i>
	Length, Angularity and Direction of strokes	<i>documentation</i>	<i>documentation</i>







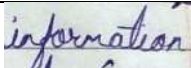
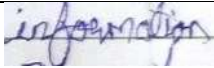
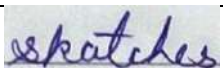

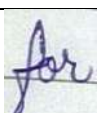
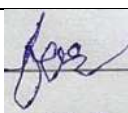
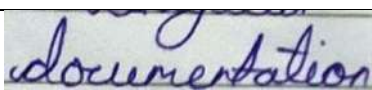
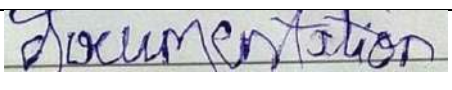
	Appearance, Size and Shape of loops	<i>both</i>	<i>both</i>
	Presence of hook or tick at the Start or Finish Stroke	<i>left</i>	<i>left</i>
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 15</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	<i>scene</i> —	<i>scene</i> —
	Connecting Strokes	<i>information</i>	<i>information</i>
	Start and Finish of letters	<i>sketches</i>	<i>sketches</i>
	Direction of curvature of strokes	<i>foo</i>	<i>foo</i>
	Length, Angularity and Direction of strokes	<i>documentation</i>	<i>documentation</i>

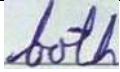
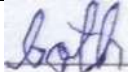
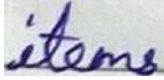
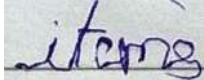










	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 16</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design		
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		
	Length, Angularity and		



	Direction of strokes		
	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 17</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design	 —	 —
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		
	Length, Angularity and		

	Direction of strokes		
	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 18</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>LEFT HANDED</b>	Letter Design		
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		
	Length, Angularity and		

	Direction of strokes		
	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 19</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design		
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		
	Length, Angularity and Direction of strokes		

	Appearance, Size and Shape of loops		
	Presence of hook or tick at the Start or Finish Stroke		
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular
	Nature of T-Bar	Light/in center	Light/in center
<b>Sample 20</b>	<b>Characteristics</b>	<b>Right Hand</b>	<b>Left Hand</b>
<b>RIGHT HANDED</b>	Letter Design		
	Connecting Strokes		
	Start and Finish of letters		
	Direction of curvature of strokes		
	Length, Angularity and Direction of strokes		

	Appearance, Size and Shape of loops	both	both
	Presence of hook or tick at the Start or Finish Stroke	items	items
	Embellished Writing	Not Present	Not Present
	Nature of I- Dot	Circular	Circular

**7.1 Class characteristics:**

The writing from unaccustomed hand will be lighter due pen pressure and bigger than practiced hand. In case of practiced hand, it will be darker, skilled, smaller, smoother and contain embellishment and pictorial effect will be good. The below table summarizes the mean observations based on all samples corresponding to different class characteristics observed in all samples.

Characteristics	Practice Hand	Unaccustomed Hand
Line Quality	Good	Poor
Relative Size	Medium	Big
Speed	Medium	Slow
Slant	Vertical And Rightward	Leftward
Alignment	Horizontal	Ascending
Skill	Good	Poor
Rhythm	Fluent	Non- Fluent
Pressure	Heavy	Medium

Table 1: Results of class characteristics of writing samples

Note: Mostly in left-handed writing sample alignment is descending in practised hand and horizontal in unaccustomed hand

**7.2 Individual Characteristics:**

1. The individual characteristics observed for the horizontal dash in “t” character will be from right to left in case of practiced hand and left to right in case of unaccustomed hand irrespective of person being left handed or right handed.
2. If left handed person writes from unaccustomed hand, then stroke formation will be upwards (down to up) and vice versa in case of right handed person.

3. Hesitation marks will be observed in case of writing sample from unaccustomed hand.
4. The dot of “i” letter will be big in case of practiced hand as compared to unaccustomed hand which is much small.
5. Writing from unaccustomed hand will be bigger than for practiced hand.
6. Formation of “f” character will be angular in case of unaccustomed hand and loop of “f” will be reversed in most cases as compared to practiced hand.
7. If embellishment is present in writing it is present in practiced hand and absent in unaccustomed hand.

According to my research if we find a questioned document for observation, we can determine using some specific class and individual characteristics that given sample is written by right hand/left hand or an accustomed hand. This will help new learners develop new methods to determine differences between practiced and unaccustomed handwriting samples of left and right handed individuals and differentiate on the same.



