

29/06/2022

wednesday

## Type of application:

- ① Standalone application (Desktop app)
- ② Client Server application

\* Client server application There are 2 types :-

\* Client Server

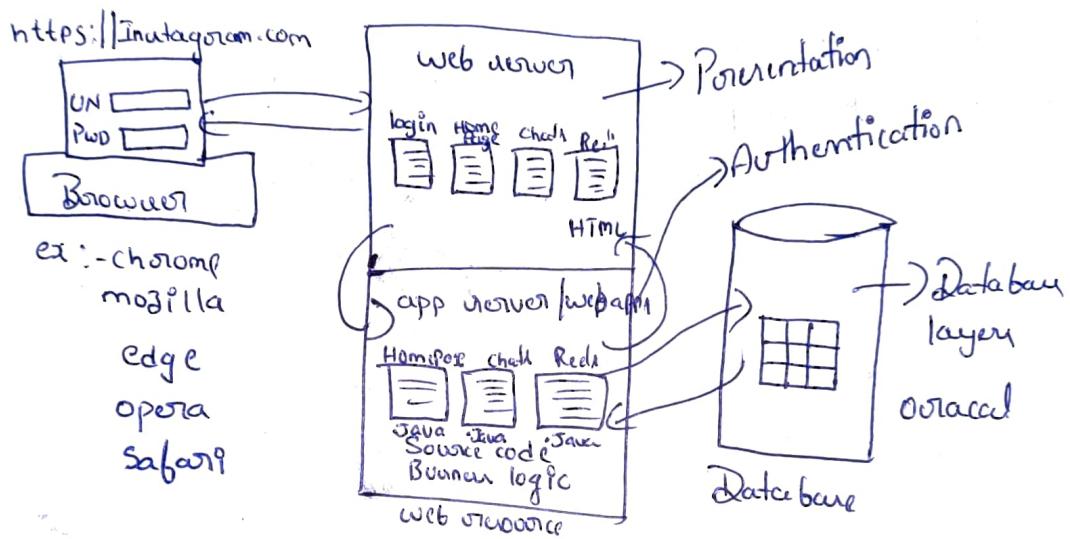
\* web app

30/06/2022  
Thursday

## Architecture of web application:-

### HTML :-

HTML is used to design any web page



Browser :- Browser is a Standalone application used to access any web application via URL over the network

\* Browser understands HTML, CSS, & JavaScript only

\* Browser uses http protocol. Hence it always sends http request & receives http response

Ex:- Chrome, Safari, Mozilla,

Web Server :- It is also a software which runs on any operating system [os]

\* Web servers receive request from the browser, communicate with the app server to provide back to response to the browser.

Ex :- Apache tomcat [famous web server using port]

App servers :- collection of web resources within the web application is called as app servers.



Types of web resources :-

① Static web resource

② Dynamic web resource

① Static web resource :-

Response generated even before the request is called as static web resource

Any web application which contains only static web resource is called as static web applications

NOTE :- All static web applications

To develop any static web application only html is enough



Ex :- wikipedia

## ③ Dynamic web resource :-

Response generated at the time of request in called as dynamic web resource  
ex:-

If a web application contains at least one dynamic web resource it is called as dynamic web - application

eg:- gpay , phonpay .

## NOTE:-

To develop dynamic web application we use Servlet

## Database :-

it is a place on a medium which we can store the data in the form of systematic & organised manner

ex:- oracle , mysql , ~~NO~~ Sql , ms sql , postgresql , Sybase , mongodb , etc ---

## JDBC [Java data base connectivity] :- [API]

"it is a Java API use to connect the Java object with the data base

01/07/2022  
Friday

URL :- [ Uniform resource location ]

what URL needs

- \* Address of a particular location
- \* every application will have a unique address in the form of URL
- \* uniform resource locator is used to identify specific web resource within a web application

Syntax of web URL

Protocol :// Domain name : port number / Resource path ?  
Query string # fragment ID

Syntax :- Protocol :// Domain name : port number / Resource path ?  
Query string # fragment ID

Protocol :- whenever two applications are communicating with each other they need to be a common language which both the application understand. hence we use protocol

