Chapter 1 :

WWW :

The **World Wide Web** (**WWW**), commonly known as the **Web**, is an information system where documents and other web resources are identified by Uniform Resource Locators (URLs, such as `https://example.com/`), which may be interlinked by hyperlinks, and are accessible over the Internet.

www.google.com

Www = Host name
Google = Second Level Domain
.com = Top Level Domain

Client Server Architecture : (Two Tiered Architecture)

- The client requests for the centralized server for the data.
- Usually clients are personal computers and servers are located somewhere in the network.

Three Tiered Architecture:

- Similar to Two tiered architecture where there is arrangement of client and servers but in this architecture it includes application logic in between client and server.
- Commonly a gateway between client and server to make request and response more secure and give limited access to the system and resources. (allowing certain degree of interaction)

URI (Uniform Resource Identifier) :

A string of characters that is used to identify names or resources.
Two types:
URL and URN

URL (Uniform Resource Locator) : It is the address of the resource where it is located.
URN (Uniform Resource Name) : It is the actual name of the resource.

Protocols

HTTP (HyperText Transfer Protocol):

- Protocol used for making communication between browser and server for web files.
- Consists of Two Phase : request and response.
- Also known as stateless protocol. Because it does not store the request and response information with it. Different connections should be established for each request.

HTTPS(Hypertext Transfer Protocol Secure):

- A secure version of HTTP protocol
- Helps to encrypt data while sending & receiving.
- By Default, HTTPS uses 443 port whereas HTTP uses port 80

POP (Post office Protocol):

- Pop is an email application protocol that is used to retrieve email from an email server for the clients.
- It is different from IMAP, because POP doesn't keep sync of the emails while IMAP does.
- The latest version of this protocol is POP3.

SMTP (Simple Mail Transfer Protocol):

- It is used for transferring emails.

FTP (File Transfer Protocol):

- It is used for transferring files over the internet.

WAP (Wireless Application Protocol);

- It is used for Communication for wireless devices to the internet.

Internet Message Access Protocol (IMAP)

- It is a mail protocol used for accessing email on a remote web server from a local client.

Multipurpose Internet Mail Extensions (MIME):

It is a widely used internet standard for web browser and email system in order to identify the types of file. So, once the type of file is identified, the web browser renders it using its own rendering tools.

Mimes are set by the server and sent to the browser.

Mime Headers

Mime-version: Indicates the version of Mime used
Content-type: text/html,text/xml, application/xhtml+xml, video/mp4
Content-description : description or data of the content
Content-id :
Content-transfer-encoding: gzip, binary, base64

Chapter 2 : HTML

Tags:

Meta tags : Are used to provide additional information to the document.

Anchor Targets:

1. _blank : Opens in a new tab.
   <a href=”” target=”_blank”>
2. _self : opens in same tab.. (default)
3. _parent: opens the document in the parent frame.
4. Framename : opens document in that frame.

Empty HTML Elements

HTML elements with no content are called empty elements.

<br> is an empty element without a closing tag (the <br> tag defines a line break).

Empty elements can be "closed" in the opening tag like this: <br />.

Image maps :

An image with certain portions of clickable areas are image maps.

Example

```
<img src="workplace.jpg" alt="Workplace" usemap="#workmap">
<map name="workmap">
<area shape="rect" coords="34,44,270,350" alt="Computer" href="computer.htm">
<area shape="rect" coords="290,172,333,250" alt="Phone" href="phone.htm">
<area shape="circle" coords="337,300,44" alt="Coffee" href="coffee.htm">
</map>
```

The coords attribute specifies the coordinates of an area in an image-map.
x1,y1,x2,y2 : Specifies the coordinates of the top-left and bottom-right corner of the rectangle (shape="rect")
x,y,radius: Specifies the coordinates of the circle center and the radius (shape="circle")

For Collapsed table :

```
<table cellspacing=”0”>
OR
<table style=”border-collapse:collapse”>
```

Spans :
Rowspan = upside
Colspan = siddha

Table less design and table-based design.

