



Web Development

2024



Outline

- 
- 1 Introduction to Web Development
 - 2 Essentials Skills for Web Development
 - 3 Web Development in A2SV?
 - 4 Product, Design/User Experience
 - 5 UI Implementation
 - 6 Handling Data
 - 7 State Management
 - 8 Testing
 - 9 Deployment
 - 10 React and Next.js

What is Web Development?

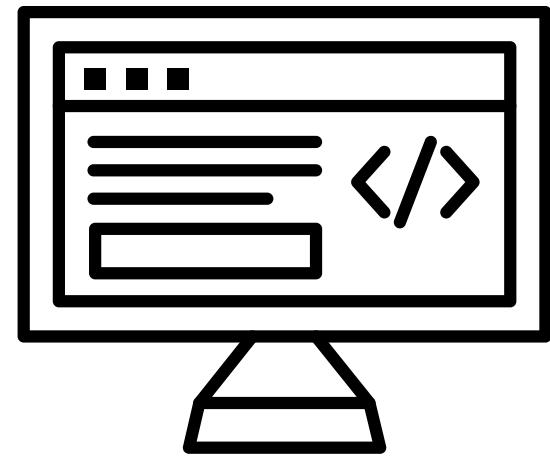


The process of creating websites and web applications for the internet.

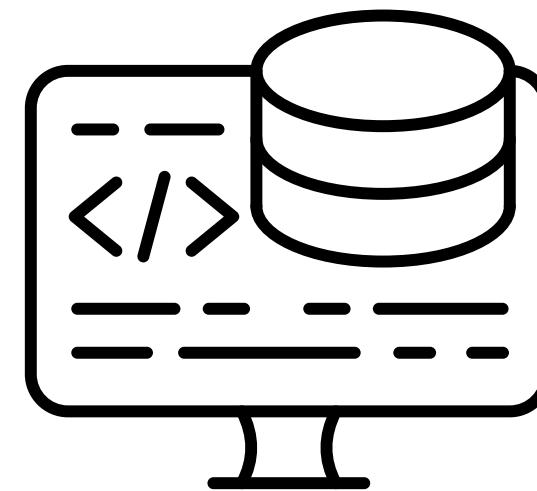
- Web design
- Programming
- Content creation
- Database management.



Two main categories of Web Development



- Front-End



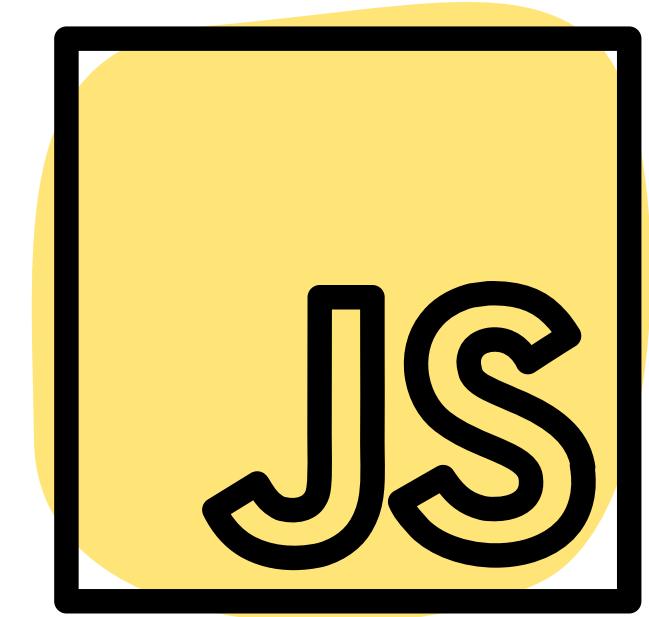
- Back-End

We will focus on Front-End web development in the web team.

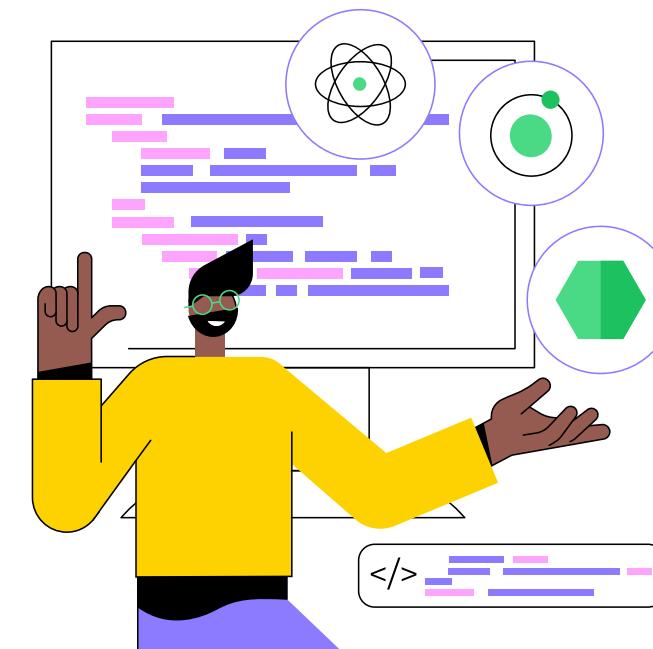
Essentials Skills for Web Development



- Basic building blocks of any website



- Used to create interactive and dynamic web pages.



- pre-built libraries

Web Development in A2SV



Design (Product, UI/UX)



Design (Product, UI/UX)

- Understand the Design Vision
 - Attend Design Meetings
 - Review Design Documents
- Clear Communication
- Technical Feasibility



The UI Design

Starter Project G33 / A2SV Web - Landing Page & Blogging Project v1.0 [Jan 02 2023]

Layers Assets 🎨 03. Fi... ^

Pages +

- High fidelity designs
- 🕒 03. Final Designs
- 🎨 05. Design System

Group 1000001960

- ❖ Button
- ❖ Frame 105
- ❖ Text content
- ❖ Image
- ❖ Hover overlay
- ❖ Paginated banner
- ❖ Carousel
- ❖ Group 9979
- ❖ Group 9984
- ❖ Component 11

Blog Section

Background F5F5F5 100%

Local styles

Color styles

Blog edit & delete

IMG

Export

Plugin

NB Charts

Home Teams Success Stories About A2SV Africa To Silicon Valley Blogs Login

Latest Popular

Sinkumen Assefa 4 days ago

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Sinkumen Assefa 4 days ago

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String ...

