DEPARTMENT OF COMPUTER SCIENCE AND MATHEMTICS
COLLEGE OF BASIC AND APPLIED SCIENCES
COURSE OUTLINE

CSE 104/MTU CSC 104 Introduction to Web Technologies (2 Units: LH 30)

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CHAPTER ONE
CONCEPT OF THE INTERNET

1.1 The Internet (Information Superhighway)

The Internet or simply called “the Net” is an international network which began as a U.S. Department of Defense network to link scientists and professors around the world. It connects several thousands of different networks from more than two hundred countries across the globe together.
Internet is one of the most crucial developments in the history of information system, and it is the world largest and most widely used network. The Internet provides a very flexible platform for distributing at almost no cost to millions of people throughout the world. Internet is also extremely elastic, that is if networks are added or removed or failures occur in any parts of the system, the rest of the Internet continues to operate. Since the introduction of the Internet, companies and private individuals can exchange business transactions, text messages, graphic images, video and audio, whether they are located within the same building or in another country.

The computers in the Internet communicate by using common protocol called TCP/ IP (TCP/IP for Transmission Control Protocol/ Internet Protocol). This allows different computers on different networks to communicate with one another other.

The main uses of the Internet are:

1. Electronic-mail (E-mail)

Electronic-mail links computer together through wired or wireless connections and allows users to send and receive messages via electronic mail boxes. With e-mail, you type in recipient’s e-mail address, subject and the message, and then click on the send icon. This message will go to the recipient’s mailbox and be stored on the server until that person accesses it.

E-mail addresses are of two parts. The first which is the portion of the address to the left of the @ symbol is the name or identifier of the specific individual or organization. While the second part to the right of @ symbol is the domain name which is the unique name of a collection of computers connected to the internet. The domain contains sub domain separated by a period. The general form therefore is **user @ computer.domain**. Examples are: rashmoye@yahoo.com, myoolumoy@yahoo.com etc.

The major benefit of E-mail is confidentiality; no one can access an individual mailbox without knowing the password. E-mail is widely used for setting up meetings within business organization, distribution of memoranda throughout an organization and for communication between employees and offices and to communicate with customers and suppliers. Researchers can also use this facility to share idea, information and documents.

2. Telnet (Remote Login)

Internet offers a large number of services, among the service is Telnet, which allows someone allows someone to log on to a computer system while working with another one.

Telnet is a protocol that establishes an error-free, rapid link between the two computers, allowing you for example to log on to your business computer from a remote computer. Telnet uses the computer address you supply to locate the computer system you want to reach and to connect you to it. The other computer that the telnet program connects you to is called the remote computer.

3. File Transfer

Another fundamental function of the Internet is file transfer or information retrieval. Many hundreds of library catalogs are on-line through the Internet including those of such giants as the library of congress. In addition, users are able to search and retrieve information from many thousands of databases that are opened to the public.

One can use the Internet to locate and download some of these free software, textbooks, games, photos, music other intellectual materials that are readily available on computer across the globe. Some of the methods of accessing and locating files are:

➢ File Transfer Protocol (FTP)

This is a method of information retrieval that allows users to connect to a remote computer and transfer publicly available files to your own microcomputer hard disk or Universal Serial Bus flash dive. File transfer protocol is a very fast and easy method of downloading files from the remote computer to users' computers. The free files offered covers nearly anything that can be stored on computer software, games, photos, music and books.

➢ Gophers

A gopher is a powerful tool that allows users to locate information stored on Internet gopher server via an easy-to-use and hierarchical menu. The gopher is a menu-based tool that enables users to search for public information on the Internet. Each gopher site has its own system menu listing, subject- matter, topics, local files and other relevant gopher sites. A gopher site might have as many as several thousand listings within its menu. When using gopher software to search for a particular topic or related item on the menu, the server automatically takes you to the appropriate file on that server on which the information is located.

➢ Search Engines

A web search engine is an interactive tool that assists people to locate information available on the World Wide Web. The web consists of databases that contain references of thousands of resources. A web search engine provides an interface for the user to interact with the database by submitting questions which ask the database if it contains resources that matches the questions.
The commonest search engines are:

(i) AltaVista: http://www.altavista.digital.com
(ii) Excite: http://www.excite.com
(iii) Google: http://www.google.com
(iv) Infoseek: http://www.infoseek.com
(v) Lycos: http://www.lycos.com
(vi) Yahoo: http://www.yahoo.com
(vii) Hotmail: http://www.hotmail.com

➢ Chatting

This allows two or more people that are simultaneously connected to the internet to hold live and interactive conversations. Chatting can be an effective business tool for discussion, if the parties involved set an appointed time to meet and talk.

4. Groupware

This is software that provides functions and services that will support the various activities of different work groups. This include the software for information sharing, electronic meetings, e-mail and network to connect the members working on their own desktop computer in different and widely scattered locations.

The major advantage of groupware is that it helps group to make their decisions faster. Example of groupware is video conferencing.

- **Video Conferencing**

This is also called **teleconferencing**, it involves the use of video camera and several computers to allow people in different location to see, hear and talk with one another. Video conferencing provides real time transmission of video and audio signals to assist people in different location to have a meeting. Also, it consists of people meeting in separate conference rooms or booths with specially equipped television cameras. The benefit of this type of technology is that it saves time and cost.

Data conferencing is another type of video conferencing which enables two or more users to be able to edit and modify data files simultaneously.

Intranet and Extranet

Intranets are the internal corporate networks that use Internet technology and the World Wide Web to serve the internal needs of a business organization and are protected from the public by firewall. Intranet requires no special hardware and can run over any existing network infrastructure. The software used by intranet is the same as that of the World Wide Web.

An extranet is an extended private intranet that allows limited access to only designated and authenticated users from remote locations into the company’s intranet. For examples extranet allows selected suppliers, business partners and customers access to relevant information of the organization. Also, it allows students to update their records on-line. Firewalls can be used in companies’ extranet to ensure that access to its internal data is secured and limited to authorized person.

Firewalls as used in intranet and extranet are made up of hardware and software placed in between the organization’s internal and external network for the purpose of preventing unauthorized users from penetrating their private networks.

5 World Wide Web (WWW)

World Wide Web, which is simply called the web, is a system of universally accepted standard for storing, retrieving, formatting and displaying information for Internet users. The web also contains texts, graphical images, pictures, full motion video and sound clip which the users accesses through graphical user interface (GUI).

The web is made of two components:

(i) A Web browser

(ii) A Web server

(i) **A web browser**, or simply the **browser** is a graphical user interface (software) that is used for translating documents into web pages on the computer screen that the users can view. The process of visiting different web sites on the Internet

Examples of web browsers are:

- Netscape Navigator
- Mosaic
- Cello
- Microsoft Internet Explorer
- Amaya
- Hot Java
- Opera.

(ii) **Web server** is the second part of the web which stores information in a series of text files called pages.

The benefit of World Wide Web is that research materials, intellectual properties, news and commercial advertisements can be accessed via the web. All the components that are connected to the World Wide Web have Internet addresses which include their domain names.

To access a website, the user must specify a uniform resource locator (URL), which points to the address of a specific resource on the Web. The process of visiting different web sites on the Internet hosted by various companies, schools, government, news media and individuals is referred to as **Internet browsing** or **net surfing**.

Examples are:

Company	**Uniform Resource Locator**
Mountain Top University	www.mtu.edu.ng
Rashmoye	http://www.rashmoye.com
University of Ado-Ekiti	http://www.unadportal.com
Microsoft	http://www.microsoft.com

Some other Web terms include the following:

- **http:**//: This connotes Hypertext Transfer Protocol which is the communication standard used for transferring information on the Web.
- **HTML**: This stands for Hypertext Markup Language and is a set of instruction called tags or markups that are used to specify document structures, formatting and links to other documents.
- **Web Sites**: This is the Internet location of a computer or server on which a hyperlinked document is store.
- **Web Pages**: A web page is actually a document, consisting of an HTML file.

7. E-Commerce

Electronic commerce is the process of buying and selling of goods and services via electronic methods with computerized business transaction using the Internet, networks and other digital technologies. E-commerce also encompasses these activities supporting marketing transactions, such as advertising, marketing, customer support, delivery, and payment for goods and services. With the introduction of E-commerce suppliers can interact with manufacturers, customers can interact with sales representative and distributors. The application of e-commerce includes; e-marketing business–to–customer (B2C), business–to–business (B2B) and customer–to–customer (C2C).

8. E-Banking

Electronic banking also referred to as internet banking or cyber banking involves the provision of banking services on the internet. Virtually all the banks in Nigeria today are providing banking services via the Internet.

9. E-Learning

E-Learning is a unifying term that covers a wide range of instructional material that can be delivered on a CD-ROM or DVD, over a local area network (LAN), or on the Internet. It can also be described as the use of network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere. E-learning includes Computer-Based Training (CBT), Web-Based Training (WBT), Electronic Performance Support Systems (EPSS), distance or online learning and online tutorials. The major advantage of this mode of study is easy access to students.

CHAPTER TWO
CONCEPT OF WEB TECHNOLOGIES

2.1 Introduction to Web Technology

This section is dedicated to the introduction to Web Technology. In this IT world, we know that the internet is an important platform. Understand that websites look and function in a certain way. Therefore, web developers use various languages. However, the three main languages are HTML, CSS, and JavaScript.

On one hand, *HTML is the backbone of many webpages. In addition, it is used to create the structure of how a particular website would look. From the headings to the paragraphs, the body, links, and even images.*

Web technology is a method by which computers communicate with each other with the help of markup languages and multimedia packages. Further Web technology involves developing a web site for the Internet (World Wide Web) or an intranet (a private network). In the same vein, it can range from developing the simplest static single page of plain text to the most complex web-based internet applications. Moreover, this includes electronic businesses and social network services.

2.2 Meaning of Web technologies

Web technology refers to the means by which computers communicate with each other using markup languages and multimedia packages. It gives us a way to interact with hosted information, like websites. Web technology involves the use of hypertext markup language (HTML) and cascading style sheets (CSS).

In order to make websites look and function a certain way, web developers utilize different languages. The three core languages that make up the World Wide Web are HTML, CSS, and JavaScript.

In the IT world, the internet is an essential platform, whether it`s for developing or for consumer use. When developing a website, typically three main languages come into play. These languages are JavaScript, CSS, and HTML. HTML is the backbone of most webpages. Essentially, it is used to create the structure of how a specific website would look like, from the headings, to the paragraphs, the body, links, and even images.

Web technology refers to the numerous tools and strategies used in the act of communicating between various sorts of devices over the internet. A web browser would be required to visit pages. Web browsers are applications that animations, data, pictures videos, and display text, via the Internet. Web browsers are technology systems that allow users to view hyperlinked content on the World Wide Web.

You're probably aware that machines don't communicate in the same manner that humans do. Computers, on the other hand, need codes or instructions. These codes and commands enable computers to process data. Every second, trillions of zeros and ones are processed to give you the knowledge you want. So, what does this have to do with your capacity to upload your most recent photos on the internet? Everything. Web technology refers to the ways through which computers connect with one another using markup languages and multimedia packages. Web technology has evolved dramatically over the last few decades, from a few marked-up web pages to the capacity to execute extremely precise tasks on a network.

2.3 Major Categories of Web Technology

i). Web Browser: A web browser is a piece of technology that provides the web the internet (World Wide Web). It acts as a bridge between both the server and the client, as well as a conduit for queries to the server for online pages and services. Also, Web browsers are software that use the Internet to show animations, data, photos, videos, and text. Web browsers are software applications that enable users to access hyperlinked material on the World Wide Web.

ii). A **web server** is a software and hardware that responds to client requests over the World Wide Web using HTTP (Hypertext Transfer Protocol) and other protocols. ***The primary role of a web server is to display website content to users by storing, analyzing, and transmitting web pages.*** Web servers, in addition to HTTP, provide SMTP (Simple Mail Transmission Protocol) and FTP (File Transfer Protocol), which are used for email, data transfer, and storage.

iii). Web Pages: A webpage is a digitized file that is connected to the World Wide Web and can be seen by anyone with an internet connection and a web browser.

iv). The World Wide Web The World Wide Web, commonly known as the Internet, is a collection of websites or web pages maintained in web servers and linked to local computers through the web. These websites include textual pages, digital images, audios, and videos, among other things. Users may access the content of these sites through the internet from anywhere in the globe using devices such as computers, tablets, cell phones, and so on. The WWW, like the internet, allows you to retrieve and display text and media on your device.

v). Web development The process of developing, building, and administering websites is known as web development. Included are database management, web publishing, web development, and web design. It refers to the creation of internet-based software, such as from a site.

vi). Ruby on Rails is a server-side web deal that makes app development easier and faster. The reusability of the code, as well as several other great features that will help you get the job done quickly, really set this framework apart. Popular Ruby-based websites included Basecamp, Ask.fm, GitHub, 500px, and many more.

2.4 Classifications of Web Developments

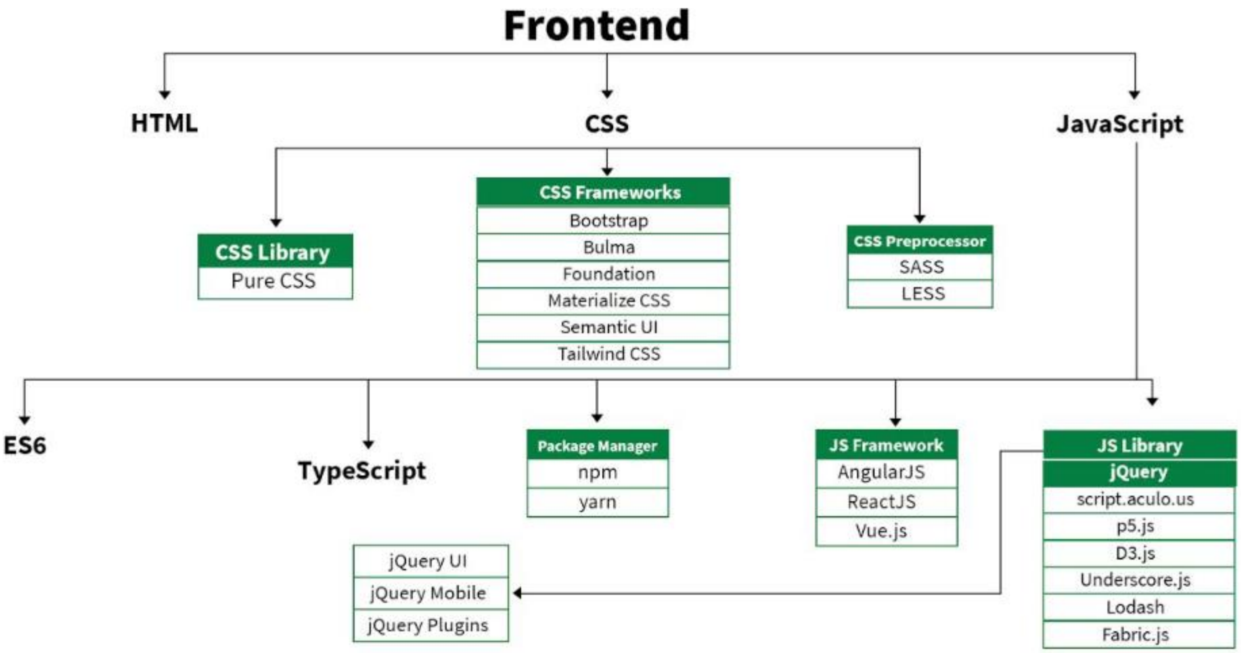
Web development can be classified into frontend and backend. These are discussed accordingly.

2.4.1 Front-end Web Technology (Development)

The part of a website that the user interacts directly with is referred to as the front end. It is also referred to as the 'client side' of the application. The frontend portion is developed by using some languages which are discussed below or as shown in the diagram:

- HTML, or Hypertext Markup Language: It is used to design the front-end portion of web pages using a markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. The markup language is used to define the text documentation within the tag which defines the structure of web pages. It is required when utilizing a markup language to construct the front end of a website. HTML is a markup language and hypertext format. The linkages between two or more pages are defined as hypertext. The markup language is required for specifying the written documentation inside the tag, which in turn determines the structure of the web page. HTML is required to create the foundation for your site.

- CSS: Cascading Style Sheets fondly referred to as CSS is a simply designed language intended to simplify the process of making web pages presentable. CSS allows you to apply styles to web pages. More importantly, CSS enables you to do this independent of the HTML that makes up each web page. CSS, on the other hand, creates the page setup, layout, typefaces, and colors.



- **JavaScript:** JavaScript is a famous scripting language used to create magic on the sites to make the site interactive for the user. It is used to enhancing the functionality of a website to running cool games and web-based software.

- **AJAX:** Ajax is an acronym for Asynchronous Javascript and XML. It is used to communicate with the server without refreshing the web page and thus increasing the user experience and better performance.

- **JS React:** React JS, sometimes known as React, is a JavaScript front-end library that is open source. It creates interactive and dynamic apps while also improving UX/UI design. React JS is exclusively in charge of improving the view layer.

