# Web development

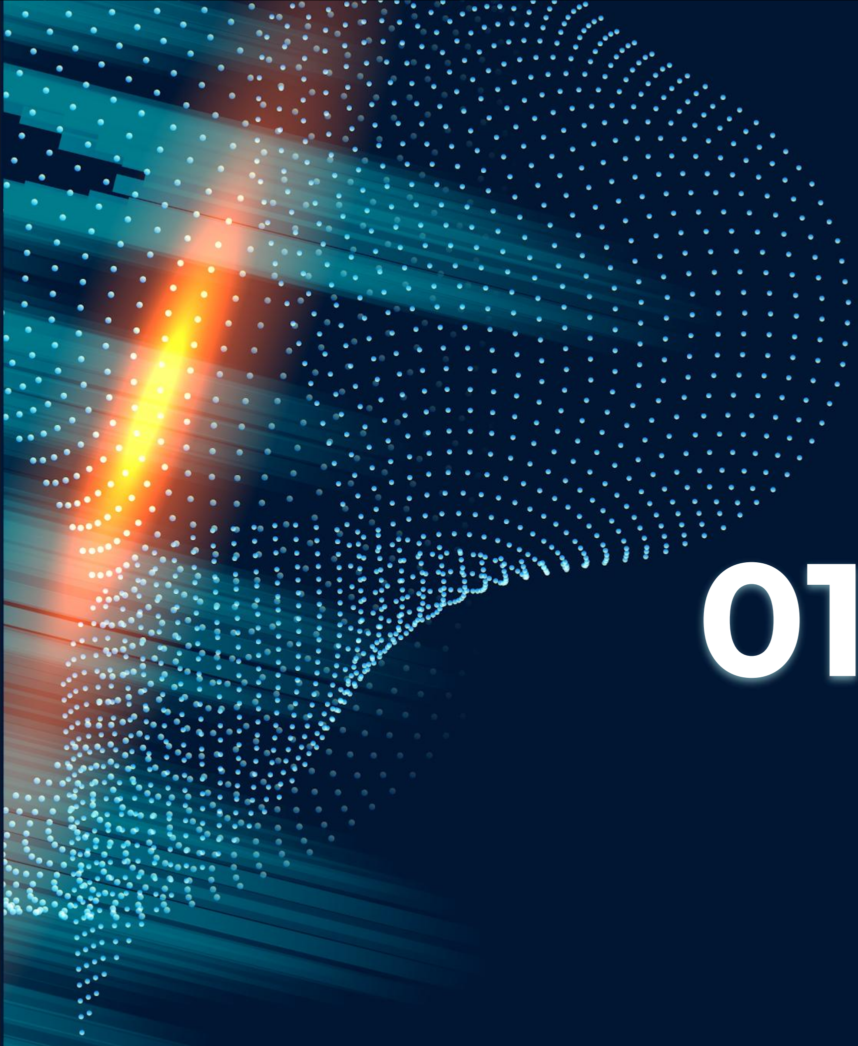
## Day 1

By Rajdeep Karmakar

# Today’s Topics:

There’s what you’ll find in this Slidesgo template:

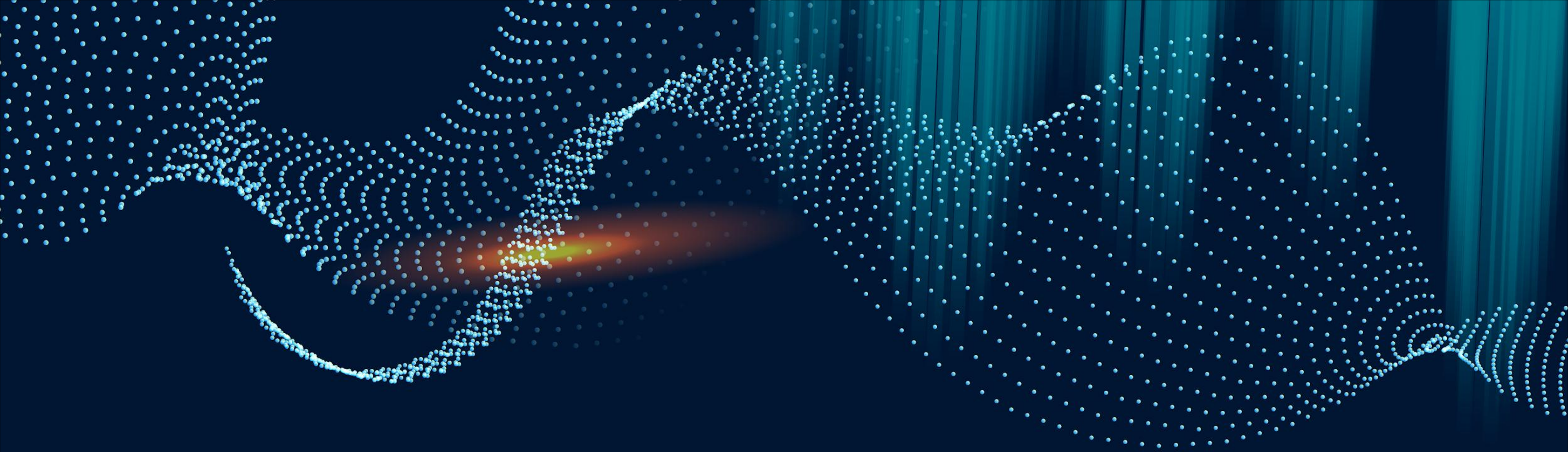
1. Introduction
2. How website works.
3. Github account creation
4. replit account creation.
5. VS code installation



# 01 Intro

The so called “INTRO” from me! ☺

“Every great website starts with a single line of code, and today marks the beginning of your journey to build something incredible.”



# 02 How website works

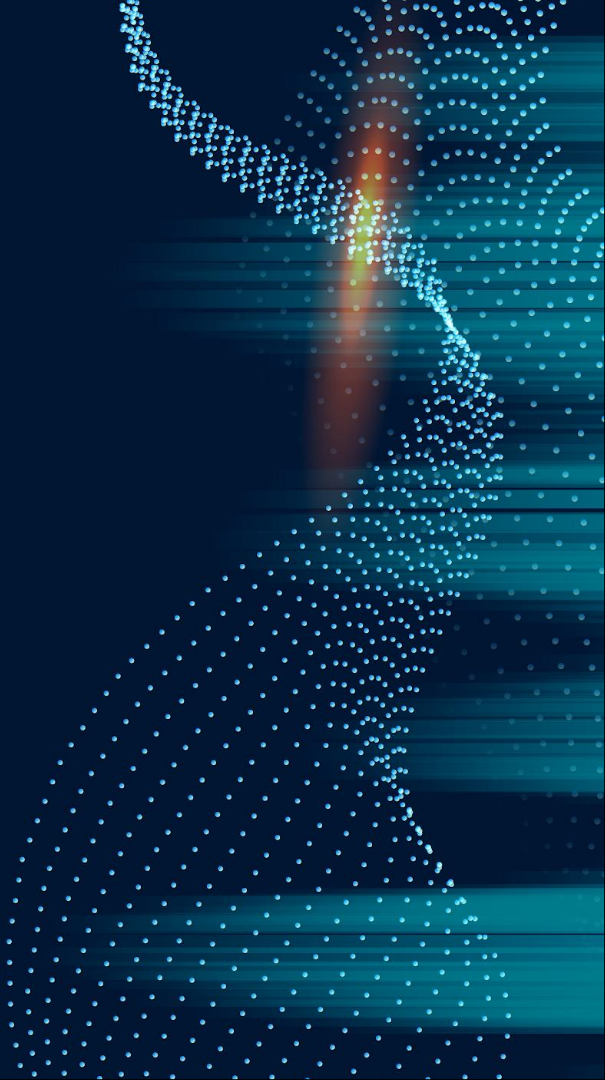
# How Website works?!

**Topics covered**: Frontend, backend, database, DNS, IP Address

## Website:

A website is a collection of related web pages that are hosted on a server and accessible through the internet. Each website has a unique domain name (like example.com) that users can visit using a web browser (Chrome, Firefox, etc.).

When a user types a website URL in the browser, it sends a request to the web server hosting the website. The server processes the request and sends back the required web page.



