NIELIT (DOEACC) 'O' Level Syllabus
January 2020 of Revision-V

'O'level
Module-2[M2-R5]
Web Designing & Publishing
Study Material
&
Objective Question Bank

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M2R5

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SYLLABUS

M2-R5 (Web Designing & Publishing)

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Detailed Syllabus

(i) Introduction to Web Design

Introduction of Internet, WWW, What is Website? How the Website Works?, Web pages, Front End, Back End, Client and Server Scripting Languages, Responsive Web Designing, Types of Websites (Static and Dynamic Websites)

(ii) Editors

Notepad, Downloading free editors: Notepad++, Sublime Text Editor, Making use of Editors, File creation and editing, saving

(iii) HTML

HTML: Introduction, Basic Structure of HTML, Head Section and Elements of Head Section,

Formatting Tags : Bold, Italic, Underline, Strikethrough, Div, Pre Tag Anchor links and Named Anchors Image Tag, Paragraphs, Comments,

Tables : Attributes – (Border, Cellpadding, Cellspacing, Height, width), TR, TH, TD, Rowspan, Colspan

Lists : Ordered List, Unordered List, Definition List, Forms, Form Elements, Input types, Input Attributes, Text Input Text Area, Dropdown, Radio buttons, Check boxes, Submit and Reset Buttons

Frames : Frameset, nested Frames HTML5 Introduction, HTML5 New

Elements: Section, Nav, Article, Aside, Audio Tag, Video Tag, HTML5 Form

Validations: Require Attribute, Pattern Attribute, Autofocus Attribute, email, number type, date type, Range type

(iv) CSS

Introduction to CSS, Types of CSS, CSS Selectors : Universal Selector, ID selector, Tag Selector, Class Selector, Sub Selector, Attribute Selector, Group Selector, CSS Properties: Back Ground properties, Block Properties, Box properties, List properties, Border Properties, Positioning Properties, CSS List CSS Tables, CSS Menu Design CSS Image Gallery,

(v) CSS Framework

Web Site Development using W3.CSS Framework, W3.CSS Intro, W3.CSS Colors, W3.CSS Containers, W3.CSS Panels, W3.CSSBorders, W3.CSSFonts, W3.CSS Text, W3.CSS Tables, W3.CSS List, W3.CSSImages, W3.CSS Grid

(vi) JavaScript and Angular Js

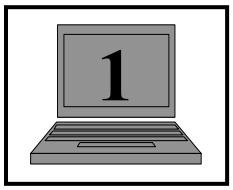
Introduction to Client Side Scripting Language, Variables in JavaScript, Operators in JS, Conditions Statements, JS Popup Boxes, JS Events, Basic Form Validations in JavaScript

(vii) Photo Editor

Features of Photo Editing: Tools: Selection tools, Paint Tools, Transform Tools, Text Tool, Layers, Brightness/Contrast, Improve Colors and tone, Filters

(viii) Web Publishing and Browsing

Overview, SGML, Web hosting Basics, HTML, CGL, Documents Interchange Standards, Components of Web Publishing, Document management, Web page Design Consideration and Principles, Search and Meta Search Engines, WWW, Browser, HTTP, Publishing Tools.



INTRODUCTION TO WEB DESIGN

1.0 Introduction:

The process of creating a website is called web designing. This includes many things such as web pages, layout, content production and graphic design. This can also be called web development process. Content for web publishing can include text, video, digital images, media, etc. Web designing focuses on factors like user interface and other visual images to make the website attractive and easy to use. A web designer uses many software tools and languages to create a website. Publishers must have a web server, a web publishing software, and an Internet connection.

1.1 Introduction to Internet:

The full name of Internet is International Network. It was started by VintCurf in 1950, hence he is also called the father of Internet. Internet is a network of networks. It connects all computers at a global level, thereby helping people exchange data among themselves. Data available on the Internet is controlled with the help of protocols. Services provided through internet are- email, web portals chat, social networking, blogging, online transactions etc.

1.1(i) History of Internet:

The full name of Internet is International Network. It was started by VintCurf in 1950, hence he is also called the father of Internet.

Internet is a global system of interconnected computer networks which is made up of many small and big computer networks spread across the world connected through various communication mediums. It includes personal, public, educational, business and government networks etc. It uses a common set of protocols for data transmission known as TCP/IP. The primary purpose of the Internet is to facilitate the transmission of information. To make this possible, many different tools are used on the Internet, important tools among them are e-mail newsgroups, Telnet, Gopher, FTP and Wide Area Network. World Wide Web (www) is known as most popular internet tool.

The expansion of the Internet occurred due to the usefulness of the World Wide Web, which is the largest source of information today. Any person can search required information at very low cost.

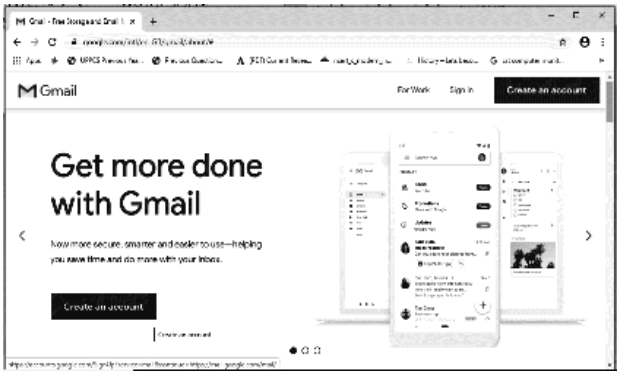


Figure-1.1 Internet

1.1(ii) Features of Internet:

The Internet is a global service and available for everyone to use. Even people located far away can use the Internet very easily. Following are the main features of Internet–

- It is easy to use. The web browser is designed very simple so it can be learned and used easily.
- Internet services have a high degree of interaction with other media.
- The cost of development and maintenance of Internet services is low comparatively.
- Communication through the Internet is quite flexible. It also provides communication facility through text, audio and video.
- The world's fastest postal service called e-mail and we can communicate with any other person through chatting anywhere in the world with in moment.
- Through internet, any one can get information about any recognized person, institution, country, product etc.
- Online shopping of products can be through internet from anywhere in the country or abroad.

1.1(iii) Applications of Internet:

The services received through internet are called internet services. Internet services are as follows–

- **Communication:** Contacting through internet has become easy, fast and cheap. In the Internet, one can communicate with more than one person simultaneously through e-mail, chat etc.
- **Education–** There have been many changes in the field of education through the Internet. People can get information about any topic through internet. Education can be obtained from home through virtual classes.
- **Business:** There has been also a revolution in the field of business through the Internet. With this, maximum profit can be earned by business on a larger scale.
- **Entertainment:** Through internet one can entertain at home by downloading any movie, song etc.
- **Online Transaction:** Online transactions can be using the Internet. This is an easy way to do transactions sitting at home.
- **E-commerce:** We can buy and sell anything online through the internet. There are a huge number of web portals available for buying and selling.

1.1(iv) Applications of Advantages or Disadvantages Internet:

Internet has become a necessity today, and we have felt this need because of the benefits we get from it.

Advantages of internet–

- Through the Internet we are able to access various types of online services.
- Important documents like Aadhar Card, PAN Card, Ration Card and Voter ID can be obtained online.
- Through social media sites, you can stay connected and communicate with your family, relatives, friends and can also share photos and videos of events.
- From your phone you can pay water bill, electricity bill, train ticket, hotel booking, taxi booking etc.
- Tasks like admission in college, filling forms for competitive examinations, submitting scholarship forms can be completed without going to the government office.
- If you want to get detailed information about any new topic, the Internet is beating the library in this matter. You can get information about any topic within a minute.
- In terms of finding a new job, you can search and apply for many jobs in a very short time.

