

# 1.0 Introduction to Web Design

Web design refers to the aim of websites that are displayed on the internet. It usually refers to the user

skill aspects of website development rather than software development. The whole thing about your website -

including the content, the way it looks and the way it works is determined by the website design.



Web design is a process of gathering, planning, and constructing of a collection of electronic files that determine the layout, colors, text styles, structure, graphics, images and use of interactive features that distribute pages to your site visitors. Certified Web design helps to build your business trustworthy online.

When you're prepared to construct a website, you have numerous options. If you are not well-known with HTML programming language and Web design applications, there are a number of other options for creating your Web design. Sign up specialized website design expert to construct and build an excellent Web site. Create your own website design via software such as Dreamweaver or FrontPage. Utilize online Web design templates to customize with your company colors, graphics and text.

# 1.1 Introduction of Internet

Internet is network of networks. In order to send and/or receive any kind of information via internet then sender and receivers in anywhere in the world should be connect internet via dedicated routers and servers. Here any kind of information means may be text message, graphics, voice, video and/or any type of file.

The Internet is the global system of interconnected computer networks that use the Internet protocol suite (TCP/IP) to link devices worldwide.



It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents and applications of the World Wide Web (www), electronic mail, telephony and file sharing.

No one owns Internet, although several organizations the world over collaborate in its functioning and development. The high-speed, fiber-optic cables (called backbones) through which the bulk of the Internet data travels are owned by telephone companies in their respective countries which are termed as ISP -Internet Service Provider. Every computer in the network is connected using two

protocols -Internet Protocol and Transmission Control Protocol.

# **1.1.1 Internet Protocols**

The Internet Protocol is responsible for addressing hosts and for routing datagrams (packets) from a source host to a destination host across one or more IP networks. Internet Protocol (IP) is the principal communications protocol in the Internet protocol suite for relaying data-grams across network boundaries. Its routing function enables internetworking and essentially establishes the Internet.

IP is the primary protocol developed in 1970's and IP is one of the heart of the Internet Protocol. The

network makes no guarantees about the packet. IP is often used together with TCP and referred to interchangeably as TCP/IP. IP versions are IPv4 and IPv6, IPv4 address length is 4 Bytes and IPv6 address length is 16 bytes. IPv4 most used network protocol. IP is a routable network-level protocol used for unreliable communications of data from one network node to another. IP documented in RFC 791 standards.

## **1.1.2 Features of the Internet**

- Mail anywhere in the world in a moment with the fastest mailing service of the world called "email" and we exchange the messages with another person through Chatting.
- Transfer files to anywhere in the world

- Find any information about any (recognized) people, product, institution, country etc.
- Call anywhere in the world
- Watch TV
- Connect to people in just a moment
- Do shopping (Also foreign products also)
- Discuss & receive suggestions on our problems...  
Also can suggest others on their problems...
- Make an application for admission
- Pay our telephone bills... etc.,
- Enjoy Movies / Music.
- Play online games.
- Promote our product by giving advertisement on websites.
- View live maps of anywhere of the world.

# 1.1.3 Internet Services

Internet Services is referred as the facility you are availed through internet. There are many kind of internet facility we are availed now-a-days.

- **Online**

## **Transaction**

All the financial companies or banks have been online and making online

transactions from a far away branch to its head branch. All the share market companies are trading online. A share holder buys and sells the share of him / her online.





- **Searching**

When we need any kind of information we do find it on a certain website or search it through search engines, we can find any mathematical or scientific solution of a query. You can even find software for free through internet.

- **Ticket Booking**

We can book tickets of airlines, railways, buses, movies and so on. Only we need to pay the amount of that through a payment gateway.

- **Online Application**

Now-a-days an application for a post is applied through online mode in every government, private department and other important service.

