API Testing

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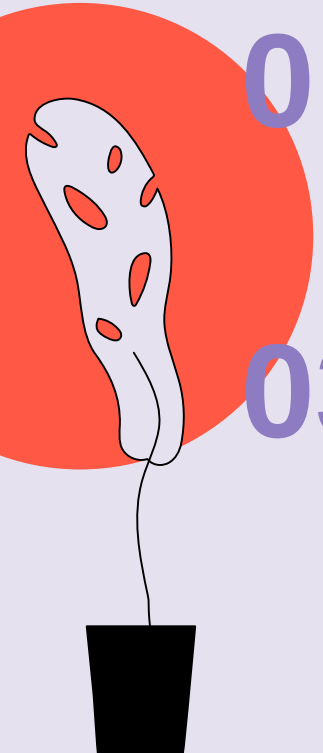


01

API Testing

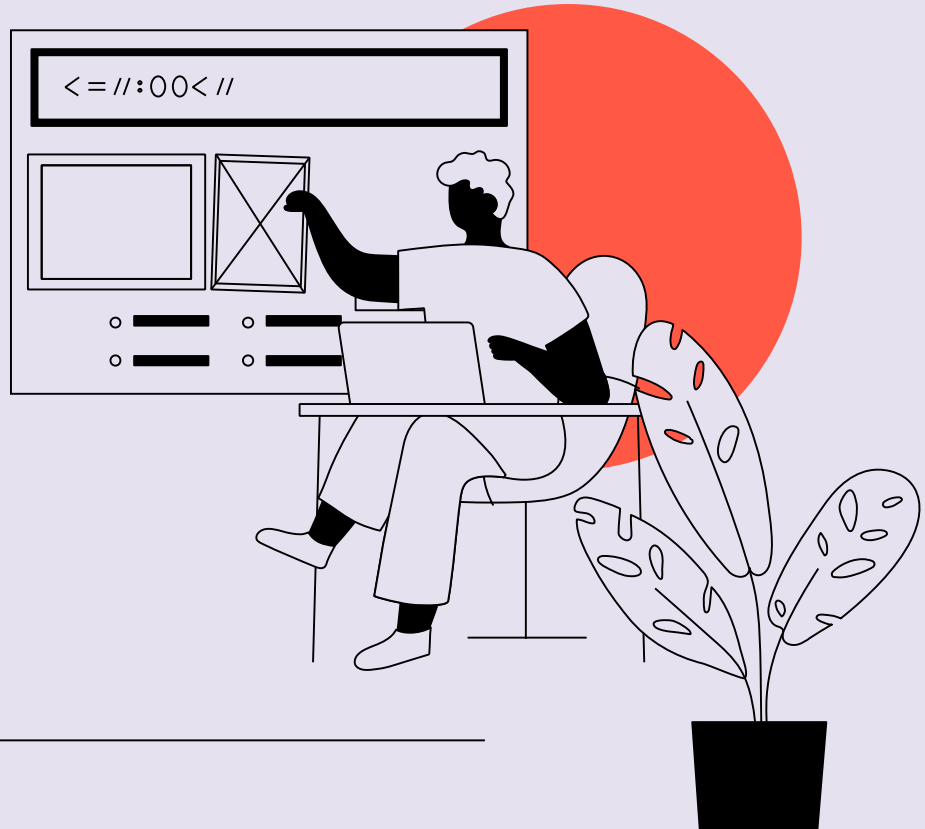
What is API?

API stands for the Application Programming Interface; They are basically a collection of functions and procedures which allows us to communicate two application or library. For example, It like a connector as seen in the picture. All data connects to our organization through API.

What is API Testing?

API testing is testing that APIs and its integration with the services.

- It is one of the most challenging type of testing, If we miss the certain cases in API Testing that can cause a very big problem in production after full integration, and it will hard debug in production environment..

