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Basics of Web
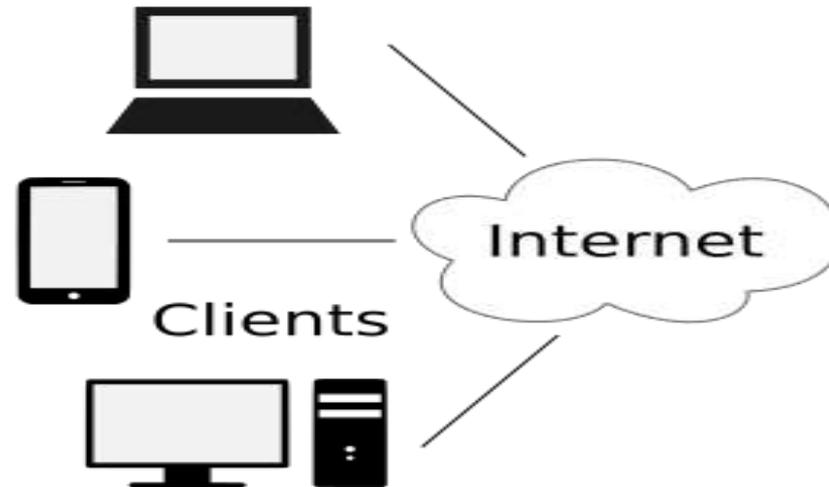
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DISCLAIMER

- ➢ The data in the tutorials is supposed to be one for reference.
- ➢ We have made sure that maximum errors have been rectified. Inspite of that, we (ECTI and the authors) take no responsibility in any errors in the data.
- ➢ The notes are theoretical concepts only.
- ➢ These are pre-requisites for any Web Development Courses.

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What is Internet?

➢ In simple terms, Internet is a Network of Networks.

➢ The internet is a network of computers linking many different types of computers all over the world using TCP/IP protocol.

➢ The internet is made up of millions of computers from all around the world, linked to each other by a network of telephone lines, cables and satellite connections.

Client

- ➤ A client is an application that runs on a personal computer or workstation.

- ➤ They rely on servers for:
    - Files
    - Devices
    - Some operations to perform

- ➤ There are many different types of clients. For example:
    - **E-mail client** - an e-mail client is an application that enables you to send and receive e-mail.
    - **Web Browser** - runs on a user's local computer or workstation and connects to a server as necessary.

Server

➢ A computer or device on a network that manages network resources.

➢ There are many different types of servers. For example:

- **File server:** a computer and storage device dedicated to storing files. Any user on the network can store files on the server.

- **Database server:** a computer system that processes database queries.

- **Application server:** an application server is a program that handles all application operations between users and business applications or databases.

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- ➤ When we say a server is a computer, in simple terms, it is a computer with huge amount of data held on it and connected in a network (read, Internet).

- ➤ Each of these SERVERS has a unique ID called as the IP address.

- ➤ The IP address is in the form of X.X.X.X where each X may range from 0 – 255.

- ➤ Each website we try to access is present on such servers. Thus upon request, the IP address is called and a connection with that server is successfully established.

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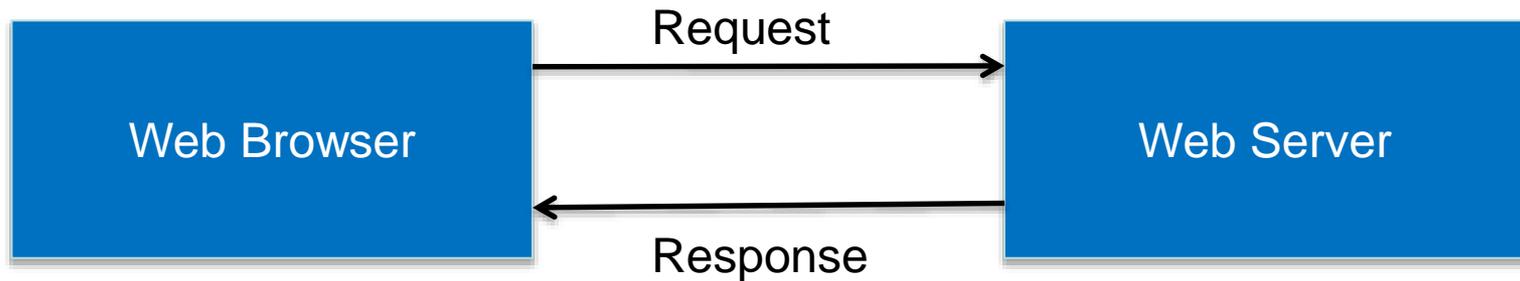An ISO 9001:2008 Certified Company

