



# Introduction to Web Design

## **Contents to be covered . . .**

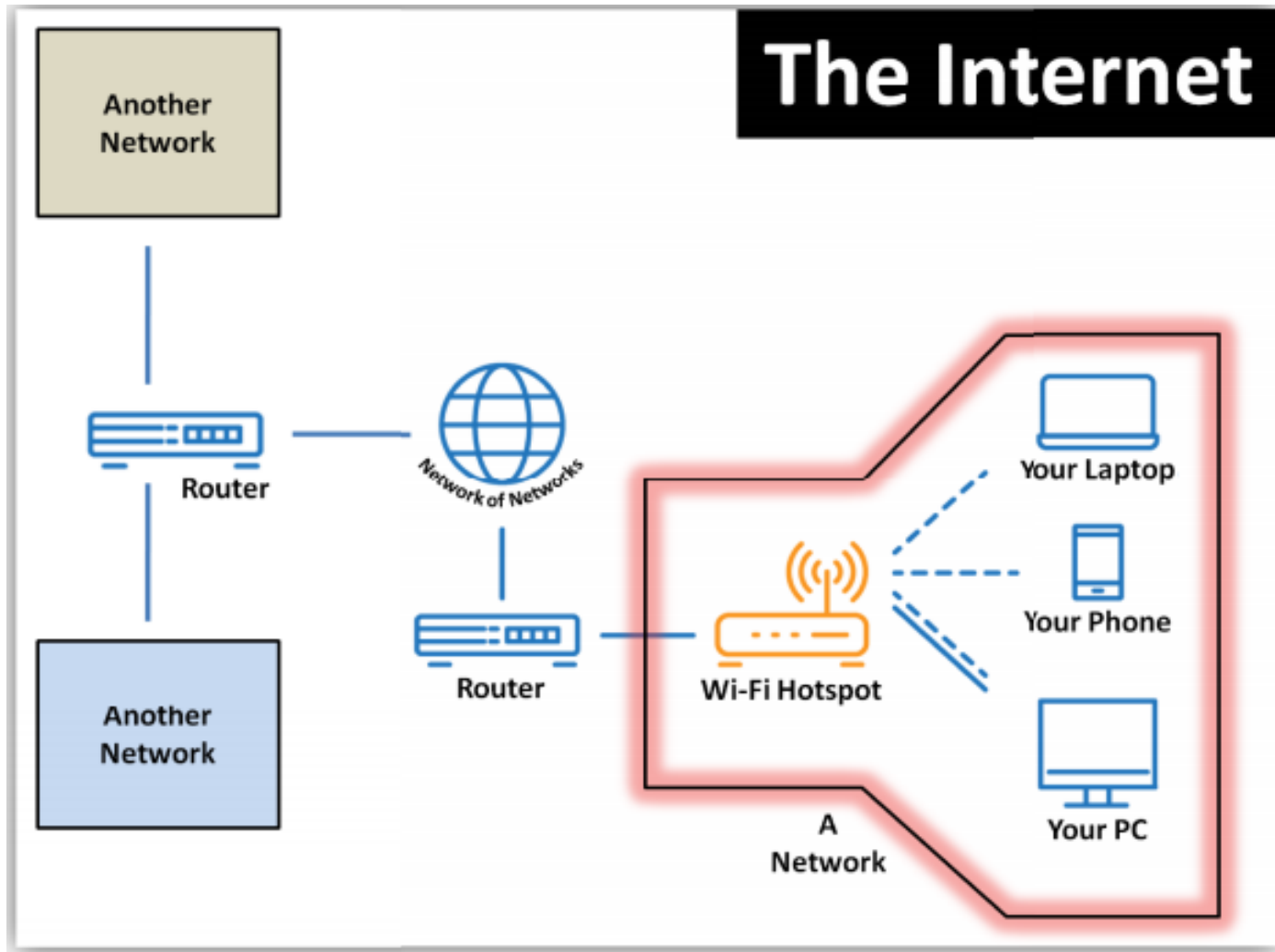
# **Unit 1: Introduction to Web Design**

- ☐ Introduction of Internet
- ☐ WWW
- ☐ Website
- ☐ Working of Websites
- ☐ Web pages
- ☐ Front End
- ☐ Back End
- ☐ Client and Server Scripting Languages
- ☐ Responsive Web Designing
- ☐ Types of Websites (Static and Dynamic Websites)

## Introduction to Internet

- ❑ The Internet is a globally connected network system that uses TCP/IP (Transmission Control Protocol/ Internet Protocol) model to transmit data via various types of media (wired or wireless).
- ❑ It is a network of networks (**Inter** - **Net**working).
- ❑ It is network of global exchanges including private, public, business, academic, government etc. networks connected together.
- ❑ Millions of millions people are users of Internet.
- ❑ It has complex combination of several technologies and services used around the world every day.

