

# \* Web Serving \*

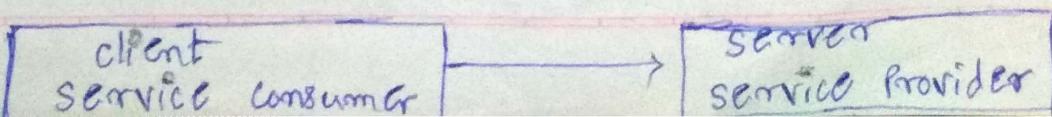
## SOAP UI Tool

- a. What is SOA?
- SOA stands for ~~Software~~ <sup>Service</sup> oriented architecture.
- SOA is a architecture for building business applications by using the loosely coupled services.
- ① • SOA is a architecture of integrating various application/services so as to achieve certain business needs.
- ② • SOA acts like black box & it can organized to achieve a specific functionality by linking all application together.
- ③ ex. Business need :- Application in which user login & search for restaurants based on location & see menu from server & finally do payment.

Tasks :-

- ① for logging - 'Authentication Service'
- ② for restaurants search - 'Geo-locator Service'
- ③ for menu - 'menu Downloader Service'
- ④ for payment - 'Payment Service' used

- ⑤ • SOA basically deals with interaction between service provider & service consumer.
- for completing one Business need differ small application integrated.



Q What is loosely coupled services?  
→ The service / application which are distributed by the service provider on the internet to access by consumer.

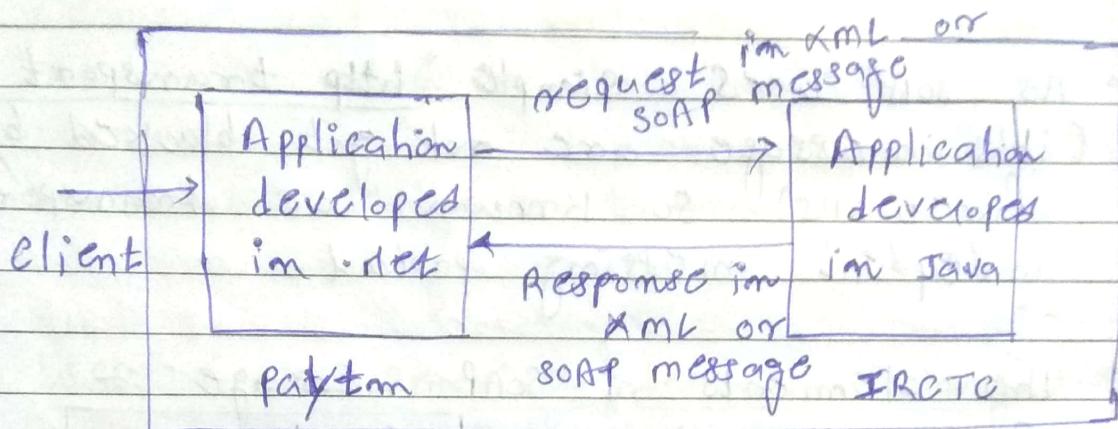
Q. What is web services?

→ Web services :-

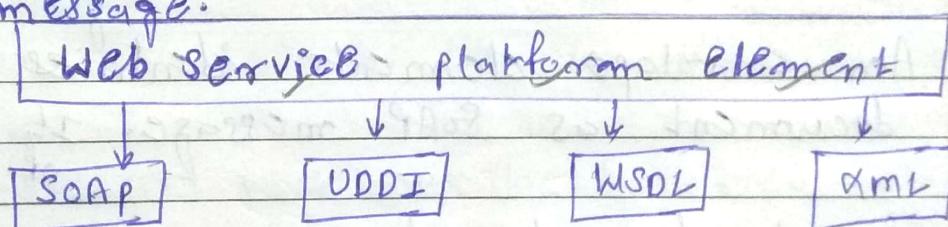
The term web service / web application describes a standard way of integrating web-based application using XML, WSDL, UDDI as open standards on internet protocol.

