RestAPI

What is WebServices?

This is a s/w or function that can be access by other program over the web.

Web Services are Language or Platform Independent. Where u want u can integrate it -

Type of webServices

1. RPC
2. Soap
3. Rest API’s

What is the difference between API and WebServices?

All the WebServices are API’s but not all the API’s are WebServices

API is a program which is connecting with different Program.

API can be web based or it can be Library based (Ex : Java is an API, WebDriver is an API) They also help the program to use there Library function to run the program.

API is Application Programing Interface. By which third party can write code that interface other codes

WEB Service is always web based.

All web services can be called as API.

Protocol is different for different web services. But most of the time it uses HTTP protocol

Swipe card the call is going to the Payment gateway services where they send the input and data and get the output.

So Payment Gateway is an API which help to connect two system

Q: How QA test Web Services?

A : First gothrough the Doc to understand the specification about the web services

Then analyise what input parameter you will pass and what response you will get.

Then test the actual response using the assertions.

Q: How to identify SOAP based webservice?

Every soap web service end with WSDL

Go to SOAPUI tool File>New Soap Project> Enter Project Name >Enter WSDL URL>OK

You will see the project get created.

In that web service you can see the operation is already defined in the Project.

So under

Q : What are the different status code with r to testing?

A : When I am trying to get some information back from the server using the GET method I useally get 200 response which is OK response.

If I am creating or updating some request using POST or PUT methods I will be getting 201 response for resource created

204 for deletet or no content

When I am giving a bad request I am getting 400 Bad Request message.

When I am searching something and it is not availabel then I am getting 404 Resource Not Found

500 when ever the server is down

Q: Different way of testing Web Services in the Project?

How to test 5 different Web Services?

A: So first we can see what kind of tools they are using , Suppose they are using SOAP UI then next step

Find out if is there any API which depends on each other

Find out If any services which required the token so run those services before and get the Token , use that token to test sub sequest services.

Q: What is the web service mocking?

A : When webservice is down or webservices is being devloped and if u still wanted to test the WSDL , you can use the mocking.

Using SopaUI tool.

U want to create Proxy for the services. Create the mock server in the project itself. It is similar to same soapUI service.

If u wanted to add assertion

Q: What kind of Automation FW u had RESTAPI testing?

A : Do the HTTP POST / HTTP Get method

One class for get request

One class for Post request

We can do the Data Driven Testing :- sending the request –send a word Harry and to test how many responces you can get in the Google Search

Q: What are the Teste cases u would write for API’s which is develop for CRUD operations?

Suppose I Have following API

CreateOrder – POST (After u craete an order ypu will get an Order ID, which u can use to track your Order)- We will put assert and check that order is created , and check it will give order existed

UpdateOrder- PUT

getOrderDetails – GET (Number of element is correct and Element is correct

Delete Details – DELETE(after delete operation ID is not presend

Test Cases:- Check for POST request if I am getting a response 201 Success response.

Check Content Type, Content Length

Check the Header

Check if Order is created that the ID is unique

Take the same OrderID try to update some details using PUT method, it should be refelected and staus code should be 200 success code

Once it is updated I’ll do some assertion whether the new data is present or not.

I can do the GET as a retrival part

U can Parse the JSON and add the assertion by tools

Check all Valid or invalid scenario:- to see if this is howing error msg

Try to deltet already delited resource

Give update ID when u r trying to update, ID should not be update.

Q: How many type of project is available in SoapUI Tool?

Ans : There is 3 types of Project is availabe in Soap UI Tool

1. Soap Project

2. Rest Project and

3. Generic Project

SopaUI Suppost 2 type of Project Format

1. Stanalone Project

2. Composit Project

Based on the what project type you are using , you can Import the project in the SOAPUI tool

1. Local Project File

2. Local Packed Project – Zip file can be set of xml and import entired set in the project

3. Local Composit Project

4. Local Remote Project

Q: What is SOAP web service ?

Soap is the protocol and it followed the WSDL Standards.

WSDL is the Webservicer defiation Language.

WSDL contain Defined Operations, name space,messages, porttype, parameter which are used by web services.

Q: What contain under WSDL Content?

Ans : IT contain Service, Binding , Port Type, Messages , Schema , Globel Elements.