## Introduction to Internet (Contd ...)



## 5 History of Internet

- ❑ The Advanced Research Project Agency (ARPA) in the Department of Defences (DoD) of US government was initially desired to connect its computers so that researchers could share the resources.
- ❑ In 1967, ARPA presented its idea for ARPANET, a small network of computers. The idea was in short that each host computer would be attached to a specialized computer called IMP (Interface Message Processor) to create network.
- ❑ By 1969, ARPANET connected four nodes - the University of California Los Angeles (UCLA), the university of California at Santa Barbara (UCSB), Stanford Research Institute (SRI) and the University of UTAH via IMPs to form a network.

## History of Internet (Contd...)

- ❑ Then, a team of defence engineers at the University of California at Los Angeles (UCLA) sent the first every instant message **successfully** via computer to another team thousand of miles away at Stanford.
- ❑ The technology continued to grow. In the 1970, after scientist Robert Kahn and Vinton Cerf developed TCP/IP, a communication model that set standard for how data could be transmitted between multiple network.
- ❑ ARPANET adopted TCP/IP on Jan 1<sup>st</sup>, 1983 and from there researchers began assemble the networks of network that became modern Internet gradually.
- ❑ The online world then took on a more recognizable form in 1990 when computer scientist Tim Berners Lee invented WWW (World Wide Web).WWW popularized the Internet among public.

## WWW (World Wide Web)

- World Wide Web (WWW) is sometime referred to only as “Web”.
- The idea of WWW was proposed by Tim Berners Lee in 1989 and the commercial web started in 1990.
- It is **one of the service of Internet** and used for accessing data online in the form of websites and hyperlinks.
- It is repository of information in which the documents are distributed all over the world and related document are linked together.



## WWW (Contd...)

- It is repository of information in which the documents are distributed all over the world and related document are linked together.
- It works on distributed client server service, in which client using browser can access a service from server.
- The service provided is distributed over many location called websites or sites. Each sites holds many web pages and web pages can contain links to other related web pages.



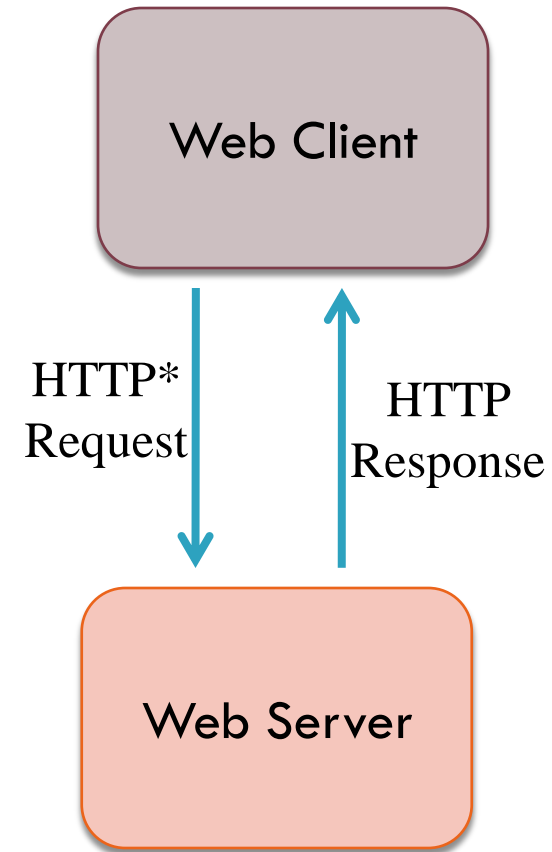
## 9 WWW (Contd...)

### □ Web Client

Web browser is known as web client that interpreted display web pages. A variety of commercial and free web browsers are available in the market like MS Internet Explorer, MS Edge, Google Chrome, Mozilla Firefox Opera, Safari Netscape Navigator Mosaic etc.