\* Protocol acts like a common language b/w two applications

\* it is also a set of rules

## Type of protocol :-

- ① HTTP - hyper text transfer protocol
- ② HTTPS - Secured  
Secure
- ③ SMTP - simple mail transfer protocol
- ④ FTP - file transfer protocol

NOTE :- Protocol is optional information present in Web URL

## Domain name :-

Domain name is used to identify specific Computer or a Server with in the network

\* Domain name can be either Computer name or IP address

\* It is a mandatory information present in the WEB URL

ex:- https://facebook.com (commercial)

- org (Organization)
- edu (Education)
- gov (Government)
- in (India)

Steps to add IP address plug in

Stepus ① :-

Launch Chrome Browser

Step ② :- Go to Settings

Step ③ :- click on extension link in the left navigation ~~part~~ Bar

Step 4 :- click ~~the~~ on hamburger menu in the left navigation bar

Step 5 :- click on open chrome web store click

Step 6 :- click on Search the Store text field.

Step 7 :- type "IP address"

Step 8 :- click on IP address image

Step 9 :- click on add to chrome button

Step 10 :- click on add extension button

Port number :- It is used to identify specific application within a computer it is an optional information

Eg :- 8080 ~~8080~~

8088

8888

Resource Path :- It is used to identify specific web resource within a web application  
It is also an optional information

## Query Storing :-

- \* It is used to pass a particular parameter
- \* Query Storing always begin with "?"
- \* In query storing the data is paired name value pair
- \* each name value pair is separated by using & (Amperand)

## Fragment ID :-

- \* It is used to identify specific fragments [Sections] within in the web application

04/07/2022  
monday

## Types of languages :-

Developing language



C

C++

C#

Java

Script language  
(Validation)

