MAA OMWATI DEGREE COLLEGE HASSANPUR

(PALWAL)

NOTES

BCA 1ST SEM

INTERNET & WEB DESIGN

Internet & Web Design Notes

Unit-1

Introduction to Internet:-

Internet is a group of computer systems connected from all around the world. The Internet protocol suite is a framework defined through the Internet standards. Methods are divided right into a layered set of protocols on this architecture. The Internet gives a huge variety of statistics and communique offerings, which includes forums, databases, email, and hypertext. It is made of the neighborhood to global personal, public networks connected through plenty of digital, wireless, and networking technologies.

Working of the internet: The internet is a global computer network that connects various devices and sends a lot of information and media. It uses an Internet Protocol (IP) and Transport Control Protocol (TCP)-based packet routing network. TCP and IP work together to ensure that data transmission across the internet is consistent and reliable, regardless of the device or location. Data is delivered across the internet in the form of messages and packets. A message is a piece of data delivered over the internet, but before it is sent, it is broken down into smaller pieces known as packets.

IP is a set of rules that control how data is transmitted from one computer to another via the internet. The IP system receives further instructions on how the data should be transferred using a numerical address (IP Address). The TCP is used with IP to ensure that data is transferred in a secure and reliable manner. This ensures that no packets are lost, that packets are reassembled in the correct order, and that there is no delay that degrades data quality.

History of Internet

Talking about the **history of internet**, the ARPANET (Advanced Research Projects Agency Network, later renamed the internet) established a successful link between the University of California Los Angeles and the Stanford Research Institute on October 29, 1969. Libraries automate and network catalogs outside of ARPANET in the late 1960s.

TCP/IP (Transmission Control Protocol and Internet Protocol) is established in the 1970s, allowing internet technology to mature. The development of these protocols aided in the standardization of how data was sent and received via the internet. NSFNET (National Science Foundation Network), the 56 Kbps backbone of the internet, was financed by the National Science Foundation in 1986. Because government monies were being used to administer and maintain it, there were commercial restrictions in place at the time.

In the year 1991, a user-friendly internet interface was developed. Delphi was the first national commercial online service to offer internet connectivity in July 1992. Later in May 1995, All restrictions on commercial usage of the internet are lifted. As a result, the internet has been able to diversify and grow swiftly. Wi-Fi was first introduced in 1997. The year is 1998, and Windows 98 is released. Smartphone use is widespread in 2007. The 4G network is launched in 2009. The internet is used by 3 billion people nowadays. By 2030, there are expected to be 7.5 billion internet users and 500 billion devices linked to the internet.

Uses of the Internet:

- **E-mail:** E-mail is an electronic message sent across a network from one computer user to one or more recipients. It refers to the internet services in which messages are sent from and received by servers.

- **Web Chat:** Web chat is an application that allows you to send and receive messages in real-time with others. By using Internet chat software, the user can log on to specific websites and talk with a variety of other users online. Chat software is interactive software that allows users to enter comments in one window and receive responses from others who are using the same software in another window.

- **World Wide Web:** The World Wide Web is the Internet's most popular information exchange service. It provides users with access to a large number of documents that are linked together using hypertext or hyperlinks.

- **E-commerce:** E-commerce refers to electronic business transactions made over the Internet. It encompasses a wide range of product and service-related online business activities.

- **Internet telephony:** The technique that converts analog speech impulses into digital signals and routes them through packet-switched networks of the internet is known as internet telephony.

- **Video conferencing:** The term "video conferencing" refers to the use of voice and images to communicate amongst users.

Web Client

The client (or user) side of the Internet. The Web browser on the user's computer or mobile device is referred to as a Web client. It could also apply to browser extensions and helper software that improve the browser's ability to support specific site services.

Web browser

A web browser is a software program software that searches for, retrieves, and presentations material which includes Web pages, photos, videos, and different files. The browser sends a request to the Webserver, which then transmits the statistics returned to the browser, which presentations the findings at the laptop. Example – Mozilla Firefox, Microsoft Edge, Google Chrome, Safari etc.