- **Browsers:** Seek data and then display it in a fashion that we can understand. Consider them to be web interpreters. Here are some of the most popular: Google Chrome is now the most popular browser provided by Google. Apple's web browser, Safari Firefox - Mozilla Foundation-supported open-source browser Microsoft's browser is Internet Explorer.

There are many other languages through which one can do front-end development depending upon the framework for example *Flutter* user *Dart*, *React* uses *JavaScript* and *Django* uses *Python*, and much more.
Note: To work as a front-end web developer, you must understand JavaScript, HTML, and CSS.

2.4.2 Back-end Web Technology (Development)

Backend is the server side of a website. It is the part of the website that users cannot see and interact. It is the portion of software that does not come in direct contact with the users. It is used to store and arrange data.

The back-end portion is built by using some languages which are discussed below:

- PHP
- Framework: Laravel
- CMS: WordPress
- NodeJS:
- Framework: Express
- Python:
- Framework: Django
- Package Manager: Python PIP
- Ruby:
- Framework: Ruby on Rails
- Java:
- Framework: Spring, Hibernate

- PHP: PHP: PHP stands for 'Hypertext Preprocessor', with the original PHP within this standing for 'Personal Home Page'. The acronym has changed as the language developed since its launch in 1994 to more accurately reflect its nature. PHP is a server-side scripting language designed specifically for web development. Since PHP code executed on the server-side, so it is called a server-side scripting language. Since its release, there have been 8 versions of PHP, as of 2022, with version 8.1 currently a popular choice among those using the language on their websites. PHP programming can be used to create most things that a software developer needs.

However, there are three main areas in which it thrives.

Server-side scripting- Server-side Script is PHP's main strength. If you are just learning to code and want to explore server-side scripting, PHP is a great language to learn. To get cracking with PHP server-side scripting you'll need to have a PHP parser, web server and web browser.

Command-line scripting - Command-line scripting is ideal for scripts made using cron (Linux) or Task Scheduler (Windows). It is also great for simple text processing.

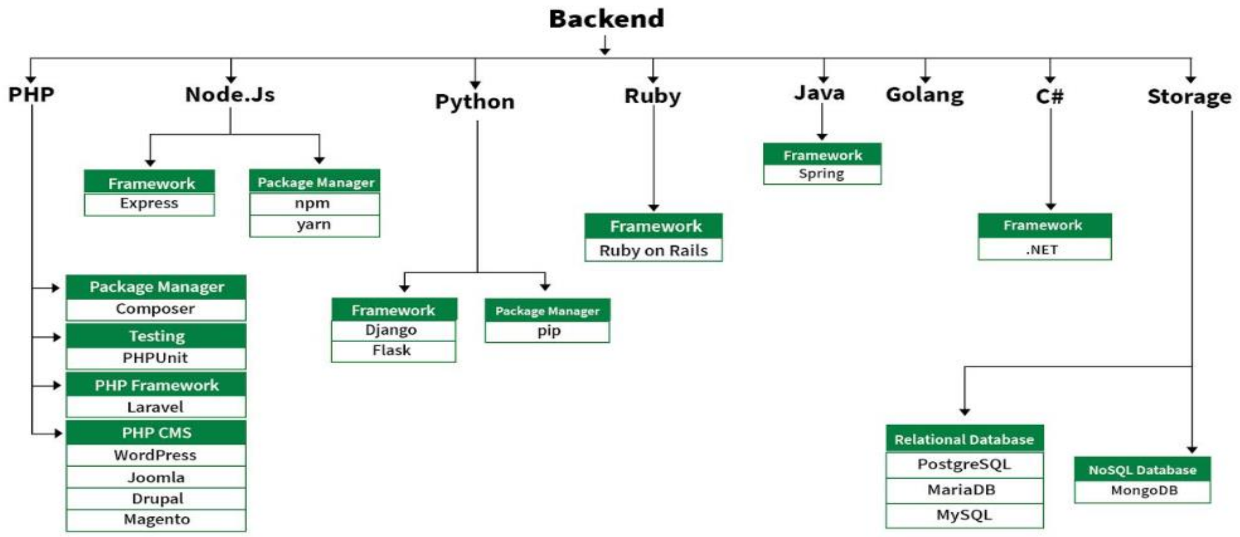
Writing desktop applications- PHP is probably not the best language to use to create desktop applications but for the advanced web developer, it provides you with many more options than its competitors.

- **Node.js:** Node.js is an open-source and cross-platform runtime environment for executing JavaScript code outside a browser. You need to remember that NodeJS is not a framework, and it's not a programming language. Most people are confused and understand it's a framework or a programming language. We often use Node.js for building back-end services like APIs like Web App or Mobile App. It's used in production by large companies such as Paypal, Uber, Netflix, Wallmart, and so on.

- Python: Python is a programming language that lets you work quickly and integrate systems more efficiently.

- Ruby: Ruby is a dynamic, reflective, object-oriented, general-purpose programming language. Ruby is a pure Object-Oriented language developed by Yukihiro Matsumoto.

Everything in Ruby is an object except the blocks but there are replacements too for it i.e procs and lambda. The objective of Ruby's development was to make it act as a sensible buffer between human programmers and the underlying computing machinery.



- Java: Java is one of the most popular and widely used programming languages and platforms. It is highly scalable. Java components are easily available.

- JavaScript: JavaScript can be used as both (front end and back end) programming.

- Golang: Golang is a procedural and statically typed programming language having the syntax similar to C programming language. Sometimes it is termed as Go Programming Language.

- C#: C# is a general-purpose, modern and object-oriented programming language pronounced as "C sharp".DBMS: The software which is used to manage database is called Database Management System (DBMS).

2.3 Markup Languages

Markup languages are the languages in which the web is written. The most common markup language used is HTML, which uses tags to annotate text so that a computer can then manipulate the text. Most markup languages are human readable, and use annotations that are distinguishable from the annotated text. There are many different kinds of markups and languages, but all are consistent in the way in which they annotate documents.

Hypertext

Hypertext is defined as the arrangement of information inside a database that allows the user to receive information and to navigate from one document to another by clicking on highlighted words or pictures inside the primary document. Hypertext is the base of the World Wide Web, because it enables user to click on other links to get more information. Hypertext is a term used for all links, whether it appears as texts or other graphical part.

Hypertext Markup Language (HTML)

HTML is the conventional markup language used to create and edit web pages and web applications. HTML is used for creating the basic structure of a website. HTML consists of different elements preceded by an opening tag, <tag>, and a closing tag, </tag>. The content between the tags, <html> and </html>, is the content of the webpage. The content between the tags, <head> and </head>, is the title of the webpage. This text is displayed between the <title> and </title> tags. The content between the tags, <body> and </body>, is the main content of the webpage. The content can include links , paragraphs, headings, and various other elements.

Here Are the Most Commonly Used HTML Tags:

Tag	Description
<h1> - <h6>	Gives a web page a heading. 1 is the largest heading you can have and 6 is the smallest.
<p>	Starts a paragraph in your web page.
<i>	Italic font style.
<b>	Bold font style.
<a>	Inserts hyperlinks onto a web page.
<ul> & <li>	Starts an unordered or ordered list.
<!DOCTYPE>	Defines the document type of the web page.
<!-- -->	Allows you to insert comments into your HTML code. Comments aren't displayed in on the web page, but are helpful for organization.
<img>	Inserts an image onto a web page.
<br>	Inserts a line break between bodies of text.

HTML Major Versions

HTML 2.0

Published in 1995, HTML 2.0 flushed out the RFC system, allowing detailed mechanical explanations of the system.

HTML 3.2

Published in 1997, HTML 3.2 performed major housecleaning on the structure of HTML. It removed mathematical formulas, reconciled code overlap, and adopted Netscape's Visual Markup Tags.

HTML 4.0

Published at the end of 1997, HTML 4.0 introduced 3 different versions and browser specific plugins. 4.0 Allowed custom experiences tailored to specific browsers.

XHTML

Released in 2000, XHTML fused HTML and XML into a language that was very precise, almost too precise. XHTML is widely considered a tedious and difficult language.

HTML 5.0

Released in 2014, HTML 5.0 is the currently used version of HTML. HTML 5.0 removed some of the tedium and severity of XHTML, while keeping its ability to remain precise and detailed.

2.4 Hypertext Transfer Protocol (HTTP)

HTTP is the protocol used by the World Wide Web that determines how messages are formatted and transmitted. It also directs web servers and browsers to what actions they should take in reaction to several commands. When you open your web browser and enter a URL, you are using HTTP. The Web server directs it to get and transmit the requested Web page based on the HTTP command that is sent.

HTTP Protocol

HTTP is an application used as the fundamental foundation of communication on the web. HTTP is the first letter you type in when inputting a web address. HTTP is a request - response protocol. The client might request something and the http allows the client to access the information. Like when we updated our virtual machines the request, we wanted was to go get updates for the software and http request went out and got updates.

2.5 Cascading Stylesheets (CSS)

CSS is a style sheet language standard set by W3C (World Wide Web Consortium) used to create and edit the visual presentation of web pages. CSS allows web developers to isolate a web page's content and visual styles into separate documents and gives better page layout control. An external CSS sheet is generally linked to HTML and XHTML, it also can be linked to XML, SVG, and XUL. HTML and Javascript, with CSS, is a vital part of technology used by the majority of interfaces for websites. This is also used in interfaces for mobile devices making the websites more engaging.

Here are the most commonly used CSS tags:

Tag	Description
background	A shorthand property for setting all the background properties in one declaration.
color	Sets the color of text.
opacity	Sets the opacity level for an element.
border	Sets all the border properties in one declaration.
border-color	Sets the color of the four borders.
float	Specifies whether or not a box should float
padding	Sets all the padding properties in one declaration.
/*...*/	Allows you to insert comments into your CSS code. Comments aren't displayed in on the web page, but are helpful for organization.
width	Sets the width of an element.
clear	Specifies which sides of an element where other floating elements are not allowed.

Types of CSS

CSS can be incorporated with HTML in 3 different ways; Inline, Internal, and External.

i). Inline styles add style to a single element on the page by placing 'style' after the element you wish to be styled.

Ex: h2 style = "color: blue"

ii). Internal styles create a style for a single document because the CSS is stored in the head of the HTML document. Internal styles are placed using a <*style*> tag around all style selectors.

Ex: <style>
body {background-color: white;}
*/*This is a comment!*
'Body' is the selector,
'background-color' is the declaration/*
h2 {color: blue;}
</style>

iii). External style sheets exist in separate documents from HTML documents, allowing for better organization of style and structure. An external style sheet can be linked to all HTML documents making up a web site, allowing a web developer to style the entire site (all pages) using one document.

2.6 Web Design Programs

Web Design Programs help the webpage creator manage and create the content of a website. Many Web Design programs have many built in tools that ease the process of creating a website. Such programs are ***Dreamweaver and Sublime***. There are also publishing programs like Wordpress and Ghost that allow the user to have more of a GUI based interface for blogging and managing a website.

Sublime

Sublime is a text editor that allows the web developers, programmers, software engineers, etc. manipulate code. It's not only for HTML and CSS it can be set-up for many different programming languages and new productivity tools. One contribution that Sublime has that many do not is the "Package Control" Tool. The tool gives you full access to an entire library of content to better your coding experience. For example, there is a package you can install called Emmet, helping in typing massive amount of HTML, if you type "html:5" and press "tab" then emmet will push out all the correct syntax for an HTML 5 document.

Dreamweaver

Adobe Dreamweaver is a website creation program that allows you to build and publish web pages almost anywhere with software that supports HTML, CSS, JavaScript and more.

SASS

SASS is somewhat like emmet but is more of a language. It is a Ruby engraved language that gives CSS much more capabilities like variables and nesting. Like emmet it makes writing CSS much faster and more efficient saving the programmer lots of time.

2.7 Dynamic Web Content

Client-Side Scripting

Generally, refers to computer programs on the web that are executed by the user's web browser, instead of on a web server, enabling web pages to be scripted. Client-side scripts do not require additional software on the server but instead utilize the user's web browser to understand the scripting language in which it is written.

Server-Side Scripting

Server-side scripting is a technique used in web development that involves using scripts on a web server which produce a unique response for each user’s request to the website.

Combination technologies

When both client side and server-side scripting collectively build a webpage it is known as a web application. This web application can manage user interaction, security, and help improve performance between the client and server. Web applications can include anything from online stores to instant messaging services as long as both server and client sides execute scripts to a achieve a common goal in unison.

2.8 JavaScript

JavaScript is a scripting language that is used along with HTML and CSS as the three core components of the World Wide Web. JavaScript has first-class functions and is used in most websites. JavaScript does not have any I/O which means that it has to be embedded in the host environment. JavaScript is also used in PDF documents, game development, and desktop and mobile applications. JavaScript is most commonly used to make DHTML by adding client-side behavior to HTML pages.

Worldwide Web Consortium

Worldwide Web Consortium (W3C) is an international community of web members to meet the Web standards. It was founded by Tim Berners-Lee, an inventor of the Web, back in the 20th century. W3C is designed to reach a full potential of the Web and to make it accessible to all users from all over the world. Also, another aim for W3C was to make standards to maintain the growth of the Web in a single direction rather than splitting into competing groups. Here are some standards by W3C:

- Accessibility
- Web Authoring
- Web Performance
- Cascading Style Sheets
- HTML5
- Web Fonts
- Widgets
- Media Access
- Mobile Web Applications
- Internationalization of Web Design and Applications
- Mobile Web Authoring
- XML
- Graphics

- RDF
- HTTP

2.9 Data Format

Format of data is used by web applications to communicate with each other. It is light weight text-based data interchange format which means, it is simpler to read and write.

Below are two common data formats used in web development:

- **XML:** Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.
- **JSON:** JSON or JavaScript Object Notation is a format for structuring data.

API: API is an abbreviation for Application Programming Interface which is a collection of comunication protocols and subroutines used by various programs to communicate between them.

2.10 Web Protocols

Web protocols are set of rules followed by everyone communicating over the web.

- **HTTP:** The Hypertext Transfer Protocol (HTTP) is designed to enable communications between clients and servers. HTTP works as a request-response protocol between a client and server. A web browser may be the client, and an application on a computer that hosts a web site may be the server.

- **Other Protocols:**
  - TCP/IP Model
  - UDP
  - FTP
  - SMTP
  - SOAP

2.11 Graphics

Graphical elements are one of the key features of any webpage. They can be used to convey important points better than text does and beautify the webpage.

- **Canvas:** The HTML "canvas" element is used to draw graphics via JavaScript.
- **SVG:** SVG stands for Scalable Vector Graphics. It basically defines vector-based graphics in XML format.

CHAPTER THREEE
BASICS OF HTML

3.1 Introduction

In this article, we will go through all the basic stuff required to write HTML. There are various tags that we must consider and know about while starting to code in HTML. These tags help in the organization and basic formatting of elements in our script or web pages. These step-by-step procedures will guide you through the process of writing HTML.

Outline:

- HTML Paragraph
- HTML Horizontal Lines
- HTML Images
- HTML Attributes
- HTML Comments
- HTML Lists

3.2 HTML Paragraph

These tags help us to write paragraph statements on a webpage. They start with the **<p>** tag and end with **</p>**. Here the **<br>** tag is used to break the line and acts as a carriage return.
<br> is an empty tag.

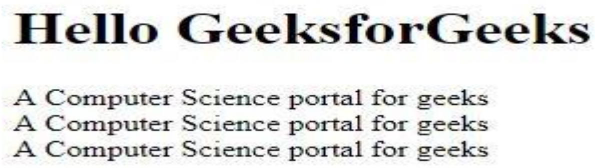
Syntax:

```
<p>GeeksforGeeks</p>
```

Example: This example shows the use of paragraph tag.
html

```
<!DOCTYPE html>
<html>

<head>
   <title>Paragraph tag</title>
</head>

<body>
   <h1>Hello GeeksforGeeks</h1>
   <p>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
   </p>
</body>
</html>
```

Output:



Hello GeeksforGeeks

A Computer Science portal for geeks
A Computer Science portal for geeks
A Computer Science portal for geeks

3.3 HTML Horizontal Lines

The <hr> tag is used to break the page into various parts, creating horizontal margins with help of a horizontal line running from left to right hand side of the page. This is also an empty tag and doesn’t take any additional statements.

