API

API = "Application Programming Interface"

---->What is API?<------

->APIs are mechanisms that enable two software components to communicate with each other using a set of definitions and protocols.

---->How Does API Works<----

->API architecture is usually explained in terms of client and server. The application sending the request is called the client, and the application sending the response is called the server.

There are four different ways that APIs can work depending on when and why they were created.

1--> SOAP API:

It stands for 'Simple Oject Access Protols'. Client and server exchange message using XML. This is a less flexible API that was popular in past.

2--> RPC API:

It stands for 'Remote Procedure Calls'. The client completes a function on the server, and the server sends the output back to the client.

3--> Websocket API

Websocket API is another modern web API development that uses JSON objects to pass data. A WebSocket API supports two-way communication between client apps and the server. The server can send callback messages to connected clients, making it more efficient than REST API.

4--> REST API

It Stand for 'Representational State Transfer'.REST defines a set of functions like GET, PUT, DELETE, etc. that clients can use to access server data. Clients and servers exchange data using HTTP. The main feature of REST API is statelessness. Statelessness means that servers do not save client data between requests.

What is the difference between the WebSocket and REST API?

|  |  |  |
| --- | --- | --- |
| **Criteria** | **WebSocket** | **REST** |
| Performance | WebSockets have a low overhead per message. They’re ideal for use cases that require low-latency, high-frequency communication. | REST APIs have a higher message overhead compared to WebSockets. They’re best suited for use cases where you want to create, retrieve, delete, or update resources. |
| Nature | Socket-based. | Resource-based. |
| HTTP use | WebSocket uses HTTP only during the initial request/response handshake (connection establishment). | REST uses HTTP to enable client-server communication. |
| Communication | Event-driven and bidirectional. | Request-driven and unidirectional. |
| State | WebSocket is stateful protocol. | REST uses the HTTP protocol, which is stateless. |
| TCP connection | A WebSocket connection uses a single TCP connection for data exchange. | Every request/response requires a new TCP connection. |

What are API Query Parameters ?

* API Query parameters can be defined as the optional key-value pairs that appear after the question mark in the URL. Basically, they are extensions of the URL that are utilized to help determine specific content or action based on the data being delivered. Query parameters are appended to the end of the URL, using a ‘?’.
* If you want to add multiple query parameters, an ‘&’ sign is placed in between them to form what is known as a query string.

Example:-

1. <https://example.com/articles?sort=ASC&page=2>

In this URL, there are two query parameters, sort, and page, with ASC and 2 being their values, respectively.

## Query vs. Path Parameters

## The first difference between query and [path parameters](https://rapidapi.com/blog/api-glossary/parameters/path/) is their position in the URL. While the query parameters appear on the right side of the ‘?’ in the URL, path parameters come before the question mark sign.

## The query Parameters are used to sort/filter resources. On the other hand ,path parameters are used to identify a specific resources.

## 

## You can’t omit values in path parameters since they are part of the URL. On the other hand, query parameters are added at the end of the URL, and thus can allow omission of some values as long as the serializing standards are followed.