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Basics of Web

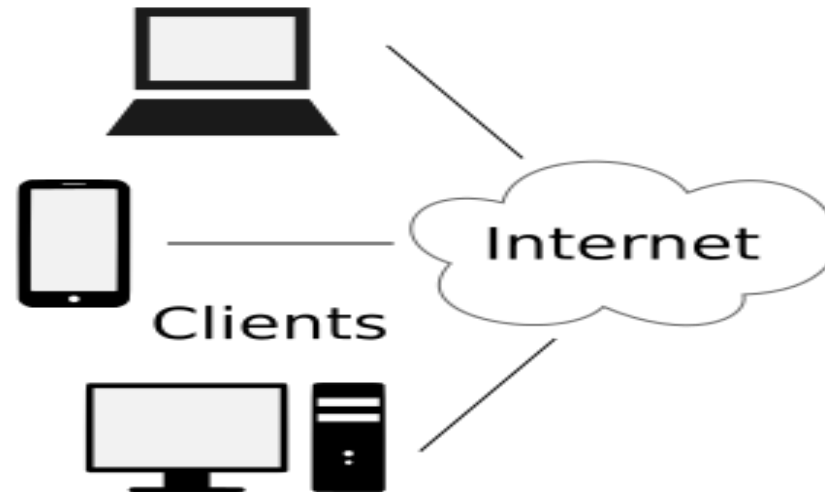
Updated on:
20 September 2017

DISCLAIMER

- The data in the tutorials is supposed to be one for reference.
- We have made sure that maximum errors have been rectified. In spite 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.

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.

Web Browser

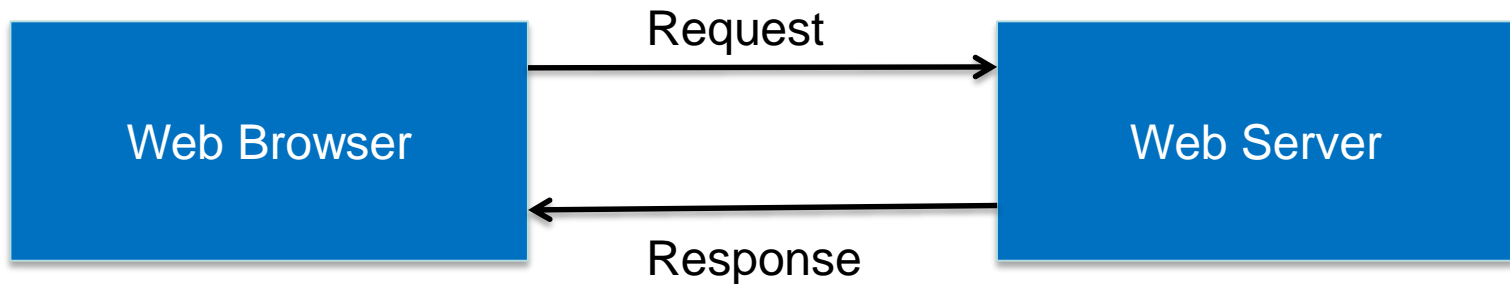
- A browser is a software application used to locate, retrieve and display content on the World Wide Web, including Web pages, images, video and other files.
- The most popular web browsers that are used today are **Mozilla Firefox, Google Chrome, Microsoft Internet Explorer, Apple Safari** and **Opera 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.

