Design a Dynamic Frontend with React

Introduction to React and Other Basic Concepts

A Day in the Life of a MERN Stack Developer

You are working in an organization as a MERN stack developer. Recently, you discovered the power and popularity of ReactJS, a JavaScript library for building user interfaces.

To work with ReactJS, you need to learn about its installation, the organization of the folder structure, component-based architecture and the components. You also must learn event handling, event binding, and methods.

By mastering these key concepts, you will be able to successfully begin your journey as a ReactJS developer.

Learning Objectives

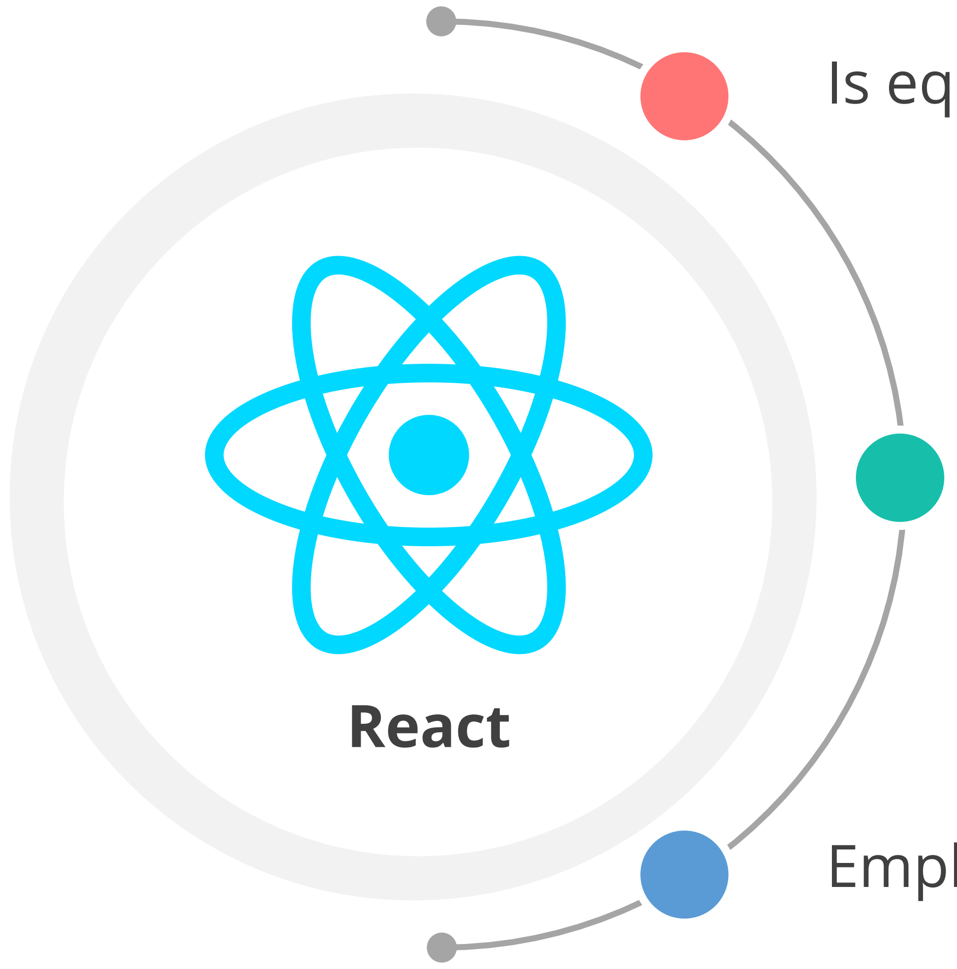
By the end of this lesson, you will be able to:

- Create the default structure of a ReactJS project to provide a solid foundation for the development workflow
- Comprehend the concepts of React components to build an efficient user interface
- Identify the steps in the event handling process to build interactive web applications
- Work with the rendering concepts to deliver a smooth and responsive user experience

Getting Started with ReactJS

Introduction to ReactJS

React is a JavaScript-enabled, open-source library that is used for creating the frontend of an application.



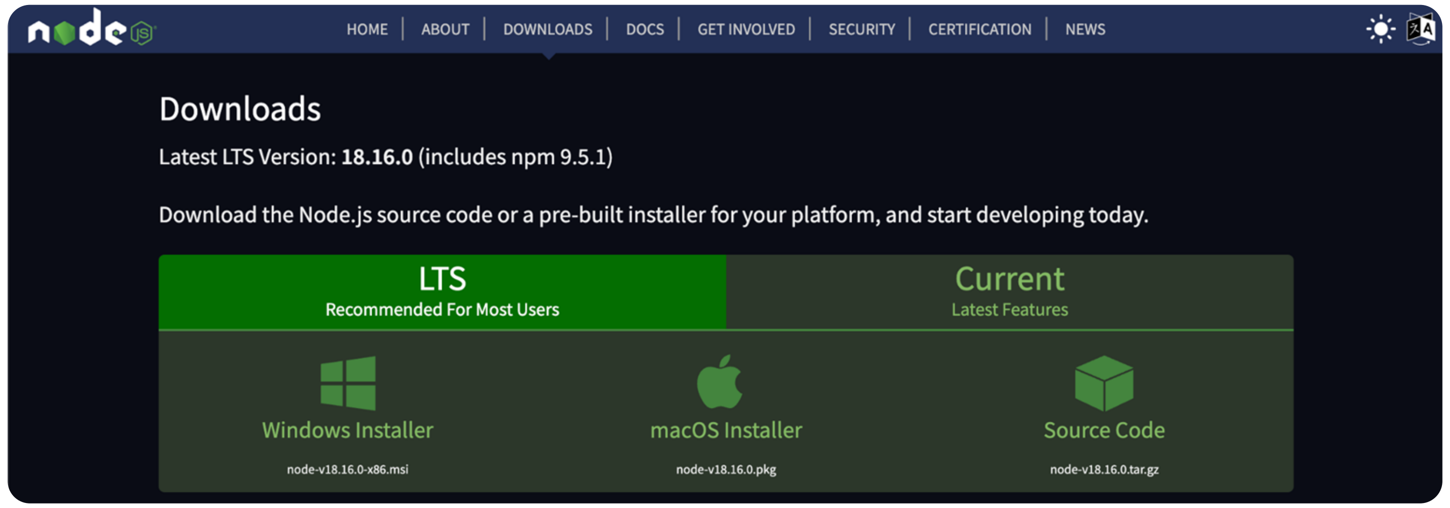
Is equipped with an open-source JavaScript library

Is based on a component-based architecture

Employs a virtual representation of the real DOM

Installation of React

Launching React requires installing the necessary tools and dependencies to create and run React applications.



Downloads

Latest LTS Version: **18.16.0** (includes npm 9.5.1)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

Steps to be followed:

1. Go to node.js download page: https://nodejs.org/en/download/
2. Download the LTS version of the operating system
3. Install the downloaded file

Installation of React

To verify the installation, open the command prompt and check **node -v** and **npm -v** to ensure the packages are downloaded correctly.

```
# Open the command prompt or terminal
# Run the following commands


# Check Node.js version
node -v


# Check npm version
npm -v
```

Installation of React

To create a new React project, install the create-react-app command-line tool globally on the system.

```
npm install -g create-react-app
```

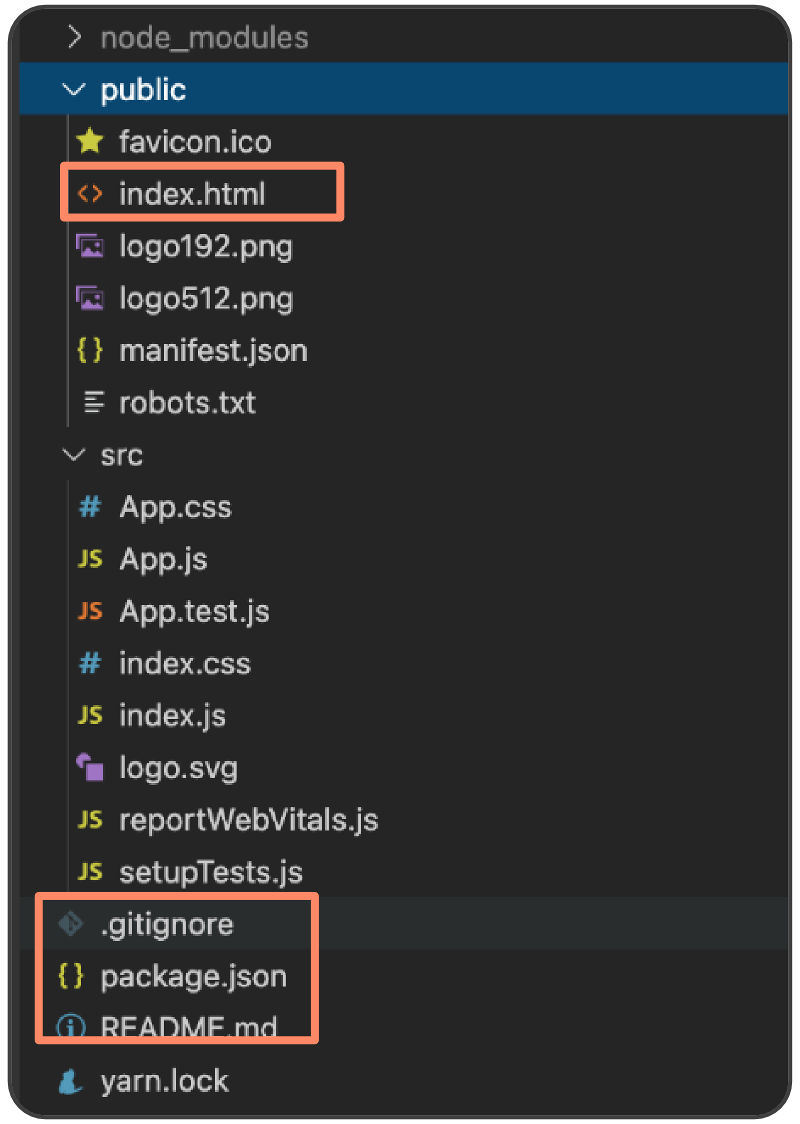
Start a New Project

Navigate to the directory where the React project needs to be created and download the development server to begin a new project.

```
cd my-react-app npm start
```

Folder Structure

The default project structure consists of several directories, such as public, src, and the node_modules folder.

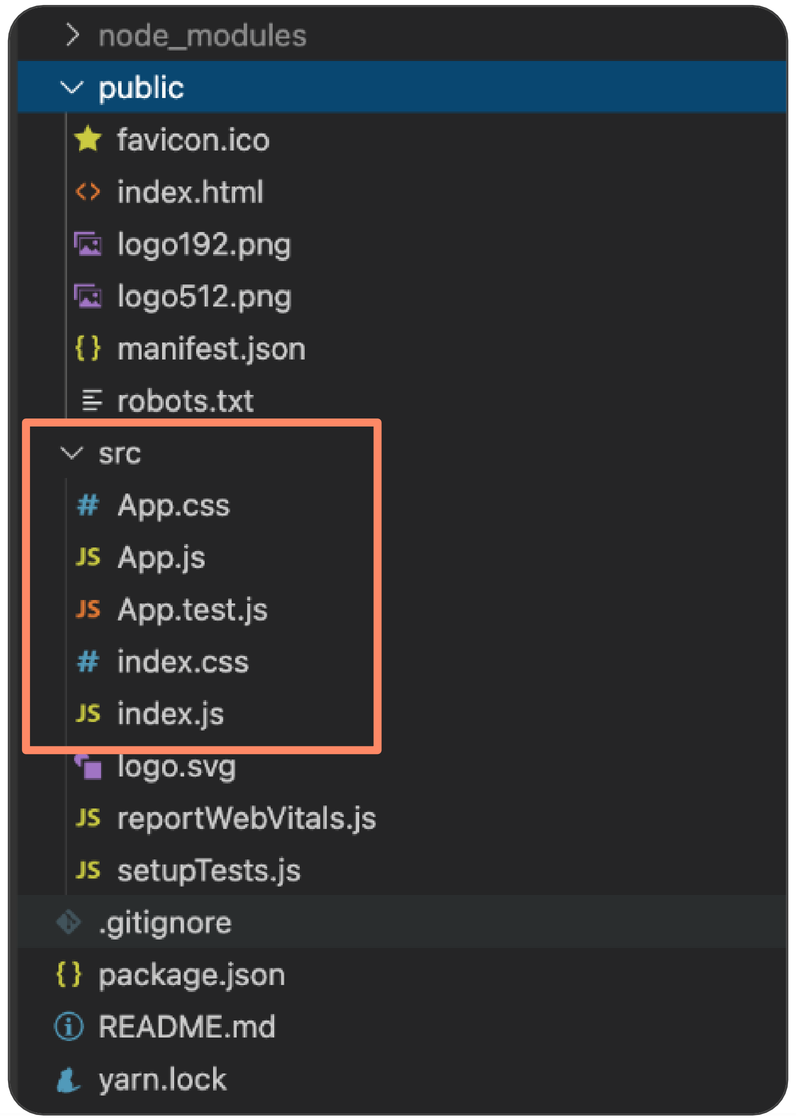


```
> node_modules
v public
    favicon.ico
    index.html
    logo192.png
    logo512.png
    manifest.json
    robots.txt
v src
    App.css
    App.js
    App.test.js
    index.css
    index.js
    logo.svg
    reportWebVitals.js
    setupTests.js
  .gitignore
  package.json
  README.md
  yarn.lock
```

- In **/public**, the necessary file is index.html, which is equivalent to the static index.html file.
- **.gitignore** is used for adding the files that git will ignore.
- **package.json** includes all the package versions.
- **README.md** is the marked-down file used for adding the summary at the bottom of the project.