Python

Java Script

Shell Script

Visual Basic

Other language

XML

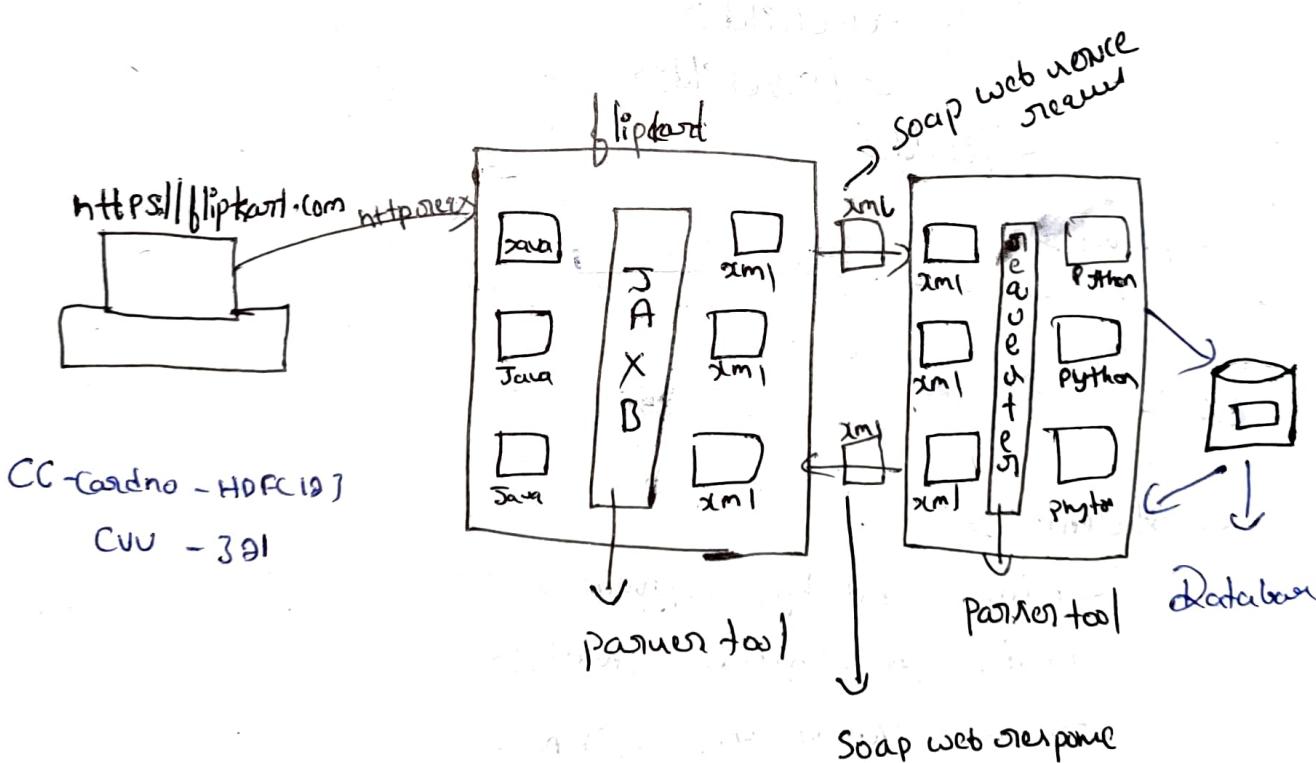
JSON

XSD

DTD

HTML

① XML :- [Extensible markup language]

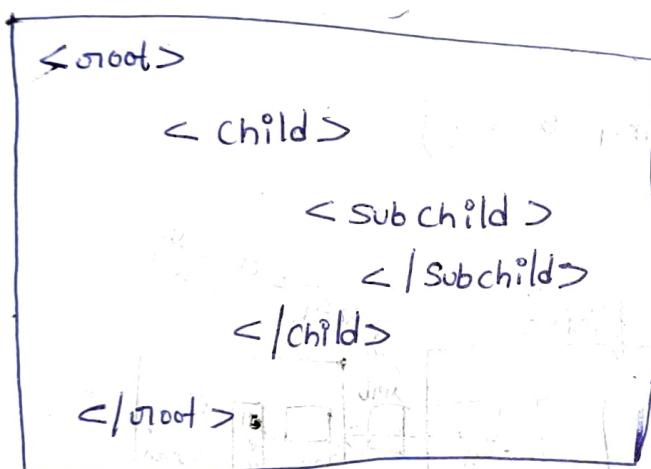


JAXB :-

It is a parser tool which is used to convert Java into XML (or) Python to XML

- extensible markup language is used to store & transport the data b/w two application
- \* it is a collection of customized tags or user defined tags
  - \* it is a strictly typed language
  - \* it is case sensitive
  - \* It is an extension of 'HTML' hence the structure looks similar to HTML
  - \* In XML Tags are also called as elements

### Structure of XML :-



ex :-

```
<Student>
  <name> Adithya </name>
  <Native> Rachitoradba </Native>
  <Ph no> 7090253419 </Ph no>
  <gender> male </gender>
  <Sal> 5 LPA </Sal>
</Student>
```

## XML entity reference :-

few characters have a special meaning in XML  
for ex :- < is used to denote the start tag of an element  
to avoid this confusion the entity references will be used.

|   |          |
|---|----------|
| < | - &lt;   |
| > | - &gt;   |
| ' | - &apos; |
| " | - &quot; |
| & | - &amp;  |

## Elements & attributes :-

Anything which includes the start tag, value & the end tag is called as an element.

\* Anything which is written in name value pair within the start tag of an element is called as an attribute [name = value].

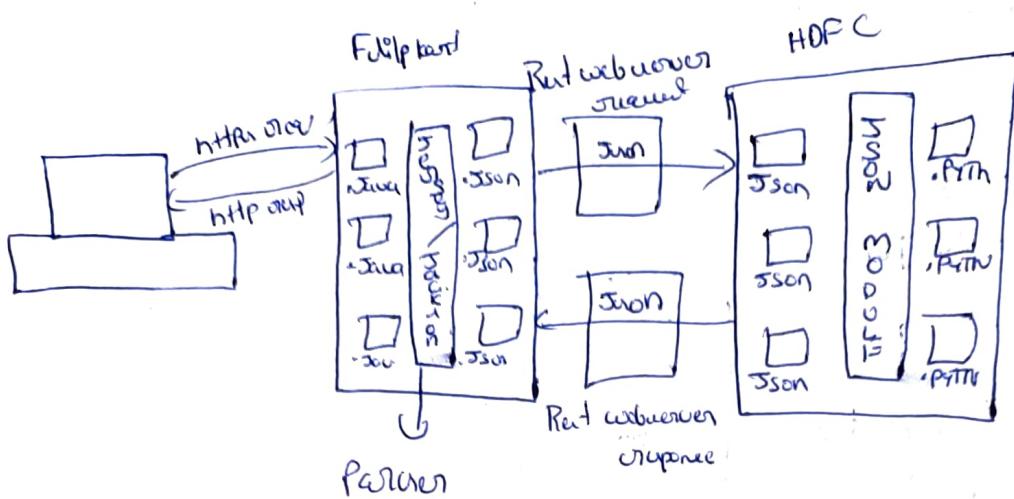
ex:- Element

```
<Name> shivu </Name>
```