### References:

1. Six Basic Factors in Handwriting Classification - Theodora LeH. Smith, Journal of Criminal Law and Criminology, Volume 44 | Issue 6
2. Saran Vaibhav, Kumar Suneet, Gupta A. K., Ahmad Syeed., Differentiation of Handedness of Writer Based on their Strokes and Characteristic Features. Journal of Forensic Research, 2013; 4(5).
3. 2. Huber A. Roy., Headrick M. A., Handwriting Identification: Facts and Fundamentals, CRC Press, Boca Raton New York. 1999.
4. 3. Sharma B. R., Forensic Science in Criminal Investigation and Trials, Fourth Edition, Universal Law Publishing Co. Pvt. Ltd. 2005
5. 4. Koppenhaver M. Katherine, Forensic Document Examination, Humana Press. 2007.
6. 5. Ordway. Hilton., Scientific Examination of Questioned Documents, Elsevier Science Publishers B.V. 1982.
7. 6. Jay. Siegal, Geoffery Knupfer, Pekka Saukko., Encyclopedia of Forensic Sciences, three volumes set. Elsevier. 2000.
8. 7. Grabowska1 Anna., Gut Malgorzata., Binder Marek., Forsberg Lars., Rymarczyk1 Krystyna., Urbanik Andrzej., Switching handedness: MRI study of hand motor control in right-handers, left-handers and converted left-handers, Acta Neurobiol Experimentals, 2012;(72) 439-451.
9. 8. J. E. Franks., T. R. Davis., Variability of stroke direction between left and right handed writer, Journal of the Forensic Science Society, 1985;(28) 353-370.
10. 9. J. L. Smart., C. Jeffery., B. Richards., A retrospective of relationship between birth history and handedness at six years. Early Human Development, 1956; (10) 56-60.
11. 10. Sharma B. R., Handwriting Forensics, Second Edition, Universal law Publishing, 2017.
12. 11. Stangohr, Gordon R., Opposite-hand writings. Journal of Forensic Sciences, 1968, (13) 376-89.

13. Franks JE, Davis TR (1985) Variability of stroke direction between left and right handed writer. *Journal of the Forensic Science Society* 28: 353-370.
14. Smart JL, Jeffery C, Richards B (1956) A retrospective of relationship between birth history and handedness at six years.
15. Early Human Development, Totty RN, Hardcastle RA (1982) The dependence of slope of HW upon the handedness of writer. *Journal of the Forensic Science Society* 27: 237-240.
16. Ball GR, Srihari SN (2011) Statistical characterization of handwriting characteristics using automated tools. In *Proc Document Recognition and Retrieval*.
17. <https://forensicsdigest.com/factors-affecting-handwriting-of-an-individual/>
18. <https://forensicsdigest.com/factors-affecting-handwriting-of-an-individual/>

# **GOVERNMENT HOLKAR SCIENCE COLLEGE**

**INDORE (M.P.)**

**Academic Year – 2021-2022**



***PROJECT REPORT***

**DEPARTMENT OF MATHEMATICS**

**M.Sc. Final Year (4<sup>th</sup> semester)**

**Topic – Sales Marketing**

**GUIDED BY**

**PROF. SUNIL SHARMA**

**SUBMITTED BY**

**SHRUTI GAWANDE**

**M.Sc. 4<sup>th</sup> semester**

**(Mathematics)**

**Roll NO. - 204477**

**Enrollment no – DS2015014**

# स्नातक षष्ठम एवं स्नातकोत्तर चतुर्थ सेमेस्टर

## कार्यस्थल प्रशिक्षण प्रतिवेदन का प्रारूप

1. विद्यार्थी का नाम - Shauri Gaware कक्षा - M.Sc.
2. पिता का नाम - Kailash Gaware
3. महाविद्यालय का नाम - Govt. Holkar Science College Indore
4. विद्यार्थी का पता एवं दूरभाष क्रमांक - Bhawankua, Indore  
(निवास एवं मोबाइल नंबर) - 8889266297
5. शिक्षक निर्देशक का नाम - Prof. Sunil Sharma
6. कार्यस्थल प्रशिक्षण संस्था का नाम/पता एवं दूरभाष क्रमांक - DS Group
7. सर्वेक्षित (विजिट की गयी संस्थाओं से प्राप्त जानकारी/किये गये कार्य) का तिथिवार विवरण -

क्रमांक	दिनांक	संस्था का नाम	सम्पर्क किये गये व्यक्तियों का		कार्य/प्राप्त की गयी जानकारी का संक्षिप्त विवरण
			नाम	दूरभाष	
01	11/06/2021	DS Group	Nilesh	99939	Sales Marketing
			Rane	89691	