### □ Web Server

Web server is a computer where web pages are stored. It is used to host the websites. Web server contains software that respond to the request for web resources made by web clients.



\* Hypertext Transfer Protocol (HTTP). It defines the rules how the communication takes place between web client and web browser.

## Webpage

- ❑ A web page is single document or page available on world wide web
- ❑ The web pages are created using HTML (Hyper Text Mark-up Language) and are interpreted, displayed by web browsers.
- ❑ Each web page has unique address called URL (Uniform Resource Locator) which distinguish one page to another on WWW.  
For example, the URL of a web page of NIELIT like :

<http://nielit.gov.in/content/computer-course-0>

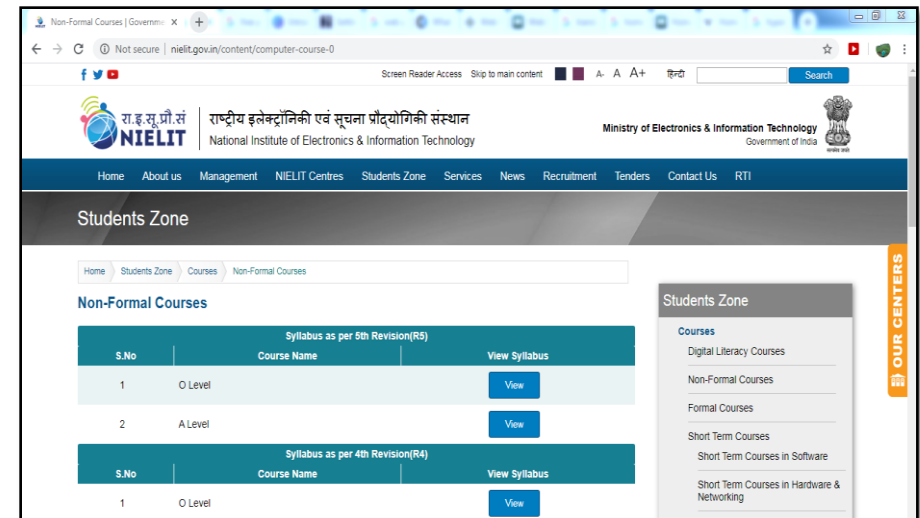


Figure: A Web Page

- ❑ A website is a collection of related web pages.
- ❑ It may contains text and other multimedia elements like images, graphics, videos etc.
- ❑ The website loads with its default web page called Home page of the website.
- ❑ The related web pages are linked together using concept of hyper linking and hyper text.
- ❑ A **hyperlink** is link or reference that points to another webpage or another location of same web page.



Figure: Home page of NIELIT's website

## Website (Contd...)

- ❑ A **hypertext** is those text on webpage that contains hyperlink. When user move mouse over the hypertext, the shape of the mouse gets changed, and by clicking on hypertext, the user can move to another location.
- ❑ Actually the term hypertext has been now replaced with **hypermedia** because not only text but also images, video etc can be hyperlinked in the webpage.
- ❑ A **website can be accessed by typing website's name (known as domain name) in the address bar of the web browser (like Google chrome, Mozilla firefox etc).**
- ❑ Examples of some websites are [www.nielit.gov.in](http://www.nielit.gov.in) (NIELIT's Website), [www.facebook.com](http://www.facebook.com) (Social networking site), [www.google.com](http://www.google.com) (search engine site).

## Working of website

- The working of website can be understood in following steps:
  1. When user makes request for accessing a website by typing its domain name (say [www.nielit.gov.in](http://www.nielit.gov.in)) in the address bar of the browser.
  2. The browser sends request to DNS (Domain Name System) server for looking IP address of the domain name. The DNS translates the human readable domain name into numeric IP address (say 164.100.129.96).
  3. The DNS server returns the IP address to the browser

## Working of website (Contd...)

3. The browser now sends the request for web page using IP address provided by DNS to connect to the web server.
4. The web server responds the request made by web client (browser), and returns the copy of web page static or dynamic based on the request.
5. The web page is now displayed on the web browsers.

