بسم الله الرحمن الرحيم

In the name of Allah, the Beneficent, the Merciful

Web Application Development

CS3193

Muhammad Zeeshan Sabir

Lecture # 01: Course Policies

Online Course Resources

- All the lecture related material will be uploaded on Github
- Follow to get updated lectures.

- **https://github.com/mzsabir/WAD-1--FALL-2024**

Attendance Policy

- Attendance can be held any time during the class.

- Students present in the class, will only be marked as PRESENT

- Make good use of the allowed absentees

Cell Phone Policy

- It is strictly prohibited to use phone in the class.

- Keep it in your bag/pocket
- keep it in SILENT mode.

- A penalty could be imposed if any violation found during.

NO CELL PHONE USE IN THIS CLASSROOM

Grading Policy

Assessment	Marks	Total Weight
Quizzes	20	20%
Assignment *	20	20%
1 Midterm	20	20%
1 Final	40	40%
* Viva may be conducted for assignments		

Makeup Policy

- No makeup for <u>Assignment</u>, <u>Quizzes</u>, <u>Presentations</u> or <u>Exam</u> – **No exceptions**

- Late Submissions of Assignments will be accepted with penalty.

Contact

- Feel free to contact me for any issues that you may face regarding this course:

  - **Muhammad Zeeshan Sabir**

  - **Email: zeeshan.sabir@cust.edu.pk**

  - **Office: C Block 2nd floor**

Course Overview

- This course gives you the overview about:

  - What is <u>Web Application Programming</u>?
  - What are front end technologies for Web?
  - What are the fundamental architectural elements of web programming to produce dynamic content?
  - How to develop <u>web services & Consume APIs</u>?

Topics to be Covered

- HTML
- CSS
- Bootstrap
- Javascript, jQuery
- AJAX and JSON
- PHP/C#
- MySQL
- Laravel

Reference Material

- **Recommended Books**
  - PHP and MySQL for Dynamic Web Sites
    - LARRY ULLMAN
  - PHP: The Complete Guide for Beginners to Advanced Detailed Approach
    - By MG Martin

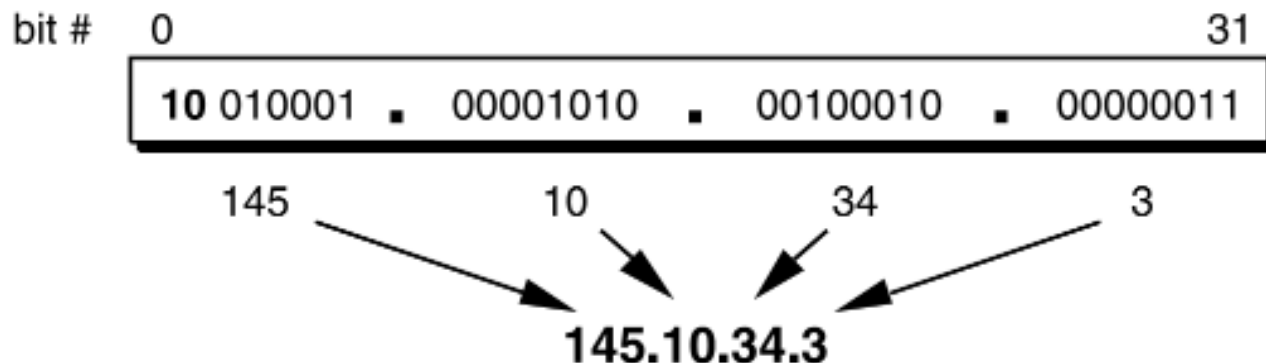- **Various Web Resources**
  - **w3schools.com**

The Internet

The Internet is a **network of networks** that uses the standard **Internet Protocol Suite (TCP/IP)** to serve billions of users worldwide.