8. प्रगति विवरण -
  - (अ) प्रशिक्षण के दौरान सौंपा गया कार्य -
  - (ब) पूर्ण किया गया कार्य -
9. संस्था द्वारा निर्धारित प्रतिनिधि/संस्था प्रमुख द्वारा विद्यार्थी के संबंध में आकलन
  - (अ) समय की पाबंदी -
  - (ब) वेशभूषा एवं व्यवहार -
  - (स) संस्था के नियमों का पालन -
  - (द) आवंटित कार्य के प्रति निष्ठा -
  - (इ) संवाद/संप्रेषण क्षमता -
  - (ई) व्यक्तित्व में किस प्रकार के सुधार की आवश्यकता है तथा विद्यार्थी द्वारा इसके लिये किये गये प्रयास सुधार की प्रगति -
  - (उ) आवंटित कार्य के प्रति जिज्ञासा/सीखने की क्षमता/किये गये कार्य की प्रगति -
10. मैं यह प्रमाणित करता हूँ कि विद्यार्थी Shauri Gaware (पूरा नाम) द्वारा मेरी संस्था/मेरे संपर्क में न्यूनतम 60 घंटे की उपस्थिति दी है।

हस्ताक्षर  
संस्था प्रमुख/प्रतिनिधि



# बी.एस.सी. अंतिम वर्ष एवं बी.सी.ए. षष्ठम सेमेस्टर इंटर्नशिप कार्यक्रम

महाविद्यालय का नाम : शासकीय होलकर विद्यालय महाविद्यालय,  
इन्दौर (म.प्र.)

छात्र/छात्रा का नाम : Shreuti Gaware

कक्षा एवं विषय : M.Sc IV sem Mathematics

कार्यानुभव की विधा : Sales Marketing

प्रशिक्षण संस्था का नाम : DS Group

निर्देशक प्रशिक्षक का नाम : Nilesh Rane

निर्देशक प्राध्यापक का नाम : Prof. Sunil Sharma

## कार्यानुभव प्रशिक्षण दैनिक उपस्थिति

क्र.	दिनांक	छात्र/छात्रा के हस्ताक्षर	प्रशिक्षण के हस्ताक्षर	क्र.	दिनांक	छात्र/छात्रा के हस्ताक्षर	प्रशिक्षण के हस्ताक्षर
1	11/06/22	Shreuti	Nilesh	21			
2	13/06/22	Shreuti	Nilesh	22			
3	14/06/22	Shreuti	Nilesh	23			
4	15/06/22	Shreuti	Nilesh	24			
5	16/06/22	Shreuti	Nilesh	25			
6	17/06/22	Shreuti	Nilesh	26			
7	18/06/22	Shreuti	Nilesh	27			
8	20/06/22	Shreuti	Nilesh	28			
9	21/06/22	Shreuti	Nilesh	29			
10	22/06/22	Shreuti	Nilesh	30			
11	23/06/22	Shreuti	Nilesh	31			
12	24/06/22	Shreuti	Nilesh	32			
13	25/06/22	Shreuti	Nilesh	33			
14	27/06/22	Shreuti	Nilesh	34			
15				35			
16				36			
17				37			
18				38			
19				39			
20				40			





- विद्यार्थी के घोषणा-पत्र का फॉर्मट (Format for Declaration of the student)

### विद्यार्थी का घोषणा-पत्र

मैं ..... (विद्यार्थी का नाम) आत्मज/आत्मज  
 श्री/श्रीमती ..... (अभिभावक/पालक का नाम)  
 घोषित करता/करती हूँ कि संलग्न परियोजना कार्य मेरे द्वारा स्वयं पूर्ण किया गया है एवं  
 मौलिक है। उक्त परियोजना कार्य मैंने प्रो./डॉ. .... विभाग .....  
 ..... के मार्गदर्शन में पूर्ण किया है।

दिनांक : .....

स्थान : .....

विद्यार्थी के हस्ताक्षर : .....

नाम : .....

कक्षा : .....

अनुक्रमांक : .....

पता : .....

दूरभाष : .....

### Declaration of the Student

I Shweta Gawande son/daughter of Kailash Gawande  
 certify that the project report entitled Sales Marketing  
(B.S. Group) prepared by me is my personal and an  
 authentic work under the guidance of Prof. Sunil Sharma  
Mathematics (Name of Guide with Department).