Folder Structure

The /src directory is important as it contains all the code related to a React application.



```
> node_modules
v public
    favicon.ico
    index.html
    logo192.png
    logo512.png
    manifest.json
    robots.txt
v src
    App.css
    App.js
    App.test.js
    index.css
    index.js
    logo.svg
    reportWebVitals.js
    setupTests.js
  .gitignore
  package.json
  README.md
  yarn.lock
```

- The **/src** directory includes all the React-related codes.
- **/src/App.js** is the primary component of an application. Often, it is referred to as the App component.
- **/src/App.css** allows the developer to define the visual appearance and layout of components and elements.
- **/src/index.js** has been assigned the task of rendering the root component into the DOM.

Programming in React: Prerequisites

Before starting a program, it is important to:

- Delete all the files from the /src directory and only keep index.js
- Import ReactDOM, React, and append a component of React

Programming in React: Example

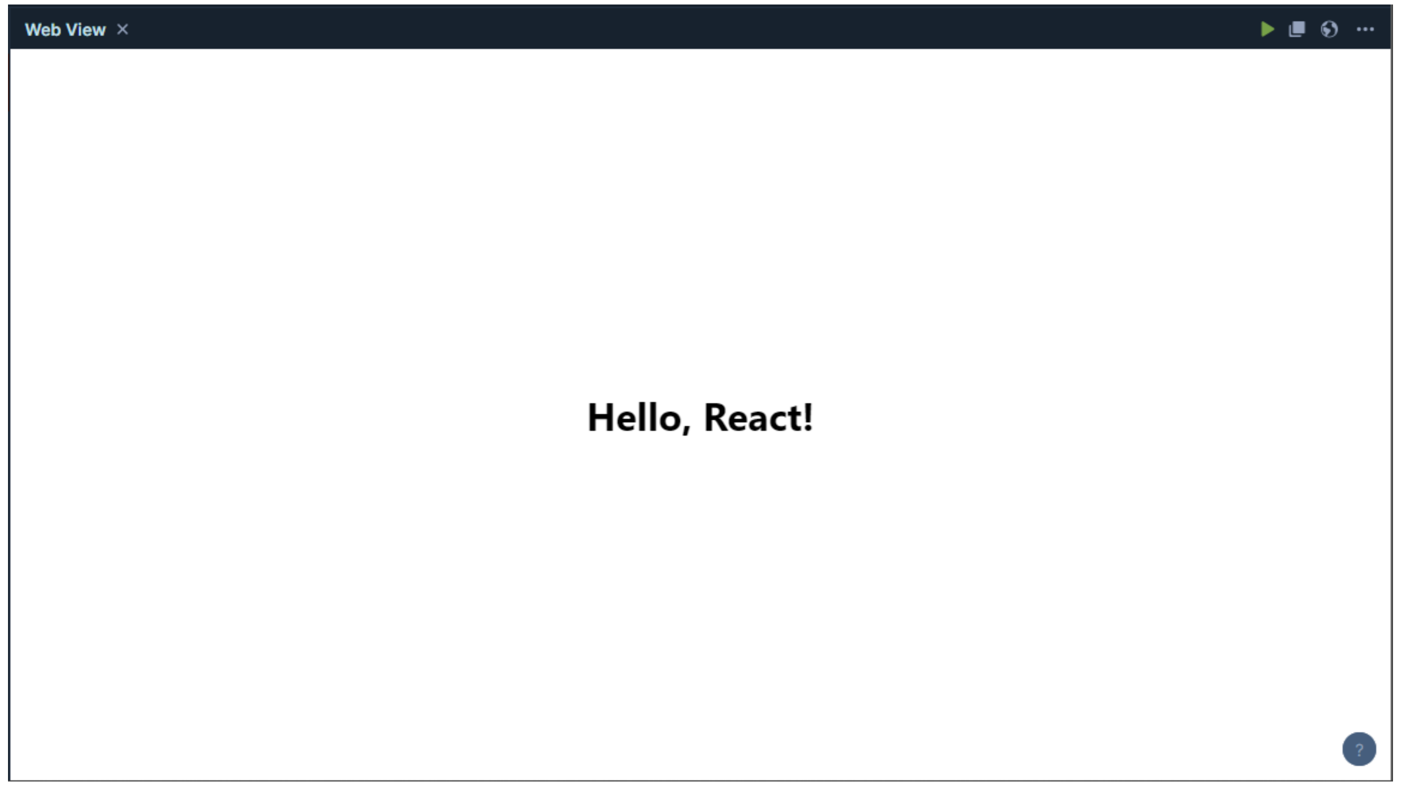
A simple code in React is illustrated as follows:

```
import React from "react";
import ReactDOM from "react-dom";
const App = () => {
 return (
   <div>
   <h1>Hello, React!</h1>
   </div>
 );
};
ReactDOM.render(<App />,
document.getElementById("root"));\
```

Programming in React: An Example

The returned output of the App function is JSX (an extension to JS), which allows writing functions similar to HTML-like syntax.

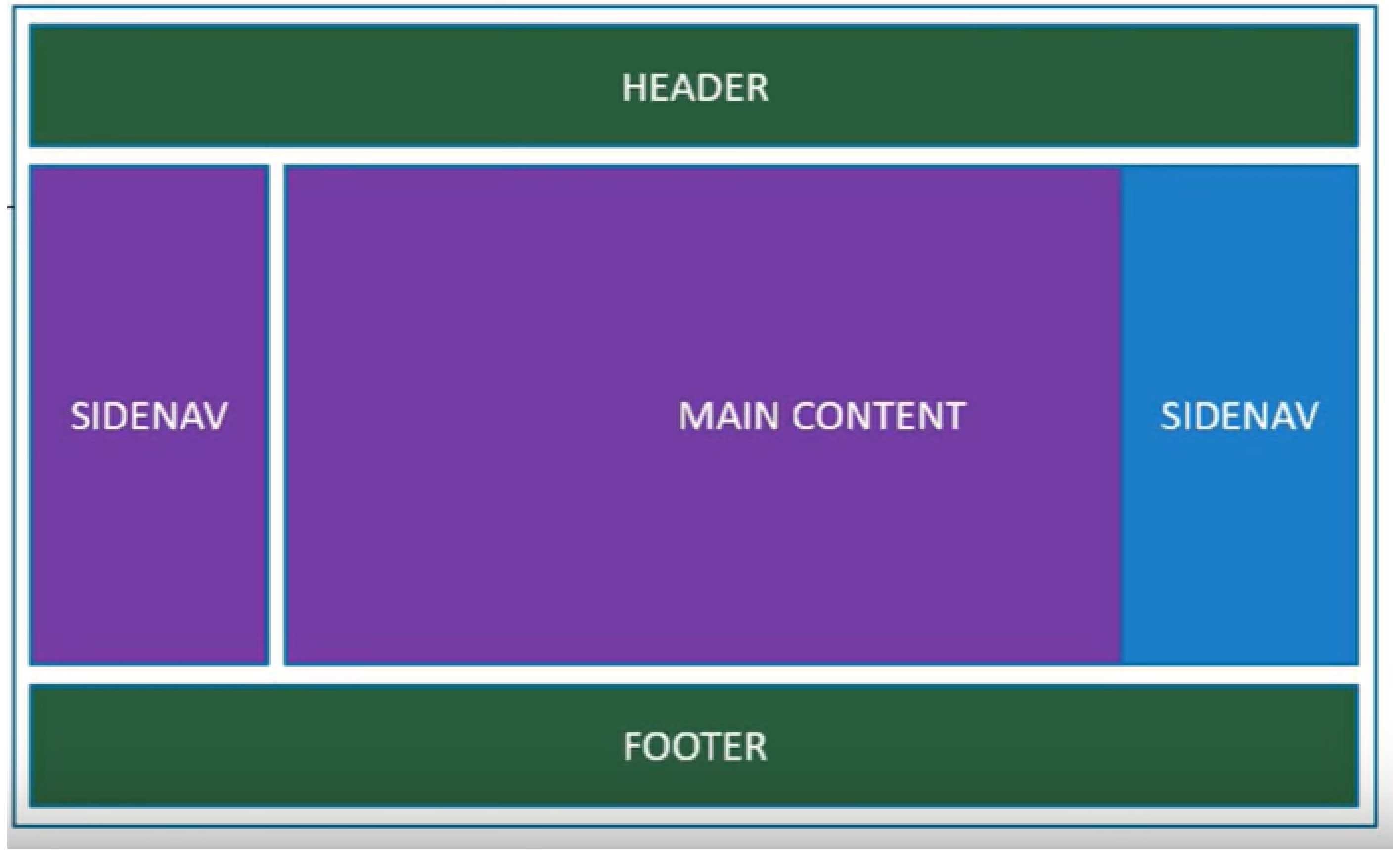
After saving the code and checking the browser, the output will appear as given below:



```
Hello, React!
```

React Components: An Overview

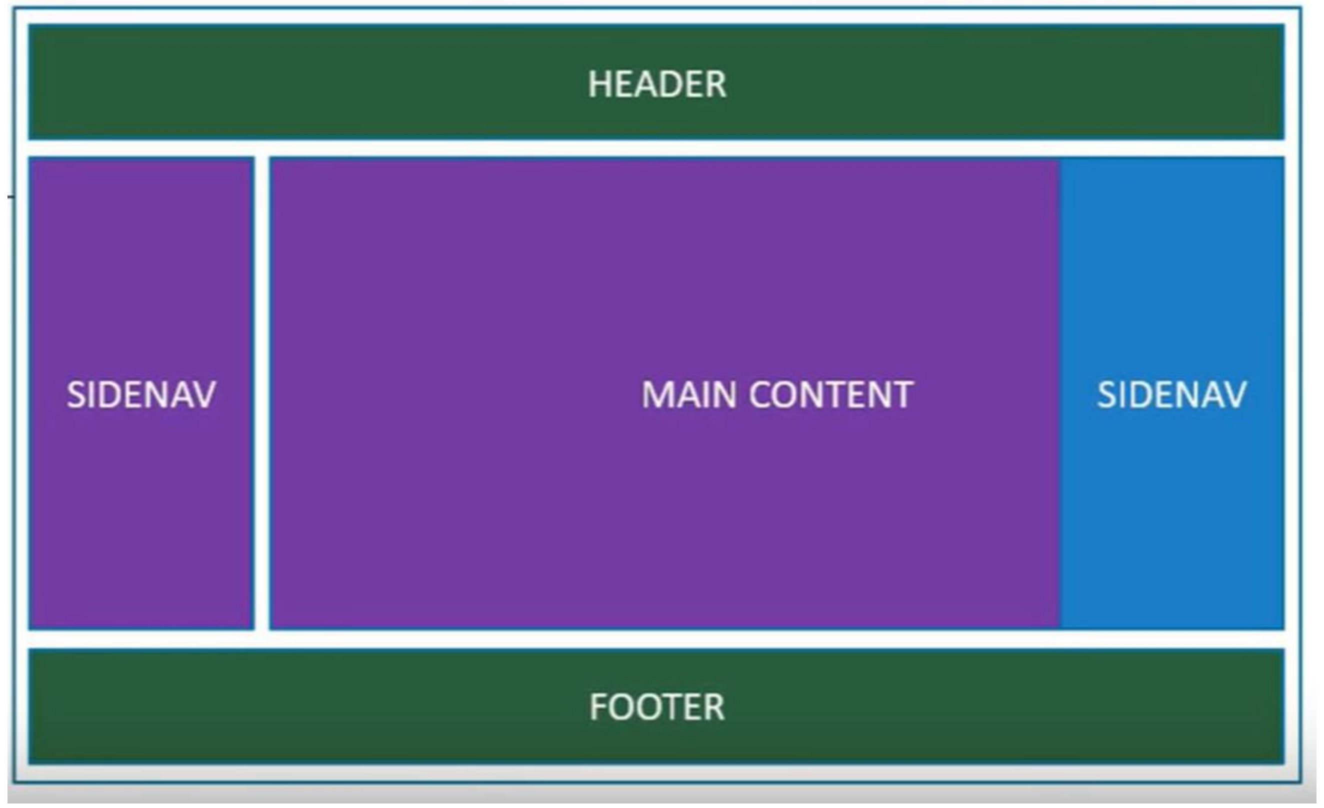
As React is a component-based architecture, developers can divide the application into individual units.



