Frontend Course Session 1
Introduction to WEB World

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Agenda

How a website works

Backend & API & Frontend Roles

Course Overview

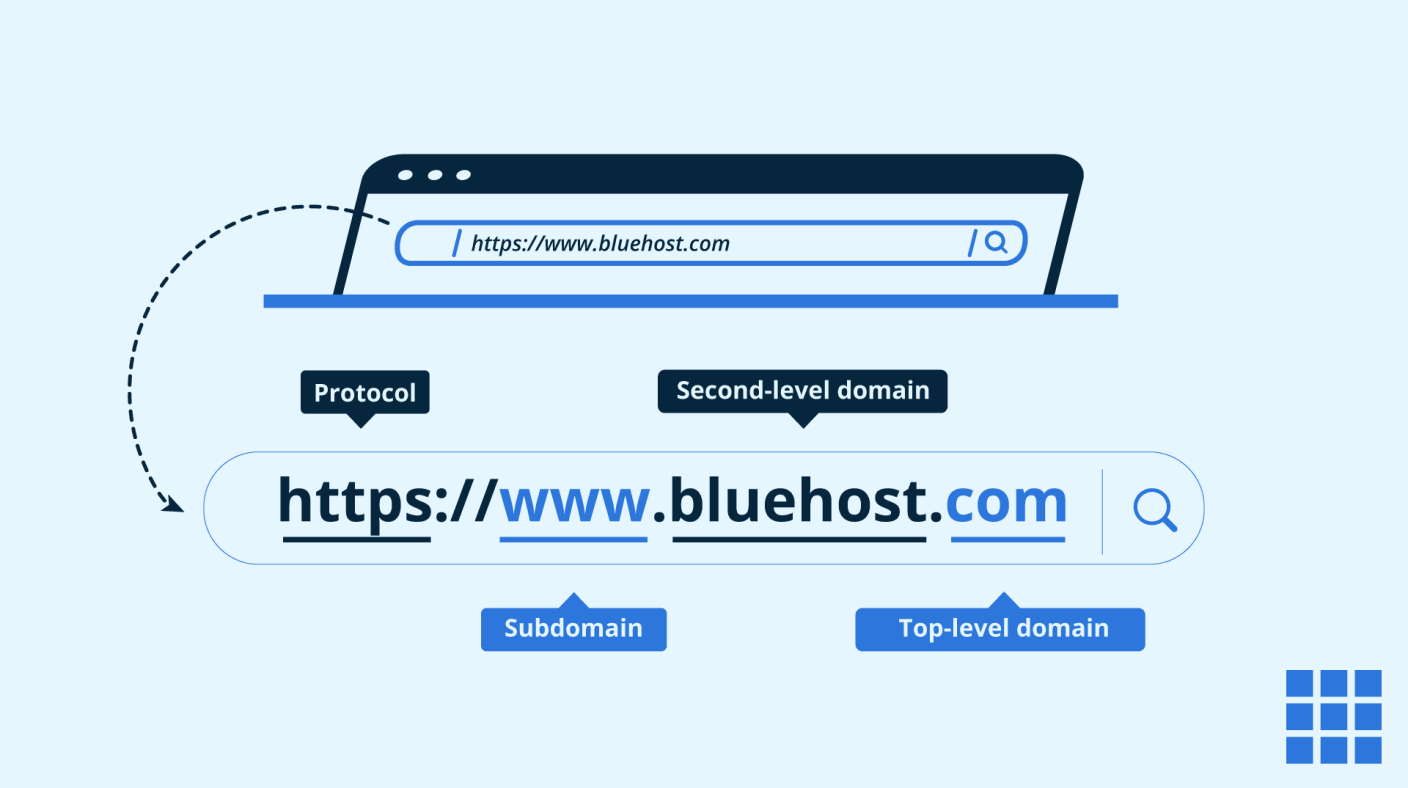
Course installation

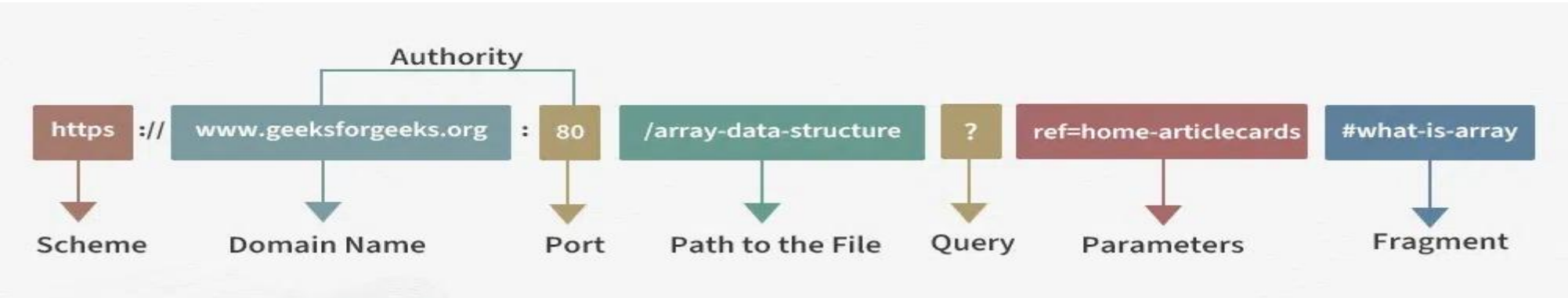
Resources

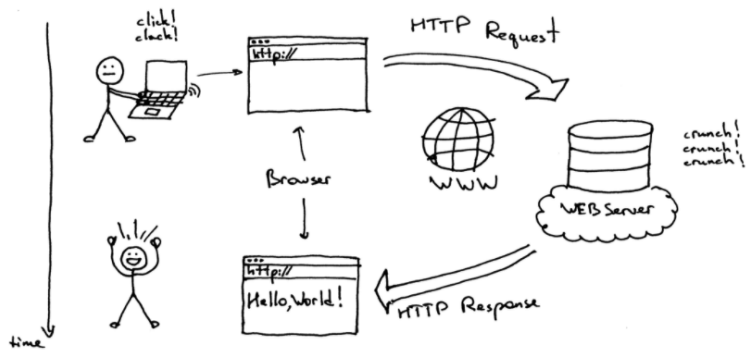
Terminologies

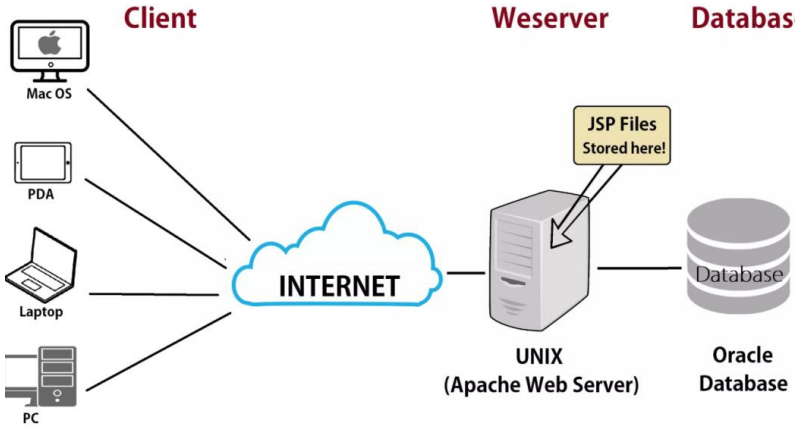
- Web: is the collection of all websites and web pages that you can access using a browser over the internet.
- URL: is the address of a specific page or resource on the web.
- Domain: is the main name of a website, used to identify it on the internet. i.e.
- Website: is a collection of web pages stored on a server and accessed through a domain.

Aspect	World Wide Web	Internet
What It Is	A collection of webpages and websites you access with a browser.	A global network connecting computers.
Started	1989 by Tim Berners-Lee at CERN.	1960s as ARPANET.
Purpose	To share and explore information like text, images, and videos.	To connect devices and share data.


https://www.bluehost.com
Protocol
Second-level domain
https://www.bluehost.com
Subdomain
Top-level domain


Authority
https
://
www.geeksforgeeks.org
:
80
/array-data-structure
?
ref=home-articlecards
#what-is-array
Scheme
Domain Name
Port
Path to the File
Query
Parameters
Fragment