Disadvantages of internet– Internet is a main assistant of human life. As many advantages, its disadvantages are also seen–

- Many businesses use email to market their products. They send spam messages to our e-mail inbox. Many times important e-mails get deleted due to spamming.
- There is a lot of wrong information available on the internet.
- A lot of time is wasted while surfing the internet.
- There is a danger of malware or virus, it removes all the important files of the computer and the system crashes
- Internet distracts students.
- Internet reduces work productivity.
- Due to excessive use of internet, one has to face health related problems like migraine, effect on eyesight, back pain, weight gain, depression etc.
- Important files can be easily taken by hackers. Hacking can take place to extract personal information from people's e-mail accounts, bank accounts and mobile phones.
- Pornography easily available into the hands of even small children through the Internet.
- Sometimes you end up spending too much while shopping online on the internet.

1.1 (v) How Internet Works?:

Internet is a type of interconnected network of many computers which are connected to each other through various mediums. All these computers which are connected to the Internet are divided into two types on the basis of their function. One is called server and other is called client. Both server and client are types of computers which connect to each other through the Internet, but the function of the server is to provide Internet service and the client is the computer which connects to the server through the Internet and receives service. Like we use computers to explore the Internet or to use various Internet services. Therefore, our computer will be considered a client computer in the Internet. At the same time, a server is also a computer but it is used as a server, in simple language, it is used as storage. This computer is also connected to the Internet like our computer i.e. the client. Generally, web content is saved

in these computers. When a client needs web content, the client computer obtains that content by making a connection to the server. This process is facilitated by the web browser and several Internet protocols. Whatever we see on the Internet like website, video, image, song, movie etc are stored on any server. To show or use all this content on the Internet, our computer (client) makes a connection with that server and start communicating among them selves. After which our computer receives the data from that server and shows it as per our instructions. When two computers connect together then they use TCP/IP to communicate with each other. The full name of TCP is Transmission Control Protocol. It transfers information or data in the form of small packets from one computer to another. The full name of IP (Internet Protocol) is Internet Protocol. It works as the address of the computer, that is, it tells the location of the computer. Every computer throughout the Internet has its own Internet protocol. With its help, every computer on the Internet can be identified, due to which information or data can reach the right computer.

That is, TCP transfers information or data in the form of small packets and IP transmits that information or data to the right computer. It may have taken you time to read this and understand each process, but it is so fast that here you send the information and it gets there. Generally it depends on the speed of your internet data or internet connection. For example, you can take WhatsApp which is very popular in India for messaging. Similarly, communication takes place through the internet and this is how the internet works. Because all the content present on the Internet is stored somewhere on another computer, like if they run a website then that website is stored on a server.

1.2 WWW :

The Internet is a global system of interconnected computer networks that connect various small and large computer networks spread across the world. Personal, public, educational, business and government networks etc are connected to it. It uses a common set of protocols for data transmission known as TCP/IP. Primary objective of internet is to ease the transmission of information. Many different tools are used on the Internet to make this possible. E-mail, newsgroup, telnet, gopher, FTP and wide area network are important tools. The World Wide Web (WWW) is the most popular Internet tool.

WWW (World Wide Web) is also called Web. This is the most popular service available on the internet. It is a huge group of information interconnected through hyperlinks which can be accessed on the Internet with the help of a web browser. It is the second most popular Internet service after e-mail.

■ World Wide Web is a system that is connected to many computers with the help of Hyper Text documents. It connects information together and to send this information from one place to another, Hyper text transfer protocol is used which exchanges data with the help of hyperlink.

Every page stored on the World Wide Web is called a web page which is created using HTML (hyper text markup language).

■ The World Wide Web is based on the client/server model. The computer providing Internet service is called Web server and the user of this service is called Web Client. Client Software is called web browser which runs on the local computer.

■ Server software runs on a web host, takes an Internet connection and then launches a web browser to access the web.

1.2(i) Difference between World Wide Web & Internet:

Internet	(www) World Wide Web
The estimated year of origin of the Internet is 1969, although the opening of the network to commercial interests began only in 1988.	The World Wide Web, Started in 1993.
The name of the first version of the Internet was ARPANET.	First version of the World Wide Web is called NSFnet.
Internet is a network of computers, in which copper wire, fiber optic cable and wireless network are used.	It holds files, folders and documents stored in different computers.
This works by internet protocol.	It works through Hyper text transfer Protocol (HTTP).
It is base and independent of the World Wide Web.	It depends on the Internet to function.
This is hardware.	Its form is software.

1.2(ii) Evolution of the www:

www is a group of documents which are linked to each other by hypertext. In hypertext document, Text Image, sound etc are included. www is a service of internet. www was first used by TIM BERNERS LEE at CERN laboratory in 1989. In the World Wide Web, information is stored in the form of websites. This website is stored on web server in the form of hypertext files. The World Wide Web is a system by which each website is given a unique name. That is identified on the web by the same name.

The full name of www is World Wide Web. Internet and World Wide Web are connected closely and both are dependent on each other. The World Wide Web is a storage of information, which is in the form of links. Actually, it is a technology due to which computers arround the world are connected to each other. The World Wide Web works on HTML, HTTP, web servers, and web browsers.

1.2(iii) Web Browsing Software:

A web browser is a software application that allows a user to view and display web pages. Text and images can be a hyperlink presented on a web page which can be clicked to move another web page easily. Web browsing software is a client of an Internet server that is provided free of cost by Microsoft Corporation and many other companies. Through this, any information can be sent, received or retrieved on the Internet. When URL is given to web browser it identifys the location of the requested page.

Following are some of the famous web browsers–

Microsoft Internet Explorer– It is a popular web browser which is manufactured by Microsoft Company. It is also a type of Windows component which is used to access and navigate web pages.

Internet Explorer supports HTML4.01, CSS Level 1, XML 1.0 and DOM Level. It is the default browser of Windows which is now replaced by Microsoft edges.

Microsoft Edge– This is the latest web browser of Windows 10. Internet Explorer 11 is also available with Windows 10 for compatibility. The browser includes integrated Adobe Flash Player and a PDF reader. Web user can make annotations on pages that can be stored with a drive, But can not save HTML pages.

Mozilla Firefox– It is a free open source web browser which is developed by Mozilla Corporation. It can be used in operating systems like Windows, Linux, Macintosh etc. It can also be downloaded from its official website.

Opera– Opera is a free internet browser available for mobile phones and computers. It includes features like tab browsing, page zooming, mouse gestures and an integrated download manager etc. Opera comes pre-designed with a free Virtual Private Network (VPN) that works on both private and public free internet and protects your location from hackers. Opera's VPN blocks your location when using the public Internet, providing additional protection against malware. The Opera Portable browser which is, available for Windows, stores your browsing history, bookmarks extensions and other private data on a portable storage device such as a USB drive.

Google Chrome– This is a web browser developed by Google Company in 2008 which is becoming popular for its fast speed and better security provisions. It is a web browser released primarily for Microsoft Windows.

■ **To open Microsoft Edge;**

- Click the Microsoft Windows icon on the taskbar.