U can travers from Binding to the Port Type to the Services To the Messaging To the Element via double clicking on each of them.

Under Services you can see what are the services this WSDL contain along with the http methods.

Schema is the place where they are executing the web services.

Globel Element is the place where you can see WSDL related Inputs and Outputs.

What ever is defined in the Binding that will be refere to the Port Type.

All the componet in the WSDL each are discribing individual functionality.

Operation :-

Soap Operation shows the different methods or function which serves the different purpose.EndPoint is the place where you are going to access the web service

Q: How do you know that what input you want to enter in your web services?

Ans : For this you need to check Messages and Globel Element. Each element in the Global Element is the parameter which we are using in our request and response.

NameSpace is the place where you can get the prsponce for the web services you are using, So I can say response is coming from that particular namespace.

Port is the place where the web services are running from. OR port is the place where the web service is present.

Services uses Port Type and Binding.

Binding defines what operation are presents.

Port Type refers internally detail about those operations.

Operation has input and output.

Messages is refering under Port Type.

Under Message they define the Elements.

So all the elements which is presents under messages defining the one particular schema.

Elements are the parameter used in the web services.

Messages definds the details about the elements.

Port Type defines the details about the element, what input and out put parameter are used.

Binding defines what different operations going on in your WSDL.

Elements are used in the Messages and Messages are used in the Port Type

Q: Details about SOAP?

Ans: Soap Web services transfer data (request and response) through XML format only.

All the request and response parameter are binded inside SOAP Envelop in order to transmit the data.

Envelop refers the NameSpace that is pointed by the WSDL.

The root tag there is soap Envelop then soap Header and then soap body.

Soap Body contain the actual request parameter, whether it is country name or user name or order number etc…

Q: What are the different HTTP status codes?

Ans :

1xx – Information

2xx – Success

3xx – Redirection

4xx – Client Error

5xx – Server Error

SOAP is always xml based

Request and response is having some information

Respnce has

1. Status Code with Status Message
2. Content Type: what kind of response you got, it is always xml type response
3. Server:- from which server u are getting the data. Usually it is Microsoft –IIS/7.0
4. Version
5. Time and date
6. Content length

Q: How to do Testing using SoapUI?

Ans: First create the test cases with Step to execute, expected result and actual result.

Then run the first test case as when you run the request you got the respnce back.

Now it’s time to add some assertions.

Under the request area there is Assertion button click on it and click on the + sing to add new assertion.

Q: How many time of assertion is availabe?

Ans: Type of assertion:

1. Property contain
2. Compliance , Status and Standards
3. Script
4. SLA
5. JMS
6. Security

1. Functioality Testing :- Based on the respince we add some assertions

* Valid or Invalid Status Code:
* Schema Present or not
* Contain or not contain
* Xpath Assertion
* Actual Element
* Actual Data
* Order of Data
* Count of data
* Valid and Invalid scenarios
* Boundariy condition

2. Security Testing

3. Load Testing

Q :How to test the REST API web services?

Ans: Get the Rest API

<https://itunes.apple.com/lookup?id=909253>

Q: What is the difference b/w Soap And Rest?

Ans: Soap is the protocol and it follow WSDL standard.

Soap uses XML format.

Sopa uses SOAP envelop to transfer the data.

Soap has inbuild security.

Rest is an architecture.

Rest uses http method to define its operation.

Rest support JSON,XML,HTML formate

Q: What is endpoint?

Endpoint from where webservices are running OR from where the webservices is hosted.

Sources are the operation webservices is doing based on the parameter.

Sources are like lookup,search etc…

Q: How do u create the Restful Api’s?

Ans: Using Http method.

