**API class-01 starting date; 20-01-2024**

**What is api testing?? Why do we need api testing???**

**Testing the connection between client and server is created or not we need api testing.**

**------------------------------------------------------------------------------------------------------**

**Why we do need Api???**

To communicate the systems, developed in different languages

**---------------------------------------------------------------------------------------------**

**What type of api testing??? integration testing. Not functional, functional is ui testing.**

**Merging two things are called integration testing.**

**---------------------------------------------------------------------------------------**

**What is Api??????? Application (different software components, UI button, text box web elements) programming (interact with code , not manually) interface (using set of rules, protocols, like http)**

**---not a user facing software.**

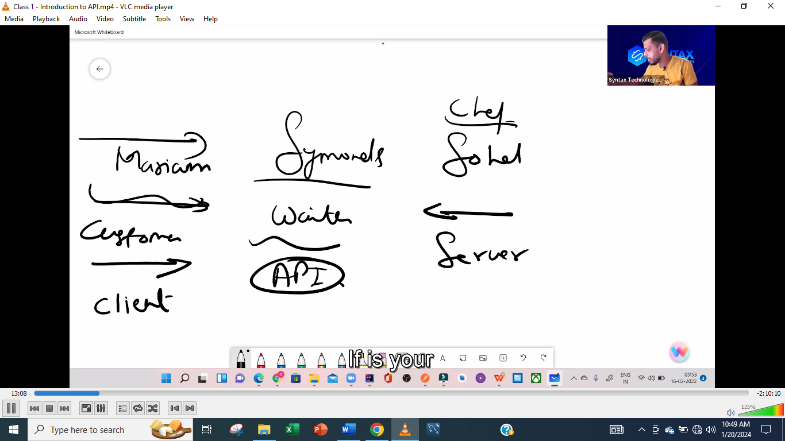
**-----------------------------------------------------------------------------------------------------------------**

An API is not a tool or software itself, but it is a set of rules and protocols that allows different software applications to communicate with each other.

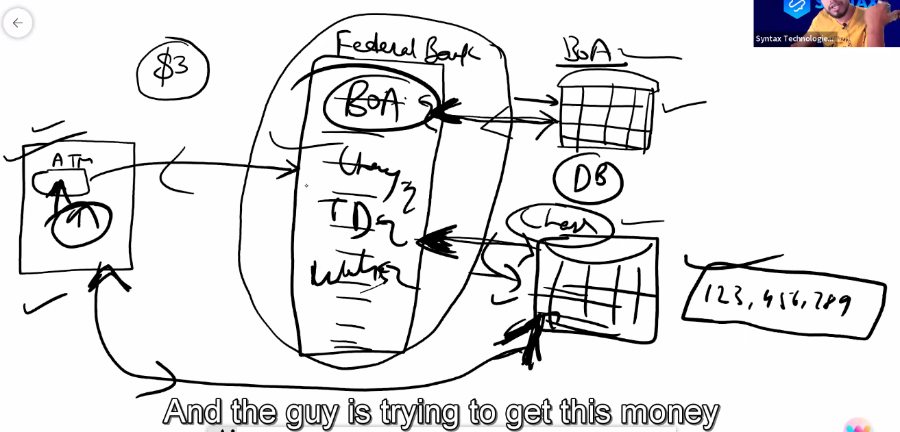
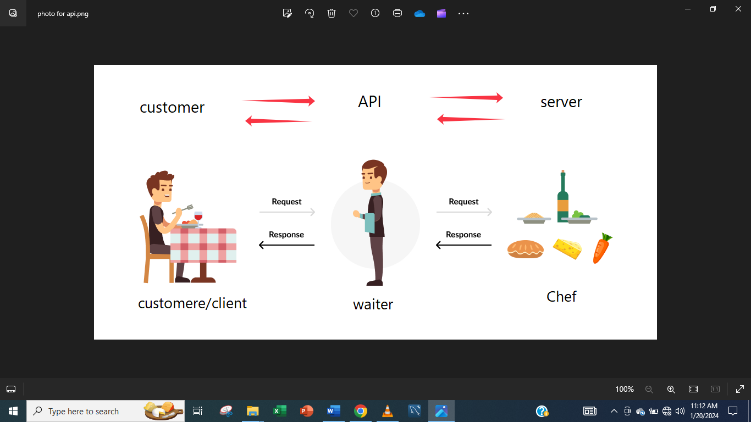
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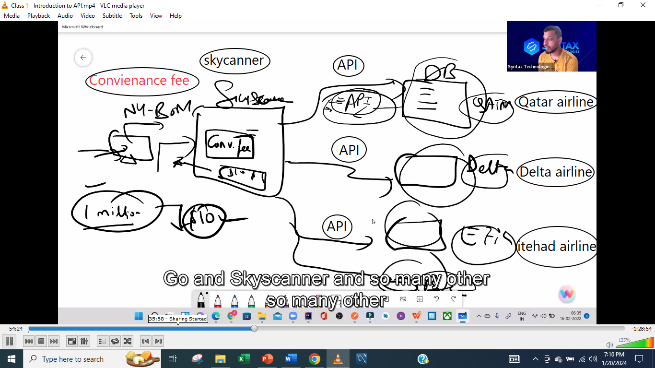
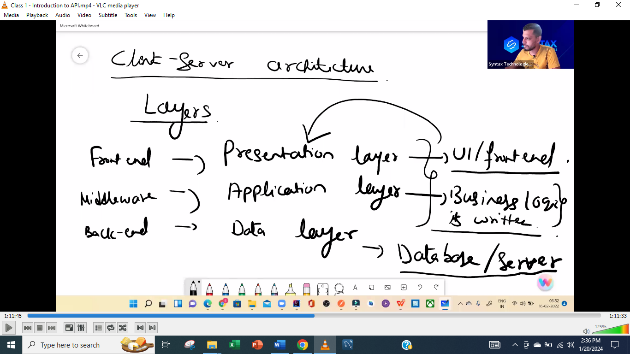
API stands for Application Programming Interface.