Syntax:

```
<hr>
```

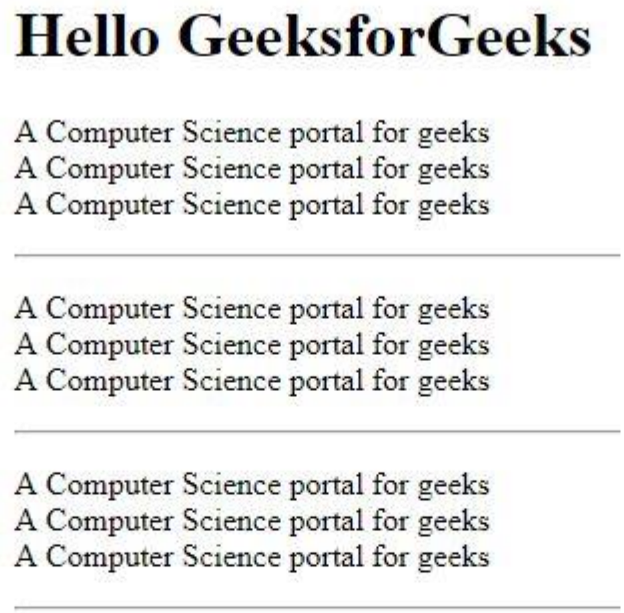
Example: This example shows the use of horizontal row tag in an HTML document.

html

```
<!DOCTYPE html>
<html>

<head>
   <title>Horizontal row</title>
</head>

<body>
   <h1>Hello GeeksforGeeks</h1>
   <p>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
   </p>
   <hr>
   <p>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
   </p>
   <hr>
   <p>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
      A Computer Science portal for geeks<br>
   </p>
   <hr>
</body>
```

```
</html>
```

Output:



Hello GeeksforGeeks

A Computer Science portal for geeks
A Computer Science portal for geeks
A Computer Science portal for geeks

A Computer Science portal for geeks
A Computer Science portal for geeks
A Computer Science portal for geeks

A Computer Science portal for geeks
A Computer Science portal for geeks
A Computer Science portal for geeks

3.4 HTML Images

The image tag is used to insert an image into our web page. The source of the image to be inserted is put inside the **<img src=”*source_of_image*“>** tag.

Syntax:

```
<img src="geeks.png" alt="image">
```

Example: This example shows the use of HTML images in an HTML document.

html

```
<!DOCTYPE html>
<html>

<head>
   <title>HTML Images</title>
</head>

<body>
   <img src=
"https://media.geeksforgeeks.org/wp-content/cdn-uploads/Geek_logi_-low_res.png">
</body>

</html>
```

Output:

3.5 HTML – Attributes

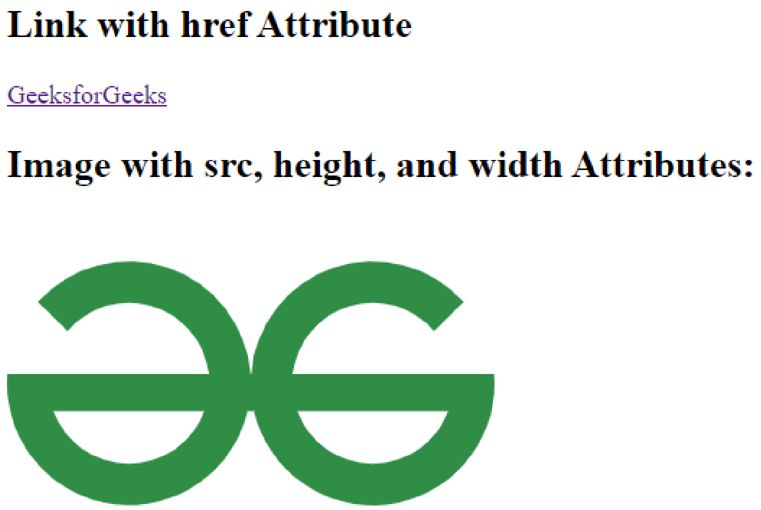
An attribute is used to provide extra or additional information about an element. It takes two parameters name and value. The name parameter takes the name of the property we would like to assign to the element and the value takes the properties value or extent of the property names that can be aligned over the element. Every name has some value that must be written within quotes.

Example: This example illustrates the use of href, height,width and src attribute in an HTML document.

HTML

```
<!DOCTYPE html>
<html lang="en">

<head>
   <meta charset="UTF-8">
   <meta name="viewport"
         content="width=device-width, initial-scale=1.0">
   <title>HTML Attributes</title>
</head>

<body>

   <h2>Link with href Attribute</h2>
   <a href="https://www.geeksforgeeks.org/"
      target="_blank" title="Geeks">
      GeeksforGeeks
     </a>

   <h2>Image with src, height, and width Attributes:</h2>
   <img src="https://media.geeksforgeeks.org/gfg-gg-logo.svg"
        alt="GeeksforGeeks Image" height="200"
        width="300">

</body>

</html>
```

Output:



Link with href Attribute

GeeksforGeeks

Image with src, height, and width Attributes:

3.6 HTML – Comments

It is used for inserting comments in the HTML code. Using comments, especially in complex code, is the best practice of coding so that coder and reader can get help for understanding. It gives help to coder / reader of code to identify pieces of code specially in complex source code.

Syntax:

```
<!-- Write your comments here -->
```

Example: This example shows the use of HTML comments in an HTML document.

HTML

```
<!DOCTYPE html>
<html lang="en">

<head>
   <meta charset="UTF-8">
   <meta name="viewport"
        content="width=device-width, initial-scale=1.0">
   <title>comment in HTML</title>
</head>

<body>
   <!-- there is a comment -->
   <p>GeeksforGeeks</p>
</body>

</html>
```

Output:

3.7 HTML – Lists

A list is a record of short pieces of information, such as people’s names, usually written or printed with a single thing on each line and ordered in a way that makes a particular thing easy to find. For example, shopping list , To-do list etc. HTML offers three ways for specifying lists of information. All lists must contain one or more list

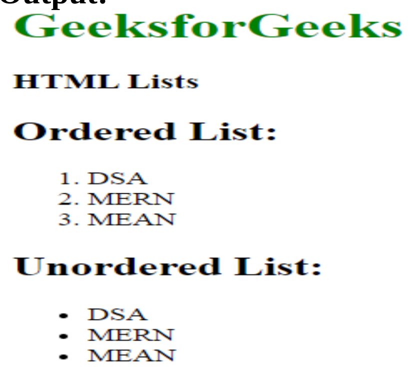
- **unordered list (ul)** : This will list items using plain bullets.
- **ordered list (ol) :** This will use different schemes of numbers to list your items.
- **definition list (dl)** : This arranges your items in the same way as they are arranged in a dictionary.

Example: This example illustrates the use of HTML list with help of HTML document.

HTML

```
<!DOCTYPE html>
<html lang="en">

<head>
   <meta charset="UTF-8">
   <meta name="viewport"
         content="width=device-width, initial-scale=1.0">
   <title>HTML list</title>
   <style>
      h1 {
         color: green;
      }
   </style>
</head>

<body>
   <h1>GeeksforGeeks</h1>
   <h3>HTML Lists</h3>
   <h2>Ordered List:</h2>
   <ol>
      <li>DSA</li>
      <li>MERN</li>
      <li>MEAN</li>
   </ol>

   <h2>Unordered List:</h2>
   <ul>
      <li>DSA</li>
      <li>MERN</li>
      <li>MEAN</li>
   </ul>

</body>

</html>
```

Output:



GeeksforGeeks

HTML Lists

Ordered List:

1. DSA
2. MERN
3. MEAN

Unordered List:

- DSA
- MERN
- MEAN

3.8 HTML Tables

HTML table is a structured way to display data in rows and columns on a web page. It consists of a series of elements that define the structure of the table and its contents.

- **<table>:** The main container element for the table. It contains all the rows and columns of the table.
- **<tr>:** Defines a single row in the table. It contains one or more <td> or <th> elements.
- **<td>:** Defines a cell in a table row. It contains the actual data of the table.
- **<th>:** Defines a header cell in a table. It is typically used to represent column or row headers and is usually bold and centered by default.

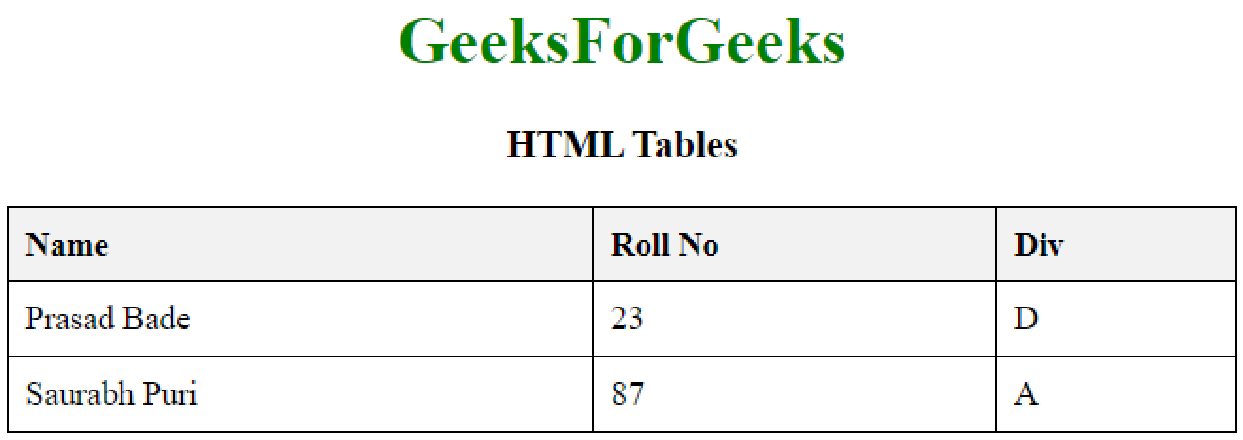
Example: Below example shows how we can create a table in HTML.

HTML

```
<!DOCTYPE html>
<html>
<head>
   <style>
     body{
       text-align: center;
     }
     h1{
       color: green;
     }
       table {
           border-collapse: collapse;
           width: 100%;
       }
       th, td {
           border: 1px solid black;
           padding: 8px;
           text-align: left;
       }
       th {
           background-color: #f2f2f2;
```

```
      }
    </style>
</head>
<body>
  <h1>GeeksForGeeks</h1>
  <h3>HTML Tables</h3>

<table>
    <thead>
        <tr>
            <th>Name</th>
            <th>Roll No</th>
            <th>Div</th>
        </tr>
    </thead>
    <tbody>
        <tr>
            <td>Prasad Bade</td>
            <td>23</td>
            <td>D</td>
        </tr>
        <tr>
            <td>Saurabh Puri</td>
            <td>87</td>
            <td>A</td>
        </tr>
    </tbody>
</table>

</body>
</html>
```

Output:



GeeksForGeeks

HTML Tables

Name	Roll No	Div
Prasad Bade	23	D
Saurabh Puri	87	A

3.9 HTML Course : Starting the Project – Creating Directories

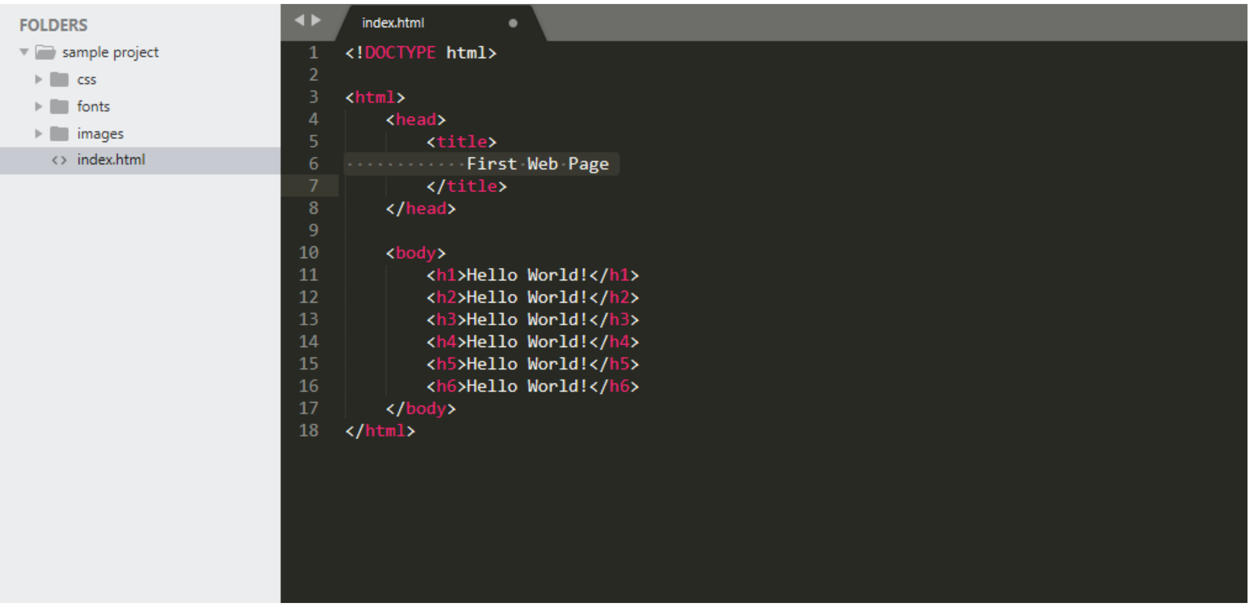
We already have learned a lot of things about HTML. We know:

- The structure of an HTML Page.
- What are Tags and Elements?
- Detailed explanation about some of the Basic Tags that are most commonly used.
- Created our First Web Page to print “Hello World!” in different sizes.

Prerequisites: Before starting the project, we first need to download a suitable code editor for writing our code. Some popular HTML text editors are given below:

- VS Code
- Notepad
- Notepad++
- Sublime Text 3
- Atom

Let us now begin with the project that we saw at the introduction of this course.
The very first step to take will be to create the directories. That is, the folders and files which we need to create to write codes and keep them structured for a well-compiled and clean project.
Below is the list of files and folders needed:



```
<!DOCTYPE html>

<html>
    <head>
        <title>
            First Web Page
        </title>
    </head>

    <body>
        <h1>Hello World!</h1>
        <h2>Hello World!</h2>
        <h3>Hello World!</h3>
        <h4>Hello World!</h4>
        <h5>Hello World!</h5>
        <h6>Hello World!</h6>
    </body>
</html>
```

You can clearly see in the above image the folders and files we have used in the project in the left sidebar of the editor. But here arise a few questions:

- Why is it important to create so many folders?
- What is the convention to follow for creating folders?
- Are there any naming conventions for naming the folders and files?

So, these are a few basic questions that arise in the mind of everyone who is creating a project for the first time.

Answers:

1. If you don’t want to create any folders and instead keep all the files, images, etc in the root directory and link them properly wherever needed, your project will still work

fine. But that’s not enough. Making separate folders for a separate set of files makes things organized and easily understandable for others. For example, keeping all the images in a separate folder with the name “image”, keeping all stylesheets in a folder named “CSS” etc.

2. There is no standard convention of doing this. Every organization creates its own set of rules to keep things structured. But the basic approach which is followed is to keep separate folders for a separate set of files as explained above.
3. Again there is not any standard convention of naming the files and folders except “index.html”. The page named “index.html” is the base of a project which the browser considers as the homepage. So, you must name your homepage as “index.html” and for the rest of the files and folders, you can name them anything which best describes the content they have.

Let us now dive into details about the directories that we created for our project:

- **sample project**: This is the root directory of our project which will contain all the folders and files which we will be creating during building the project.
- **css**: This folder will contain all the CSS files that we will use to style our project. For now, we have kept this folder empty.
- **fonts**: This folder will contain all the font files used in the project.
- **images**: This folder consists of all the images that we will be used in the project. For now, this is empty.
- **index.html**: The page named “index.html” is the base of a project which the browser considers the homepage. Everything inside this will be rendered when our website will load in the browser.

3.10 HTML Course Understanding and Building Project Structure

We have created all of the directories needed for our project. Let’s just start writing our HTML code. Since we are designing a **single page website** – Website with a single HTML page(No internal links). So, we will write all of our codes in the file “index.html”. We do not need any other HTML to create for this project.

Before we begin with writing code, keep in mind these two things:

- All of our HTML code will be in the “index.html” file.
- All of our code will follow the standard HTML5 rules.

3.11 What is HTML5?

HTML5 is the fifth version of the HTML scripting language. It supports a lot of new things that older version of HTML does not. For Example: In HTML5 there is something new called the **Semantic Elements**. Semantic elements have meaningful names which tell about the type of content. For example header, footer, table, … etc. HTML5 introduces many semantic elements as mentioned below which make the code easier to write and understand for the developer as well as instructs the browser on how to treat them.