Web Browser

➢ A browser is a software application used to locate, retrieve and display content on the World Wide Web, including Web pages, images, video and other files.

➢ The most popular web browsers that are used today are **Mozilla Firefox, Google Chrome, Microsoft Internet Explorer, Apple Safari** and **Opera browser**.

➢ Windows additionally has a new browser in Windows 10 in the name of **EDGE**.

Web Server

➤ A web server is a system that sends content, such as web pages, using HTTP (HyperText Transfer Protocol), or files using FTP (File Transfer Protocol), over WWW.

➤ The server handles all the requests from the clients and is manages the request in a very sophisticated manner.

➤ Server architectures are a huge domain to look into.

➤ We will be looking into the basics of how the client and server communicate with each other and what exactly happens when a client system sends a request to the server.

➤ The most popular web servers that are used today are Apache, Microsoft's IIS.
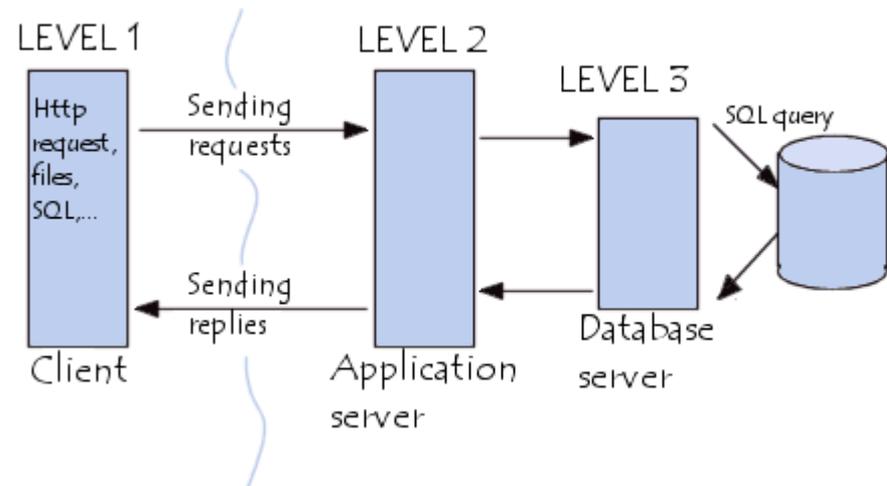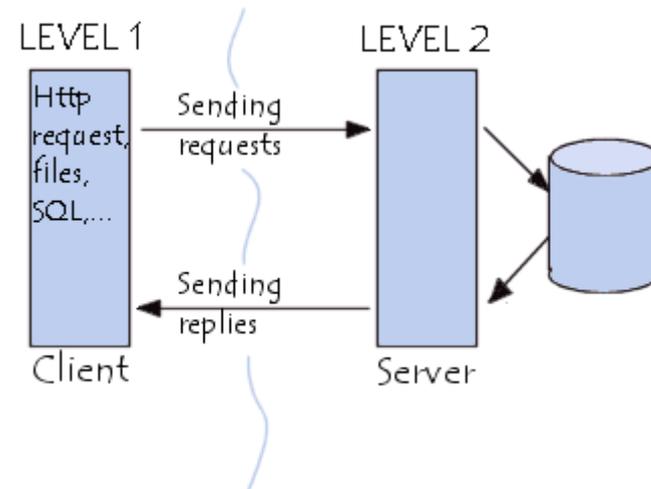
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Client – Server Architecture

➢ Clients and servers exchange messages in a request–response messaging pattern i.e. The client sends a request, and the server returns a response.