Search

Sinkumen Assefa

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Sinkumen Assefa

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Sinkumen Assefa

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See the full list

String Array Business

Dynamic Programming Array

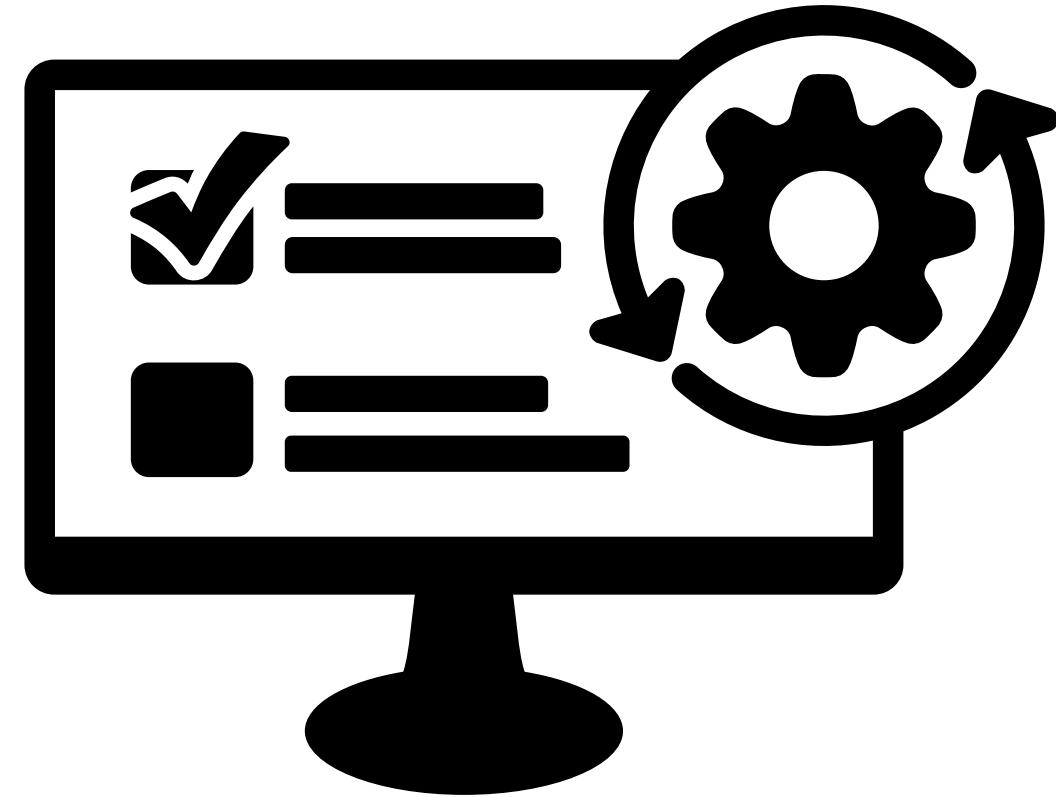
Success Story

UI Implementation



A large, abstract graphic element occupies the right side of the slide. It features a series of overlapping horizontal bars in shades of blue, purple, and cyan. A prominent, thick bar at the top is cyan. Below it, several blue bars of varying lengths overlap. To the right of these bars is a stylized, wavy line that transitions from blue to purple and then to orange. The entire graphic is set against a white background.

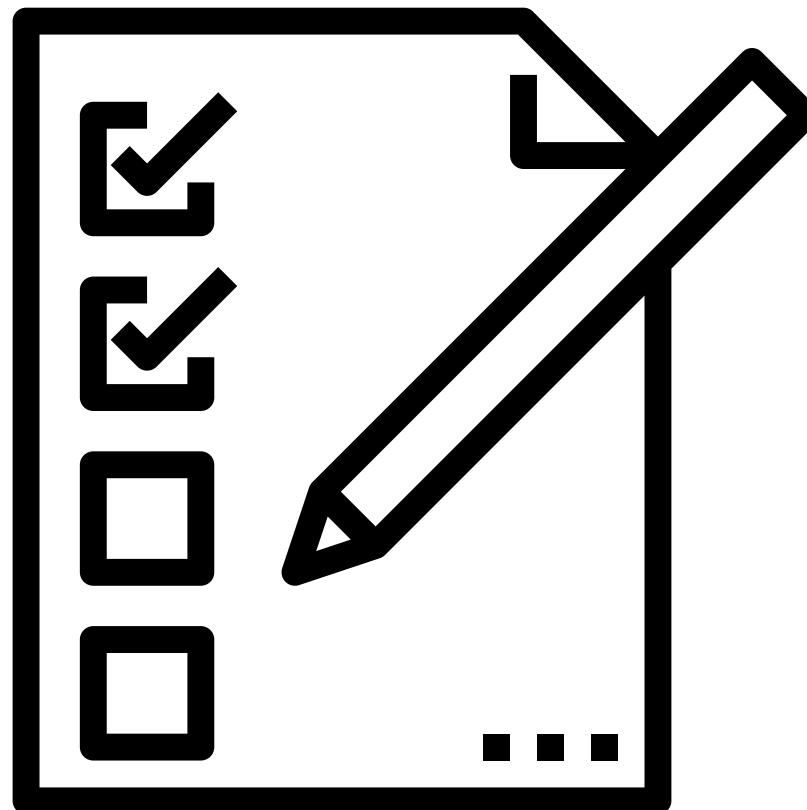
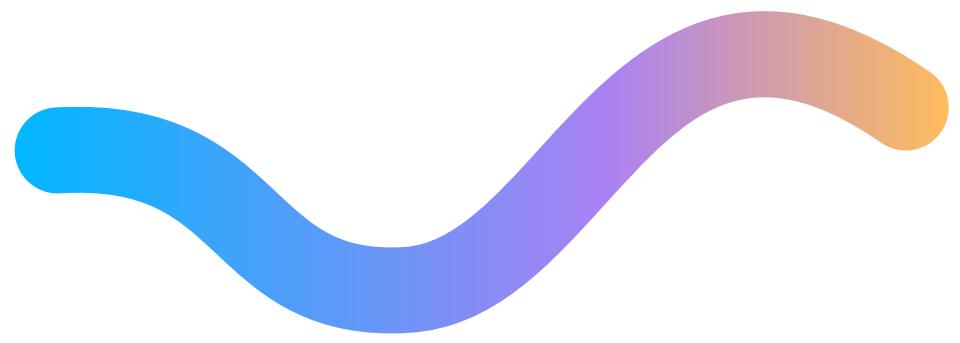
Implementing the UI