# We have to understand some parts of website

## Frontend

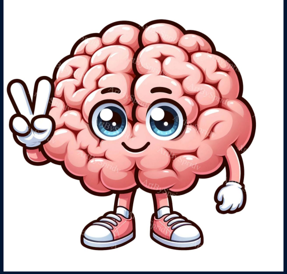
The frontend is the part of a website that the user interacts with. It includes everything you see and interact with in the browser—text, images, buttons, forms, etc.

## Backend

The backend is the part of a website that runs on the server and handles all the logic, database interactions, and operations not visible to the user.

## Database

A database is a structured collection of data that websites or applications use to store, manage, and retrieve information efficiently.

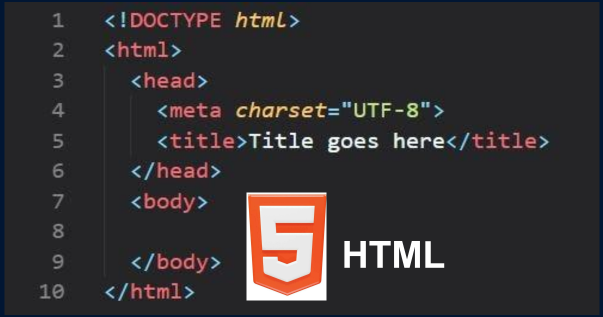


# Frontend:

## Technologies used in the frontend:

**HTML**: The structure and content of a webpage (e.g., text, images, headings).
**CSS**: The design and layout (e.g., colors, fonts, positioning).
**JavaScript**: Adds interactivity (e.g., animations, form validations).
How it Works:

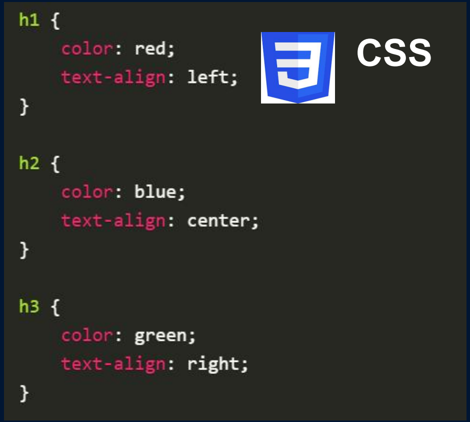
1) The browser sends a request to the web server.
2) The server responds with an HTML file (sometimes with CSS and JavaScript).
3) The browser interprets and renders the webpage for the user.



```html
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>Title goes here</title>
  </head>
  <body>

  </body>
</html>
```

HTML



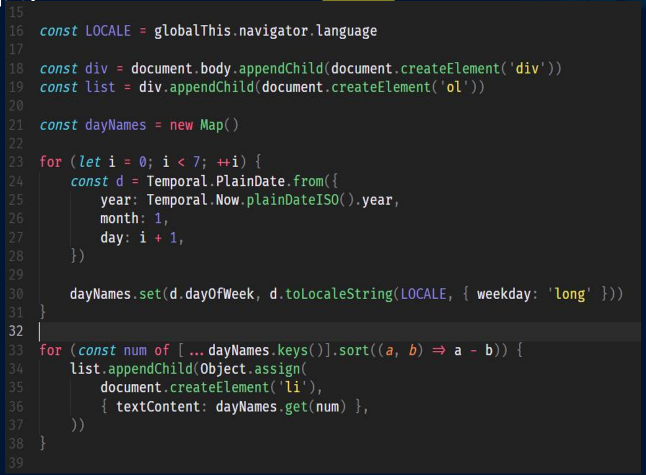
```css
h1 {
    color: red;
    text-align: left;
}

h2 {
    color: blue;
    text-align: center;
}

h3 {
    color: green;
    text-align: right;
}
```

CSS

JS Javascript



```javascript

const LOCALE = globalThis.navigator.language

const div = document.body.appendChild(document.createElement('div'))
const list = div.appendChild(document.createElement('ol'))

const dayNames = new Map()

for (let i = 0; i < 7; ++i) {
    const d = Temporal.PlainDate.from({
        year: Temporal.Now.plainDateISO().year,
        month: 1,
        day: i + 1,
    })

    dayNames.set(d.dayOfWeek, d.toLocaleString(LOCALE, { weekday: 'long' }))
}

for (const num of [...dayNames.keys()].sort((a, b) => a - b)) {
    list.appendChild(Object.assign(
        document.createElement('li'),
        { textContent: dayNames.get(num) },
    ))
}

