React & Node Training

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Agenda - Day 2

NPM
Nodejs
Npm scripts
Npm usage
CRA(create-react-app)
Code conventions

Nodejs

- Node.js is an open source server environment
- Node.js is free
- Node.js runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
- Node.js uses JavaScript on the server

NPM

NPM stands for Node Package Manager.
npm is a package manager for the JavaScript programming language. npm, Inc. is a subsidiary of GitHub, that provides hosting for software development and version control with the usage of Git. npm is the default package manager for the JavaScript runtime environment Node.js

CRA

Create-react-app module is provided by facebook to create a boiler plate code for react application.

E.g. npx create-react-app demoapp

React Overview

React is a library for building composable user interfaces. It encourages the creation of reusable UI components, which present data that changes over time. Lots of people use React as the V in MVC. React abstracts away the DOM from you, offering a simpler programming model and better performance.

React Overview

React implements one-way reactive data flow, which reduces the boilerplate and is easier to reason about than traditional data binding.

Virtual DOM

Virtual DOM (VDOM) is a programming concept where an ideal, or "virtual", representation of a UI is kept in memory and synced with the "real" DOM by a library such as ReactDOM.

Reconciliation

Virtual DOM (VDOM) is a programming concept where an ideal, or "virtual", representation of a UI is kept in memory and synced with the "real" DOM by a library such as ReactDOM.

It will detect the change by using diffing algorithm.

This process is called reconciliation.

Components

Components are the building blocks of any React app and a typical React app will have many of these. Simply put, a component is a JavaScript class or function that optionally accepts inputs i.e. properties(props) and returns a React element that describes how a section of the UI (User Interface) should appear.

Example :

```
const Greetings = () => <h1>Hello World!</h1>;
```

Why React

Fast Learning Curve

React is very a simple and lightweight library that **only deals with the view layer**. It is not a beast like other MV* frameworks such as Angular or Ember. Any Javascript developer can understand the basics and start developing an awesome web application after only a couple of days reading tutorial.

Why React

Reusable Components

React provides a component based structure.

Each component decides how it should be rendered. Each component has its own internal logic. This approach has some amazing results. You can re-use components anywhere you need

ed. As a result, (1) your app has **consistent look and feel**, (2) code re-use makes it easier to **maintain and grow your codebase**, and (3) it is **easier to develop** your app

Fast render with Virtual DOM

When you are about to develop a web application that involves high user interaction and view updates
Updating DOM is usually the bottleneck when it comes to the web performance. React is trying to solve this problem by using something called **virtual DOM**; a DOM kept in memory. Any view changes are first reflected to virtual DOM, then an efficient diff algorithm compares the previous and current states of the virtual DOM and calculates the best way

Why React

Huge Community support

React has the huge community support. If you want to try your code , or learn react. You will get the support from the web and other community groups.

Web Application Architecture

The web application architecture describes the interactions between applications, databases, and middleware systems on the web. It ensures that multiple applications work simultaneously.
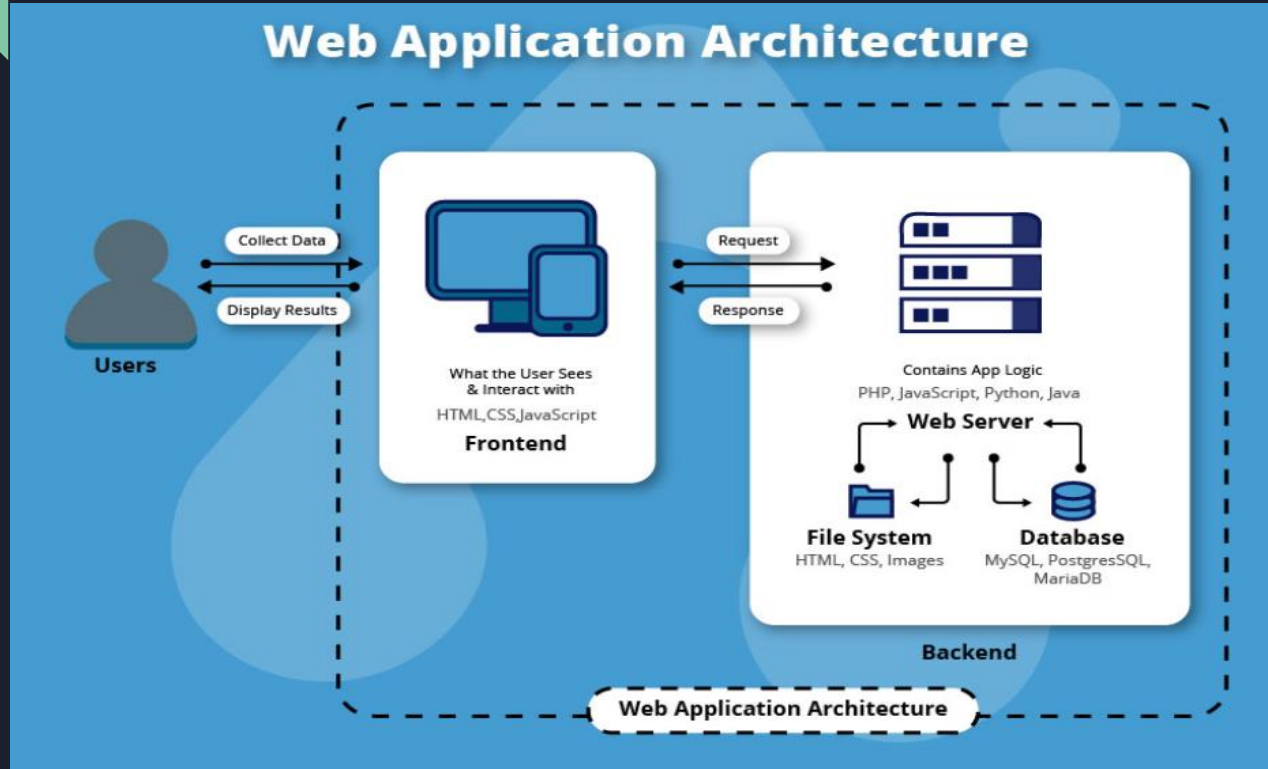
How it works?