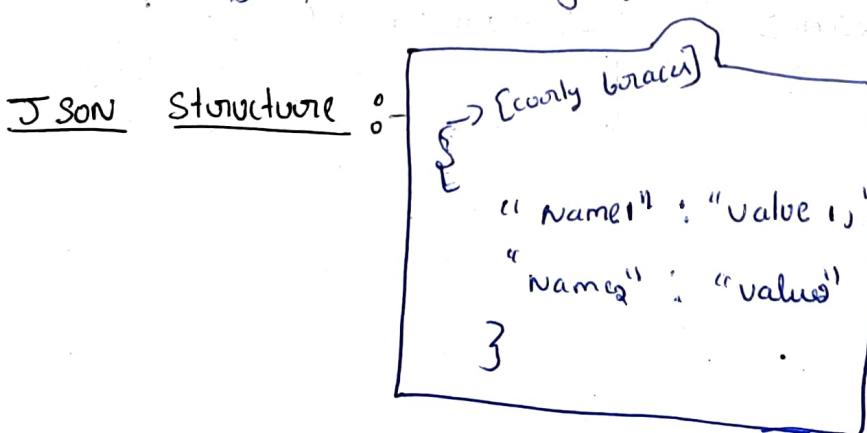
ex:- attributes

```
< Student Name="Shiva" native="mandya" gender="male" >
```

## JSON :- [Java script object notation]



- Java Script object notation like XML, SADON is also used store & transfer the data b/w two application
- Compare to XML JSON is very lightweight
- JSON contains more no of data types
- It is an extension of JAVA Script
- file name extension of JSON is `.JSON`
- Content type of JSON is application / JSON
- It is a very popular language



## JSON follows map structure

- Curly Braces denotes an object
- In JSON The key [name] must always be enclosed within double quotes (" ") followed by a colon(:)
- The value in JSON should be any of the following data types

String - "Dinga"

Number - 101.03

Boolean -

NULL -

array -

object -

object array -

- String values must always be enclosed within double quotes (" ")
- number could be a whole number or a decimal number
- Boolean indicates whether the condition true or false
- Array Contains the Similar Set of Data which must be enclosed with Square Braces ([ ]).

~~JSON PARSER~~ :- Jersey or Jackson or Jax-RS are the parser tools used to convert JAVA to JSON & vice versa

- \* The process of Converting JAVA to JSON object is called as Serialization / marshalling
- \* The process of Converting JSON to JAVA is called Deserialization / unmarshalling

\* \* \* IQ

## Difference b/w JSON & XML

### JSON

- \* Java ~~script~~<sup>Object</sup>
- \* Java script object notation
- \* It is an extension of Java script
- \* JSON has a data type
- \* JSON datatypes : String, number, null, boolean, array, object, object array,
- \* Content type of JSON is Application / JSON
- \* Data is readily acceble in JSON format
- \* JSON is supported by most of the browsers
- \* JSON is less Secured

### XML

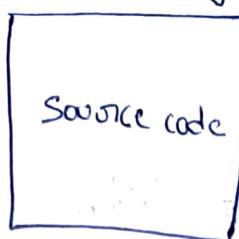
- + extensible markup language
- \* It is an extension of HTML
- \* XML is type less
- \* All the data will be considered as a string
- \* Content type of XML is Application / XML
- \* XML Data is ready to be parsed
- \* XML is not supported by most of the browsers
- \* XML is more Secured

## Service oriented architecture (SOA)

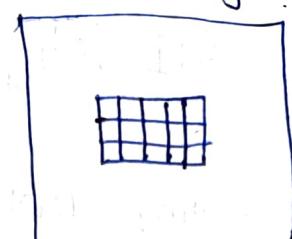
Presentation layer



Business layer



Database layer



### BST / Functional testing

1. manual testing
2. Automation

### API testing

1. WBT/unit testing
2. Web Service testing
  - (a) SOAP ws testing
  - (b) REST ws testing

### Database testing

### ETL testing

#### ① What is API?

- Application programming interface acts as a bridge  
or connection b/w two different programmes