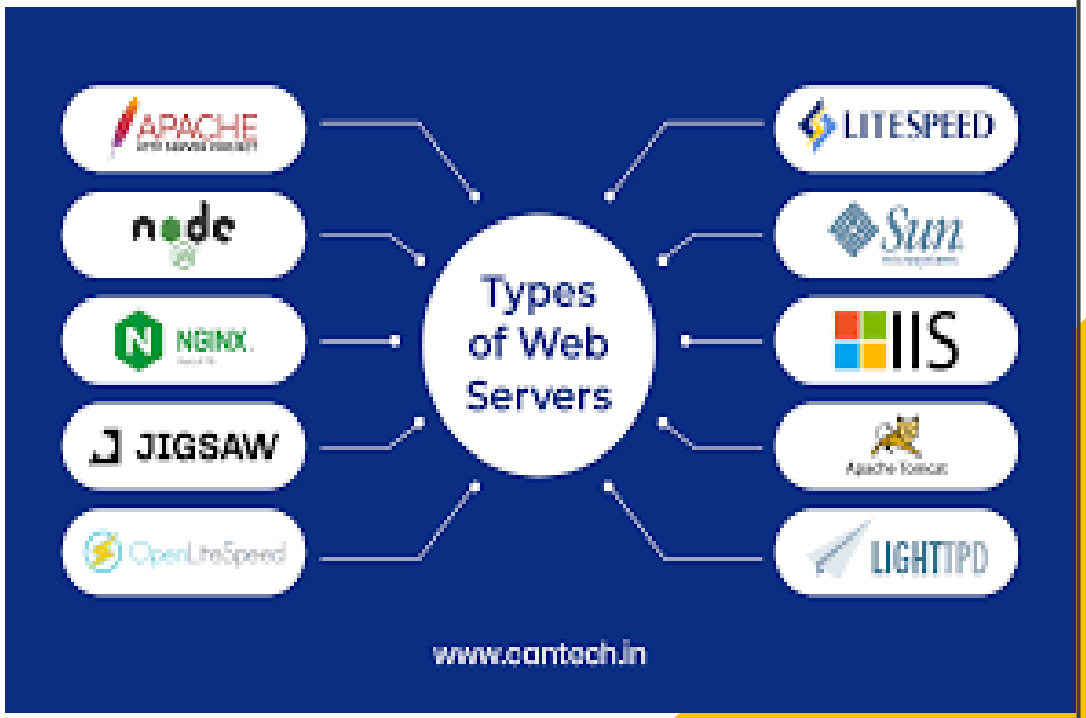


How Websites Work

- Web Server
- Databases
- Backend
- API
- Frontend

Web Server

A web server is a computer hosting one or more websites. "Hosting" means that all the web pages and their associated files are available on that computer. The web server will send web page files it is hosting to a user's browser when they attempt to load it.



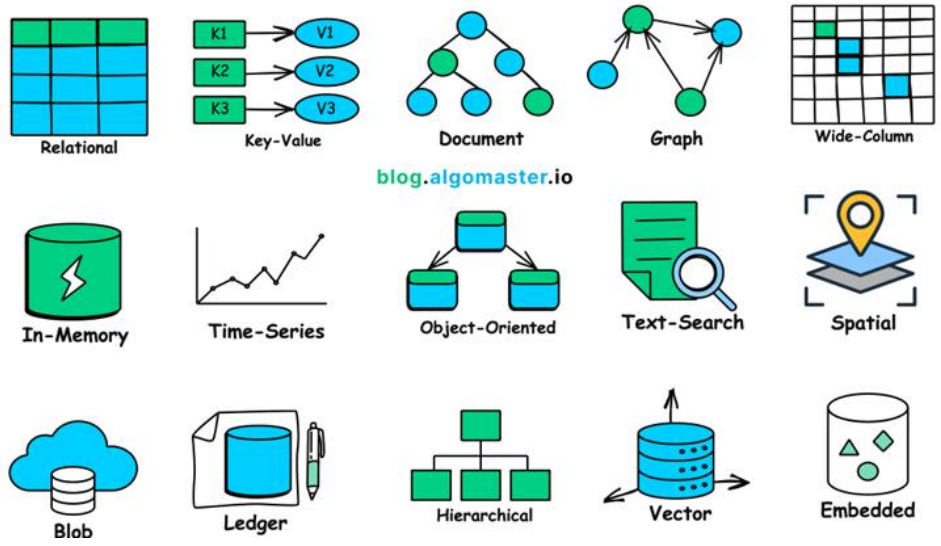
[What is a web server? - Learn web development | MDN]

Databases

A database is an organized collection of data stored electronically. It allows users and applications to easily access, update, and manipulate information.

