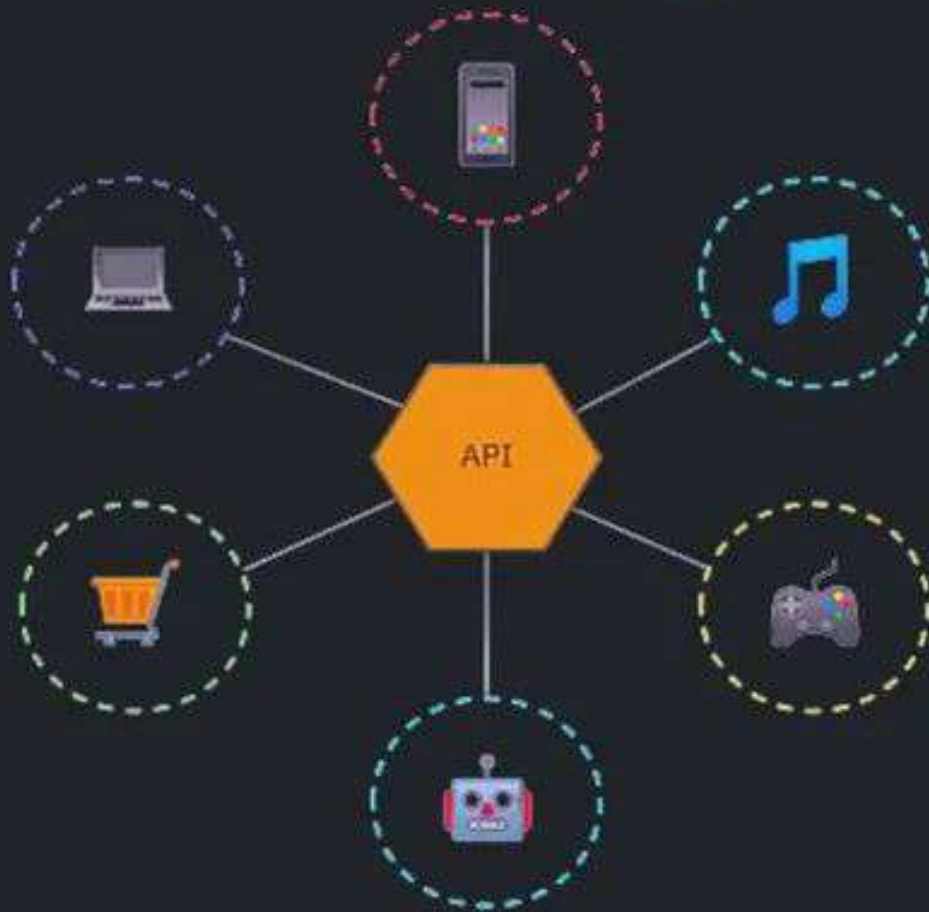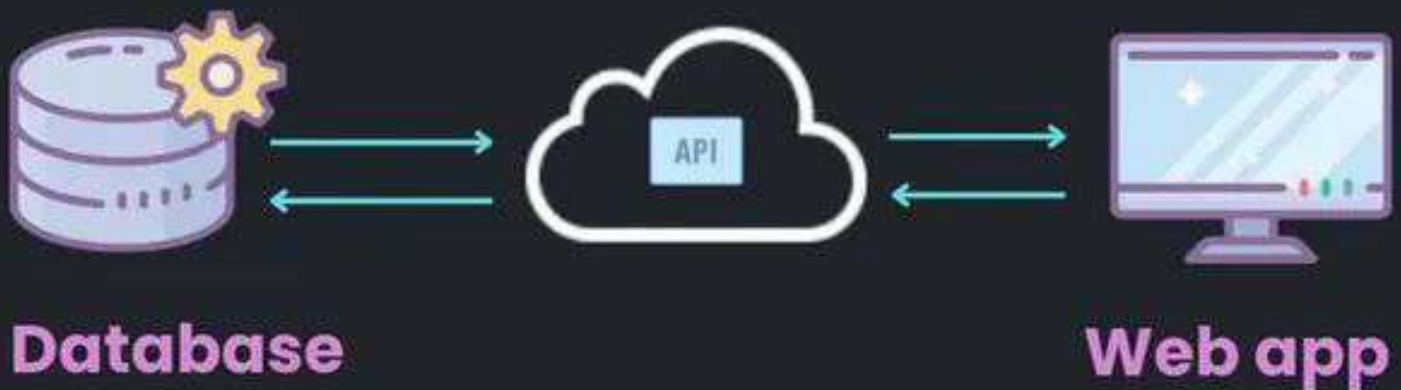# Rest API
# Fundamentals

# API Concept



API means Application Programming Interface and, like any other interface, allows interactions. In the case of an API, it allows interactions between systems by following a set of standards and protocols in order to share features, information and data.

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# REST Fundamentals



**Database**
**Web app**

REST is an **architecture style to develop web services**, which uses the **HTTP protocol** as a communication interface in order to transfer data through HTTP methods.