Tableless web design (or **tableless web layout**) is a web design method that avoids the use of HTML tables for page layout control purposes. Instead of HTML tables, style sheet languages such as Cascading Style Sheets (CSS) are used to arrange elements and text on a web page.

Frames
From Frames, we can display more than one document at a time in the browser window.
Now it's obsolete, iframe is used instead of frame.
Iframe = inline frame.

```
<frameset cols=”20%,*”>
        <frame src=”a.html” name=”sidebar” />
        <frame src=”b.html” name=”container/>
</frameset>
```

HTML Multimedia
Different multimedia format s:
Video : mov, webm, mp4, avi (made by microsoft)
Audio : Mp3, ogg, wav
Flash : swf, flv

Img : `<img src=”” alt=””/>`

Video:

```
<video>
        <source src=”a.mp4” type=”video/mp4”>
</video>
```

Audio :

```
<audio controls>
        <source src=”b.mp3” type=”audio/mp3”>
</audio>
```

Flash Players:
We can make use of object or embed tags.

```
<object width=”400” height=”500” data=”animation.swf” ></object>
```

Or

```
<embed width=”400” height=”200”  src=”bookmark.swf”>
```

XHTML

More stricter version of html.

Rules:
Elements should be properly nested.
Elements must always be closed.
Elements should be in lowercase.
Attribute name should be in lowercase.
Attribute values should be quoted.
Attribute minimization is forbidden (ex: selected = “selected”)

What determines if the document is HTML or XHTML?

Mime type separates the type of document
If Mime = text/html   = > html page.
If Mime = application/xhtml+xml or text/xml   => xhtml page.

Chapter 3 - CSS

Inline CSS : (Lowest Level)

Advantage:
Useful if you want to test, debug and preview changes faster in web pages.
Inline CSS have precedence over Internal and external style sheets

Disadvantage:
Each tag has to be styled individually
Overriding of CSS property may occur at times.
Cannot re-use the same styles to others.
Difficult to apply pseudo classes to the style.

Internal CSS : (Document Level)

Advantage:
Only one page is affected by stylesheet
No need to upload multiple files on the server.
Internal CSS have precedence over external style sheets

Disadvantage:
Increase Page load time
Increased file size.
Not useful, if we want to use that same CSS code on other pages.

External CSS : (Highest Level)

Most convenient way of writing CSS code.
Also @import can be used.

Advantages:
Clean Code & Web Page Structure
Small size of html files.
Faster Loading speed of pages.
Same .css file can be used in multiple pages

Disadvantages:
Until the external css file is loaded, the page is not rendered correctly.
Not useful for small pieces of css codes.

CSS Selectors

1. Element Selector
   p { text-align: center; color: red; }

2. Class Selector
3. Id selector
4. Universal selector
   *{}
5. Generic selector
   h1.student{}
6. Pseudo Selectors : Pseudo classes are styles that apply when something happens, rather than because the target element simply exists.
   Example : input:hover{} input:focus{} a:hover{}

Font Properties:

Font-family, font-size
Font-variant: normal | small-caps
Font-style: normal | italic
Font-weight: normal | bold | bolder

Shorthand : font : bold 14px ‘Times New Roman’

Text-decoration : none, underline, overline, line-through,

Chapter 4 : JavaScript

JavaScript (JS) is an object-oriented scripting language that enables us to create interactive effects on web pages.

It is one of the three core technologies of World Wide Web Engineering:
1. HTML defines the content of web pages.
2. CSS specifies the layout of web pages.
3. JavaScript programs the behavior of web pages.

JavaScript is not a pure object oriented programming language but it a object based programming language
Interpreted, Case Sensitive.
Loosely typed (dynamic typed)

Disadvantages of client side programming:

1. Do Not allow file handlings.
2. Can’t support networking handling applications.
3. Doesn’t have threadings feature support.

Common uses of JavaScript :

1. Data (Form) Validations
2. Event Handlings
3. DOM Manipulations
4. Drag-Drop
5. Other interactive Features

Primitive DataTypes in JS:
Number, String , Boolean, Null, Undefined.

