What is API?

- API stands for application programming interface basically it is an interface which act as intermediator between two application or server which help them to communicate with each other.
- If application 1(client) send a request or ask something from application 2(server) then they can't interact directly firstly client send a request to API and API transfer the request to server after that it get the response from server which can't be understood easily so API convert it into understandable form and deliver to client.
- They used API key for security purpose client with API key can raise a request if they don't have any API key either they get error or blocked by API.
- They are used for monitoring and the handling the data

Why API?

- APIs allow different applications, written in different languages, to **communicate and work together**, even if they weren't originally built to work with each other.

Why REST API?

- When we want to order something we search and check if that thing is available or not but it provided the response in HTML which is hard to decode. We want the structured data not the html format. There are two format of response in which data is a.) XML b.) JSON. XML is a hierrachial data structure which is not used now JSON is a key value data structure which is commonly used. If there is one data entry we can use some method to get information from them but in multiple entries it is impossible so that's why we use REST API's.

What is REST API?

- REST stands for **Representational State Transfer.**
- It uses a stateless, client-server communication model where HTTP is the most common protocol.
- It uses two rules -

a.) Client – Server Architecture- They should be independent of each other. When the client(browser, mobile phone, alexa) send a request to server through API it's response in text, image, JSON or HTML doc so if html document is a response and client is using browser it's fine it can get the data but if it use mobile phone then it can't get the data so they become dependent to each other for response to solve this problem we can send the raw data in JSON format as response and it can decode it through mobile phone.

b.) Respect the HTTP method- To search anything on the browser we use http format and that's basically we create our request to browser for a specific thing like booking a flight although we are using but to check the flights or something related to it can be searched through browser.

5 HTTP method are there-

- **GET-** It is used to read and get the user information.

Example- Fetching the details of specific user.

Get/users

- **Patch-** It is used to update a particular thing .

Example- User want to update the e-mail address.

Patch/users/123

- **Put –** it is used to update the user.

Example – Updating the existing information

put/users/123

- **Post-** It is used to create new user.

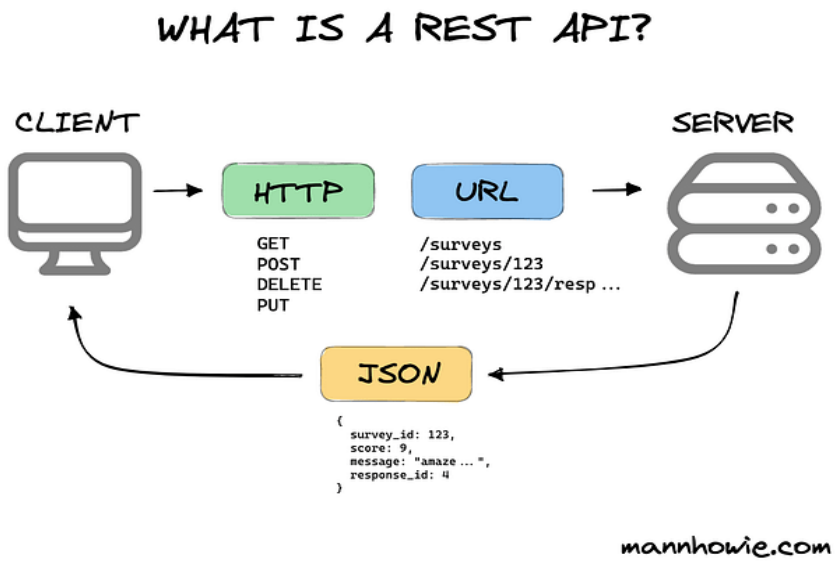
Example- Adding new user to system

Post\users\123

- **Delete –** It is used to delete a particular user or information

Example – Deleting the account because the user does not want to use it anymore.

Delete\users\123



Understanding RESTful API Design:-

- A RESTful API is an interface that allows different software systems to communicate with each other over HTTP . Here are some essential aspects of designing RESTful APIs:
- 1. Use Nouns for Resource URLs: Resource URLs should use nouns to represent resources. For example, `/books` is a good URL for a collection of books, and `/books/123` is suitable for a specific book with ID 123.
- 2. HTTP Methods for Actions: Use HTTP methods to perform actions on resources. For example, use POST to create a new resource, PUT to update it, GET to retrieve it, and DELETE to remove it.
- 3. Status Codes: Use appropriate HTTP status codes to indicate the outcome of an API request. For instance, a 200 status code signifies success, while a 400 status code indicates that the requested resource was not found and 500 status code signies service was not available.
- 4. Versioning: It's a good practice to include a version number in your API URL, e.g., `/v1/books`. This allows you to make changes to the API while maintaining backward compatibility for existing clients.

Commands -

- **Invoke-RestMethod –** When we call Invoke-RestMethod it start pre-processing the data and start converting the json file into powershell object.
- What it does is use http to request and get the response through it.

$uri = "http://randomuser.me/api"

$invoke-restmethod = -Invoke-RestMethod –uri http://randomuser.me/api -Mthod get

$invoke-restmethod.requst

- **Invoke-WebRequest -**