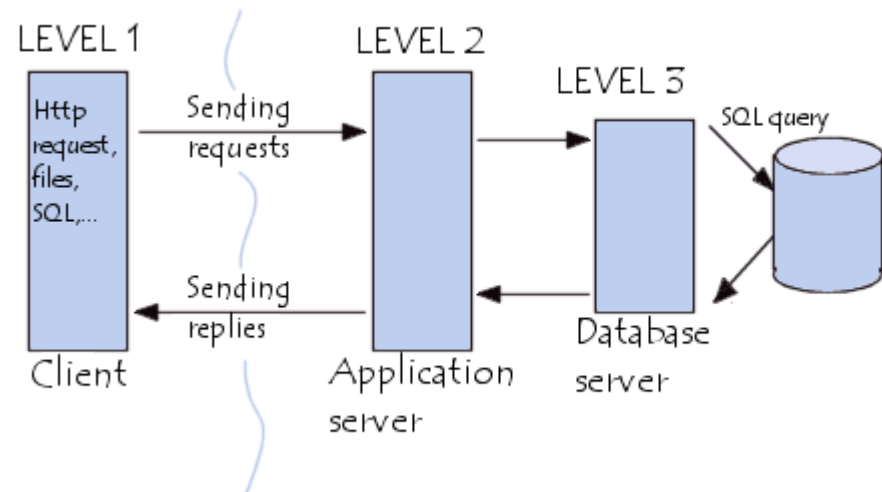
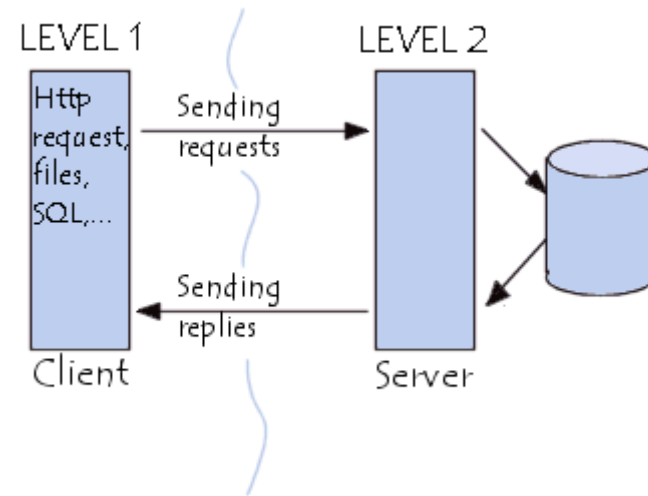
Client – Server Architecture

- 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.

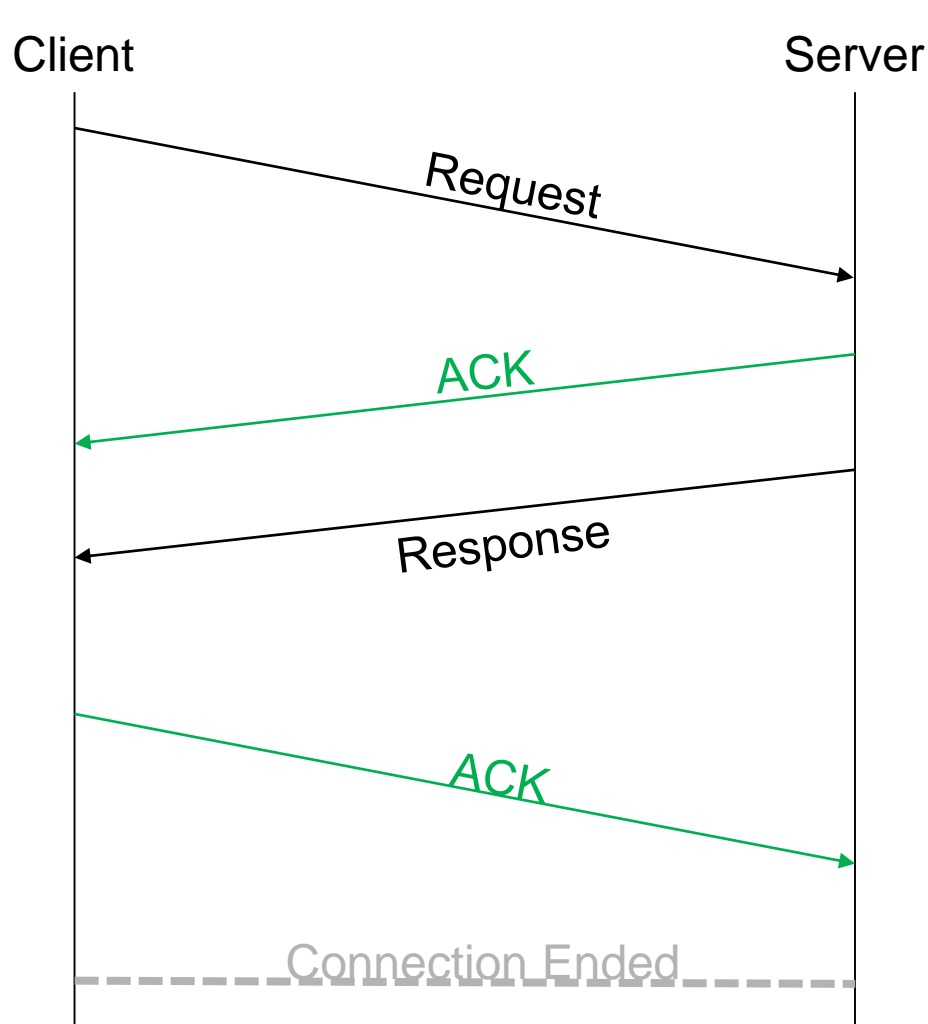
Response

- 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.