To learn more about what’s new in HTML5, please visit:

- Difference between HTML and HTML5
- HTML5 | Semantics

Let us now start with actually coding our website. Remove everything from your **index.html** and only keep the standard HTML structure. That is, your index.html will now look like as something below:

- HTML

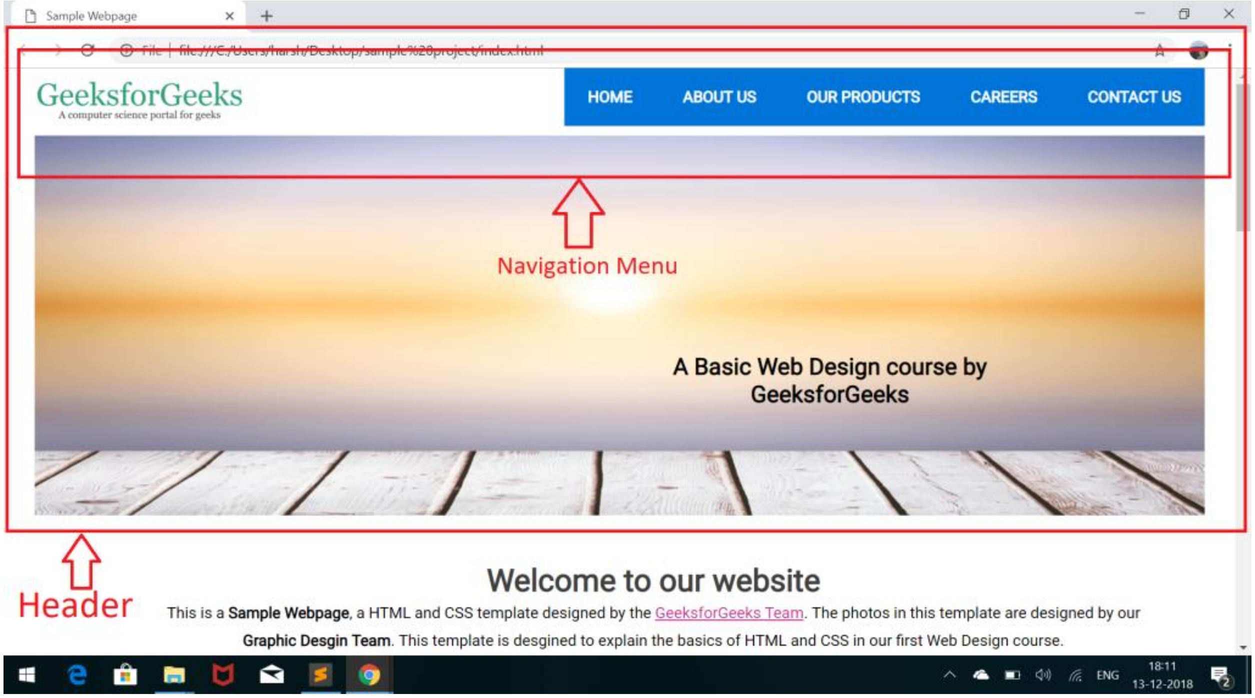
```
<!DOCTYPE html>
<html>

<head>
   <title>Sample Webpage</title>
</head>

<body>

</body>

</html>
```

Let us now divide our website in smaller parts following the HTML5 semantics. We will divide the page in different parts as follows:

1. **HEADER**: This will be further divided into:
   - *Nav*: Navigation menu.
   - *Image Section*: To contain the image.
2. **MAIN**: This will further contain smaller SECTIONS to display different information.
3. **FOOTER**

Let us have a look at the below images for clear understanding of the division stated above:

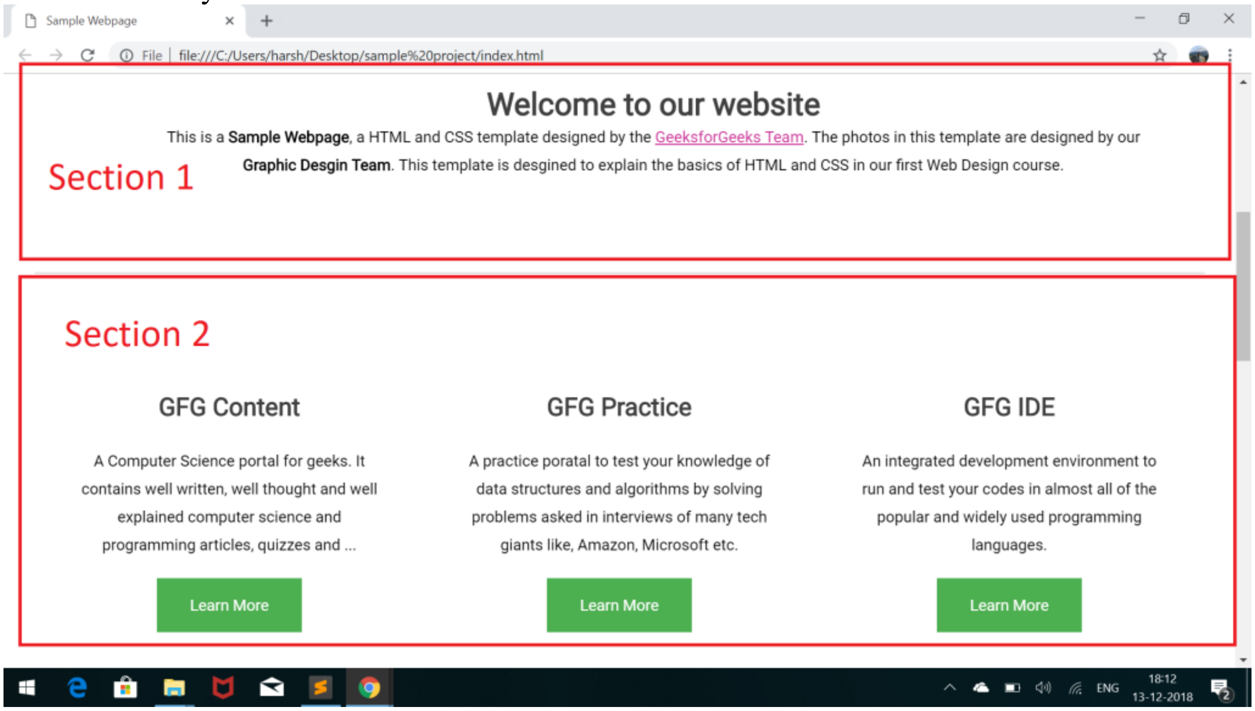
- Header with Navigation menu and Image:


Sample Webpage
File | file:///C:/Users/harsh/Desktop/sample%20project/index.html
GeeksforGeeks
A computer science portal for geeks
HOME
ABOUT US
OUR PRODUCTS
CAREERS
CONTACT US
Navigation Menu
A Basic Web Design course by GeeksforGeeks
Header
18:11
13-12-2018
ENG

Welcome to our website

This is a **Sample Webpage**, a HTML and CSS template designed by the GeeksforGeeks Team. The photos in this template are designed by our **Graphic Desgin Team**. This template is desgined to explain the basics of HTML and CSS in our first Web Design course.

- Body with different Sections:



Welcome to our website

This is a **Sample Webpage**, a HTML and CSS template designed by the GeeksforGeeks Team. The photos in this template are designed by our **Graphic Desgin Team**. This template is desgined to explain the basics of HTML and CSS in our first Web Design course.

GFG Content

A Computer Science portal for geeks. It contains well written, well thought and well explained computer science and programming articles, quizzes and ...

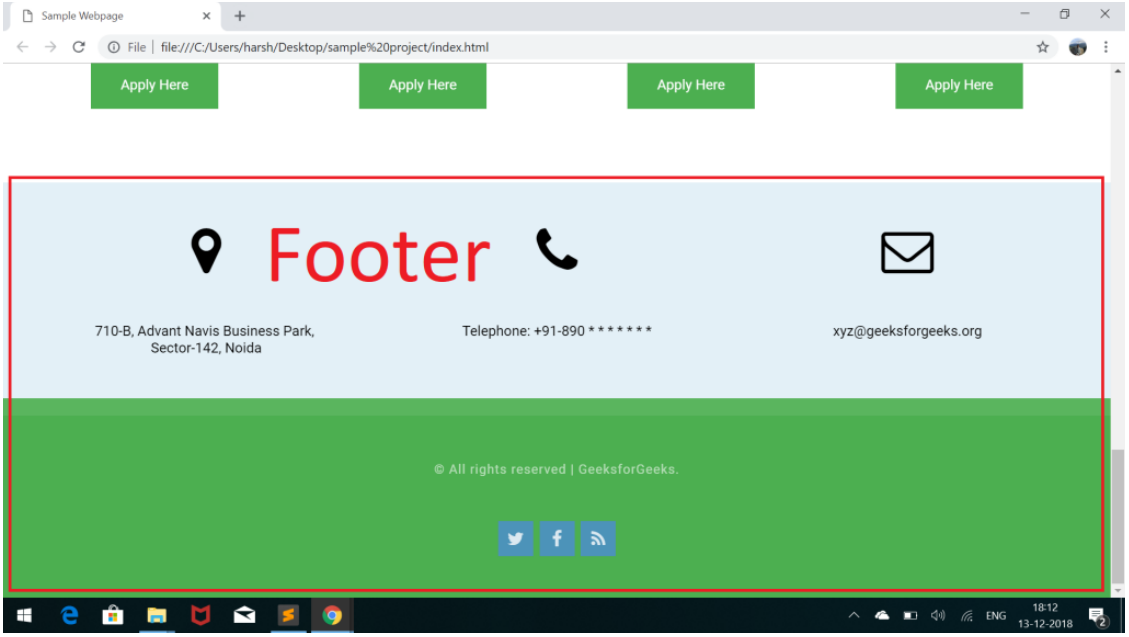
GFG Practice

A practice poratal to test your knowledge of data structures and algorithms by solving problems asked in interviews of many tech giants like, Amazon, Microsoft etc.

GFG IDE

An integrated development environment to run and test your codes in almost all of the popular and widely used programming languages.

- Footer:



Footer

710-B, Advant Navis Business Park,
Sector-142, Noida

Telephone: +91-890 * * * * * * *

xyz@geeksforgeeks.org

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Write the following code in your **index.html** file to create all of the sections as shown above:

- HTML

```
<!DOCTYPE html>
<html>

<head>
    <title>
        First Web Page
    </title>
</head>

<body>
    <!-- Header Menu of the Page -->
    <header>
        <!-- Top header menu containing
                 logo and Navigation bar -->
        <div id="top-header">
            <!-- Logo -->
            <div id="logo">

            </div>
            <!-- Navigation Menu -->
            <nav>

            </nav>
        </div>
        <!-- Image menu in Header to contain an Image and
                 a sample text over that image -->
        <div id="header-image-menu">

        </div>
    </header>

    <!-- Main content between Header and Footer -->
    <main>
        <!-- Section 1 of Main content -->
        <section>

        </section>

        <!-- Section 2 of Main content -->
        <section>

        </section>

        <!-- Section 3 of Main content -->
        <section>

        </section>
    </main>

    <!-- Footer Menu -->
    <footer>

    </footer>
</body>

</html>
```

If you run the above code, you will see an empty web page as till now we are not printing anything. In the above code we have just outlined the skeleton of the website using the available tags in HTML5. In the next article we will see how to design the Header menu using styles and CSS.

3.12 HTML Course : Creating Navigation Menu

We earlier created the entire structure of our website using HTML elements and Tags. Let’s now start building the website in parts.

The first part of the website is the **header**. So the first thing we will create is the navigation menu in the Header of the webpage.

The navigation bar contains:

- A logo aligned to the left.

- A menu of five items aligned to the right.

Let’s look at the part of the code of the header menu from our **index.html** file. Below is the portion of code of the Header menu where the highlighted part is the top navigation bar:

- HTML

```
<!DOCTYPE html>
<!-- Header Menu of the Page -->
<header>
   <!-- Top header menu containing
     logo and Navigation bar -->
   <div id="top-header">

      <!-- Logo -->
      <div id="logo">

      </div>

      <!-- Navigation Menu -->
      <nav>

      </nav>
   </div>

   <!-- Image menu in Header to contain an Image and
       a sample text over that image -->
   <div id="header-image-menu">

   </div>
</header>
```

The **first task** is to add the image for the logo. **Steps to include image and create logo**:

- Download image by clicking here.
- Copy and Paste the image to the directory: root/images. Where **root** is the top directory of our project. In our case it is named as “sample project”.
- Include the image in the code using img tag.

The **second task** is to create an unordered-list in HTML inside the navigation section of the header menu:

- Add an unordered list in the navigation menu section with 5 list-items named “Home”, “About Us”, “Our Products”, “Careers”, and “Contact Us”.

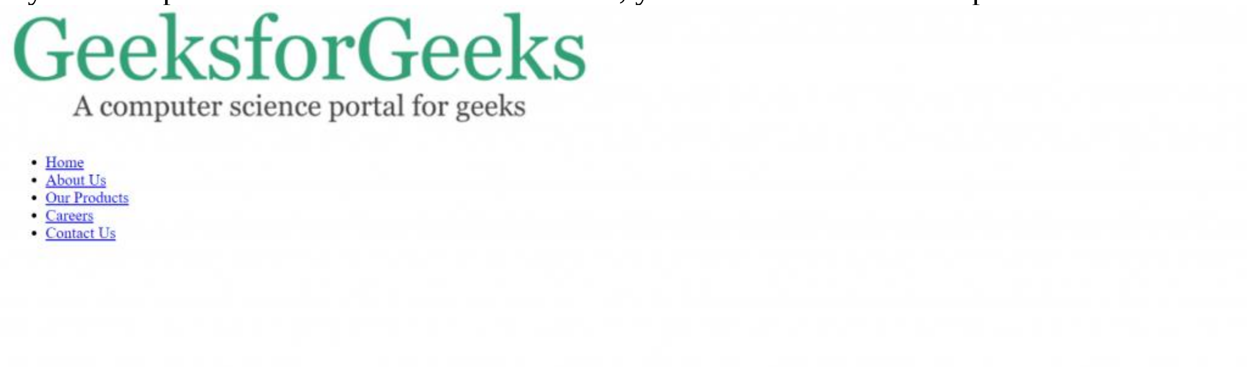
The code of the Header section after adding the above two things will look like as shown below:

- HTML

```
<!DOCTYPE html>
```

```
<!-- Header Menu of the Page -->
<header>
    <!-- Top header menu containing
         logo and Navigation bar -->
    <div id="top-header">
        <!-- Logo -->
        <div id="logo">
            <img src="images/logo.png" />
        </div>
        <!-- Navigation Menu -->
        <nav>
            <div id="menu">
                <ul>
                    <li class="active"><a href="#">Home</a></li>
                    <li><a href="#">About Us</a></li>
                    <li><a href="#">Our Products</a></li>
                    <li><a href="#">Careers</a></li>
                    <li><a href="#">Contact Us</a></li>
                </ul>
            </div>
        </nav>
    </div>
    <!-- Image menu in Header to contain an Image and
         a sample text over that image -->
    <div id="header-image-menu">

    </div>
</header>
```

If you now open the index.html file in a browser, you will see the below output:



- Home
- About Us
- Our Products
- Careers
- Contact Us

This looks very different than what we saw in the screenshots of the final project. This is because our website is missing CSS for now. That is we have just created the structure of the navigation bar, to make it look beautiful, we will have to add styles using **CSS**.

We will design the navigation bar later but first create a file named “**style.css**” and add it to the folder “**sample project/css**“. Also include the CSS file created to the “index.html” file by adding the below line in between head tags.

```
<link rel="stylesheet" href="css/style.css">
```

Before we begin styling the navigation menu, the first thing needed to do is to set the default CSS values for the HTML elements. **Copy and Paste** the below code in your “**style.css**” file:

- CSS

```
html, body{
   height: 100%;
}

body{
   margin: 0px;
   padding: 0px;
   background: #FFFFFF;
   font-family: 'Roboto';
   font-size: 12pt;
}

h1, h2, h3{
   margin: 0;
   padding: 0;
   color: #404040;
}

p, ol, ul{
   margin-top: 0;
}

p {
   line-height: 180%;
}

ol, ul{
   padding: 0;
   list-style: none;
}

.container{
   /* Set width of container to
      1200px and align center */
   margin: 0px auto;
   width: 1200px;
}
```

As you can see in the above CSS that we have set the default values for almost every useful HTML element required for the project. Also, we have created a CSS class named “**container**“. This

basically defines a container with a width of 1200px and all of the text within it aligned to center. Add this class named **container** to the **<header>** tag.
The next step is to **assign some id's to our HTML elements and then use those id's in the CSS file to style them**. Here, we already have assigned id's to the HTML elements as you can see in the above code. Let's just begin adding styles to them.