Date : 27/06/2022

Place : Indore

Signature of the Student: Shweta

Name: Shweta Gawande

Class: M.Sc. Mathematics IV sem

Roll Number: 204477

Address: Bhawankar Indore

Contact Number: 8889266297



- सर्वेक्षित संस्था के प्रमाण-पत्र का फॉर्मट (Format of the Certificate of the surveyed Institution)

### सर्वेक्षित संस्था का प्रमाण-पत्र

प्रमाणित किया जाता है कि श्री/श्रीमती/कु. .... (विद्यार्थी  
का नाम) ने अपने परियोजना कार्य को पूर्ण करने हेतु इस कार्यालय/संस्था में उपस्थित हुए।  
परियोजना कार्य के दौरान इनका कार्य एवं व्यवहार संतोषजनक रहा।

हस्ताक्षर : .....  
नाम : .....  
स्थान : .....  
दिनांक : .....  
पद : .....  
कार्यालय/संस्था : .....

### Certificate of the Surveyed Institution

This is to certify that Mr./Ms. .... Shreedi Gaurande ..... (Name  
of the student) has visited our office/Institution for his/her project work. During the  
project work his/her work and behaviour was satisfactory.

Date: 27/06/2022  
Place: Indore

Signature: [Signature]  
Name: Nilesh Rame  
Designation: ASPM  
Office/Institution: D.S. Group



- सर्वेक्षित संस्था के प्रमाण-पत्र का फॉर्मेट (Format of the Certificate of the surveyed Institution)

सर्वेक्षित संस्था का प्रमाण-पत्र

प्रमाणित किया जाता है कि श्री/श्रीमती/कु. .... (विद्यार्थी  
का नाम) ने अपने परियोजना कार्य को पूर्ण करने हेतु इस कार्यालय/संस्था में उपस्थित हुए।  
परियोजना कार्य के दौरान इनका कार्य एवं व्यवहार संतोषजनक रहा।

हस्ताक्षर : .....  
नाम : .....  
स्थान : .....  
दिनांक : .....  
पद : .....  
कार्यालय/संस्था : .....

Certificate of the Surveyed Institution

This is to certify that Mr./Ms. .... Shreuti Gaurande ..... (Name  
of the student) has visited our office/Institution for his/her project work. During the  
project work his/her work and behaviour was satisfactory.

Date: 27/06/2022  
Place: Indore...

Signature: [Signature].....  
Name: Nilesh Rane.....  
Designation: ASM.....  
Office/Institution: DS Group





# ACKNOWLEDGEMENT

I would like to express my deepest appreciation to all those who provided me the opportunity to complete this internship training and project report .It is with deepest sense of gratitude and reverence that I express my indebtedness to Mr. NILESH RANE (ASM DS GROUP INDORE) who granted me to work under their guidance in DS GROUP INDORE (M.P.)

I take privilege to express my sincere thanks and gratitude to my guide PROF. SUNIL SHARMA SIR who gave me guidance constructive criticism and valuable suggestion. I feel honored to have such mentors throughout. Also my deep and sincere gratefulness to all the staff member of DS GROUP Indore who readily and cheerfully extended every help required from the beginning till this project work.

SHRUTI GAWANDE

M.Sc. 4<sup>th</sup> sem

Government Holkar science college Indore (M.P.)

## CERTIFICATE

This is to certify that Shruti Gawande D/O Mr. Kailash Gawande Students of M.sc. Final year of government Holkar Science College Indore has successfully completed her Internship training from DS group Indore for a period of 60 hours. The internship Program included the training of studying of Sales Marketing during this period the institution found her performance to be good and satisfying.

Hence the project work entitled “ Sales Marketing ” embodies the original work done during the above mentioned internship training period. I wish her every success in her future endeavours.

Date :- 27/06/2022.

Place :- INDORE.....



Authorized signature

DS Group

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## Overview

Since 1929

The DS Group (Bhatnagar Satyapal Group) is a Multi-Business corporation and one of the leading FMCG (Fast Moving Consumer Goods) conglomerate with strong Indian and International presence. Founded in the year 1929, it is an inspiring and successful business story that blends a remarkable history and legacy with visionary growth. The Group continues to build successful brands across diverse business categories to delight the consumers while the undeterred pursuit for 'Quality and Innovation' ensures loyalty and Satisfaction.

Guided by a clear set of values and built on a strong foundation of collective good, Corporate Social Responsibility is an integral part of the Group's business objectives.



The Group works on projects across the country to achieve this objective with a focus on critical areas such as Water, livelihood and Education. These initiatives have a transformational impact on communities. Active participation from stakeholders is sought, while creating awareness and during the implementation to ensure long term sustainability of the projects.

