Rest API Testing (automation) from scratch – Rest Assured Java

API:

Application Programming Interface –

Lets consider a website that has frontend made with java , we have backend code made in java , think we have a method createReservation() method that checks with the database for availability and booking

If some other application needs the booking data , we provide an API instead of showing all the code

API is independent of any language , data from frontend in form of JSON , goes to API over http request

API is an interface between client and server , thus simplify communication between them though they were made using different languages in front end and backend

Understanding GET,POST,PUT,DELETE Http CRUD operations of API:

End Point/Base URL : Address where API is hosted on server – to test api 1st we need end point

Http methods which are commonly used to communicate with rest apis are - crud

GET : retrieve data from existing data in server

POST: used to send data to server
 PUT : This will update existing data in server

Delete: Removes all current representations of the target resource given by a URI.

What are Resources?

Resources represent API/Collection which can be accessed from server

Google.com/maps

Google.com/search

Google.com/images

Path Parameters:

Are variable parts of a URI path they are typically used to point to a specific resource within a collection , such as a user identified by ID

www.google.com/images/1123343

www.google.com/docs/1123343

amazon.com/orders/112

Query Parameters
used to sort/filter the resources

Identified with ?""

https://amazon.com/orders?sort_by=5/9/2022

Endpoint base url can be constructed as below:

BaseURL/resources/(Query/Path)Parameters

Headers/Cookies:

These are meta data associated with api request and response . we were sending additional details to API to process our request thus helps in authenticate or authorize the data being accessed

Ex: Authorization Details

_____

End point: Address where API is hosted on the Server.

HTTP methods which are commonly used to communicate with Rest API's are

GET, POST, PUT, and DELETE
GET- The GET method is used to extract information from the given server using a given URI. While using GET request, it should only extract data and should have no other effect on the data. No Payload/Body required

How to send input data in GET?
Ans: Using Query Parameters

POST- A POST request is used to send data to the server, for example, customer information, file upload, etc. using HTML forms.

How to send input data in POST?
Ans: Using Form Parameters /Body Payload

PUT- Replaces all current representations of the target resource with the uploaded content.

DELETE- Removes all current representations of the target resource given by a URI.

Resources:
Resources represent API/Collection which can be accessed from the Server
Google.com/maps
google.com/search
google.com/images

Path Parameters:
Path parameters are variable parts of a URL path. They are typically used to point to a specific resource within a collection, such as a user identified by ID
https://www.google.com/Images/1123343
https://www.google.com/docs/1123343
https://amazon.com/orders/112
https://www.google.com/search?q=newyork&oq=newyork&aqs=chrome..69i57j0l7.2501j0j7&sourceid=chrome&ie=UTF-8

Query Parameters:
Query Parameter is used to sort/filter the resources.
Query Parameters are identified with?""

https://amazon.com/orders?sort_by=2/20/2020

Headers/Cookies:
Headers represent the meta-data associated with the API request and response. In layman terms, we were sending Additional details to API to process our request.
Example : Authorization details

End Point Request URL can be constructed as below
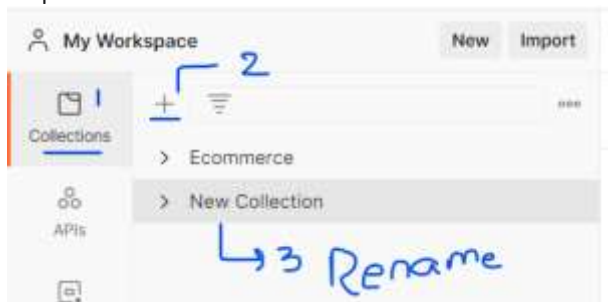Base URL/resource/(Query/Path)Parameters

