**OVERVIEW OF THE WORLD WIDE WEB**

* **What is the World Wide Web**
  + The **WWW** is a collection of **Web resources** and **applications** that serves as a tool for users to share and obtain information through the Internet.The Web is typically a representation of human knowledge around the globe.
  + Its Web resources are **Hypertext** and **Hypermedia** based which enables resources to be linked to other resources.
    - Hypertext - software system used to link one text-based resource to another
    - Hypermedia - an extended feature of Hypertext which enables handling of multimedia resources such as images and videos.
    - The terms Hypermedia and Hypertext were invented by **Ted Nelson**
  + Applications are software tools used by users to access the Web resources
    - Two forms of Application
      * Web Server
        + It hosts/houses electronic resources
        + Gives response to clients’ request
      * Web Client
        + Sends requests to the server to be able to access certain Web resources.
    - **“Spider”**- A web crawler application which performs **Web Indexing** to obtain all of the information for a certain topic in the Web.
* **Internet** 
  + A common misconception is that the WWW is the same thing as the Internet.
  + serves as a medium between the Web and the Web browser such that it allows users to access information with the use of Web browser.
  + Collection of computers connected to a network
    - Composed of the following:
      * Hosts
      * Media
      * protocols
* **Web Browser**
  + A typical tool used to interact with the WWW
    - Categories
      * Static
        + Information displayed does not change/alter
      * Dynamic
        + Generates/displays information that varies and depends on the client
* **The History of the World Wide Web**
  + 1989
    - The WWW was invented by Sir Tim Berners-Lee in 1989 with the purpose of allowing scientists to easily share scientific resources or documents to other researchers around the world.
      * **Sir Tim Berners-Lee** - Father of modern Web
    - It was developed at **CERN**, a company sir Tim Berners-Lee works for.
    - Sir Tim Berners-Lee proposed the three **Web Technologies**:
      * HTTP
      * HTML
      * URL
  + 1990
    - CERN hosted the first website developed by Sir Tim Berners-Lee in Switzerland
  + 1993
    - CERN made World Wide Web open source such that users around the world can alter it and improve it without a cost.
  + 1994
    - **The World Wide Web Consortium (W3C)** was founded by sir Tim Berners-Lee
      * **W3C**  - is an international organization that provides standards in developing the Web

**HYPERTEXT TRANSFER PROTOCOL**

* **What is HTTP**
  + A communication protocol used to fetch the hypertext and hypermedia resources such as HTML documents in the Web.
  + It serves as a tool that allows Web servers and Web browsers to communicate in such a way that Web servers are able to understand requests given by the Web browser.
  + It is base on a Client-Server Structure which means that interaction between the Web browser and the Web server is initiated by having the Web browser send requests.
  + In additional, it is a set of standards in formatting and transmitting resources such as documents,videos and graphic within the World Wide Web
* **HTTP Fundamentals**
  + HTTP is a stateless protocol which means that the server does not need to keep the information about the client’s request or session.
  + Based on the **Client-Server Architecture/Structure**
    - Client (a.k.a User Agent)
      * A tool such as the Web browser which is used by the users to perform certain tasks in the Web.
    - Web Server
      * Serves web resources such as documents as requested by the client.
  + Uses the **Request-Response** Protocol
    - A protocol in which the client first sends a request which is then sent to the server and the the server sends back a response.
  + HTTP is media-dependent which means that it allows transmission of information in various data types as long as both the Web Server and the Client understands the data type of the resource.
    - Both Client and Server uses MIME Types to identify the data type of the information being sent.
* **HTTP Features and Functionalities**
  + Cache Control
    - HTTP controls caching in such a way that it allows servers to indicate or specify specific resources to be cached at the same time, the Client is allowed to choose the actions to be done on the resources that are cached.
  + Content Media Type specification
    - Uses MIME extension to specify the media types allowed.
  + Language and Character set specification
  + Content/Transfer Codings
    - Allows servers and clients to specify how resources are transmitted
      * For example, a resource can be sent/transmitted in compressed or uncompressed form
  + Content Negotiation
    - Allows clients to negotiate with the server in such a way that it specifies the preferred format of the resource being sent.
      * For example, a client indicates that its preferred format for the documentation is pdf.
  + Request pipelining/multiplexing
    - Multiplexing means concurrency
  + Authentication and Authorization
    - It allows servers to specify the authentication and authorization in accessing its resources.