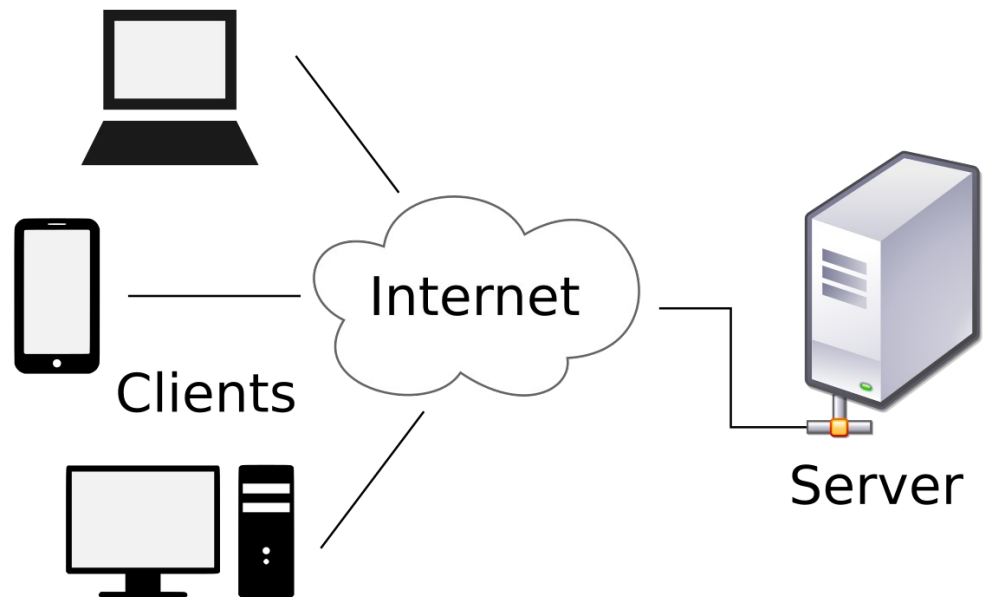
- **E-Communication**

There is number of facilities to communicate through online. Sending email, chatting, sending

free sms to cell phones, voice on internet protocol and so on.

- **Weather forecasting**

Internet is used to broadcast the news and weather report.



- **E-Commerce**

Through internet, we can buy and sell anything online. There is number of buy & sell web portals and we can also do advertisement of any brand or asset through various popular advertising websites.

- **E-Governance**

Internet is playing a big role for changing weaker section of society with help of transparency. E governance is implementation of government schemes through different portals to reach common people i.e. Passport making, PAN card making, Online tax filing, Adhar card making etc.

## **1.2 WWW**

World Wide Web is a set of program standards to allow a user to access web pages governed by the protocols where you can create or access your websites containing text, images, graphics, audio and video. For accessing files or creating new files or displaying on web through hyperlinks supported by HTTP protocol.

World Wide Web (WWW) was invented by Tim Berners-Lee CERN, 1989 WWW (World Wide

Web) is a network of internet sites. It is a system of interlinked hypertext documents accessed via Internet. You can view web pages that may contain text, images, videos and other multimedia and navigate between them via hyperlinks. Followings are the characteristics of WWW. It is a software programs (Web browsers) developed to access the Web Page. First Web browser, Lynx in 1989 used for text only and Mosaic (1992), introduced at the University of Illinois used for graphical, video, music and text all. Mosaic leads to Netscape Navigator in 1994 and Internet Explorer browsers in 1995.

## **1.2.1 Web Browsing Software**

Web browsing is a kind of software which is used to access the web contents. This kind of software

is used at the client side. This contains various tools which are used to navigate the web contents. We need to type the address (URL) of the website at the address bar (URL bar) in the web browser and this will let you reach to the home page (default) of the website.

## 1.3 Website

The documents which contain combination of computer data including graphics, sounds, text, video multimedia and interactive content that runs while the user is interacting with the page. Each website has its own unique address which let a user to access the web page through client side application known as web browsers. We enter the website address in browser URL bar and access the website. Here's an address of a website like <http://www.tbalaji.in>

# 1.3.1 Web Portals

Web portals are the websites which contain a certain data or information as well as links to other websites to avail related data or information. These websites seem to be complete suite about a certain field known as web portals.

# 1.3.2 Web Address

Web address is a unique name following by the domain name is used to access a certain website to avail related information. These addresses are known as URL (Uniform Resource Locators).

## Elements of URLs used...

- Protocols
- Web server
- Domain name

# Protocols

Protocols are set of rules programs to communicate.

- ftp (File Transfer Protocol)- Organizes the text and binary files in a hierarchical structure, like a tree.
- gopher (Transmission Control Protocol/Internet Protocol) - Organizes the text or binary files in menu structure.
- http (Hyper Text Transfer Protocol)- Links multimedia files like images, graphics, audio and video to world wide web.
- mail (Simple Mail Transfer Protocol / Post Office Protocol)- Send electronic messages upto 64 KB.
- news (Network New Transfer Protocol)- Organizes newsgroup in hierarchical structure.

## **1.3.3 Web servers**

A web server is a remote database which provides information to the user via web browsers requested.

# **1.4 Working with website**

## **How the Website Works?**

These web pages are usually located on a web server that is linked to the Internet. The web server is a computer that has been built exclusively to host websites. Finally, the web server is an internet connected computer that receives the request for a web page sent by browser. The browser connects



your computer to the server through an IP address or domain name.