- ① Web service provides a common platform ~~that offers~~ in which multiple application (which is built on various programming languages) make the communication to each other.
- ② Web service don't provide GUI to user.
- ③ It share only business logic, data & process through a programmatic interface like XML.
- ④ The main component of web service is data which is transfer between client & server through XML or in between application through XML.

- ⑤ Web-service are not tied to any operating system or programming language.
- ⑥ It means it can operate on any operating system & it interact with any language like Java, C++, C# etc.



- ⑦ The data which is send from web service to the application or to client through XML or SOAP message.



- \* **SOAP (Simple object access protocol) :-**  
SOAP message is an ordinary XML document.

- ② SOAP is based on transferring XML data as SOAP message.
- ③ SOAP is known as a ~~transport~~-independent messaging protocol, for making communication.
- ④ SOAP is a protocol for making communication.

- SOAP Comm. done via internat.

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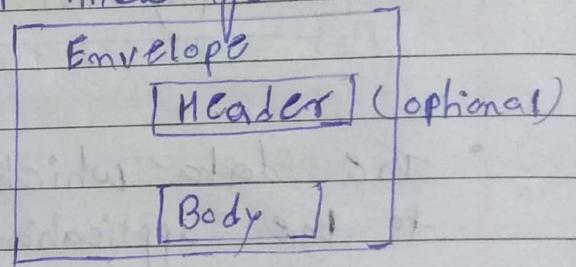
⑦ • The ~~elements~~ of SOAP message used for sending & receiving web service requests or responses. on web services.

⑥ • As SOAP use XML document which is platform independent.

⑤ • As SOAP uses simple "http transport protocol" (it's message are not got blocked by firewalls) so known as transport-independent messaging protocol.

⑧ • The elements of SOAP message :-

- ① < envelope >
- ② < Header >
- ③ < Body >
- ④ < fault >



- An envelope elements identifies the XML document as SOAP message. It is a root element of SOAP message.
- An header element contains header information like authentication, complex types, routing information etc.
- Body contains actual message.
- Body element contains call & response information.
- A fault element contains error & status information.

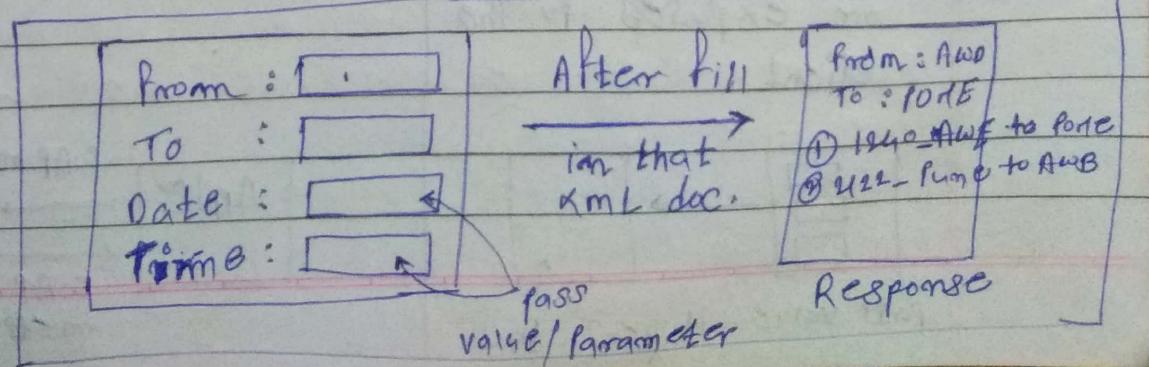
## \* XML (Extensive markup lang.):-

- It is machine readable code, which is software hardware independent.
- It is used to make communication between machines.
- It also used to hold data.
- It allows designer to create their own customised tag.

## \* WSDL (Web service description lang.):-

- ① WSDL stands for web service description lang.
- ② WSDL is a ~~file~~ written in XML document.
- ③ WSDL is used to describe the web services
- ④ It is also used to locate web services on UDDI.
- ⑤ It gives idea about which parameters/value can we pass & also what method is present in XML document.

Ex. Travel ticket information → method or web service



⑥ WSDL consist of different ~~Element~~ Element :-  
data

① ~~<types>~~ → it defines the data type that are used in web service.

