MERN Stack Training

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Application: It is a computer program that can perform some task, there are two types of applications

1. Standalone or Desktop
2. Web Application or Distributed

Standalone application: You can use this application only after installing on your machine

ex: MS Word, Antivirus, VSCode editor and so on

Web application: These applications can be accessed over the internet without installing on your machine

ex: Bank Applications, Gmail, twitter, e-commerce website and so on.

How you can access these web applications

You need to access via browser (which itself is another application which is a standalone application that helps accessing any distributed application).



Client & Server



Both client & server are machines, where you can launch or run the applications, but servers are the one who hosts the application and client would send the request to these applications and get the response.

Web application vs Web pages

Web application can produces many web pages, it can perform various tasks and can handle the request & generate the response, these response are shown in web pages

Web application’s can show two kinds of pages

1. Static pages - These contents doesn’t change, it would be common to all the users

ex: Wikipedia

1. Dynamic pages - These contents change at runtime, it would be different for different users

ex: Facebook, Twitter, Online shopping applications, Gmail

Technologies used for static pages & dynamic pages

Static pages can be developed using HTML & CSS

Dynamic pages can be developed using various technologies like Javascript, Servlets, PHP, ASP.net, Django

Various programming languages helps you to develop dynamic web applications

1. Java: Servlets & JSP
2. JavaScript: Node.js & Express.js
3. C#: ASP.net
4. Python: Django.

URL: Uniform Resource Locator, it is used to access any web application over the internet, this is a name for a web application running in any particular server

HTTP: Hyper Text Transfer Protocol, it is used to communicate between the client and the server, it is used to exchange the data in request & response formats, which are also called as HTTP messages

HTTP messages: These are the data exchanged between server & the client, there are two types of http messages

1. Request: Sent by client
2. Response: Sent by server

Request & Response are divided into two sections

1. Header: It will have header information’s of request & response like content-type, accept, length and so on
2. Body: It will have the data, which is very much important for both client & server

History of browsers

1. WorldWideWeb Browser
2. Mosaic
3. Internet Explorer
4. Opera
5. Safari
6. Mozilla Firefox
7. Google Chrome
8. Microsoft Edge



Standalone applications are the applications that need to be installed before using

Desktop applications need to be installed in Laptops or Desktops ex: MS Word, Antivirus, VSCode and so on

Mobile applications need to be installed on your mobile phones ex: Mobile banking applications, Facebook application, Google pay, phone pay, Zomato, Swiggy and so on

Distributed applications are the applications that can be accessed over the internet, there are two types of Distributed applications

1. Web application
2. Enterprise application

Web applications are accessed only via browsers and it returns HTML as a response so that browser can easily show the content to the user

Enterprise applications are more complex applications that can be accessed by any kind of applications, they don’t provide service only for browsers, they provide service for all kind of applications like web applications, mobile applications, desktop applications, VR devices, Swiping machines, ATM machines and so on



Enterprise applications returns data not in HTML format rather in one common format called JSON (JavaScript Object Notation) that is easily readable by any applications written in any programming language, these applications are called as client applications they convert the data to the format the environment understands means, mobile applications converts the data to the format which can be displayed in the mobile screen, web applications can convert these data to the format that is displayed in the browser i.e., HTML, similarly ATM machines can convert the data in a format that can be displayed on ATM monitors and so on with Swiping devices, VR Devices.

Examples of enterprise applications

Banking applications, Google map, Facebook application, Twitter



Here the enterprise applications provide services to many client applications, ex: a banking applications are enterprise applications that can be accessed via many client applications like ATM, mobile banking apps, google pay, phone pay, paytm, swiping mahines and so on

These type of enterprise applications are allowing multiple client applications to connect and share data via webservices

Webservices: These are online services or Online API’s which are made available on the internet with URL’s for variety of client applications, webservices can convert the data in one language to JSON and vice versa.



Distributed applications are not just web applications, they are more than that

What are the other formats the webservices can use

1. JSON (More widely used is JSON)
2. XML : It is heavy weight & used rarely

Day 3:

Layered architecture

It is an architecture which is followed in every complex application as in an application there will be 1000’s of functions & you must not mix the roles of each function, every function has to perform a particular task, hence an application must have layers like

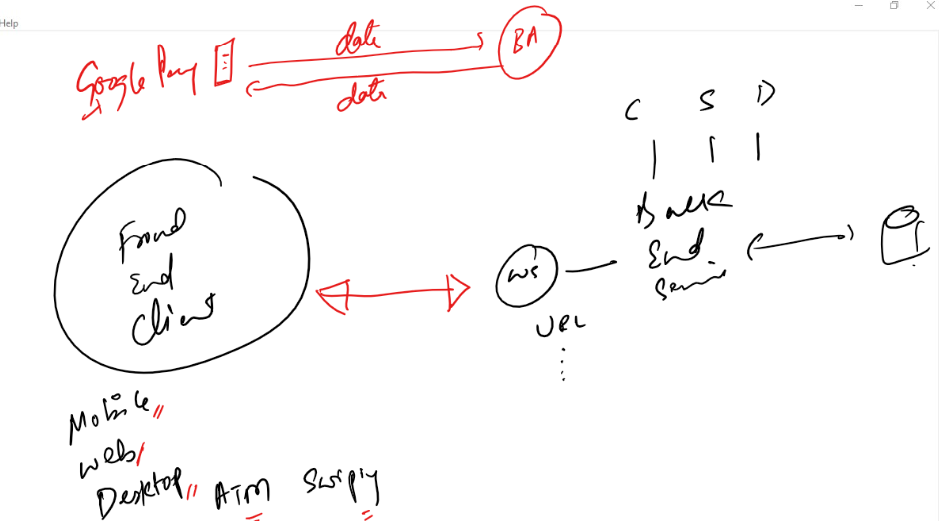
1. Presentation layer: Will have UI which user can access
2. Controller layer: Takes data from the UI and decides what is the next view the user must see and also passes the data to the UI and Business layer
3. Business layer: It is also called service layer, it applies business logic, like performing business validations before interacting with the database, it returns the data to the controller layer
4. DAO layer: DAO stands for Data Access Object, it interacts with the database and returns the data to the business layer.