Client - Server Architecture

➢ A Client – Server Architecture works in multiple ways.

➢ There is either a 2-tier or a 3-tier architecture method in application of Client – Server Communication.

➢ The image above shows a 2-tier Client – Server Architecture

➢ Whereas the image below shows a 3-tier Architecture.

Request – Response Cycle

➢ The client – server communication happens in form of a cycle. This cycle is called as the Request – Response Cycle.

➢ There are multiple ways in which this cycle can be implemented.

➢ The multiple ways are:

- Synchronous Messaging
- Asynchronous Messaging

What is Request – Response?

Request

➢ It is a request of data or web page from the web browser to the server.

➢ It can be in any form.

➢ e.g.:

When we type in www.facebook.com in our web browser, the browser first decodes the IP address linked to the URL facebook.com and then sends a request to that server to send the page linked.
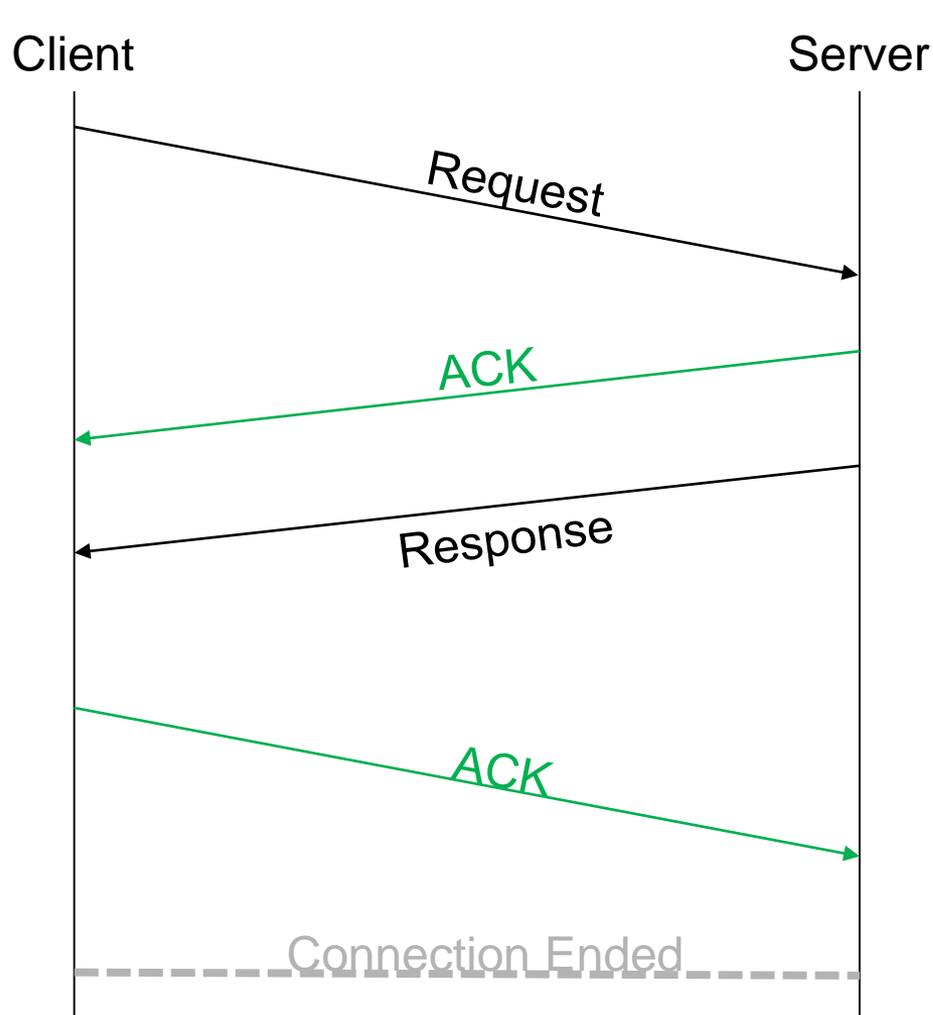
Response

➢ It is the response that the server sends back to the client in the form of data or web page.