Future-focused the Group has been steadily expanding its 'green' initiatives, including Energy and Water Conservation to reflect its response to what the world needs and its own role as a committed corporate citizen.

Catch Salts and spices has been the vanguard of Indian spices market, adapting tradition and bringing innovation at every step. One of the premium F&B Brands of the country today, catch offers a

a wide range of salts, spices, sprinkles, cooking pastes, Griddles and Beverages.

'catch' is also the nation's first 'Natural Spring Water', bottled at the source in Himalayas. From water to soda,

Flavoured Water to Juices and tonic water to ginger ale, catch offers a vivid spectrum of beverages. 'ksheer' the

premium dairy brand has a product basket of Cow Ghee, Desi Ghee, Fresh Milk, Chaach, Lassi, Dahi, Panner, Khoya, Flavoured milk, Dairy whitener and Creamer.

'Pass Pass' encompasses a broad portfolio of pioneering products in the confectionery business. 'Pass Pass Chingles' covers the Chewing gum assortment and 'Pass Pass', the leader in the hard boiled candy segment offers a unique experience of a fiery taste that peaks with tangy surprise at the core. And 'Tulsi Royal Khajoor plus' further augment the Group's confectionary basket.



The Group has 'Mamah' at Jim Corbett National park. 'The Manu Mahasani' in Maunital, 'Radisson Blu in Guwahati, 'Crowne Plaza' in Jaipur and 'Holiday Inn Express' at the Kolkata Airport. Well-known retail brands 'Le Marche' and 'L' opera' mark the Group's presence in Luxury retail. The Rubber thread brand, 'Unitexx', Rigid Packaging brand 'compac' and a Flexi Packaging unit for laminates and pouches are the other areas of interest of the Group.

A story that began from a small shop in Chandni Chowk, Delhi has now become a saga of success, spanning over nine decades of excellence. From humble beginnings to turning into a well-founded multi-diversified conglomerate. The DS Group is a legend of determination and perseverance.

## Vision -

To be a leading quality and innovation driven global conglomerate.

Innovation: creative, out of box thinking, doing thing in newer, better cost effective and efficient way.

## Mission -

We are constantly striving to achieve excellence in all over endeavors to create sustainable value for our stakeholders and the community at large.

Excellence: state of superiority in virtue with respect to product and service quality and touch point management.

Value: Creating tangible benefit, both financial and non-financial.

Stakeholders: Investors, Bankers and financial institutions, consumers, channel.

Partners: Supplier and Business partners.

Employees, Regulatory Bodies and Government.



## Core Values -

Empathy, sympathy and compassion: Humane caring, thoughtful, tolerant and listen to people.

Mutual trust and Respect: Belief in self, team, system, business partners, customers. High value to feelings and emotions of people.

Transparency: fairness in all actions and communications dealing with employees and stake holders.

Openness: Encourage honest feed back, patient hearing to negatives, communicate bad news quickly, promote truthfulness.

Honesty and Integrity - financial honesty, Ethical behavior, fair practice, commitment, Non-opinionated and unbiased commenting on issues.

Relationship: Creating an environment, which would perpetuate harmonious associations with employees, associates, partners and other stake holders.

## DS GROUP (con. words)

This is well reflected in our new corporate signature - a signature that captures nine decades of our successful journey and inspires us to face the challenges of an infinite future. It represents a meaningful, timeless, confident and inspiring symbol for those who believe in achieving the impossible.

Our logo projects our firm determination to become a world leader. The green colour suggests prosperity and purity, combined with warm intimate feeling the logo reads 'D' for Dharampal; and 'S' for Satypal, woven into an interesting design to symbolize the world moving through space, conveying a distinctive image of innovation and change. Also, the absence of any border around the logo reflects the group's desire to be one with the world. It is reflection of a well-diversified business conglomerate, constantly re-innovating itself for a better tomorrow.



## DS Group's Founders -

our founders Shri Dharampal 'Sugandhi' and Shri  
 Durgapal 'Sugandhi' started as humble traders in  
 the pre-independence era, yet we became  
 hallmarks of success in an emergent nation.  
 We got an incredible response from our discerning  
 customers in the initial years, yet dared our  
 diversify into new ventures treading the  
 path less taken. We hold our legacy in our  
 hearts and value our incredible inheritance.  
 yet our heartbeats resonate the sentiment of  
 the gen-next. We respect the bridge  
 between the past and novel and therefore,  
 seamlessly connect yesterday, today and tom-  
 orrow. We are The DS Group.