API to create user. - Post

Update User details - Put

Delete User - Delete

Retrive User – Get

What kind of opertation web services is supporting – Options

What kind of header information is used in head – Head

Http Methods : get, put, post,delete, Trace,Head, Options

http is a protocol and it has some methods:

Get is used for retrival purpose

Put is used for updating purpose

Post is used for creating purpose

Delete is used for

116 lines (78 sloc)  2.32 KB

|  |  |  |
| --- | --- | --- |
|  | What is API? | |
|  |  | |
|  | Webservices: | |
|  |  | |
|  | What is a webservice? | |
|  |  | |
|  | Webservice is a piece of software/function that can be accessed by other programs over the web. | |
|  |  | |
|  |  | |
|  | RPC | |
|  | SOAP | |
|  | REST API's | |
|  |  | |
|  |  | |
|  | EmiCalculator - written a program in java which takes some inputs and gives you required output | |
|  |  | |
|  | inputs- amount, tenure | |
|  | calc based on interest rate, tenure and amt | |
|  | output- EMI | |
|  |  | |
|  | public Integer emiCalc(int amount, int tenure){ | |
|  | //calc | |
|  | return emi; | |
|  | } | |
|  |  | |
|  |  | |
|  | Citi | |
|  |  | |
|  | wellsfargo | |
|  | chase | |
|  |  | |
|  | \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* | |
|  | How Qa test webservices? | |
|  | 1. Go through the specifications(docs) to understand functionality of webservice. | |
|  | 2. Analyse input parameters to be passed and what response you are expecting. | |
|  | 3. Functionalty Testing - You will test actual response by adding assertions. | |
|  | What kind of assertions: | |
|  | status code | |
|  | header information - content type, content length | |
|  | actual elements | |
|  | actual data | |
|  | data order | |
|  | count of data | |
|  | valid/invalid | |
|  | boundary condtions | |
|  |  | |
|  | 4. securityTesting | |
|  | 5. LoadTesting | |
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|  |  | |
|  | SoapUI - It is tool to test webservices.It was initially developed to test SOAP based websercvices | |
|  | but latest SoapUI tool versions support testing both Soap and Rest webservices. | |
|  |  | |
|  | The tool itself is written in Java language. | |
|  | \*\*\*\*\*\*\* | |
|  |  | |
|  | assertion is statement that makes sure actual = expected in programs or in tools. | |
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|  | \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* | |
|  | Soap websrvices: | |
|  |  | |
|  | Soap is a protocol. It follows WSDL standards. | |
|  | WSDL- webservice definition language. | |
|  | WSDL - defines operations, namespace, messages, porttypes,parmaters which are used by webservice. | |
|  |  | |
|  | Soap webservices trasfers data (request and response) through xml format only | |
|  | All the request and response parameters are binded inside soap envelope. | |
|  | <soap:envelope namespace> | |
|  | <soap:header/> | |
|  | <soap:body> | |
|  | <country>US</coubntry> | |
|  | </soap:body> | |
|  | </soap:envelope> | |
|  |  | |
|  | It has inbuilt ws security. | |
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|  | \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* | |
|  | Rest APi's | |
|  |  | |
|  | Rest is an architecture. | |
|  | It uses http methods to define its operations. | |
|  |  | |
|  | Mainly CRUD operations are concerned in Rest apis: | |
|  |  | |
|  | Api to create user - post | |
|  | update the user details - put | |
|  | delete the user - delete | |
|  | retrieve the user - get | |
|  | http methods: get, put, post, delete, trace, head, options | |
|  |  | |
|  | facebook apis: | |
|  | http://facebook.api.com/users - post | |
|  | register with fb: create user account | |
|  | name | |
|  | mailid | |
|  | adress | |
|  | dob | |
|  | pwd | |
|  |  | |
|  | response- id is created for user | |
|  |  | |
|  | update profile : | |
|  |  | |
|  |  | |
|  | http://facebook.api.com/users/id=2030 - put | |
|  | city | |
|  | zipcode | |
|  |  | |
|  |  | |
|  | details updated succesfully | |
|  |  | |
|  |  | |
|  |  | |
|  |  | |
| RestAPI: | |
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|  | | crud operations: |
|  | |  |
|  | | get - retrieval - say u pass order id and get order details |
|  | | get wil not have request body |
|  | | post - creation of resource- give order detials - order gets created with new id |
|  | | post will have request body |
|  | | put - updating the resource - to update existing order id details |
|  | | delete - delete the resource - delete the order with order id |
|  | |  |
|  | | what to test: |
|  | | statuscode |
|  | | contetnt type, length - headers |
|  | | actual response |
|  | |  |
|  | | Different AUthentication types: |
|  | | Auth - to secure the api's |
|  | | Basic - user eneters uname and pwd , token id is generated which is to be persisted for further requests eg: talentscreen |
|  | | OAuth - key and access tokens are generated as per api's - eg:twitter apis |
|  | | public api's - api key - eg:google |
|  | |  |
|  | |  |
|  | | Load Testing - performance of the api |
|  | | tps - threads per second |
|  | | bps - bytes per second |
|  | |  |
|  | | Threads- no fo concurrent/parallel user requests |
|  | |  |
|  | | Strategy- simple, burst, variance |
|  | |  |
|  | | TEstDelay -Time in ms b/n each batch of requests |
|  | | Random - random factor for test load |
|  | | eg: test delay -400, rf =0.5 |
|  | | delay is distributd b/n 400\*0.5 - |
|  | | so delay will be 200-400 |
|  | |  |
|  | |  |
|  | |  |
|  | | o/p: |
|  | |  |
|  | | min- shoertest time step has taken to execute(ms) |
|  | | max- longest time step has taken to execute(ms) |
|  | | avg- avg time step has taken to execute(ms) |
|  | | cnt - no of time sstep has been executed |
|  | | err- assertion Errors |
|  | |  |
|  | | Security Testing - SoapUI tool supports in built |
|  | |  |
|  | |  |
|  | |  |
|  | |  |
|  | | SoapMock service: used when you are not able to user actual service |
|  | |  |
|  | | https://www.soapui.org/soap-mocking/service-mocking-overview.html |
|  | | Data Driven Testing- running same test step with different set of data |
|  | | SoapUIPRo- DataSource and DataSourceLoop step for data driven testing |