## Types of website - Static Website

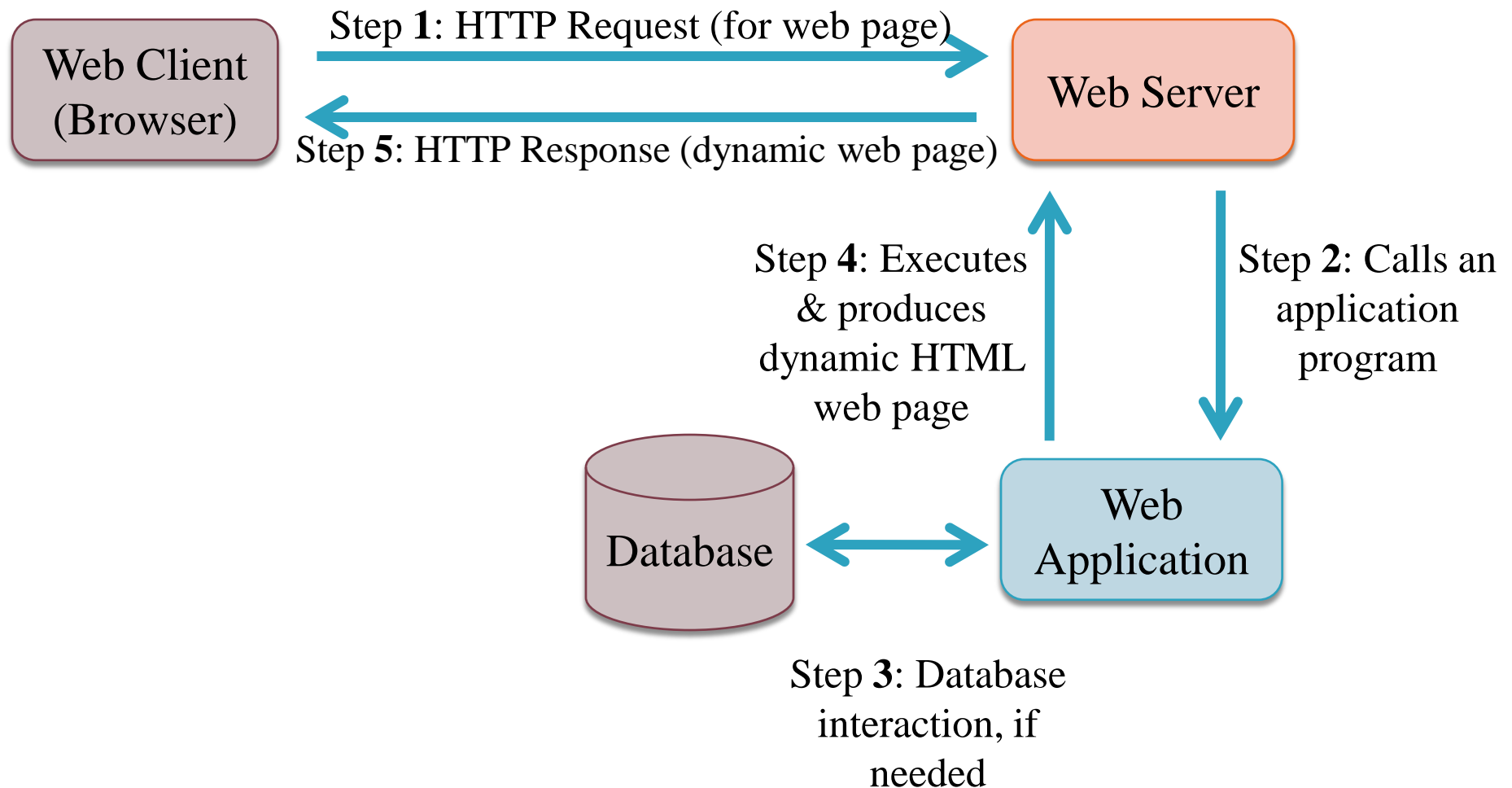
- ❑ **Static websites**, as its name suggests, are those which has predefined and fixed contents and remain same every time when user accesses the website. Static websites are informative website.
- ❑ The user can not interact with static website. Static websites do not require any information to be stored in the database.
- ❑ Static websites are designed using only front end tools (HTML, CSS, JavaScript).
- ❑ The contents of static websites can be changed manually at server side. The user can not modify.