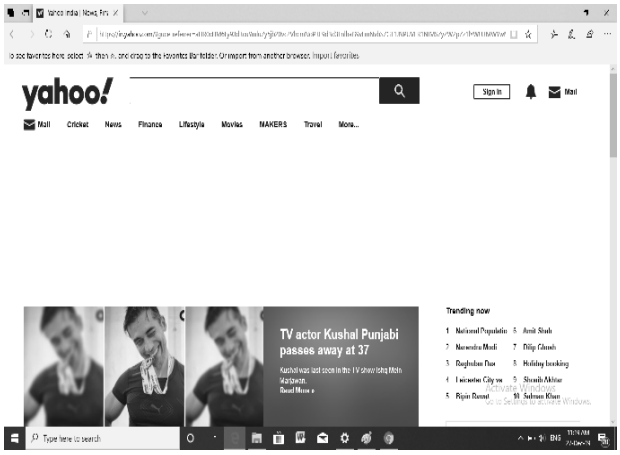


Figure-1.2 Selecting Microsoft Edge

Following are the parts of Microsoft Edge–

Title bar– It is located at the top of the Internet Explorer window, displays the name of the current web page. Minimize, Maximize and Restore buttons are displayed on the right side of the title bar.

Address bar– It displays the address of the web page you are currently viewing. You can also use the address bar for navigation. Type the address of the page you want to visit in the address bar and press Enter.

There are following buttons–

- **Back:** Displays pages from the list of previously viewed pages.
- **Forward:** Displays a page from the list of next viewed pages.
- **Stop:** Stops the downloading of the current page.
- **Refresh:** Displays the updated version of the current web page.

Reading View– Click on the book icon to go to reading mode. It displays a clean view of the main content of the page by removing distraction.

Reading List– This allows to save web pages for later viewing. Such as in the Favorites folder, you can also add web pages to the reading list.

Pinning sites to the Start menu– Open your favorite website and click the Settings button. Now click on "Pin to start" option from the displayed settings menu. Now your favorite website will be displayed on the start menu.

Sharing– Regularly opened web pages can be shared by sending a link.

Advanced Tab Management Options in Edge Browser– Edge has focused on tab browsing in tab management options. Right click on any browser tab. Due to which a context menu option will be displayed. This can be used to refresh tabs reopen a closed tab. Close all tabs etc.

1.3 Website:

A website is a collection of web pages related to a particular person or organization, found under a single domain name. Different pages of the website are connected to each other through hyper links.

A website may contain a few or many webpages. The steps to connect to a website are as follows–

- Type the URL of any website in the web browser like– www.youthcompetitiontimes.com
- The browser attempts to connect to the web server.
- The web server accepts the request.
- The homepage of a website is downloaded from a web server on your personal computer.
- The web page is displayed by the web browser and the connection is closed between the server and your browser.

Website Address– Web address is also called URL. It identifies the location of a specific web page. URLs display the Internet addresses of files on client computers connected to the Internet.

Enter the web page address you want to visit on the address bar.

■ To type a web page address,

- Click on the address bar.
- Type the web page address.

Lik– https://www.featurepics.com

Figure-1.3 Typing an address in the address bar

- The web page is displayed as shown below.

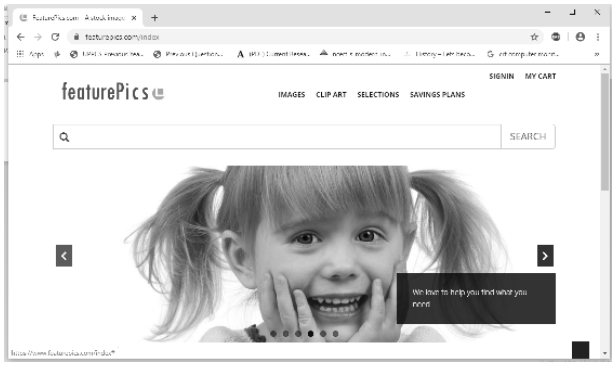


Figure-1.4 FeaturePic homepage is displayed

Internet Addressing Scheme– Many computers are connected together on the Internet. But for communication, every connected computer is provided a unique address which is called IP addressing system. IP address is an address that is used to uniquely identify a device on an IP network. The directory system available in IP addressing is called Domain Name System (DNS) which converts a name into a numeric address.

1.3(i) Protocol:

Protocol is a set of rules used for digital communication. The protocol decides how data will be transmitted and received over the computer network. There are several levels of protocols available in a telecommunications connection.

Following are the common networking protocols–

FTP (File Transfer Protocol)– FTP protocol is a standard for transmitting files between computers over the Internet protocol. Transferring or copying files from one place to another over the network is possible only through the FTP protocol. FTP uses port 21 for connection control and port 20 for connections.

HTTP (Hyper Text Transfer Protocol)– It is a stateless protocol i.e. all requests sent by the client are

Executed separately and after responding to the request the connection is closed.

TCP– Transmission Control Protocol is used for communication in a network. It converts the message into a set of packets at the sender. It is also called connection oriented protocol and it is an important protocol which works at the transport layer of OSI.

POP– Post Office Protocol is used to receive e-mail. Because POP is in version 3, it is called POP3. This protocol works at the application layer of the OSI model that allows clients to download and send mail from the server. Once the e-mail is downloaded, it can also be read offline.

SMTP– Simple Mail Transfer Protocol is a standard protocol used for e-mail service over TCP/IP networks. This protocol helps in sending e-mail messages. SMTP protocol works at the application layer of the OSI model. It helps in transmission and delivery of e-mail over the Internet. It is used for e-mail applications in the same network as well as in different networks.

IP– Internet Protocol, also known as TCP, was developed in the 1970s. It is an addressing protocol that allows different computers to communicate with each other by establishing a network. It maintains the addresses of packets based on each standard and knows the source and destination of each IP packet.

Telnet– Telnet is a set of rules for connecting one system to another. The connecting process in this is called remote login. Entering the user name and password starts the Telnet session. The computer requesting the connection is called the local computer and the computer accepting the connection is called the remote computer.

WAP– Wireless Application Protocol provides services to web browsers. It is a browser used in mobile devices.

UDP– User Datagram Protocol is a transport layer protocol for client server network applications. It is a connectionless protocol that transfers data over the network. This protocol does not ensure that data reaches the destination properly. Therefore, it is used only in those situations where data security is not important but transmission speed is important.

Gohper– Gohper is an application-layer protocol that provides the ability to search and view web documents stored on remote web servers. It works on client/server principal.

1.3(ii) Domain Name:

It is a set of network resources that are assigned to users. Through this, computers which are connected to the Internet, are identified and located. Domain name is always unique and written separated by dot (·).

Example– google.com, yahoo.com etc.

The Domain Name System is used to identify servers and translates domain names into IP addresses. It is a two-letter abbreviation denoting the name of a country and a three-letter abbreviation denoting the name of an organization.

Following are some of the key identifiers–

.com	–	Commercial business
.edu	–	Educational Institutions
.org	–	Organizations
.gov	–	Government entities
.net	–	Internet service provider
.info	–	Information services

1.3(iii) Web Server:

Web server is a software that delivers web pages to users and serves web pages to visitors. Web server is the program of any website which performs the task of searching the web pages of that website. Generally, the software that delivers web pages to its users, is called web server. It helps in searching any website data with the help of HTTP Protocol.

Types of Web Server–

- Apache Web Server
- Internet Information Server
- Nginx Service Server
- Light Speed Web Server

1.4 How Website Works:

Figure-1.5 below shows the travel of web pages through networking equipment and telecommunication systems.