### Shri Dharampal 'Sugandhi'

1<sup>st</sup> January 1901 - 23<sup>rd</sup> June 1964

Born on 01-01-1901, call it coincidence  
 or call it destiny.

Life-changing journey of Lala-Dharampal  
 'Sugandhi' started from the agrarian  
 routes of Karnal, to the urban roads of  
 Delhi - Chandni Chowk.

As time passed by, given his personality, behaviour and ability to learn, Dharampalji became increasingly versatile in managing the business. Beginning with a modest perfume shop in Chandni Chowk, in the heart of Delhi, Shri Dharampalji added his personal touch in spreading fragrances across the nation. A self-starter and a visionary, he was farsighted to conceive the almost impossible.

### Shri Satyapal 'Sugandhi'

14th August 1929 - 4th December 1995

Shri Satyapal 'Sugandhi', was born on 14th August 1929, celebrated as the Founder's Day. It was when the DS saga unfolded with inauguration of a small perfumery shop that was set up in the heart of Chandni Chowk.

He inherited high virtues and aspiration for being the best in one's own business.

Today, his mission of offering the unmatched guides all our endeavours.



## Our Bussinesses

### \*Beverage Business

In August 1999, the company marked its debut in the beverage arena with 'catch Natural spring water

- > catch water
- > catch carbonated Beverages
- > catch Juice Beverage
- > Liquid Life.

### \*Food

Making an entry in the F&B segment in 1987 our range of products have become household favourites across the nation

- |                        |                    |
|------------------------|--------------------|
| > catch salts & Spices | > catch leaves     |
| > Kewal spices         | > Nature's Miracle |
| > Not Just Nuts        | > Snack Factory    |
| > Pulse Matkaare       | >                  |
| > Dairy                |                    |
| > catch pastes         |                    |

## \* Confectionery -

The expertise in flavours and fragrance and understanding of consumer tastes has been the key driver of some of the Group's successful products in the business.

- > Pass - Pass
- > Pass - Pass Chingles
- > Pass - Pass Pulse
- > PRU
- > Maze

## \* Luxury Retail-

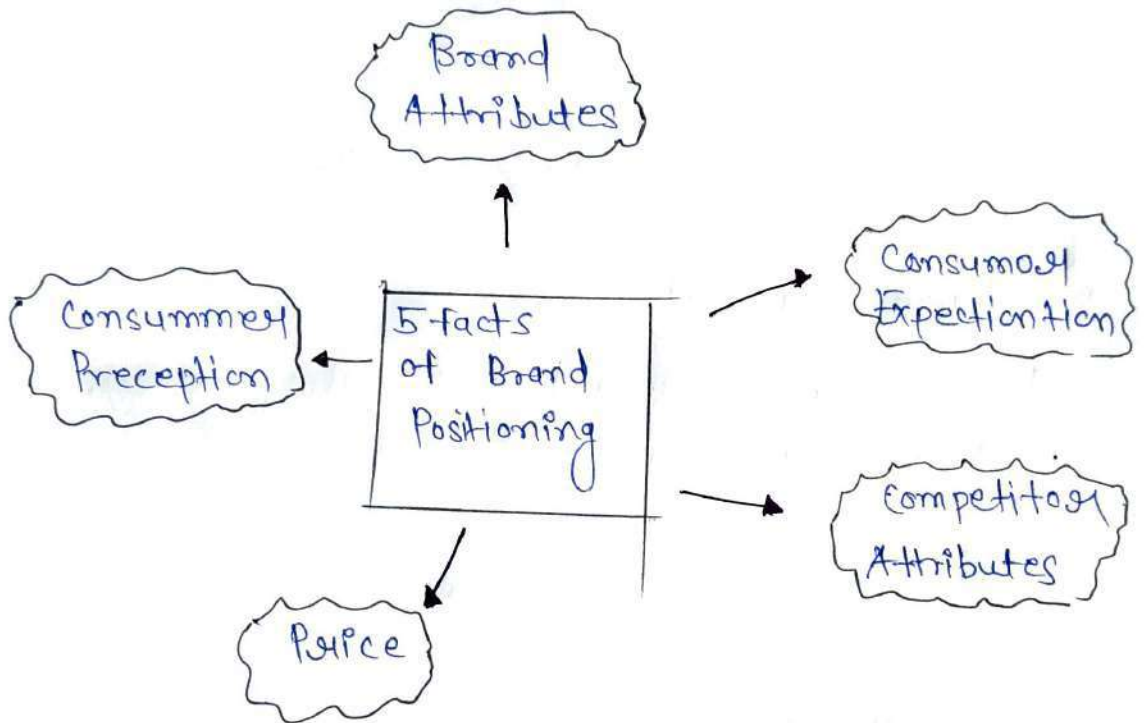
The group ventured into the luxury arena with acquisition of well known details chains in the industry.

