Royal University of Bhutan

Unit I:
Introduction to Web Application Development (WAD)

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Learning Outcomes

In this session, you will learn about:

- Technology Stack
- Full Stack Development
- Web Application Development Process

Web Application

- The application you build should be fast and provide an interactive browsing experience to users.
- If users seek more information, the application must be able to quickly fetch and organize the information in an easy-to-view manner.
- It should scale well if your application grows popular, without adding any performance overhead to the application ecosystem.

Web Application

For best web application, you must have the right technologies and infrastructure that:

- are cost-effective.
- give a seamless frontend experience to users.
- provide application developers with a fast and smooth development experience.
- scale up and out when required.

The set of technologies that you choose to use to build an end-to-end web application, mobile application, IoT, or similar application forms the **Technology Stack**.

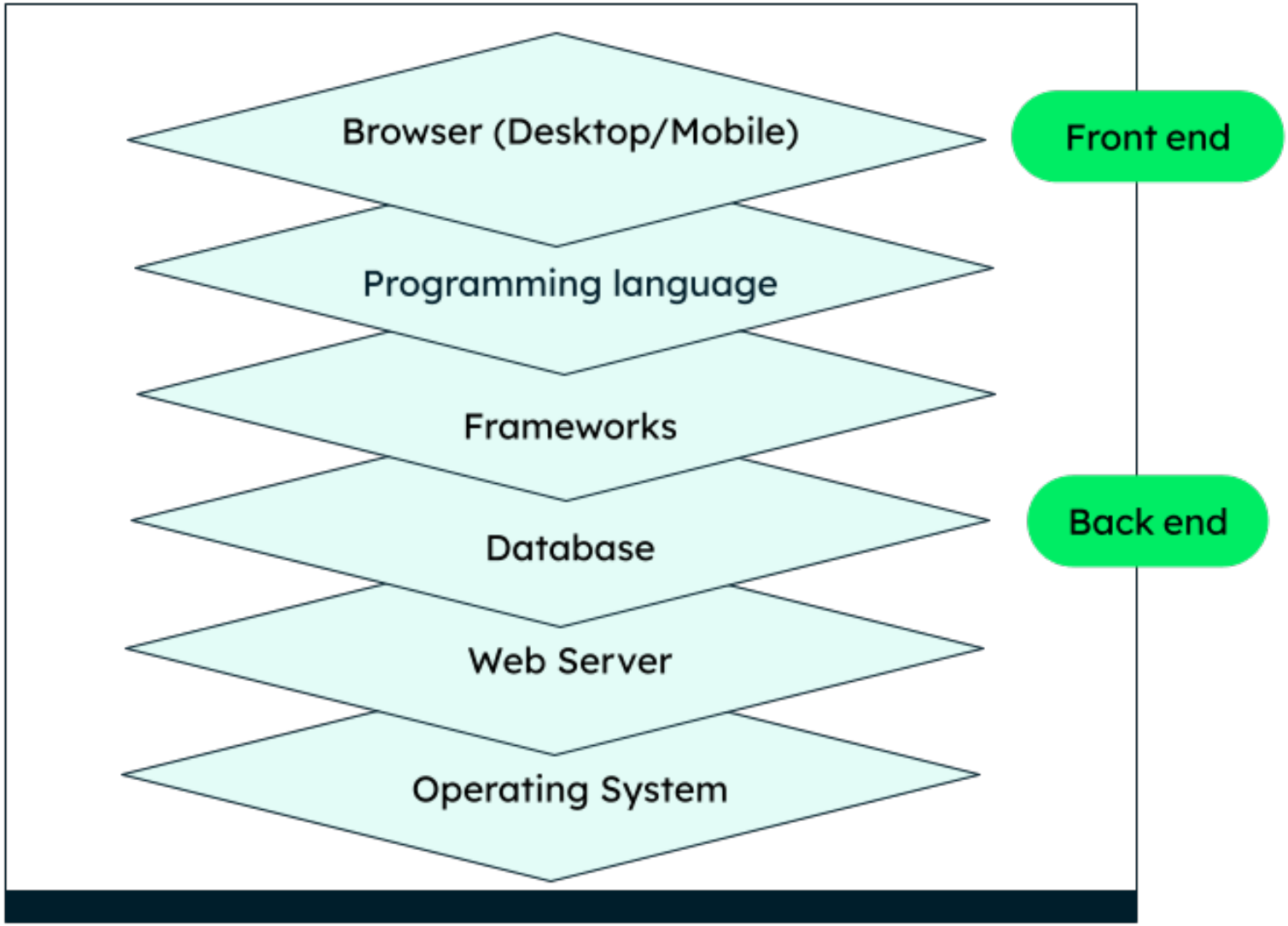
What is a Technology Stack?