Webpage

An internet web page (additionally called a web page) is a report that may be regarded in an internet browser at the World Wide Web. HTML (HyperText Markup Language) and CSS (Cascading Style Sheet) are used to generate the primary shape of an internet web page. An internet web page is generally a segment of an internet site that carries statistics in plenty of formats, which includes textual content inside the shape of paragraphs, lists, tables, and so on.

The home web page is the beginning or first web page of an internet site. It gives trendy statistics and connections to all the internet pages which are associated. Every internet web page has its personal deal with. This may be visible withinside the deal with the bar. As a result, if we need to get admission to a selected internet web page, the deal needs to be placed inside the browser's deal with bar.

Website

An internet site, in trendy, is a group of statistics approximately statistics prepared into many internet pages. An internet site is probably made for a sure motive, subject matter, or to provide a service. An internet site (abbreviated as

"website" or "site") is a group of online pages connected collectively through links and saved on an internet server. By clicking on links, a tourist can pass from one web page to the next. An internet site's pages also are connected below one area call and proportion a not unusual place subject matter and template.

Search Engine

Search engines are websites that search on the internet on behalf of users and show a listing of results. More than actually written may be discovered on seek engines. You can be capable of looking for different online content material which includes photographs, video content material, books, and news, in addition to gadgets and offerings, relying on the seek engine you are the use of.

What is WWW?

WWW stands for World Wide Web and is commonly known as the Web. The WWW was started by CERN in 1989. WWW is defined as the collection of different websites around the world, containing different information shared via local servers(or computers).

Web pages are linked together using hyperlinks which are HTML-formatted and, also referred to as hypertext, these are the fundamental units of the Internet and are accessed through Hypertext Transfer Protocol(HTTP). Such digital connections, or links, allow users to easily access desired information by connecting relevant pieces of information. The benefit of hypertext is it allows you to pick a word or phrase from the text and click on other sites that have more information about it.

History of the WWW

It is a project created, by Tim Berner Lee in 1989, for researchers to work together effectively at CERN. It is an organization, named the World Wide Web Consortium (W3C), which was developed for further development of the web. This organization is directed by Tim Berner's Lee, aka the father of the web. CERN, where Tim Berners worked, is a community of more than 1700 researchers from more than 100 countries. These researchers spend a little time on CERN and the rest of the time they work at their colleges and national research facilities in their home country, so there was a requirement for solid communication so that they can exchange data.

Features of WWW

- WWW is open source.
- It is a distributed system spread across various websites.
- It is a Hypertext Information System.
- It is Cross-Platform.
- Uses Web Browsers to provide a single interface for many services.
- Dynamic, Interactive and Evolving.

Components of the Web

There are 3 components of the web:

- **Uniform Resource Locator (URL): URL** serves as a system for resources on the web.
- **Hyper Text Transfer Protocol (HTTP): HTTP** specifies communication of browser and server.
- **Hyper Text Markup Language (HTML): HTML** defines the structure, organisation and content of a web page.

Domain Name System

The Domain Name System (DNS) is like the internet's phone book. It helps you find websites by translating easy-to-remember names (like www.example.com) into the numerical IP addresses (like 192.0.2.1) that computers use to locate each other on the internet. Without DNS, you would have to remember long strings of numbers to visit your favorite websites.

Domain Name System (DNS) is a hostname used for **IP address** translation services. DNS is a distributed database implemented in a hierarchy of name servers. It is an application layer protocol for message exchange between clients and servers. It is required for the functioning of the Internet.

What is the Need for DNS?

Every host is identified by the IP address but remembering numbers is very difficult for people also the IP addresses are not static therefore a mapping is

required to change the domain name to the IP address. So DNS is used to convert the domain name of the websites to their numerical IP address.

HTTP Full Form

HTTP stands for **HyperText Transfer Protocol**. It is the main way web browsers and servers communicate to share information on the internet. Tim Berner invents it. HyperText is the type of text that is specially coded with the help of some standard coding language called **HyperText Markup Language (HTML)**. **HTTP/2** is the new version of HTTP. HTTP/3 is the latest version of HTTP, which is published in 2022.