* **Application**: Refers to software components, modules, or systems.
* **Programming**: Indicates the method of interacting with these software components through code or programmatically.
* **Interface**: Represents the set of rules, protocols, and tools that define how software components should interact with each other.



b





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**==================================================================================================================================================================**

**What is Presentation Layer??? The layer to which the user interact.** The graphical user interface of any application, the front end of application which is visible to user is called presentation layer.

**What is Application layer /Business Logic?? Middle layer. The layer in which logic is stored.**

The layer which gives instructions to presentation layer and data layer is called application layer. Instruction like, if user enter valid credentials show him dashboard page.

**What is Data Layer???? Back end.**

The layer where data is present is called data layer.

When we combine these three layers we get a website.

==================================================================================================================================================================================================================================================

**Tier mean is a high position or level or rank or layer.**

**Client-Server architecture**

how the client and server deal with each other is called client server architecture.

and this has four types to deal with client and server with each other.

**1 tier architecture**

When presentation layer, application layer, data layer all present in one place in one computer this is called 1 tier architecture. Example calculator, note pad, MS paint.

**---------------------------------------------------------------------------------------------------------**

**Example: Standalone Desktop Applications:**

A one-tier architecture, also known as a single-tier architecture, is a software architecture in which the entire application runs on a single machine, and there is no separation between the user interface, business logic, and data storage.

**1. 1 tier architecture**

**2. 2 tier architecture**

**3. 3 tier architecture**

**4. n tier architecture**

**=============================================================================**

**What is 2 tier architecture???**

**When presentation layer is at user side and application layer, data layer are on back end side this is called 2 tier architecture.**

**Dominos’ pizza example, store information, in data base.**

**Dubai airport**

**------------------------------------------------------------------------------------------------------**

**What is 3 tier architecture??**

**When application layer, presentation layer, data layer all are present at different places are called 3 tier architecture.**

**Example; amazon, face-book, any e commerce website.**

**-----------------------------------------------------------------------------------**

**What is n tier architecture???**

Client---- >> make request

Server------->> give response

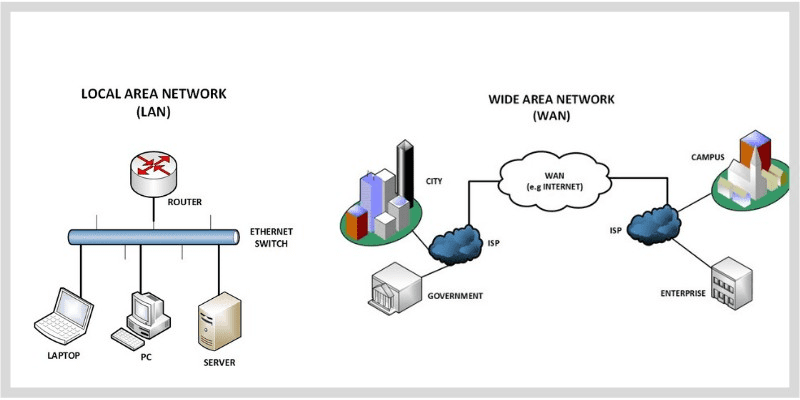
Example of dominos in America different states

Examples of Dubai air port

Example of amazon black shirt

, facebook, amazon, Instagram and other application.