Day 4

Front-end and Back-end applications

Front end applications will have only UI’s that use can access, it will not have any kind of business logics or database logics it interacts with backend webservices

Back end applications will have business logics that can interact with the database, it will have the webservices which front-end would interact with.



Ex of front end applications

1. Google pay
2. Phone pay
3. IRCTC mobile app
4. Zomato
5. Swiggy
6. Ola mobile
7. Uber mobile

Ex of Back end applications

1. Google map Api’s
2. Facebook Api’s
3. Banking application Api’s

Technologies or Programming languages that developers use to develop front end and back end applications

For front-end we have below technologies

* JavaScript
* Angular
* React.js
* Ember.js
* Vue.js
* ASP.Net

For Back end we have below technologies

* JavaScript
* Python
* Java
* C#
* C++

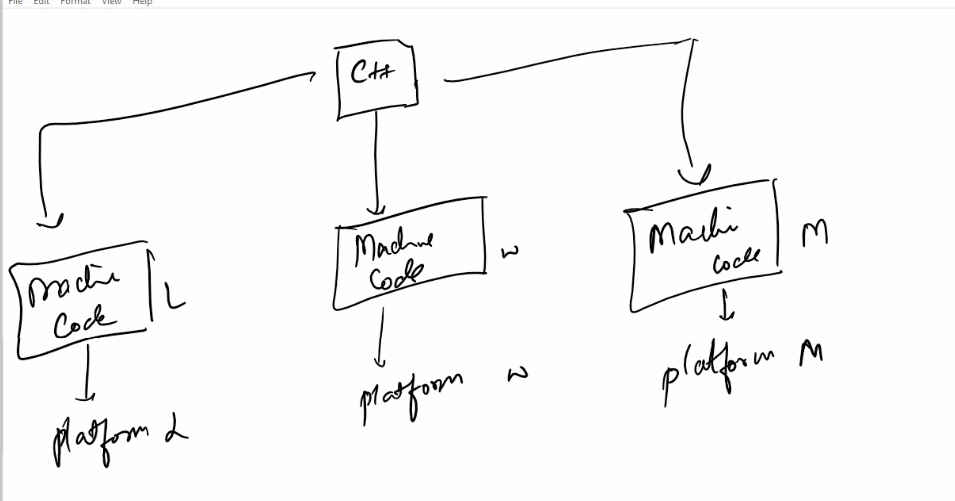
Evolution Programming languages

MLL: It is a language only Machine can understand 0’s and 1’s

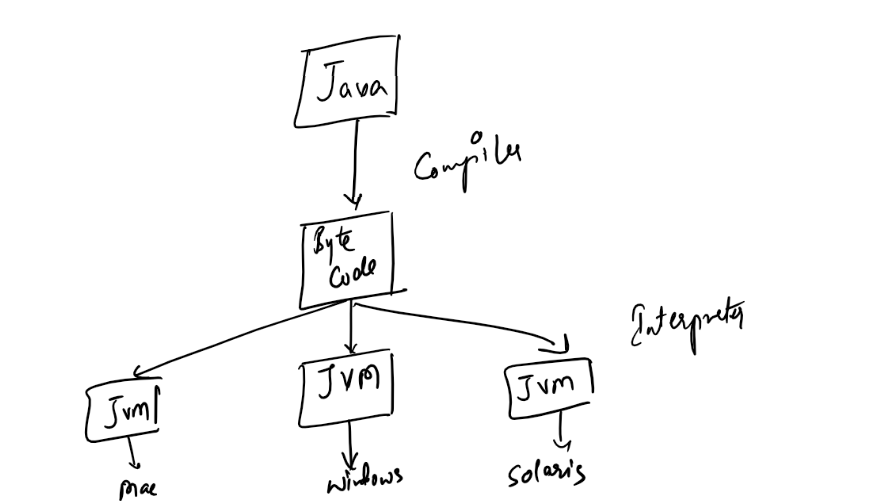
ALL: It is an Assembly Level Language, which is understood by humans, but it works only on specific processors, if you change processors, then you need to change your entire program

C: It is an High level language which is procedure oriented, but it doesn’t secure the data, as the data you create is accessible by all the procedures

C++: It is an Object Oriented Programming language, which binds the data & functions in a unit so that they are accessible only withing that unit not to the outsiders, it is platform dependent, which means the code you compile in one machine doesn’t work in another machine



Java: It is a platform independent language, it converts the source code into byte code and the byte code is converted to suitable platform specific code by JVM (Java Virtual Machine)



JavaScript: It is a language used to develop front end web pages, it is understood by all the browsers, but Java Script can also be used now for developing backend applications i.e., you can create web services with Java Script.

JavaScript needs browser to run at the front end

JavaScript needs node.js to run at the back end, node.js is a Javascript runtime environment it allows you to perform various backend operations like connecting to databases, IO operations on files, Socket IO operations (chatting applications).