In JavaScript, a variable without a value, has the value undefined
var data;

Dialog Boxes :

alert()

confirm()
Ok click = returns true
Cancel click = returns false

prompt()
Ok click = imputed value
Cancel click = null

Arrays:

Push -= adds to the end of array
Pop = removes the last element of array
Unshift = add element to first of array
Shift = remove the first element
Concat = to add two arrays
Join = joins array elements.. And converts to string.
Example : var a = [“a”,”b”].   Var d = a.join(“-”)   output: a-b

JS Pattern Matching

String.search(regularExpression)

If found , returns the index of the first match..
If not found returns -1

Syntax: /pattern/modifiers;

: replace()
    replace(/regularExp/,”kesle replace garne”);

:match()
    Returns array of information if found
    Else returns null on mismatch.

DOM (Document Object Model)

- It is the graphical representation of the structure of HTML or XHTML documents. It is a logical structure and helps programmers to access and manipulate from its model.
- All the information are represented in tree like structure

- The DOM is W3C standard.
- When a web page is loaded, the browser creates a Document Object Model of the page.

And give one Example of DOM

Way of accessing DOM elements : (functions list)

- By Tag Name : document.getElementsByTagName
- By Element Name : document.getElementsByName(“p2”);
- By ID : document.getElementById("id1”);
- By Class Name : document.getElementsByClassName
- By Query Selector : document.querySelector();

DOM Versions

1.1 Level 0 DOM — DOM0
Level 0 DOM is divided into two:

One is to write the onclick event in the label
The second is to write onclick=function(){} function in JS

1）

```
<input type="button" onclick="alert(0);" />
```

2）

```
<script>
  var btn = document.getElementsByClassName('button');
  btn.onclick = function(){
    alert(0);
  }
</script>
```

Level 2 DOM (DOM2):

We attach and remove the event as per requirement.

btn.addEventListener(‘click’,function,false)

The first parameter is the event name (such as click, IE is onclick);
The second parameter is the event handler function;
If the third parameter is true It means that it is called during the capture phase as false Indicates that it is called during the bubbling phase.

With bubbling, the event is first captured and handled by the innermost element and then propagated to outer elements.

With capturing, the event is first captured by the outermost element and propagated to the inner elements.

Example:

```
<div id="box">click me</div>
<script>
      var box = document.getElementById('box');
      box.addEventListener('click', fun1,false);
      box.addEventListener('click', fun2,false);
      function fun1() {
            console.log('method 1');
      }
      function fun2() {
            console.log('Method 2');
      }
      // Implementation method 1 // Implementation method 2

      // delete event
      box.removeEventListener('click', fun1, false)
</script>
```

DOM 3 :

The DOM3 level event adds more event types to the DOM2 level event. All types are as follows:

THERE is no DOM1 version.

JS EVENTS

Event : An Event is an action that is triggered by mouse movements, key press, window resize or any other activities. In javascript an event is also an object which is implicitly executed as response to some activity.

Event Handling : Event Handling is a script, which is responsible for doing some action after the occurrence of the event.

Mouse Events:

event.clientX, event.clientY = document ko
event.screenX, event.screenY = screen ko

CSS Position :

Default position : static

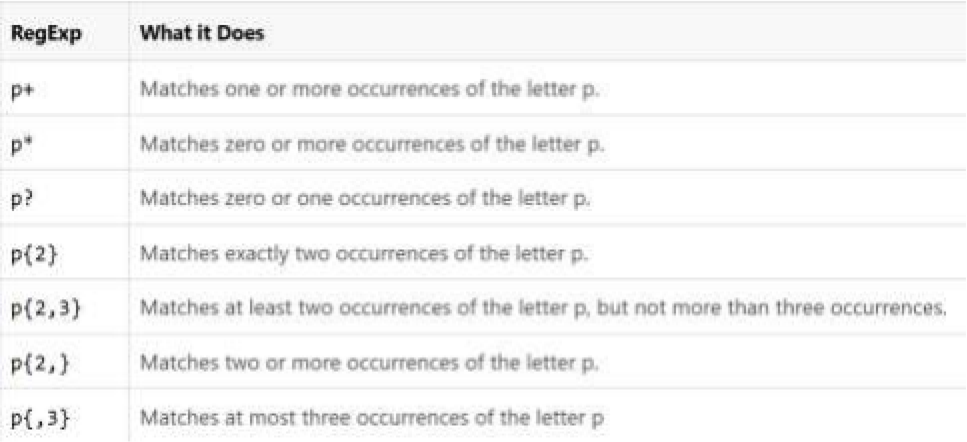
Visibility :