This data contains text, numbers, images, videos and more. Databases are managed using specialized software known as a **Database Management System (DBMS)i.e** MySQL, PostgreSQL, Microsoft SQL Server, and Oracle Database. which facilitates the storage, retrieval, and manipulation of data.

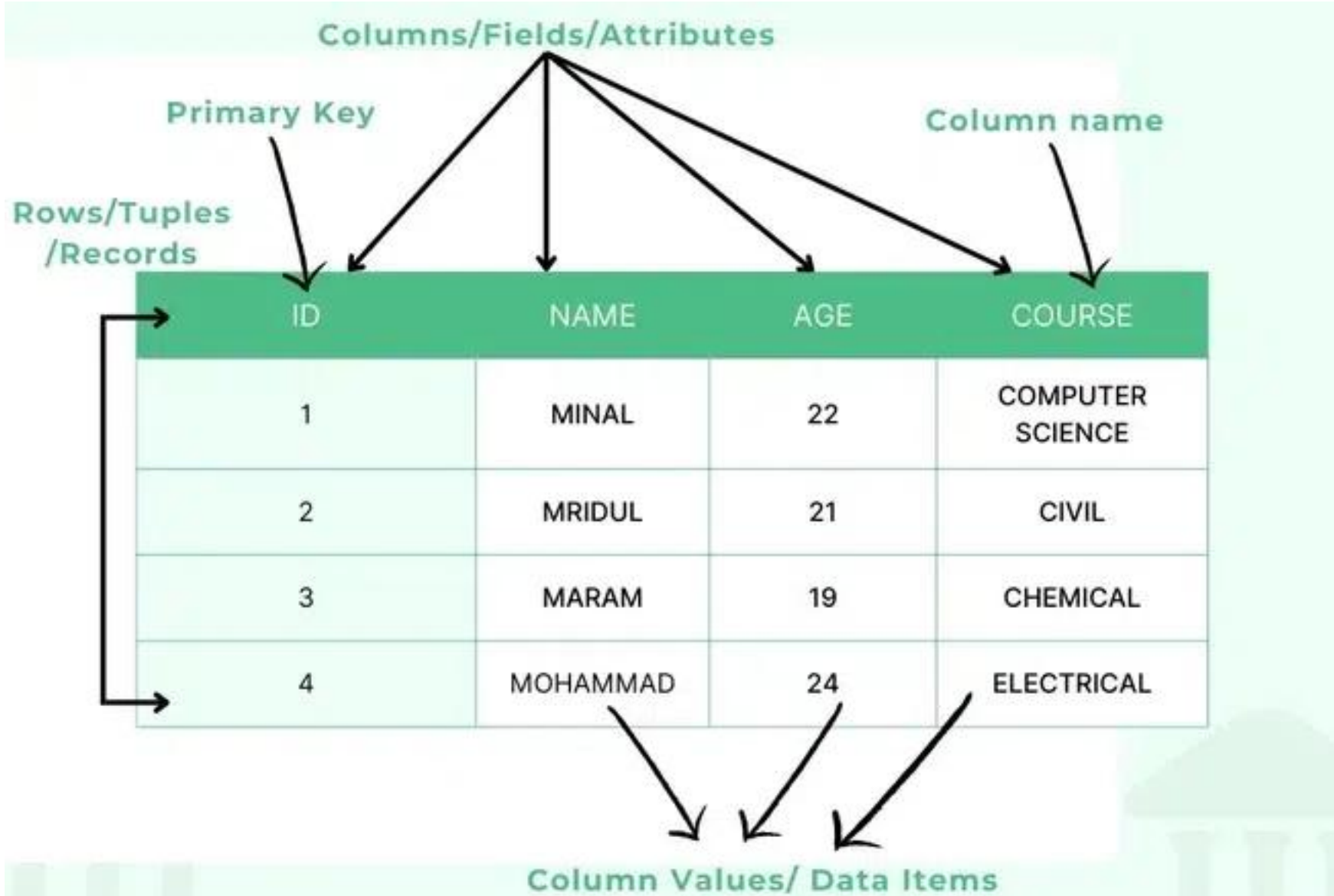
- What is Database? - GeeksforGeeks
- Course: Database Fundamentals* | Mahara-Tech



Databases

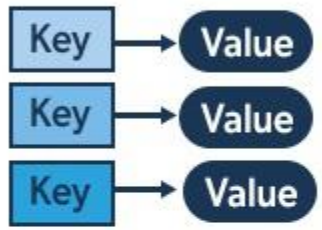
- Relational DBMS (RDBMS): Data is organized into tables with rows and columns, and relationships are established between tables. Examples include MySQL, PostgreSQL, Microsoft SQL Server, and Oracle Database.

