

Frontend Learning Summary

HTML

- Semantic tags improve accessibility and SEO (e.g., <article>, <nav>).
- Form elements like input, label, select, and validation attributes.
- Use ARIA attributes and avoid unnecessary <div>s.

CSS

- Flexbox and Grid for modern layouts.
- Animations using @keyframes and transitions.
- Responsive design with media queries.

JavaScript (ES6+)

- Destructuring, Spread/Rest, Arrow Functions.
- Async/Await and Promises for API calls.
- Modules and Classes for organized code.

React.js

- Hooks: useState, useEffect, useRef, useMemo, useCallback.
- Component patterns: HOC, render props.
- Context API for lightweight state management.

Next.js

- File-based routing, dynamic routes.
- Data fetching: getStaticProps, getServerSideProps.
- Built-in API routes and image optimization.

Tailwind CSS

- Utility-first classes like p-4, text-center.

- Custom themes in `tailwind.config.js`.
- Dark mode support.

Bootstrap

- Responsive grid system using `row` and `col`.
- Pre-built components like modals, alerts.
- Utility classes for spacing and text.

Component Libraries

- `shadcn/ui` for Tailwind-based components.
- MUI for Google's material design.
- Ant Design for enterprise apps.

Redux

- Store, reducers, and actions.
- Redux Toolkit simplifies setup.
- Middleware for logging and async logic.

GSAP

- Timeline and tweens for animation sequences.
- ScrollTrigger for scroll-based animations.
- High-performance 60fps animations.

React Toastify

- Easy-to-use notifications.
- Custom toasts with JSX.
- Supports progress bars and dismiss options.

Form Handling & Validation

- Controlled components in React.

- Libraries: react-hook-form, Formik, Yup.
- Validate on submit or blur.

API Integration

- CRUD operations using fetch or axios.
- RESTful design using GET, POST, PUT, DELETE.
- Caching with SWR or React Query.

Authentication

- JWT for secure token-based auth.
- Google OAuth via NextAuth.js.
- 2FA with Google Authenticator (optional).

Responsive & Accessible Design

- Mobile-first approach.
- Keyboard navigation and screen-reader support.
- ARIA roles and labels.