```

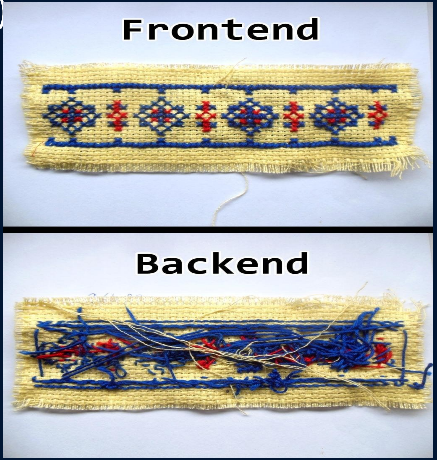
# Backend:

Technologies used in the frontend:

**Server-Side Languages:** (e.g., Node.js, Python, PHP, Ruby) process requests, handle logic, and interact with databases.

**Database:** Stores the data that the website needs (e.g., user profiles, blog posts, product listings).How it Works:

1) When a user submits a form (e.g., a login form), the browser sends the data to the server.
2) The server processes the data, interacts with the database, and returns the result (e.g., a success message or an error)



Java
Python
PHP
NodeJS
Ruby
C#
Kotlin
C++
Pearl
SQL
Golang
ASP.NET Core
Django

## Database:

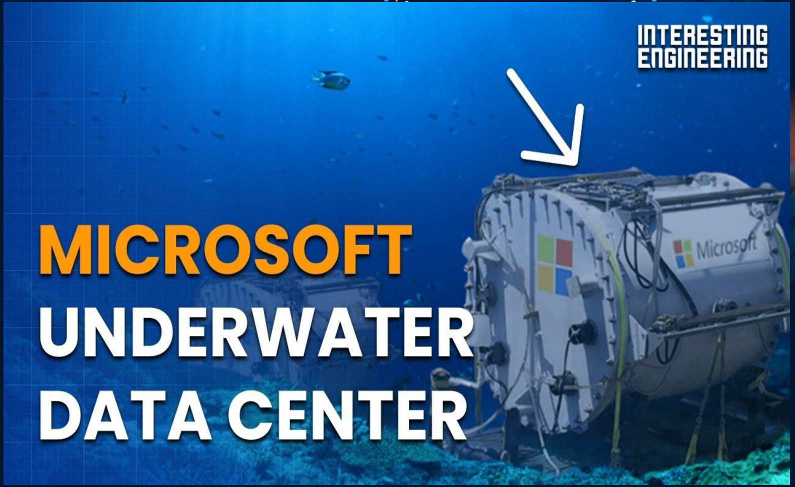
Technologies used in the frontend:

**SQL (Structured Query Language)** databases like MySQL, PostgreSQL.
**NoSQL databases** like MongoDB (used for large sets of unstructured data).

### How it Works:

Backend applications communicate with the database to fetch or store information. For instance, when you log in, the backend checks your credentials against the stored data in the database.

Database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UNDERWATER
DATA CENTER
Microsoft

# DNS (Domain Name System):

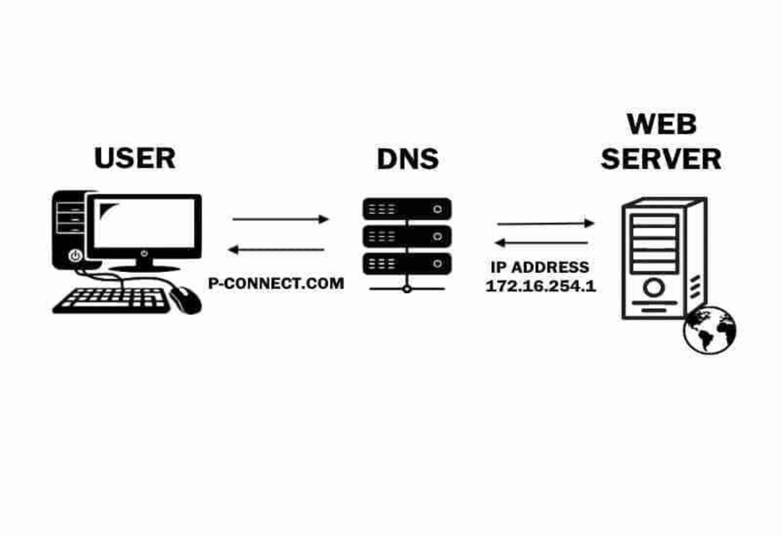
## What is DNS?