## Types of website - Dynamic Website

- ❑ **Dynamic websites** are created using front end and back end tools. Dynamic website is something whose contents changes dynamically on the basis of user request.
- ❑ The examples of dynamic website include facebook, twitter etc.
- ❑ The contents of these website changes as per the user input. The contents of the facebook's website like posts, comments, photos etc are stored in the database. The facebook page differs from one user to another user.
- ❑ In dynamic website, when user makes request for web page, it is processed at server side and dynamically the web page is created in real time, then transferred to client side and displayed on the browser.

**Dynamic Website (Contd...)**

- **Front end** refers to client side design of website. Front end is involved with what the users see and interact with the website i.e. the User Interface (UI) which includes the design, layout, navigation menu, text, images, videos, image gallery etc.
- The languages used for front end designing and development of the website include
  - **HTML** – It is fundamental language for creating and organizing web contents.
  - **CSS** – It defines the style and layout of the website contents.
  - **JavaScript** – It is used for more interactive elements, handling events and to set the behavior of the webpage.

## Front End (Contd...)

- Apart from above, here are some most popular front end framework and libraries:
  - **JQuery** (Library of JavaScript)
  - **Angular JS** (Library of JavaScript)
  - **W3.CSS** (CSS Framework)
  - **Bootstrap** (CSS and JavaScript Framework)

## Back End

- ❑ **Back end** refers to server side development of website.
- ❑ It is involved with what the user cannot see in the browser like database and server information etc.
- ❑ It concerns with security aspects, data storage and manipulation, content management, user authentication etc.

## Back End (Contd...)

- The languages used for back end development of the website include:
  - Python
  - PHP
  - Java
  - Ruby
- Popular framework for back end:
  - Express
  - Django
  - Node.js

## Scripting Language

- A **script** or **scripting language** is a programming language with a series of commands, being executed without being compiled, it is often interpreted. It automates the execution of tasks.
- A **server side scripting languages** are those that are executed on web server. User can not see the processing of scripts. It deals with database, provide customize and dynamic content to the web page based on the user request. The examples include Perl, PHP, ASP and Python etc.



## Scripting Language (Contd...)

- ❑ A **client side scripting languages** are those that are executed on client side without server side processing of codes. It requires browsers to run the scripts. It can be used to validate user data before submitting to the server. It minimizes the loads of the server. The examples include HTML, CSS, JavaScript.
- ❑ The client side scripting languages deals with front end of the website whereas server side scripting languages deal with the back end of the website.
- ❑ The client side scripting languages are used to design and develop static website whereas server side scripting languages are used for designing of dynamic website..

## **Responsive Web Design (RWD)**

- ❑ **Responsive Web Design (RWD)** means designing of website in such a way that the contents of websites automatically fit and resize that makes the website looks good on all devices (PC, laptop, tablets or mobile phones) wherever it is opened.
- ❑ Now a days, users view the website using different devices (PC, laptop, tablets or mobile phones) and the screen size of the devices differs from one another, therefore the designing of the website must be in such a way that it looks good in all the devices.
- ❑ **HTML** and **CSS (Cascading Style Sheet)** technologies are used together to make the website responsive.

## Responsive Web Design (Contd...)

- We can understand it by following figure which depicted how the contents of the website fits, arrange and resize on various screen size:



1. Computer Screen  
(Large Screen)



2. Tablet Screen  
(Medium Screen)



3. Mobile Screen  
(Small Screen)

### Responsive Web Design (Contd...)

#### Popular framework for RWD

1.

W3.CSS

2.

Bootstrap

## **W3.CSS**

- ❑ W3.CSS is a free and modern CSS framework published by W3school for developing responsive, mobile-first websites.
- ❑ It is smaller and faster than similar CSS frameworks. It is easier to learn and use.
- ❑ It simply and speed up the development of website
- ❑ W3.CSS is inspired from Google Material Design.
- ❑ It includes only standard CSS. No jQuery or JavaScript library included in it.

## **Bootstrap**

- ❑ Bootstrap is a web framework that simplify the development of informative web pages.
- ❑ It is one of the most popular HTML, CSS, and JavaScript frameworks for developing responsive, mobile-first websites.
- ❑ It is open source toolkit having powerful library of typography, forms, navigation bar, image gallery, buttons, carousel etc.
- ❑ Bootstrap, originally named Twitter Blueprint, was developed by Mark Otto and Jacob Thornton at Twitter as a framework. After a few months, it was renamed from Twitter Blueprint to Bootstrap, and released as an open source project on 19<sup>th</sup> August, 2011.

**Thank  
You !!!**