- > Le Marche
- > L'Opéra

## \* Hospitality & Hotels-

The renowned property soon became famous for its accommodation and dining and attracted visitors from all over the country.

- > The Maru Maharani, Nainital
- > Namah, Jim Corbett National Park.
- > Radisson Blu Hotel, Guwahati
- > Glorione Plaza Jaipur Tonk Road.
- > Holiday Inn Express Kolkata Airport.





## Branding Process -

The five factors of Branding -

Understanding these following factors are essential to understand the current position of a Brand and how it differentiates itself from its competitors to create a permanent position in the mind of the consumers.

- Brand Attributes.
- Consumer Perception.
- Consumer Expectation.
- Price
- Competitor Attributes.

1. Brand Attributes - This is basically what the brand delivers through features and benefits to consumers.

2. Consumer Expectations - As the name says it. It is what that any demanded company expect to receive from the brand. If group is successful in meeting consumers expectations.

### 3. Competitor attributes -

When we consider brand position, we have to analyse who are competitors and what are they providing in terms of attributes to their consumer.

### 4. Price -

Pricing strategies are very important when it comes to distinction among brands and decision making process.

### 5. Consumer Perceptions -

This is the perceived quality and value of the brand in consumers mind (i.e. does the brand offer the cheap solution, the good value for the money solution, the high-end, high-price, tag solution etc?). PS Group always gives values to their customers and in service marketing customer perception gives you the ultimate business.

## HR Department (Human Resource Department)

The department helps to find out the best people, who can suits with this organization. This department also motivates the employees in various ways.

- a) Recruiting of new employee are their concern.
- b) Training and development of the interns are going in a good way is also their concerns.
- c) Compensation employee benefit, leave and service rules programme and up-gradation.
- d) Placement and Performance appraisal of employees.
- e) Preparing related reports.
- f) Reporting to the Executive committee Board on related matters.



The Recruitment process for quality digital account executive are as follows -

- a) Circulation of opening for digital account executive is circulated among the different departments, daily newspapers and online job sites.
- b) Once the cv is collected, It is screened for the best candidates and they are called for case presentation.
- c) The case is usually provided with real life project topic, where the candidates are given 3 hours to prepare the case and present.
- d) Once the case is presented the candidates are shortlisted.
- e) The shortlisted candidates are called for final interview and the best candidate is chosen among the many.

## Creative Department -

The main goal of creative team is design and execute campaigns that encourage a target audience to buy a company's products or services.

The team is also responsible for creating a consistent brand image for the company through its look, voice and messaging.

Doing this effectively requires each member of the creative team to possess a deep understanding of the client or organizations business goals, target audience, values and vision.

Then they must use all of this information to develop creative ways to package creative and present a new message wheather its an ads, emails websites billboards or a product itself.

## How to manage a creative team-

There are six principal are follows-

The most successful creative team leaders understand the importance of teamwork.

They strive to create a culture of collaboration, accountability and engagement knowing these traits will enable each individual to perform at the highest level.

They achieve this by staying attuned to the needs of each team member and adjusting their leadership style and techniques accordingly.

Here are six principles successful creative team leaders live by

1. Strive to inspire.
2. Lead from back.
3. Ensure guidelines and constraints are clear.
4. Rethink your approach to project management
5. Foster an environment of collaboration not competition.



## Finance Department -

A finance department is the unit of a business responsible for obtaining and handling any monies on behalf of the organization.

The department controls the income and expenditure in addition to ensuring effective business running with minimum disruptions.

Besides the traditional roles of handling the payrolls, income and expenses, finance department responsibilities also include economic analysis to improve key business strategies.

**What does a finance department do?**

A finance department has specific responsibilities to carry out daily. Its primary function includes:

### 1. Accounting -

Daily account record keeping is a finance department function that entails reconciling a company's financial registers to make suitable business decisions.

Through book keeping and income statement preparations the unit supports the management in filing requisite financial data that's useful in managing funds.



## 2. Examining financial statements and reporting

By analyzing a company's financial statement the finance department evaluates economic trends, identifies its future investment and cultivates long-term business plans. It uses and synthesizes financial analysis information to assist in business decision-making.

## 3. Preparing and forecasting budgets

The finance department plans and implements the company's financial year budget.