1. Set Up the Development Environment

Install necessary tools, libraries, and frameworks

Implementing the UI

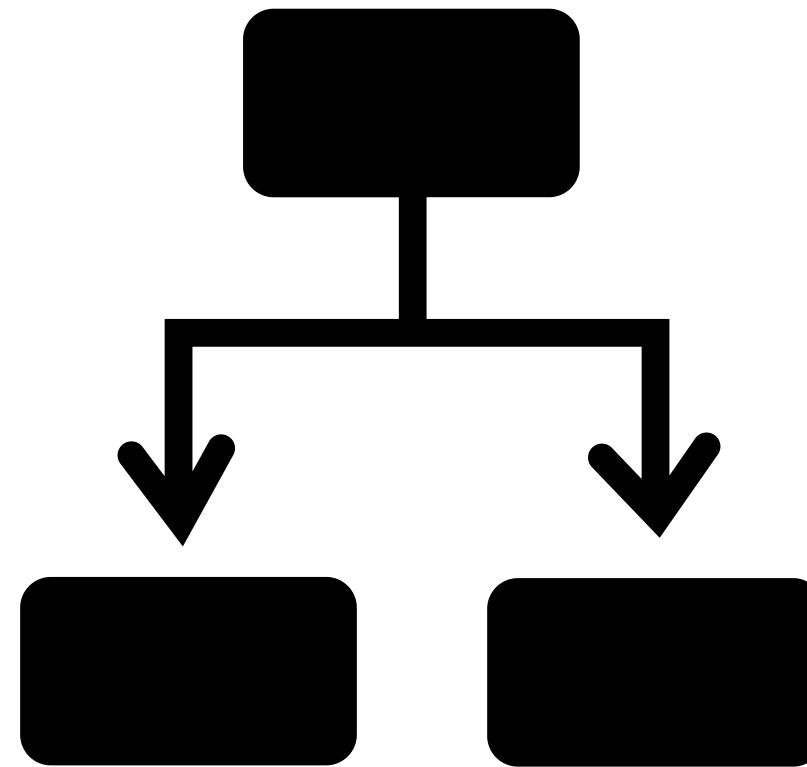


2. Gather Requirements

Collect all design assets such as wireframes, mockups, images, icons, and style guides from the UI/UX team.



Implementing the UI



3. Break Down the UI

Break down the design into individual pages and sections.



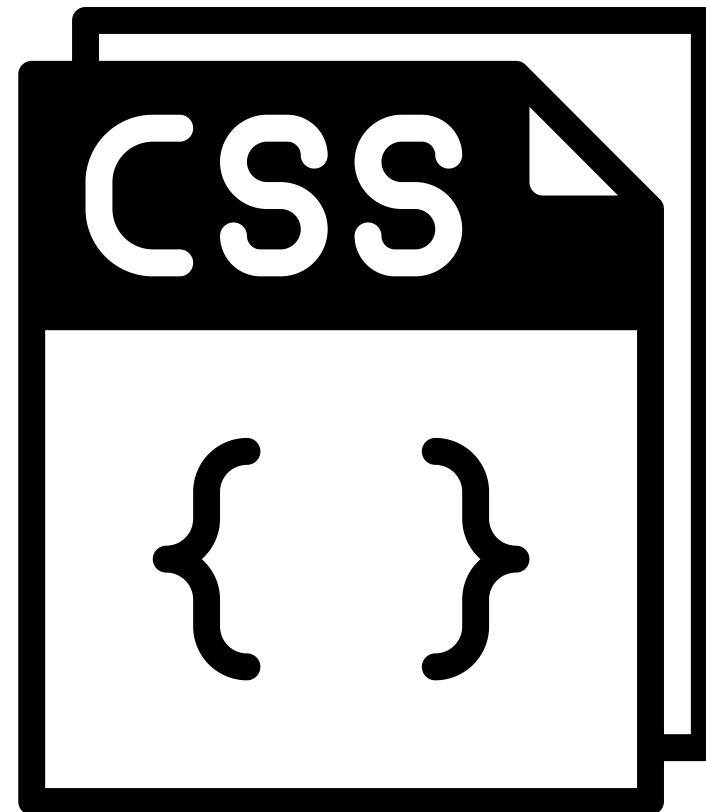
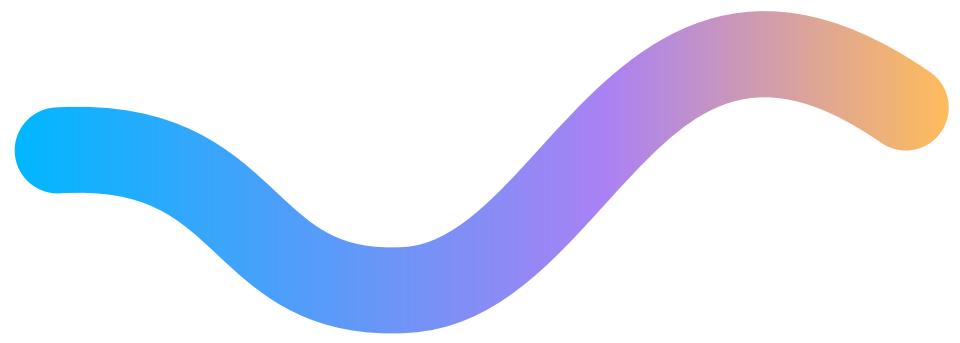
Implementing the UI



4. Set Up the Basic Layout

Create the basic HTML structure for the pages.

Implementing the UI

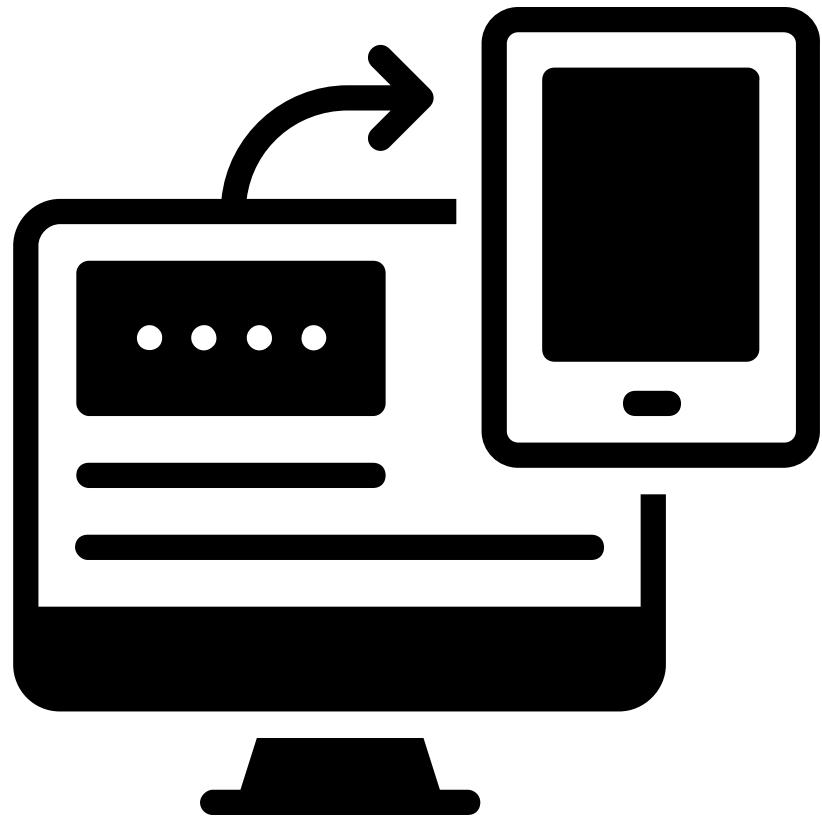


5. Implement Styles

Implement styles for components and ensure they match the design specifications.