When you visit a website, HTTP helps your browser request and receive the data needed to display the web pages you see. It is a fundamental part of how the internet works, making it possible for us to browse and interact with websites.

What is a Webcast?

webcast is a one-way online broadcast that streams audio, video or content to audience over the internet. In a webcast, there is typically limited or no interaction between presenter(s) and audience. The Webcasts are often used for the broadcasting large events, conferences or presentations to wide and potentially large audience.

Web Server: Web server is a program which processes the network requests of the users and serves them with files that create web pages. This exchange takes place using Hypertext Transfer Protocol (HTTP).

Unit-2

Web Publishing and HTML Basics

1. Hosting Your Site

What is Hosting?

Hosting involves storing your website's files on a server that makes them accessible on the internet. Hosting is provided by companies called **web hosting service providers**.

Types of Web Hosting

- **Shared Hosting**: Multiple websites share resources on the same server.

- **Dedicated Hosting**: A single server is entirely dedicated to one website.

- **Virtual Private Server (VPS)**: A virtualized server offering dedicated resources.

- **Cloud Hosting**: Scalable hosting using a network of servers.

Steps to Host a Website

1. Choose a domain name (e.g., www.example.com).

2. Select a hosting provider (e.g., Bluehost, HostGator, AWS).

3. Upload your website files to the server using an FTP client (e.g., FileZilla) or the hosting provider's control panel.

2. Internet Service Provider (ISP)

An **Internet Service Provider (ISP)** is a company that provides internet connectivity. ISPs play a vital role in web publishing by enabling:

- Access to hosting services.

- Domain registration.

- Hosting packages with email and website management features.

3. Phases of Planning and Designing Your Website

1. **Define Purpose and Goals**
   - Identify the website's objectives (e.g., blog, portfolio, e-commerce).
   - Understand the needs of the target audience.

2. **Research and Inspiration**
   - Analyze competitors' websites.
   - Choose design trends suitable for your purpose.

3. **Structure and Layout**
   - Create a sitemap to plan page hierarchy.
   - Sketch wireframes or mockups of your pages.

4. **Choose Tools and Technology**
   - Select web development tools: HTML, CSS, JavaScript for frontend; PHP, Node.js for backend.
   - Use platforms like WordPress or custom-built solutions.

5. **Content Creation**
   - Develop high-quality text, images, and media.
   - Ensure content is SEO-friendly.

6. **Testing and Launch**
   - Test for usability, responsiveness, and cross-browser compatibility.
   - Deploy the website on a hosting platform.

4. Steps for Developing Your Website

1. **Select a Domain Name**
   - Unique and memorable (e.g., www.example.com).

2. **Choose Hosting**
   - Pick a hosting service that meets your requirements.

3. **Develop Content**
   - Write content for pages like the homepage, About Us, and Services.

4. **Design Web Pages**

   - Use tools like Figma for design or HTML and CSS for coding.

5. **Add Functionality**

   - Implement forms, interactive elements, or animations using JavaScript.

6. **Test and Launch**

   - Check for bugs and launch the website for public access.

5. Choosing the Contents

- **Text**: Informative, engaging, and SEO-optimized.

- **Images and Graphics**: High-resolution and relevant to the content.

- **Videos**: Tutorials, walkthroughs, or promotional clips.

- **Interactive Elements**: Forms, live chat, or feedback sections.

- **Call-to-Actions (CTAs)**: Buttons like "Buy Now" or "Subscribe."

6. Introduction to HTML

What is HTML?

HTML (Hypertext Markup Language) is the standard language for creating and structuring web pages.

What is Hypertext?

Hypertext refers to text that links to other text or resources, enabling navigation.

HTML Document Features

- Begins with <!DOCTYPE html> declaration.

- Contains elements like <html>, <head>, and <body>.