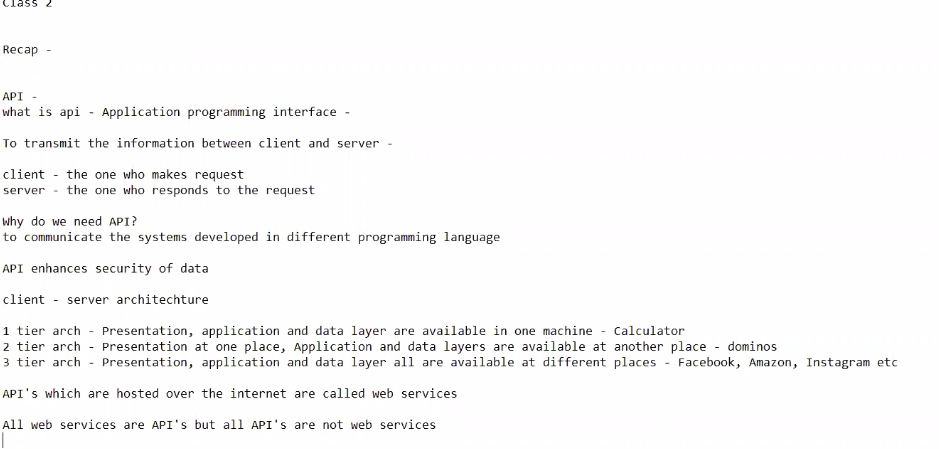
**Tier mean is a high position or level or rank or layer.**



**Why we do need Api???**

To communicate the systems, developed in different languages.

To perform CRUD operations.



**===================================================================**

**CLASS 02 Date; 21-01-2024**

An API serves as a set of guidelines and protocols that enable different software to communicate effectively with each other."

APIs facilitate communication between programs written in different languages, allowing them to understand and interact seamlessly."

APIs are utilized to verify and maintain the connection between the front end (user interface) and back end (server) of a software system."

**A convenience fee** is an additional charge or fee that is assessed by a business or service provider to cover the cost of providing a convenient payment method to customers. This fee is often associated with electronic payment methods, such as credit cards, debit cards, or online payment systems.

**API IS the parent and web services is child**

**What are web services????**

**The services which required internet to communicate are called web services.**

All the API which needs internet to connect the website or any application are called **web services. (web mean internet)**

**What are non-web services??**

**The services which do not require internet are called no web services.**

All the API which does not need internet to connect with website or any application are called **non web services.**

**Calculator.**

**Do you have tested web services???????**

**Yes , give me any name of website I will do testing.**

We just focus on only web services api.

**--------------------------------------------------------------------------------------------------------------------------------------------**

**There are two types of web services???**

**1. REST (Representational State Transfer):**

**The api which take less time to transfer data is called Rest api. Less band width.**

**why we will learn about rest this???**

1. Rest ---- has less bandwidth, take less time to transfer data , which mean small information and relevant information,
2. It accepts xml, html, Json, text languages.

---------------------------------------------------------------------------

**To make request with REST full API we need following things**

* http method—post, create, delete, update
* request header---json, xml, html
* base uri--- url—end points---api location
* status code---response handling

---------------------------------------------------------------------------

**SOAP (simple object access protocol) more secure, banks use this webservice**

**The api which has large band width to transfer the data.**

1. Because it take more bandwidth to transfer the data, it need more time to travel data, it has more information that’s why it take more time.
2. It accept only one language which is xml.
3. Soap is more secure, banks use this soap web services.

---------------------------------------------------------------------------------

**What are all the things which we need to connect/communicate with web services using restful web services???**

**What is DNS ???**

**DNS domain name server;**

Linking of IP address with human readable name for example google.com is name and IP is 8.8.8.8.4.4.4.4. this is called DNS.

--------------------------------------------------------------------------------------------------------------------------------------------

**What is base uri???** Uniform resource identifier.

Base URI= address of server (URL) + API location + end points

--------------------------------------------------------------------------------

Base URL= address of server (URL) + API location

1. **URL:**

https://www.example.com/page1

1. **API Location: -----location of api folder in data base.**

3.237.189.167/syntaxapi/api/

1. **Endpoint: -------is table cell in data base.**

https://api.example.com/v1/users

-------------------------------------------------------------------------------------------------------------------------------

**What is swagger document????????**

**It gives all information How to make rest full api request. and what are all components need to make a request, this is swagger document.**

**It gives the complete information of uri, url , api location end points of any website.**

-----------------------------------------------------------------------------

**Swagger;** when we have base uri and url locator, api location , end point then there is question how will perform CRUD operation .

How will know that what is the end point

How we will know what is api location

How we will know what is server address

Of any website or application

This will be done by using swagger documentation.

**-------------------------------------------------------------------------------------------------------------------**

SWAGGER SYNTAX LINK

[Hrm.syntaxtechs.net/syntaxapi/swagger/editor/@/](mailto:Hrm.syntaxtechs.net/syntaxapi/swagger/editor/@/)

<http://hrm.syntaxtechs.net/syntaxapi/swagger/editor/#/>

**What is HTTP/HTTPS – hypertext transfer protocol/ hypertext transfer protocol secure????**

http protocol allows us to communicate with any website over internet.

**Via methods, post, get, create, delete**

**http is the protocol to use any application on internet.**

Scenario; when we live in a country we have to follow the rules of that country.