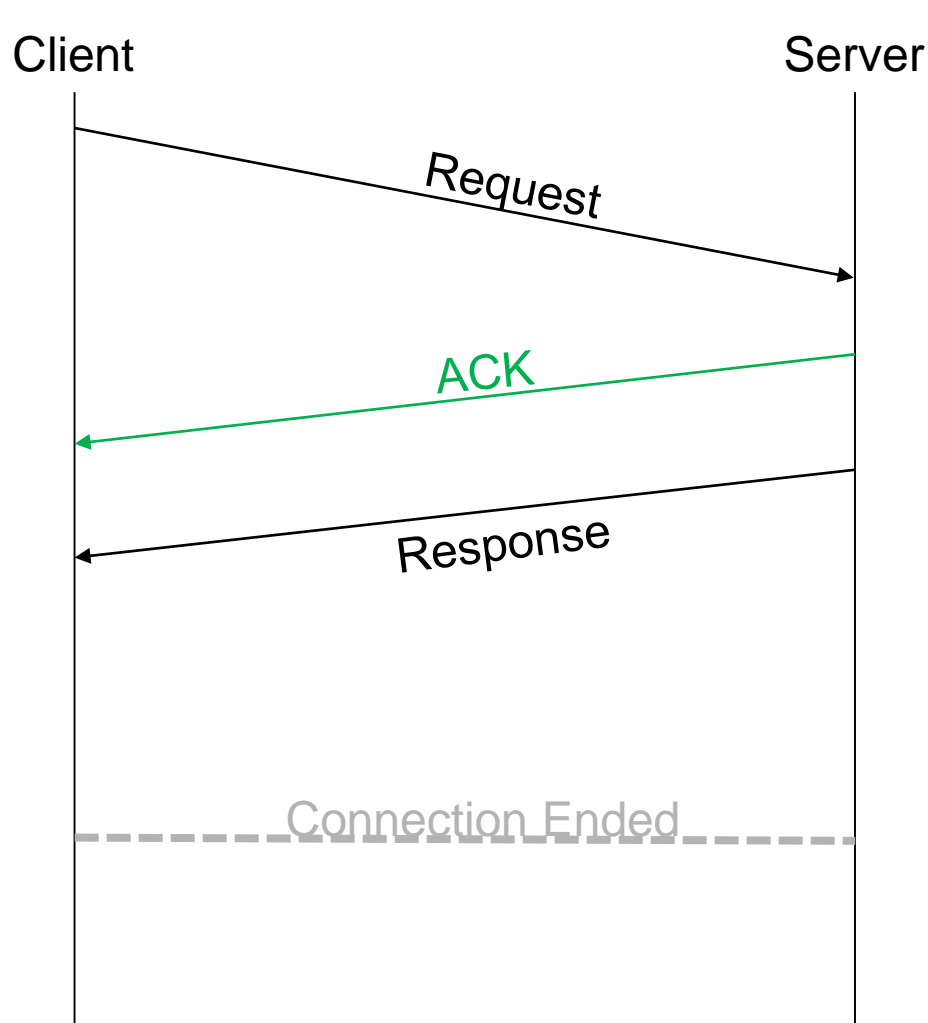
NOTE: The IP Address for facebook is 69.63.176.11