Example of an HTML Document:

<!DOCTYPE html>

```
<html>

<head>

    <title>My Website</title>

</head>

<body>

    <h1>Welcome to My Website</h1>

    <p>This is a simple HTML document.</p>

</body>

</html>
```

7. HTML Command Tags

Headers

Used to define headings, from <h1> (largest) to <h6> (smallest). **Example**:

html

Copy code

```
<h1>Main Heading</h1>

<h2>Subheading</h2>
```

Text Styles

- **Bold**: Text or Text

- **Italic**: <i>Text</i> or Text
  Example:

html

Copy code

```
<p>This is <b>bold</b> and <i>italic</i> text.</p>
```

Text Structuring

- **Paragraphs**: <p>

- **Line Breaks**:

- **Lists**:

    - **Ordered List**: Item

    - **Unordered List**: Item

Text Colors

Set text colors using the style attribute or CSS.
Example:

html

Copy code

<p style="color: red;">This text is red.</p>

Formatting Text

- **Underline**: <u>Text</u>

- **Strikethrough**: <s>Text</s>

- **Subscript**: _{Text}

- **Superscript**: ^{Text}

Unit-3

HTML Basics: Lists, Tables, Images, Links, Forms, and Page Layouts

1. Lists in HTML

Lists are used to organize content in a structured format.

a. Ordered Lists

An **ordered list** (<ol>) displays items in a numbered sequence.

Syntax:

   Item 1

   Item 2

   Item 3

Output:

1. Item 1
2. Item 2
3. Item 3

b. Unordered Lists

An **unordered list** (<ul>) displays items with bullets.

Syntax:

   Item A

   Item B

   Item C

Output:

- Item A

- Item B

- Item C

2. Tables in HTML

Tables allow data to be organized in rows and columns.

Basic Table Syntax:

```html
<table border="1">
  <tr>
    <th>Header 1</th>
    <th>Header 2</th>
  </tr>
  <tr>
    <td>Data 1</td>
    <td>Data 2</td>
  </tr>
</table>
```

Output:

 Header 1 Header 2

 Data 1   Data 2

Table Layouts

- **Adding a caption**:

```html
<table>
  <caption>Table Title</caption>
</table>
```

- **Rowspan and Colspan** for merging cells:

```
<table border="1">

  <tr>

    <td rowspan="2">Merged Row</td>

    <td>Cell 1</td>

  </tr>

  <tr>

    <td>Cell 2</td>

  </tr>

</table>
```

3. Images in HTML

Images enhance visual appeal by embedding graphics.

Syntax:

```
<img src="image.jpg" alt="Description" width="300" height="200">
```

- **src**: Path to the image file.

- **alt**: Text displayed if the image fails to load.

- **width and height**: Set image dimensions.

4. Frames in HTML

Frames divide a web page into multiple sections.

Basic Syntax:

```
<frameset cols="50%,50%">

  <frame src="page1.html">

  <frame src="page2.html">

</frameset>
```

Note: Frames are outdated. Use **CSS Flexbox** or **Grid** for modern layouts.

5. Links in HTML

Hyperlinks connect to other pages or sections.

Syntax:

Visit Example

- **href**: Specifies the URL.

- **target="_blank"**: Opens the link in a new tab.

Creating Anchor Links (within the same page):

Go to Section 1

<h2 id="section1">Section 1</h2>

6. Forms in HTML

Forms allow user interaction by collecting input.

Form Syntax:

<form action="submit.php" method="post">

  <input type="text" name="username" placeholder="Enter Username">

  <input type="submit" value="Submit">

</form>

Common Form Elements:

- **Text Box**:

<input type="text" name="name">

- **Radio Buttons**:

<input type="radio" name="gender" value="male"> Male

<input type="radio" name="gender" value="female"> Female

- **Checkboxes**:

```
<input type="checkbox" name="subscribe"> Subscribe to Newsletter
```

- **Dropdown Menu**:

```
<select name="country">
   <option value="us">United States</option>
   <option value="uk">United Kingdom</option>
</select>
```

Advanced Form Features:

- **Validation**:

```
<input type="email" name="email" required>
```

- **Buttons**:

```
<button type="button">Click Me</button>
```

7. Page Layouts in HTML

Page layouts define the structure and placement of content.