The following diagram demonstrates what happens each time you view a website.

For example, if you type "www.google.com" into your browser, we requested to the web server, please provide the details of related website. Here web server takes your request and search it, if given request is available in web server then it replies accordingly in your web browser else it replies error message.

## **1.5 Web pages**

Web page is a document on internet written and constructed using HTML and are translated by your Web browser. Web pages can either be static or dynamic. Static pages show the same content each time they are viewed. Dynamic pages have content that can be changed.

In other words Electronic document created with HTML and therefore, accessible with a browser. In addition to text and graphics, web pages may also contain downloadable data files, audio and video files and hyperlinks to other pages or sites. There are multiple types of information that could be presented on web pages, which could be divided into two main groups - perceived information (visible to the website visitor) and hidden information (hidden from the visitor's eye). Depending on the purpose and target audience of a

website, Its perceived information could be textual, non-textual and Interactive.

The non-textual information includes static images (e.g. GIF, JPEG, PNG or TIFF), animated images (eg animated GIF, Flash, Shockwave, Java Applet), vector formats (e.g. Flash, SVG), audio file formats MIDL WAV, MP3, Java Applets).  
vidéo files (WMV, RM, FLV, MPG, MOV).  
Interactive content on web pages could be displayed via DHTML, interactive illustrations, script orchestration or DHTML based buttons. For interaction between the content on separate pages developers use hyperlinks and forms. The hidden information on web pages includes comments, metadata, charset details, CSS visual specifications, scripts (e.g. JavaScript, Ajax).

Depending on the type of information, a web page could be qualified as being static and dynamic. Static web pages contain static text files that are displayed on the screen the way they are stored on the web server. Dynamic web pages, in turn, are retrieved by the browser in accordance with the interactivity instructions set for the particular web page, mostly by the use of Database.

## URL (Uniform Resource Locator)-

Every Web page has a unique address called a URL which identifies where it is located on the Web For example the URL for Google <http://www.google.co.im>. The basic parts of a URL often provide "clues" to where a web page originates and who might be responsible for the information at that page or site.

# 1.6 Front End

A front end of any website is part of a system that is directly accessed and interacted by the user to receive or utilize capabilities of the website. It enables users to access and request the features and

services of the underlying website. In other words Front-end construct the visible parts of websites that users see and interact with in their web browsers. The front end is built with languages like:

HTML, CSS, JavaScript etc.

The front end development also referred to as "client-side" development, it includes everything user experiences directly: from text and colors to buttons, images and navigation menus.

A common front-end job title is "web designer." A web designer, you guessed it, designs websites. The job title of web designer is pretty broad, though. A web designer could just be someone who designs the sites in a program like Photoshop or Fireworks and will never touch the code. But in another location, a web designer could do all the design comes in Photoshop and then be responsible creating all the HTML and CSS (and sometimes even JavaScript) to go along with it. A front designer or developer can create a site without any back-end development.

The sites they would create without a web developer, or using the back-end, is a static site. A static site is something like a site for a restaurant. It doesn't require any information to be stored in a

databas The pages will almost always stay the same, unless it's time for a redesign.

## 1.7 Back End

Back end developers build the invisible parts of websites that users don't interact with directly. The back-end, or the "server-side" is basically how the site works, updates and changes. This refers to everything the user can't see the browser, like databases and servers. Usually people who work on the back-end are called programmers or developers. The back-end is built with languages like: Php. Python etc.

The backend ("server-side") is the portion of the website you don't see. It's responsible for storing and organizing data and ensuring everything on the client-side actually works. The backend communicates with the front-end, sending and receiving information to be displayed as a web page. Whenever you fill out a contact form, type in a web address, or make a

purchase (any user interaction on the client-side) and your browser sends a request to the server-side, which returns information in the form of frontend code that the browser can interpret and display. A back-end developer or at least back-end development, is required to create a dynamic site.

A dynamic site is a site that's constantly changing and updated in real-time. Most sites are dynamic) sites, as opposed to static sites. Facebook, Google Maps and this blog are all considered dynamic sites. Blogs are dynamic sites, since their content is constantly changing and updating. A dynamic site. requires a database to work properly. Web developer's work with programming languages like PHP or Net, since they need to work with something the database understands. The code they write communicates with the server and then tells the browser what to use from the database.



# 1.8 Client and Server Scripting Languages

All websites generally run on two components namely:

## 1.8.1 Client Scripting

To view a website, user has to use a browser. This browser can be termed as a client. The client can use different technologies like mobile phones, laptops, computers, tablets etc.. to view the websites. Here the client side scripting is being used and processed. The client-side scripting is performed by a browser.