When we have to test an api we need to know api contract:
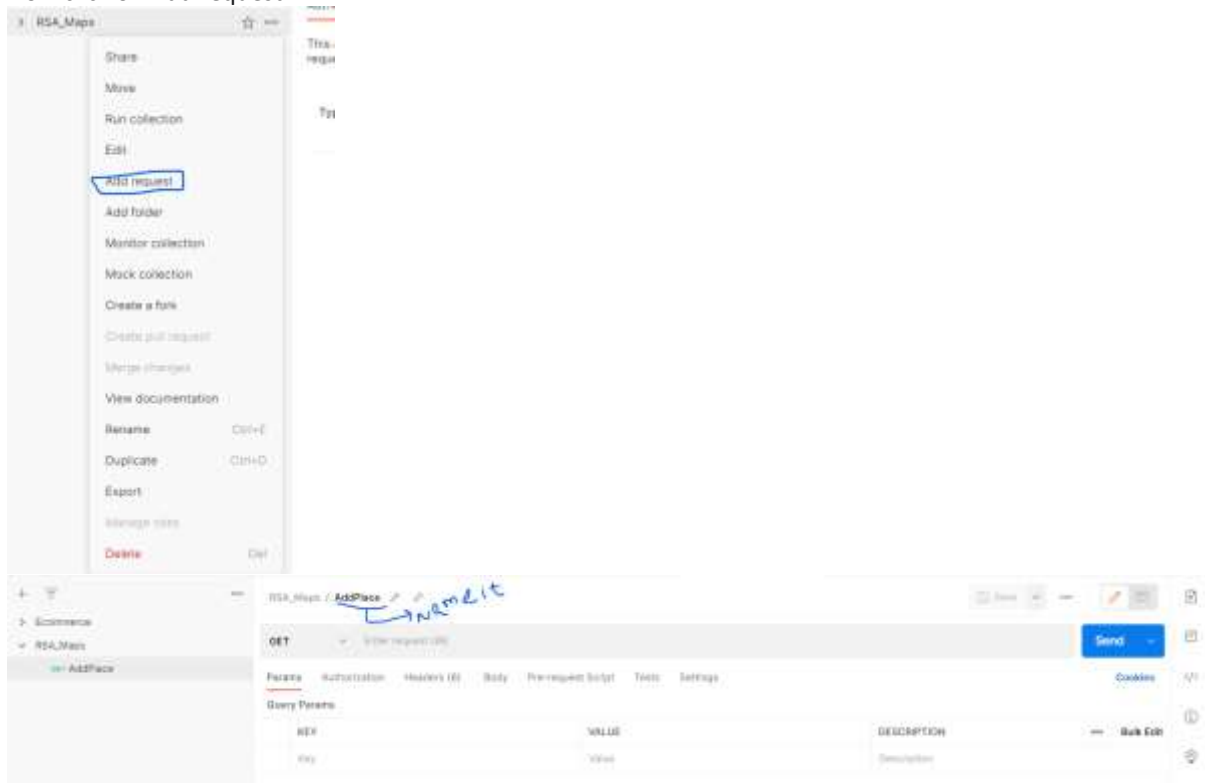API contract is base url , resource , query parameters , http methods , and sample json request and json response
Lets use **Postman** to test API
Open postman and click on + after collections and rename it
Step1: create a collection