Similarly, when you want to use any website or app on internet we have to follow some protocols. One of them is HTTP.

How we use this protocol, we use by functions/methods. These are the protocols

**How to follow the http protocols???**

Via crud methods.

----------------------------------------------------------------------------------------------------------------

Crud, CRUD

Link

Base URI=hrm.syntaxtechs.net/syntaxapi/api/createUser.php

**What is payload/body???**

**Post;** when you want to create user, you need body of the user. Base URI is only address it has no body. You need body if you want create user.

**Payload definition; the total number of passengers and weight of goods that an aircraft or a ship** carries or can carry. Load, weight.

**Get;** for getting data we do not need body. Because we are just accessing already created data.

--------------------------------------------------------------

**CREATE A USER what things we need???**

Base URI

Payload/body---what I need in the body to create a user, who tell me this, swagger.

Format/language Json

**What is collection???????**

**To keep multiple api request at one place we need collection.**

**What is http status code?????**

Status code is the response of server against your request.

2xx series for pass result

4xx series for fail result

==========================================================================================================================================================================================================================================================================================================================================================================================================================================================================================================================================================

**Class 3 date; Ramzan-01-04-2024**

**What is postman?????**

Postman is a tool which is used to interact with API.

**What does postman do???**

it makes the request and give the respond.

Postman allows us to connect with end point.

End point mean the exact location and exact person whose you want to send something.

End point is exact location whose you want to send something.

-----------------------------------------------------------------------------------------------------------------------

Api location mean api address present inside the server.

**There are two types of api**

1. public api ----- api which is available for all. google map is example of this free access of map for all

2. private api ----------the api which is not available for all, paid api. food panda, uber are example paid version.

The api which need authentication and authorization is private api.

-----------------------------------------------------------------------------------------------------------------------------------

Now we will talk about security of api how api keeps the security. When we talk about security of api then there come two things

**What is authentication??????**

1. authentication------the process of verifying the identity of a user. Show your identity.

**What is authorization??????**

**2. authorization --------**the process to verify how much authority/access you have.

You are allowed only this operation.

Four question to understand these concepts

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**Authentication**

1. who are you -- enter valid credentials
2. are you allowed --- you are allowed some features

**Authorization**

1. show your identity
2. what accesses you have

--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**How many types of application are there----------------in computer science when developing application consider these types???**

1. **Stateful application----when you deal with credentials**
2. **Stateless application----when you deal with token**

**Stateful Application:**

The application which Remembers past history of user interactions with application. Server has memory.

* Example: face book, Gmail remember your password and you don’t need provide again and again.

---------------------------------------------------------------------------------------

**Stateless Application:**

The application which Forgets past history of user interactions with application and treats each request

independently. Server don’t have memory. Generate token.

* Example: banking application.

Stateless application do not have server memory. They generate token .This is the difference only.

-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Scenario 2, face-book has many server to store the data , when there is load on one server then the load is transferred to another server by load balancers, but your session id / or persmision granted was stored in sever one suppose. Not due to load your are connected with server two, in this case you again will provide user name and password because your credentials are not stored inside the server two.

----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Stateful application is less secure because there are multiple servers and hacker if hack just one server he will get all the information . he will not then hack the data base.

---------------------------------------------------------------------------------------------------------------------------

Stateless application are used for where security is required like all banking apps , banks don’t give the option to save your password .

-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**We will just learn about stateless (secure) application**.

because it is more secure and gives back token and session expiry time.

**JWT stands for JSON Web Token**. (JavaScript Object Notation)

**What is json web token jwt????**

Jason web token is piece of information to communicate between client and server.

------------------------------------------------------------------------------------------------------------

**How many types of JWT token??????**

1. **Bearer token**
2. **MAC token** Message Authentication Code Tokens
3. **Grants token**

**What is bearer token???????**

Bearer tokens are used for authentication and authorization

**Why we use jwt what is the reason?????**

It specifies that the data is formatted as JSON (JavaScript Object Notation). JSON is a lightweight data-interchange format widely used in APIs for data representation.

-------------------------------------------------------------------------------------------------------------------------

**How many parts jwt token consist of three parts**

**1. header** --- --- main heading for server to understand

* type ---- type of token
* the signing algorithm – HMAC Hash-based Message Authentication Code SHA-256 Secure Hash Algorithm

**2.payloads----** --- letter message inside the envelop ---

* issuer of this token,
* what is the subject of token
* what is the expiry date of token
* what is the audience of token

all these things are called claims.

3**.signature**----- ---- stamp on the letter.

Signature is used to verify the message is not changed.

**-------------------------------------------------------------------------------------------------------------------------------------------**

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**Lets add an employee using api**

The things which we need to create an employee or add an employee

Base URI = URL + api location + end point

Payload/body = from {SWAGGER documentation}

Header = content- type Jason/application

Method = create --- because we are creating new employee

**Important**

For GUI testing there is selenium tools for testing GUI

For database testing there is mysql , sql, oracle, posrgresql and many other.