- NoSQL DBMS: These systems are designed for handling unstructured or semi-structured data and offer flexibility and scalability. Examples include MongoDB, Cassandra, and Redis.

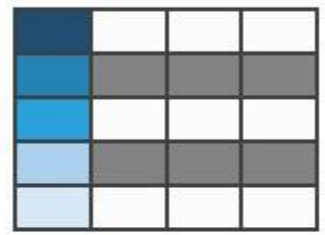

Columns/Fields/Attributes
Primary Key
Column name
Rows/Tuples
/Records
ID
NAME
AGE
COURSE
1
MINAL
22
COMPUTER SCIENCE
2
MRIDUL
21
CIVIL
3
MARAM
19
CHEMICAL
4
MOHAMMAD
24
ELECTRICAL
Column Values/ Data Items

NoSQL

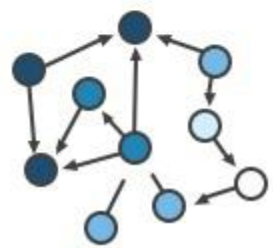
Key-Value



Column-Family



Graph



Document

Backend Roles

- Authentication: The process of verifying a user's identity (e.g., login with email & password).
- Authorization: The process of determining what a user is allowed to do (e.g., access admin panel).Database design & management
- Database Design & Management: Organizing data into structured formats (tables or documents) and managing how it's stored, accessed, and updated in a database system.
- API creation: Building interfaces (usually REST APIs) that allow different systems (like frontend & backend) to communicate using standard HTTP methods.

Backend Roles

- Security: Protecting the application and data from unauthorized access or attacks.
- Scalability: The system’s ability to grow and handle increasing loads efficiently.
- Performance: How fast and efficiently the system responds to users or requests.

Frontend roles

1. Usability & Accessibility: Ensure the app is easy to use and accessible to all users, including those with disabilities.
2. User Interface (UI): Design and develop the layout, buttons, colors, and visual elements.
3. User Experience (UX): Focus on smooth, intuitive interactions and navigation.
4. API Integration: Fetch and display data from the backend.
5. Form Validation: Ensure input fields are correctly filled and prevent invalid submissions.

Frontend Platforms

Web: Traditional websites accessed via browsers.

Mobile:

1. Native: Built specifically for iOS or Android (e.g., Swift, Kotlin).
2. Cross-platform: Shared codebase for multiple platforms (e.g., React Native, Flutter).

API

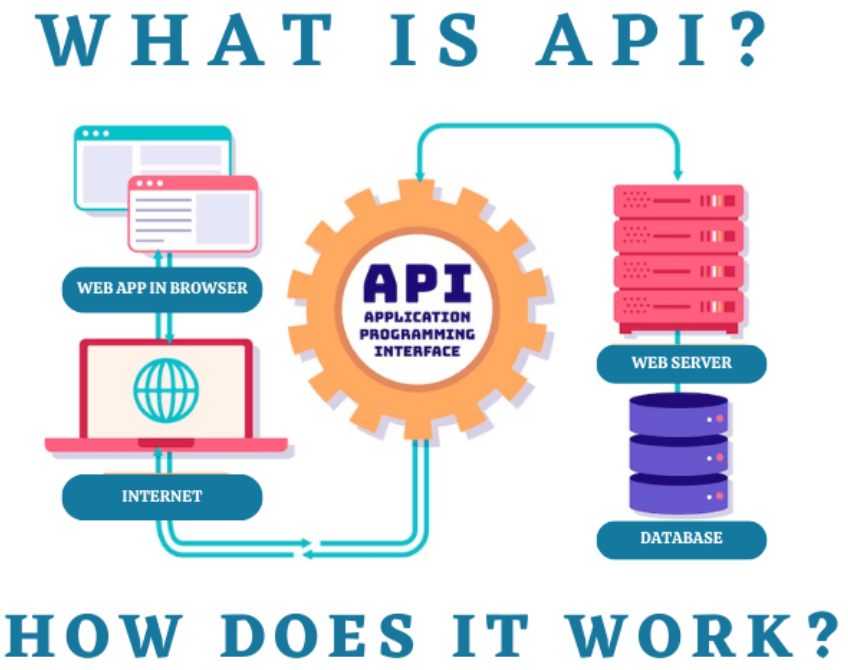
API (Application Programming Interface) is a set of rules that allows different software applications to communicate with each other.