With any typical web application, there are two different codes (sub-programs) running side-by-side. These are:
Client-side Code - The code that is in the browser and responds to some user input
Server-side Code - The code that is on the server and responds to the HTTP requests
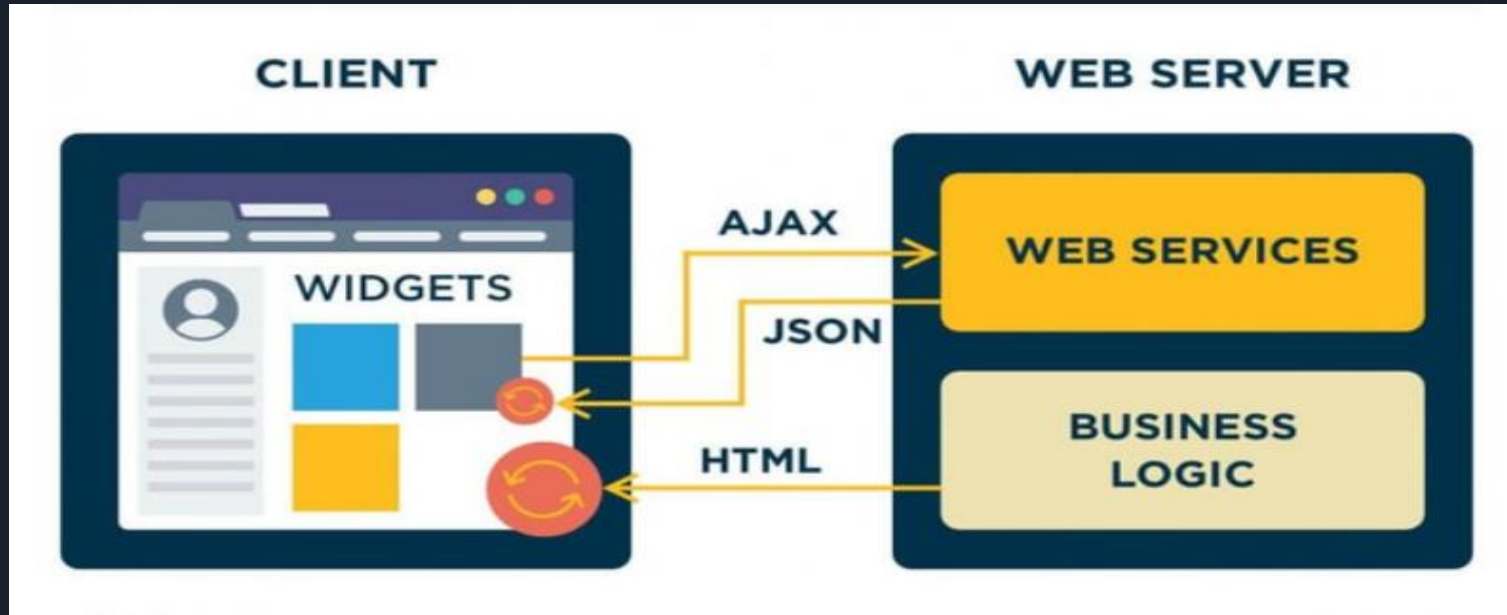
Web Application Architecture

Single Page Application

Single-Page Applications (SPAs) – Instead of loading completely new pages from the server each time for a user action, single page web applications allows for a dynamic interaction by means of providing updated content to the current page. E.g. Facebook, Netflix, Gmail, Google Maps, and twitter

Single Page Application Architecture

React Architecture

- React works on the concept of components
- React has its own lifecycle of components.
- When any change is detected in state of component, it is first reflected in virtual dom.
- Then previous state and current state of virtual dom is compared.
- Any change if detected, it will be reflected to real dom.
- Only dom tree part, in which change is detected will be changed in real dom

Thank You