Display : block , none, inline
Visibility : visible, hidden

Display none le place ligdena
Visibility none le not visible banacha but it takes place.

Email validation :

abc@gmail.com (/^\w+@\w+\.\[a-Z]{2,3}$/)



RegExp	What it Does
p+	Matches one or more occurrences of the letter p.
p*	Matches zero or more occurrences of the letter p.
p?	Matches zero or one occurrences of the letter p.
p{2}	Matches exactly two occurrences of the letter p.
p{2,3}	Matches at least two occurrences of the letter p, but not more than three occurrences.
p{2,}	Matches two or more occurrences of the letter p.
p{,3}	Matches at most three occurrences of the letter p

Chapter -5 : PHP MYSQL

Use of PHP :

- Form Handling
- Database Connection. (Storing of Data)
- Creating Dynamic Pages.
- File Read & Write
- For Making Desktop Applications (PHP GTK) & Web Applications.
- For Command Line Scriptings (Cron Jobs)
- Can Work for Network related Applications

PHP is server side language because php requires server to run a code. Code of php get executed on the server and the result of execution is returned to the browser. That's why php is called script language and server side language.

PHP Arrays

```
$cars = [];
$cars = array();
$cars[0] = ;
```

Types:

1. Indexed Array or Numeric Array
2. Associative Array
3. Multi Dimensional array

Array Functions:

Implode : makes string from array
Example : $data = (“I”,”have”,”money”);
implode(“ ”,$data);   //implode(kesley_garne_implode,array);
Output: I have money

Explode: makes array from string
Example: $data = “i have money”;
explode(“ “,$data); //explode(kelsley_garne_explode,string);
Output: Array([0]=>I,[1]=>have)

array_keys($array);

```
        array_values($arrray);

        sort($array)   : sort an array in ascending order
        shuffle($array) : shuffles the elements of array.
        count($array): gives the length of array
        array_push(‘data’,$array)
        array_pop($array);
```

Foreach vs each..

```
foreach($array as $key=>$value){

        //gives key and value by one by one
}
```

Each

```
//gives first index
$data = each($array); //gives one index at at time.

//gives second index
$data = each($array);//gives second wala
```

Pattern Matching PHP

preg_match(regularExpressions, $data)

Returns true if matched. Else return false.

preg_split(regularExpression,” “);

Splits the string into array by that matched pattern.

preg_replace(regularExpression, replacingText, String);

Get and Post differences:

GET	POST
Less secure.. As data appears on url address	More secure.. Doesnot appear on address bar

bar	
Limited data can be sent.. As they appear on url address bar (URL length : 2048 letters)	Unlimited amount of data can be sent.
Get request are saved in browser history	Post request are not saved in browser history
Possible to bookmark page	Not possible to bookmark page.

Super Global Variables:

$_SERVER
    $_SERVER[“PHP_SELF”] : refers to current page.
    $_SERVER[‘REQUEST_METHOD’] // POST or GET

$_COOKIE

Cookies

To store small pieces of information . Usually in key pair value format in string types.

Is stored in Client side , in browser

Can store upto 4kb

Why Cookies ?