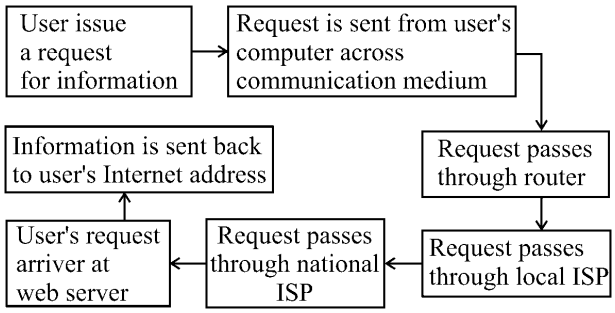


Figure-1.5 shows the travel of web pages through the networking equipment and telecommunication systems of the Internet.

■ In the web browser, a page can be visited by typing a URL or clicking on a link. The URL takes the user to the appropriate location to provide the desired information. URL (Uniform Resource Locator) is the name of a web location, through which web browsers and web servers are able to communicate with each other.

■ A URL consists of several parts. The first part contains the name of the transfer protocol (http) followed by a colon and two slashes (://). In the second part, the name of the server is known, it is also called the domain name of the host computer which is www. The third part identifies the web server for connection. Its last part contains google.com to identify the specific directory, document and other objects on the web server. In its last part, specific directories, documents and other objects are identified on the web server.

Figure-1.6 Example of URL

■ Internet routers examine requests to determine which server the request is intended for. URL, it is sent to the Internet on a Web Server. Tells which request is being searched, if a valid request is returned on HTTP://.

■ By receiving the request through the HTTP protocol, the web server tells which document has requested by the user.

■ When the requested document or object is received on the main page of the server, then this home page sends that document back to the client which is displayed on the computer screen.

1.5 Web Page:

A web page is an electronic page created by using HTML (Hyper Text Markup Language). It provides links for information. A web page can contain text, images, graphs, audio, video or hyperlinks.

Every web page has a unique address called a URL that identifies its location on the network. Web pages are of two types: static and dynamic. Static web pages have the same content every time when they are accessed, and dynamic web pages change content every time it is accessed.

■ To open a web page,

- Type the URL in the search bar of the browser.
- After typing, press Enter or Ok button.
- The web page starts displaying.

1.5(i) URL (Uniform Resource Locator):

Uniform resource locators (URLs) are used to specify addresses on the World Wide Web. It provides network identification for any resource connected to the web.

Any document or page available on the World Wide Web can be easily accessed using URL.

The format of URL is as follows–

Protocol://host name/other_information

For example,

http://featurepics.com

The protocol in a URL describes how information is transferred through the link. The protocol used for web resources is Hypertext Transfer Protocol (HTTP). Apart from this, HTTPS, FTP, Telnet, Newsgroup and Gopher protocols are also used in most web browsers.

The protocol is followed by a colon (:), two slashes (//) and then the domain name. The domain name itself tells the location of the resource. After the domain name, there are links to files or subdirectories.

Absolute URL– An absolute URL contains all the information needed to locate a resource available on the Internet. This is a complete path including the domain file name.

Example–http://www.sparkpay.com/images/img.jpg

It locates the image file named img.jpg which is available in the Images directory and has the domain www.sparkpay.com.

Relative URL– A relative URL usually contains only the path to a particular file, which is relative to the absolute URL.

Example– http://www.domain.com/default.html

an example of a relative URL.

Through this you can easily create a set of hypertext documents. Connect them together by hyperlink through file name. So that the user can go to another file while reading a document by clicking on the file name available in it.

1.6 Front End:

Front end and back end are very important units used in web development– front end is also called client side and sometimes it is considered as web design.

The front end of a website is what we can see and interact with on the browser. That is, it is a part of the website by using this users interact directly. It is created by combining technologies such as Hyper Text Markup Language (HTML), JavaScript, and Cascading Style Sheets (CSS). Front end developers create and design the buttons, menus, page links, graphics, and more elements on a web page. This enables User to access and request features and services of the underlying Website.

1.7 Back End:

The back end of the web industry is called the client side. The back end and server side are the parts of the website that you don't see. People who work on the backend are called programmers or developers. The back end developers are mostly responsible for security, structure and content management. It establishes communication between the server side of an application, the database, and the browser. It stores and manages data and everything is created on the client side of the website. This is the part of the website that you can only view but can not interact. Must have some skills in back end programming language or framework, accessibility and security, understanding of front end technology like HTML, CSS and hosting management ability.

The backend part is built using to a few languages like PHP, C+, Java, Python, JavaScript etc.

1.8 Client and Server Scripting Language:

A script is a type of program in which a number of programming instructions, i.e. code, are written, which are interpreted at runtime. This means that when an application is running, the code is read and executed. Scripting languages can be embedded within HTML itself.

All websites generally run on two components–

1. Client Side Scripting Language– Client side scripting is used to generate a code that can run on a browser (client end) without the need for server side processing. This type of script is placed inside an HTML document. It is usually associated with a language that is compatible with the browser. HTML, CSS and JavaScript languages are used for client side but JavaScript is the most used language for client side scripting. It has the ability to run on any browser. The browser downloads that code permanently and processes it without a server. Scripting is used to check a user's form for errors before additional information is required and to change the content according to user input.

Client Side Scripting Languages–

- **HTML:** It provides the frame to the website and describes content management.
- **CSS:** It provides a way to design graphic elements that help in making the appearance of a web application more attractive.
- **JavaScript–** It is essentially client side scripting designed for specific purpose but currently various JavaScript frameworks are used as server side scripting technology.

2. Server-Side Scripting Language– Server side scripting creates a way for the website to work with the database and backend, which organizes and runs the website. Server side scripting is a programming technique for creating code that can run software on the server side. Server side scripting creates the communication link between the server and the client. Server side includes three parts – server, database, API and back end software, which is developed through server side scripting language.

Server Side Scripting Languages–

- **PHP:** This is the most popular server-side language used on the web, which was designed to extract and manipulate information from databases. It is used in Facebook, WordPress and Wikipedia.
- **Python:** It works well in object oriented environment and used in famous sites like YouTube, Google etc.
- **RUBY:** It is a complex logic language that packages a back end with database utility, which is also provided by PHP and SQL.

Apart from this ASP.NET, Cold Fusion, C#, Java, C++ etc are server side scripting languages.

Difference between client and server side scripting language– Following are the important differences between client side scripting and server side scripting–

⇒ Client side scripting works on the front end and is visible to the user whereas server side scripting works on the back end and not visible on the client end.

⇒ Client side scripting is when the browser contains all the code and the page is later changed according to the user's input. Server side scripting occurs when the user's browser initiates a server request. Non-dynamic pages are created based on several conditions.

⇒ The browser can perform client side scripting after accessing the page sent by the server. The server can perform a server side script but cannot perform client side scripting.

⇒ Server side scripting helps to connect to databases that already exist on the web server. Client side scripting does not connect to the database available on the web server.

⇒ The scripting process for the server side is done on a remote computer. Therefore the response from the client is relatively slow compared to the request. In server side scripting, the response is faster because the script is executed on the local computer.

⇒ Languages used in server side are Ruby, PHP, ASP Python, C# Java, C++ etc. Generally languages like HTML, CSS, Java Script etc. are used for client side scripting.

1.9 Responsive Web Design:

Responsive web design is a process in which a website is designed in such a way that it adjusts its layout according to screen size and orientation on desktop, laptops, tablets, and small-screen mobile devices.

Using a responsive website is also liked by mobile visitors as the webpage does not take much time to open and the speed of the site is further improved.

Responsive website design has the following three main elements–

1. Fluid Grids– The size of the elements of most websites is set in pixels, which is fixed, but according to Fluid Grid, the height and width of the website layout is defined in percentage instead of pixels so that it can fit on any screen. You can resize your height and width according to the size.