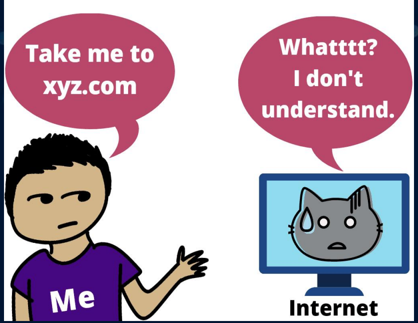
**DNS (Domain Name System)** is like the phonebook of the internet. It translates human-readable domain names (like example.com) into machine-readable IP addresses (like 192.168.1.1) that computers use to identify each other on the network.

## How DNS Works:

1) You enter a domain (like example.com) in the browser.
2) The browser checks its local DNS cache to see if it already knows the IP address.
3) If not, it sends a request to a DNS resolver (usually provided by your ISP).
4) The resolver checks several DNS servers:
   **Root DNS servers:** Directs the request to the correct top-level domain (TLD) server(e.g., .com, .org).
   **TLD DNS servers:** Provide the address of the DNS server responsible for the specific domain.
   **Authoritative DNS servers:** Hold the actual IP address of the domain you requested.
5) The resolver returns the IP address to the browser.
6) The browser uses this IP address to connect to the web server hosting the website.

# DNS (Domain Name System):





Link: How DNS works

# IP(Internet Protocol) Address:

**What is an IP Address?**

**IP (Internet Protocol)** Address is a unique address assigned to every device connected to the internet, allowing computers to communicate with each other.

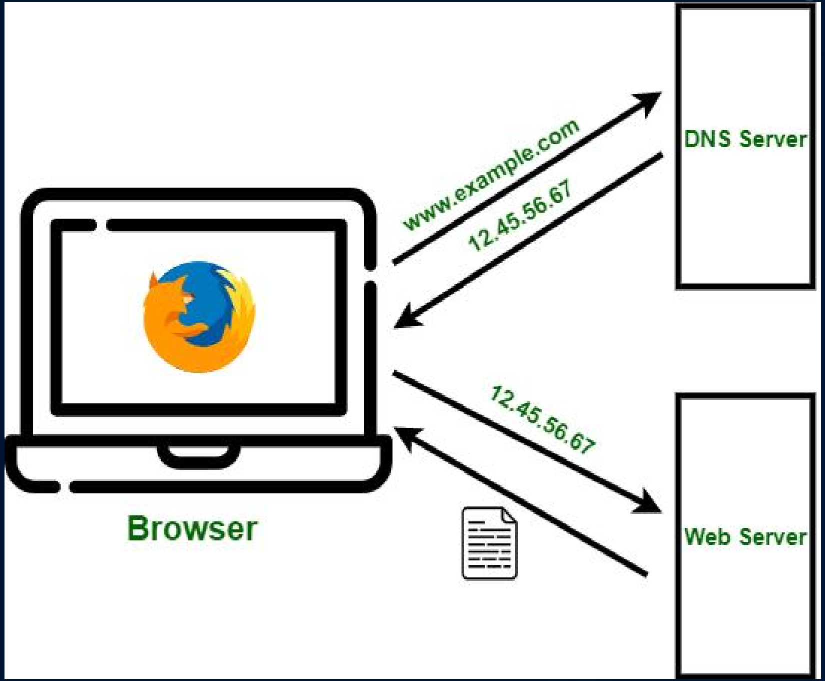
Example: `192.168.1.1` or for IPv6: `2001:0db8:85a3:0000:0000:8a2e:0370:7334`.