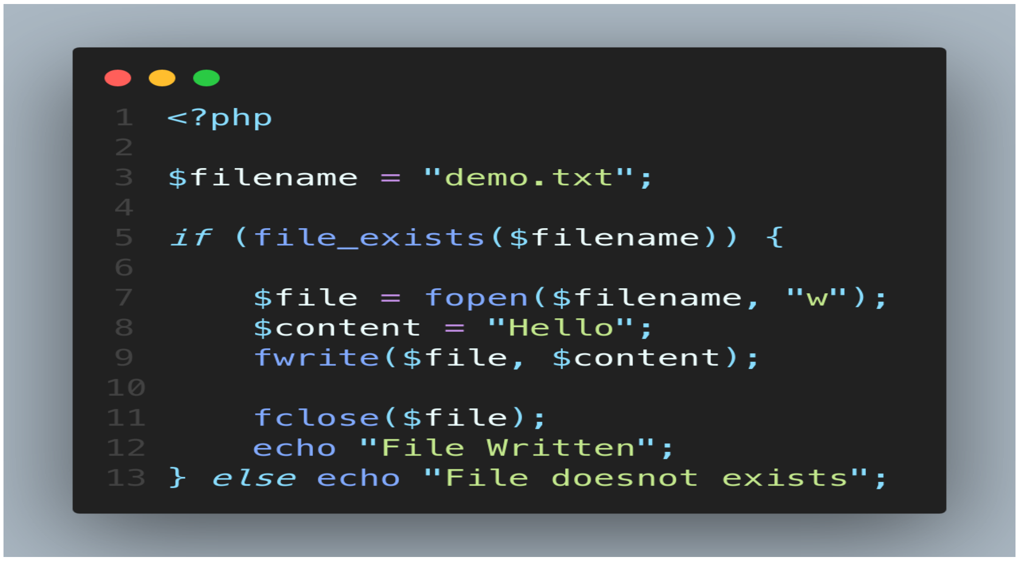
To track the state of user
For personalizing user experience.
To track the website visits

Set cookie :
Basic syntax: setcookie(cookie_name, cookie_value, [expiry_time]);

```
<?php
setcookie("user_name", "xyz", time()+3600); //setting cookie for 1 hour
echo "The user name is" . $_COOKIE["user_name"]; //accessing cookie value
setcookie("user_name", "xyz", time()-3600); //deleting cookie
?>
```