Wikipedia: http://en.wikipedia.org/wiki/Internet
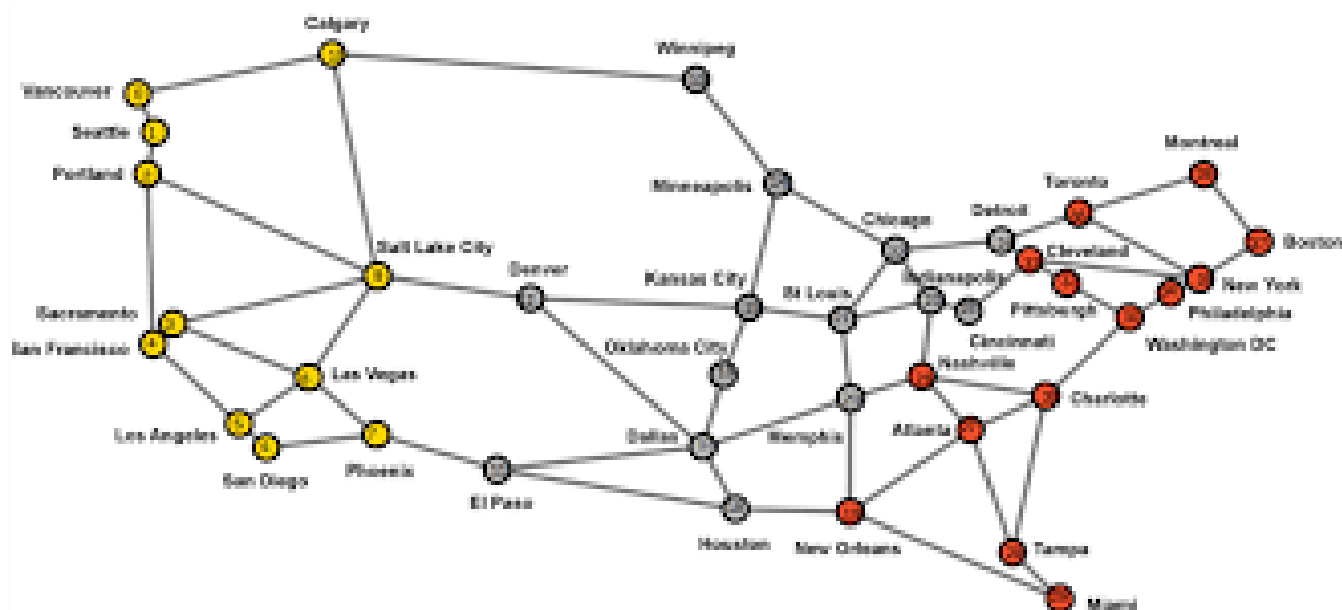
TCP/IP

- The Transmission Control Protocol (**TCP**) is one of the core protocols of the Internet Protocol Suite.

- IP protocol used to locate devices/computers on interent

- Each device has an IP address

bit #   0   31

| **10** 010001 | . | 00001010 | . | 00100010 | . | 00000011 |

145   10   34   3

145.10.34.3

Domain Name System (DNS)

- Set of servers that translate names to IP addresses

  - Example: www.**facebook.com** → **174.123.78.18**

Wikipedia: http://en.wikipedia.org/wiki/Domain_Name_System

World Wide Web

World Wide Web ≠ The Internet

- The Internet is a **hardware and software infrastructure** that provides connectivity between computers.

- In contrast, **World Wide Web is one of the services that run on the Internet**.

Wikipedia: http://en.wikipedia.org/wiki/World_Wide_Web

Web Server

- Computer running web server software that listens for web page requests on TCP port 80

- Popular web server software:

    - Apache

    - Microsoft Internet Information Server (IIS)

Wikipedia: http://en.wikipedia.org/wiki/Web_server

Web Browser

- Software application that displays web pages

- Popular Web Browsers:

  - Mozilla Firefox
  - Microsoft Internet Explorer (IE): part of Windows
  - Apple Safari: part of Mac OS
  - Opera
  - Google Chrome

Wikipedia: http://en.wikipedia.org/wiki/Web_browser

Hypertext Transport Protocol (HTTP)

- HTTP is the foundation of data communication for the World Wide Web.