Why do we use it?

- Connect frontend with backend
- Access data or services from servers
- Build scalable and reusable systems

[What is an API? - Application Programming Interfaces Explained – AWS]

[JSONPlaceholder - Free Fake REST API]



HTTP

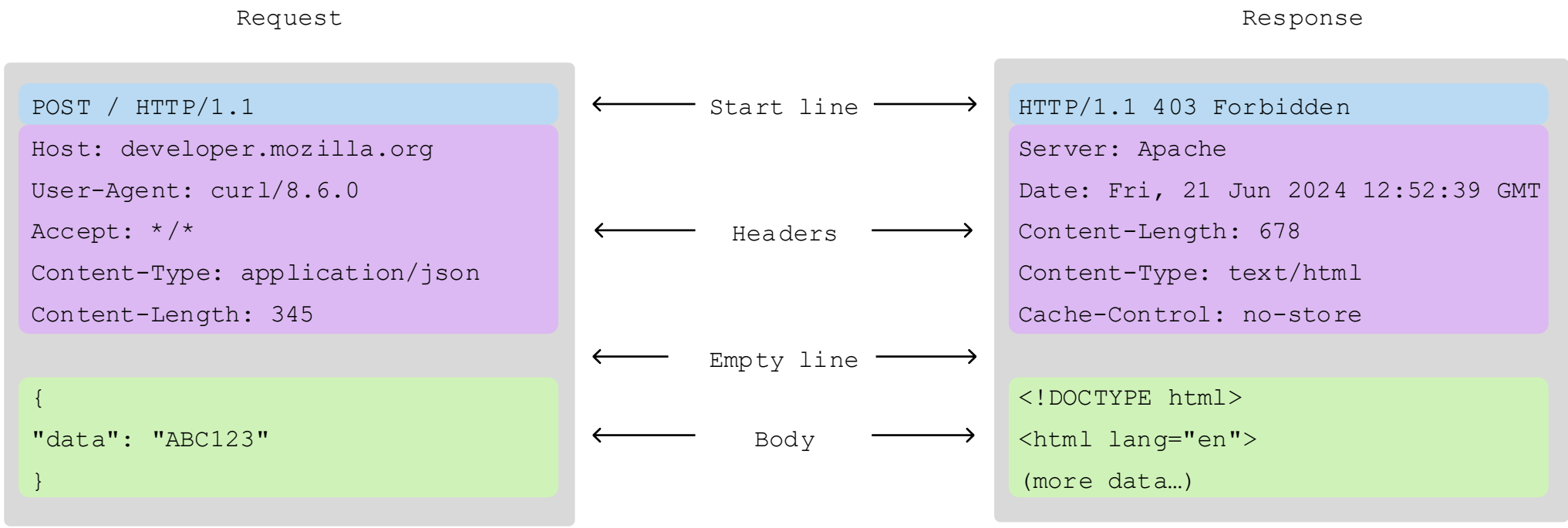
- HTTP (Hypertext Transfer Protocol) is the communication protocol used between your browser (client) and a server on the internet.
- An HTTP request is a message sent from a client (browser, phone, API client) to a server asking for a resource or performing an action.
  It includes a method (GET, POST, etc.), a path (URL), headers (metadata), and sometimes a body (data).
- An HTTP response is the message a server sends back to the client after receiving an HTTP request.
  It tells the client whether the request succeeded and returns the requested data.
- The response contains:

Status line: e.g., 200 OK, 404 Not Found

Headers: metadata (content type, cookies, length, etc.)

Body: the actual data (HTML, JSON, image, etc.)

What Is an HTTP Request?