Below is the step-by-step guide to style the navigation bar:

- **Styling overall Header**: There isn't much styling needed for the header tag. The header tag is just needed to be set to "overflow: hidden" to prevent window from overflowing on browser resize.
  Add the below code to style.css:

- CSS

```
header{

   overflow: hidden;
}
```

- **Styling Navigation Bar(#top-header)**: Set a fixed height of 60px for the navigation bar and align the texts to center.
  Add the below code to style.css:

- CSS

```
#top-header{

   text-align: center;
   height: 60px;
}
```

- **Styling Logo(#logo)**: Remove padding from the parent div of logo. Make both parent and image floated towards left and assign widths to them.
  Add the below code to style.css:

- CSS

```
#logo{
   float: left;
   padding: none;
   margin: none;
   height: 60px;
   width: 30%;
}

#logo img{
   width: 60%;
   float: left;
   padding: 10px 0px;
}
```

- **Styling Navigation Menu(#menu)**:
  Add below code to style.css:

- CSS

```
#menu{
   float: right;
   width: 70%;
   height: 100%;
   margin: none;
}

#menu ul{
   text-align: center;
   float: right;
   margin: none;
   background: #0074D9;
}

#menu li{
   display: inline-block;
   padding: none;
   margin: none;
}

#menu li a, #menu li span{
   display: inline-block;
   padding: 0em 1.5em;
   text-decoration: none;
   font-weight: 600;
   text-transform: uppercase;
   line-height: 60px;
}

#menu li a{

   color: #FFF;
}

#menu li:hover a, #menu li span{
   background: #FFF;
   color: #0074D9;
   border-left: 1px solid #0074D9;
```

```
    text-decoration: none;
}
```

The overall CSS code combining all of the above class and id’s for the navigation bar is shown below:

- CSS

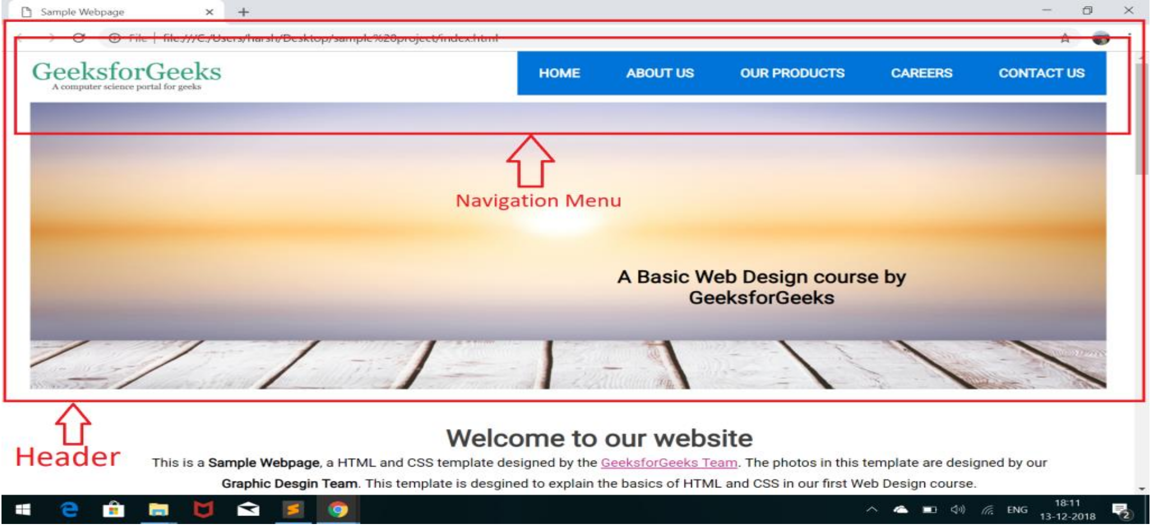
```
/*************************/
/*   Styling  Header    */
/*************************/
header{

    overflow: hidden;
}

#top-header{

    text-align: center;
    height: 60px;
}

/****************/
/* Styling Logo */
/****************/
#logo{
    float: left;
    padding: none;
    margin: none;
    height: 60px;
    width: 30%;
}

#logo img{
    width: 60%;
    float: left;
    padding: 10px 0px;
}

/***************************/
/* Styling Navigation Menu */
/***************************/
#menu{
    float: right;
    width: 70%;
    height: 100%;
    margin: none;
}

#menu ul{
    text-align: center;
    float: right;
    margin: none;
    background: #0074D9;
}

#menu li{
    display: inline-block;
    padding: none;
    margin: none;
}

#menu li a, #menu li span{
    display: inline-block;
    padding: 0em 1.5em;
    text-decoration: none;
    font-weight: 600;
    text-transform: uppercase;
    line-height: 60px;
}

#menu li a{

    color: #FFF;
}

#menu li:hover a, #menu li span{
    background: #FFF;
    color: #0074D9;
    border-left: 1px solid #0074D9;
    text-decoration: none;
}
```

Open the index.html file in browser now, can you see something as shown in the below image. If not, please tally and recheck your code with ours, you must have missed something:

So, we have successfully created the navigation bar for the header of our Website. The next thing is to insert the image and a text over the image just below the navigation bar in the header.

3.13 HTML Course : Building Header of the Website

So far, we have created the navigation bar for the header of our website. The next thing to complete the header is to include the image and text above the image as shown in below screenshot:



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*

Let’s again look at the **part of the code for the header in our index.html file**. The highlighted part of the code shows the image menu of the header:

- HTML

```
<!DOCTYPE html>
<!-- Header Menu of the Page -->
<header>
    <!-- Top header menu containing
        logo and Navigation bar -->
    <div id="top-header">
        <!-- Logo -->
        <div id="logo">
            <img src="images/logo.png" />
        </div>
        <!-- Navigation Menu -->
        <nav>
            <ul>
                <li class="active">
                    <a href="#">Home</a>
                </li>
                <li>
                    <a href="#">About Us</a>
                </li>
                <li>
                    <a href="#">Our Products</a>
                </li>
                <li>
                    <a href="#">Careers</a>
                </li>
                <li>
                    <a href="#">Contact Us</a>
                </li>
            </ul>
        </nav>
    </div>
    <!-- Image menu in Header to contain an Image and
        a sample text over that image -->
    <div id="header-image-menu">
    </div>
</header>
```

To complete the image menu, we first need to add the image and text inside the div tag with id “header-image-menu” as shown in the above code.

Adding Image:

- **Click Here** to download the given image.
- Add it to the images folder of your project.
- Include it inside the div with **id = “header-image-menu”**.

Adding Text: Add the text inside an <h2> tag and give the tag an id = “image-text” which will be used for adding styles.

Below is the final HTML code for the header menu after adding the images and text:

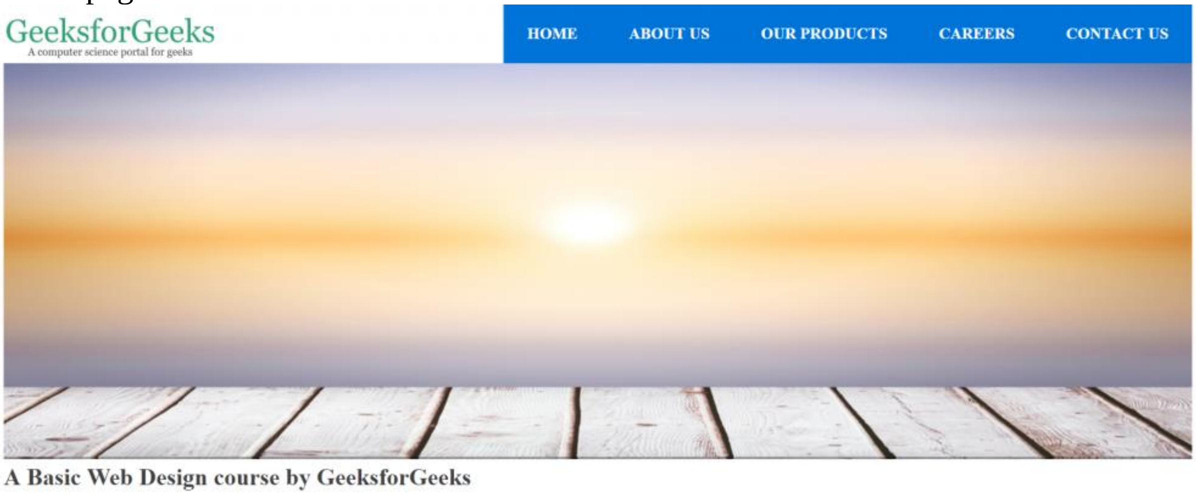
- HTML

```
<!DOCTYPE html>
<!-- Header Menu of the Page -->
<header>
    <!-- Top header menu containing
         logo and Navigation bar -->
    <div id="top-header">
        <!-- Logo -->
        <div id="logo">
            <img src="images/logo.png" />
        </div>
        <!-- Navigation Menu -->
        <nav>
            <ul>
                <li class="active">
                    <a href="#">Home</a>
                </li>
                <li>
```

```
          <a href="#">About Us</a>
        </li>
        <li>
          <a href="#">Our Products</a>
        </li>
        <li>
          <a href="#">Careers</a>
        </li>
        <li>
          <a href="#">Contact Us</a>
        </li>
      </ul>
    </nav>
  </div>

  <!-- Image menu in Header to contain an Image and
     a sample text over that image -->
  <div id="header-image-menu">
    <img src="images/slider.jpg">
    <h2 id="image-text">
      A Basic Web Design course by GeeksforGeeks
    </h2>
  </div>
</header>
```

Our webpage will now look like as in the below screenshot:



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Can you point out **what is wrong with the above image**? The answer is that the text is below the image and not at its correct position as shown in the template.
We will have to use CSS to add styles to the text and image in order to place the text over the image. Let’s begin with adding CSS.

- **Styling the main image menu(#header-image-menu)**: Give the image menu parent a margin of top as 10px and set its position to relative.
  Add the below code to style.css:

- CSS

```
#header-image-menu{
   top: 10px;
   position: relative;
}
```

- **Styling the image inside the image menu**: Set the width of the image to 100% of the parent and remove the margins and padding.
  Add the below code to style.css:

- CSS

```
#header-image-menu img{
   width: 100%;
   margin: none;
   padding: none;
}
```

- **Positioning the text(#image-text)**: Set the position of the text to absolute first and give appropriate margins from left and top. Set the color and translate the text by 30% using the translate() function.
  Add the below code to style.css:

- CSS

```
#image-text{
   position: absolute;
   top: 60%;
   left: 60%;
   font-family: 'Roboto';
   color: #000;
   transform: translate(-30%, -30%);
   text-align: center;
}
```

The complete CSS code for the image menu will look something as below:

- CSS

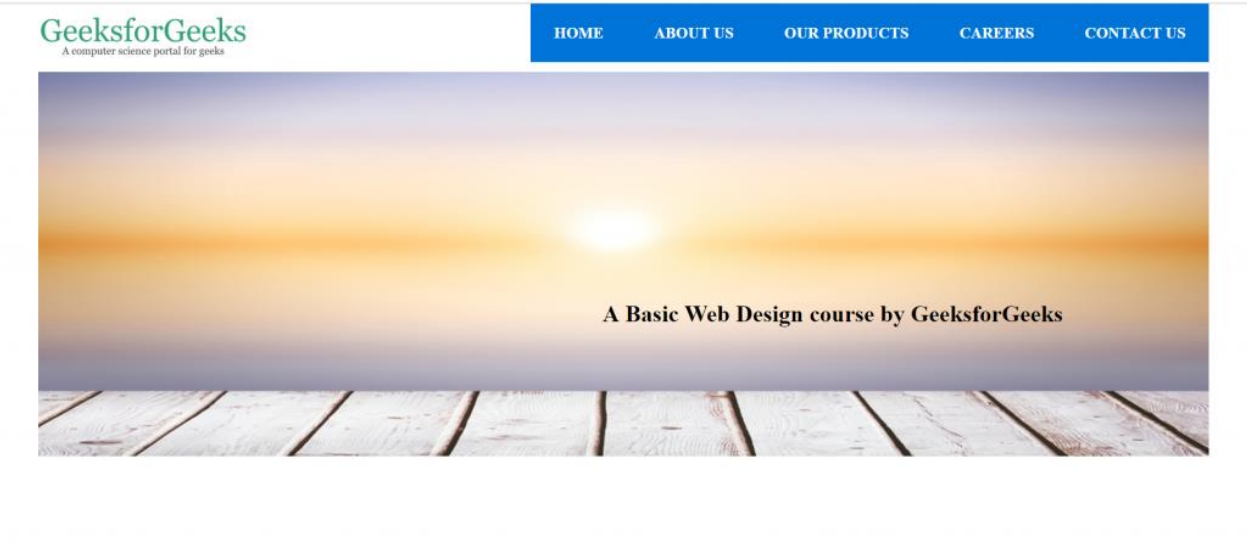
```
/******************************/
/* Styling Header Image Menu */
/******************************/
```

```
#header-image-menu{
    top: 10px;
    position: relative;
}

#header-image-menu img{
    width: 100%;
    margin: none;
    padding: none;
}

#image-text{
    position: absolute;
    top: 60%;
    left: 60%;
    font-family: 'Roboto';
    color: #000;
    transform: translate(-30%, -30%);
    text-align: center;
}
```

On opening the **index.html** in the browser now, you will see the exact same header as shown in the sample video at the start of the course.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We have completed building the header of our website.

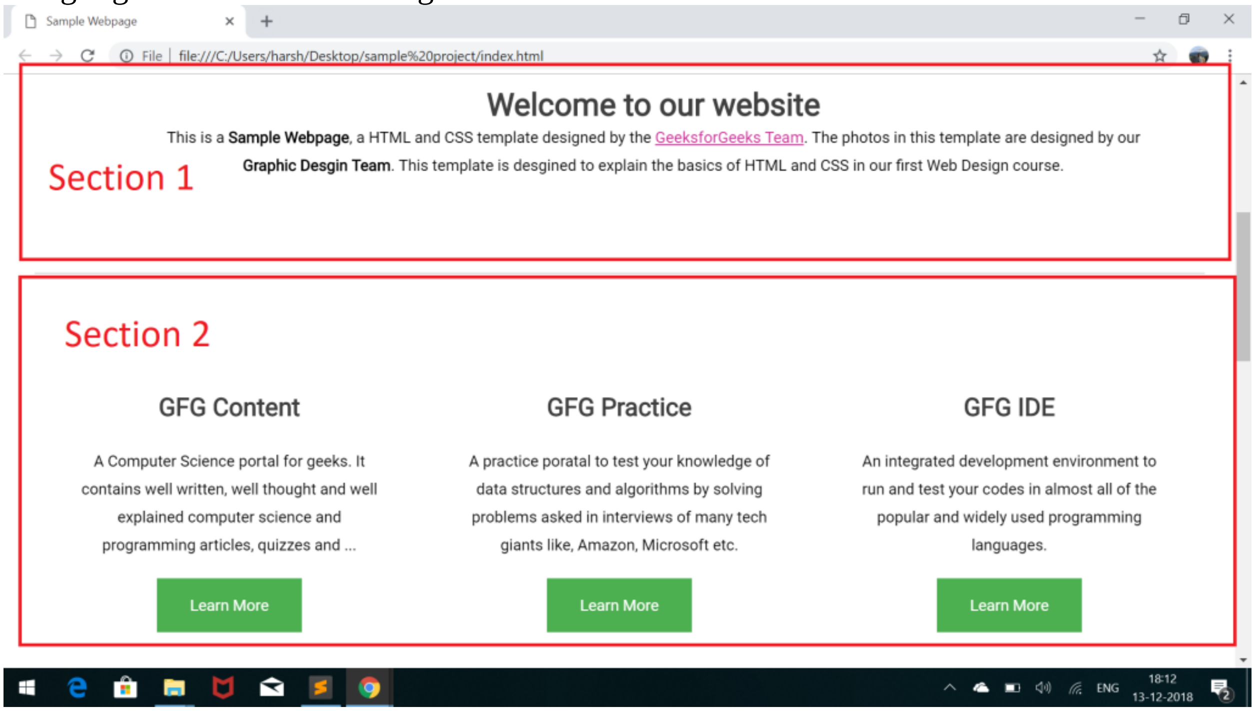
3.14 Building Main Content – Section 1

We just completed building the header for our website. Let’s start building the main content for the website. As we described while **creating the HTML layout of the website**, the main content was divided into three sections as shown below:

- HTML

```
<!DOCTYPE html>
<!-- Main content between Header and Footer -->
<main>
    <!-- Section 1 of Main content -->
    <section>

    </section>

    <!-- Section 2 of Main content -->
    <section>

    </section>

    <!-- Section 3 of Main content -->
    <section>

    </section>
</main>
```

In this post, we will build the **section 1** of the main layout. The section 1 of the main layout is highlighted in the below image:



Welcome to our website

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Let’s note down the content and some properties of Section 1 that will be useful in designing:

- **Title**: It contains the title “Welcome to Our Website”, which is aligned to the center.
- **Sample Text**: It has a sample text or we can say a paragraph just below the title which is also aligned to the center.

Let’s start writing HTML for section 1 of our website, follow the below steps:

- Give the **section** tag the class **container** to fix it width to 1200px and align its children to center.
- Create a new div tag inside the section tag with an id “**title**“.
- Add the title “Welcome to Our Website” inside a **<h1>** tag and assign it an id **title**.
- Assign the sample tag below the title inside a paragraph **<p>** tag.