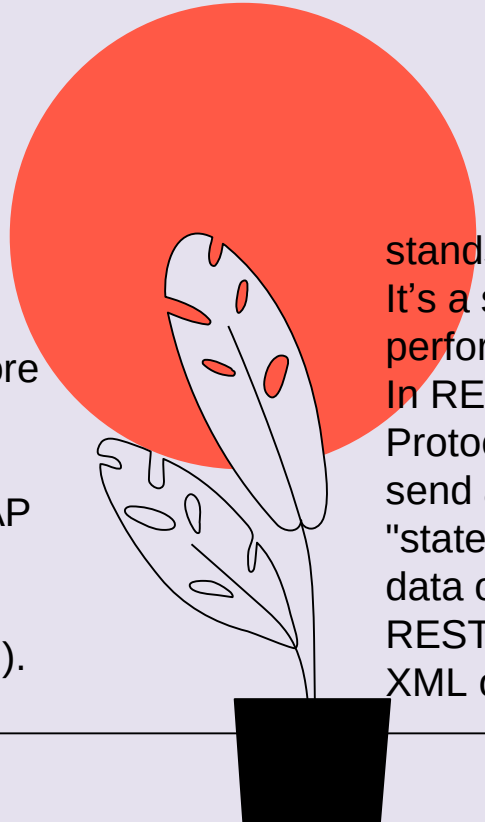


02
Soap Vs Rest

Soap Vs Rest

Soap

stands for Simple Object Access Protocol.
It’s a bit more complex by defining more standards than REST—things like security and how messages are sent. SOAP has much tighter security. SOAP messages may contain up to four components, including an envelope, header, body and fault (error handling).



Rest

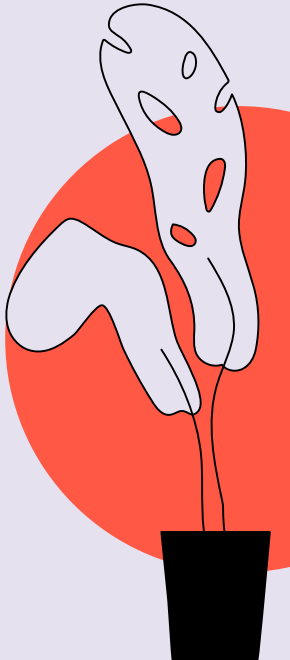
stands for Representational state transfer
It’s a set of functions to which the developers perform requests and receive responses.
In REST API, interaction is made Via HTTP Protocol, it involves using HTTP methods to send and receive messages. REST is "stateless," which means the API stores no data or status between requests.
REST messages often takes the form of XML or JSON