② ~~< message >~~ → This element defines the data element of an operation.

③ ~~< port type >~~ → It is important WSDL element.  
• It describes the web services,  
+ the operations that can be performed  
& message that are involved.

④ ~~< binding >~~ → It defines the data format & protocol for each port type.

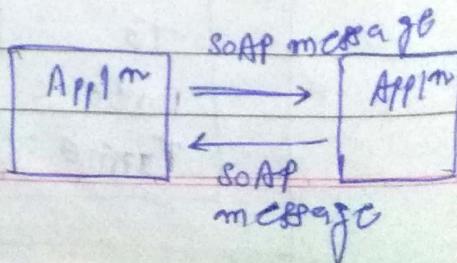
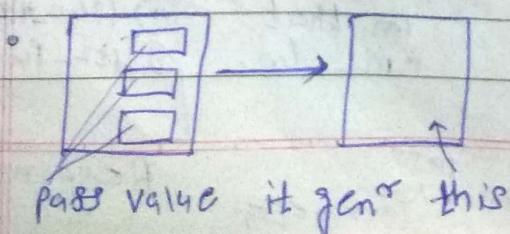
### WSDL

### SOAP

- WSDL is an XML document that describes protocol that exchange information between a web service.
- SOAP is an XML based protocol that exchange information between applications.

- WSDL tells about the functions that you can implement or expose to the client.

- It is action between communication.



## \* Role of WSDL :-

- For validating web services using SOAPUI is easy & it is only possible with WSDL document.

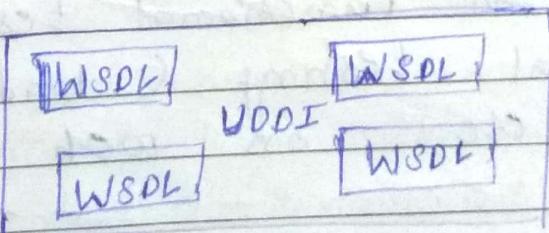
## \* UDDI (universal description discovery integration)

- The UDDI stands for universal description, discovery integration.

or an online directory  
• UDDI is a global repository where companies publish their <sup>web services</sup> so we can search for web services spread over the global.

- UDDI is place where the WSDL is described in details.

- ex. if you wish to advertise your products to the global customers, you could create a web service & host it through UDDI. This can be accessed by global users & from their business could be established.



\* API (application program interface) :-

- API is a interface which specifies how software components should interact with each other.
- It is set of protocol for communication.
- we have ~~two~~, two SOAP, REST protocol for ~~6~~
- The SOAP UI & REST API tools used for web service testing.

\* SOAP UI :- (latest version 5.3)