**Objectives of Testing:**

1. Verify Response/status code (success-200,201 etc ; clienterror-400-badrequest,401,404 ; 500-server side etc etc)  
   2. Verify Response Line (OK, SUCCESS etc etc)  
   3. Verify Presence of desired headers in response (application/json, image/png etc etc) – response type  
   4. Verify response body for elements exists or not, count, value

5.Validate response schema – xml/schema, json/schema

Request:

The service url

Request params- mandatory /optional

Type of request – json/xml/text

ApiKey/oauth/clientid

Why Automation:

Huge response cannot always be manually automated

Set of testcases

DbConnection validation

Read from properties file

HttpMethods:

CRUD operations- most frequently used as part of Rest API’s

Post – creating a resource

Using order details provided by customer an order is created with certain order id

Get- retrieving the data-

Send order id and get order details

Put- update the resource

Update the exisiting order with new order details by using previous order id

Delete- delete the resource

Delete order using order id

Options- gives all the supported operations

Head- gives all header details

Safe: get ,head

The particular method action do not affect the existing resource as it is just retrieval.

Idempotent methods: get same response for N >0 request

Get,head,put,delete

Get vs Post:

In general- get is used for retrieval, post is to create the resource

Some of the secure retrievals like userLogin(get) are done through

Post methods because the secure should not be exposed in url.

Get do not have request body and all req params are sent through url.

Length of url is limited – so we cannot have unlimited request data in get request

But post request data is unlimited.

Put vs post:

Post is to create and put to update the resource but when there is no existing resource put acts as post and creates the resource.

Post can act as put if the resource already exists

Put can act as post if resource do not exists

Http status codes:

100 - informational

200 – success

201- resource created- post

200- ok- get

204- no content

300- redirecting

400-client side error

400- bad request

401- unauthorised

403- client forbidden

404- resource not found

500- server side error

500- internal server error

503-service unavaialble

Authentication:

BasicAuthentication – username and pwd is entered and token is generated based on uname and pwd.

OAuth 1

OAuth 2

Api key

What do you test in an API:

Functional testing:

Status code

Imp header info

Response message

Create Request data – valid data/invalid data/blank/boundary values

-Mandatory/optional params

Authentications test

Endpoint test

Resources within endpoint- mostly crud operations

Actual response: element present, element has exact value, data count,

Data order

After post request – execute the sql query and make sure the data is posted properly in db.

Security testing

Performational testing

What you require to start RestAPI testing:

API specs/specification docs- details about endpoint, resources, parameters,

Functionality details of resources.

Sample request/response – from dev team or in specs

Tools – SoapUI , Postman- chrome,AdvancedRestClient- chrome, RestClient-firefox

Automation Framework-

Java- HttpClient, RestAssured

JS- chakram