For API testing there is postman and many other software. , asi, tosca and many other.

Api is middleware which we have to test that whether the connection between GUI and database is correctly working.

----------------------------------------------------------------------------------------------------------------------

Why we created employe in api first.

Suppose you are asked in company to test the data base using CRUD operation.

Then if there is no data present in the data base how you will retrieve the data, how you will update the data how will you delete the data, because the data base is empty.

So first you have to create the data.

Create ------ add or create new employe

Update data partial ---- just first name change

Update data full -------- all details change

Delete data ------ delete data and then check the data is deleted or not.

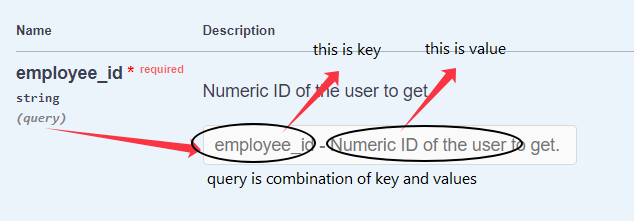
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**What is query parameter????**

**To get one specific data from group of data is called query paramtere.**

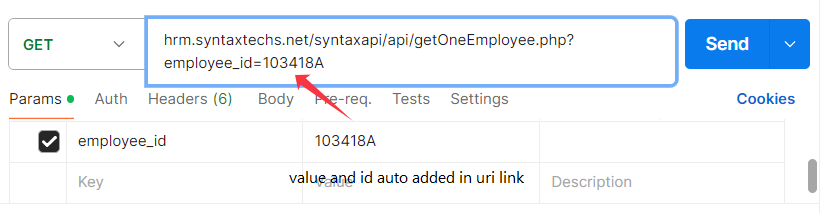
Query parameter is just key and values. When you want to get one employee you need this.

Query is nothing just extra information to get one data from group of data.



**When you get all employee do you need query parameter???**

No we not need , because query is only get data of one employee having this id.



**What are cookie???**

Cookies are small block of data which store your actions performed on website.

**Who creates cookies????**

Chrome Brower Server create cookies.

**Why create cookies??**

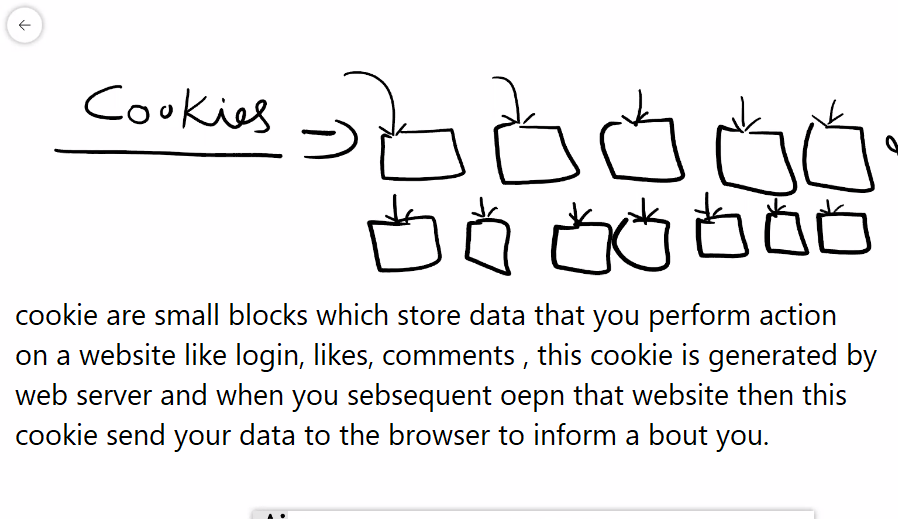
To store data.

**Why cookie store the data??**

1. for advertisement purpose

**Types of Cookies:**

* **Session Cookies:** Temporary cookies that expire when you close your browser.
* **First-party Cookies:** user for remember of login credentials.
* **Third-party Cookies:** store our data and share our data to other companies.



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**Class 04 DATE;25-01-2024**

The term "raw" is used to indicate that the data is sent as-is, without any additional formatting .

**What is status code for patch and update employee???**

For update------200 ok.

For patch--------201 created.

**What is difference in patch and put method???????**

Put method is used to update complete employee data

Patch method is used to update partial employee data

**What is path parameter???????**

Whenever in the URL , the text comes after slash / this is called path parameter

When you want access all data use path parameter.

**Example; google.com/search**

**What is query parameter????**

Whenever in the URL any text which comes after the? mark this is called query parameter.

**Example; google.com/search?q=32aA**

**When you want get one specific data from group of data use query parameter.**

What is end point php ??

PHP stood for "Personal Home Page," as it was created by Rasmus Lerdorf in 1994 to manage his personal website.