#### ② What is API testing?

⇒ "Testing the interface b/w two programmes is called  
as API testing"

(Q1)

"Testing the application in business layer is called API  
testing"

(Q2)

"Testing the application without using the browser is  
also called as API testing"

#### ③ Why API testing is necessary?

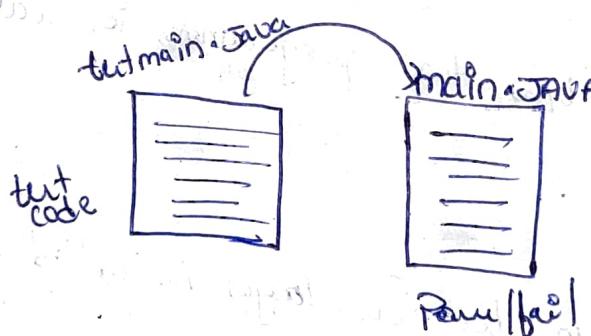
## Types of API testing :-

- ① WBT Testing (or) unit testing
- ② web service testing

- (i) SOAP web service testing
- (ii) REST web service testing

### ① WBT Testing (or) unit testing :-

⇒ Testing each & every line of Source code with the help of another program (or) code is called as WBT (or) unit testing



②

## Web Services :-

→ web service is a mechanism where two application exchange the information b/w each other.

### Two application

→ web service helps two applications exchange the information without sharing the source code & the database data.

## WebService testing :-

Testing the request and response b/w two application is called as web service testing.

Q) Who should do the web service testing?  
 ⇒ ~~Web~~ web service provider has to do web service testing in order to make sure that all the API's exposed by his application is ~~not~~ ~~both~~ is working as expected with respect to functionality, Scalability, performance &

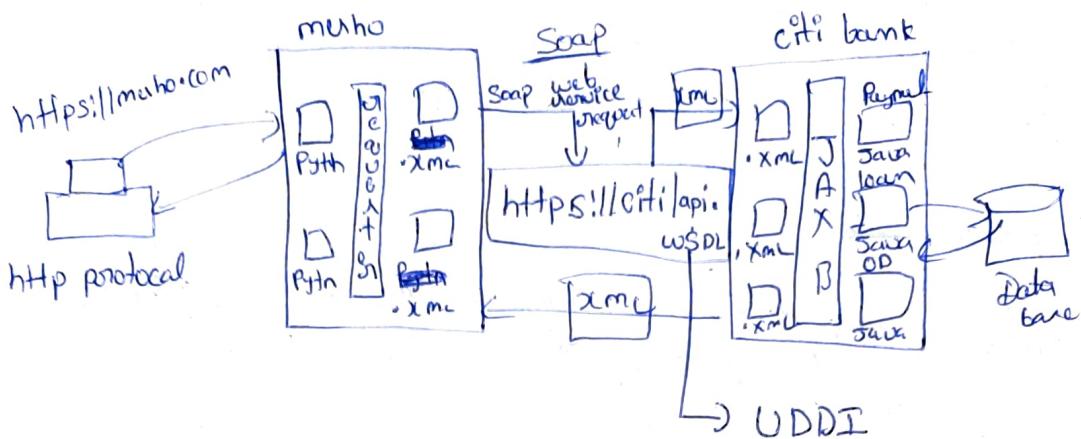
### Security

NOTE :-  
 All web services ~~are~~ ~~one~~ API, all APIs are not web services.

## SOAP :-

→ Soap stands for "Simple object access protocol"  
 → it is an XML Based protocol used to exchange the information b/w two application.

## Soap web service :-



Two application exchanging information b/w each other using XML with the help of Soap protocol is called as SOAP web service!