CSS-Based Layouts:

- **Using Divs and CSS**:

```
<div style="display: flex;">
   <div style="flex: 1;">Left Column</div>
   <div style="flex: 2;">Main Content</div>
</div>
```

Modern Layout Techniques:

- **CSS Grid**:

```
<div style="display: grid; grid-template-columns: 1fr 2fr;">
   <div>Left Column</div>
```

```
    <div>Main Content</div>
</div>
```

- **CSS Flexbox**:

```
<div style="display: flex;">
    <div style="flex: 1;">Box 1</div>
    <div style="flex: 1;">Box 2</div>
</div>
```

Unit-4

CSS Basics: Concepts, Properties, and Applications

1. Introduction to CSS

CSS (**Cascading Style Sheets**) is used to style HTML documents, controlling the layout, colors, fonts, and other visual elements.

Key Concepts

- **Selectors**: Define the HTML elements to style.
    - Example: p, .class, #id
- **Properties**: Define what aspect of the element to style (e.g., color, font-size).
- **Values**: Specify the value for a property.
    - Example: color: blue;

CSS Syntax

```
selector {
    property: value;
}
```

Example:

```
p {
    color: red;
    font-size: 16px;
}
```

2. Types of CSS

1. **Inline CSS**: Applied directly within an HTML element.

```
<p style="color: blue;">This is blue text.</p>
```

2. **Internal CSS**: Defined in the <style> tag within the <head> section.

```
<style>
```

```
  p {

    color: green;

  }

</style>
```

3. **External CSS**: Stored in an external .css file.

   o **HTML**:

```
<link rel="stylesheet" href="styles.css">
```

   o **CSS (styles.css)**:

```
p {

  color: purple;

}
```

3. Common Tasks with CSS

Text Styling

- **Color**: color: red;

- **Font Size**: font-size: 20px;

- **Alignment**: text-align: center;

- **Decoration**: text-decoration: underline;

- **Transform**: text-transform: uppercase;

Font Styling

- **Font Family**: font-family: Arial, sans-serif;

- **Font Weight**: font-weight: bold;

- **Font Style**: font-style: italic;

Margins and Padding

- **Margins**: Space outside the element.

```
margin: 10px;
```

- **Padding**: Space inside the element.

padding: 10px;

Links

- **Hover Effect**: Change link appearance on hover.

```css
a:hover {
  color: red;
}
```

Tables

- **Border Styling**:

```css
table {
  border: 1px solid black;
  border-collapse: collapse;
}
th, td {
  padding: 10px;
}
```

Colors

- **Background Color**: background-color: yellow;
- **Text Color**: color: black;

4. Advanced CSS Features

Marquee Effect (Not recommended in modern development)

Simulates scrolling text:

html

Copy code

```html
<marquee>Scrolling Text Example</marquee>
```

Mouse Over Effects

Style changes when hovering:

```
button:hover {

    background-color: lightblue;

    transform: scale(1.1);

}
```

Filters

Apply visual effects to elements:

```
img {

    filter: grayscale(100%);

}
```

Transitions

Smooth animations between styles:

```
div {

    transition: background-color 0.5s ease;

}
div:hover {

    background-color: lightgreen;

}
```

5. Adding Links in CSS

Links can be styled in different states:

```
a:link {

    color: blue;

}
a:visited {
```

```
  color: purple;

}

a:hover {

  color: red;

  text-decoration: underline;

}
```

6. Using CSS in HTML Documents

Linking CSS (External):

```
<link rel="stylesheet" href="styles.css">
```

Embedding CSS (Internal):

```
<style>

  body {

    background-color: lightgrey;

  }
</style>
```

7. CSS Properties for Filters and Transitions

Filters:

- **Grayscale**: filter: grayscale(50%);

- **Blur**: filter: blur(5px);

- **Brightness**: filter: brightness(1.5);

Transitions:

- **Syntax**:

```
transition: property duration timing-function;
```

- **Example**:

```css
button {
    background-color: blue;
    transition: background-color 0.3s ease;
}
button:hover {
    background-color: green;
}
```

8. CSS Layout Techniques

Flexbox:

Create responsive layouts:

```css
.container {
    display: flex;
    justify-content: center;
    align-items: center;
}
```

Grid:

Build complex layouts:

```css
.container {
    display: grid;
    grid-template-columns: 1fr 2fr;
}
```