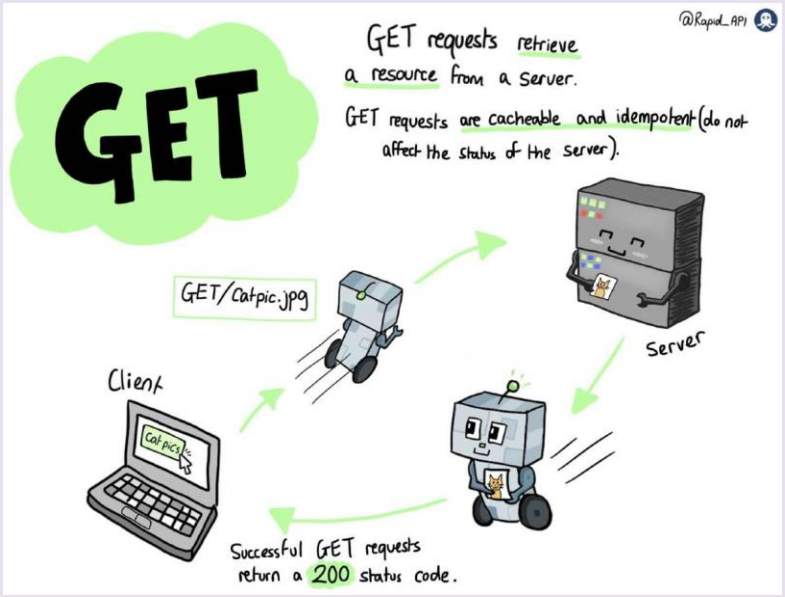
03

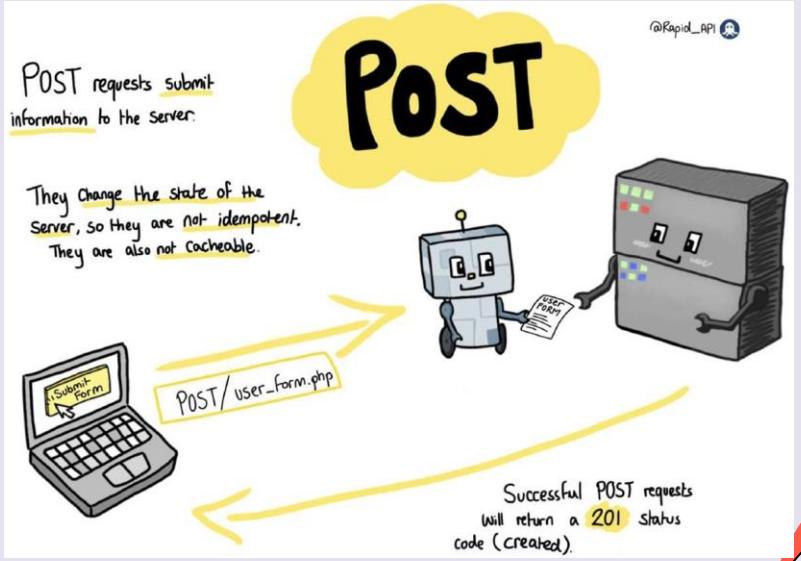
API Methods & Tools

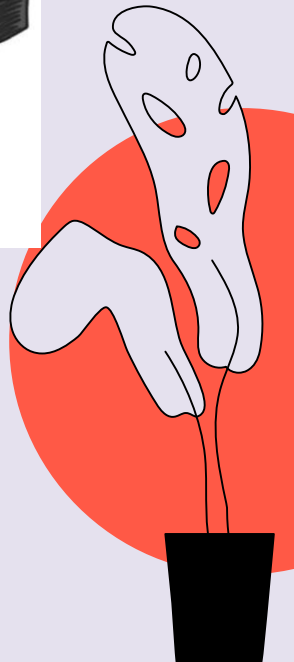
API Methods

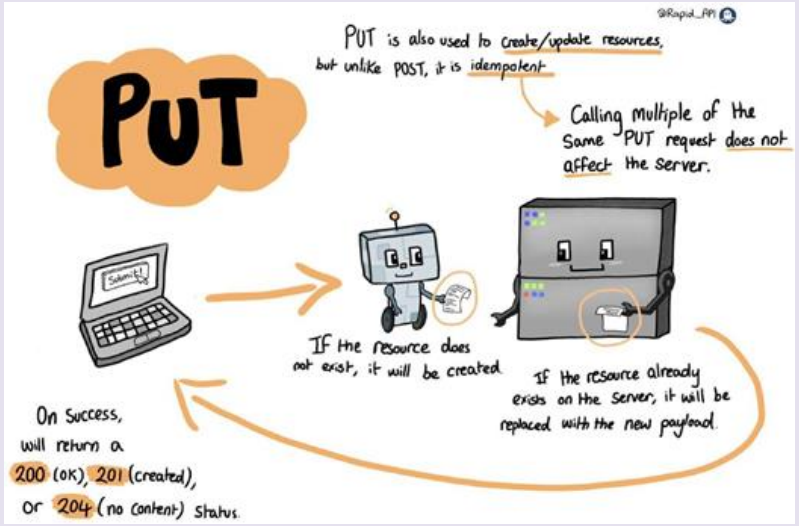
Get	Request to read web page
Post	Request to upload web page
Put	Request to update web page
Delete	Request to delete web page

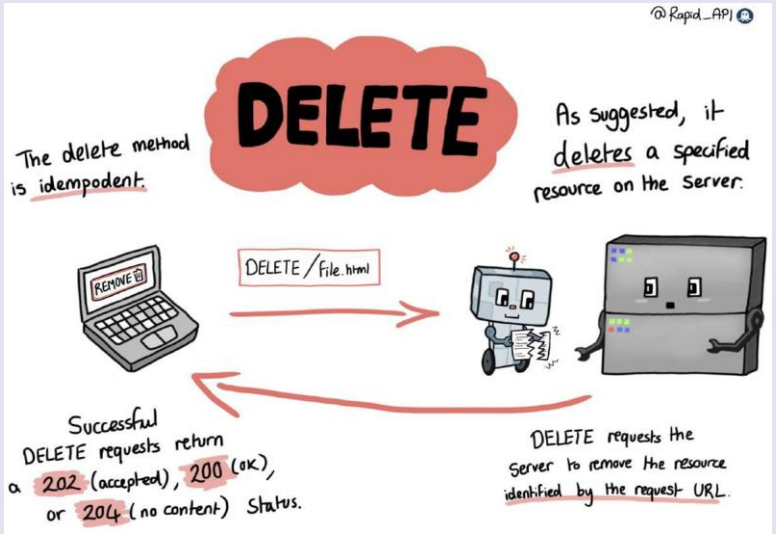


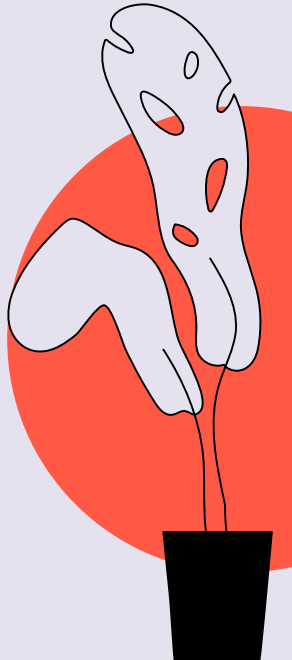

@Rapid_API
GET
GET requests retrieve a resource from a server.
GET requests are cacheable and idempotent (do not affect the status of the server).
GET/Catpic.jpg
Server
Client
Cat pics
Successful GET requests return a 200 status code.