Request
Response
POST / HTTP/1.1
Host: developer.mozilla.org
User-Agent: curl/8.6.0
Accept: */*
Content-Type: application/json
Content-Length: 345
{
"data": "ABC123"
}
Start line
Headers
Empty line
Body
HTTP/1.1 403 Forbidden
Server: Apache
Date: Fri, 21 Jun 2024 12:52:39 GMT
Content-Length: 678
Content-Type: text/html
Cache-Control: no-store
<!DOCTYPE html>
<html lang="en">
(more data…)

RESTful APIs

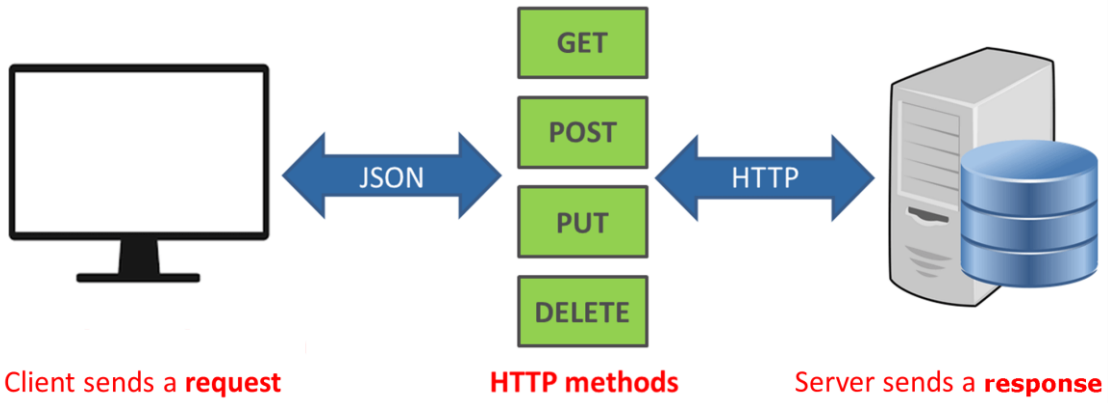
REST (Representational State Transfer) is a common way to structure APIs using HTTP methods.

Basic HTTP Methods:

- GET – Retrieve data
- POST – Send new data
- PUT – Update existing data
- DELETE – Remove data

Example (JSON format):

- GET /users → Get list of users
- POST /users → Add a new user
- GET /users/1 → Get user with ID 1
- DELETE /users/1 → Delete user with ID 1