➢ e.g.:

When a request of www.facebook.com is received, the server IP for facebook would respond with the facebook.com page.
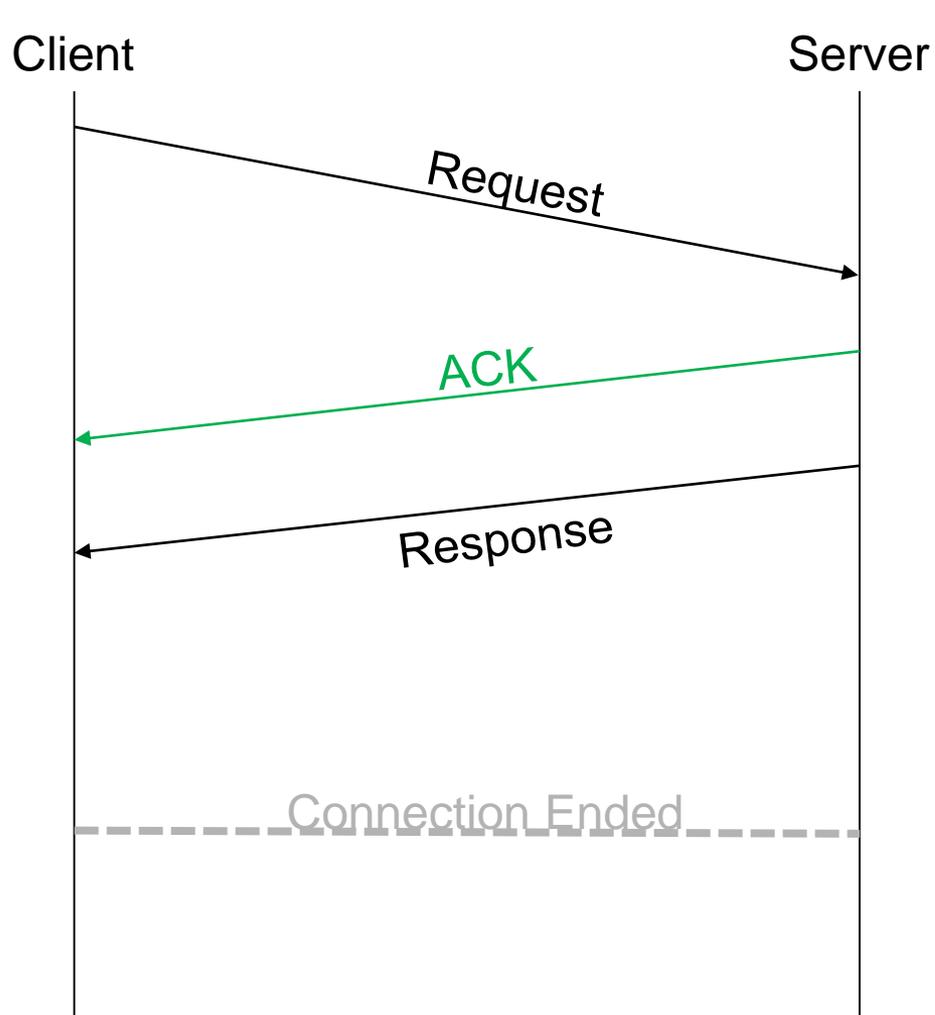
NOTE: The IP Address for facebook is 69.63.176.11