Each component is responsible for:

- Rendering a specific part of the UI
- Handling its own logic
- Creating a hierarchy

React Components: An Overview

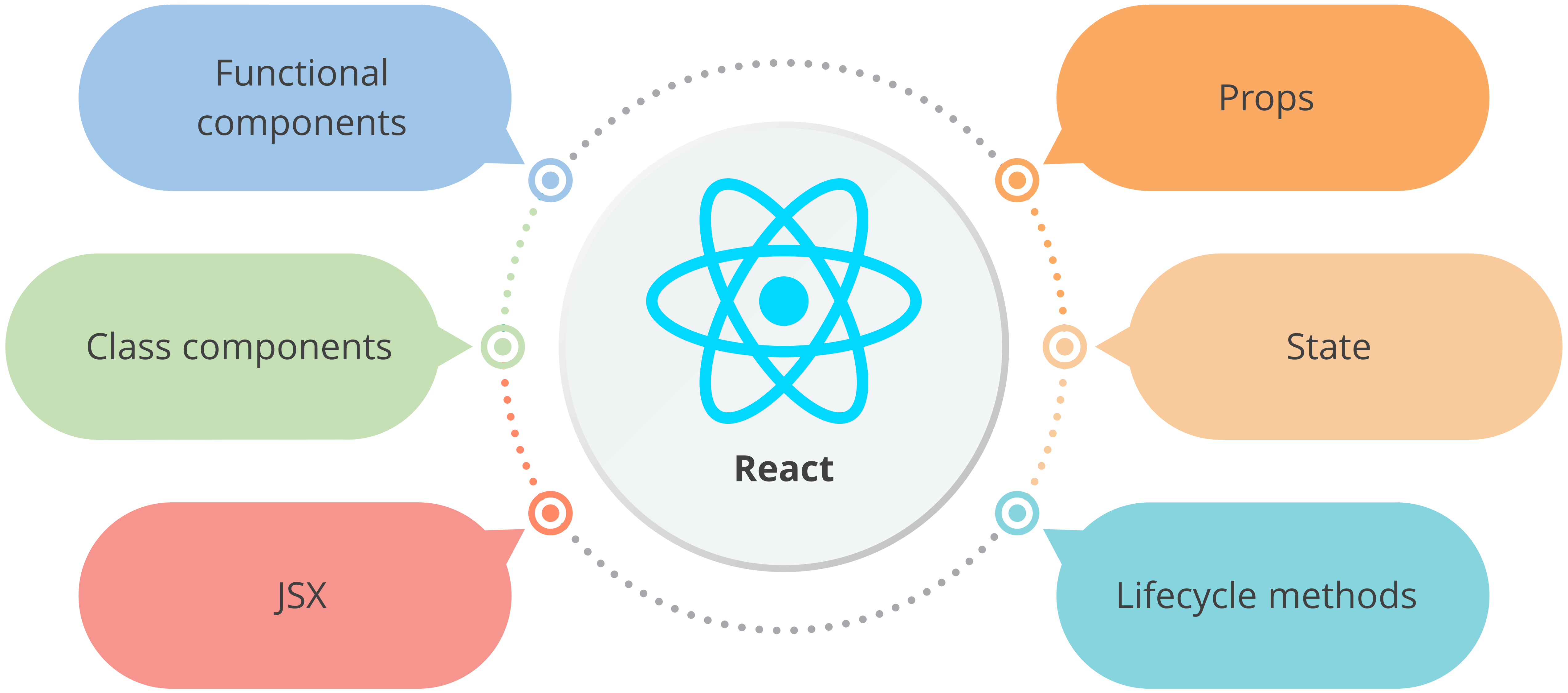


- Each component constitutes a part of the user interface.
- It resembles a building block in React.
- It can be reused.

Example: The side navigation component can be placed either on the left or the right side.

Components in React

Here are the following types of components in React:



Functional Components

Functional components can be defined and developed using JavaScript functions. They are popular because of the following features:

- Simplicity and readability
- Reusability
- Good performance
- Hooks
- Testing

Class Components

A class component defines and creates reusable UI components using JavaScript classes.

To create a class component:

1. Import components from the React library
2. Extend the component class
3. Initialize the props
4. Return the JSX using the render method
5. Name an export after the class name

Class Components: An Example

The following example shows how a class component can be developed:

```
class Welcome extends React.Component {

  render() {
   return <h1>Hello, {this.props.name}
</h1>;
  }
}
```

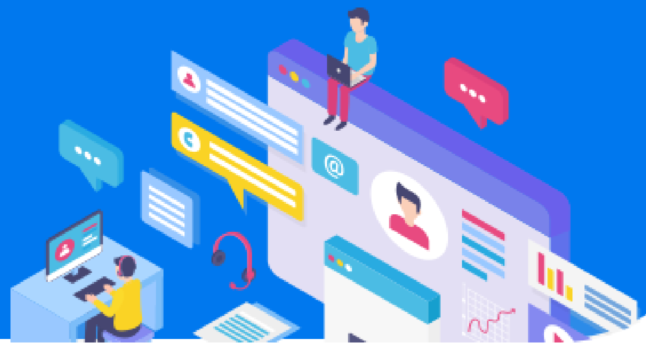
Example:
Class **Welcome** extends **React.Component.** A render method of the class returns a <h1> tag (**Hello)**.

Functional and Class Components

Developers have a preference for functional components instead of class components. Here are some of the reasons why they do so:

Simplicity	Functions accept props and return a declaration.
No this Keyword	**this** keyword is absent, which makes the task easier for beginners.
No State	A state with many components is not needed to find a solution.
Complex Logic	Logic is not complicated.

Assisted Practice

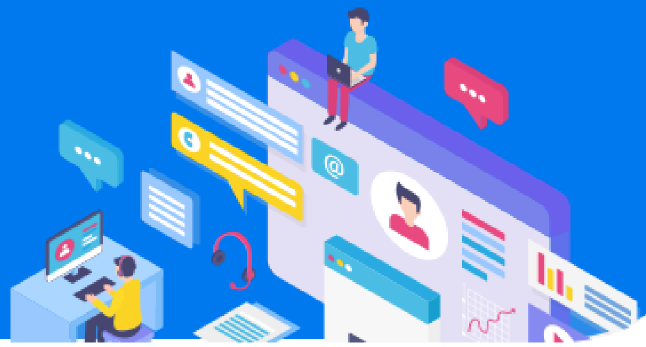


React Components **Duration: 15 Min.**

Problem Statement:

You are given a project to create and start a React application with a class component displaying a text on the screen.

Assisted Practice: Guidelines



Steps to be followed:

1. Create a class component
2. Implement a render function to return the h2 element

Hooks: An Overview

Hooks allow the addition of custom behavior to an application, enabling more flexibility. Some of the important features of Hooks are as follows:

Follow specific rules and naming conventions

Call hooks only at the top level of the functional component

Use the **use** prefix, followed by the feature they provide

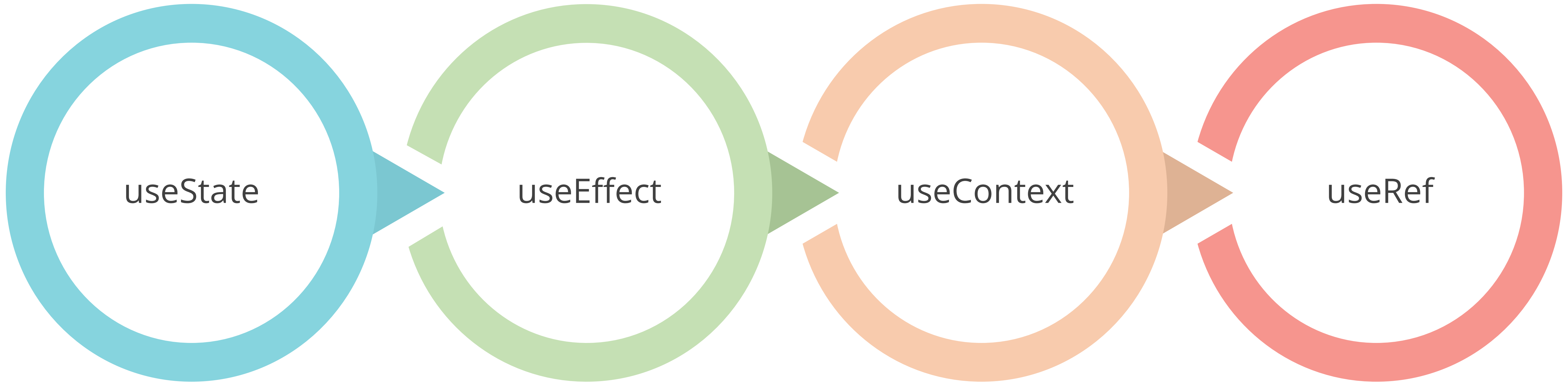
Hooks: An Overview

Hooks enable coders to use functional components in coding without the help of class syntax. They revolutionized the method of writing React components by allowing users to:

- Use the features of components in functional components
- Add features for state and lifecycle
- Arrange the component logic into units

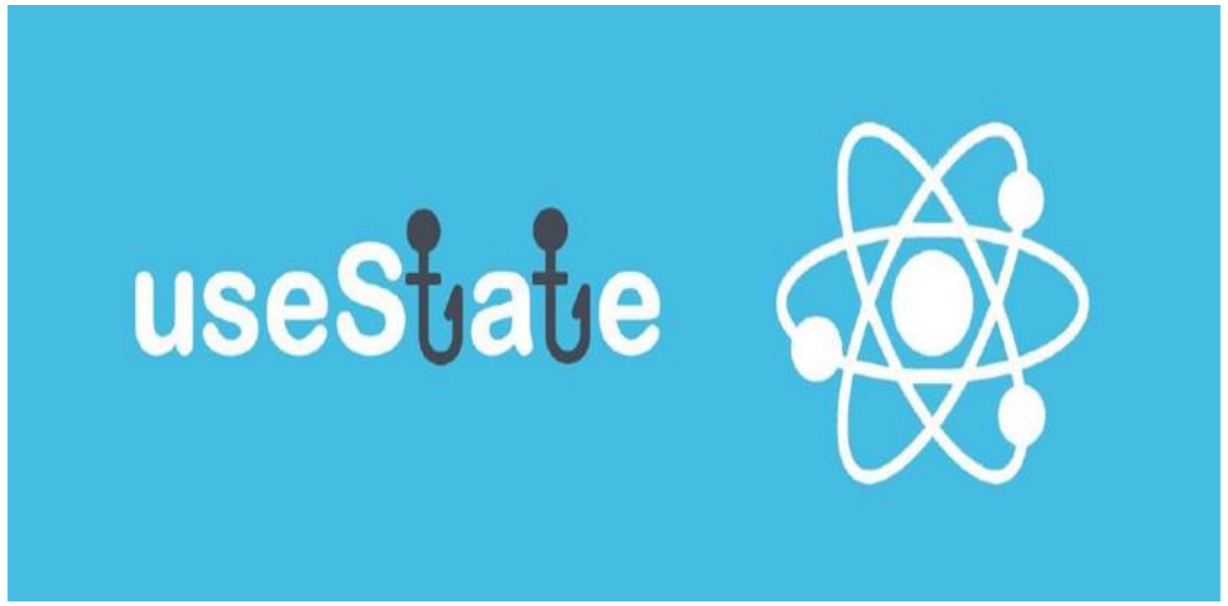
Types of Hooks

Here are the following Hooks that help to manage state, handle side effects, share data between components, and more:



The useState Hook

The **useState** Hook is vital as it permits functional components to have their own state.



Source: https://jeffdevslife.com/p/usestate-hook/

- **useState** can be used with an array, object, string, Boolean, or number.
- The **useState** function picks the initial state as the argument.
- **useState** Hooks return a pair of values as an array.