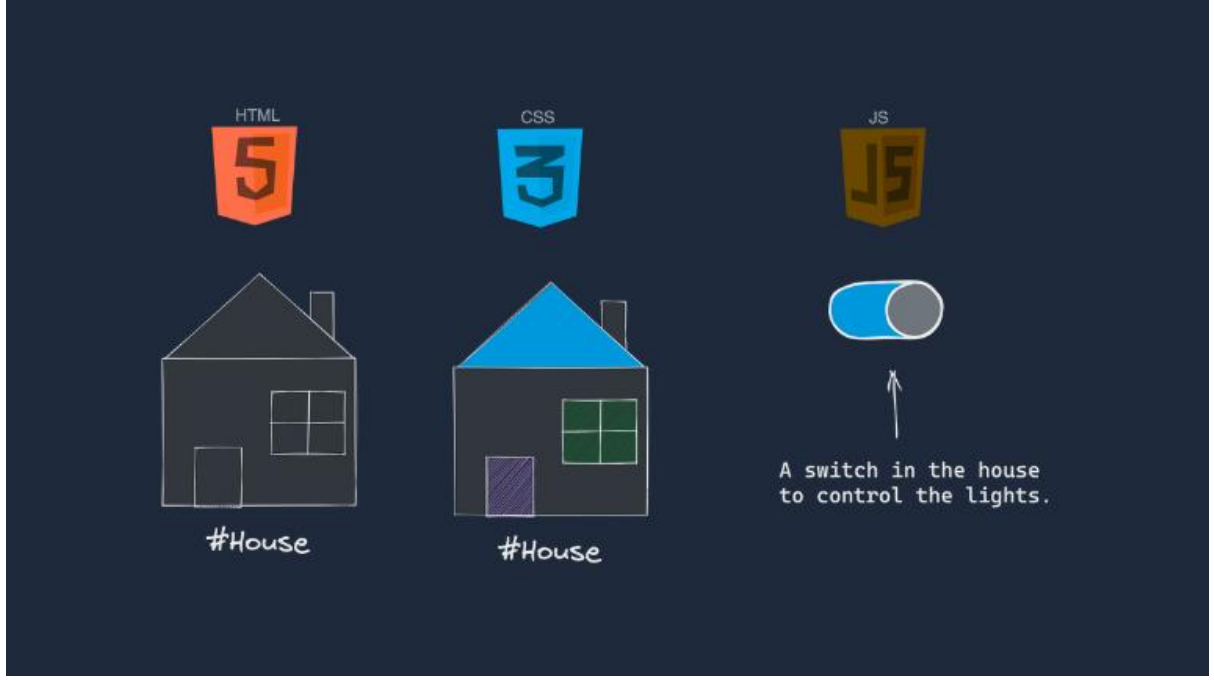


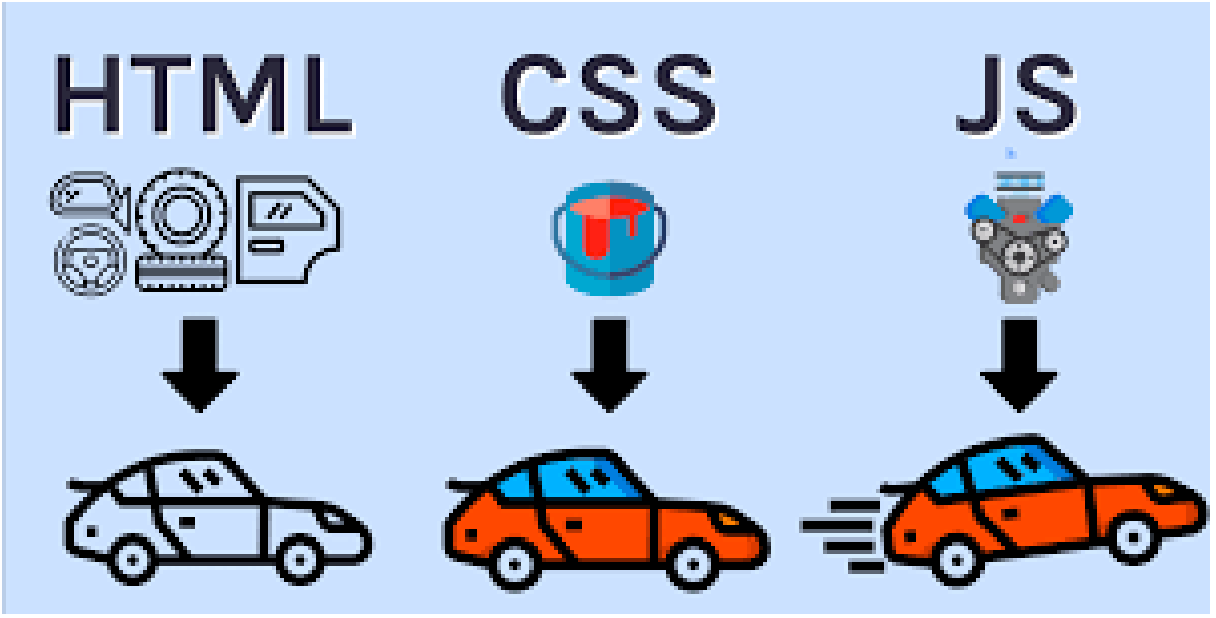
Web Browser

- The web browser is an application software used to explore the World Wide Web (WWW). It acts as a platform that allows users to access information from the Internet by serving as an interface between the client (user) and the server. The browser sends requests to servers for web documents and services, then renders the received HTML content, including text, images, links, styles, and scripts.
- Simply being connected to the Internet isn't enough; a browser is essential to search and view content online. Popular web browsers include Google Chrome, Microsoft Edge, Mozilla Firefox, and Safari.

Course Overview

- Learn how to build responsive, interactive, and accessible web interfaces using:
- HTML: Structure your web content using semantic markup.
- CSS: Style and layout your content with modern techniques (Flexbox, Grid).
- JavaScript: Add interactivity and dynamic behavior to your pages.
- Bootstrap: Quickly create beautiful, responsive UIs using the most popular CSS framework.
- Git & GitHub: Version control your code, collaborate with others, and deploy your work.
- Supabase: Add backend features (authentication, database, storage) using this open-source Firebase alternative.


HTML
CSS
JS
#House
#House
A switch in the house
to control the lights.


HTML
CSS
JS

Course installation

Resources

- Responsive Web Design | freeCodeCamp.org
- JavaScript Algorithms and Data Structures | freeCodeCamp.org
- Bootstrap · The most popular HTML, CSS, and JS library in the world.
- MDN Web Docs
- W3Schools Online Web Tutorials

Course Material

Repo:ahmedsamir45/Basics-Frontend-Course: Explain HTML CSS JS and Bootstrap

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