WEB DEVELOPMENT OVERVIEW
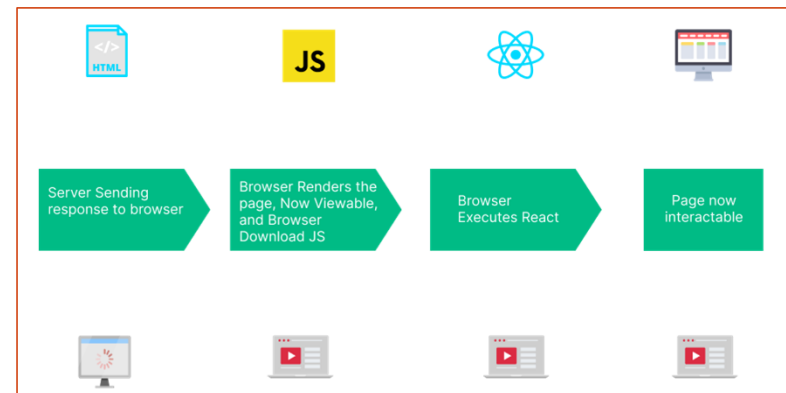
WEB DEVELOPMENT ARCHITECTURE STRATEGIES
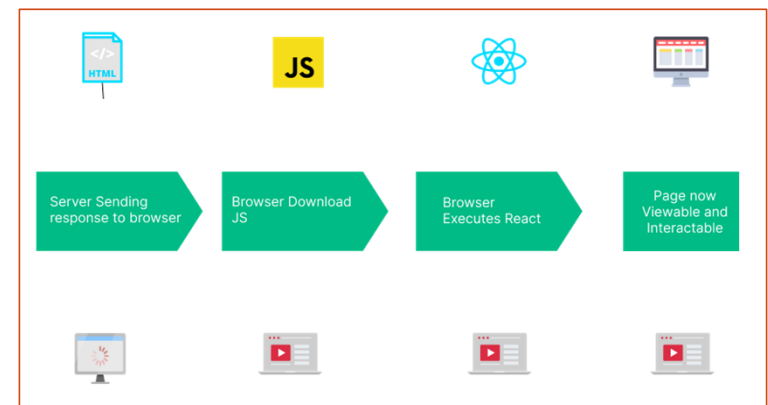
➢ **Server-side rendering**

  o Front-end & back-end communicate without API

  o 1 project (technology/framework) for both front-end & back-end

  o Examples:

    ▪ JavaScript: ExpressJS, NestJS

    ▪ Java: Spring MVC, Spring Boot

    ▪ .NET: .NET MVC, .NET Core

  o Typical websites:

    ▪ VnExpress

    ▪ Zing News

    ▪ Thegioididong

WEB DEVELOPMENT ARCHITECTURE STRATEGIES

➢ **Client-side rendering (Single-page app)**
  o Front-end & back-end communicate with API
  o 2 projects (technologies/frameworks) for front-end & back-end
  o Examples:
    ▪ Front-end: ReactJS, AngularJS, VueJS, NextJS, SveltJS, Ruby On Rails
    ▪ Back-end: ExpressJS, NestJS, Spring Boot, Laravel, .NET Core, Flask
  o Typical websites:
    ▪ ReactJS: Facebook, Instagram, Netflix
    ▪ AngularJS: Trello, Paypal
    ▪ VueJS: Gitlab, Xiaomi, Alibaba

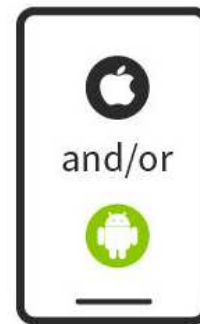# WEB DEVELOPMENT ARCHITECTURE STRATEGIES

❖ **Universal web app**
- Combines of both Server-side rendering (SSR) & Client-side rendering (CSR)
- "The best of both worlds"
- Takes the avantages both of them together
  - SSR: Accessibility, page load times, SEO, social media support
  - CSR: cost-effective rending, ease of building and maintaining
- Examples:
  - SSR: Admin/Management site
  - CSR: User/Customer site

WEB DEVELOPMENT ARCHITECTURE STRATEGIES

❖ **Hybrid web app**
- Combines of both native and web app
- Current trend of application development
- Advantages:
  - Multiple platforms: web, mobile (iOS, Android)
  - Faster build time
  - Easier to update
  - Can work online and offline
- Examples:
  - React Native
  - Flutter
  - Unity

Native   Hybrid   Web App

www.app.com

WEB DEVELOPMENT ARCHITECTURE STRATEGIES

	Server-side rendering	Client-side rendering
Advantages	Better SEO (Search Engine Optimization) and page positioning	Less load on server
	Fast initial loading	Better User Interface (UI)
	Faster Largest Contentful Paint (LCP)	Reduced server-side resource
Disadvantages	Frequent server requests	Slower initial load time
	Slower time-to-interactive	Low SEO score (if implemented incorrectly)
	Slower time to page redirection	Caching is not possible until page is fully loaded

LONGNDT

DATABASE FOR WEB APPLICATION

❖ **SQL**
- ○ SQL: Structured Query Language
- ○ Relational database
- ○ Examples:
  - ▪ MySQL
  - ▪ SQL Server
  - ▪ SQL Lite
  - ▪ Oracle
  - ▪ PostgreSQL

DATABASE FOR WEB APPLICATION

❖ **No-SQL**
- No-SQL: Not only SQL
- Non-relational database
- Examples:
  - MongoDB
  - GraphQL
  - Neo4j
  - Cassandra
  - Couchbase

DATABASE FOR WEB APPLICATION

|	SQL	No-SQL
Data Model	Tables with fixed rows and columns	Document, Key-value, Wide-column, Graph
Schema	Strict: Fixed, static or predefined schema	Flexible: Dynamic schema
Scalability	Vertical scalable (upgrade RAM, CPU, SSD,…)	Horizontal scalable (add more servers,..)
Joins	Required	Not required
Data to Object Mapping	Requires ORM (Object-Relational Mapping)	Do not requires ORM

FULL-STACK WEB DEVELOPMENT TECHNOLOGIES

❑ **MERN:**
- MongoDB: database
- ExpressJS: middleware
- ReactJS: front-end
- NodeJS: back-end

❑ **MEAN:**
- MongoDB: database
- ExpressJS: middleware
- AngularJS: front-end
- NodeJS: back-end

❑ **MEVN:**
- MongoDB: database
- ExpressJS: middleware
- VueJS: front-end
- NodeJS: back-end

FULL STACK DEV

FRONT-END DEV · BACK-END DEV · DATABASES · DEVOPS · MOBILE APP DEV
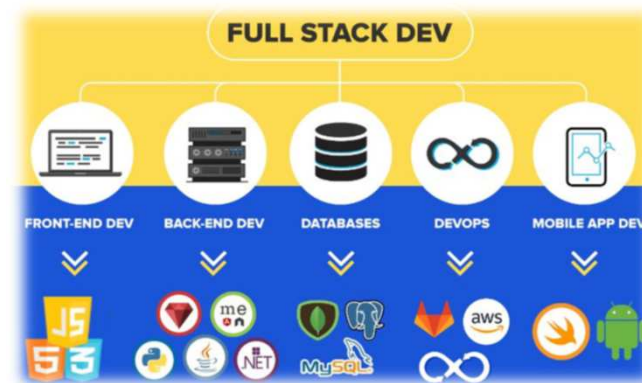
CLOUD SERVICES FOR WEB DEPLOYMENT