The useEffect Hook: Functions

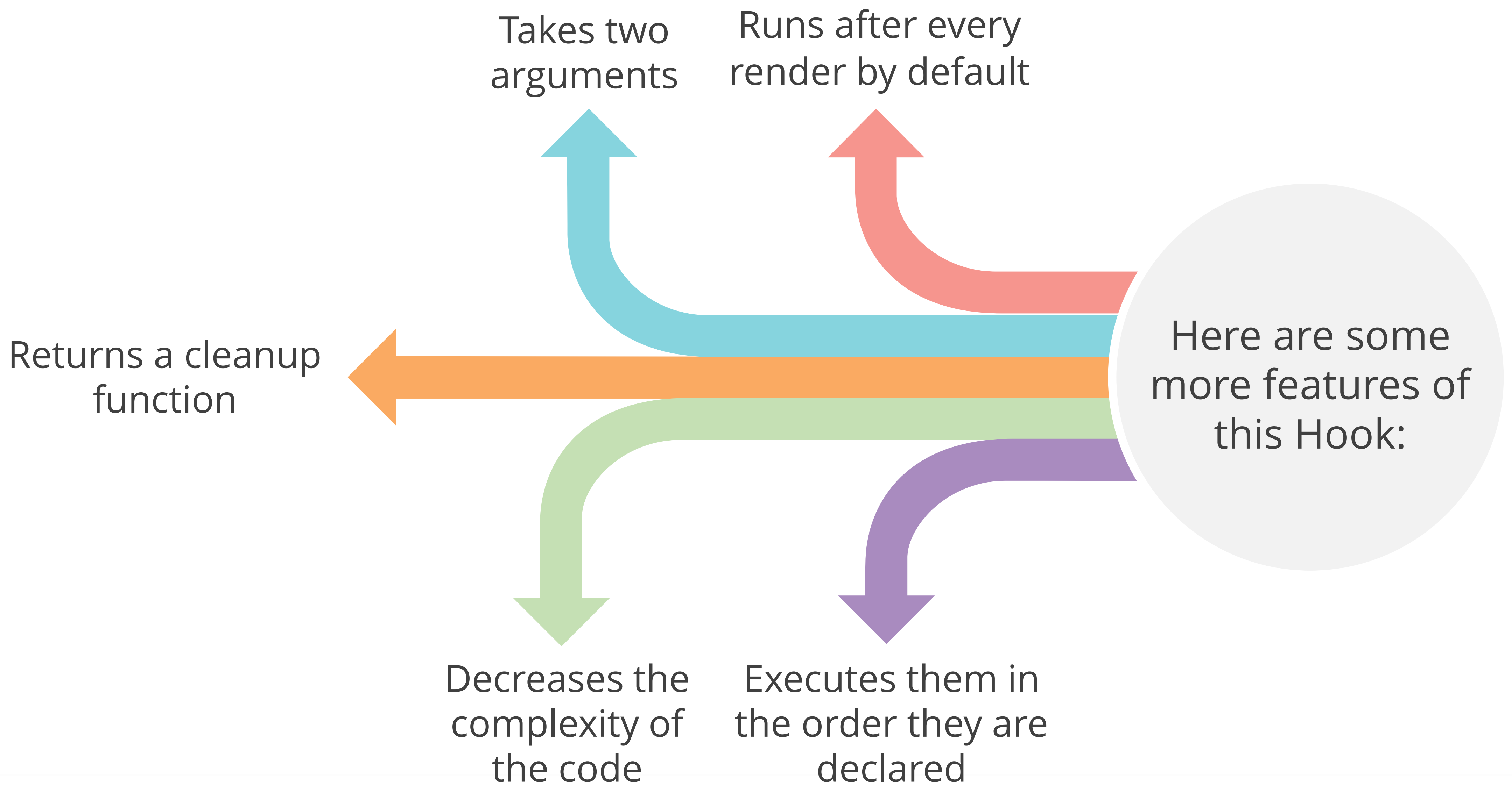
The **useEffect** Hook ensures side effects are performed in functional components.

It also has the following functions:

- It implements life-cycle methods.
- It ensures React remembers the function that is passed.
- It enables timers in functional components.
- It allows side effects like fetching data and updating DOM to be performed in the functional component.
- It updates the document title.

The useState Hook: Features

The **useEffect** Hook controls the execution of the side effects and keeps the component's behavior consistent.


Here are some more features of this Hook:
Takes two arguments
Runs after every render by default
Returns a cleanup function
Decreases the complexity of the code
Executes them in the order they are declared

JSX Syntax

JSX (JavaScript XML), a syntax extension, ensures coders can write code similar to HTML in JavaScript files. Some of the important features of JSX are as follows:

- It is an extension of JavaScript.
- It builds user interfaces.
- It combines JavaScript and HTML into one language.
- It changes into regular JavaScript during runtime.
- It embeds JavaScript logic.

Benefits of Using JSX

Developers use the JSX component in React applications for the following reasons:

- Allows HTML-like code in JavaScript files
- Efficiently creates interactive UI components
- Allows declarative and component-based code
- Allows dynamic content and conditional rendering
- Improves code organization and reusability
- Provides intuitive syntax for defining UI elements

Props in React

This code shows how props can be passed as attributes to a component. It also displays how to use the **props** parameter.

```
// Greet.js
import React from 'react';
const Greet = (props) => {
  console.log(props);
  return <h1>Hello, {props.name}!</h1>;
};
export default Greet
```

Props in React

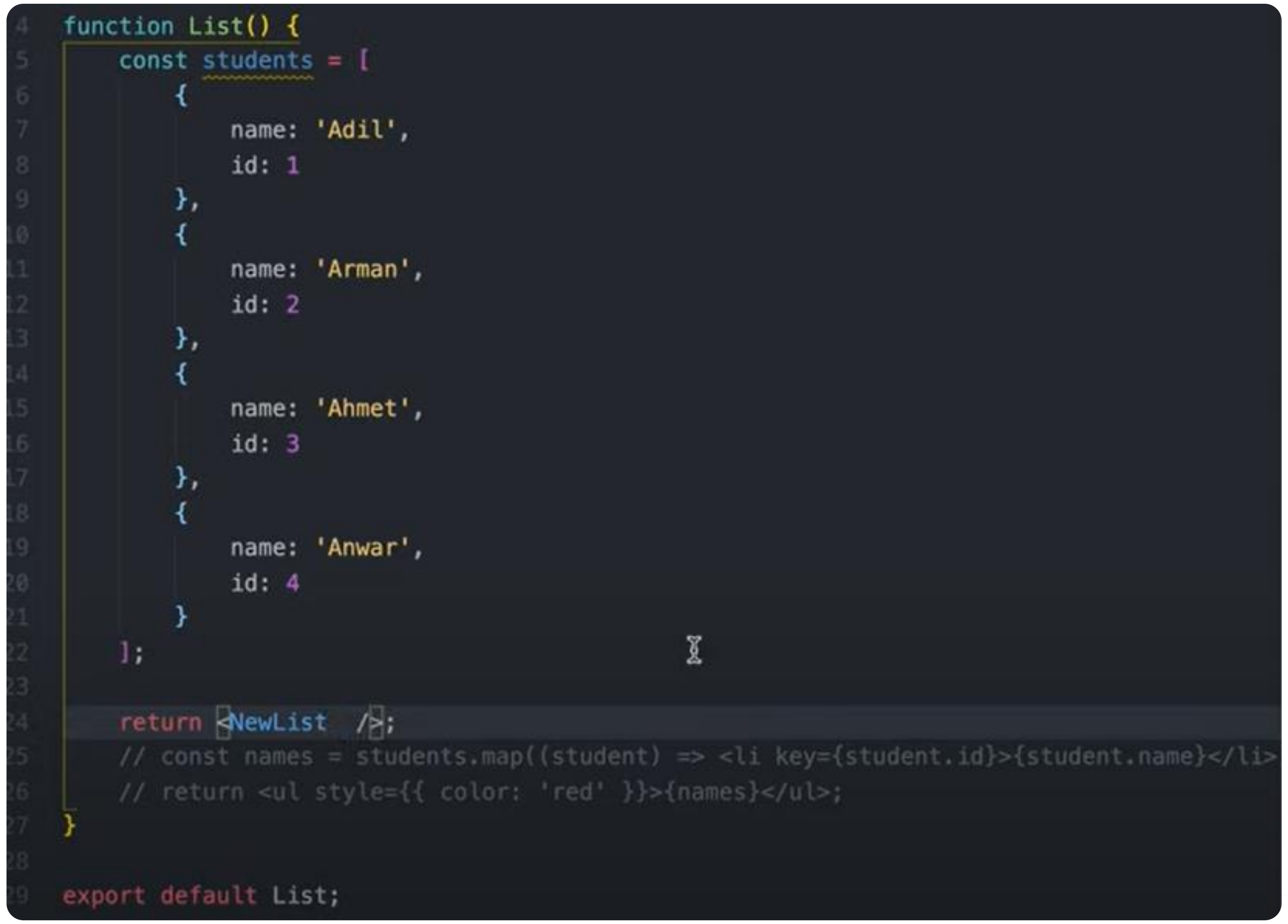
The code shows how props can render dynamic content.

```
// App.js
import React from 'react';
import Greet from './Greet';
const App = () => {
  return (
   <div>
   <Greet name="John" />
   <Greet name="Mary" />
   <Greet name="Rock" />
   </div>
  );
};
export default App;
```

Using Props in React

The following steps are required:

- To display the value of a specific prop, use the syntax props.name, where name is the attribute name
- To include the value of a prop inside the rendered output in JSX, wrap the prop expression in curly braces {}



```
function List() {
    const students = [
        {
            name: 'Adil',
            id: 1
        },
        {
            name: 'Arman',
            id: 2
        },
        {
            name: 'Ahmet',
            id: 3
        },
        {
            name: 'Anwar',
            id: 4
        }
    ];

    return <NewList  />;
    // const names = students.map((student) => <li key={student.id}>{student.name}</li>
    // return <ul style={{ color: 'red' }}>{names}</ul>;
}

export default List;
```

State in React

JavaScript object **state** holds data for a component.

For instance, a state object can be initialized inside a constructor.

```
class Truck extends React.Component {
  constructor(props) {
 super(props);
 this.state = {brand: "Ford"};
  }
  render() {
 return (
    <div>
       <h1>My Truck</h1>
    </div>
 );
  }

}
```

Using State in React

A state object can be used with the syntax: **this.state.propertyname**, anywhere in a component.

```
class Truck extends React.Component {
  constructor(props) {
   super(props);
   this.state = {
   brand: "Ford",
   model: "Pickup",
   color: "red",
   year: 1994
   };
  }
  render() {
```

Using State in React

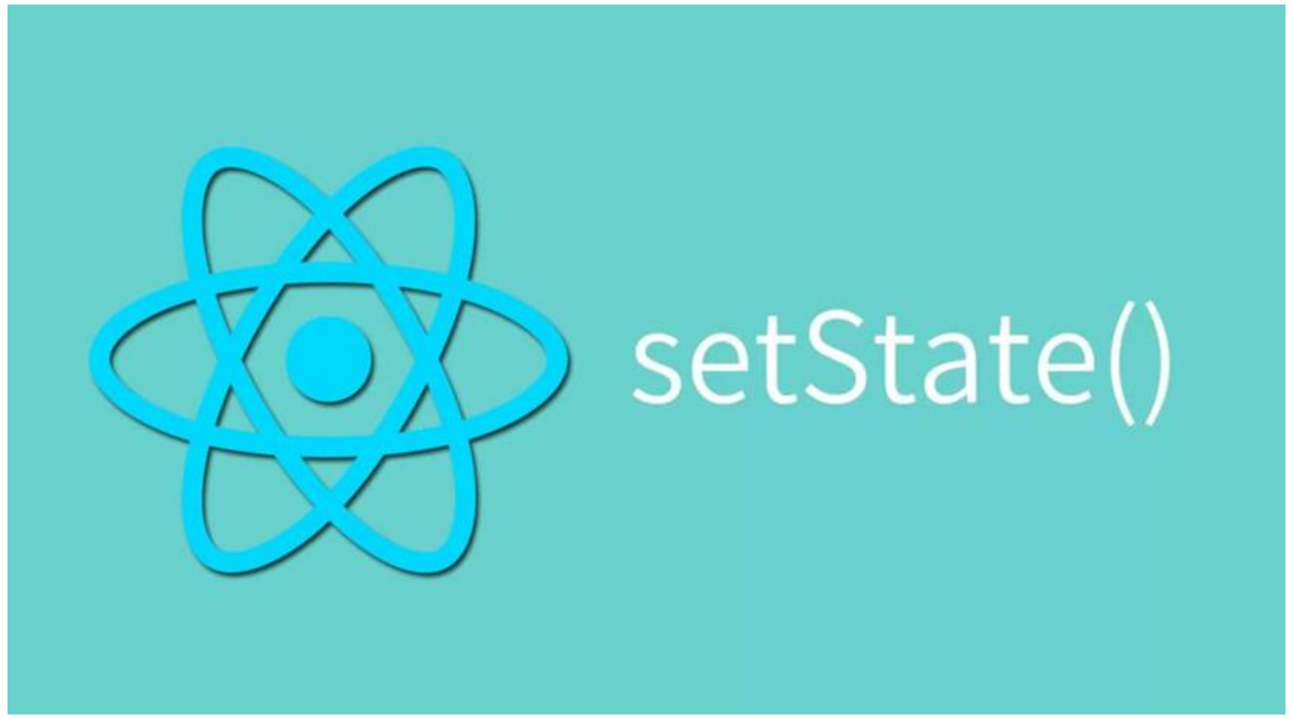
The code represents a component that renders information about a specific product, including its brand, color, model, and year, using JSX syntax in React.

```
return (
<div>
  <h1>My {this.state.brand}</h1>
  <p>
   This is {this.state.color}
```

```
{this.state.model}
   from {this.state.year}.
   </p>
  </div>
 );
}
}
```

setState in React

The component class provides a method, **setState**, that updates a component's state.



Source: https://www.poudelanil.com.np/react-setstate-callback/

When a developer calls setState, React:

- Merges the provided object with the current state object
- Updates the specified properties

setState in React: Example

Example: Change the color of the truck from red to blue with a click of a mouse button. For this, use the **onClick** event, which is called when the mouse button is clicked.

```
class Truck extends React.Component {
  constructor(props) {
   super(props);
   this.state = {
   brand: "Ford",
   model: "Pickup",
   color: "red",
   year: 1964
   };
  }
  color_change = () => {
   this.setState({color: "blue"});

   }
```

setState in React: Example

Example: Here, the **render() method** of the Truck component returns a JSX structure that represents the visual output of the component.

```
render() {
  return (
  <div>
     <h1>My {this.state.brand}</h1>
     <p>
        It is a {this.state.color}
        {this.state.model}
        from {this.state.year}
```

```
</p>
      <button
         type="button"
          onClick={this.changeColor}
      >Change color</button>
   </div>
   );
  }

 }
```

Destructure Props and State

In React, destructuring props in the state refers to extracting specific properties from the props object.