- HTTP functions as a **request-response protocol** in the **client-server** computing model.
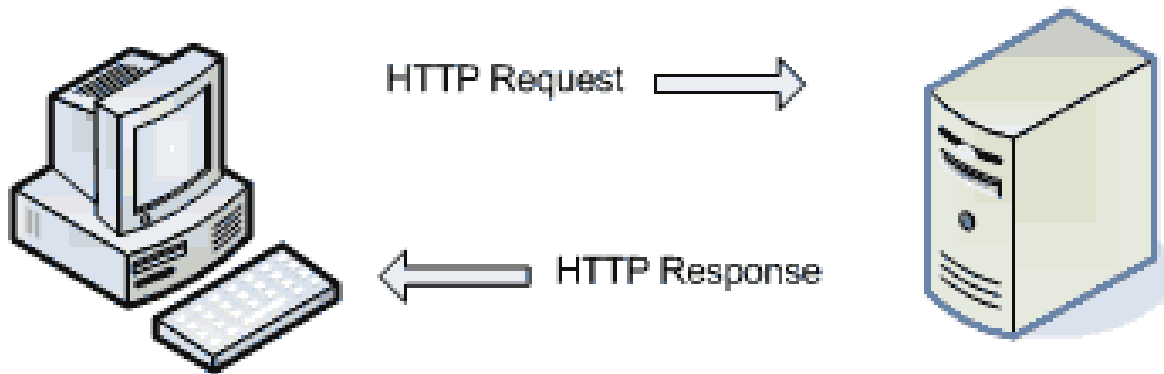
Wikipedia: http://en.wikipedia.org/wiki/Http_protocol

HTTP Error Codes

- The web server returns a special "**error code**" number to the browser, possibly followed by an HTML document

- Common Status Codes:

  - 200   OK
  - 301   Page has moved
  - 403   You are forbidden to access this page
  - 404   Page not found
  - 500   Internal server error

Wikipedia: http://en.wikipedia.org/wiki/Http_error_codes

Uniform Resource Locator (URL)

- Uniform Resource Locator (URL) is an identifier for the location of a resource on the Internet.

- Basic URL:
  http://www.cust.edu.pk/Faculties/tabid/56/Default.aspx

- Upon entering this URL into the browser, it would:

  - ask the **DNS** server for the **IP address** of *www.cust.edu.pk*
  - connect to that IP address at **port 80**
  - ask the server to **GET** */Faculties/tabid/56/Default.aspx*
  - display the resulting page on the screen