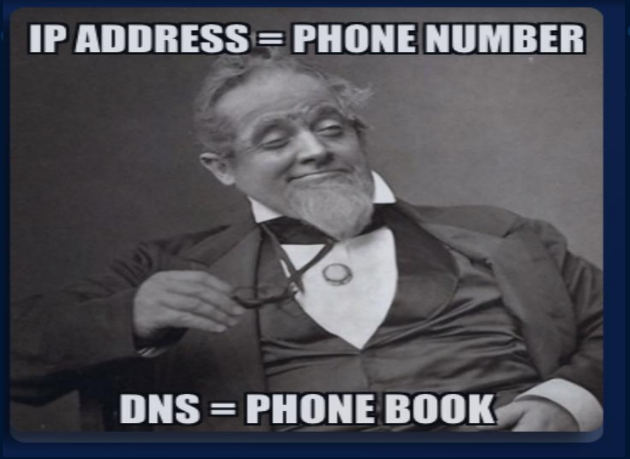
**Relationship Between DNS and IP Address:**

DNS acts as a translator between domain names (which are easy for humans to remember) and IP addresses (which computers use to communicate).

Instead of memorizing a long string of numbers (the IP address), we can use domain names, and DNS resolves them to the appropriate IP addresses.

# IP Address:


www.example.com
12.45.56.67
DNS Server
Browser
12.45.56.67
Web Server


IP ADDRESS = PHONE NUMBER
DNS = PHONE BOOK

The hotel's free WiFi is really fast
Your IP address starts with 172.16.42.x

## Interesting Fact:

# Your IP = My IP

When connected to the same hostel wifi
or same internet source

# Where Domains Are Stored & How They Fetch:

Where Domains Are Stored & How They Fetch:

**Where Domains Are Stored:**

1) Domains are managed by domain registrars (like GoDaddy, Namecheap). When you purchase a domain, it's stored in a global database managed by the **ICANN (Internet Corporation for Assigned Names and Numbers).**

**2**) Domains are linked to authoritative DNS servers that hold the IP address and related DNS records for the domain.

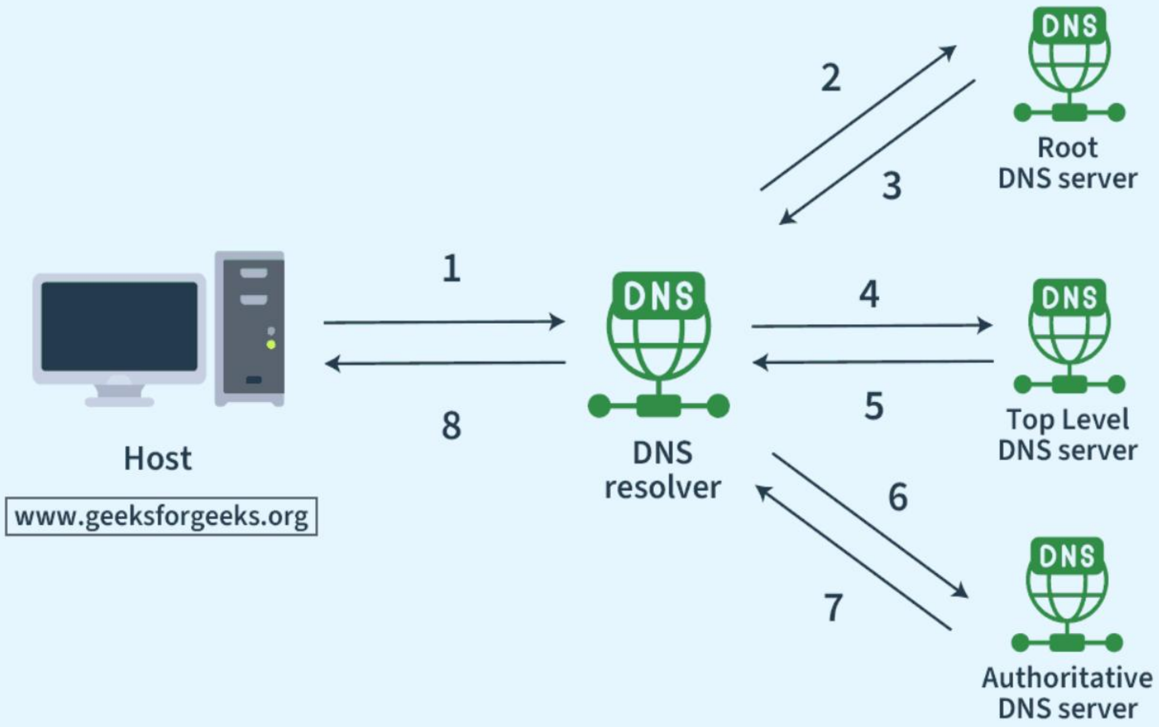
**How Domains Are Fetched:**

1) When you type in a domain name, your browser queries DNS to find out which IP address the domain is associated with.