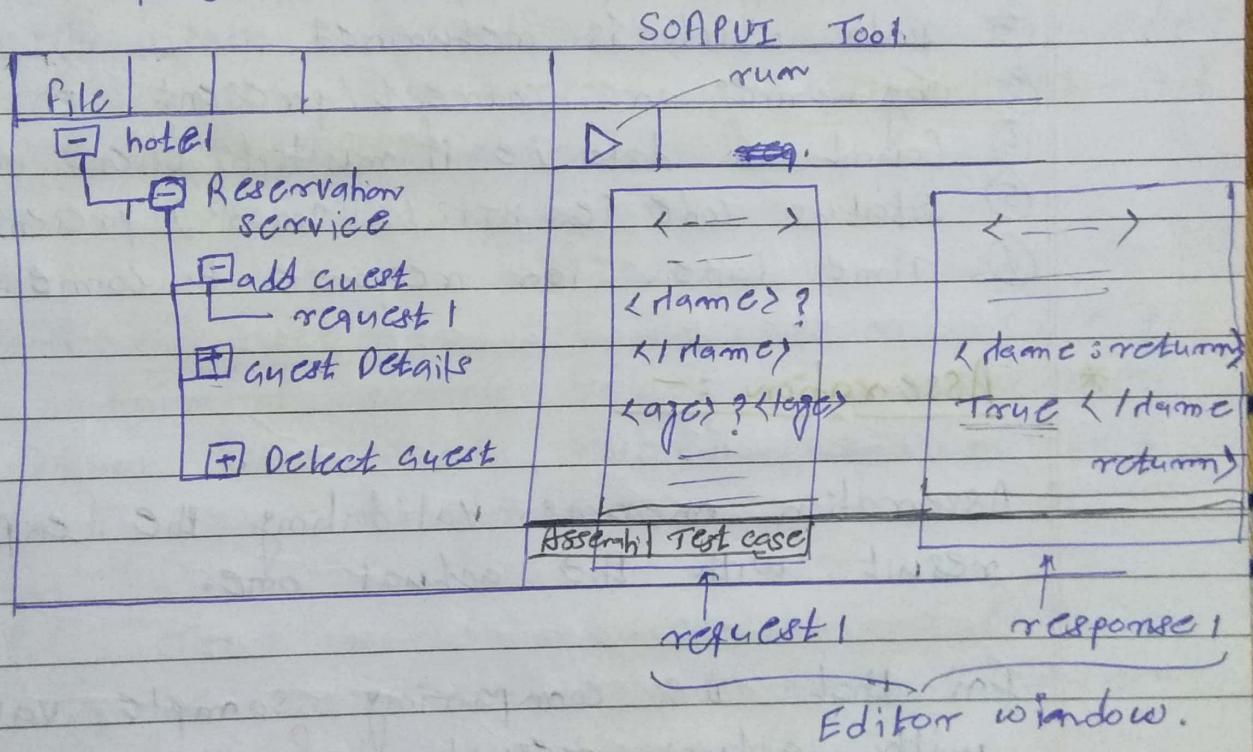
- The SOAPUI is a tool for testing web services.
- SOAPUI is an open source & completely free tool.
- SOAPUI can used for complete testing of SOAP web service & RESTful API.
- We can do functional testing & non-functional testing (load, performance, security etc) on web services through SOAPUI.
- SOAP UI 5.3.1 version now we currently we are using.

SOAPUI → tool or protocol for web service communication  
RESTful → Architecture used for web service which uses both SOAPUI & RESTful.

R2

Steps to follow web service testing through SOAPUI :-

- ① Developer put application on UDDI
- ② UDDI contains WSDL (which describes web services)
- ③ open (SOAPUI tool) → Add (SOAPUI project)  
→ give name & add link of WSDL.  
(ex. reservation service link)  
→ We can add multiple WSDL file in project also.



- open request 1 (reservation service) WSDL contains three (3) methods add guest, guest details, Delete guest)
- fill all data i.e. pass value in XML doc. of request 1 in place of "?" (question mark)
- Then run (▷) → get response i.e. SOAP response or XML response.

HTTP Response code :-

- 1xx → information based
- 2xx → success 5xx → server error
- 3xx → Redirection 4xx → forbidden/unauthorised
- 4xx → client Error (402, 403, 404) page not found

R3

True in response → if record are added in database.

False in response → if record not added in database.

If we got error i.e. SOAP fault in response these can be handled by Assertion or test cases.



In web service testing we validating,

- ① Validating Soap response
- ② Data which is returned
- ③ Tag names are correct / present
- ④ Count of data i.e. if multiple client on one server
- ⑤ Status code (e.g. HTTP/1.1 200 OK) present response
- ⑥ Time taken for response to come.

### \* Assertion :-

Assertion means validating the expected result with the actual one.

In that we comparing sample value with actual result. If these value same than assertion is pass or else fail.

Need of assertion :- Some time test case pass but request not stored in database for avoiding these use assertion.

e.g. consider in last SOAPUI request XML doc. if run 2 times then response

uthorized.  
and)