## Client- side scripting

It performed to generate a code that can run on the client end (browser) without needing the server

side processing. Basically, these types of scripts are placed inside an HTML document. The client-side scripting can be used to examine the user's form for the errors before submitting it and for changing the content according to the user input. The web requires three elements for its functioning which are client, server and database. The effective client-side scripting can significantly reduce the server load. It is designed to run as a scripting language utilizing a web browser as a host program. For example, when a user makes a request via browser for a webpage to the server, it just sent the HTML and CSS as plain text and the browser interprets and renders the web content in the client end.

## **Client-side scripting languages**

1.HTML- It is the basic building blocks of web programming which provides the frame to the website. It describes the arrangement of the content.

2.CSS- CSS provides the way to design the graphic elements which help in making the appearance of the web application more attractive.

3.JavaScript- It is also a client-side scripting language which essentially designed for the specific purpose, but currently there are various JavaScript frameworks used as server-side scripting technology.

Earlier, Client scripting was used mainly for page navigation, formatting and data validation. Today, Client-side scripting is rapidly growing and evolving. As a result, it is

now faster and easier to do client side scripting, leaving less work for the server.

## 1.8.2 The Server Scripting

The server can, however, be at any remote place around the globe. The server can run back-end architecture of a website, process requests and response pages to the browser, and so on. Server-side scripting is usually done by a web server. The server-side scripting usually happens on the back-end of a website. The user does not get access to view what happens here.

The Below figure shows how the back-end scripting is working properly

Server-side scripting is a programming language which can run and execute on the server side. In

simple words any scripting or programming language that can run on the web server is known as server-side scripting. The operations like customization of a website, dynamic change in the website content, response generation to the user's queries, accessing the database and so on are performed at the server end.

The server-side scripting constructs a communication link between a server and a client (user). Earlier the server side scripting is implemented by the CGI (Common Gateway Interface) scripts. The CGI was devised to execute the scripts from programming languages such as C++ or Perl on the websites.

When a browser sends a request to the server for a webpage consisting of server-side scripting, the web server processes the script prior to serving the

page to the browser. Here the processing of a script could include extracting information from a database, making simple calculations or choosing the appropriate content that is to be displayed in the client end. The script is being processed and the output sent to the browser. The web server abstracts the scripts from the end user until serving the content, which makes the data and source code more secure.

# Server-side scripting languages

After the introduction of CGI, multiple programming languages were evolved such as PHP, Python, Ruby, Cold Fusion, C#, Java, C++ and so on for server side scripting among which some of them are described below:

**PHP-** It is the most prevalent server-side language used on the web which was designed to extract and manipulate information in the database. The language is used in association with SQL language for the Database. It is used in Facebook, Word Press and Wikipedia.

**Python-** The language is fast and contains shorter code. It is good for beginners as it concentrates on the readability and simplicity of the code. Python functions well in the object-oriented environment and fused in famous sites like Youtube, Google, etc.

**Ruby-** A dynamic, open source programming language with a focus on simplicity and productivity. It has an elegant syntax that is natural to read and easy to write.

## Comparison Chart

	<h2>Server-Side Scripting</h2>
are	Works in the back end which could not be visible at the client end.
on the server.	Requires server interaction.
	PHP, ASP.net, Ruby on Rails, ColdFusion, Python, etc.,
	Could effectively customize the web pages and provide dynamic websites.
	Relatively secure.

The scripts can be written in two forms, at the server end or at the client end. The main difference between server-side scripting and client-side scripting is that the server side scripting involves server for its processing. On the other hand, client-side scripting requires browsers to run the scripts



on the client machine but does not interact with the server while processing the client-side scripts.

# 1.9 Responsive Web Designing

The Internet took off faster than anyone would have predicted, growing like crazy. Now, for the past few years, mobile growth has expanded in day to day life. These days it is hard to find someone who doesn't own a mobile device connected to the Internet. With the expansion in mobile Internet usage comes the question of how to build websites suitable for all users including mobile users. The industry response to this question has become responsive web design, also known as RWD.

Responsive web design is the practice of building a website suitable to work on every device and every screen size, no matter how large or small, mobile or desktop. Responsive Web Design is a method through which we automatically resize, hide, shrink or enlarge, a website, to make it look good on all devices (desktops, tablets and mobile phones). A web page should look good on any device. Responsive images are images that scale nicely to fit any browser size. Web pages should not leave out information to fit smaller devices, but rather adapt its content to fit any device.