It is a widely used open-source server-side scripting language designed for web development

**Query parameter; when after question mark in the url, key and value present this is called query parameter.**

**?employee\_id=103418A**: This is a query parameter. It is used to pass information to the server,

**?**: The question mark serves as the separator between the base URL and the query string. It indicates the beginning of the query string.

--------------------------------------------------------------------

Whenever in the url , the text comes after slash / this is called path parameter

**Example; google.com/search**

Whenever in the url any text which comes after the ? mark this is called query parameter.

**Example; google.com/search?q=32aA**

-------------------------------------------------------------------------

both query parameters and path parameters provide a way to pass data in a URL, but their usage depends on the specific requirements and design choices of the API.

Put method is used to update all the data of one employee.

Patch method is used to update partial data of one employee

**What is difference in put and patch;**

Put method is used to update all data

Patch method is used to update partial data

Put method give response status code 200 ok

Patch method give response status code 201 ok.

----------------------------------------------------------------------------------------

How to create test while you run collection of requests.

How to use these tests in postman tool.

----------------------------------------------------------------------------------------

**What is api integration testing??**

api is testing the link between client and server the connection created between is working perfectly fine.by using api status code. This type of testing we cannot perform on interface and not in database that’s why we perform api testing.

--------------------------------------------------------------------------

Api is non-UI testing; it is testing that the link has been established or not and connection is working or not in between client and server.

-----------------------------------------------------------------------------------------------------------------------------------------

The number and names of environments can vary across organizations, and different companies might have different naming conventions. However, in software development and testing, several common environments are often used

1. **Development (Dev) Environment:**

* + Where developers write and test their code.

1. **Quality Assurance (QA) or Testing Environment:**
   * Where testers conduct various types of testing, including functional, integration, and regression testing.
2. **Staging Environment:**

A mirror of the production environment used for final testing before deploying to production.

1. **User Acceptance Testing (UAT) Environment:**
   * Purpose: Where end-users validate that the software meets their requirements.
2. **Pre-Production Environment:**
   * Purpose: Mimics the production environment closely, used for final checks before deploying to production.
   * Characteristics: Helps catch any issues that might arise in the production environment.
3. **Production Environment:**

The live environment where the software is available to end-users.

Top of Form

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These all above environment but we just as a tester will use only 3 or 4 just related to use.

**Quality Assurance (QA) or Testing Environment**

**User Acceptance Testing (UAT) Environment:**

Console is very important,

In console you can check the result of your request.

All the things available in console which you want to check against your request are all availble

This is way how to run collection.

**--------------------------------------------------------------------------------------------------------------------------------------**

**Path parameter include api path also.**

**Query parameter do not include api path.**

hrm.syntaxtechs.net/syntaxapi/api -- this path is an environment

/generateToken.php --- these end points are global variables

?employee\_id=103418A – query parameter.

-----------------------------------------------------------------------------------------------------------------------------

**In postman we can check three ways of assertion**

1. assertion of status code

2. assertion on the basis of key

3. assertion on the basis of value

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In postman there are multiple environment???

Testing environment

Development environment

Staging environment

Production environment

-----------------------------------------------------------------------------------------------------------------------------------

**Why postman provide environments??????**

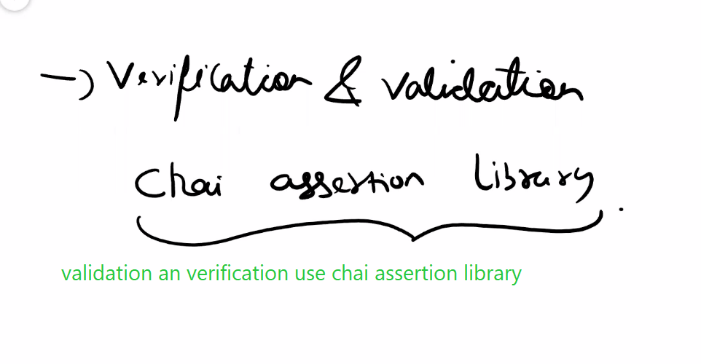
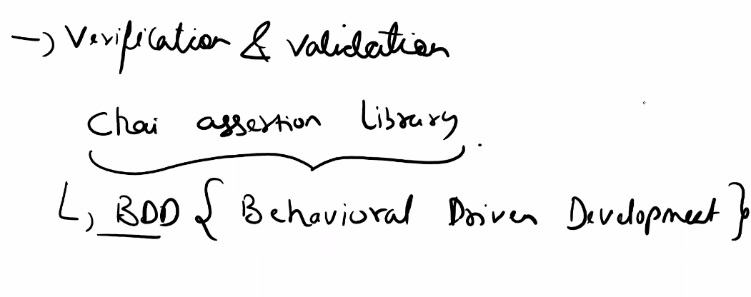
**Because you can switch in different environment and can execute your test cases in every environment.**

**Why postman use java script language to write test cases??????**

Because java script is universal language, mostly used language in IT industry.