Below is the complete HTML code for **Section 1** of the Main layout:

- HTML

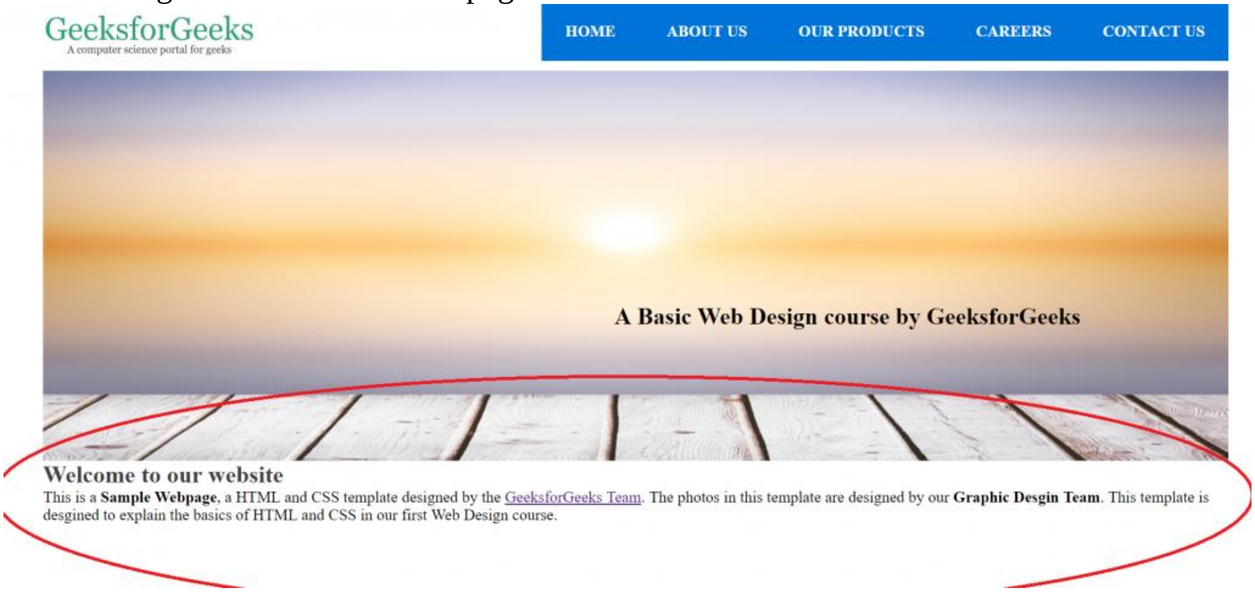
```
<!DOCTYPE html>
<!-- Main content between Header and Footer -->
<main>
   <!-- Section 1 of Main content -->
   <section>
      <div id="welcome">
         <h1 class="title">
            Welcome to our website
         </h1>
         <p>
            This is a <strong>Sample Webpage</strong>, a HTML
            and CSS template designed by the
              <a href="https://www.geeksforgeeks.org" target="_blank"
            rel="nofollow">GeeksforGeeks Team</a>.
            The photos in this template are designed by our
            <b>Graphic Design Team</b>. This template is designed
            to explain the basics of HTML and CSS in our first
            Web Design course.
         </p>
      </div>
   </section>
   <!-- Section 2 of Main content -->
   <section>

   </section>
   <!-- Section 3 of Main content -->
   <section>

   </section>
```

```
</main>
```

After adding the HTML codes the page **index.html** will look like as below: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Let’s add styles to the classes to make this look as shown in the template:

- **Styling div with id (#welcome)**: This div will include both the title and the sample text. So set its overflow to hidden and use “margin: 0px auto” to align its children to center. Also set its width to 1000px.
  Add below code to style.css:

- css

```
#welcome
{   overflow: hidden;
   width: 1000px;
   margin: 0px auto;
}
```

- **Styling the title h1 tag**: Give at top margin of 20px, padding of 20px and align its text to center.
  Add below code to style.css:

- css

```
#welcome .title{
   margin-top: 20px;
   padding: 20px;
   text-align: center;
}
```

- **Styling the p tag for sample text**: Give it a margin from bottom of 40px and align its text to center.
  Add below code to style.css:

- css

```
#welcome p{
   margin-bottom: 40px;
   text-align: center;
}
```

- The complete CSS for styling the section 1 of the main layout is given below:

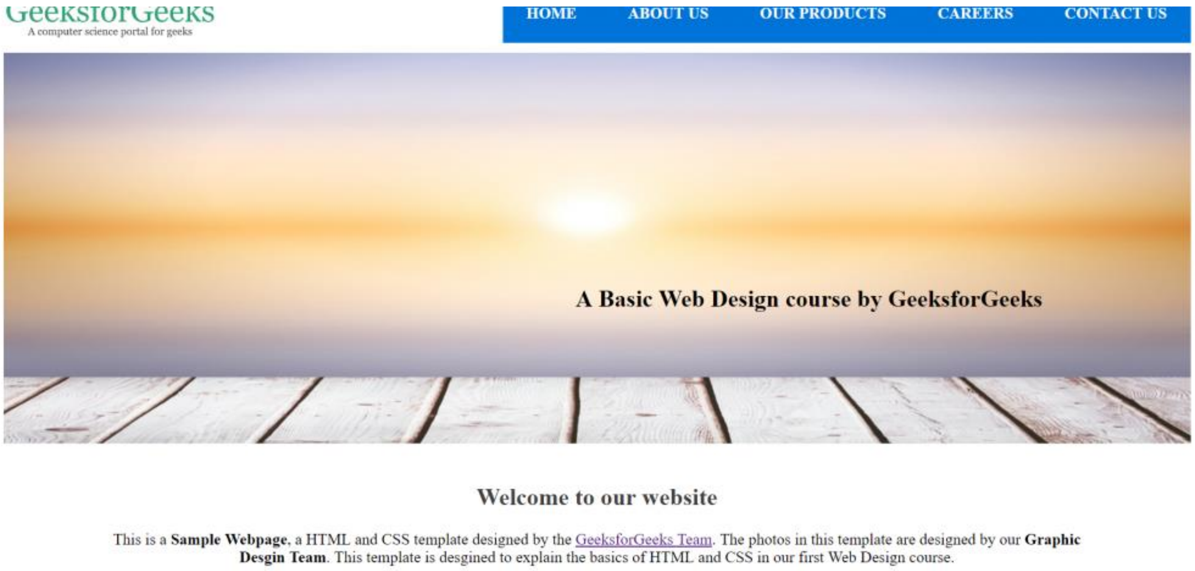
- CSS

```
/**********************************/
/* Styling Main content Section 1 */
/**********************************/
#welcome
{    overflow: hidden;
   width: 1000px;
   margin: 0px auto;
}

#welcome .title{
   margin-top: 20px;
   padding: 20px;
   text-align: center;
}

#welcome p{
   margin-bottom: 40px;
   text-align: center;
}
```

That’s it, on opening the **index.html** file in a browser now, you will see the below output: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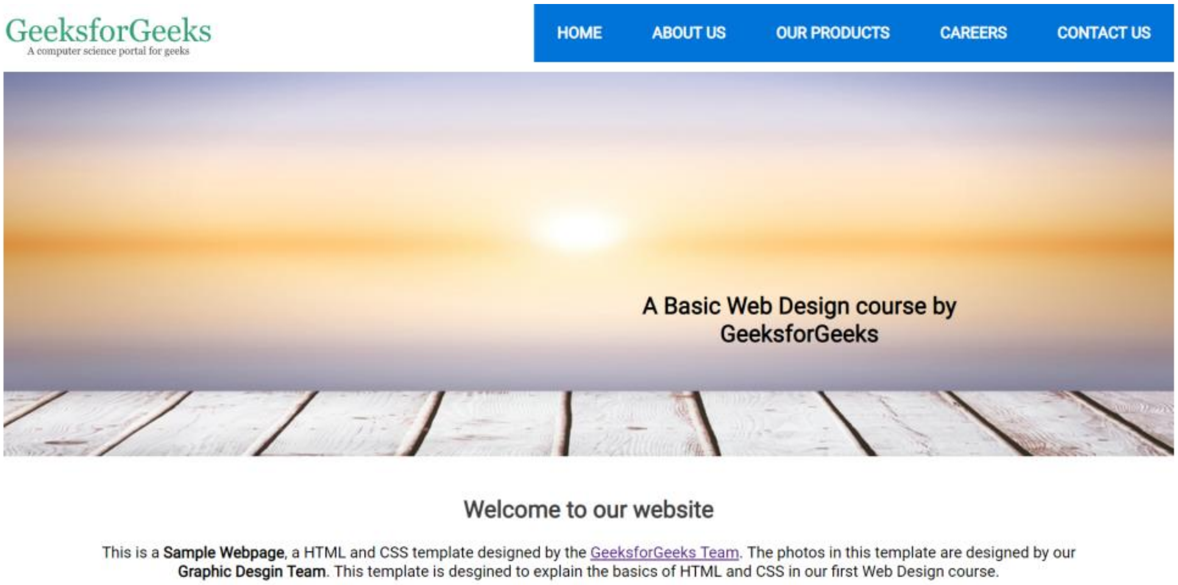
Everything looks fine till now. But there seems to be some problem. The font’s in our project does not seem to be the same as that of the template. We have used the font “Roboto”, but it seems to be not working for some reason.

This is because the browser does not support each and every font implicitly. We will have to explicitly define the source of the font within the head tags. Add the below line inside the head tags of index.html file:

```
<link href='https://fonts.googleapis.com/css?family=Roboto' rel='stylesheet'>
```

After including the above line within the head tags. Reload your index.html in the browser: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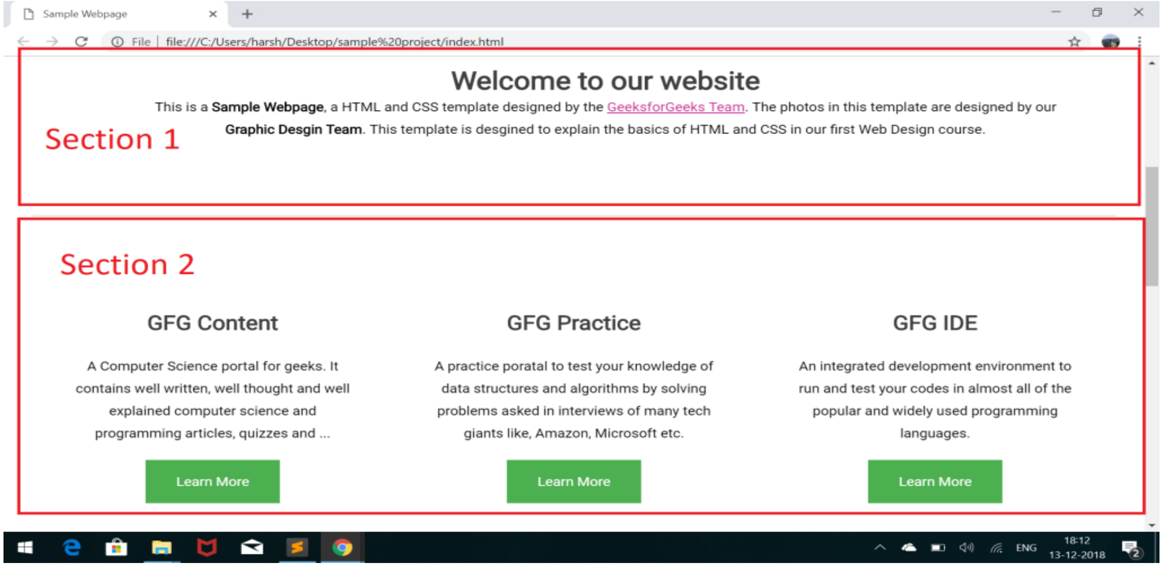
3.15 HTML Course : Building Main Content – Section 2

In the last article, we began building the main section of the website and have completed the first section. Let us now move to the **section 2** of Main Content.

You can see the Section 2 of the Main Content in the below image:


Sample Webpage
File | file:///C:/Users/harsh/Desktop/sample%20project/index.html
Section 1
Section 2
ENG
18:12
13-12-2018

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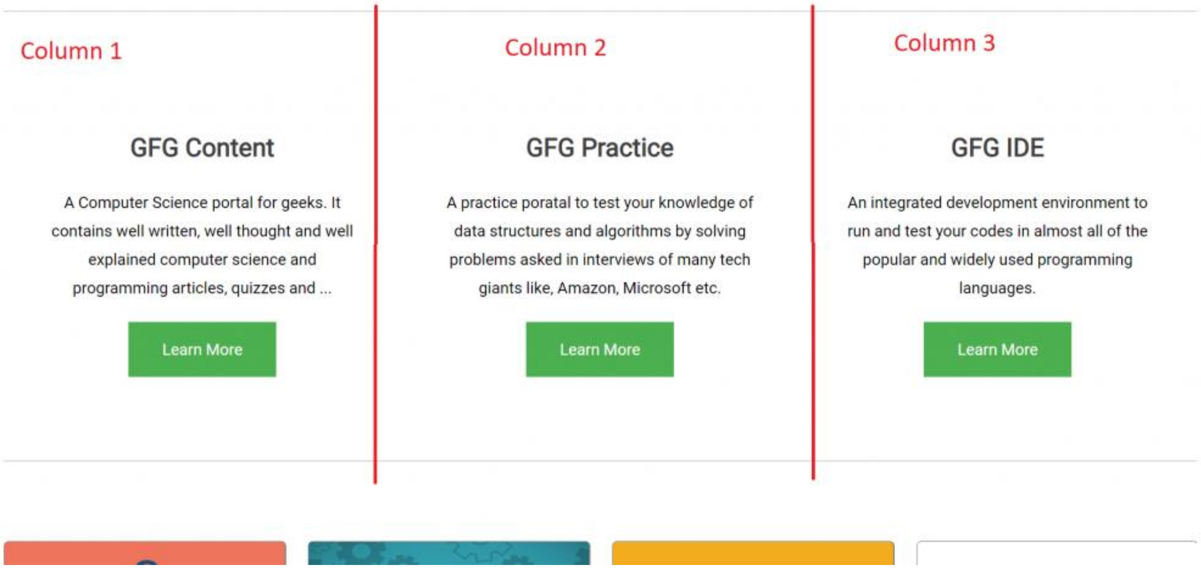
If you observe carefully, you can say that the section 2 is divided into three columns as shown below:



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This is also referred to as **3-Column** layout in terminology of Web Development. Let's start writing HTML for Section 2 of our Website, follow the below steps:

1. Declare a parent div with a class named *row*.
2. Declare three div's inside the parent row div to contain three columns and assign them id's as column1, column2 and column3 respectively.
3. **For Each Column**:
   - Declare a div with class = "column-title". For the title of the column.
   - Declare a paragraph **p** element for the description of the content.
   - Declare an anchor tag **<a>** to add an external link which will be styled as a button later.

Below is the complete HTML code for the **Section 2** of the Main Content:

- HTML

```
<!DOCTYPE html>
<html>

<body>
    <!-- Section 2 of Main content -->
    <section class="container" id="section-2">
        <div class="row">
            <div id="column1">
                <div class="column-title">
                    <h2>GFG Content</h2>
                </div>

                <p>
                    A Computer Science portal for geeks. It
                    contains well written, well thought and
                    well explained computer science and
                    programming articles, quizzes and ...
                </p>

                <a href=
"https://www.geeksforgeeks.org"
                   target="_blank"
                   class="button">
                    Learn More
                </a>
            </div>

            <div id="column2">
                <div class="column-title">
                    <h2>GFG Practice</h2>
                </div>

                <p>
                    A practice poratal to test your knowledge
                    of data structures and algorithms by solving
                    problems asked in interviews of many tech giants
                    like, Amazon, Microsoft etc.
                </p>

                <a href=
"https://practice.geeksforgeeks.org"
```

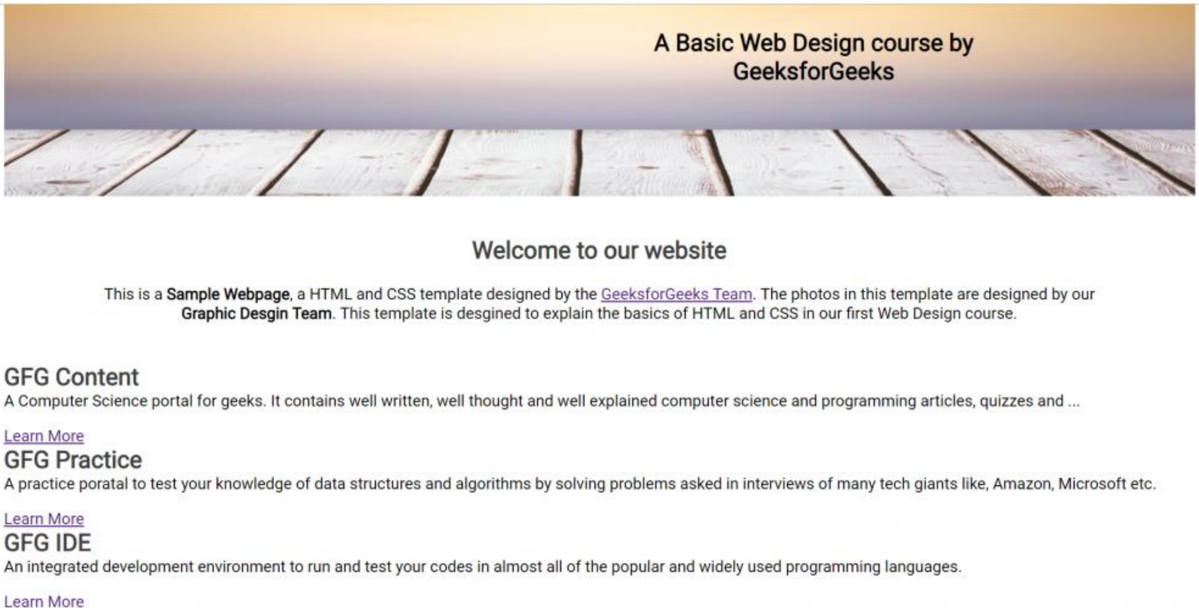
```
          target="_blank"
          class="button">
           Learn More
        </a>
      </div>

      <div id="column3">
        <div class="column-title">
          <h2>GFG IDE</h2>
        </div>
        <p>
          An integrated development environment to
          run and test your codes in almost all of
          the popular and widely used programming
          languages.
        </p>

        <a href=
          "https://ide.geeksforgeeks.org"
          target="_blank" class="button">
           Learn More
        </a>
      </div>
    </div>
  </section>
</body>

</html>
```

If you run the index.html in your browser, you will be able to see something as shown below:



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This no where looks close to our final Section 2 in the Main Content. Let's start adding styles to it.