Consider an employee object with the given properties:

```
const employee = {
  first_name: "Ramesh",
  last_name: "Fadatare",
  email_Id:
"ramesh@gmail.com"
 }
```

Before ES6, each property had to be accessed individually using dot or bracket notation.

```
console.log(employee.first_name) // Ramesh

console.log(employee.last_name) // Fadatare

console.log(employee.email_Id) // ramesh@gmail.com
```

Destructure Props and State

Destructuring of Props and State properties can efficiently extract and assign values concisely. The following code illustrates this point:

Destructuring helps in streamlining the given code.

```
const { first_name,
last_name, email_Id } =
employee;
```

The previous code is similar to the following code.

```
const first_name =
employee.first_name
const last_name =
employee.last_name
const email_Id=
employee.email_Id
```

Now, the mentioned properties can be received.

```
console.log(first_name)
// Ramesh
console.log(last_name)
// Fadatare
console.log(email_Id) //
ramesh@gmail.com
```

Destructure Props and State: Example

The given code is a functional component called Employee in React that displays employee details.

```
import React from 'react'

export const Employee = props => {

return (

   <div>

        <h1> Employee Details</h1>
        <h2> First Name :
{props.first_name} </h2>
```

```
<h2> Last Name : {props.last_name} </h2>

         <h2> Email Id : {props.email_Id}
</h2>

   </div>

)

 }
```

Note that the employee data can be accessed in the Employee component using props.

Destructure Props and State: Example

This code represents the main entry point of a React application. The Employee component receives props for **firstName**, **lastName**, and **emailId**.

```
import React from 'react';
import logo from './logo.svg';
import './App.css';
import Table from
'./components/functional-
components/Table';
import PropsDemo from
'./components/props/PropsDemo';
import { Employee } from
'./components/Employee';
function App() {
```

```
return (
  <div className="App">
    <header className="App-header">
     <Employee first_name = "Ramesh"
last_name = "Fadatare" email_Id =
"ramesh@gmail.com" />
    </header>
  </div>
  );
}
 export default App;
```

Destructure Props: Function Parameter Destructured

Here is one way to destructure props in a functional component:

1. Function parameter destructured

```
import React from 'react'
export const Employee = ({first_name, last_name, email_Id})
=> {
  return (
     <div>
        <h1> Employee Details</h1>
        <h2> First Name : {first_name} </h2>
        <h2> Last Name : {last_name} </h2>
        <h2> Email Id : {email_Id} </h2>
     </div>
  )
 }
```

Destructure Props: Props Destructured

2. Props destructured in the function body

```
import React from 'react'
export const Employee = props => {
  const {first_name, last_name, email_Id} = props;
  return (
     <div>
        <h1> Employee Details</h1>
        <h2> First Name : {first_name} </h2>
        <h2> Last Name : {last_name} </h2>
        <h2> Email Id : {email_Id} </h2>
     </div>
  )
 }
```

Destructure Props Using Class Components

Specific props are picked up from **this.props** object and allotted to individual variables when destructuring props in class components.

Here is an example of a program without destructuring:

```
import React, { Component } from
'react'
class Employee extends Component {
  render() {
     return (
        <div>
           <h1> Employee Details</h1>
```

```
<h2> First Name :
{this.props.first_name} </h2>
           <h2> Last Name :
{this.props.last_name} </h2>
           <h2> Email Id :
{this.props.email_Id} </h2>
        </div>
     )
  }
}
 export default Employee;
```

Destructure Props Using Class Components

Destructuring props in class components using the **render() function** is given below:

```
render() function:

import React, { Component } from
'react'
class Employee extends Component {
  render() {
     const {first_name, last_name,
email_Id} = this.props;
     return (
        <div>
           <h1>
```

```
Employee Details</h1>
           <h2> First Name :
{first_name} </h2>
           <h2> Last Name :
{last_name} </h2>
           <h2> Email Id : {email_Id}
</h2>
        </div>
     )
  }
}
 export default Employee;
```

Destructure State

This code is an example of a class component in React that renders the details of an employee.

```
import React, { Component } from
'react'
class StateDemp extends Component {
  render() {
     const {state_1, state_2,
state_3} = this.state;
     return (
<div>
           <h1> State Details</h1>
           <h2> state1 :
```

```
{state_1} </h2>
           <h2> state2 : {state_2}
</h2>
           <h2> state3 : {state_3}
</h2>
        </div>
     )
  }
}
 export default StateDemo;
```

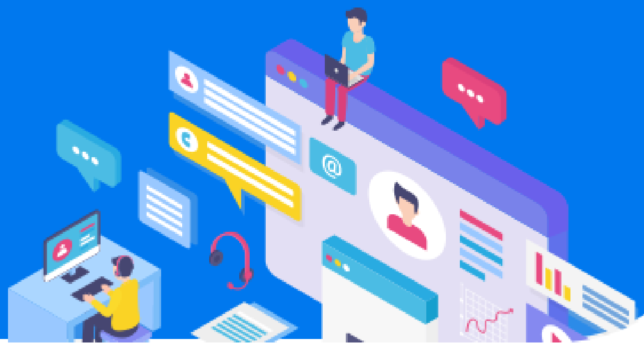
Assisted Practice

React Props and States **Duration: 15 Min.**

Problem Statement:

You are given a project to implement a React web application to store any details of a bike.

Assisted Practice: Guidelines



Steps to be followed:

1. Create a class bike with the make, model, and color
2. Create a function to change the bike color using **setState**
3. Render the bike property on the page

Handling Events

Event Handling vs. DOM

Event handling captures and responds to the actions or events in a component.

The typical steps to handle events in React are:

01 Define an event handler function

02 Attach the event handler to the JSX element

03 Implement the event handler logic

Event Handling vs. DOM

In React, event handling allows one to respond to user interactions such as button clicks, form submissions, or keyboard input.

Features of React and DOM event handling are as follows:

React events use camelCase names	DOM events use lowercase names	React events require a function as an event handler	DOM events can use a string as an event handler
Example: OnClick	Example: Onclick	onClick={buttonClicked}	onclick="buttonClicked()"

Event Handling vs. HTML

React event handling and HTML event handling have some similarities, but there are also important differences between them.

HTML	React
<button onclick="buttonClicked()"> Button Click!	<button onClick={buttonClicked}> Button Click! </button>
Event handlers are defined as attributes on HTML elements.	Event handlers are typically passed as props to components.

Event Handling vs. HTML

To prevent default behavior in React, **return false** cannot be used, and instead, **preventDefault()** must be called explicitly.

HTML

```
//HTML
<button onclick="console.log('Button
Clicked.'); return false">
 Click Me
 </button>
```

React

```
// React
Function handleClick (e) {
    e.preventDefault ();
    console.log('Button clicked.');
}
Return (
     <button onClick={handleClick}>
         Click me
     </a>
   );
```

Event Handling: Functional Component

The **FunctionClick()** component renders a button. When the button is clicked, the **clickHandler()** function is called.

```
import React from 'react'

function FunctionClick() {

  function clickHandler() {

     console.log('Button clicked')

     }
```

```
return (

     <div>

        <button
onClick={clickHandler}>Click</button>

     </div>

     )

}

export default FunctionClick;
```

Event Handling: Class Component

The **ClassClick** component is a class-based component in React that renders a button. When the button is clicked, the **clickHandler()** method is called, logging a message to the console.

```
import React, { Component } from
'react'

class ClassClick extends
Component {

  clickHandler() {

  console.log('Clicked the
button')

  }

 render() {
```

```
return (

     <div>

     <button
onClick={this.clickHandler}>Clic
k Me</button>

     </div>

   )

   }

}

export default ClassClick
```

Binding Event Handlers

Event Binding permits coders to state a function or method to be implemented when an event occurs.

```
import React, { Component } from 'react'
class EventBind extends Component {
  constructor() {
   super()
   this.state = {
   message: 'Hello'
   }
  }
```

When using class methods for event handling, the coder must ensure the correct binding of **this** within the method to access the component's instance and its properties.

Binding Event Handlers

If the binding is not done, the **this** keyword may return undefined, resulting in a **TypeError: Cannot read property setState of undefined error**.

```
 clickHandler() {
   console.log(this)
   this.setState({message:
'Goodbye'})
  }
  render() {
   return (
   <div>
```

```
<div>{this.state.message}</div>
      <button
onClick={this.clickHandler}>Click</b
utton>
   </div>
   )
  }
}
 export default EventBind
```

Binding Event Handlers: Methods

React offers three ways to bind event handlers:

01 Dynamic binding

02 Using arrow function

03 Constructor binding

Dynamic Binding

Dynamic Binding refers to the process of establishing a connection between a function and its execution context (the value of **this**) at runtime.

```
import React, { Component } from 'react'
class EventBind extends Component {
  constructor() {
   super()
   this.state = {
   message: 'Hello'
   }
  }
```

It allows for flexible and late binding of functions to objects or instances.

Dynamic Binding

```
clickHandler = () => {
    this.setState({message:'Goodbye'})
  }
  render() {
   return (
   <div>
        <div>{this.state.message}</div>
      <button onClick={this.clickHandler}>Click</button>
   </div>
   )
  }
}
```

Changing **this.state.message** causes the component to rerender and generate a new handler that is different from the one used during the initial call to render().

Using the Arrow Function

With arrow functions, there is no need to explicitly bind the event handler, as they automatically capture the **this** context of the component.

```
import React, { Component } from 'react'
class EventBind extends Component {
  constructor() {
   super()
   this.state = {
   message: 'Hello'
   }
   this.clickHandler =
this.clickHandler.bind(this)
  }
 clickHandler() {
   console.log(this)
```

```
this.setState({message: 'Goodbye'})
  }
  render() {
   return (
   <div>
        <div>{this.state.message}</div>
      <button
onClick={this.clickHandler}>Click</button>
   </div>
    )
  }
}
 export default EventBind
```

Constructor Binding

Constructor binding binds the context of a class method to the component.

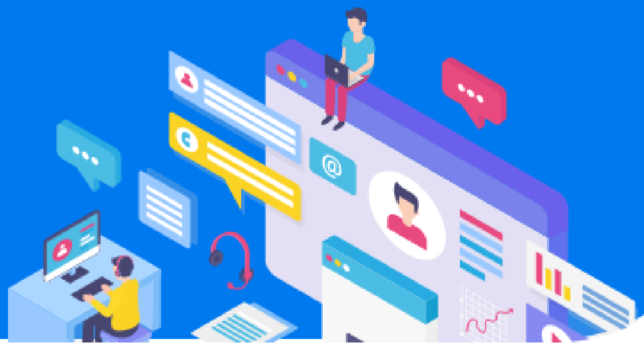
```
import React, { Component } from 'react'
class EventBind extends Component {
  constructor() {
   super()
   this.state = {
   message: 'Hello'
   }
   this.clickHandler = this.clickHandler.bind(this)
  }
 clickHandler() {
   console.log(this)
```

Constructor Binding

```
this.setState({message: 'Goodbye'})
  }
  render() {
   return (
   <div>
        <div>{this.state.message}</div>
      <button
onClick={this.clickHandler}>Click</button>
   </div>
   )
  }
}
 export default EventBind
```

Constructor binding provide good performance and are widely used in React applications for binding events.

Assisted Practice

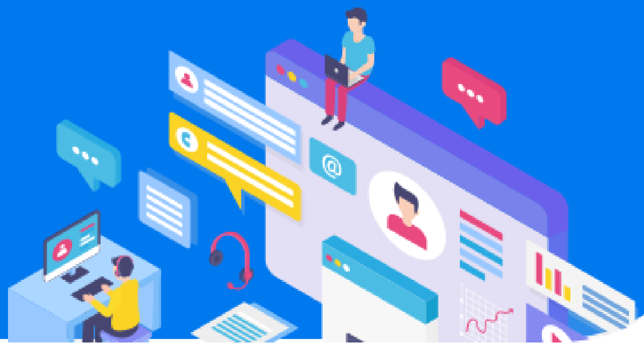


Event Handlers **Duration: 15 Min.**

Problem Statement:

You are given a project to create a React component that binds its event handler contexts and passes data into the event handler.

Assisted Practice: Guidelines



Steps to be followed:

1. Import the necessary dependencies from the **React** and **react-dom** libraries
2. Import the **MyList** component from **./MyList**
3. Define an array of items with their IDs and names
4. Render the **MyList** component with the **items** array as a property and mount it to the **root** element in the HTML document
5. Implement the **MyList** component

Rendering

Methods as Props

Methods as props: a method defined in a parent component is shared with a child component as a prop.