Now click on Add request

Now Provide all details and click on send

We can pass query params in the params tab or provide directly in the base url after ?
Select appropriate http method ,
We selected POST it needs body to be sent
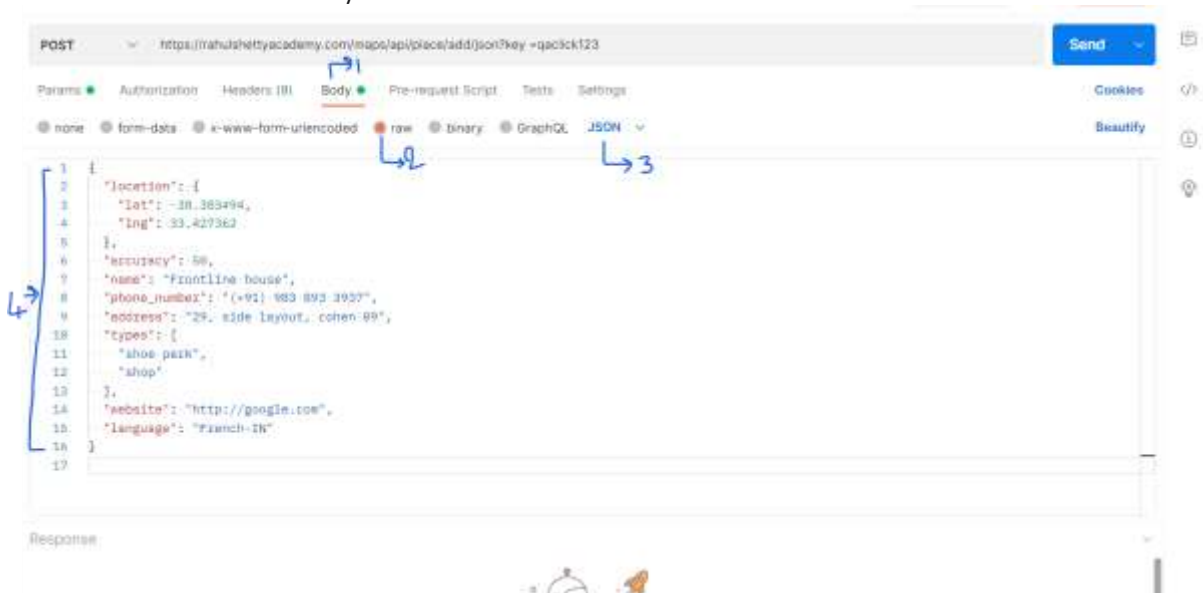
Go to body tab select raw , JSON and provide the body
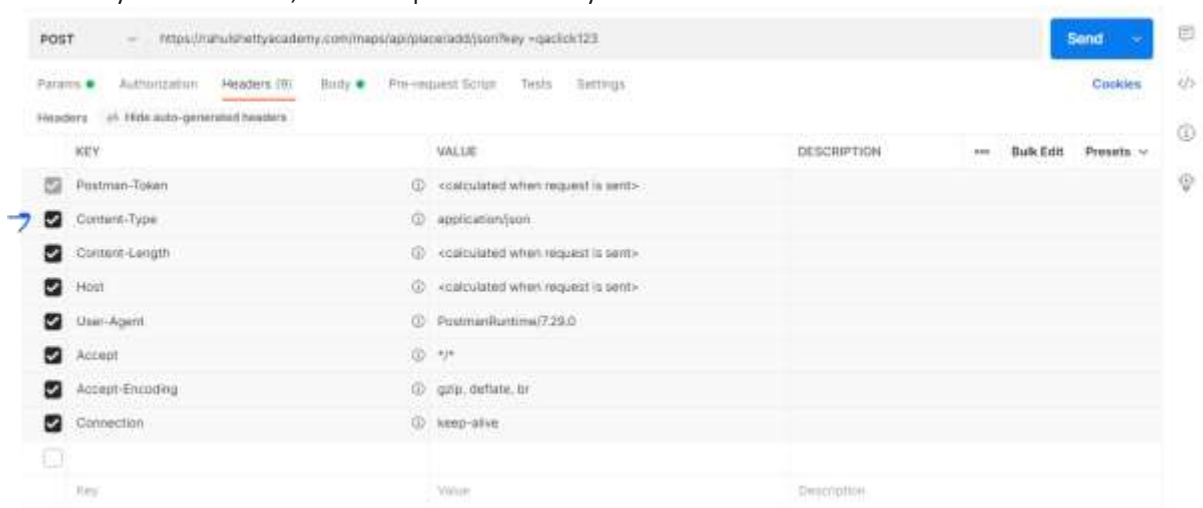
Headers will be auto generated if anything is needed pass them in Headers tab as key value pair

Click on send and then we can see the response generated with statuc code 200 ok

GET API Demo:

Delete Demo:

Create a request by add request , name it , provide base url ,resource and query params and click on Send
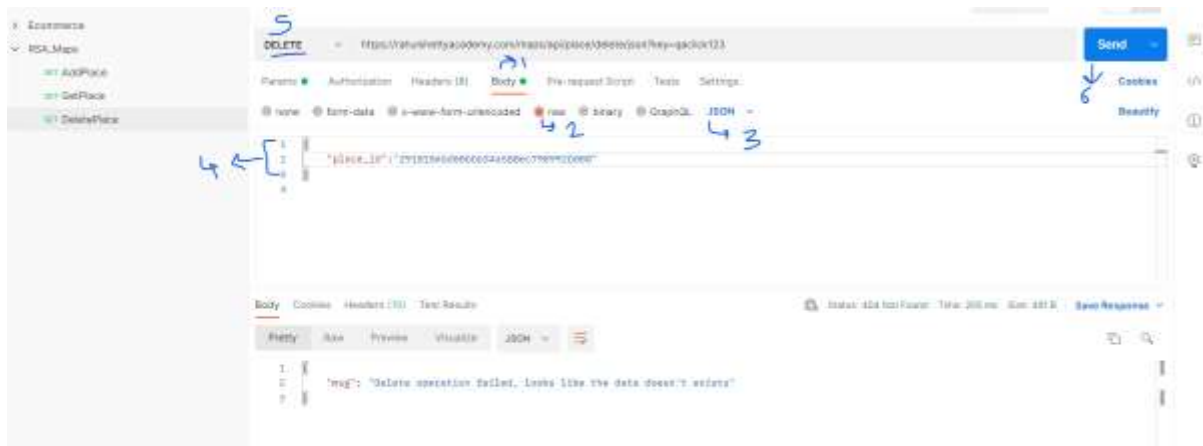
Update place:

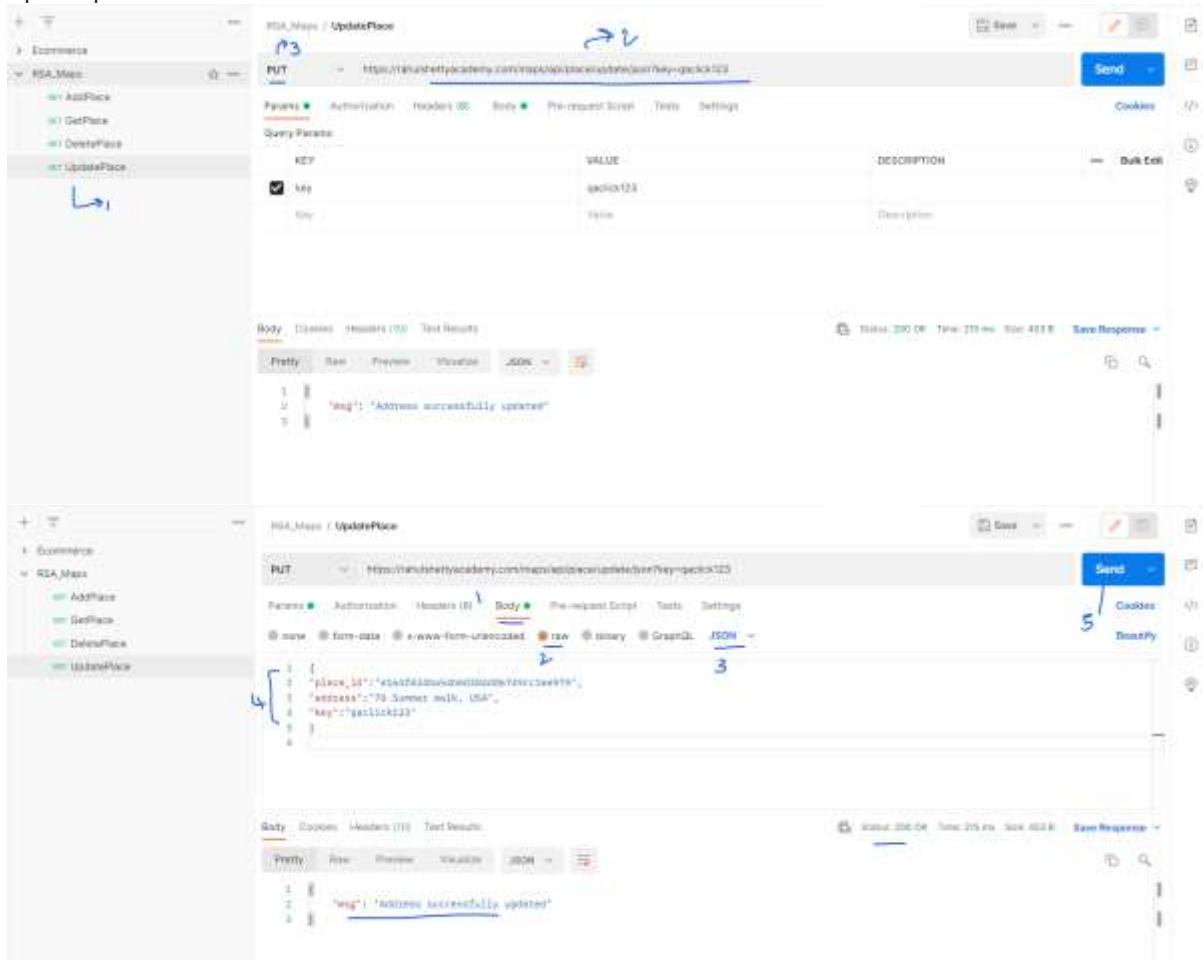**What is Rest Assured?**

Rest Assured is a java based library that is used to test restful web services /apis

3 simple steps to setup rest assured project

        1.Install java and set in system variables

        2.Install eclipse and create java maven project

            File-new -java project , convert java project to maven project – right click on project

            →configure→Convert to maven project

            We will get pom.xml file created

        3.Configure rest assured jars into project

        Go to maven repository and search rest assured and select the dependency paste in pom.xml file

        Then search testng dependency , hamcrest dependency and add them

```
<dependencies>
```

```xml
<!-- https://mvnrepository.com/artifact/io.rest-assured/rest-assured
-->

        <dependency>
            <groupId>io.rest-assured</groupId>
            <artifactId>rest-assured</artifactId>
            <version>5.0.1</version>

        </dependency>
        <!-- https://mvnrepository.com/artifact/org.testng/testng -->
        <dependency>
            <groupId>org.testng</groupId>
            <artifactId>testng</artifactId>
            <version>7.5</version>

        </dependency>
        <!-- https://mvnrepository.com/artifact/org.hamcrest/hamcrest -->
        <dependency>
            <groupId>org.hamcrest</groupId>
            <artifactId>hamcrest</artifactId>
            <version>2.2</version>

        </dependency>

    </dependencies>
```

For now we have removed `<scope>test</scope>` in all dependencies

Build rest api automation test to add place and validate status code:

```java
        //step3: to see all the request ,response we can use log().all() after the given() , then()
      given().log().all().queryParam("key", "qaclick123").header("Content-Type","application/json")
        .body("{\r\n"
          + "  \"location\": {\r\n"
          + "    \"lat\": -38.383494,\r\n"
          + "    \"lng\": 33.427362\r\n"
          + "  },\r\n"
          + "  \"accuracy\": 50,\r\n"
          + "  \"name\": \"Frontline house\",\r\n"
          + "  \"phone_number\": \"(+91) 983 893 3937\",\r\n"
          + "  \"address\": \"29, side layout, cohen 89\",\r\n"
          + "  \"types\": [\r\n"
          + "    \"shoe park\",\r\n"
          + "    \"shop\"\r\n"
          + "  ],\r\n"
          + "  \"website\": \"http://google.com\",\r\n"
          + "  \"language\": \"French-IN\"\r\n"
          + "}\r\n"
          + "")
      .when().post("maps/api/place/add/json")
      .then().log().all().assertThat().statusCode(200);

      //on pasting json in string inside body if escape sequences are not generated automatically
      //go to window-preferences-Java-Editor-Typing - check mark
      //escape text when pasting into string literal

  }
}
```