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Api: Api stands for application programming interface

- used to communicate between two system

-it simply knows as sending the request and getting the response.

Example of API: communication between amazon and gpay

Advantages/use of API:

a) Api provides the security

b) API checks the authentication and the data that we are passing

c) API can transfer the load to diff microservices

d) API helps to avoid data breaching

e) Test for Core Functionality

f) Time Effective- we can hit lots of apis within less time

g) Language-Independent- like json,XML, html, text

h) Easy Integration with GUI

i) Balances load between diff microservices

j) Improves performance

Types of APi:

REST API- uses Postman tool (Representational state transfer)

SOAP API- Uses SOAPUI tool (simple object access protocol)

Difference between rest and soap api:

SOAP	REST

1. soap is protocol	1. rest is architecture
2. uses XML format only	2. uses XML, JSON, HTML, TEXT, JAVASCRIPT
3. soap need WSDL file	3. rest need API only
4. type of security provided by soap: SOAP ENVIORNMENT	4. type of security provided by rest AUTH TOKEN, HEADER, PARAMS
5. Heavy in weight API's	5. Light in weight API's
6 .Response time is more	6. Response time is less
7. Not best for CRUD operation	7. Best for CRUD operation

Concept under REST:

REST- REST is an architecture used to create rest api.

REST Assured- To automate rest api we need rest assured libraries.

RESTFUL- when we automate rest api it called as restful services.

Webservices: def-

Whenever we are calling any api over http(internet) protocol it called as webservice.

Diff between rest and webservice:

-Api call internally and webservices call over the internet

- The only **difference** is that a **Web service** facilitates interaction **between** two machines over a network. An **API** acts as an interface **between** two **different** applications so that they can communicate with each other.. **Web service** also uses SOAP, REST, and XML-RPC as a means of communication.

Different types of Authorizations:

Basic

Digest

Token

Oauth1

Oauth2

Noauth

AWS signature

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a**. Basic Auth**

pass the username and pass.

b. **Digest**

whenever we are passing username and pass it will get convert in # keys.

It means your username/pass will secured get server side too.

c. **Oauth1**

Oauth1 required below things:

1. Consumer Key
2. Consumer Secret
3. Access Token
4. Secret Token

Above info will get from developers.

e. **Oauth2**

Oauth2 required below things:

1. Client Id
2. Client Secret
3. Grant type

Above info will get from developers.

f. Bearer Token

g. NoAuth

CRUD operation:

c- create the data- post

r- retrieve/ fetch the data- get

u- update the data- PUT

d- delete- delete the data

There are four different methods present in api:

GET- used to fetch the data

POST- Used to create data

PUT- Used to update data

DELETE- used to delete data

Error/ Status codes:

This are the common error /status code getting during api testing

201-created

200-ok

400-Bad request

401-Unauthorised

403- forbidden

404- page not found

500- Internal server error

503-service not available

200- when we get succesfull data

201- when we create data into database

400- URI wrong or end point missing

401- when session got expired, passing invalid token/ username/pass

404- when we are trying to access the URL but URL not present

405- Method not allowed

500- any server down or network issue

Webservice:

Whenever we are hitting any service over the internet it known as webservice.

Webservice is any piece of software that makes itself available over the internet and uses a standardized XML messaging system.

WSDl:

WSDL stands for web service description language

WSDL basically an XML document contains all the details about web service and all api request

UDDI:

- universal description discovery integration

-UDDI is an XML based standard for describing , publishing and finding the webservices.

Soap Elements:

a. Envelop – It is beginning and end of message

b. Header – Header elements contain header information

c. Body – body element contains call and response information

d. Fault – Fault contain error and status information

WSDL elements:

a. Type- Define the data types used by the webservices

b. Message – Define the data element for each operation

c. Port Type- Describe the operation that can be performed and message involve

d. Binding- Defines the protocol and data format for each port type