- A technology stack is a set of technologies that are stacked together to build any application.
- Popularly known as a technology infrastructure or solutions stack, technology stack has become essential for building easy-to-maintain, scalable web applications.
- Technology stack determines the type of applications you can build, the level of customizations you can perform, and the resources you need to develop your application.

Tech Stack

- Example for Web Tech Stack

- Most tech stacks are a combination of frontend and backend technologies like JavaScript (user interface), Python (programming language), MongoDB (database), and Apache (server).

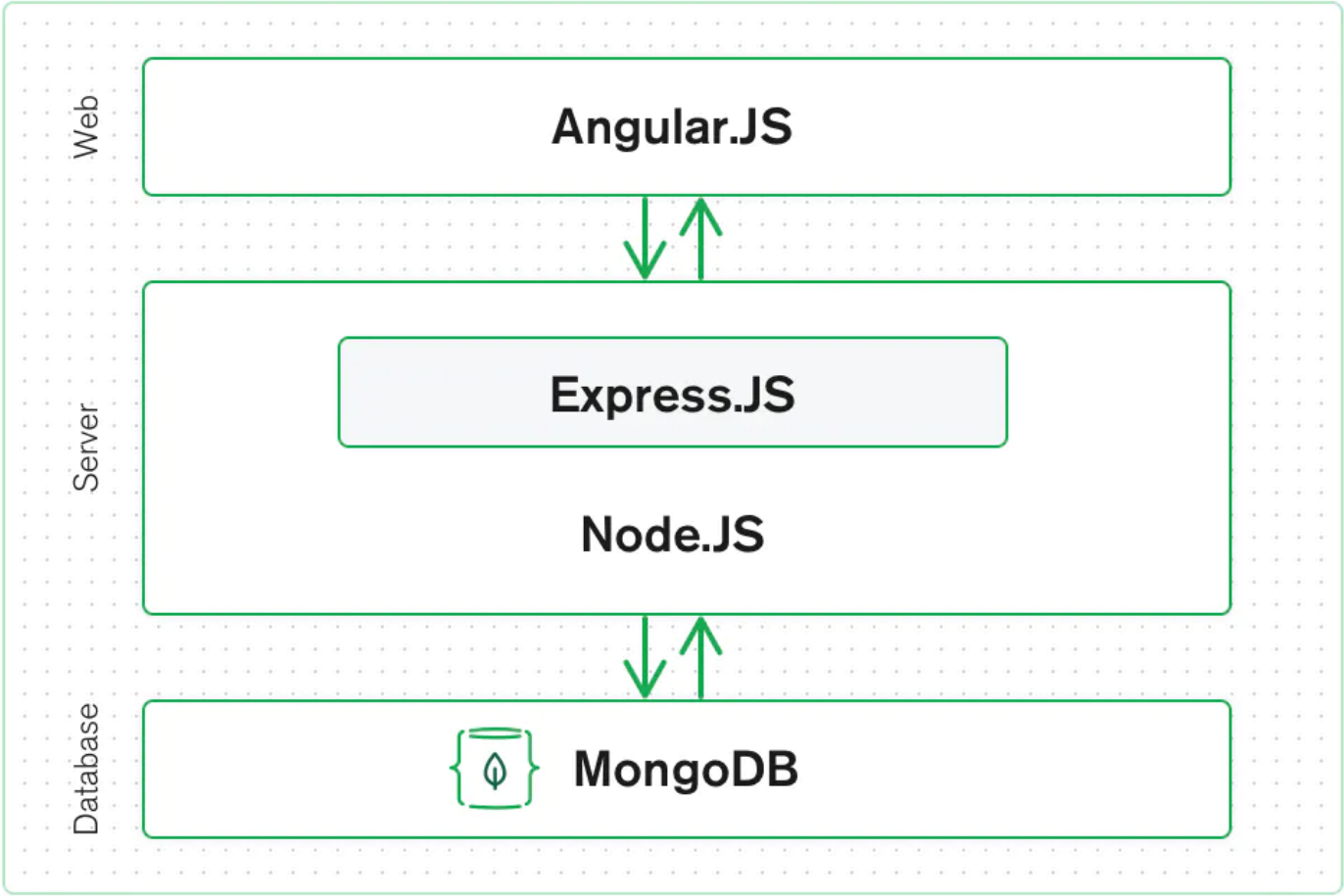


Modern Tech Stack

- A modern tech stack has many more components, because of the increase in the number of devices from which users can access applications and the huge volumes of events and data processing.
- It might include tools for containerization, performance monitoring, business intelligence, event processing, data lakes, cloud services, microservices, and analytics.
- You should choose the technology stack you want to use based on your project needs and other factors.

MEAN Stack: Example of Tech Stack

- The MEAN stack is a JavaScript-based framework for developing web applications.
  - **M**ongoDB - document database
  - **E**xpress(.js) - Node.js web framework
  - **A**ngular(.js) - a client-side JavaScript framework
  - **N**ode(.js) - the premier JavaScript web server



Refer: https://www.mongodb.com/mean-stack

Example of Tech Stack

- What types of technologies can be used for your project later?
    1. React
    2. Express
    3. Prisma
    4. SQL
    5. Any other?

Full Stack Developer

- A full stack web developer is a person who can develop both client and server software.
- He/she also knows how to:
  - Program a **browser** (like using JavaScript, jQuery, Angular, or Vue)
  - Program a **server** (like using PHP, ASP, Python, or Node)
  - Program a **database** (like using SQL, SQLite, or MongoDB)

Popular Stacks

- **LAMP** stack: JavaScript - Linux - Apache - MySQL - PHP
- **LEMP** stack: JavaScript - Linux - Nginx - MySQL - PHP
- **MEAN** stack: JavaScript - MongoDB - Express - AngularJS - Node.js
- **Django** stack: JavaScript - Python - Django - MySQL
- **Ruby** on Rails: JavaScript - Ruby - SQLite - Rails