## What is a responsive website?

The responsive web design term was largely developed by Ethan Marcotte. Responsive websites have three defining features:

**1. Media queries** - "A media query allows us to target not only certain device classes but to actually inspect the physical characteristics of the device rendering our work. This explains Media queries thus allow developers to use condition checks to alter web designs based on the properties of the user's device.

**2. Fluid grids** - When flexible grids are created using CSS, the columns automatically rearrange themselves to fit the size of the screen or browser window, whether the user is on a 21-inch desktop computer, a 13-inch laptop, a 9.7-inch tablet or a 5.5-inch mobile phone. This enables designers to maintain a consistent look and feel across multiple devices. Plus, it saves everyone time and money

by allowing designers to update one version of the website versus many.

**3. Flexible visuals** -Marcotte refers here to using code that prevents rich media files from exceeding the dimensions of their containers, as well as viewports. As the "flexible container resizes itself," he explains, so does the visual within it. Given that there are over 8.48 Billion unique devices in existence today, this functionality allow teams to create timeless designs capable of adapting to any device, regardless of its size or shape.

Together, these three types of functionality allow designers to craft responsive websites.

# **1.10 Types of Websites (Static and Dynamic Websites) -**

Website is a set of related web pages that may contain text, images, audio and video. A website can be of two types, one is Static Website and other one is Dynamic Website. Websites that only use HTML and CSS are called static websites, and websites with scripting languages are called dynamic websites. When creating your website, it's important to recognize which kind of site you want. Let us see in brief regarding static and dynamic website.

## **1.10.1 Static Website**

Static website refers to a collection of webpages whose content is fixed and is the same for every user. Fixed content means no use of database in the website. Static web pages are often HTML documents stored as files in the file system and made available by the web server over HTTP. Static websites do not require any Web programming or database design. Additionally, making updates to static websites means going directly into the HTML and making the changes from there.

Static website is the fundamental type of website that is easy to build. You don't need the knowledge of web programming and database design to create a static website. This means that every user who visits that website will receive the exact same information.

Additionally, making updates to static websites means going directly into the HTML and making the changes from there.

# Advantages and disadvantages of static web site -

## Advantages:

- Less complex to develop web pages.
- Usually faster in loading on browsers.
- Static websites are cheaper in price for the development.

## Disadvantages:

- Non-interactive web pages.

- Updates must be made directly within the HTML code.
- Cannot perform the complex functionality required in many modern sites.

## 1.10.2 Dynamic website

Dynamic website is a group of web pages whose content changes dynamically. Dynamic website access data from database. Therefore, when you alter or update the content of the database, the content of the website is also altered or updated. Dynamic website uses client-side scripting or server-side scripting or both to generate dynamic content. These sites also include HTML programming for the basic structure.



# Advantages and disadvantages of Dynamic web site -

## Advantages:

- It is much easier to add new content without accessing coding.
- Dynamic website has interactive web pages.
- Able to use it in more complex scenarios such as an online store, forum, social media platform, int etc.

## Disadvantages:

- More complex to develop.
- Greater risk of security issues.
- Costs are higher than for a static website.

# Difference between Static and Dynamic websites

Static Websites	Dynamic websites
These websites have fixed number of pages.	These websites can create webpage dynamically.
Subject of website and data of webpage are Webpage fixed.	Webpage design and data may change on run time.
Static websites load quickly on client browser because it has only some markup contents.	Dynamic sites take some time to load on client browser because it processes the request

	server de and create contents dynamically.
Static websites Never usedatabase connectivity.	Dynamic sites deal with database.
Static websites Highly secure than dynamic sites because it behaves as a half duplex approach so only one way communication is possible i.e. server to client.	Dynamic sites are less secure because it behaves as full duplex approach so both side communications is possible so user can change the server data.
Static sites can not change data on run time.	Dynamic website's content changes frequently on run time. Like - e-commerce site, online examination.
Static website directly run on browser and does not	Dynamic website run the application on server on

<p>require other server application language. Static website can be created from HTML and CSS.</p>	<p>and the output will display on webpage.</p>
<p>Static sites are easy to develop and a bit experienced people can develop it.</p>	<p>Dynamic websites not easy to develop because require qualify developers to create it, manage it, test it and maintain security of application and database.</p>
<p>Low in cost</p>	<p>High in cost</p>
<p>In static website if we want to change page content then we have to upload t page on server many times.</p>	<p>Dynamic sites provide the facilities that it that possible to change the page content using server application. And need not to upload the page on server.</p>