2) The DNS process involves checking multiple DNS servers (root, TLD, authoritative) to find the correct IP address.

3) Once the IP address is returned, the browser uses it to send a request to the web server.

# Working of DNS



# Summary of how the web works:

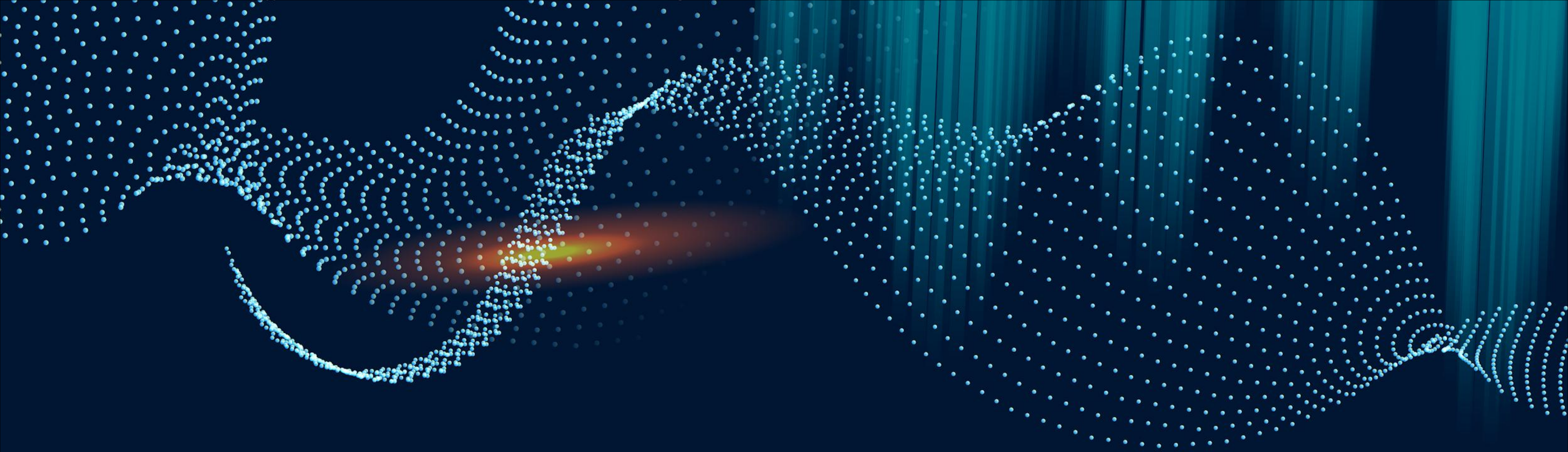
**Frontend**: The part users interact with (HTML, CSS, JavaScript) displayed by the browser.