2. Flexible Visuals– Unless all the components of the page are flexible, it cannot render well on the browser. Images also have to be flexible so that they can adjust to almost all screen sizes. The use of flexible visuals makes the media scalable by changing the media size and view port size.

3. Media Queries– CSS media queries allow targeting certain device classes as well as inspecting the user's device physical features. You can display the layout in different ways using media queries.

1.10 Types of Website:

A website is a collection of many web pages. A website contains many web pages and each page has different types of information. There are mainly two types of websites– 1. Static website, 2. Dynamic website.

1. Static Website– A static website represents a collection of web pages whose content is fixed and is same for every user.

Advantages–

- It is made by coding with simple HTML.
- It loads fast on any web browser.
- The cost of creating a static website is very cheap.
- Saves time.
- It can get dedicated servers also at low cost.

Disadvantages–

- Its content cannot be changed easily unless its code is changed, its content also does not change.
- These are not suitable for long periods of time.
- It contains non-interactive web pages.
- Complex tasks like transactions cannot be done in web pages.

2. Dynamic Website– A dynamic website is a set of web pages whose content changes dynamically. A dynamic website accesses data from the database, so when the content of the database changes, the content of the website also changes. It is written in server side coding languages like PHP, ASP, JSP, Ruby etc.

Advantages–

- It is easy to add content to the website even without using coding.
- Dynamic websites contain interactive web pages.
- It is easy to use in online stores, social media platforms etc.

Disadvantages–

- Creating a dynamic website costs more.
- Security issues and risks are high.
- There is more complexity in developing them.

❖ Practice Questions with Explanatory Solutions ❖

1. Browser is–
(a) Line, which delineates the edge of a programming window.
(b) Device, which is used to modify the window.
(c) Software programs specifically designed for viewing web pages on the Internet.
(d) None of these.

Ans.(c) Web browser is a software which helps you in viewing the content available on the internet like blogs, articles available on websites, images, videos, audios etc. Tim Berners Lee created the first web browser in 1991, which was named World Wide Web. Some of the major and popular web browsers are Mozilla Firefox, Internet Explorer, Safari, Google Chrome Opera, Epic etc.

2. On which model is www based?
(a) Local Server (b) Client Server
(c) 3 tier (d) None of these

Ans. (b) The full form of www is World Wide Web. It is a collection of websites or web pages, stored in a web server and it is connected to local computers through the Internet. It is based on the client server model. The client is a web browser that communicates with the web server that hosts website.

3. A web robot in a web crawler is–
(a) Crawler robot (b) crawl bot
(c) Web bot (d) Web robot

Ans.(c) Crawler is a program that reads the webpages of a website and sends the details of the webpages to the search engine so that the search engine can add that webpage in its database. A web bot is a web robot in a web crawler.

4. How many bits does the IP address have in IPv4?
(a) 16 bits (b) 64 bits
(c) 128 bits (d) 32 bits

Ans.(d) Full name of IPV4 is Internet Protocol Version 4, it is the fourth version of Internet Protocol. It is a connectionless protocol used in packet switched layer networks such as Ethernet.

5. Which of the following is a web server?
(a) Mozilla Firefox (b) Postfix
(c) Bind (d) Apache

Ans. (d) Apache is an open source and free web server software that provides HTTP server services. HTTP server is such server software, which saves and hosts web pages and website files. Apache Server supports various operating system platforms like Windows, Linux, Macintosh etc. Apache server software can host both static and dynamic websites.

6. The applet is–
(a) Image displayed on a web page
(b) HTML program (c) Security protocol
(d) A program to be embedded in another application.

Ans.(d) Applet is a special type of computer program whose purpose is to run (Embed) inside another software application. An applet is a Java program that runs in a web browser.

7. Which version of Internet Protocol is most used on the Internet?
(a) IPVI (b) IPV2
(c) IPV6 (d) 1PV4

Ans.(d) IPV4 is the most used Internet protocol which was developed in 1970. This is the fourth version of the Internet Protocol. An IPv4 address is 32-bit. 192.168.0.1–192.168.0.255 range can be easily identified. Each three-number group can contain numbers from 0-255. It is used to deliver data packets in the network from the host device to the destination device.

8. What is Cookie?
(a) Computer code used to show animation and play sound.
(b) Computer code that automatically records all user transactions.
(c) An advertisement displayed on the user's screen.
(d) Information sent to a computer which is used to return information to the website being accessed.

Ans. (d) Web cookies are text files that are sent by the server to the browser. This file is sent back to the server by the browser all the time so that it can remain connected to the server. Web cookies are used for security and user information. This is information sent to the computer, which is then used to return information to the visited website.

9. The first page of the website is called–
(a) Design (b) First page
(c) Home page (d) Main page

Ans.(c) The first page of the website is called the homepage where visitors can find hyperlinks to other pages of the site. That is, the home page is the starting page of a website, which is the "point of entry" for all the information stored on it.

10. Software that prevents external access to a system is called–
(a) Gateway (b) Firewall
(c) Intution Prevention System (d) Anti-Virus

Ans. (b) Firewall is software that acts as a network security system whose job is to protect a computer network from external access. It is installed at the gateway of the computer network and filters the traffic going in and out of the network.

11. **What is the full form of HTTP–**
(a) Hyper Text Transfer Protocol
(b) HTTP Text Transfer Protocol
(c) High Transfer Tier Program
(d) HTML Type Transfer Protocol

Ans. (a) The full form of HTTP is Hyper Text Transfer Protocol. This is a type of network Protocol that is used in the World Wide Web. HTTP uses a server-client model. It is a protocol for transferring information over the internet.

12. Connecting the website to the backend, processing data and controlling the behavior of the top layers, etc is all done by whom?
(a) HTML language (b) Javascript
(c) CSS Scripts (d) None of these

Ans. (b) Java Script is a dynamic computer language. It is also an interpreted/oriented language. Java script client also known as side/server side scripts. Connecting the website to the backend, processing data and using the top layers. All the work like controlling behavior etc is done through JavaScript.

13. Telnet is–
(a) Terminal network
(b) Telecommunication network
(c) Telephone network (d) Local network

Ans.(b) Telnet is a network communication protocol, which is used to communicate and manage various devices present on the network such as servers, computers, routers, switches and firewalls etc. This is completely command based communication.

14. TCP is a commonly used protocol in–
(a) Application layer (b) Transport layer
(c) Network layer (d) Physical layer

Ans. (c) TCP means Transmission Control Protocol. It transfers information between two computers and makes transmission possible. It is generally used in the transport layer.

15. A website address is a unique name that identifies a specific…..... on the web.
(a) Web browser (b) PDA
(c) Website (d) None of these

Ans.(c) The unique name used to identify a website on the web is called website address or URL. The web address itself displays a website or a page of a website or leads to a web page.

16. Leader of the World Wide Web Consortium–
(a) Mark Zuckerberg (b) Elon Musk
(c) Tim Berners Lee (d) None of these

Ans. (c) World Wide Web Consortium (W3C) is an international community. It has many members, organizations, and experts who work together to establish standards for the World Wide Web. It was led by Tim Berners Lee.

17. The address of a permanently assigned router connected to the Internet is called–
(a) Dynamic IP address (b) Static IP address
(c) Mixed IP address (d) None of these

Ans.(a) A dynamic IP address is an IP address that is automatically assigned to each node or connection in the network—like your smartphone, desktop PC or wireless tablet. Dynamic IP addresses keep changing with time in the network. Dynamic addresses are assigned as needed by Dynamic Host Configuration Protocol (DHCP) servers.

