Consider you want to initiate a transaction of 100 rs to a friend through GPay. Gpay does not contain money. It is linked to a bank account for storing or retrieving money. Hence, whenever a transaction is initiated, The gpay application will always try to connect to the bank application. If the asked amount is available, it will retrieve and send the money to the asker else it won't. This all will happen through a code which will check the required amount, registered user, authentication , etc.

Suppose the Gpay app and the banking application are using completely different languages. Suppose GPay is programmed using Java and Bank App is programmed using python. Now, suppose you have implemented a communication between these two apps which are built using different languages and different frameworks, then YOU MAY HAVE TO EXECUTE A PYTHON PROG FROM JAVA CODE OR VICE VERSA. This can be made possible using API. Using API, different languages, frameworks and different interfaces can communicate with each other

* API stands for Application Programming Interface.
* A Web API is an application programming interface for the Web.
* A Browser API can extend the functionality of a web browser.
* A Server API can extend the functionality of a web server.

Web API as the name suggests, is an API over the web which is accessed using HTTP protocol. It is a concept and not a technology. We can build Web API using different technologies such as Java, .NET etc. For example, Twitter's REST APIs provide programmatic access to read and write data using which we can integrate twitter's capabilities into our own application.

Suppose you are logging in into your Gmail account. You enter your username which is then sent to the backend servers to verify. In the same way, password is also verified at the back end. Hence, some functions are run in the back end for verification and the result is sent to the client side. This data transfer between server and client is done through WEB API

**Hence, API is something which can be used to communicate between two homogenous or two heterogeneous system.**

**HTTP protocol**

It is a protocol used to access the data on the World Wide Web (www).

The HTTP protocol can be used to transfer the data in the form of plain text, hypertext, audio, video, and so on.

This protocol is known as HyperText Transfer Protocol because of its efficiency that allows us to use it in a hypertext environment where there are rapid jumps from one document to another document.

HTTP is similar to the FTP as it also transfers the files from one host to another host. But, HTTP is simpler than FTP as HTTP uses only one connection, i.e., no control connection to transfer the files.

**Difference between API and WEB API**

***API can be created using TCP/ SMTP or Http protocol whereas Web Api is only created using HTTP protocol.***

**REST and SOAP architecture**

Rest - Representational State Transfer

Soap - Simple Object Access Protocol

Both are used for creating APIs

**REST**

\* REST uses HTTP protocol

\* In case of a REST API, you can see functions like PUT, GET, POST, DELETE

\* REST is known for simplicity, scalability and flexibility. Creating REST is easy. Scaling Rest to millions of users is possible. It can communicate with many other applications.

\* REST is less secure

**SOAP**

\* SOAP uses TCP/ SMTP protocol.

\* Not as scalable or flexible as REST.

\* It transfers messages through XML which contains a WSDL file in which we can write rules. WSDL is an XML notation for describing a web service. A WSDL definition tells a client how to compose a web service request and describes the interface that is provided by the web service provider.

\* SOAP is more secure than REST.

Hence, both REST and SOAP can be used to build API depending on our preferences or requirements

