What is a REST Api?

WHAT IS AN API?

- API stands for Application Programmable Interface which is a way computer programs communicate with each other.
- APIs provide a standard for sharing data, performing tasks and extending functionality of a system.
- APIs abstract implementation of functionality to the developers consuming (integrating into) them.

WEB API

- Web APIs sit between the application and the web server and performing tasks on requests called API calls.
- When a user initiates a request the application will use an API (make an API call) requesting the web server to perform that task.

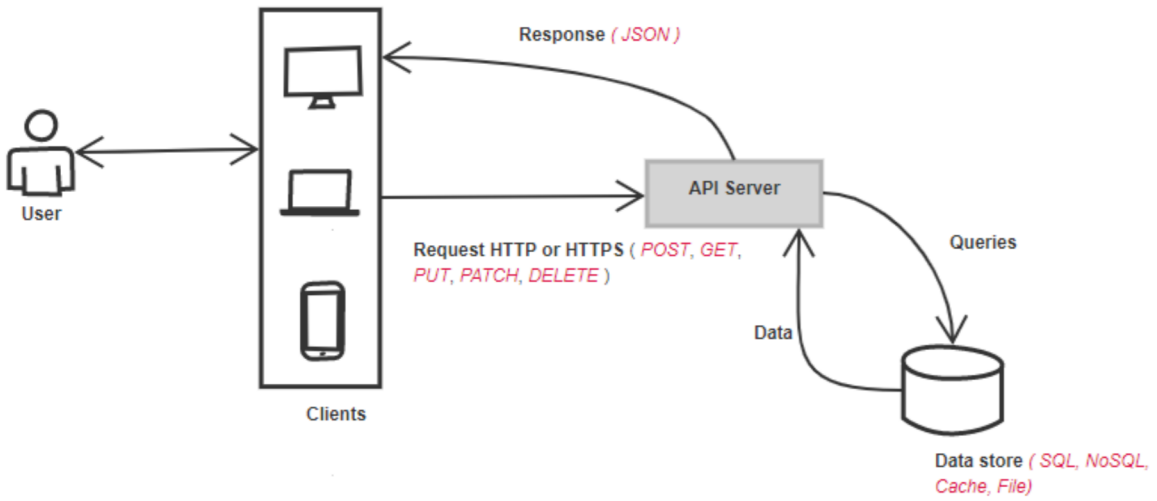
REST API

- **RE**presentational **S**tate **T**ransfer is an API architectural style that makes it easy for computer systems to communicate with the web.
- It uses HTTP requests to access and perform actions on resources and data on web servers.

WHY REST API?

- REST can support multiple formats for storing and exchanging data. A response can be in XML, JSON, HTML and Plain text format.
- It allows for caching of data on the HTTP Level. This caching of data provides better system performance.
- It abstracts functionalities allowing for easy integration into existing systems. Developers can easily add different APIs and API functionalities without rewriting the system every time.

REST ARCHITECTURE



A user interacts with an API through a user interface on a client:

Client can be a laptop, a tablet or mobile phone.

The API is hosted on a **server** which is accessed over a network, commonly the internet, using the **HTTP** protocol using action verbs.

Action verbs specify an action to be performed on a specific resource or a collection of resources.

POST: The POST verb is most-often utilized to **create** new resources

PUT: PUT is most-often utilized for **update** capabilities. The old existing resource is completely replaced by the object in the body of a PUT request.

DELETE: DELETE is pretty easy to understand. It is used to **delete** a resource.

PATCH: PATCH is used for **modify** capabilities. The PATCH request only needs to contain the changes to the resource, not the complete resource.

GET: The HTTP GET method is used to **read** (or retrieve) a representation of a resource.

When a **Request** is made by the client, it sends this information in the HTTP request.

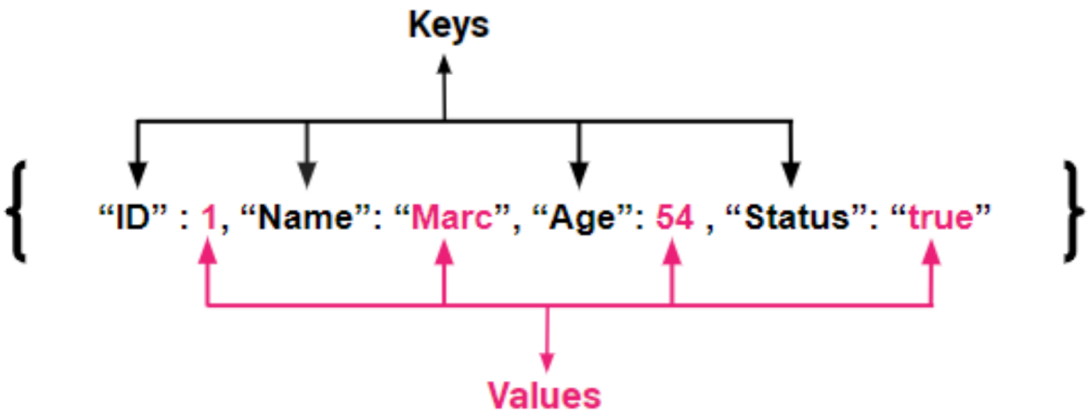
After performing the specified action, the API then responds to the client with a **Response** that the application formats to a user friendly view which is most commonly a **JSON** object.

JSON

- JSON stands for **JavaScript Object Notation**, which is a lightweight data-interchange format.
- JSON facilitates sending data between computers systems. It is easy to work with data as JavaScript objects, with no complicated parsing and translations.

- JSON can receive pure text from a server and use it as a JavaScript object.
- JSON can also send a JavaScript object to a server in pure text format.

JSON OBJECT



- JSON Objects are surrounded by curly braces.
- They are written in key/value pairs.
- Keys must be strings and values must be valid JSON data types: string, number, another JSON object, array, boolean or null.