

WEB DEVELOPMENT OVERVIEW



LONGNDT

WEB DEVELOPMENT ARCHITECTURE STRATEGIES

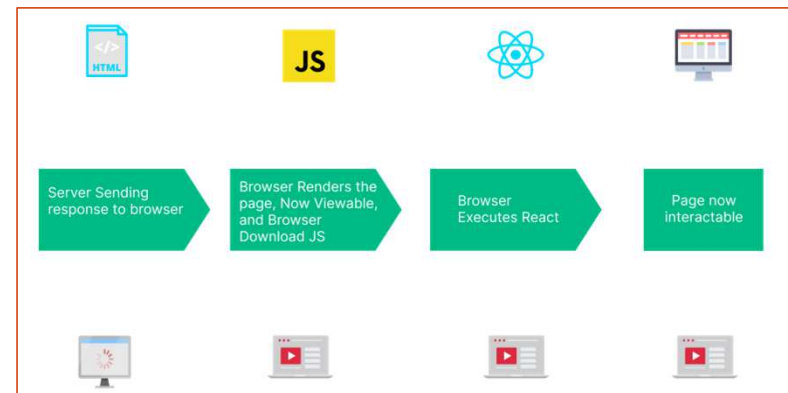
➤ Server-Side Rendering (SSR)

- Data are passed directly from the server to the client without API
- Single project where both front-end & back-end are managed
- Examples:

- JavaScript: ExpressJS, NestJS
- Java: Spring MVC, Spring Boot
- .NET: .NET MVC, .NET Core

○ Typical websites:

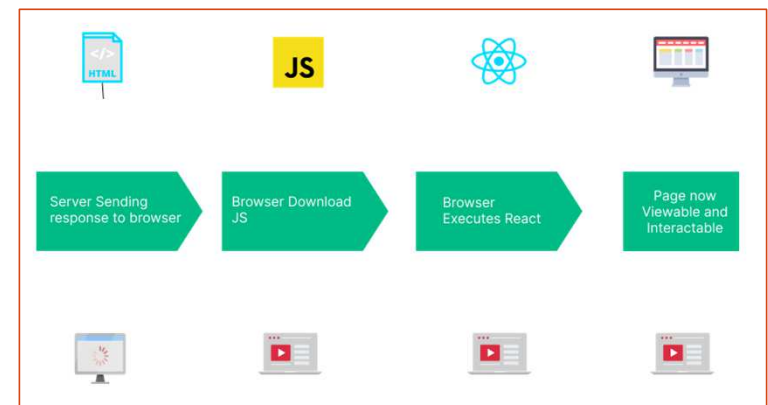
- Amazon
- New York Times
- LinkedIn



WEB DEVELOPMENT ARCHITECTURE STRATEGIES

➤ Client-Side Rendering (CSR or Single-page app)

- Front-end typically communicates with back-end via API
- Separate projects for front-end & back-end
- Examples:
 - Front-end: ReactJS, AngularJS, VueJS, NextJS, SveltJS, NextJS
 - Back-end: ExpressJS, NestJS, Spring Boot, Laravel, .NET Core, Flask
- Typical websites:
 - ReactJS: Facebook, Instagram, Netflix
 - AngularJS: Trello, Paypal
 - VueJS: Gitlab, Xiaomi, Alibaba



WEB DEVELOPMENT ARCHITECTURE STRATEGIES

❖ Universal web app

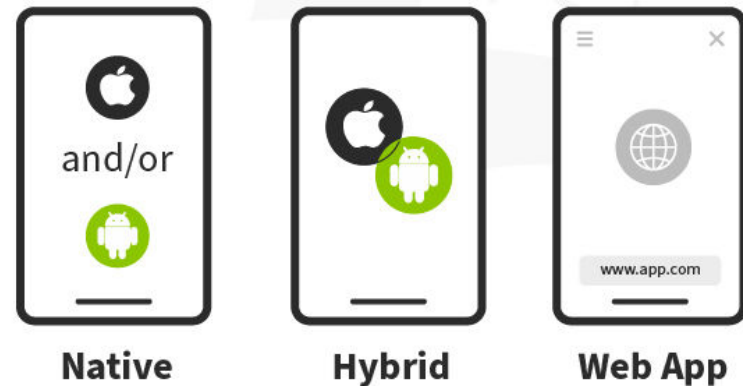
- “The best of both worlds”
- Combine SSR & CSR together to takes the advantages from both
 - SSR: Accessibility, page load times, SEO, social media support
 - CSR: cost-effective rendering, ease of building and maintaining
- Examples:
 - SSR: Admin/Management site
 - CSR: User/Customer site



WEB DEVELOPMENT ARCHITECTURE STRATEGIES

❖ Hybrid web app

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



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



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

❑ MEVN:

- MongoDB: database
- ExpressJS: middleware
- VueJS: front-end
- NodeJS: back-end

❑ MEAN:

- MongoDB: database
- ExpressJS: middleware
- AngularJS: front-end
- NodeJS: back-end



CLOUD SERVICES FOR WEB DEPLOYMENT



firebase



render