**Backend:** Handles the logic, data processing, and connects to the database.

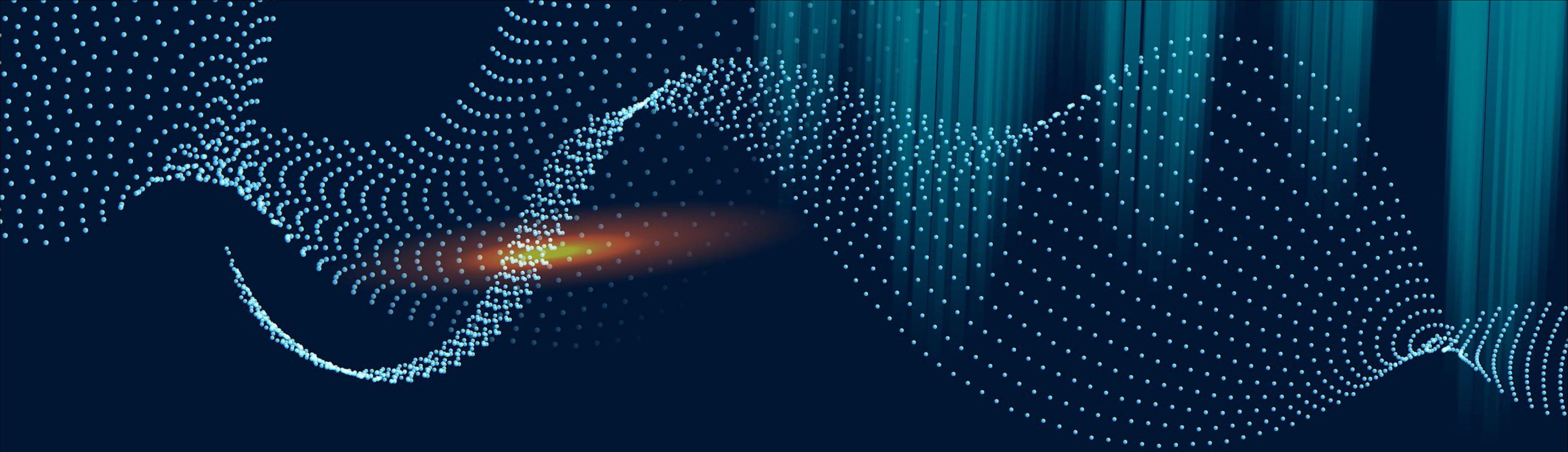
**Database:** Stores and retrieves data for the website (like user information).

**DNS**: Translates domain names into IP addresses, allowing browsers to find the correct web server.

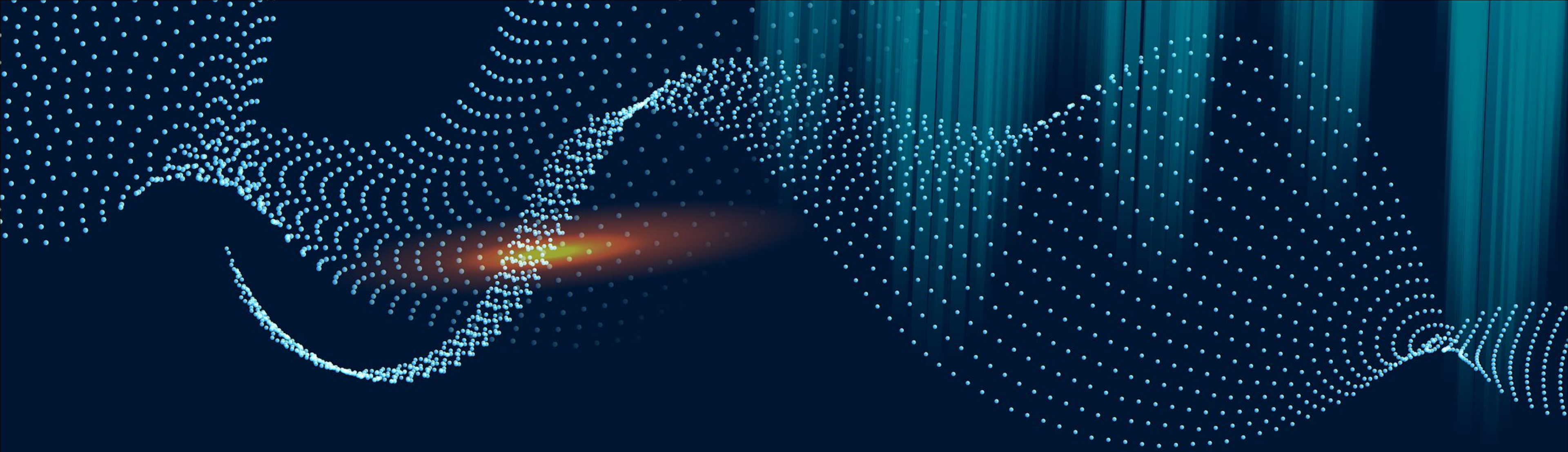
**IP Address:** The unique numerical label assigned to each device on the internet, used for identifying the server.



# 03 Github account creation



# 04 | replit account creation.



# 05 VS code installation

# Thank You!