Parent component:

```
import React, { Component } from 'react'
import ChildComponent from '../ChildComponent';
class PerentComponent extends Component {
   constructor(props) {
      super(props)

      this.state = {
            parentName: 'Parent'
      }
      this.greetParent = this.greetParent.bind(this)
   }
```

Methods as Props

The child component can then invoke that method when certain events or conditions occur.

```
   greetParent(){
      alert('Hello: ' + this.state.parentName);
   }
   render() {
      return (
         <div>
               {/* We pass a reference to a method as props to the child component
               greetHander will now be available to the child component */}
               <ChildComponent greetHandler={this.greetParent}></ChildComponent>
         </div>
      )
   }
}
 export default PerentComponent
```

Methods as Props

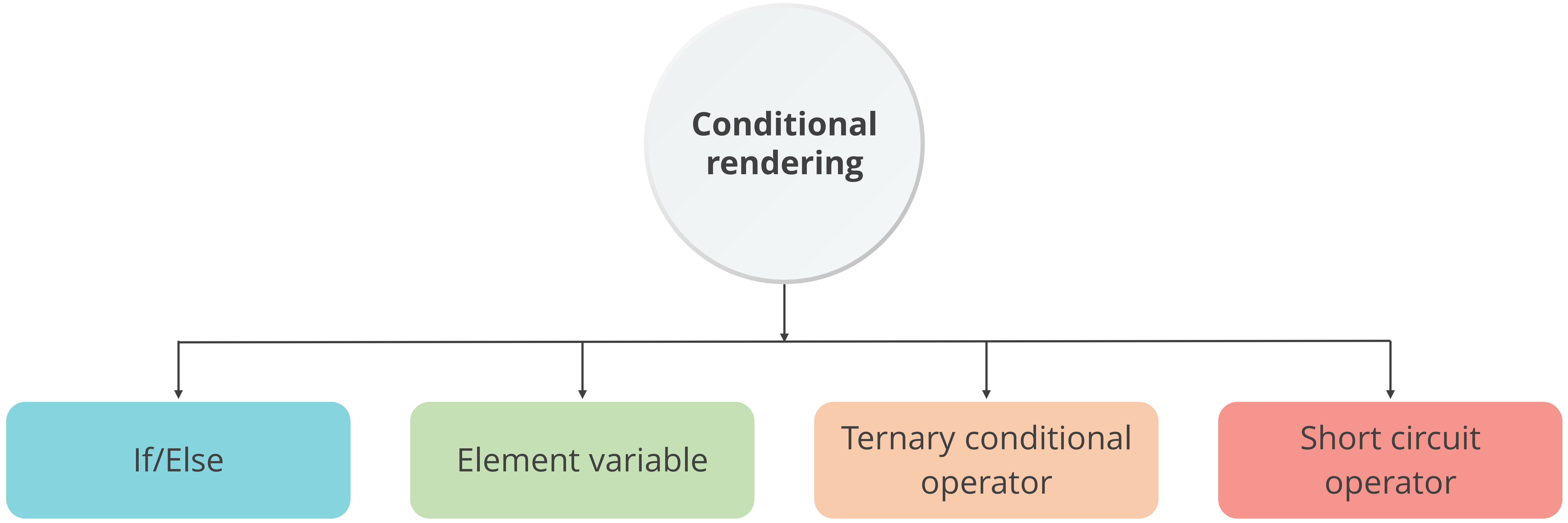
Here, a functional component called **ChildComponent** is used. This component receives a prop called **greetHandler** from its parent component.

Child component:

```
import React from 'react'
function ChildComponent(props) {
   return (
      <div>
         <button onClick={props.greetHandler}>Greet Parent</button>
      </div>
   )
}
 export default ChildComponent
```

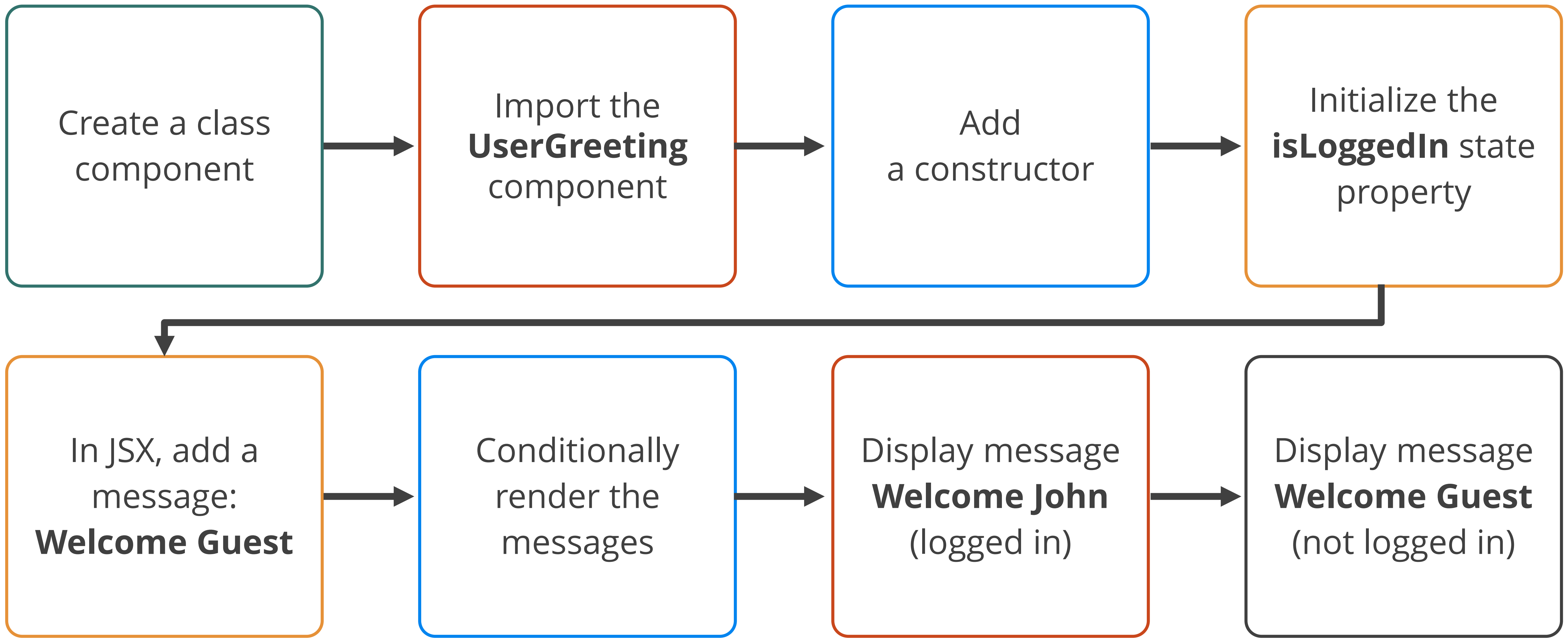
Conditional Rendering in HTML and JavaScript

Conditional rendering is a process where different components are rendered based on certain conditions or values.



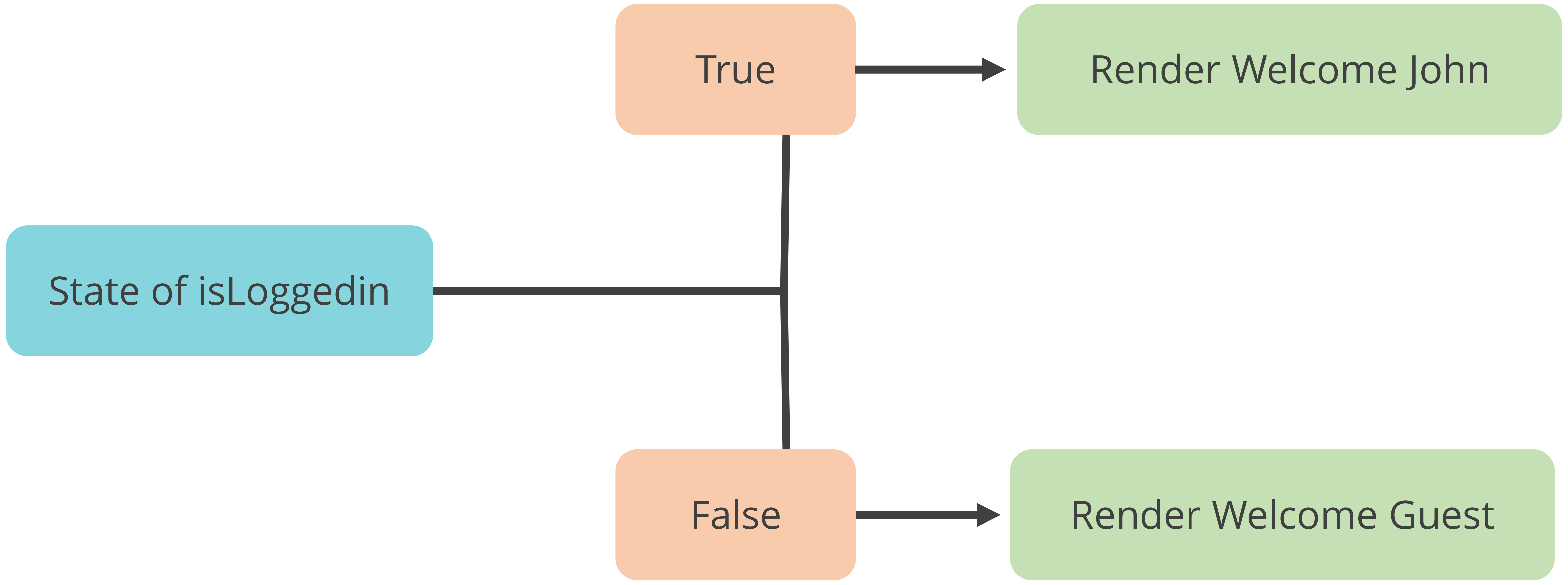
Conditional Rendering: If/Else

To create a new file UserGreeting.js:


Create a class component
Import the **UserGreeting** component
Add a constructor
Initialize the **isLoggedIn** state property
In JSX, add a message: **Welcome Guest**
Conditionally render the messages
Display message **Welcome John** (logged in)
Display message **Welcome Guest** (not logged in)

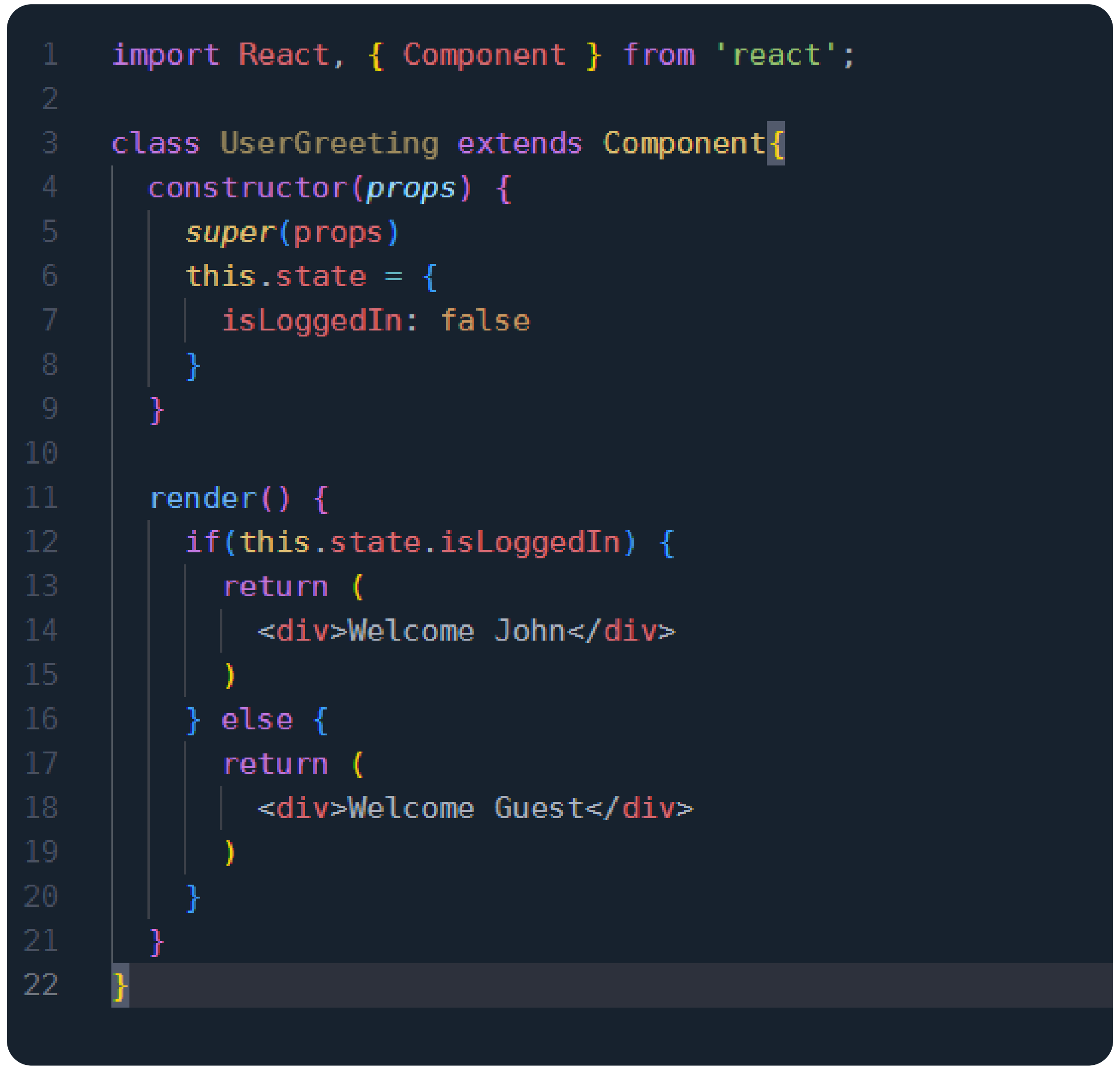
Conditional Rendering: If/Else

When the app is run and viewed in the browser, it will either render **Welcome John** or **Welcome Guest** based on the value of **isLoggedIn** in the **UserGreeting** component's state.