18. Netscape Navigator has been developed by–
(a) Microsoft (b) Google
(c) Receiving Office (d) None of these

Ans. (d) Netscape Navigator was first commercially successful web browser. It was based out of the Mosaic browser and was created by a team led by Mark Andreesen. Netscape Navigator helped influence the development of the Web as a graphical user experience rather than text based.

19. Loads the same content every time the page is reloaded–
(a) Static web page (b) Dynamic web page
(c) Both (a) and (b) (d) None of these

Ans.(a) Static web page is stored in the web server and loaded in the client's browser. These webpages can only be read by the user and no modification can be done by the user. This web page only holds static information and loads the same content every time it is reloaded. Static web pages can be created only using HTML. A static web page is created only when we do not have to make any changes to it later.

20. The function of modem is–
(a) Modulation (b) Demodulation
(c) Both (a) and (b) (d) None of these

Ans. (c) The full form of modem is modulator/demodulator. It is a hardware component that allows a computer to connect to the Internet. Modem is used to send data to the computer via telephone or cable. It converts analog and digital data for two-way network communication in real time.

21. Pieces of information sent over the Internet–
(a) Piece (b) Packet
(c) Byte (d) None of these

Ans. (b) A small part of someone's message on the Internet is called a packet. Data sent over a computer network is divided into packets. These packets can be retrieved by the computer or device by reassembling them.

22. Protocol used to receive mail from remote mailbox–
(a) IMAP (b) HTTP
(b) POP3 (d) SMTP

Ans. (b) POP 3 (Post Office Protocol) is an Internet standard protocol used by local e-mail software clients to receive e-mail from remote mail servers over a TCP/IP connection.

23. IP protocol is an implementation of which layer of OSI?
(a) Network layer (b) Physical layer
(c) Data Link Layer (d) None of these

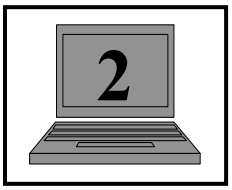
Ans.(a) The IP protocol is an implementation of the network layer of OSI. It is the third layer of the open system interconnection model whose main function is routing and delivering data packets from one host to another between different networks.

24. The protocol used to access the Internet is–
(a) SLIP (b) POP
(c) IMAP (d) SMTP

Ans.(a) The full name of SLIP is Serial Line Internet Protocol. SLIP is an Internet protocol through which users can access the Internet using a computer modem.

25. What is the other name for front end?
(a) Server side (b) Client side
(c) Both (a) and (b) (d) None of these

Ans. (b) Front end is also called client side and sometimes it is considered as web design. The front end of the website is what we can see on the browser and can also interact with it. That is, it is a part of the website that users interact with directly. It is built by combining technologies such as Hyper Text Markup Language (HTML), JavaScript, and Cascading Style Sheets (CSS). Front end developers create and design the buttons, menus, page links, graphics, and more elements on a web page. This enables the User to access and request features and services of the underlying Website.



EDITORS

2.0 Introduction:

A text editor is a computer program that allows a user to add, delete and rearrange letters, words, sentences and paragraphs in text. Text editors are provided with operating systems and software development packages and used to modify files such as configuration files, documentation files, and programming language source code.

Notepad, Wordpad, TextEdit, Emacs, vi and vim, Writer, Notepad++ etc. are some examples of text editors.

Some text editors are small and simple, while others have large and complex functions. Most word processors can read and write files in plain text format.

2.1 Notepad:

Notepad is a text editor program that becomes inbuilt with the Microsoft Windows operating system. It is a simple text editor which is mainly used to write, read and edit any simple note. It is very useful as it can be used for everything from text editing to simple coding or even for editing code.

Notepad is very easy to work, especially for beginners because it does not have many functions and tools to format created notes. Therefore, there is not much complexity in it and it is also a light weight simple program, due to which it can be used very easily on an ordinary computer.

Notepad Window Elements–

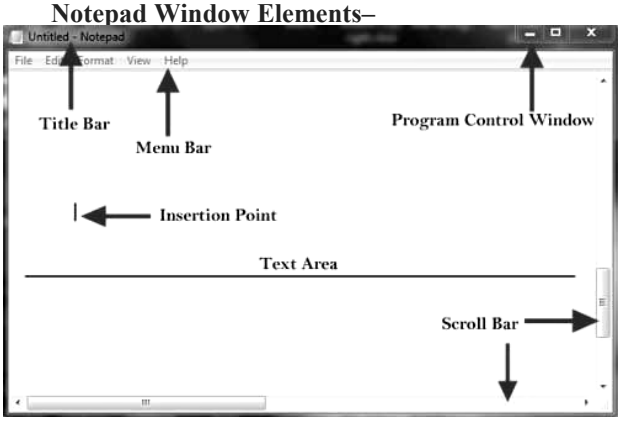


Figure- 2.1 Notepad Elements

- **Title Bar:** It is at the top of the entire window on which file name is shown. By default its name shows Untitled-Notepad.
- **Menu Bar:** It is below the title bar which contains some menus inside which there are commands related to that menu.
- **Program Window Control:** It is on the right side of the title bar which includes Minimize, Maximize / Restore and Close. There are buttons used to which the can be minimized or closed the notepad window.
- **Insertion Point:** It is like a small line blinking in the text area, which is also called cursor. This displays next typing point.
- **Scroll Bar:** It is like a slider on the side of the Notepad window, whose function is to scroll the large file up-down or left-right.
- **Text Area:** This is the entire empty area in which text is typed.

Usage of Notepad– It is mainly used to create plain text note files, plain text used for reading files, editing text files, simple coding and editing code. The executable file name of Notepad is notepad ·exe, which is the extension of notepad file.

How to open notepad–

- First of all, click on the Start button and go to 'All Programs...'
- Then click on Accessories….
- Click on Notepad here...
- After that Notepad will open.

2.1(i) Advantages of using Notepad:

This is a free software which anyone can download and use for free. In which you can also code from text and it works exactly like a code editor. Code editors are mostly paid, so Notepad can give you more experience than a coding editor. With this, it can be connected with many coding plugins so that the code can be converted from one format to another whenever required. Like a code editor, the code gets highlighted in it.

2.2 Downloading free Editors : Notepad++ :

Notepad++ was developed by Don Ho in September 2003. It is a free open source code editor used with Microsoft Windows. It is a replacement for Notepad. It supports multiple languages and its use is governed by the GPL license. It features syntax highlighting, code folding, and limited autofill for programming, scripting, and markup languages. Notepad++ is written in C++ based on cintila, a powerful component, and uses Win32 API and STL that ensure high execution speed and small program size. It is trying to reduce Carbon-di-Oxide emissions by optimizing as many functions as possible without compromising on its user-friendly nature. It supports tabbed editing, which allows working with multiple open files in a single window. It uses less resource like less CPU usage, reduction in CPU power consumption etc.

2.2(i) Process of Downloading Notepad++:

The process to download Notepad++ text editor is as follows–

Figure- 2.2 Notepad Text Editor

- Type the official website address https://notepad-plus-plus.org in your browser.
- Select the latest Notepad++ version in the left side frame and click on Download.
- Open the folder with the downloaded package on your computer and double click on the .exe file to run the installer and follow all the installation steps.
- Select the installation language.
- Click on "Agree to the terms of License Agreement".
- Wait for the system installation.
- After the installation is finished you can use the Notepad++ software.

