

# Full Stack with React & Node JS

## (MERN STACK)

### Full Stack Development 😊 :

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1. It is a Process of Developing Web Application
2. People Who can Develop Web Application those are called Full Stack Engineer or Developer

### Web Application 😊

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1. It is one of the Software Application
2. It is not installed on User or Client System
3. It is accessible through Browser via Internet
  - a. Examples : Instagram, Facebook, gmail

### Website 🤔

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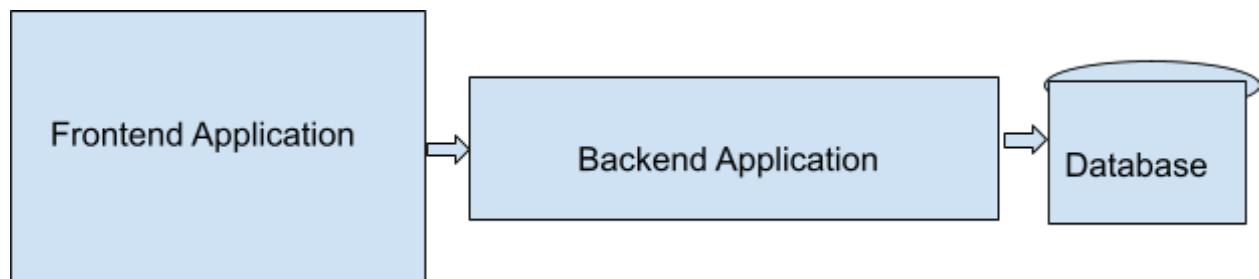
Website is a location or path or address of the Web Application on the Internet.

# High Level Architecture of Web Application

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Web Application are further divided into 3 sub application and those are

1. Frontend Application
2. Backend Application
3. Data base



## To Develop Frontend Application 👍

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1. HTML
2. CSS
3. JAVA SCRIPT
4. BOOTSTRAP
5. REACT JS

## To Develop Backend Application 👍

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1. JAVA SCRIPT
2. NODE JS
3. EXPRESS JS
4. JWT

## To Create Database Application 👍

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1. JAVA SCRIPT
2. MONGODB DATABASE

## Frontend Application 😊

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## Purpose of Frontend Development

Frontend development is all about creating the part of a website or app that users see and interact with. Its main purpose is to ensure a smooth, visually appealing, and user-friendly experience.

## Key Purposes:

- ✓ **1. User Experience (UX)** – Making sure the website is easy to use, navigate, and interact with.
- ✓ **2. Visual Design (UI)** – Creating a beautiful and attractive look using colors, fonts, and layouts.
- ✓ **3. Responsiveness** – Ensuring the website works on different devices (PCs, tablets, smartphones).
- ✓ **4. Interactivity** – Adding features like buttons, forms, animations, and pop-ups to engage users.
- ✓ **5. Performance Optimization** – Making the website load fast and run smoothly.
- ✓ **6. Accessibility** – Ensuring everyone, including people with disabilities, can use the site easily.
- ✓ **7. Connecting with Backend** – Fetching and displaying data (like login details, product listings, etc.) from the backend.

## In Simple Terms:

Front End development's purpose is to make websites look good, function well, and provide a great user experience! 🚀

## Backend Development 👍

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### Purpose of Backend Development

Backend development is responsible for handling the behind-the-scenes logic, database management, and server operations that make a website or app work.

### Key Purposes:

- ✅ **1. Data Storage & Management** - Stores and organizes user data (e.g., accounts, orders, messages) in databases like MySQL, PostgreSQL, or MongoDB.
- ✅ **2. Processing User Requests** - Handles actions like logging in, submitting forms, or making purchases.

✓ **3. Authentication & Security** – Manages user logins, passwords, and security measures like encryption.

✓ **4. Connecting Frontend & Database** – Acts as a bridge between the user interface (frontend) and the database, sending and receiving data.

✓ **5. Business Logic** – Implements rules for how the system should function, like calculating prices, processing payments, or validating user input.

✓ **6. Performance Optimization** – Ensures the website or app runs efficiently and can handle multiple users at once.

✓ **7. API Development** – Creates APIs (Application Programming Interfaces) that allow different systems (like mobile apps and websites) to communicate with each other.

## In Simple Terms:

Backend development is like the kitchen in a restaurant—it prepares and processes everything so the frontend (dining area) can serve users properly. It ensures websites and apps function correctly, securely, and efficiently behind the scenes! 🚀

# Database 🙌

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## Purpose of a Database

A database is used to store, manage, and retrieve data in an organized way. It acts as the memory of an application, ensuring that data is safely stored and can be accessed when needed.

## Key Purposes of a Database:

- ✅ **1. Data Storage** - Saves important information like user accounts, product details, orders, and messages.
- ✅ **2. Data Retrieval** - Allows apps and websites to quickly find and display the necessary information.
- ✅ **3. Data Organization** - Structures data properly so it can be easily managed and updated.
- ✅ **4. Data Security** - Protects sensitive data with encryption, access controls, and backups.
- ✅ **5. Handling Large Data** - Manages huge amounts of data efficiently without slowing down the application.

✅ **6. Multi-User Access** – Allows multiple users to access and modify data at the same time without conflicts.

✅ **7. Backup & Recovery** – Ensures data is not lost in case of system failures or crashes.

### **In Simple Terms:**

A database is like a digital filing system that stores and organizes data, making sure it is safe, easily accessible, and well-structured for websites, apps, and businesses! 🚀