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4 – phase RR Cycle

Client   Server
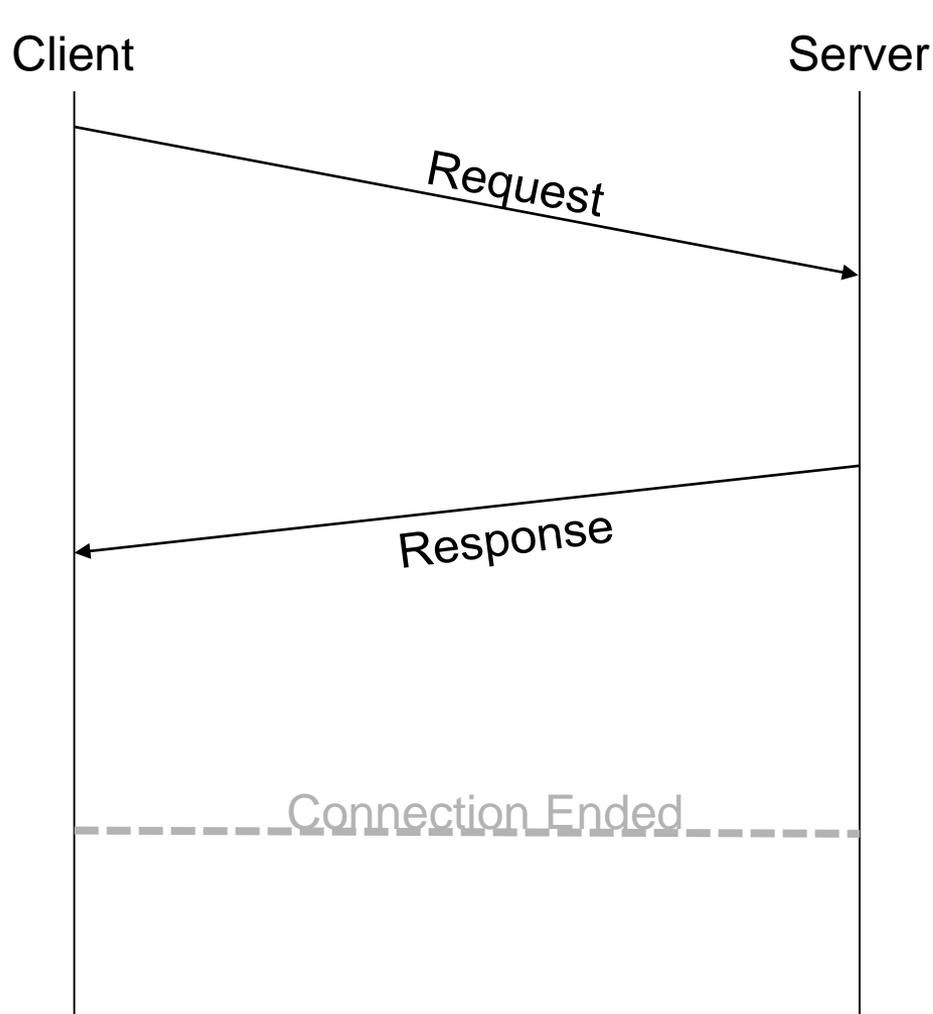
Request

ACK

Response

ACK

Connection Ended

➢ In this type, when the client sends a request, the server sends an acknowledgement once it receives it. If the client does not get an ACK in a stipulated time, it assumes that the request did not reach the server and thus it is sent again. Thus making sure that the request is executed for sure.

➢ The same happens when the server sends back the response.

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3 – phase RR Cycle

Client   Server

Request

ACK

Response

Connection Ended

➢ In this type, the first two stages remain the same.

➢ At the 3rd stage, the server sends back the response. The only difference is that the server does not wait for an ACK from the client.

2 – phase RR Cycle

Client   Server

Request

Response

Connection Ended

- ➢ In this type, the client sends requests and the server sends back the responses.
- ➢ At any given point, if a request or response is lost in transmission, there is NO WAY of recovery.
- ➢ There are no ACK messages in this type of RR Cycle.