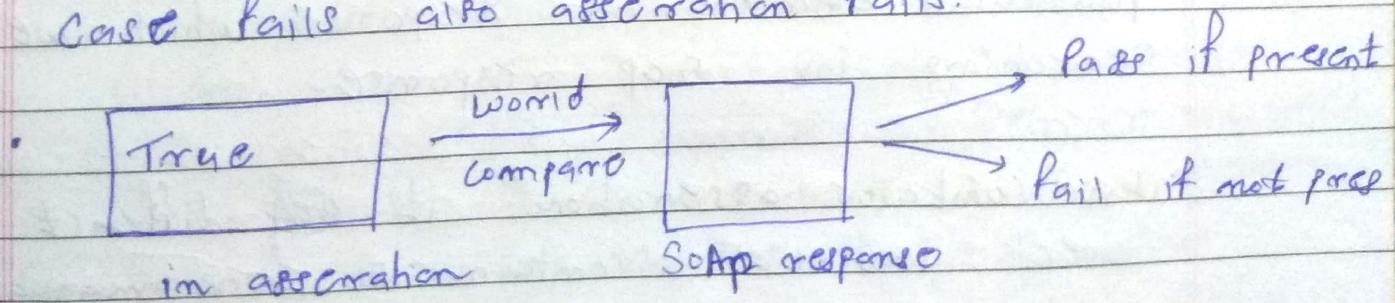
R4

1<sup>st</sup> time it store in database but in the  
2<sup>nd</sup> time response show "already exist"  
that time test case pass bcz we didn't  
get error or exception.

- but this is not stored in database for avoiding this we uses assertion.
- Type of assertion :- Some are they,
  - ✓ ① contain assertion } → I work only
  - ✓ ② Not contain assertion } → these
  - ✓ ③ xpath assertion } we provide
  - ✓ ④ regular expression in xpath } xpath match.
  - ⑤ Xquery assertion.

① Contain assertion :- in assertion we put <sup>tab</sup>  
~~contain~~ \* of sample value if matches with  
actual value than assertion ~~fail~~ ie value  
don't store in database pass

Put "True" word in assertion → if in the response true word not there than test case fails also assertion fails.



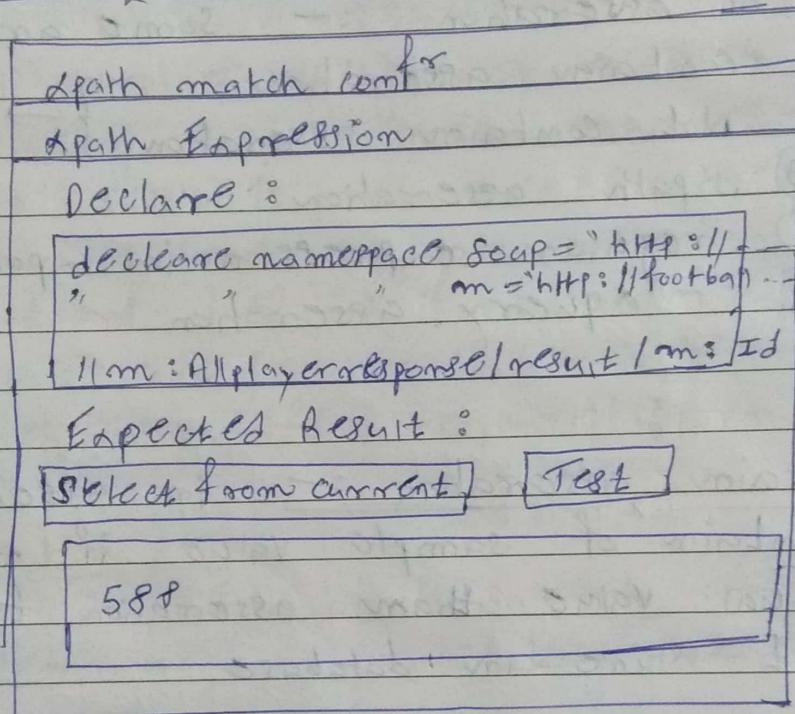
• Pass means stored data in database.  
Fail means not stored data in database..

### ② not contain :-

It compare word / Data which we have written in "not contain" after with SOAP response.