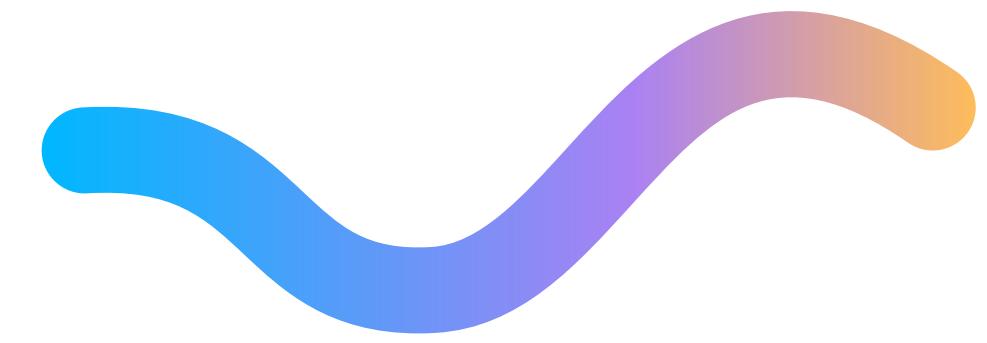


Implementing the UI



7. Responsive Design

Ensure the UI is responsive and adapts to different screen sizes.

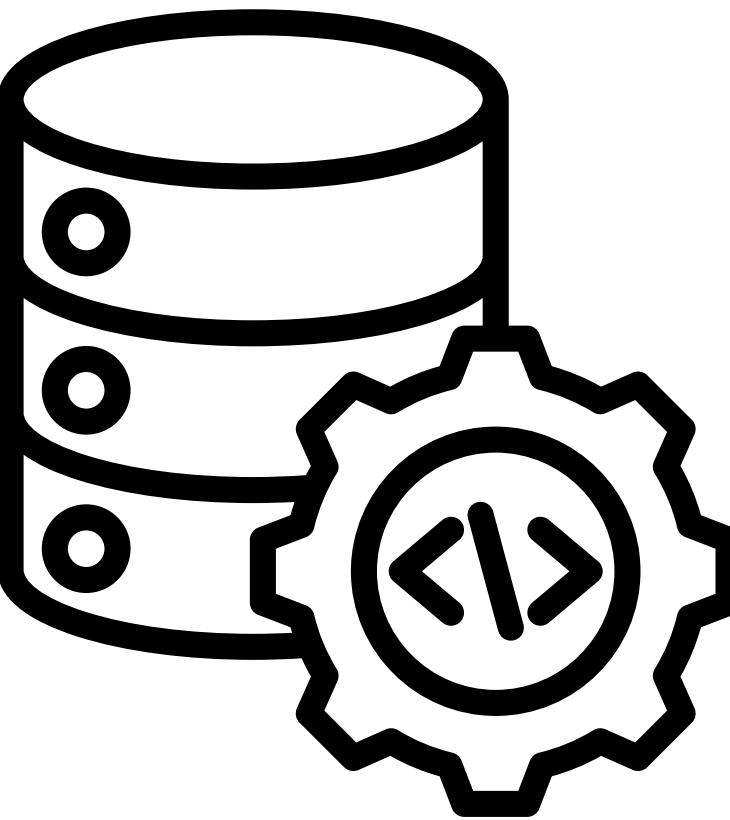


Tools

- Design Collaboration
 - Figma, Adobe XD, Sketch...
- Frontend Frameworks and Libraries
 - React, Vue.js, Angular...
- CSS Frameworks and Libraries
 - Bootstrap, Tailwind CSS, Material-UI...



Back-end Integration



Accessing and Handling Data



- Communicate with the back-end team for the integration
- Read the Documentation for the End points of the backend
- Test the Accuracy of the data from the backend
- Security of requests (Authentication and Authorization)

Latest

[Filter By ▾](#) Search Blogs...

Daniel Araya 2 hours ago

7 WAYS ON BE A GOOD PROGRAMMER

This last category of people is what I call the problem-solvers. They're neither optimists nor pessimists. They're pragmatists. But if you build the wrong solution, the consequences might be bad despite your best

[Education](#)[Celebration](#)

Misganaw Berihun 2 hours ago

SUPPORT THE DREAM, CHANGE LIVES

As young as we are as an organization, we have nonetheless been equally determined to achieve big results. Since 2019, we have had 31 placements with our software engineering education program. Our students have got full-time positions

[Celebration](#)[Full-time](#)

Daniel Araya 2 hours ago

Popular



Misganaw Berihun

Google Funding



Misganaw Berihun

Social Activities



Misganaw Berihun

Top 5 Soft Skills Every Software Developer Must Have



Misganaw Berihun

Support the Dream, Change lives

Real Data

A2SV Group 4 kickoff ceremony for Group 4 AASTU students

Exercise



- Exercise 1



State Management



State Management



- **State:** the condition or data of the application at a given moment in time.
- Organize data flow between components



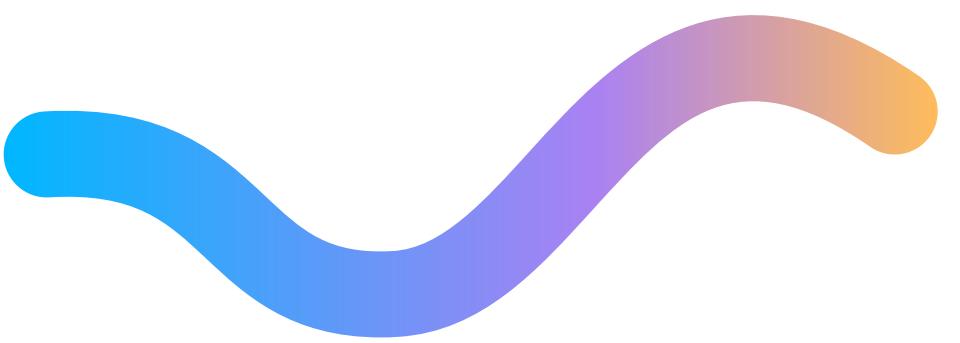
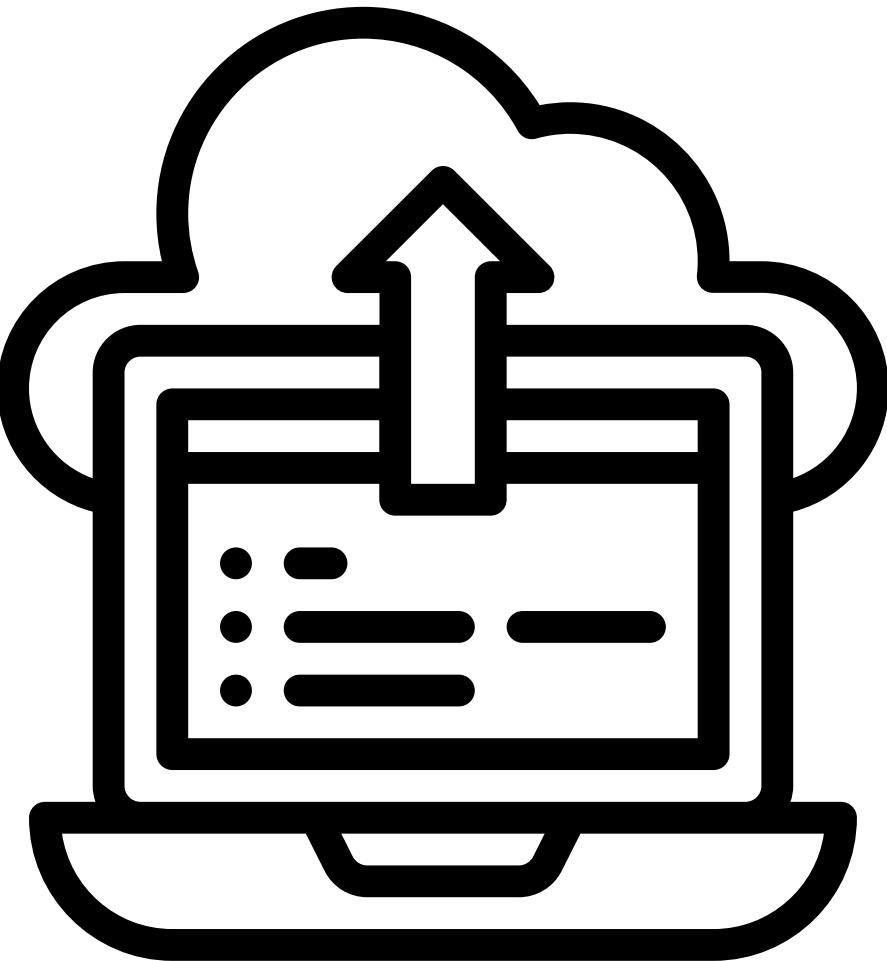
Testing