Conditional Rendering: If/Else Code

The conditions are checked in conditional rendering, and different components are rendered based on the results. Here is a program that highlights conditional rendering by using the **If/Else** code:



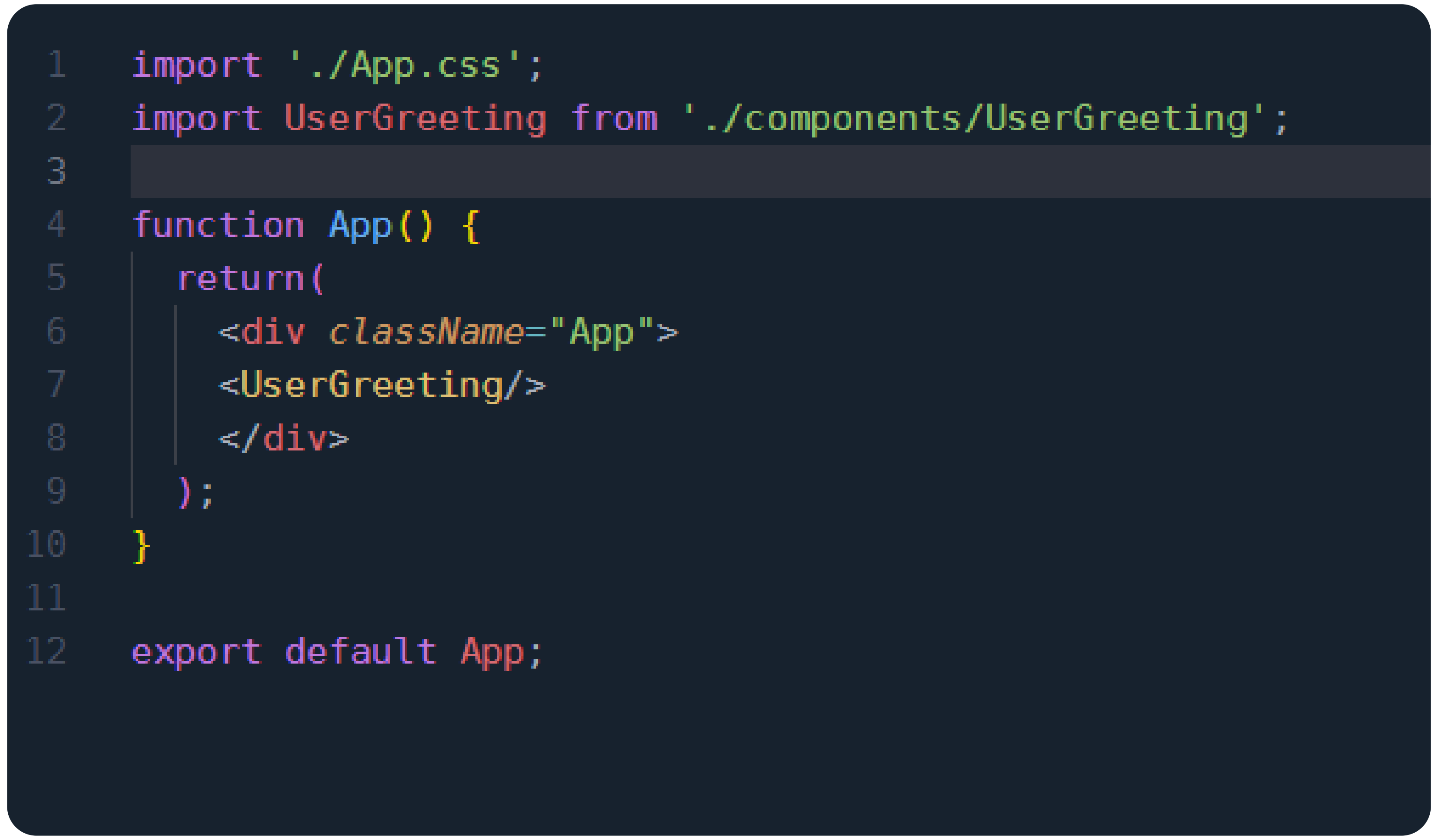
```
import React, { Component } from 'react';

class UserGreeting extends Component{
  constructor(props) {
    super(props)
    this.state = {
      isLoggedIn: false
    }
  }

  render() {
    if(this.state.isLoggedIn) {
      return (
        <div>Welcome John</div>
      )
    } else {
      return (
        <div>Welcome Guest</div>
      )
    }
  }
}
```

Conditional Rendering: If/Else Code

Different components can be rendered dynamically in conditional rendering based on the logic.
Here is the remaining part of the code:



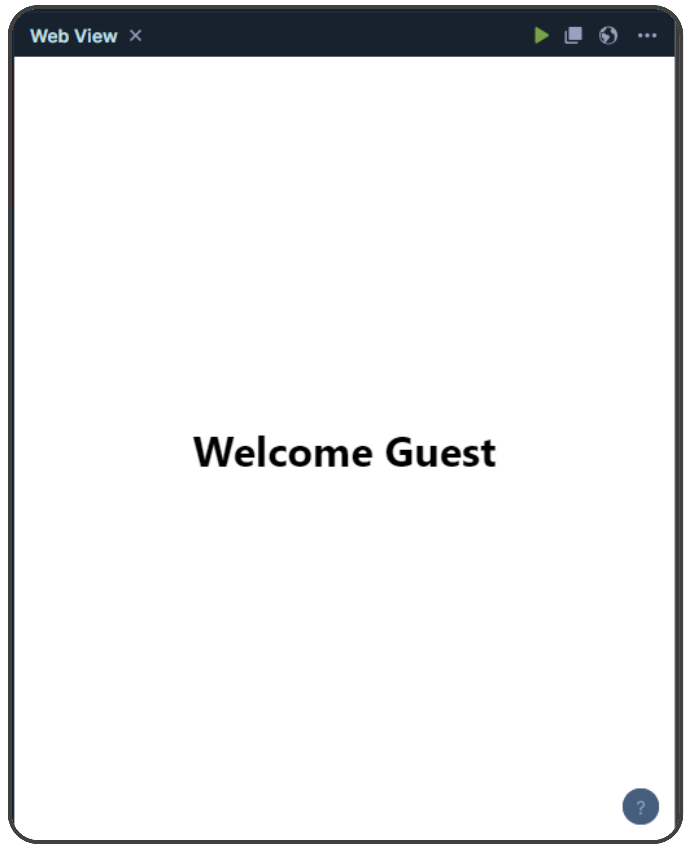
```
import './App.css';
import UserGreeting from './components/UserGreeting';

function App() {
  return(
    <div className="App">
    <UserGreeting/>
    </div>
  );
}

export default App;
```

Conditional Rendering: Element Variable

Element variables are used for the conditional rendering of components in JavaScript.

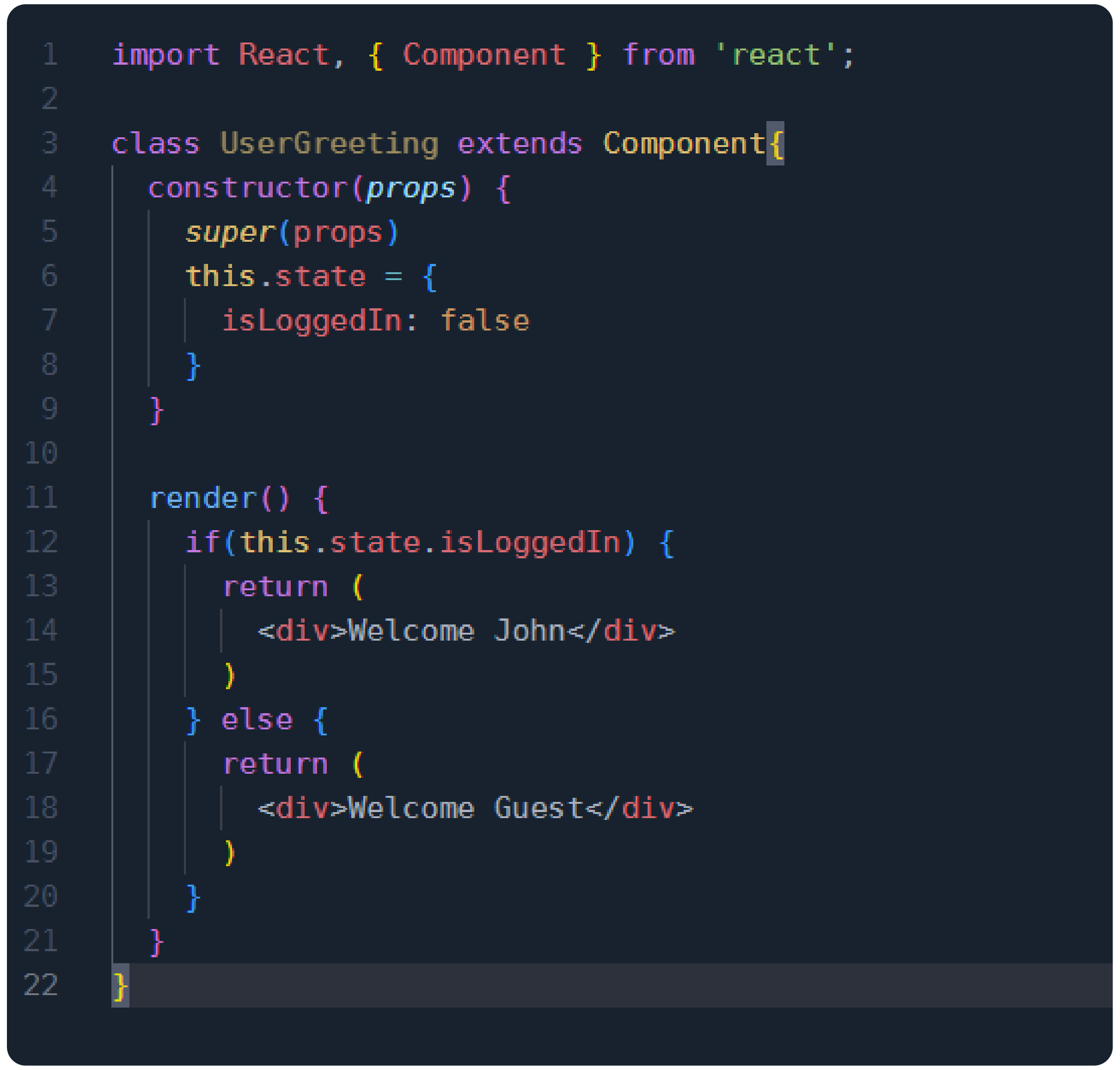


The variable containing the element is returned in the JSX.