Asseration pass → if word / data not contain  
Asseration fail → if " " contain

### ③ xpath match :- @xpath Expression :-

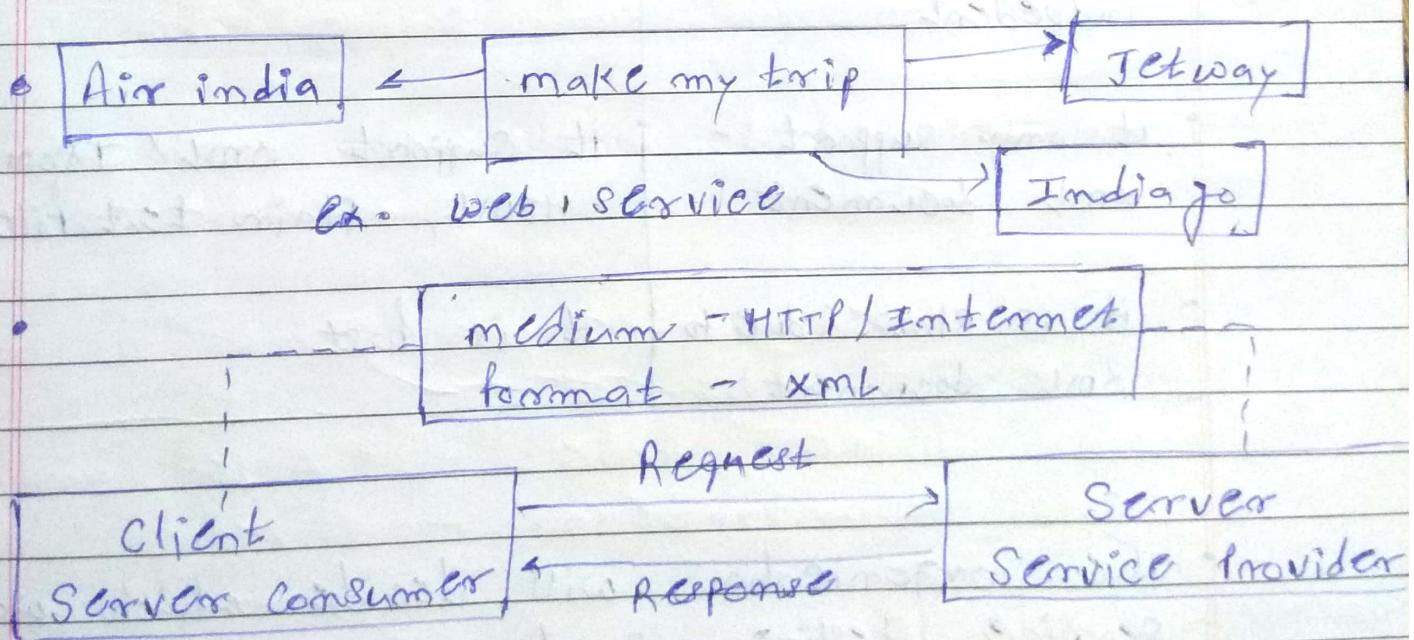


In xpath expression → give the xpath of that particular element or response which we are searching in soap response.

In "contain asseration" it ~~is~~ difficult to check individual contain so for managing contains is problem so we are going to xpath.

In xpath only path of that particular element we are giving for checking response.

- \* Web Service :> nothing but comm. of two application/services available over the web
- \* Ex. Air india, Jetway, indigo they don't provide database access for security purpose but anything change happen in flight time for such thing they provide services in the form of wsdl on UDDI.
- \* So like make my trip application which is developed in another language (ex. c++) & Jetway developed in (ex. Java) another language so for making common to each other they provide services, like wsdl. Such comm. called web service comm.



Architecture : web-service

- \* Web services are implementing in two major ways
  - ① SOAP
  - ② REST (Representational State Transfer)

- SOAP is a protocol. That protocol / Rule defines how two application will talk to each other over web.
- SOAP defining specific structure which is known SOAP web service & which is controlled by W3C org body. (World wide web)

- REST is an architectural style.

- REST defines a set of principles to be followed while designing a web services.

### SOAP web service

- it is protocol
- it is platform independent
- it only support XML document
- it is slow (due to XML document)

### REST web services

- it is architecture design
- it is platform dependent
- it support XML/ JSON/ HTML, Plain text file too
- it is fast

- The organisation will decide which web service testing is done so in my organization SOAP web service ~~testing we do~~ provide & we do testing of these services.