Testing

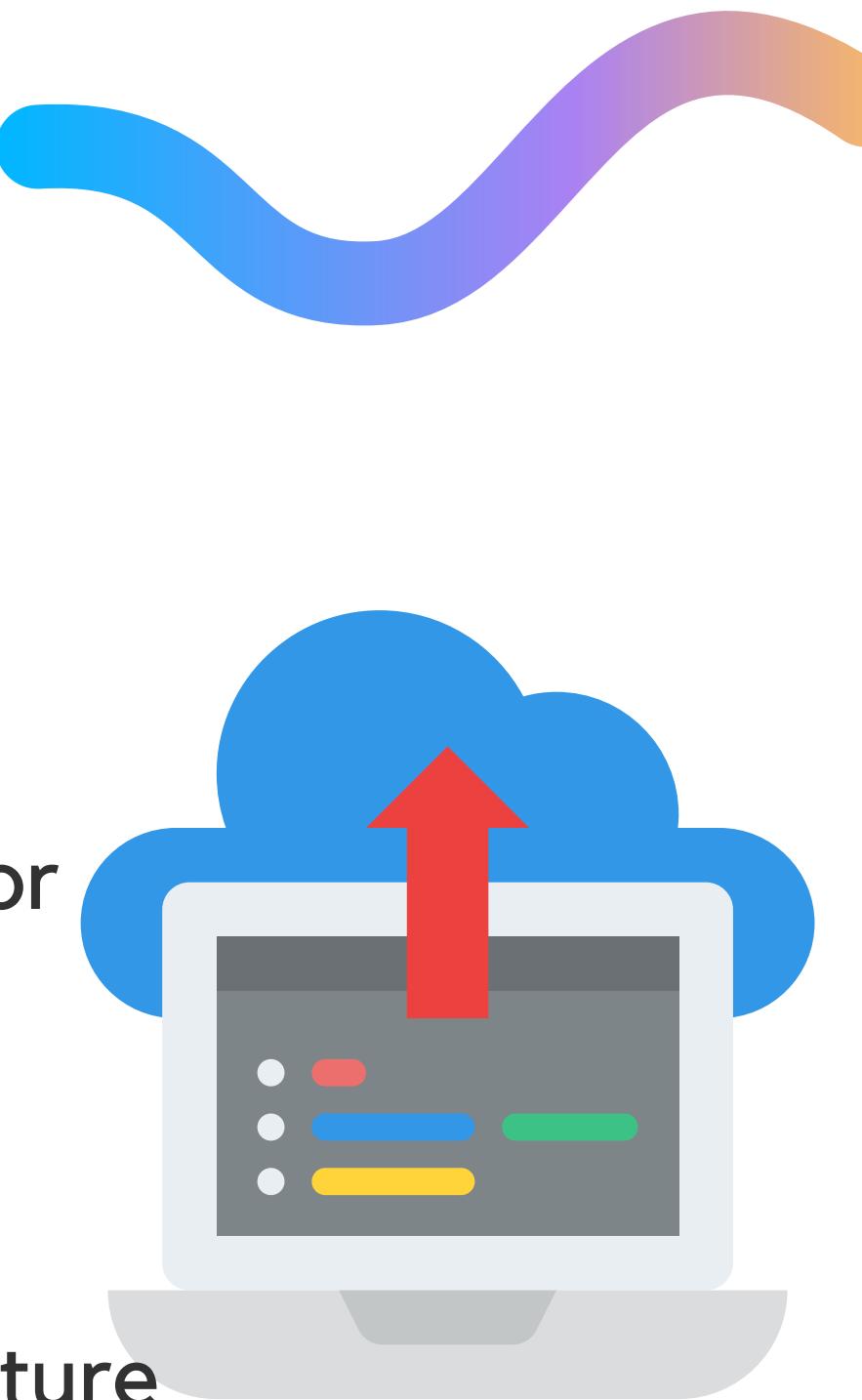
- Verify the usability and functionality of the application.
 - Unit testing: Jest
 - Integration testing: Cypress