2.2(ii) Features of Notepad++:

Notepad++ has a variety of features that make to much easier to programming and debugging code. Some key features of Notepad are the following–

- It is a source code editor.
- Text files up to 2GB in size can be edited. (Maximum size in Windows Notepad is 58MB).
- It supports line numbering.
- Multiple files organised in this tabs can be edited.
- It supports syntax highlighting and syntax folding for over 70 programming languages including html and windows batch files.
- It provides the facility to create and edit text files for various operating systems including Mac OS and Linux.
- Supports lines for bookmarks.
- It supports zoom in and zoom out.
- Supports multi language environment.
- It has the facility of recording and playback of repeatedly executed editing commands through macro commands.
- It supports auto completion which provides indication of word completion, function completion and function parameter completion.
- It supports advanced find and replace with regular expression support.

2.2(iii) Pros & Cons of Notepad++ :

Notepad++ is a useful text editor which has some advantages and disadvantages.

Pros of Notepad++

- You can use Notepad++ to create web pages but you need to have knowledge of HTML language for this.
- It is used on Windows platform but apart from Windows, it can also run on Linux, Unix, Mac OS.
- Notepad is also used to create text files and later those files can also be edited.
- In Notepad, users can change the font style while creating text files as many prebuilt fonts are available in Notepad.
- This software is free to download and takes less storage to install.
- A large directory of plugins available to extend the functionality of the text editor.
- Notepad++ interface supports tabbed editing.
- Auto indentation and auto complete facility is available in it.
- In Notepad++, smart syntax highlighting feature is available.

Cons of Notepad++

- Notepad++ cannot handle very large files.
- Available for installation exclusively on Microsoft environments.
- Remote file editing does not support HTTP, SSH, or Web DAV.
- Notepad++ app becomes unresponsive when opening large log files.

2.3 Sublime Text Editor:

Sublime Text Editor is a fully featured editor for editing source code with a cross platform application programming interface. It includes many features to edit the code base. It supports multiple programming languages and markup languages. Its functions can be added by the user with plugins, which are created by the community and organized under the Free Software License. Sublime Text Editor is used as an integrated development environment (IDE) such as Visual Studio Code and Net Beans. The current version of Sublime Text Editor is 3.0 and it is compatible with various operating systems like Mac OS, Windows, Linux.

Following are the features of Sublime Text Editor–

- Using the multiple features available in it, users are able to change multiple lines at once, rename variables etc.
- Autocompletion attempts to complete entries automatically based on user typing language and also auto-completes variables created by the user.
- The purpose of the dark background on Sublime Text is to reduce eye strain and increase the amount of contrast with the text.
- The Snippets features allow users to save frequently used blocks of code and assign keywords to them.
- When required, users can simply type the keyword and paste the block of code.
- It has the facility of macros through which you can record your tasks.

2.3(i) Procedure of Downloading Sublime Text Editor:

Sublime Text Editor is a proprietary source code editor based on Python application programming interface (API) that supports multiple programming languages and markup languages.

Following are the steps to download Sublime Text Editor–

- Type the official website address https://www.sublimetext.com in your browser.
- Download Sublime Text Editor as per your operating system by following the link available on the official website.
- Open the folder of the downloaded package in the computer and double click on the ·exe file to run the installer and follow all the installation steps.
- After running the executable file, click on Next.
- To install Sublime Text 3 Editor, select the location and click on next to verify the destination folder and click install button.
- After the installation is complete, click on the Finish button. After this you can use Sublime Text Editor Software.

2.3(ii) Linting in Sublime Text Editor:

Linting is the ability to flag suspicious constructs and likely bugs in any programming language. Sublime Linter is a package for Sublime Text that helps users to perform linting in Sublime. It helps to creating files in different modes for manipulation of the code base. This is not an inbuilt package and has to be installed manually. Any package control can be installed in Sublime Text Editor using the shortcut key combination Ctrl + Shift + P.

Different Modes of Sublime Linting– Sublime Linter runs in four modes, which are as follows–

⇒ **Background Mode–** When the Sublime Linter key is set to True, linting is performed continuously in the background every time the file is modified.

⇒ **Load Save Mode–** When the Sublime Linter key is set to Load Save Mode, lintings are saved at load when a file is loaded from the repository.

⇒ **Save Only Mode–** When the Sublime Linter key is set to Save Only Mode, linting is performed when saving a particular file to the working repository.

⇒ **On Demand Mode–** The Sublime Linter key will be set to True using the Ctrl + Alt + L shortcut key combination which sets the linter to detect bugs in the code.

2.4 File Creation and Editing in Notepad++:

Step-1 Open Notepad++ Text editor.

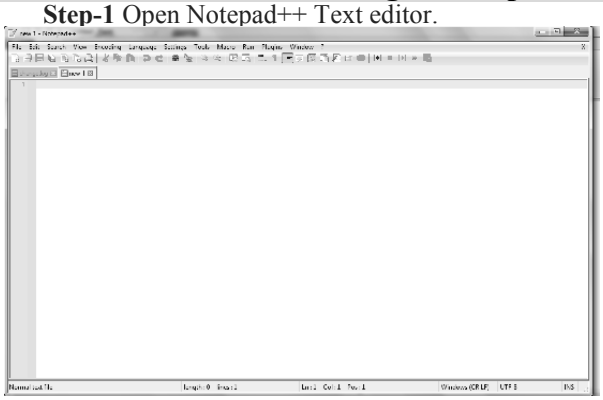


Figure- 2.3 Notepad window

Step-2 Select the language in which you want to write the code. To write an HTML program, select HTML under H from the Language menu.

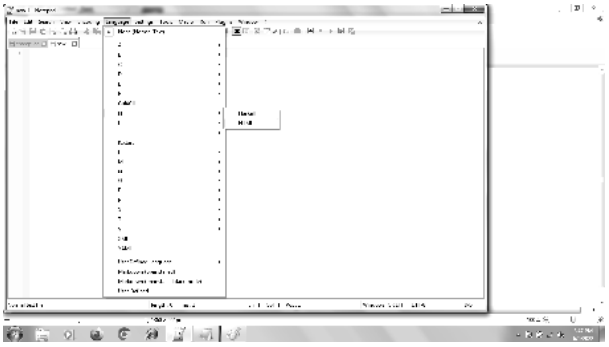


Figure- 2.4 Selecting language

Step-3 Write the code in Notepad++ and save this file using -html extension.

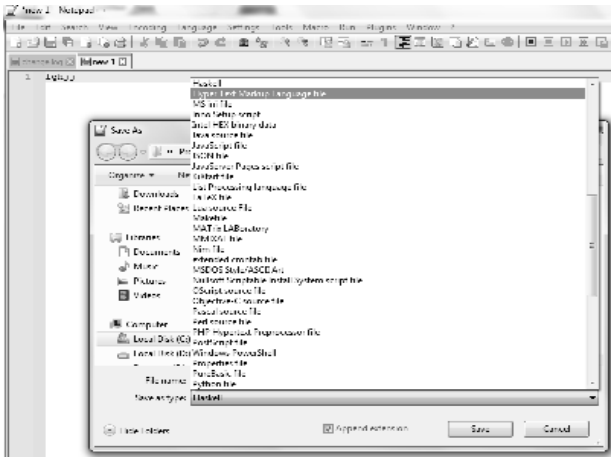


Figure- 2.5 Selecting file save as type

File Editing:

Step-4 To add some lines to the file, place the cursor at the place where you want to add text.