The department also conducts research and collects data that assists in the organization's temporary and permanent financial forecast. The information is essential in planning and providing informed decisions critical to expansion such as staff training and asset procurement.

## 4. Managing operation systems

The finance department plays a significant part in acquiring, updating and maintaining the latest operations systems to improve efficiency.

A system change may include automation of various functions or digitalization of some organizational systems.

## Production Management And Operations Management -

Production management refers to the application of management principles to the production function in a factory.

It involves application of planning organising, directing and controlling to the production process.

Operation management consists of tactics such as scheduling work, assigning resources including people, equipment, managing inventories, assessing quality standards.

Process type decisions and the sequence for making individual items is a product mix, put it simple.

## Quality Control

Quality of an item refers to the ability of a product to satisfy its intended purpose in relationship to the price.

The function of quality control is an integral part of management control.

Quality control, if it is effectively done, results in many benefits. They are

- (a) It minimise waste
- (b) Reduces cost
- (c) Builds up goodwill of the product in the market.
- (d) facilitates advertising
- (e) Increases sales

The techniques of quality control are:

### 1. Inspection:

Inspection involves checking the product so that it conforms to established standards - in terms of appearance, packaging performance etc. The inspection department of appearance of the company will have to take decisions relating to what to inspect, where to inspect



how much to inspect, how to inspect and when to inspect. Inspection of products may be done by testing the products or measuring them or by looking at them.

Inspection helps in identifying the products which do not conform to established standards and in removing them from the inventory and also in stopping further production of imperfect products.

## 2. Statistical Quality Control (SQC)-

SQC technique is used for the control of quality of the products by the application of theory of probability to the results of examination of samples.

It is concerned with the problem how many items of larger number should be inspected to determine a probability that the quality of the total number conforms to the quality standards determined.

This technique is used because in many instances, it is not possible to test each item of a total group.

Advantages of Statistical Quality Control are:

- (a) It is economical and saves cost.
- (b) It reduces waste of time.
- (c) It helps in determining whether the quality of manufacture is satisfactory.
- (d) It ensures uniformity in the quality of products manufactured.

## Logistics Department -

Logistics management is that part of the supply chain which plans, implements and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customer's requirements.

Logistics Department help you select through tenders the right logistics and transportation subcontractors to partner with for your outsourced logistics platform.

We excel in distribution, warehousing, reverse logistics, logistics platform vendors consolidation, multisite logistics platform vendors managed inventory.

Warehousing and distribution, we also help you choose structure and implement your transportation need in all models of transportation.



## Internship Period Activities:-

I worked on. Postare marketing which for retailer is very important. I had lots of different tasks which I had to deal with. I was assigned to the following Jobs regularly that were

- Interacting with clients.
- Taking brief and feedback from client.
- Giving client brief to the creative and following up with them.
- updating job list at the end of the day.
- making estimates of the cost and taking approval from client.
- make a client base
- call that client and fix meeting if possible.
- Tell them about products.
- Convince them for permanent customer.

For me it has been really beneficial. It is given me great insight into marketing and its made me realise that I want to go into it.

## SWOT ANALYSIS-

The description below analysis DS Group internal strengths, weaknesses, external opportunities and threats. This has been prepared based on their performance since their existence in the country and some companies are taken into consideration as immediate competitors.

### ● Strengths -

- \* Young enthusiastic workforce.
- \* Reputation for having no hidden charges.
- \* Strong brand image.

### ● Weaknesses -

- \* Narrow Operating span.
- \* Centralised decision making.
- \* Limited number of manpower.

### • Opportunities -

- \* Growing upper class customers.
- \* Better Marketing approach by other local and foreign companies.
- \* Growing need for websites and social media marketing.

### • Threads -

- \* Cost of service is high.
- \* Increased number of competitors.
- \* Speed of internet connection.



## Conclusion -

DS Group is overall a very good organization to start a career as it gives one huge scope of work. Also their pay scale is good. Moreover, their reputation in market is significantly high and their clients are relatively high and their clients are relatively very happy by the service they get from DS Group.

This makes the organization more sustainable in market and gives it the opportunity to retain the market lead.

Also the highest authorities are very friendly and they have the mentality to hear from the employee all the time.

This means their door is always open for any level of people working in the organization. Due to this behaviour the employee turnover rate is very less in the organization.

I am very happy to have an organization like DS Group as my Internship. I wish DS Group the best for their future.

## Recommendation-

Market Operations should conduct a team meeting every week so that the employees can know each other well.

Head of the department will get an overview how the every departments are doing which will increase the level of team work.

They could carry out activities from time to time in order to understand what the potential customers want from them.