**In postman how we can automate our test cases????**

By writing test cases in java script the purpose is that to automate your test cases.



**What is pm object in postman????**

Pm object is used to write the test cases in java script.

pm is object of postman which give different methods available in api

pm.test

pm.expect

pm.response

pm.request

**Why we use chai library in postman???????**

For validation and verification, we use chai library built in present in postman.

Snippet--------small piece of information or any thing.

================================================================================================================================================================================================================================================================================================================================================================================================================================================================

**JAVA CLASS 05 RAMZAN 23 DATE; 03-MARCH-2024**

In global variables we provide end points.

---------------------------------------------------------------------------------------------------------------------------

**Front end**

Manual testing ------ use jira

Automation testing ------- use selenium

**Back end**

Data base manual testing --------- use workbench

Data base automation testing --------- use maven project jdbc

**Middle layer**

Api manual testing --------- use postman

Api automation testing ---------- java rest assured API

===================================================================================================================================================================================

**What is Json use in API???**

**JSON is format to make request and get response in key and value pairs. Rest full API support xml, json, html**

**JSON (JavaScript Object Notation) is a lightweight data-interchange format**

**that is easy for humans to read and write and easy for machines to parse and generate.**

**What is rest assured API???**

This is a java library which we used to automate REST full API.

Rest assured API by default follow BDD approach.

Parse??? Analysis, examine, **parsing is used to convert the data to a form that the device can understand and act on. It is similar to providing a translation so an English speaker can understand text in another language.**

**What is rest full API??**

The API which uses HTTP protocols to make request.

Support multiple format Json, X ml, Html. Less band width, take less time to transfer data. Small and relevant data is transferred.

**What is soap API???**

More band width, large time to transfer data. Banks application .

The API which uses only one post method of http protocol to make request. support only one format xml

-----------------------------------------------------------------------------------

Rest assured is a domain specific language.

Rest assured follows BDD approach.

Given- preparing the request

When-making the request

Then-response-assertion/verification

-----------------------------------------------------------------------------------------------------------------------------------

**In java rest assured API**

**Base URI is considered equal to baser URL**

Base URI=Base URL (address of server + location of api)

---------------------------------------------------------------------------------------------------------------------------

Given-----is used to prepare a request

**To make a request to get one employee what things we needed???**

Base URI=Base URL

End point

Header –token, content type

Query parameter—employee id

**Request Specification is the class in rest assured library**

This provide the specification of the request.

----------------------------------------------------------------------------------------------------------------------------------------

In Rest Assured, the **given()**, **when()**, and **then()** methods are used together to construct and execute HTTP requests and validate the responses.

**Given ()**: ---- prepare request.

* + The **given ()** method is the starting point for making a request.
  + You can use **given ()** to specify parameters such as base URI, base path, headers, query parameters, request body, authentication.
  + This method returns a **Request Specification** object, which represents the details of the HTTP request that will be sent.

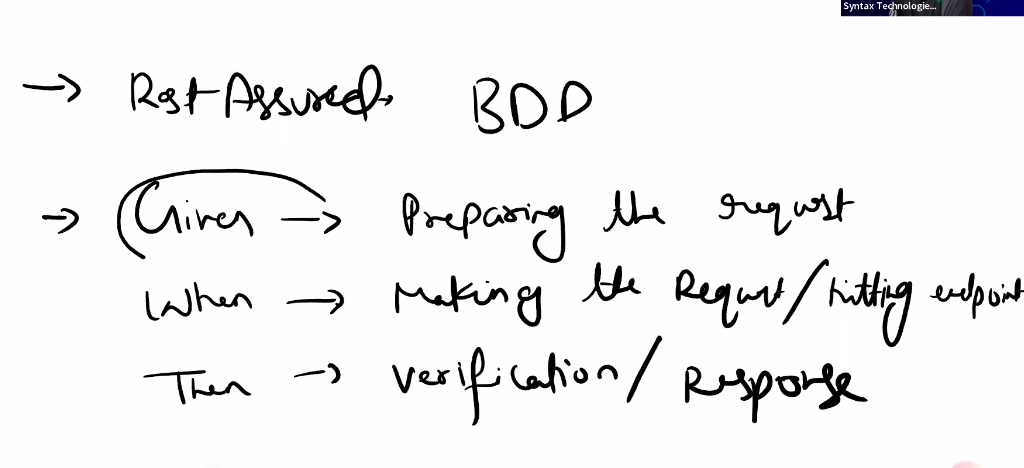
1. **When ()**: --- hitting end point.
   * The **when ()** method is used to define the action that will be performed as part of the HTTP request.
   * Typically, you would use **when ()** to specify the HTTP method (e.g., GET, POST, PUT, DELETE) and the resource or endpoint that you want to interact with.
2. **Then ()**:
   * The **then ()** method is used to specify assertions for the response received from the server.
   * You can use **then()** to validate aspects of the response, such as the status code, response headers, response body, and other properties.