Deployment



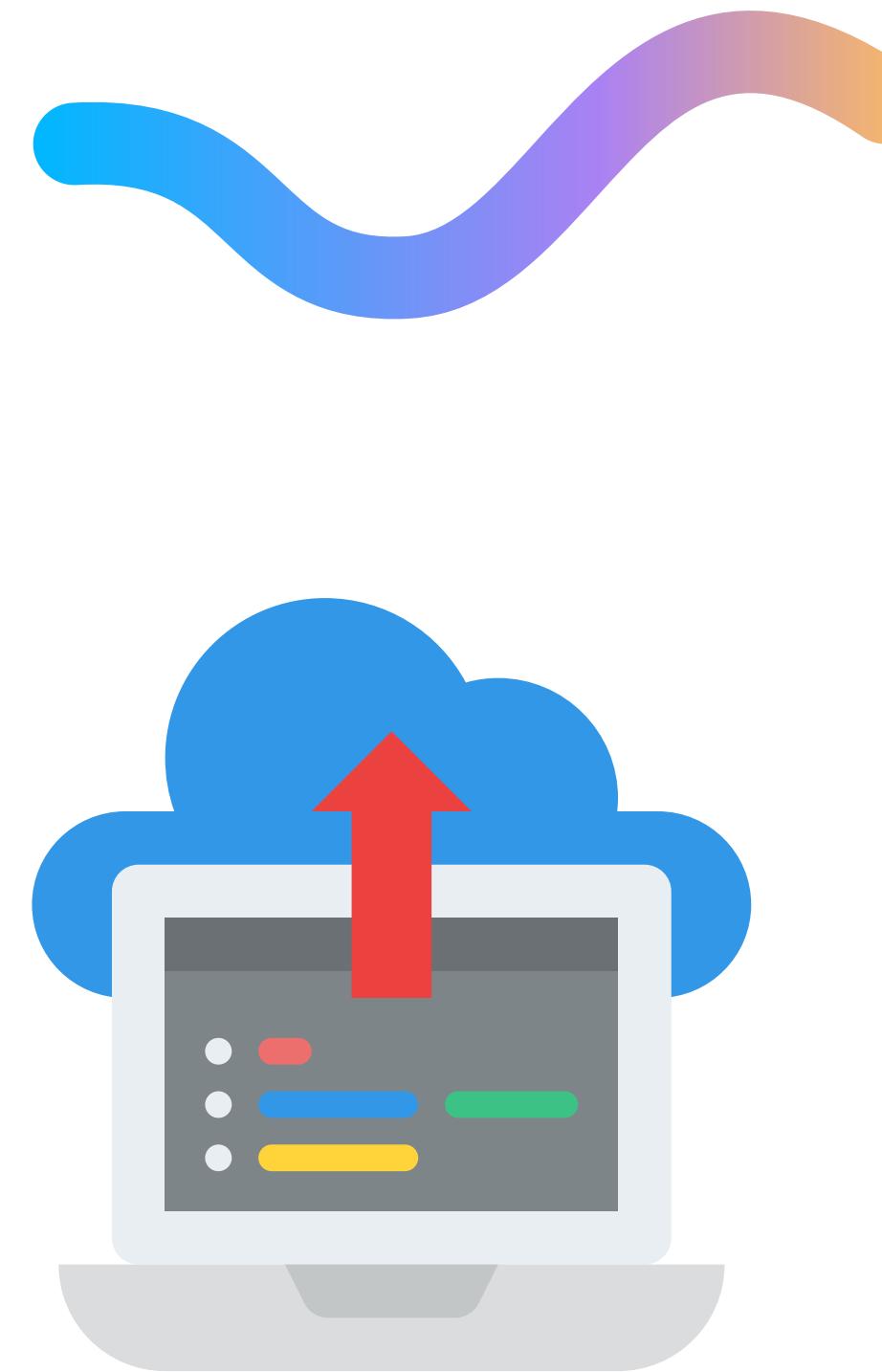
Deployment and Hosting

- **Deployment** is the process of making a web application or software system available for use by end-users
- **Hosting** refers to the service that provides the infrastructure for running your web application.



Deployment and Hosting

- Cloud hosting platforms to deploy web applications
 - Google cloud platform (GCP)
 - Vercel

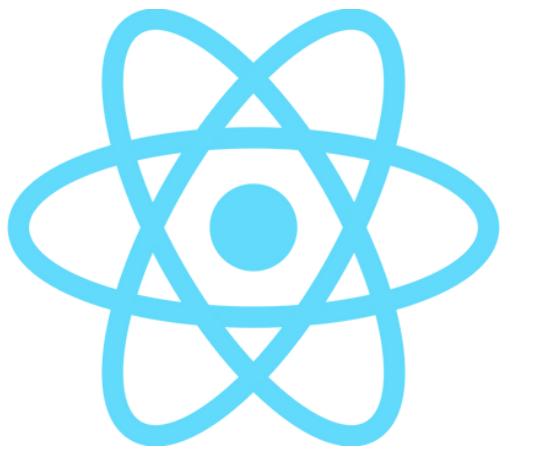


Tools We Use in A2SV



Tools

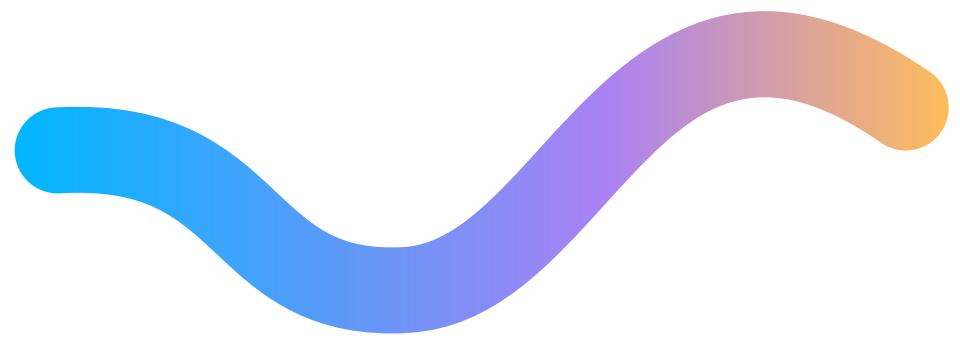
- **Integrated Development Environment (IDE)** (VScode, Zed, Sublime Text)
- **Web browser's devTools**
- **Version control systems** (Git/Github)
- **Task tracking tools** (Jira, Trello, Github Projects)
- **Web Frameworks** (React / Next, Vue)