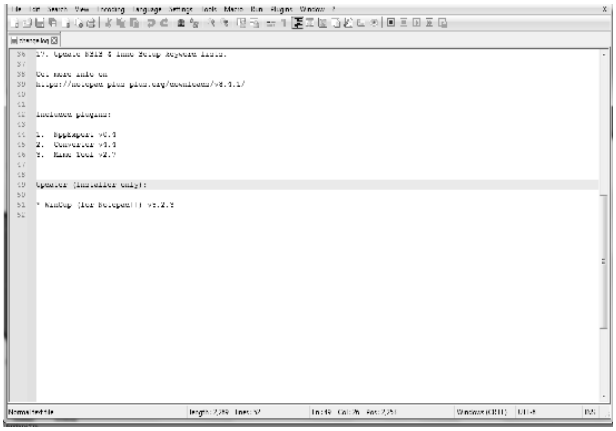


Figure- 2.6 Editing code in a file

After finishing editing, save the file as a web page.

2.4(i) Saving File in Notepad++ :

To save the written code as a file, follow the following steps–

Step-1 Click on Save as in file menu.

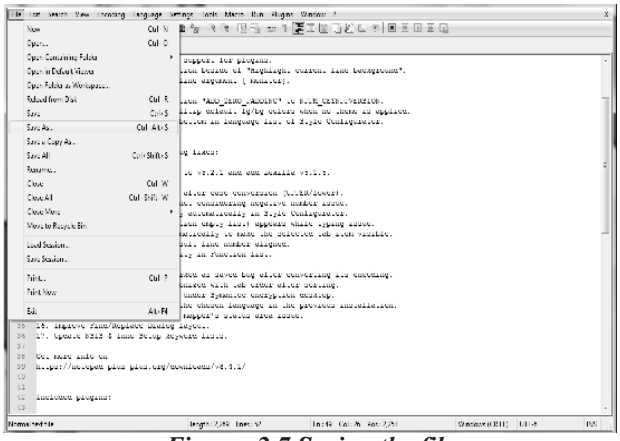


Figure- 2.7 Saving the file

Step-2 Type the name of the file in file name box.

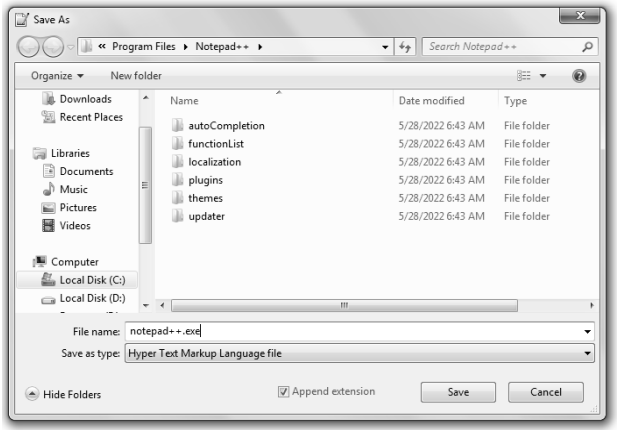


Figure- 2.8 Notepad Save As dialog box

Step-3 Click on the drop down button under Save as type and click on "Hyper text markup language file" to save in HTML format.

Step-4 Select the destination folder where you want to save the web page.

Step-5 Click on Save button.

Now the file is saved in HTML format.

2.5 File Creation and Editing in Sublime Text Editor:

To create a file in Sublime Text Editor, follow the following steps–

Step-1 Open Sublime Text Editor.

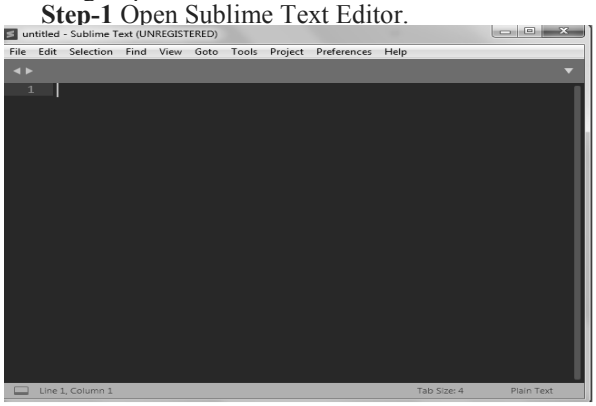


Figure- 2.9 Sublime Text Editor Window

Step-2 Select the language in which you want to write the code. To write HTML program, selet HTML from syntax option in view menu.

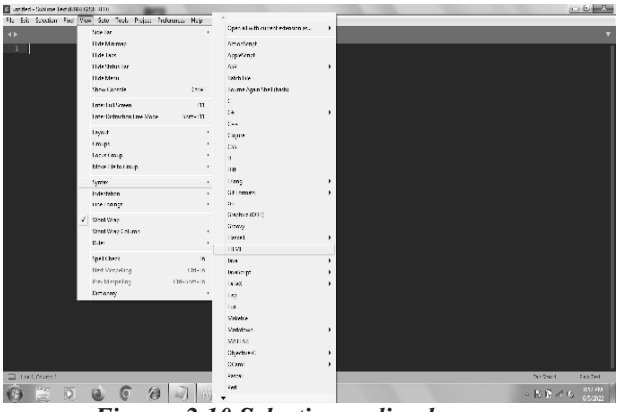


Figure- 2.10 Selecting coding language

Step-3 Now go to your page where you have to write the code.

Step-4 After writing the code, save the file with .html extension.

Follow the following steps for file editing process–

Step-5 Open the file which you want to edit. For this, click on Open File/Open Folder under the File menu or press Ctrl + O button.

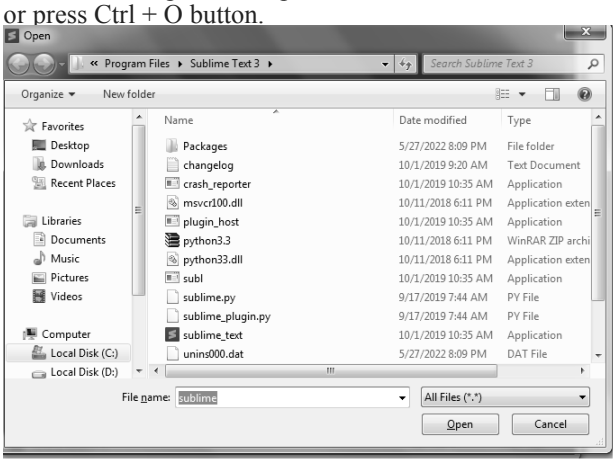


Figure- 2.11 Opening the saved file

Step-6 Select the file you want to Open and click on Open.

2.5(i) Saving file in Sublime Text Editor:

After creating a file in Sublime Text Editor, follow the following steps to save it–

Step-1 Under File menu, click on Save As. A dialog box will appear as shown in Figure 2.12.

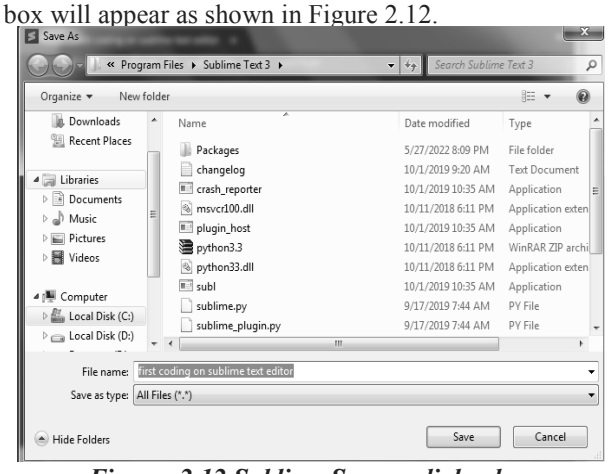


Figure- 2.12 Sublime Save as dialog box