-------------------------------------------------------------------------------------------------------------------------------------

In POM.XML file , add two things ,

1. rest assured

2. Jason



=================================================================================================================================================================================================================================================================================================================================================================================================================================================================

**CLASS 06 API RAMZAN-24 DATE; 3-APRIL-2024**

**What is Ham crest matchers????**

Ham crest matchers are classes in java which are used to perform assertions.

**What is pretty print???**

**response Pretty Print ()** is a method to print the response in console.

This is the method in rest assured library.

**What is Json??** Json is a light weight data interchange format. Json is language.

**What is Json path vs Json path ()???**

Json path is the class

Json path () is the method -- is used to get all information from the script/body/header/parameter.

This is annotation to run your methods ascending order.

@FixMethodOrder(MethodSorters.*NAME\_ASCENDING*)

In postman we use chai library for assertion

In java we will use ham-crest matcher library for assertion

**========================================================================================================================================================================================================================================================================================================================================================================**

**Class 07 date;29-01-2024**

**All the result we get in the format Json.**

So to get all the data from body, response, header we use json path ()

method to get any information from the script.

Using of baseURI base uri

Rest Assured implicitly uses the base URI set at the class level (**http://hrm.syntaxtechs.net/syntaxapi/api**). When you make a request using **.when().get("/getOneEmployee.php")**, RestAssured automatically appends the provided endpoint ("/getOneEmployee.php") to the base URI.

If you find that your code is working without explicitly setting the base URI in the method, it's likely because the default behavior of RestAssured is sufficient for your case. However, if you need to override the base URI for a specific request within the method, you can use the **.baseUri()** method in the method itself. Otherwise, the class-level base URI is used.

**Static Import:**

* In Java, static imports allow you to access static members of a class directly without qualifying the class name. In this case, you're importing the **given()** method from **RestAssured**, so you can use it directly without referencing **Rest Assured.given()**.

**Use a Method with Return Type (return Type):**

1. **Get a Value for Later:**
   * Pick a method with a return type when your task gives you a specific value that you want to use later in your code.
2. **Keep Things Clean and Reusable:**
   * Methods with return types help keep your code tidy and let you reuse the value they produce in different parts of your program.

**Use a Method with void:**

1. **Just Do the Action:**
   * Go for a **void** method when you simply want to do something without caring about getting a specific result back.
2. **Focus on Doing, Not Getting:**
   * **void** methods are good when you're more interested in doing actions, like changing things or showing stuff, without worrying about what they give back.

**Return Method:**

* A method with a return type is designed to calculate or produce a result, and it explicitly specifies the type of the result it will return using the **return** keyword.
* When you call a method with a return type, you can capture the returned value and use it in your code, either by assigning it to a variable or using it in an expression.
* A **void** method, on the other hand, is not intended to return a value. It may perform an action, modify internal state, or execute a series of statements without providing a result that the caller can use directly.
* When you call a **void** method, it carries out its actions but does not produce a value that can be assigned to a variable.

In both cases, when you call a method, the code inside the method executes. However, the key difference is whether the method is designed to produce a result (return method) or perform actions without returning a value (void method).

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1. **JSON Object:**
   * In JavaScript, a JSON object is a data structure that consists of key-value pairs. For example: **{ "name": "John", "age": 30, "city": "New York" }**.
   * In Java, when working with JSON, a JSON object is typically represented using a class provided by a JSON processing library (e.g., **JSONObject** from JSON.simple). It serves as a container for key-value pairs.
2. **JSON Class (e.g., JSONObject):**
   * In Java, a JSON class is a class provided by a JSON processing library that helps you work with JSON data.
   * **JSONObject** is an example of such a class. It allows you to create, manipulate, and convert JSON data in a Java program.

* **Data Exchange:** JSON is commonly used for data exchange between a server and a web application. For example, when a client sends data to a server or receives data from a server, the data is often formatted as JSON.
* **APIs:** Many web APIs return data in JSON format. When you make an HTTP request to a web service, the response often comes back as JSON, and you may use a JSON library to parse that data in your Java code.
* **Configuration Files:** JSON is also used for configuration files in applications. Storing configuration data in a JSON format makes it easy to read, write, and understand.
* **Interoperability:** JSON is language-agnostic, meaning it can be easily consumed by different programming languages. This makes it a popular choice for data exchange in heterogeneous environments.

While both **Map** and **JSONObject** are used to store key-value pairs, there are differences in their design and use cases. **JSONObject** often includes methods and features specifically geared towards handling the structure and serialization/deserialization of JSON data.

No, you cannot use **return obj;** directly in this context because the return type of your method is declared as **String**, not **JSONObject**. The method signature is:

javaCopy code

public static String createEmployejsonBody() {

It explicitly states that the method should return a **String**. Therefore, you need to convert the **JSONObject** to its string representation using **obj.toString()** before returning it. If you try to use **return obj;**, it would result in a compilation error because the return types do not match.