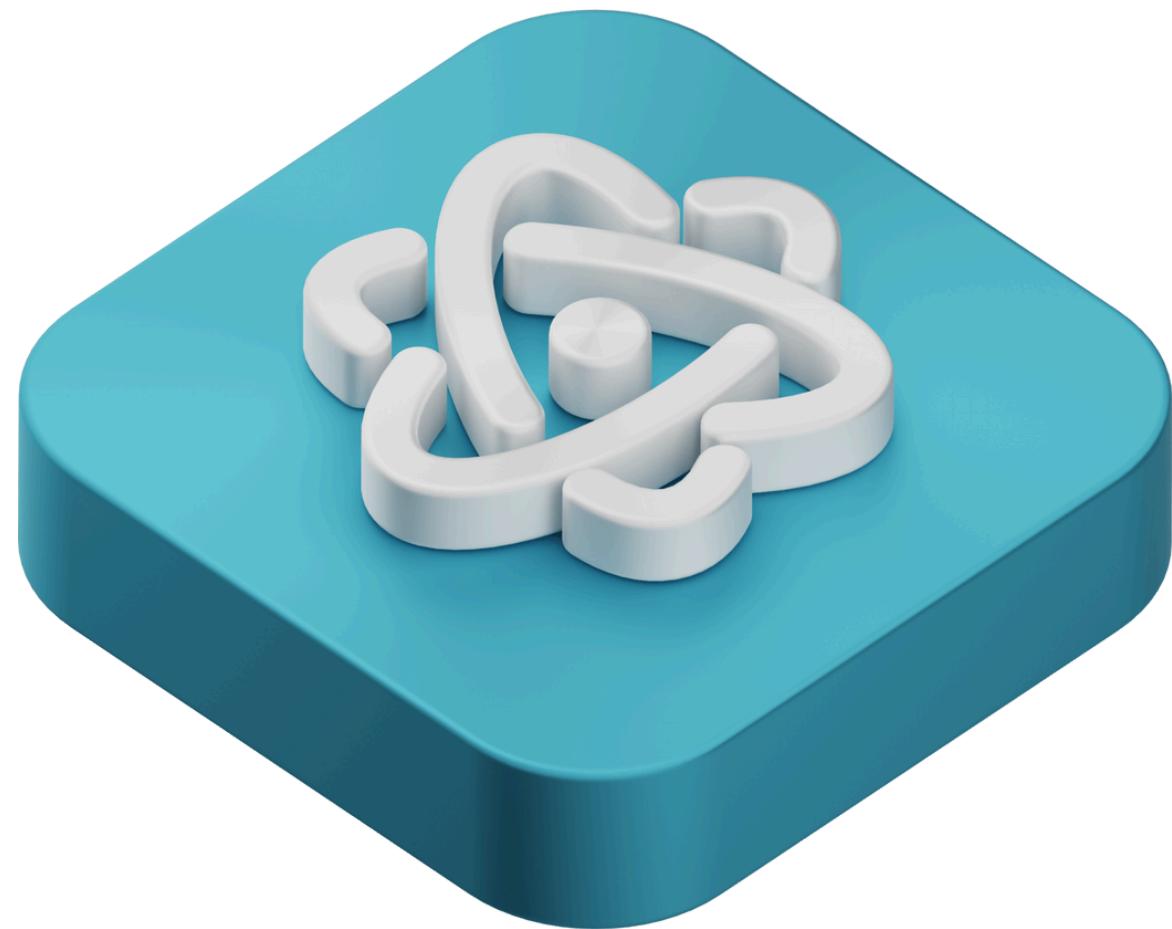
ReactJS



ReactJS



- Is an open-source JavaScript library used for frontend development
- Allows developers to create reusable UI components that can be used to build complex applications.



React Concepts

- Components
- Props
- State
- React hooks

Component



- Building blocks of React applications
- It is written in a JSX/TSX syntax



```
function Welcome() {  
  return <h1>Hello, Adona</h1>;  
}  
  
export default Welcome;
```



Group 1

Make a Gift



Feysel Mubarek

Head of Group Education

Ethiopia

Feysel Mubarek or as his friends call him, Faya, is a Software Engineering graduate from Addis Ababa Institute of Technology, Ethiopia. He started coding with Python, but soon after learning Java, became a fan of Java and Object-oriented programming. Fava loves creating



Abel Tsegaye

Software Engineer

Ethiopia

An Addis Ababa University graduate student with a bachelor's degree in software engineering, who is a mobile developer with expertise in Flutter, Native Android Development and React Native. He has been part of the A2SV program for the past 2 years



Anteneh Admasu

Software Engineer

Ethiopia/UK

A passionate and curious software engineering student who is on a continuous mission to better himself. He interned at Google in the summer of 2021 and is joining the Android team permanently after his graduation. The quest of finding ways to solve his community's problem





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Group 1

THE WHOLE PAGE IS A COMPONENT

Make a Gift 

**Feysel Mubarek****Head of Group Education**

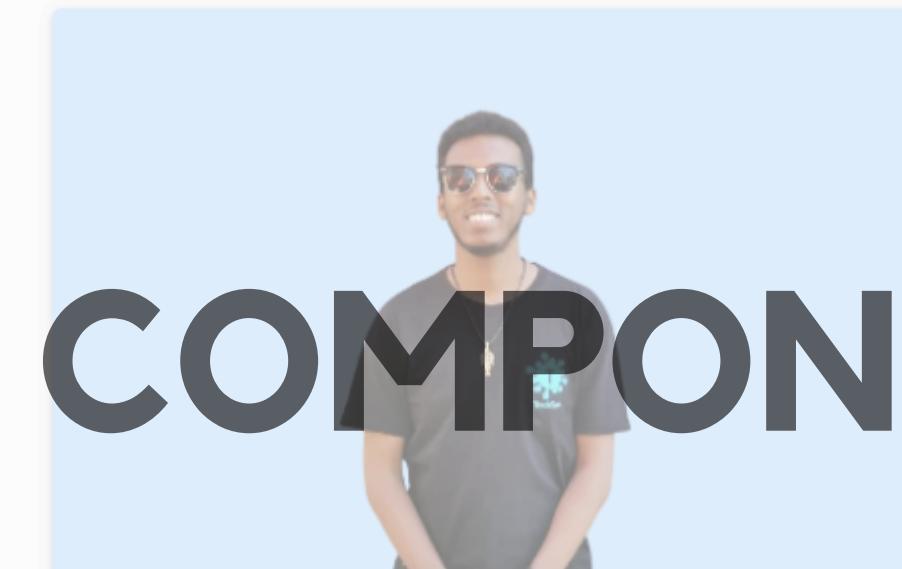
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Props

- Inputs to components
- Passed down from parent

components



Welcome.tsx

```
interface WelcomeProps {  
  name: string  
}  
  
function Welcome(props: WelcomeProps) {  
  return <h1>Hello, {props.name}</h1>;  
}  
  
function App() {  
  return <Welcome name="Adona"/>;  
}  
  
export default App;
```

PHOTO

Full Name

Role within A2SV

Country of Base

Placeholder text for the bio section.

The website interface features a top navigation bar with the A2SV logo, Home, A2SV Story, Impact Stories, Teams, Work With Us, a Join A2SV button, and a user icon. Below the navigation is a title "Group 1". Three team members are displayed in a grid:

- Feysel Mubarek**
Head of Group Education
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Each team member card includes a blue "in" LinkedIn icon. The website has a light blue header and a dark grey footer.

React Hooks

- They are simple JavaScript functions that we can use to isolate the reusable part from a functional component
 - **useState**: Hook for managing component state
 - **useEffect**: Hook for managing component lifecycle methods

useState

- You can define a **state variable** and a **function** to update its value.

```
App.ts

import React, { useState } from 'react';

function App() {
  // Declare a new state variable, which we'll call
  "count"
  const [count, setCount] = useState(0);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setCount(count + 1)}>
        Click me
      </button>
    </div>
  );
}

export default App;
```

UseEffect



- Is a hook that allows you to perform side effects in function components, such as fetching data or updating the DOM, after rendering.

```
import { useEffect } from 'react';
import { createConnection } from './chat.js';

function ChatRoom({ roomId }) {
  const [serverUrl, setServerUrl] = useState('https://localhost:1234');

  useEffect(() => {
    const connection = createConnection(serverUrl, roomId);
    connection.connect();
    return () => {
      connection.disconnect();
    };
  }, [serverUrl, roomId]);
  // ...
}
```

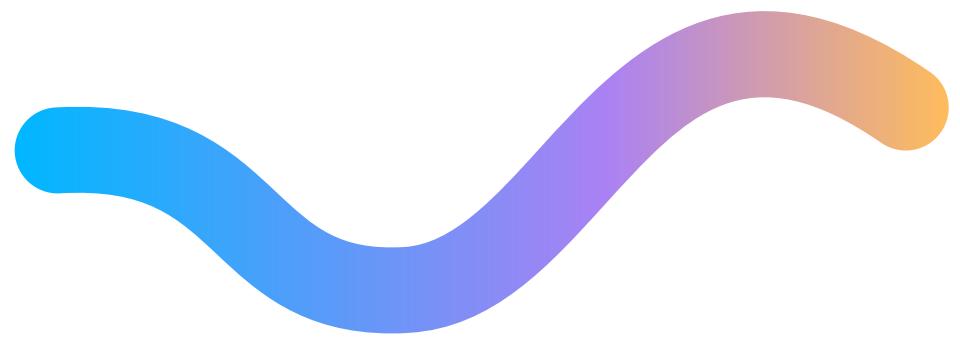
Next.js



Next.js

- Next.js is a popular React framework for building server-side rendered (SSR) and statically generated applications.
- Handles the tooling and configuration needed for React, and provides additional structure, features, and optimizations for your application.