@Rapid_API
POST
POST requests submit information to the server.
They change the state of the server, so they are not idempotent. They are also not cacheable.
Submit Form
POST/user_form.php
Successful POST requests will return a 201 status code (created).



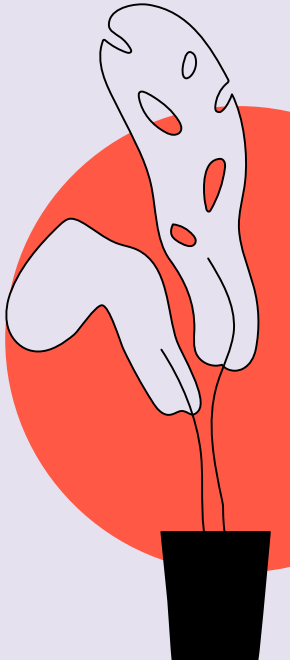

@Rapid_API
PUT
PUT is also used to create/update resources, but unlike POST, it is idempotent.
Calling multiple of the same PUT request does not affect the server.
Submit
If the resource does not exist, it will be created.
If the resource already exists on the server, it will be replaced with the new payload.
On Success, will return a 200 (OK), 201 (created), or 204 (no content) status.


@Rapid_API
DELETE
The delete method is idempodent.
As suggested, it deletes a specified resource on the server.
REMOVE
DELETE / file.html
Successful DELETE requests return a 202 (accepted), 200 (OK), or 204 (no content) status.
DELETE requests the server to remove the resource identified by the request URL.



HTTP Status Codes

200+	The request has succeeded
300+	The request is redirected to another URL
400+	The request contains bad syntax
500+	The server failed to fulfil an apparently valid request



API Tools

- Runscope.com
- Postman CI/CD
- Katalon using CI/CD
- SoapUI CI/CD
- Rest Assured CI/CD

04

Postman & Newman

What is Postman?

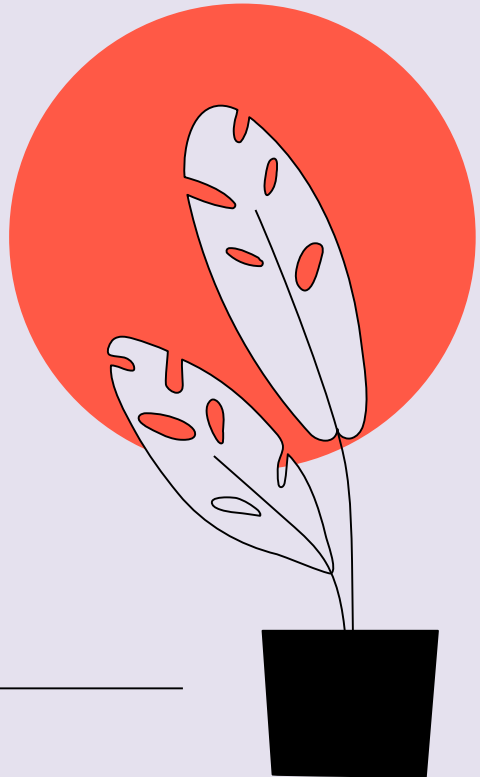
- It is an **API** Testing tool used by developers and Testers to perform API Testing with lots of different features like Global variables, mock request, Environment and monitoring of APIs.
- Its available in the MacOS, Windows and Linux as Native app.

What is Newman?

Newman is a command-line Collection Runner for Postman. It enables you to run and test a Postman Collection directly from the command line. It's built with extensibility in mind so that you can integrate it with your continuous integration servers and build systems.

Newman maintains feature parity with Postman and allows you to run collections the way they're executed inside the collection runner in Postman.

Demo



Conclusion

API based applications have gained popularity in recent times. These applications are more scalable compared to the traditional applications/software and allow easier integration with the other APIs or applications.

This API Testing presentation explained all about API Testing, API Testing process, HTTP Methods, API Benefits and API Testing Tools.

Resources

- https://www.softwaretestinghelp.com/api-testing-tutorial/
- https://www.inflectra.com/rapise/highlights/api-testing.aspx
- https://www.softwaretestingmaterial.com/api-testing/#Common-tests-on-APIs
- https://www.guru99.com/testing-rest-api-manually.html
- https://www.katalon.com/api-testing/
- https://cutt.ly/8Xw9Gcz
- https://cutt.ly/uXw95yG