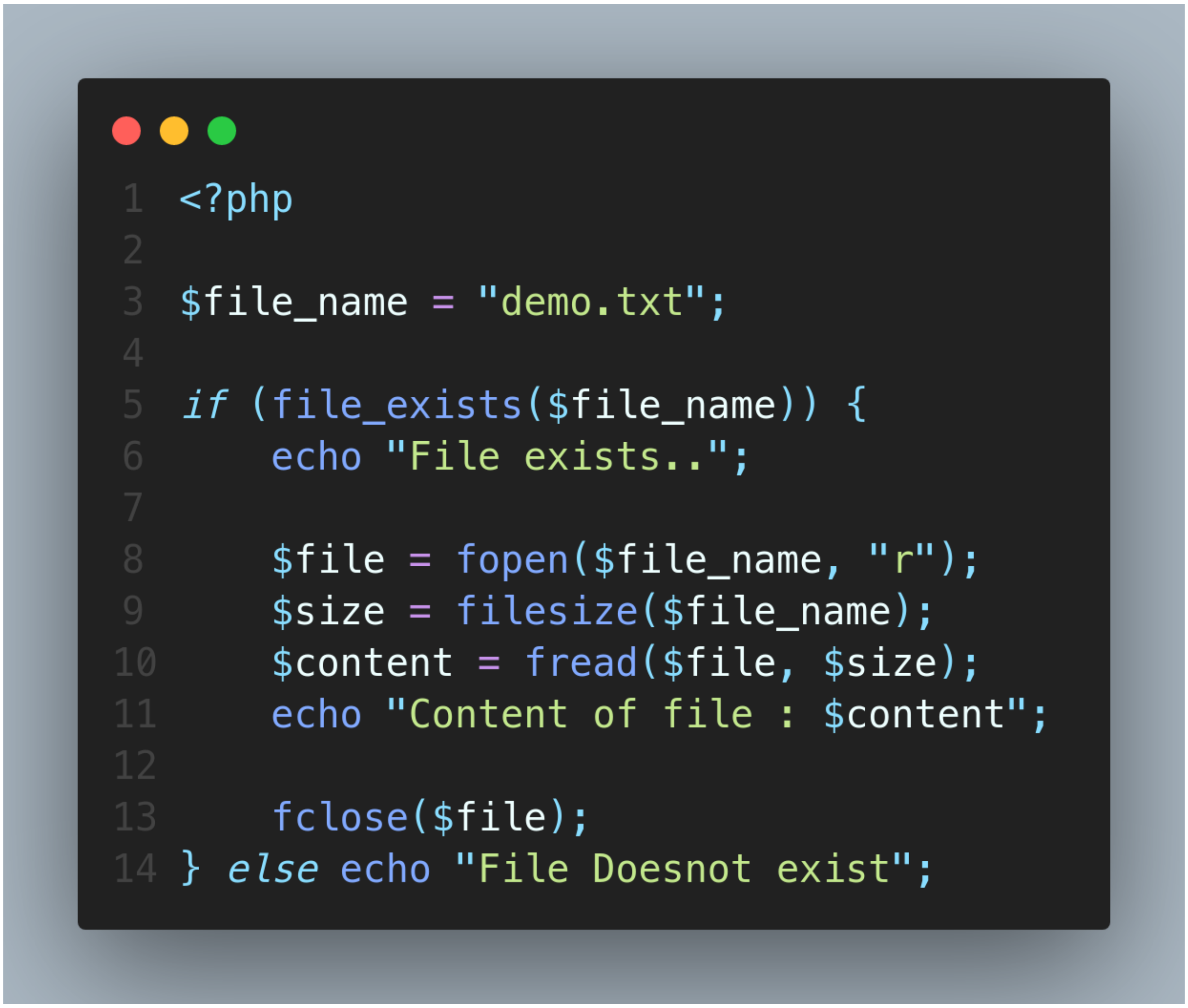
File Handling

Writing to a file:



```php
<?php

$filename = "demo.txt";

if (file_exists($filename)) {

    $file = fopen($filename, "w");
    $content = "Hello";
    fwrite($file, $content);

    fclose($file);
    echo "File Written";
} else echo "File doesnot exists";
```

Reading file :



```php
<?php

$file_name = "demo.txt";

if (file_exists($file_name)) {
    echo "File exists..";

    $file = fopen($file_name, "r");
    $size = filesize($file_name);
    $content = fread($file, $size);
    echo "Content of file : $content";

    fclose($file);
} else echo "File Doesnot exist";
```

Deleting a file:

unlink($file_name);

PHP & MYSQL

```
$con = mysqli_connect(localhost,username,password);

if($con){
        $query = “CREATE DATABASE bank”;
        $result = mysqli_query($con,$query);

        if($result){
                Echo “Database created successfully “;

                $db = mysqli_select_db($con,”bank”);
                if($db){
                        $
                }
        }
Else echo mysqli_error($con);
}
Else echo “Error connecting to mysql ”. mysqli_connect_error();
```

SQL JOINS

Join clause is used to combine rows of two or more tables if they have column associated.

Types of Join :

1. INNER JOIN
2. LEFT JOIN
3. RIGHT JOIN
4. FULL OUTER JOIN

Let us consider the following table :

id	country
1	Nepal
2	India
3	USA

Table : country

Table country_code

INNER JOIN:

```
SELECT * from country INNER JOIN country_code on country.id=country_code.id;
```

LEFT JOIN:

```
SELECT * FROM country LEFT JOIN country_code on country.id=country_code.id;
```

RIGHT JOIN:

```
SELECT * FROM country RIGHT JOIN country_code on country.id = country_code.id;
```

FULL OUTER JOIN:

```
SELECT * FROM country FULL OUTER JOIN country_code ON country.id=country_code.id
```