- **Adding basic styles for layout**: Firstly, set the overflow to hidden and add all the required margins and paddings. Next is to give the thin 1px border at the top of the section to separate it from the previous section and align all of the text inside it to center.
  Add the below CSS code to your style.css:

- CSS

```
#section-2{
   overflow: hidden;
   margin-top: 5em;
   padding-top: 1em;
   border-top: 1px solid rgba(0, 0, 0, 0.2);
   text-align: center;
}
```

- **Aligning Columns In-line**: The next step is to align all of the columns in a single line one after the other. To do this, add the below CSS code to your style.css file:

- CSS

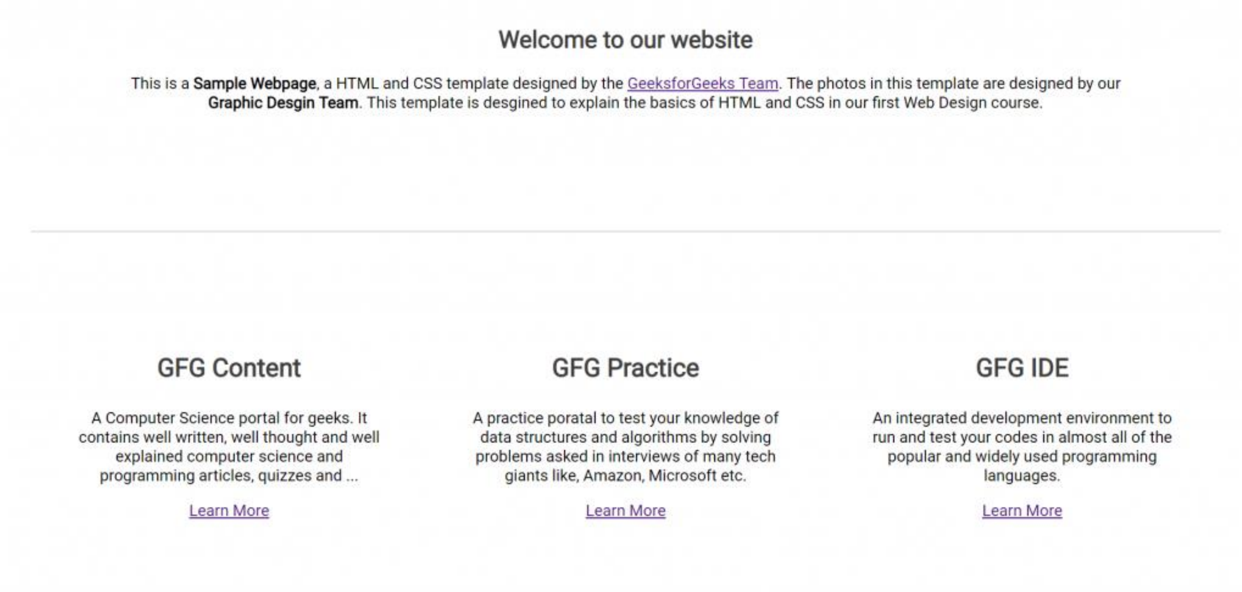
```
.row #column1,
.row #column2,
.row #column3{
       float: left;
       width: 320px;
       padding: 80px 40px 80px 40px;
}
```

- **Styling the Title of columns**: The next good thing to do is to style the title of the columns. To give them appropriate font-sizes and weights apart from the default values. Add the below CSS code to your style.css file:

- CSS

```
.column-title h2{
   margin: 1em 0em;
   font-size: 1.6em;
   font-weight: 700;
}
```

Once you have added the above styles successfully, your **Section 2** now will look something as shown below:



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It looks good now apart from the **buttons** at the bottom. The buttons are still appearing as simple links. Let's make them look good by adding some CSS.

Styling Buttons

To make the buttons look good, do the following:

- Remove text-decoration.
- Align text to center.
- Set the display property to "inline-block".
- Set appropriate font-size, color and background color of the button.
- Add paddings and margins.
- Set the cursor property to pointer so that whenever the user hovers over the button the mouse pointer will change into a nice looking hand representing a pointer.
- Use the **:hover selector** to add styles whenever user hovers over the button.

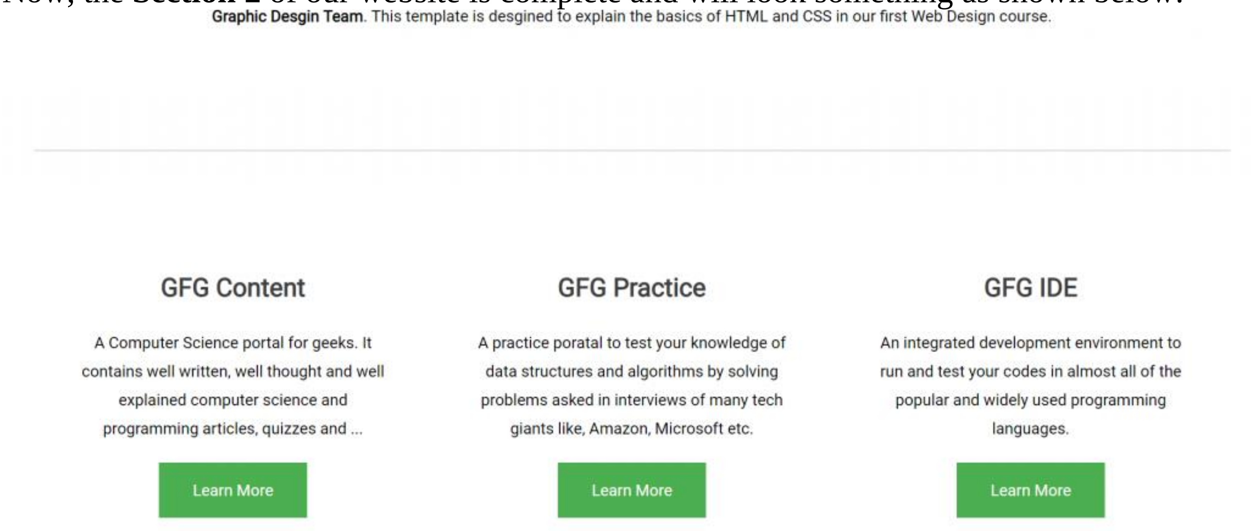
Below is the complete CSS code for the "button" class which you need to add in your style.css file:

- CSS

```
.button {
   text-decoration: none;
   text-align: center;
   display: inline-block;
   font-size: 16px;
   background-color: #4CAF50;
   color: white;
   border: 2px solid #4CAF50;
   padding: 16px 32px;
   margin: 4px 2px;
   -webkit-transition-duration: 0.4s; /* Safari */
   transition-duration: 0.4s;
   cursor: pointer;
}

.button:hover {
   background-color: white;
   color: #4CAF50;
}
```

Now, the **Section 2** of our website is complete and will look something as shown below:



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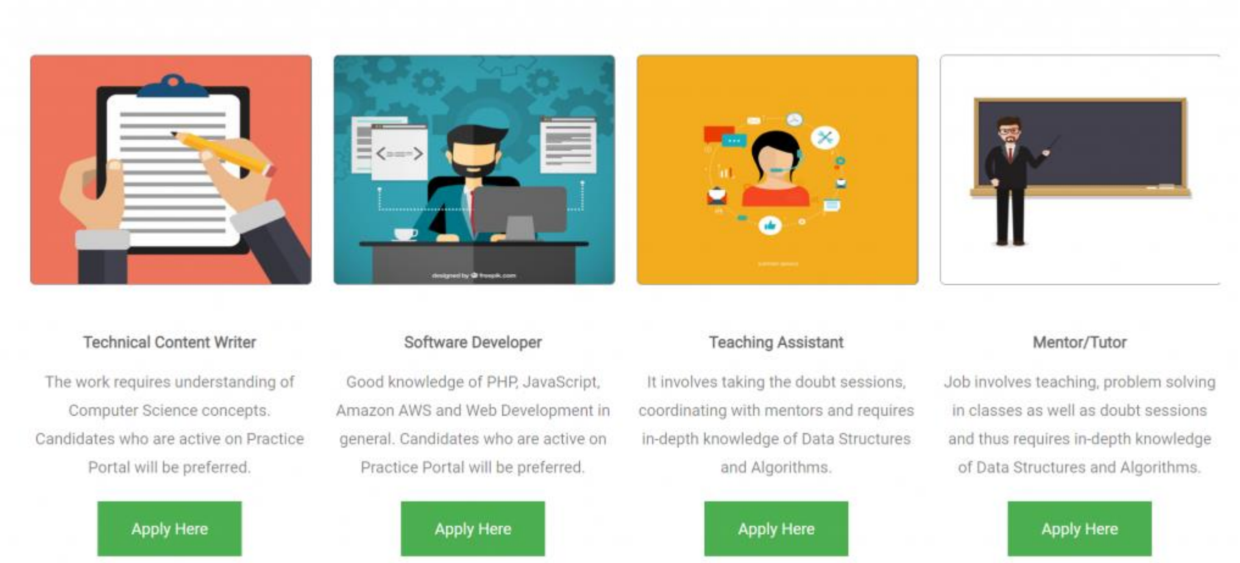
3.16 Building Main Content – Section 3

In the previous article, we have seen the **3-Column** layout and completed **Section 2** of the main content. The main content of the website is now almost complete. We just need to build Section 3 of the main content. **Section 3** is shown in the below image:



Technical Content Writer

The work requires understanding of Computer Science concepts. Candidates who are active on Practice Portal will be preferred.

Software Developer

Good knowledge of PHP, JavaScript, Amazon AWS and Web Development in general. Candidates who are active on Practice Portal will be preferred.

Teaching Assistant

It involves taking the doubt sessions, coordinating with mentors and requires in-depth knowledge of Data Structures and Algorithms.

Mentor/Tutor

Job involves teaching, problem solving in classes as well as doubt sessions and thus requires in-depth knowledge of Data Structures and Algorithms.

If you look at the above image carefully then it can be seen that Section 3 is almost the same as that of Section 2 of the Website. The only difference is that it has 4 columns instead of 3 and every column has an image at the top before the title.

Let’s start writing HTML for **Section 3** of our Website, follow the below steps:

1. Declare a parent div with a class named row.
2. Declare **four** div’s inside the parent row div to contain four columns and assign them id’s as column21, column22, column23, and column24 respectively.
3. Download the images from the given links and save them to your **images** folder.
    - Column 1 Image.
    - Column 2 Image.
    - Column 3 Image.
    - Column 4 Image.
4. **For Each Column**:
    - Use **<img>** tag to insert image for the respective column.
    - Declare a div with class = “img-title”. For the title of the column.
    - Declare a paragraph p element for the description of the content.
    - Declare an anchor tag **<a>** to add an external link which will be styled as a button. We will use the same button we created in the last article. So, assign the class “button” to the anchor tag.

Below is the complete HTML code for **Section 3** of the Main Content:

- HTML

```
<!DOCTYPE html>
<html>

<body>
   <!-- Section 3 of Main content -->
   <section class="container" id="section-3">
```

```
    <div id="row">
      <!-- Column 1 -->
      <div id="column21">
        <img src="images/writer.jpg"
           class="image image-full">

        <div class="img-title">
          <h3>Technical Content Writer</h3>
        </div>

        <p>
          The work requires understanding of Computer
          Science concepts. Candidates who are active
          on Practice Portal will be preferred.
        </p>

        <a href="https://www.geeksforgeeks.org/careers/"
         target="_blank"
         class="button">
          Apply Here
        </a>
      </div>

      <!-- Column 2 -->
      <div id="column22">
        <img src="images/developer.jpg"
           class="image image-full">
        <div class="img-title">
          <h3>Software Developer</h3>
        </div>

        <p>
          Good knowledge of PHP, JavaScript, Amazon AWS
          and Web Development in general. Candidates who
          are active on Practice Portal will be
          preferred.
        </p>

        <a href=
"https://www.geeksforgeeks.org/careers/"
         target="_blank"
         class="button">
          Apply Here
        </a>
      </div>

      <!-- Column 3 -->
      <div id="column23">
        <img src="images/support.jpg"
           class="image image-full">

        <div class="img-title">
          <h3>Teaching Assistant</h3>
        </div>

        <p>
          It involves taking the doubt sessions,
          coordinating with mentors and requires
          in-depth knowledge of Data Structures
          and Algorithms.
        </p>

        <a href=
"https://www.geeksforgeeks.org/careers/"
          target="_blank"
          class="button">
          Apply Here
        </a>
      </div>

      <!-- Column 4 -->
      <div id="column24">
        <img src="images/teacher.jpg"
           class="image image-full">

        <div class="img-title">
          <h3>Mentor / Tutor</h3>
        </div>

        <p>
          Job involves teaching, problem solving
          in classes as well as doubt sessions and
          thus requires in-depth knowledge of Data
          Structures and Algorithms.
        </p>
```

```
              <a href="https://www.geeksforgeeks.org/careers/"
                target="_blank"
                class="button">
                 Apply Here
              </a>
           </div>
        </div>
    </section>

</body>

</html>
```

On running the **index.html** file in the browser now, you will be able to see the content of Section 3 in a distorted order as that of Section 2 before adding CSS.
Therefore, let's start adding styles to the classes and complete Section 3 of Main Content:

- **Adding basic styles for layout**: Firstly, set the overflow to hidden and add all the required margins and paddings. Next is to give the thin 1px border at the top of the section to separate it from the previous section and align all the text inside it to the center.
  Add below CSS code to your style.css file:

- CSS

```
#section-3{
    overflow: hidden;
    padding-top: 5em;
    border-top: 1px solid rgba(0, 0, 0, 0.2);
    text-align: center;
}
```

- **Aligning Columns In-line**: The next step is to align all the columns in a single line one after the other. To do this, add the below CSS code to your style.css file:

- CSS

```
/* Add fixed width for each column and
   align text to center */
#column21,
#column22,
#column23,
#column24
{
    width: 282px;
    text-align: center;
}

/* Float first 3 columns to left */
#column21,
#column22,
#column23,
#column24 {
   width: 282px;
   text-align: center;
}

#column21,
#column22,
#column23,
#column24 {
   float: left;
   margin: auto 25px;
}
```

- **Styling the Title of columns**: The next good thing to do is to style the title of the columns present just below the images. To give them appropriate font-sizes, padding color etc. apart from the default values. Add the below CSS code to your style.css file:

- CSS

```
.img-title{
   display: block;
   padding-bottom: 1em;
   font-size: 1em;
   color: rgba(0, 0, 0, 0.6);
}
```

- **Styling the images**: We have added two classes for our images in the column, namely *image* and *image-full*.

