Explain what makes an API design RESTful, what are some key components of a RESTful API, and how a RESTful web service works?

Please explain the benefits of a RESTful architecture, any limitations, and basic concepts like statelessness, and resources and verbs.

Referemce: https://www.w3schools.in/restful-web-services/intro/#The_REST_Architecture

An API is Application program interface, it's essentially a contract between 2 pieces of software on how requests and responses should be structured for communication

RESTful/ Rest is Representational State Transfer, Relies on a stateless, client-server protocol almost always HTTP/HTTPs.

HTTP Methods used by REST API to communicate include:

GET, POST, PUT, DELETE, HEAD, OPTIONS, PATCH

The Stateless Transfer concept is result of using HTTP, this is where there is no "state" maintained between server and client during communication, ie no session affinity or sticky sessions.

The methods above are stateless in the sense that the server will not keep track of each method used or it relation or state to another.

Since rest stands for REST stands for **RE**presentational **S**tate **T**ransfer,
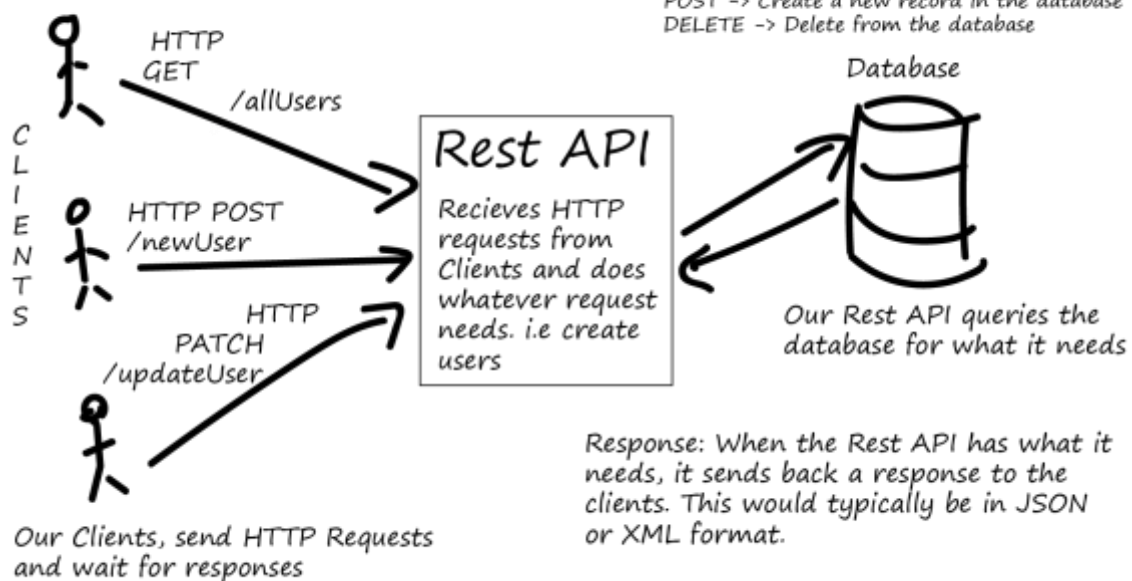
"when a RESTful API is called, the server will *transfer* to the client a **representation** of the **state** of the requested resource."

REST web services guidelines do not impose any rule concerning how it needs to be put into practice at a subordinate level; it just places high-level design guiding principle and absconds you to think of the implementation.

REST server offers contacts to resources which also helps in client accesses as well as help in updating the resources. The resources are recognized by URIs / global IDs.

The API employs a variety of representations for signifying a resource like JSON - which is very popular among them all, text, XML formats.
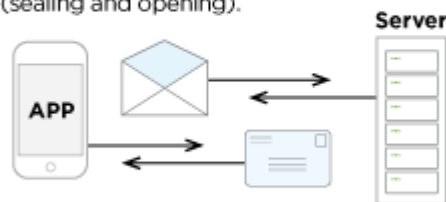
Rest API Basics

CLIENTS

HTTP GET /allUsers

HTTP POST /newUser

HTTP PATCH /updateUser

Rest API

Recieves HTTP requests from Clients and does whatever request needs. i.e create users

Database

Our Rest API queries the database for what it needs

Response: When the Rest API has what it needs, it sends back a response to the clients. This would typically be in JSON or XML format.

Our Clients, send HTTP Requests and wait for responses

SOAP vs. REST APIs

SOAP is like using an envelope

Extra overhead, more bandwidth required, more work on both ends (sealing and opening).

APP

Server

REST is like a postcard

Lighterweight, can be cached, easier to update.

Upwork