Next.js



Creator

- Developed and maintained by Vercel.

Why Use It?

- Simplifies building complex React applications with enhanced performance and optimized SEO.

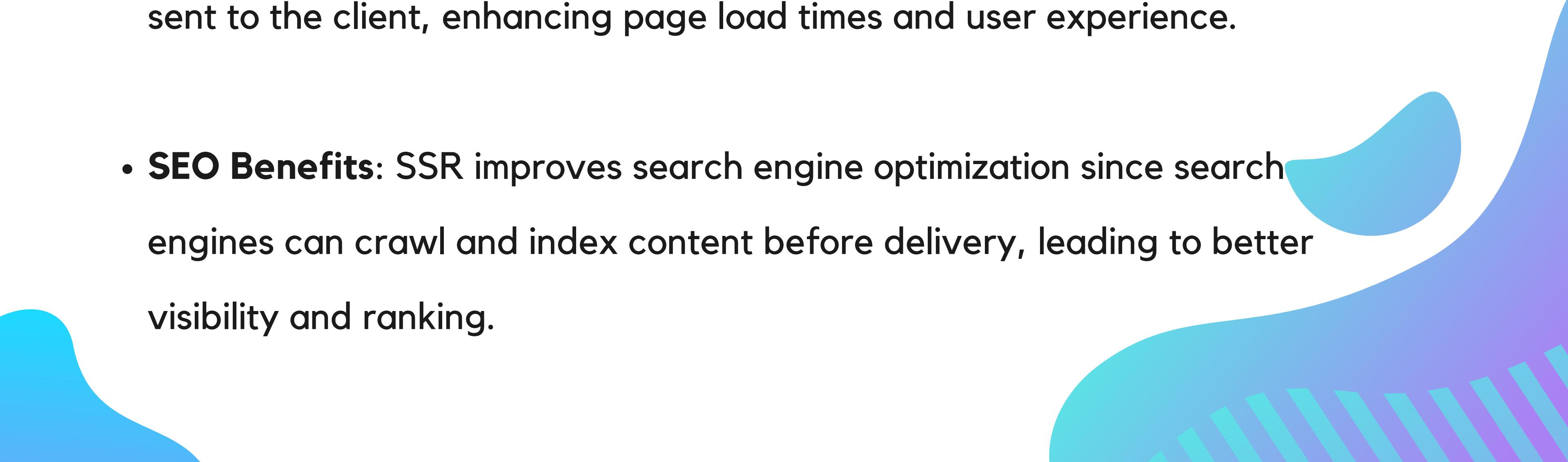


Key Features of Next.js

- **Server-Side Rendering (SSR)**: Improves SEO and initial load times.
- **Static Site Generation (SSG)**: Pre-renders pages at build time.
- **API Routes**: Built-in API routing for backend functionalities.
- **Automatic Code Splitting**: Optimizes load times by only loading necessary code.

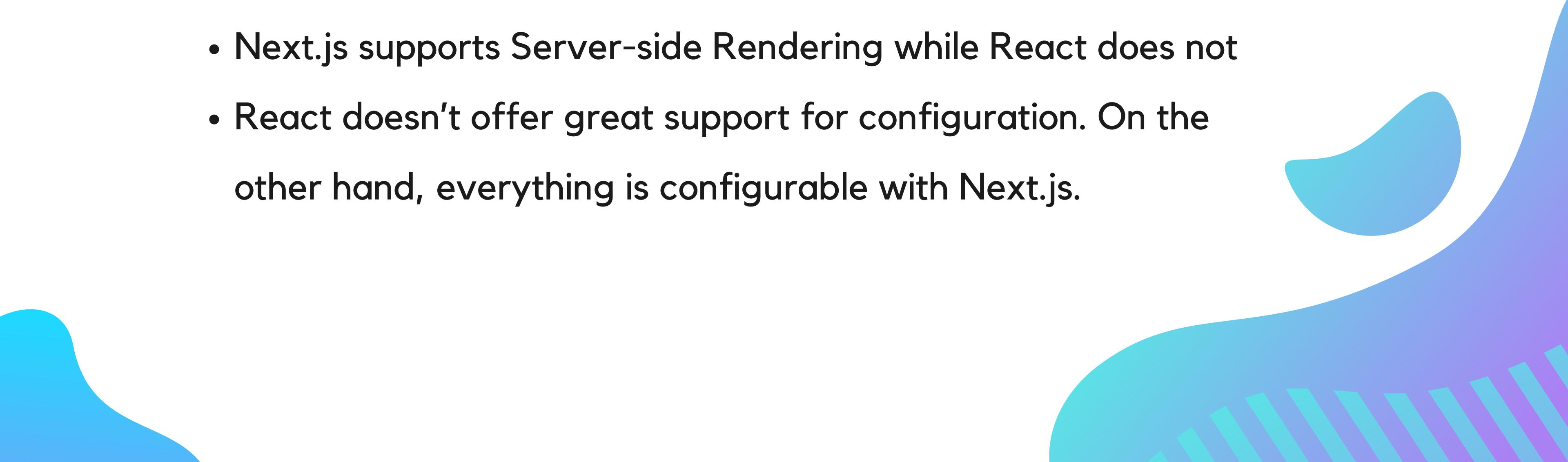
What is Server-Side Rendering?



- **Server-Side Rendering (SSR):** The process where HTML files are converted on the server into fully rendered HTML pages before being sent to the client, enhancing page load times and user experience.
 - **SEO Benefits:** SSR improves search engine optimization since search engines can crawl and index content before delivery, leading to better visibility and ranking.
- 

Next.js Vs React



- Next.js is extremely fast because of the static destinations and server-side rendering.
 - Next.js supports Server-side Rendering while React does not
 - React doesn't offer great support for configuration. On the other hand, everything is configurable with Next.js.
- 

Exercise on Next.js



- Open your terminal and run the command to create a new Next.js app.
- Remove the boilerplate code in app/page.tsx
- Modify the Home function to return a centered card with a "Hello world!" message, a white background, and rounded edges.



Thank You!