- All SOAP API's are exposed via dot visual file
- Visual stands for webervices description language it is used to specify the location of the service & the message elements use in the service
- All visual files has to be registered in UDDI
- UDDI stands for [universal description, discovery & integration]

## SOAP web services testing :-

Testing the request & response b/w two applications which is based on XML using Soap protocol is called as Soap web services testing

## SOAP web services testing tool :-

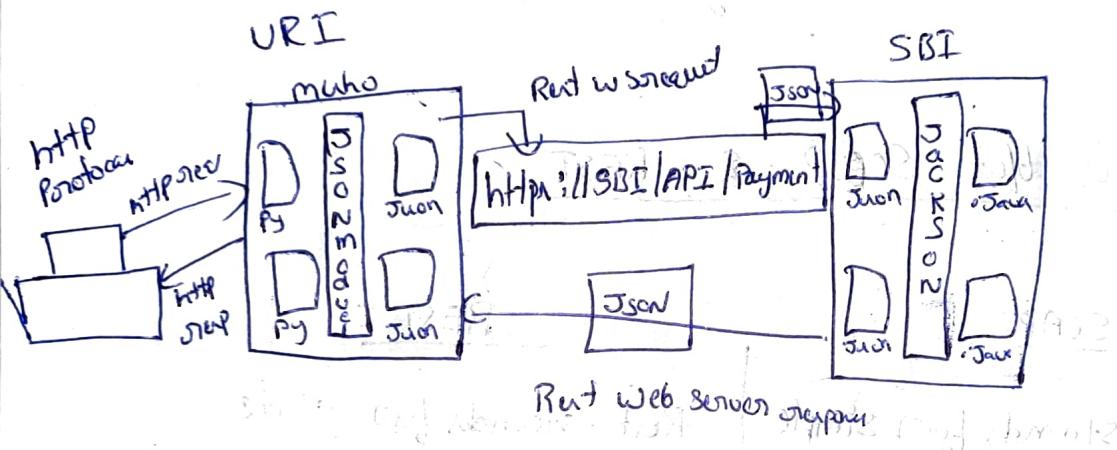
- ① Soap - UI
- ② Soap - sonar
- ③ Test maker
- ④ Ready API
- ⑤ WSDL
- ⑥ Saatent - These are available in market

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## Rest web services :-

Rest stands for representational state transfer it is used to represent the state of the resource sent by the client.



## Representational state transfer } architecture

style of API

| SOAP                   | REST              |
|------------------------|-------------------|
| XML                    | JSON              |
| Complex                | Simple            |
| Difficult to learn     | Easy to learn     |
| Large size             | Small size        |
| Not supported by all   | Supported by all  |
| Difficult to implement | Easy to implement |

Two applications exchange the information b/w each other using JSON / XML / JavaScript / text / HTML with the help of http protocol it is called as Rest web services.

→ All our API's are exposed via URI

[uniform resource identifier]

## Rest web services testing :-

Testing the request & response b/w two applications which is based on JSON XML, Java Script, text, HTML with help of http protocol is called as rest web services testing.

## Differences b/w SOAP & REST

### SOAP

- \* SOAP stands for simple object access protocol
- \* It is a protocol
- \* SOAP cannot use rest
- \* SOAP is designed using too many standards
- \* SOAP defines its own security hence it is more secure
- \* SOAP API's will be in the form of .wsdl file which contains all the services provided given by the provider as a package

### REST

- \* Rest stands for state transfer
- \* It is an architectural style
- \* Rest can use SOAP
- \* Rest does not define too many standards
- \* Rest do not define its own security but we inherited few security measures like Basic auth, Bearer token, or OAuth 1.0 or OAuth 2.0 etc
- \* REST API's are exposed via URI which is customizable

|                                     |   |
|-------------------------------------|---|
| * Soap support XML data format only | * REST supports XML, JSON, HTML, txt, Java Script |
| * SOAP is less pliable              | REST is more pliable                              |

## REST WEB Service testing tools :-

- Postman
- Rest Assured
- Karate
- Katalon
- Ready API
- Flinko etc---

## Advantages of web services :-

- Web service Interoperability.
- It is platform & technology independent
- no need of re-inventing on developing the applications from scratch
- Web services creates lot of business opportunities
- ~~It is creating~~ lot of benefit
- Services power ~~can't~~ keep using number of time
- loosely coupled
- changes made in one application will not have any impact on unrelated areas

## why API testing is necessary?

API testing is necessary in order to make sure that the interface is working as expected with respect to functionality, performance, scalability & security.