4 – phase RR Cycle



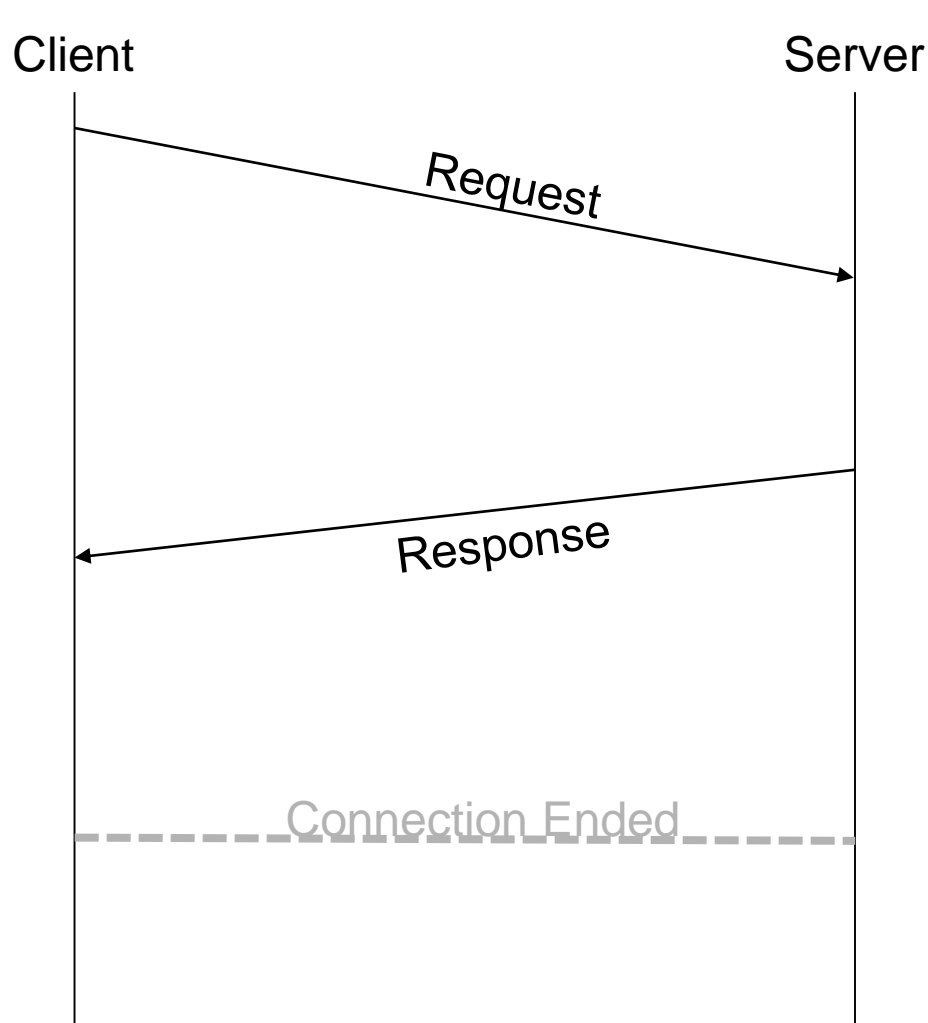
- In this type, when the client sends a request, the server sends an acknowledgement once it receives it. If the client does not get an ACK in a stipulated time, it assumes that the request did not reach the server and thus it is sent again. Thus making sure that the request is executed for sure.
- The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

3 – phase RR Cycle



- 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



- 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.

HTML / HTML5

The screenshot shows the website for Envision Computer Training Institute (ECTI), an authorized training center for PTC University. The page features a navigation menu with options like 'Featured Courses', 'Programming Languages', 'CAD/CAM', 'Mobile Apps Development', 'Web Design', and 'Downloads'. A prominent blue banner contains the text 'Get IT & CAD/CAM training from the masters at any of our branches!!' with a yellow arrow pointing to the 'CAD/CAM' menu item and a yellow button labeled 'Click to know more...'. Below the banner, there is a section titled 'Certifications we offer:' listing various credentials such as CERTIPORT, AUTODESK Certified User, HP Certified Educator, QuickBooks Certified User, HP Accredited Technical Associate, CERTIFIED EXPERT, Microsoft Technology Associate, and IGET IT. A red-bordered box highlights the 'Why choose ECTI for IT training?' section, which states that ECTI has been founded in 1999 and focuses on programming and engineering fields. It lists two reasons: 'Course designed by professional web masters' and 'Study materials are easy to understand'. A photo of a smiling man with a backpack is also visible on the right side of the banner.

www.ecti.co.in

Apps dev news localhost

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Why choose ECTI for IT training?

Founded in 1999, ECTI has rightly focused on the needs of Programming and Engineering fields. Thus it has gained a reputation as a highly effective training institute

- Course designed by professional web masters.
- Study materials are easy to understand.

About Envision Computer Training Institute (ECTI)

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- 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 in HTML but only through CSS.

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

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

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. 😊

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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