- CSS

```
.image
{
   display: inline-block;
   border: 1px solid rgba(0, 0, 0, .5);
   border-radius: 5px;
}
```

```
.image img
{
   display: block;
   width: 100%;
}

.image-full
{
   display: block;
   width: 100%;
   margin: 0 0 3em 0;
}

.img-title{
   display: block;
   padding-bottom: 1em;
   font-size: 1em;
   color: rgba(0, 0, 0, 0.6);
}
```

The Complete CSS code for Section 3 of the Main Content of the website is given below:

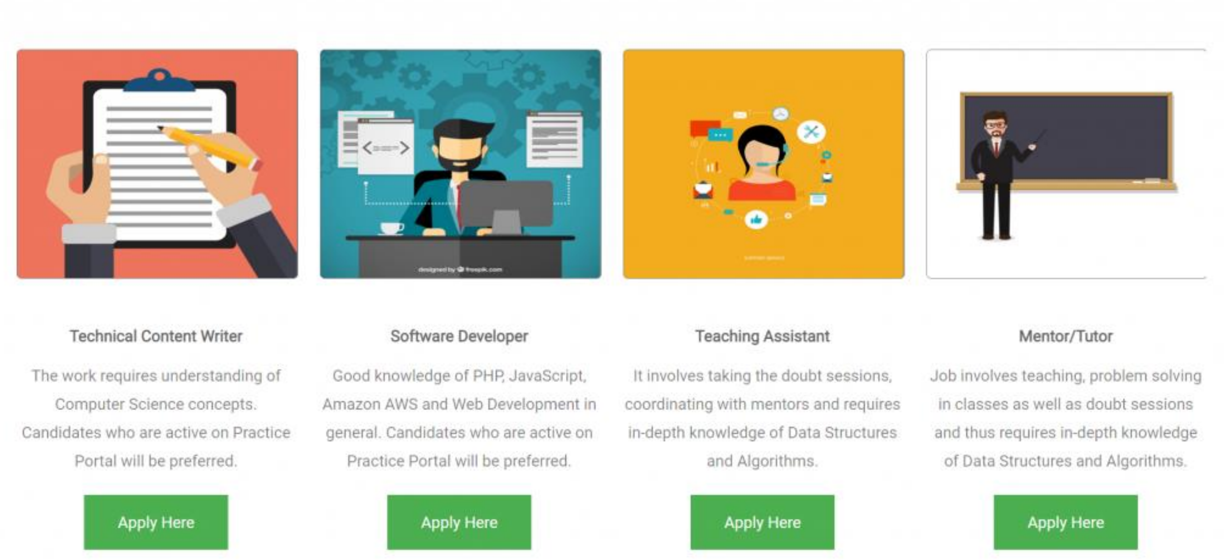
- CSS

```
/****************************************/
/*     Styling Main Content Section 3    */
/****************************************/

#section-3{
   overflow: hidden;
   padding-top: 5em;
   border-top: 1px solid rgba(0, 0, 0, 0.2);
   text-align: center;
}

.image
{
   display: inline-block;
   border: 1px solid rgba(0, 0, 0, .5);
   border-radius: 5px;
}

.image img
```

```
{
   display: block;
   width: 100%;
}

.image-full
{
   display: block;
   width: 100%;
   margin: 0 0 3em 0;
}

.img-title{
   display: block;
   padding-bottom: 1em;
   font-size: 1em;
   color: rgba(0, 0, 0, 0.6);
}

/* Add fixed width for each column and
  align text to center */
#column21,
#column22,
#column23,
#column24
{
   width: 282px;
   text-align: center;
}

#column21,
#column22,
#column23,
#column24 {
   width: 282px;
   text-align: center;
}

#column21,
#column22,
#column23,
#column24 {
   float: left;
```

```
    margin: auto 25px;
}
```

With this Section 3 of the main content is successfully completed and will now look something as shown in the below image:



Technical Content Writer

The work requires understanding of Computer Science concepts. Candidates who are active on Practice Portal will be preferred.

Software Developer

Good knowledge of PHP, JavaScript, Amazon AWS and Web Development in general. Candidates who are active on Practice Portal will be preferred.

Teaching Assistant

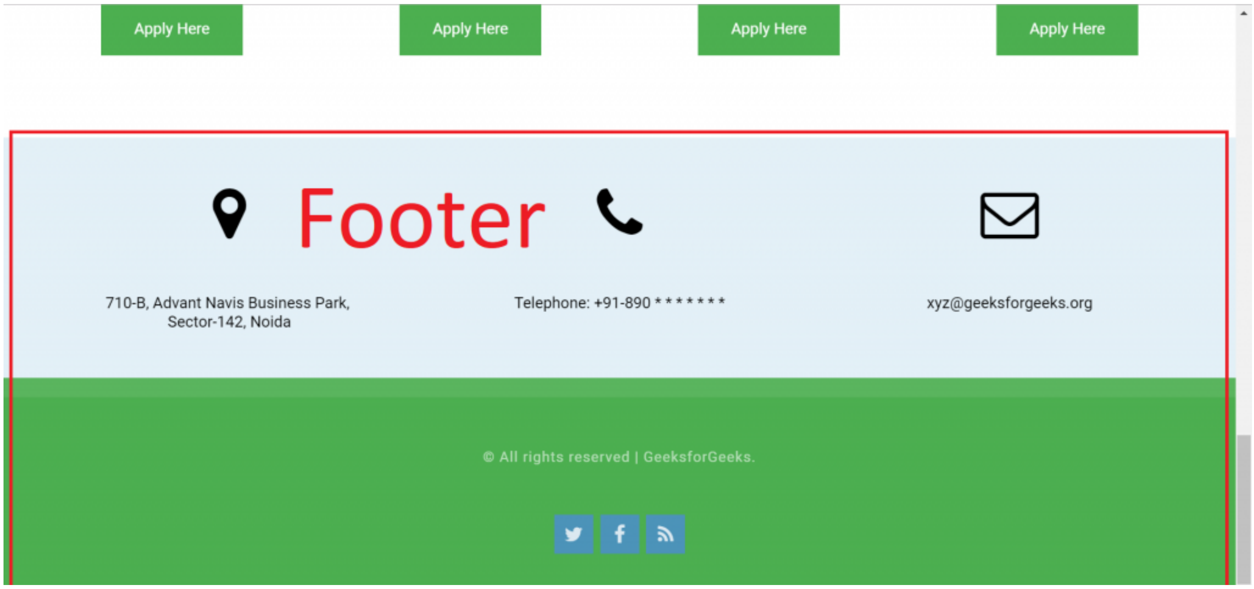
It involves taking the doubt sessions, coordinating with mentors and requires in-depth knowledge of Data Structures and Algorithms.

Mentor/Tutor

Job involves teaching, problem solving in classes as well as doubt sessions and thus requires in-depth knowledge of Data Structures and Algorithms.

3.18 HTML Course Building Footer

So, we have completed building all parts of our website except the footer. So, let’s take a look at what our final footer will look like:



710-B, Advant Navis Business Park,
Sector-142, Noida

Telephone: +91-890 * * * * * * *

xyz@geeksforgeeks.org

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Our footer mainly consists of two sections:

- **Company Details**: This contains of three columns with address details, phone details and Email details.
- **Copyright Information**: This contains information about the Copyright and links to social media handles.

Before we start building the Footer. It is recommended to go to this link once: **Font Awesome Icons**.

We will be using font awesome icons at different places in the footer. To use fontawesome icons, follow below steps:

- Include Font Awesome CSS. Paste the below code in between your head tags present at the top of index.html file.

- HTML

```
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">
```

- Now, to use the icons just add the below class to a span tag.

```
<span class="fa fa-icon_name"></span>
```

Where, icon_name is the name of the icon.

Let us now just start **writing the HTML structure of the website's footer**. We have divided the footer in two sections namely *Company Details* and *Copyright Information*.

Follow the below steps:

1. Create two div's with class names as "company-details" and "copyright" respectively.
2. Steps For div with class "company-details":
   - Add a div with class named as "row".
   - Add three div's inside the previous div with id's col1, col2 and col3 respectively.
   - For each of the column divs declare two span tags. One for the font awesome icon and second for the information.
3. Steps For div with class "copyright":
   - Add a paragraph element to show the text: "© All rights reserved | GeeksforGeeks."
   - Add an unordered list of three elements to show the three social media icons.

Below is the complete HTML code of the footer:

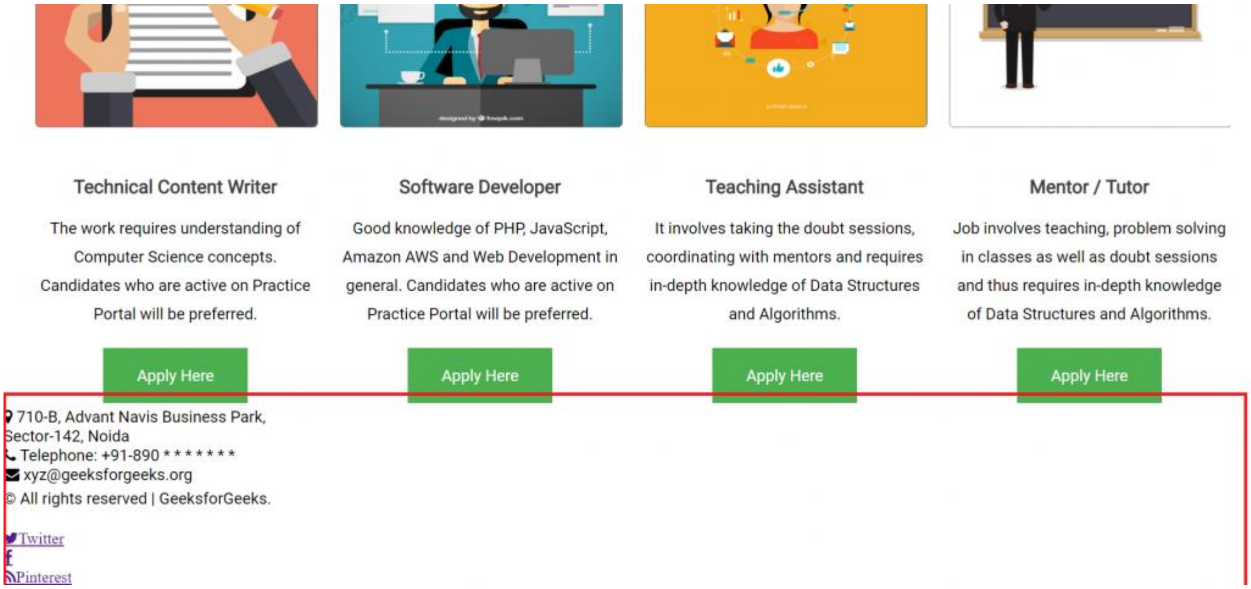
- HTML

```
<!DOCTYPE html>
<html>

<body>

   <!-- Footer Menu -->
   <footer id="footer">

       <!-- Company Details -->
```

```
  <!-- 1. Address
  2. Contact Number
  3. Enquiry Mail
-->
  <div class="company-details">
    <div class="row">
      <div id="col1">
        <span id="icon" class="fa fa-map-marker"></span>

        <span>
          710-B, Advant Navis Business Park,
          <br />Sector-142, Noida
        </span>
      </div>

      <div id="col2">
        <span id="icon" class="fa fa-phone"></span>

        <span>
          Telephone: +91-890 * * * * * * *
        </span>
      </div>

      <div id="col3">
        <span id="icon" class="fa fa-envelope"></span>
        <span>xyz@geeksforgeeks.org</span>
      </div>
    </div>
  </div>
  <!-- Copyright Section -->
  <div class="copyright">
    <p>© All rights reserved | GeeksforGeeks.</p>

    <ul class="contact">
      <li>
        <a href="#" class="fa fa-twitter">

        </a>
      </li>

      <li>
        <a href="#" class="fa fa-facebook">
```

```
                </a>
            </li>

            <li>
                <a href="#" class="fa fa-pinterest-p">

                </a>
            </li>
        </ul>
      </div>
    </footer>

</body>

</html>
```

Look at the **red marked portion** in the below image. This is what the website’s footer look like now:



Technical Content Writer

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Mentor / Tutor

Job involves teaching, problem solving in classes as well as doubt sessions and thus requires in-depth knowledge of Data Structures and Algorithms.

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Sector-142, Noida
Telephone: +91-890 * * * * * * *
xyz@geeksforgeeks.org
© All rights reserved | GeeksforGeeks.

Twitter
f
Pinterest

Let’s now add styles to the footer.

Adding Styles to div “website-details”

- **First style the basic layout**: Set the basic margins, paddings, background color and align the texts to center.
  Add the below CSS code to your style.css:

- CSS

```
.company-details{
   overflow: hidden;
   padding: 3em 0em;
   background: #E3F0F7;
   text-align: center;
   margin-top: 5em;
}
```

- **Aligning the three columns in one line**: Float all of the three columns to the left and assign a width of 320px to each one of them.
  Add the below CSS code to your style.css file:

- CSS

```
#footer #col1,
#footer #col2,
#footer #col3{
   float: left;
   width: 320px;
   padding: 0px 40px 0px 40px;
}
```

- **Adding Styles to the FontAwesome Icons**: Set the font-size of the icons to 3em and a bottom-margin of 1em and display them as block.
  Add the below CSS code to your style.css file:

- CSS

```
#footer #icon{
   display: block;
   margin-bottom: 1em;
   font-size: 3em;
}
```

Adding Styles to div “copyright”

- **Adding Styles to basic layout**: Set the basic margins, paddings, background-colors etc. for the copyright class.
  Add the below CSS code to your style.css file:

- CSS

```
.copyright
{
   overflow: hidden;
   padding: 3em 0em;
   border-top: 20px solid rgba(255, 255, 255, 0.08);
   text-align: center;
   background: #4CAF50;
}
```

- **Adding style to the paragraph element**: Add styles to the copyright information stored in **<p>** tags. Add letter-spacing, color etc.
  Add the below CSS code to your style.css file:

- CSS

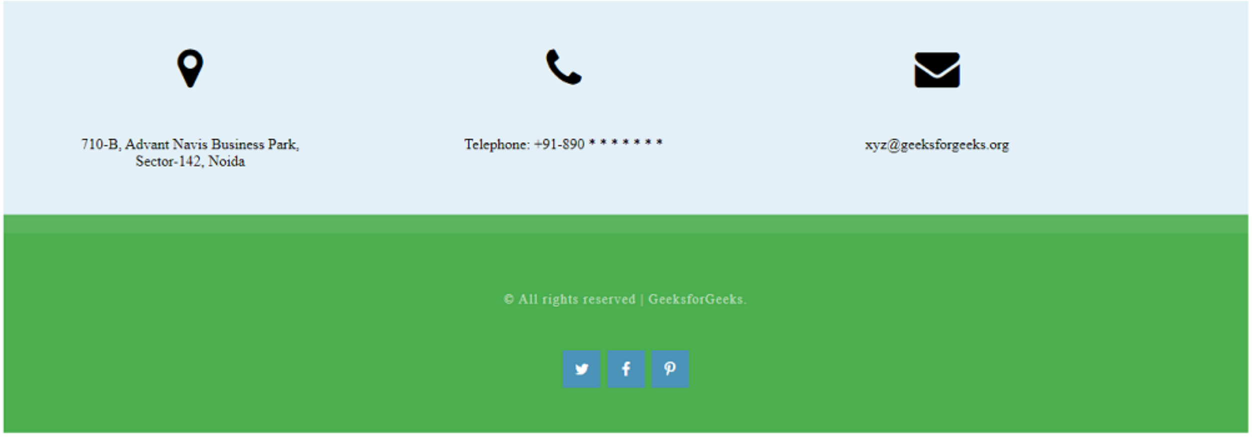
```
.copyright p
{
   letter-spacing: 1px;
   font-size: 0.90em;
   color: rgba(255, 255, 255, 0.6);
}
```

- **Adding Styles to the anchor tag**: Set the color of the anchor tag and text-decoration to none:

- CSS

```
.copyright a
{
   text-decoration: none;
   color: rgba(255, 255, 255, 0.8);
}
```

If you open the **index.html** file in the browser now, you will see the footer as shown below:



710-B, Advant Navis Business Park,
Sector-142, Noida

Telephone: +91-890 * * * * * * *

xyz@geeksforgeeks.org

© All rights reserved | GeeksforGeeks.

The above footer looks good, the only difference is in the display of the social icons of facebook, twitter etc. Let’s fix this. The last thing left is to add styles to the social media icons.

Adding styles to the Social Icons:

- Remove the margin from the ul or class named “contact”, add padding and set the list-style to none:

- CSS

```css
ul.contact{
   margin: 0;
   padding: 2em 0em 0em 0em;
   list-style: none;
}
```

- Set the list items to display as inline-block so that the icons can be displayed horizontally instead of vertically. Also add padding and font-size to the list items.

- CSS

```css
ul.contact li{
   display: inline-block;
   padding: 0em 0.10em;
   font-size: 1em;
}
```

- After adding the above two styles, the icons will now be arranged horizontally and at the center of the copyright div. Refresh and see the result in your browser after making the above changes.
- The last thing is to add background for the social icons. To do so, add the below style for the anchor tags of each list item:

- CSS

```css
ul.contact li a{
   color: #FFF;
   display: inline-block;
   background: #4C93B9;
   width: 40px;
   height: 40px;
   line-height: 40px;
   text-align: center;
}
```

The complete CSS code for the footer of the Website is as below:

- CSS

```
/**********************************/
/*          Styling Footer        */
/**********************************/

/*** Adding Styles to Company Details ***/
.company-details{
   overflow: hidden;
   padding: 3em 0em;
   background: #E3F0F7;
   text-align: center;
   margin-top: 5em;
}

#footer #col1,
#footer #col2,
#footer #col3{
   float: left;
   width: 320px;
   padding: 0px 40px 0px 40px;
}

#footer #icon{
   display: block;
   margin-bottom: 1em;
   font-size: 3em;
}

/*** Adding Styles to Copyright Div ***/
.copyright
{
   overflow: hidden;
   padding: 3em 0em;
   border-top: 20px solid rgba(255, 255, 255, 0.08);
   text-align: center;
   background: #4CAF50;
}

.copyright p
{
    letter-spacing: 1px;
    font-size: 0.90em;
    color: rgba(255, 255, 255, 0.6);
}

.copyright a
{
    text-decoration: none;
    color: rgba(255, 255, 255, 0.8);
}

/* Styling Social Icons */
ul.contact{
    margin: 0;
    padding: 2em 0em 0em 0em;
    list-style: none;
}

ul.contact li{
    display: inline-block;
    padding: 0em 0.10em;
    font-size: 1em;
}

ul.contact li a{
    color: #FFF;
    display: inline-block;
    background: #4C93B9;
    width: 40px;
    height: 40px;
    line-height: 40px;
    text-align: center;
}
```