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# Request Anatomy

## URL

URL means Uniform Resource Locator, which is the address to not just identify a resource, but also to specify how to access it. In an API, the URL can be named as Base URL, which means that is the base address that will be used in every request.

For example: **http://api.example.com**

## URI

URI means Uniform Resource Identifier, which is used in the URL to specify which resource the Client would like to access in a request.

## URI Example

http://api.example.com/products

URL: http://api.example.com/
URI: /products

Therefore, every URL is an URI, but not all URIs are URLs.

## Parameters

Parameters are information that can be sended in a request by the Client in order to influence the response by the Server.

Two types of parameters:
- Path Parameter
- Query Parameter

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## Path Parameter

It is a variable in URI path that helps in pointing towards specific resource

**Example :**

https://food.com/restaurant/1/total-orders

1 is the path Parameter (variable) which points to restaurant no 1's total orders

## Query Parameter

It is variable in URI path that helps in querying/ filtering through a list of resources

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## Example :

http://api.example.com/products?
name=laptop&available=true

we query using ? in URI, followed by item which we want to search. Here the Client communicates to the Server that the request is to retrieve products with name equals laptop, and available equals true.

## Body Params

It's the **body of the request** which contains all the data that the Server needs to successfully process the request. Therefore, it's only used in requests that must send information, such as create or update.

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## Body Params Example

```
{
    "name": "Laptop",
    "price": 1000
    "available": true

}
```

## Headers

Headers allows **sending extra information in a request**, such as authentication tokens and content types.

```
Authorization: Bearer token
Accept: application/json
```

In this given example, the **Client is sending** extra data informing not just it's credentials to access a resource, but also a desired response format.
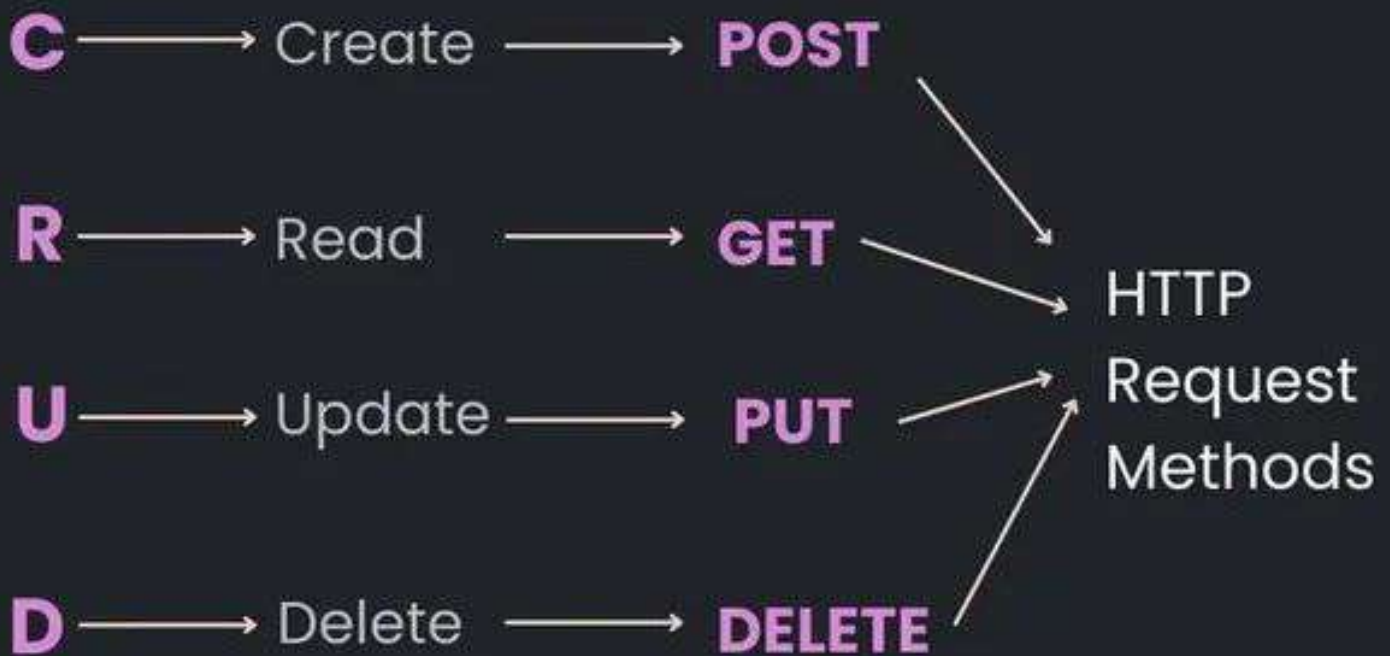
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# Methods of REST API

C ——→ Create ——→ **POST**

R ——→ Read ——→ **GET**

U ——→ Update ——→ **PUT**

D ——→ Delete ——→ **DELETE**

HTTP Request Methods

# Http Status Codes

With every request made to the server, we get Response Code/Http Status Codes in return

2xx : Success

3xx : Redirection

4xx : Problem with the client

5xx : Problem with the server

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