Full Stack

Advantage	Disadvantage
• You can master all the techniques involved in a development project • You can make a prototype very rapidly • You can provide help to all the team members • You can reduce the cost of the project • You can reduce the time used for team communication • You can switch between front and back end development based on requirements • You can better understand all aspects of new and upcoming technologies	• The solution chosen can be wrong for the project • The solution chosen can be dependent on developer skills • The solution can generate a key person risk • Being a full stack developer is increasingly complex

Website vs Web app

- **Web Application**: Web application is a piece of software that can be accessed by the browser. Web application needs authentication. The web application uses a combination of server-side scripts and client-side scripts to present information. It requires a server to manage requests from the users.
  Example: Google Apps, Amazon, YouTube

- **Website**: Website is a collection of related web pages that contains images, text, audio, video, etc. It can be consist of one page, two pages, and number of pages. A website provides visual and text content that users can view and read. There are many types of websites like Archive website, Blog, Community website, etc.
  Example: College Website.

Web Application Development process

- Web app development is the process of building an application program; to be specific, an application program that is stored on a server, delivered to users through an active internet connection, via a web browser.
- Since web apps are accessed online, users do not need to download, or store, web apps on their device in order to run them.

Web Application Development process

- 7 Steps for Web Application Development process:
  1. Information gathering
  2. Planning and blueprints
  3. Web application design
  4. Coding and programming
  5. Copywriting and labeling
  6. Testing, reviewing, and launching
  7. Post-launch maintenance and updates

References

- https://www.mongodb.com/basics/technology-stack
- https://www.mongodb.com/mean-stack
- https://www.w3schools.com/whatis/whatis_fullstack.asp
- https://www.geeksforgeeks.org/difference-between-web-application-and-website/

Home Work

- Design CST Website home page using HTML

Thank you!