Wikipedia: http://en.wikipedia.org/wiki/Url

How Does Web Work?
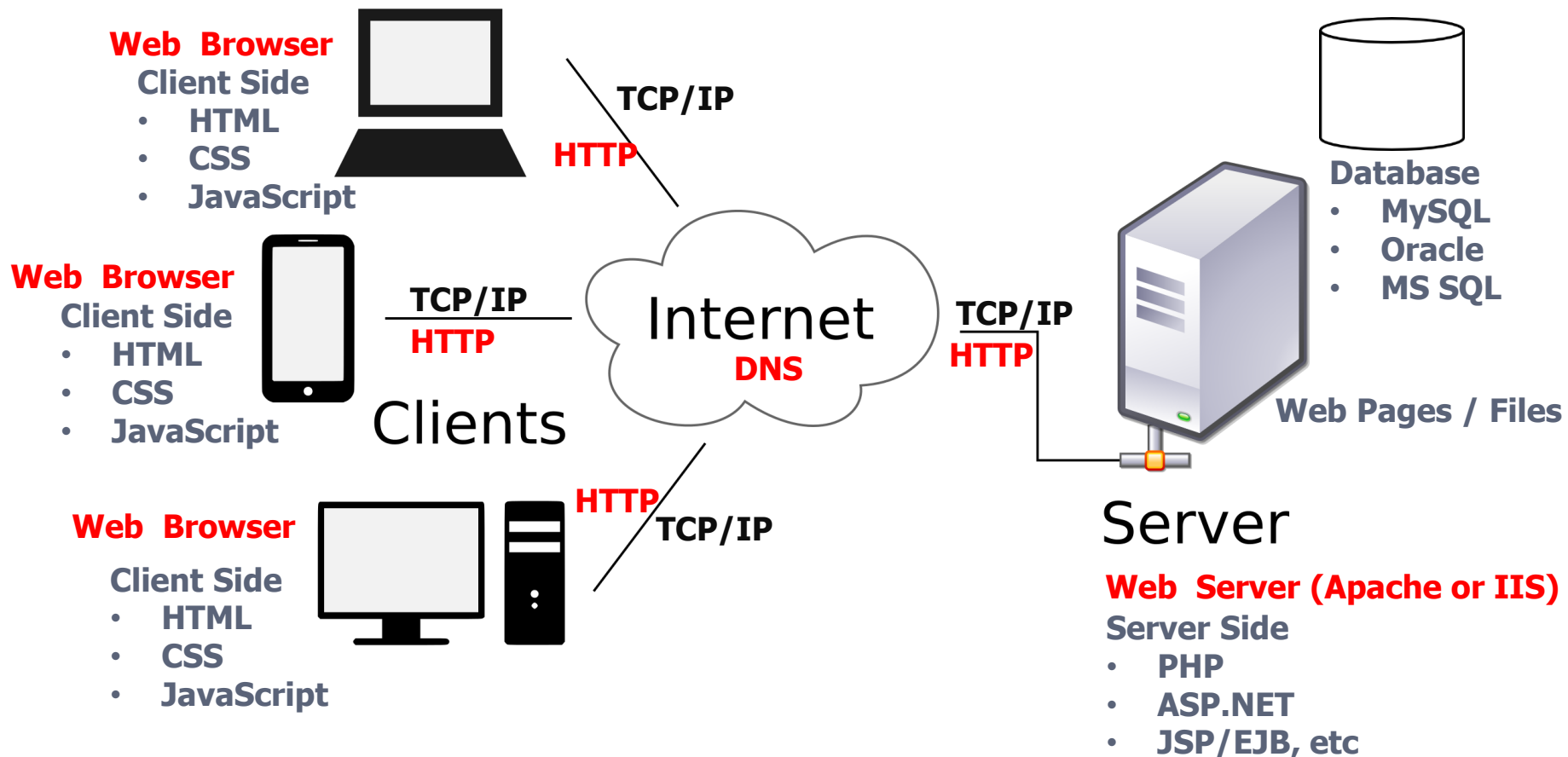
The Web Standards

- The rule-making body of the Web is the **W3C**.

- W3C stands for the **World Wide Web Consortium**.

- W3C puts together specifications for Web standards.

- The most essential Web standards are **HTML** & **CSS**.

- http://www.w3.org/

Publishing & Communication Medium

BENEFITS

- Global Access
- 24 Hour Access
- Cross Platform
- Easy to Use
- Easy to Publish & Update
- Distributed
- Multimedia Capable

LIMITATIONS

- Easy to get Lost
- Reading on a Computer
- Limited Attention Span
- User altered Pages
- User Hardware & Software Limitation
- Security
- Bandwidth

Other Dynamics

- **Multidisciplinary**
  - Programming
  - Domain Expertise
  - Usability
  - Graphic Design
  - Multimedia / Animation
  - Typography
  - Translation & Languages
  - Content Writing
  - Search Engine Optimzation

- **Hosted Solution**
  - Recurring Cost
  - Software is upgraded on the server and all users get latest version
- **Integration**
  - Integration with Existing/Legacy Systems
  - Integration with other Web Based Systems

Complexity of Web Based Systems

- **Document Centric**
  Static Websites
- **Interactive / Transactional**
  Online Banking, Shopping
- **Workflow Management**
  e-Government , B2B
- **Collaborative / Portal Oriented**
  Chatrooms, Forums, Community Portal, Business Portal
- **Ubiquitous**
  Location Aware, Multi-Platform Delivery
- **Social Web**
  User Contributed Content, Blogs, etc
- **Semantic Web**
  Syndication, Knowledge Management

Static Web Page

- Static Content

- Content is added by Publisher

- Content is embedded with code

- User can consume all content in a single visit

Dynamic Web Pages

- Dynamic Content

- Conent is dymaically generated through Data Source/DB

- Content is added by Users

- User can use it numerous times

- Also called Web Applicaitons

Client Side / frontend

- **HTML:** Describe structure (contents) of a page

- **CSS:** Controls presentation (layout, typographic ,colors, etc.)

- **JavaScript:** Can add interactivity & functionality

Frameworks/Libraries:

Bootstrap, Tailwind CSS, Angular, jQuery ,, React, Vue

Server Side / backend

- **PHP**

Create dynamic content, process forms, use other server resources

- **MySQL:** Database

Any Questions?