Contents of a WEBSITE

➤ A website predominantly consists of any or all of the following components:

- HTML / HTML5
- CSS / CSS3
- JavaScript
- jQuery
- Bootstrap / Foundation
- WordPress / Joomla
- PHP / Java / .NET
- MySQL / Oracle DBMS etc.

➤ All of these components are responsible for different characteristics of the website. Let us look into each of these individually.

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HTML / HTML5

…continued

➢ The elements highlighted in red in the above screenshot are the results of HTML / HTML5 codes.

➢ There are tags in HTML which help us write various text in various different ways.

➢ HTML is not responsible for any of the styling content to any of the text.

➢ e.g.:

➢ In the box highlighted above, the text looks white and the font size too is big, all of this is not possible is HTML but only through CSS.

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CSS / CSS3

- ➢ CSS stands for Cascaded Styling Sheet.
- ➢ All the styling part of any website or web content is taken care of, by CSS.
- ➢ Font styling, background styling, window styling, etc are all written in CSS.
- ➢ CSS can be written in three ways:
  - ▪ Inline styling
  - ▪ On-page styling
  - ▪ External styling

JavaScript & jQuery

➢ JavaScript is a scripting language which is used to add some amount of dynamicity to our web page.

➢ JavaScript is an amazing tool through which we can create animations to the images etc. with the help of few line.

➢ jQuery is a library of JavaScript.

➢ Many a times, we need to add same animations to multiple websites or at multiple locations.

➢ Using jQuery, we can do this by simply calling a function.

Framework just gives us a structural idea of things whereas a Library defines how the things are to be done

Bootstrap / Foundation

- Responsive websites are websites which respond to the screen size on which they are being viewed.

- There is a single code written in HTML and CSS but handles layouts for different screen sizes which decide the web layout at the time of rendering.

- Responsive websites are thus created through media queries in CSS etc.

- These can be easily designed with the help of certain frameworks.

- Bootstrap and Foundation are these such frameworks which can be used to design a responsive website.

- They are not mandatory but are suggested for a simplified responsive code.

- We see the use of Bootstrap more than Foundation in the market*

*as of August 2015

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Content Management System (CMS)

➢ A content management system (CMS) is a computer application that allows publishing, editing and modifying content, organizing, deleting as well as maintenance from a central interface. Such systems of content management provide procedures to manage workflow in a collaborative environment.

➢ In simple terms, a CMS is an application which is used to manage the entire web content without the help of coding.

WordPress / Joomla

➢ WordPress and Joomla are examples of such types of CMSs'.

➢ WordPress is the most commonly used CMS in the world with approximately 23.3% of the websites using a CMS, use WordPress.

➢ It is free and open-source written in PHP-MySQL.

➢ Joomla is another free and open-source CMS written in CMS.

➢ Additionally Joomla is built on the MVC (Model-View-Controller) architecture.

PHP / Java / .NET

➢ A website may have back-end application as well.

➢ This includes a CMS as well.

➢ Simply to explain, websites like Flipkart.com, Snapdeal.com etc. have a front-end and a back-end system through which the entire database is managed.

➢ This back-end is a code written in either PHP / Java or .NET technologies.

➢ Simple example of a CMS system is WordPress and Joomla

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Database Management Systems (DBMS)

➢ A DBMS is used to store data collected either from the client or the server itself.

➢ A different system is used to store the DB in order to keep the system flow smooth.

➢ There are numerous DBMS / Relational DBMS (RDBMS)

➢ There are structured and non-structured DBs available

➢ The ones used most commonly are:

- Oracle
- MySQL
- Hadoop
- MongoDB

END OF BASICS IN WEB

- ➢ Thus, the basics of Web ends here.

- ➢ We hope you are satisfied with the theory provided.

- ➢ Feel free to share, distribute or use it in any form you wish to. **IT IS FOR YOU**. ☺

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END OF BASICS IN WEB

For advance courses or for any doubts in this tutorial, please contact us on any of the following details:

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