Example:
if (this.state.isLoggedIn), message = div tag with text Welcome John, else message = div tag with text Welcome Guest

Conditional Rendering: Element Variable Code

Conditional rendering using element variables allows developers to display elements selectively based on conditions. Here is an example that shows conditional rendering:



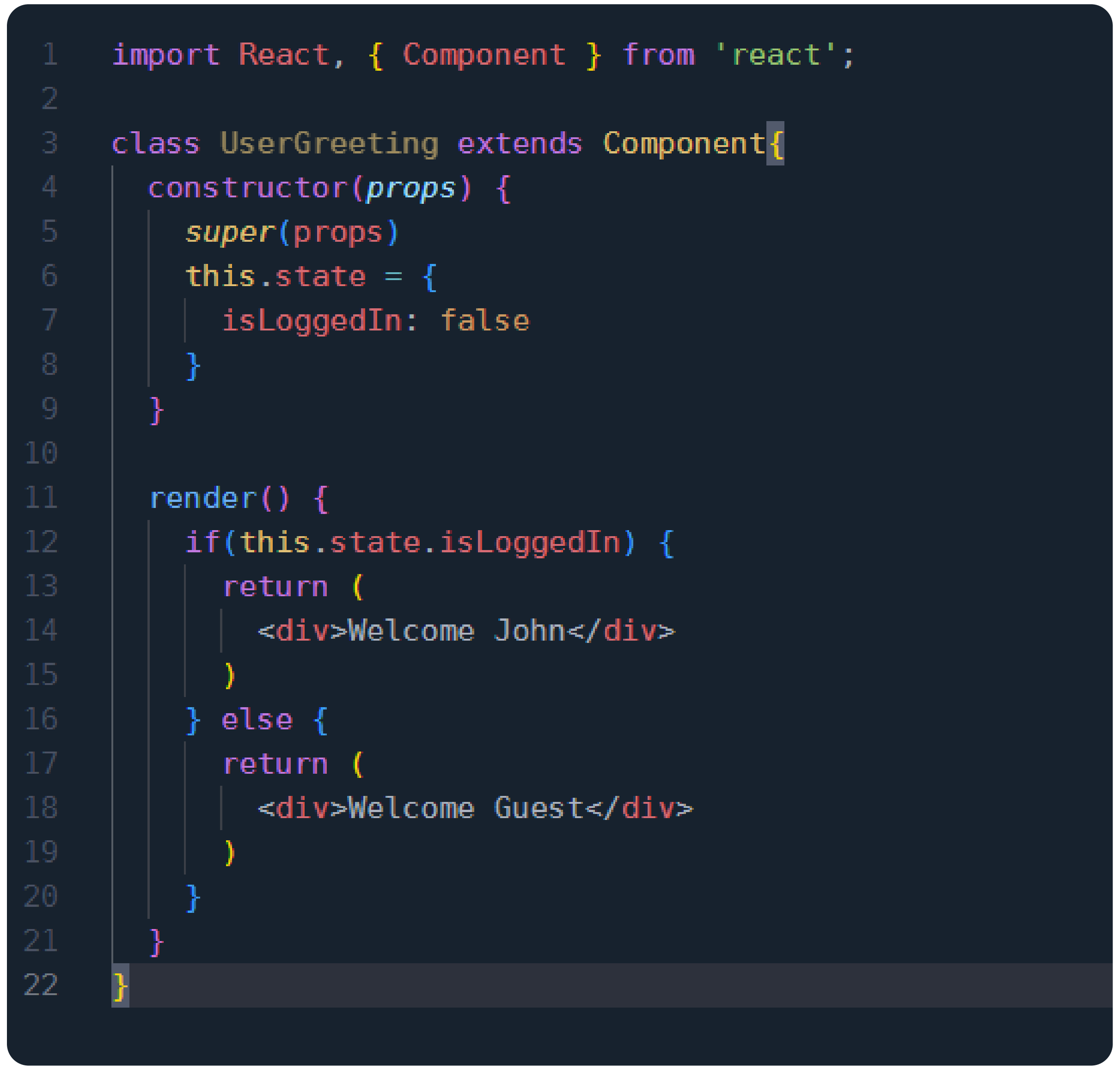
```
import React, { Component } from 'react';

class UserGreeting extends Component{
  constructor(props) {
    super(props)
    this.state = {
      isLoggedIn: false
    }
  }

  render() {
    if(this.state.isLoggedIn) {
      return (
        <div>Welcome John</div>
      )
    } else {
      return (
        <div>Welcome Guest</div>
      )
    }
  }
}
```

Ternary Conditional Operator

The ternary operator can be used within the JSX by adding a return statement and using a conditional operator with parentheses to display the appropriate element. Here is a code that explains this aspect:



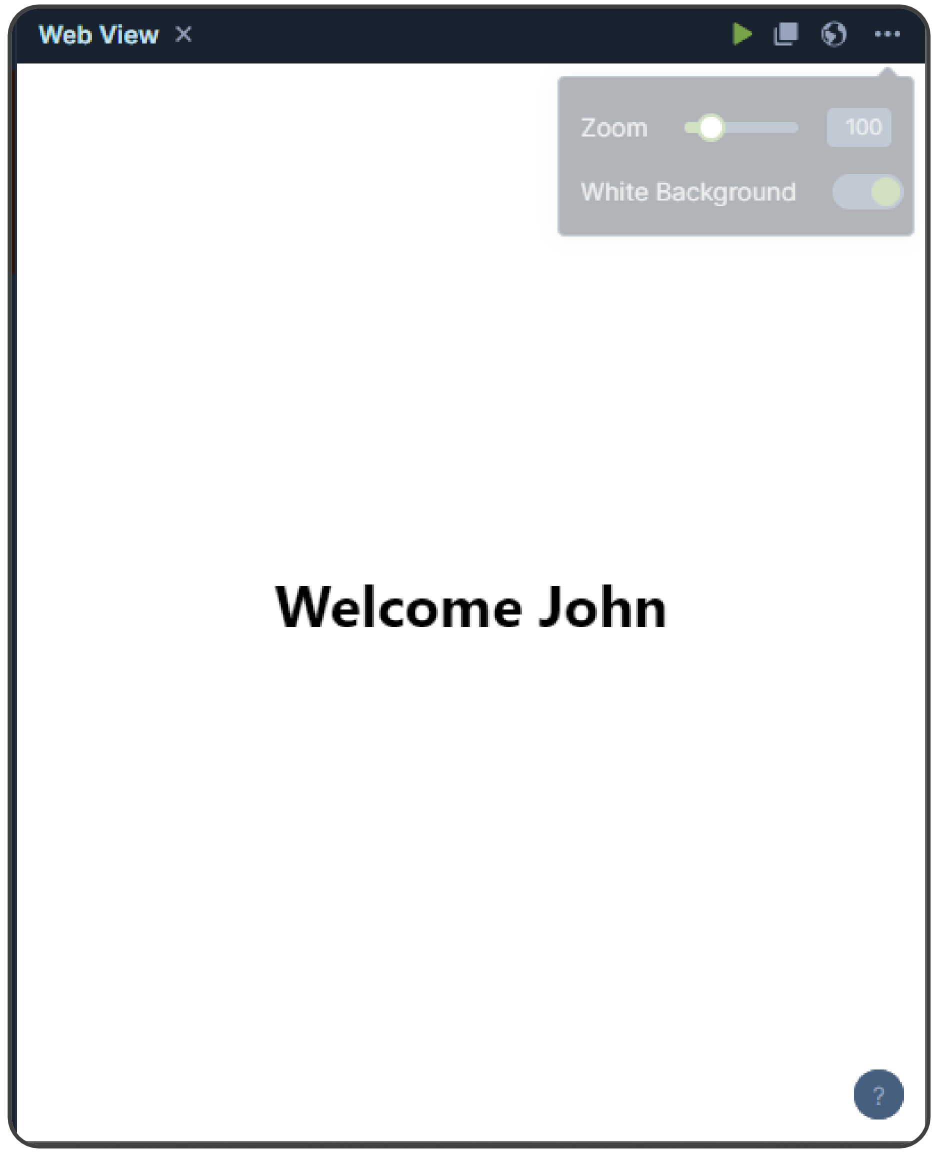
```
import React, { Component } from 'react';

class UserGreeting extends Component{
  constructor(props) {
    super(props)
    this.state = {
      isLoggedIn: false
    }
  }

  render() {
    if(this.state.isLoggedIn) {
      return (
        <div>Welcome John</div>
      )
    } else {
      return (
        <div>Welcome Guest</div>
      )
    }
  }
}
```

Ternary Conditional Operator

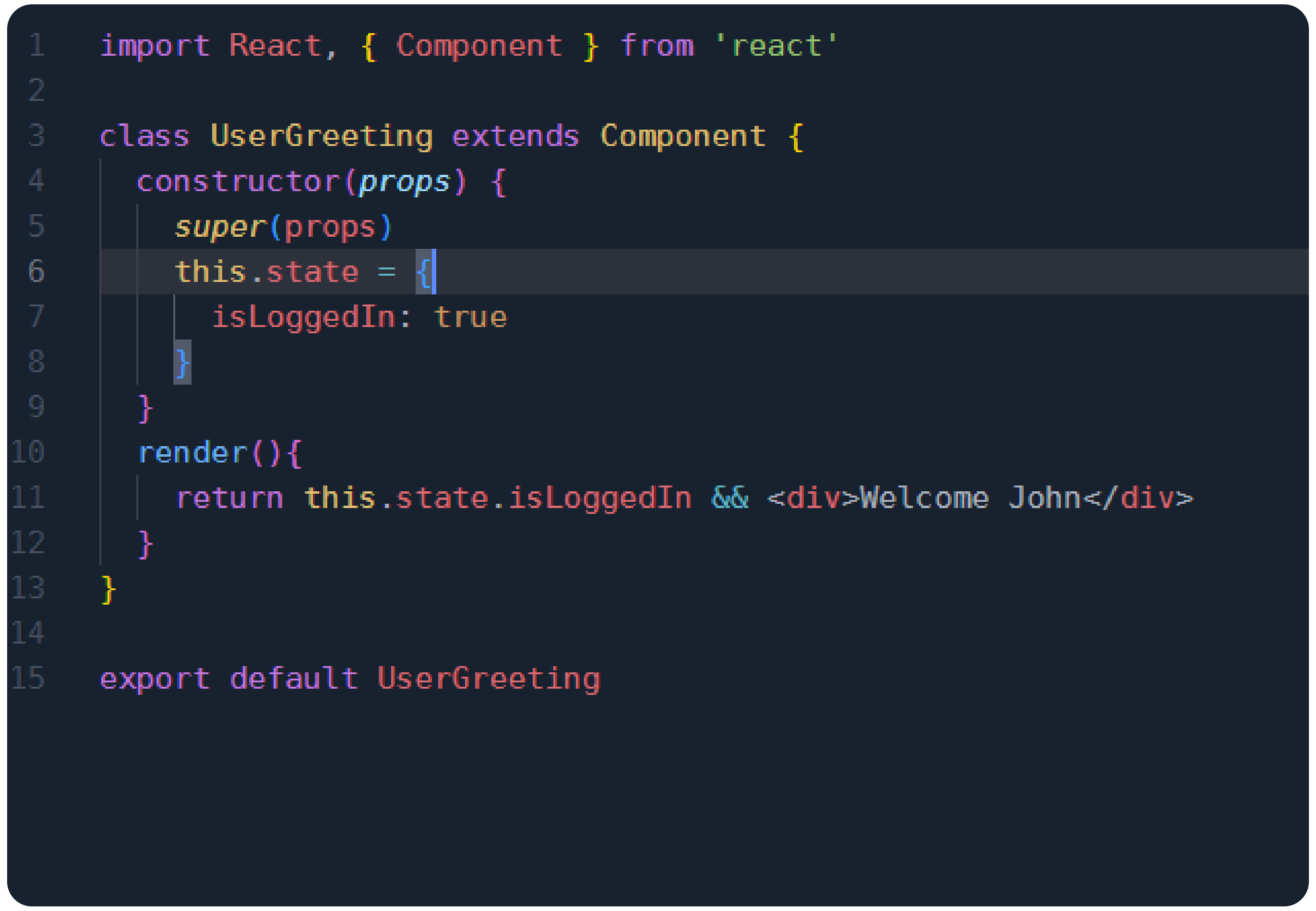
The text should appear in the browser once the code is executed.



Welcome John

Short Circuit Operator

This approach is a specific case of the ternary operator when rendering either something or nothing.



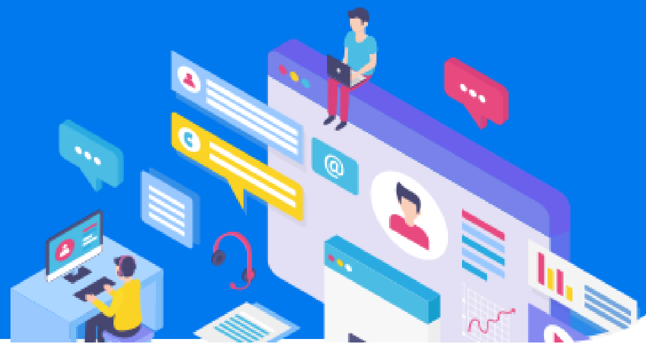
```
import React, { Component } from 'react'

class UserGreeting extends Component {
  constructor(props) {
    super(props)
    this.state = {
      isLoggedIn: true
    }
  }
  render(){
    return this.state.isLoggedIn && <div>Welcome John</div>
  }
}

export default UserGreeting
```

To render **Welcome John**

Assisted Practice

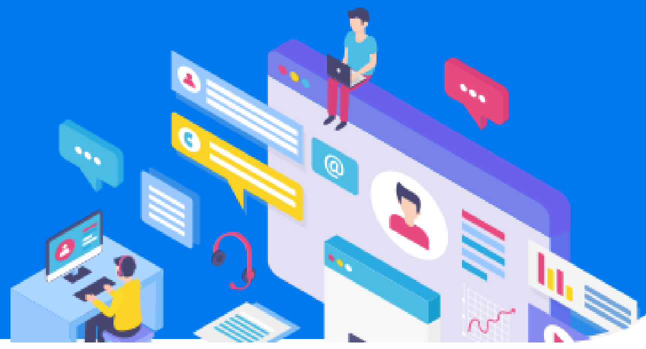


Conditional Rendering **Duration: 15 Min.**

Problem Statement:

You are given a project to create a counter application in React to increase the counter value on each click. However, the value displayed on the web page should always be an even number.

Assisted Practice: Guidelines

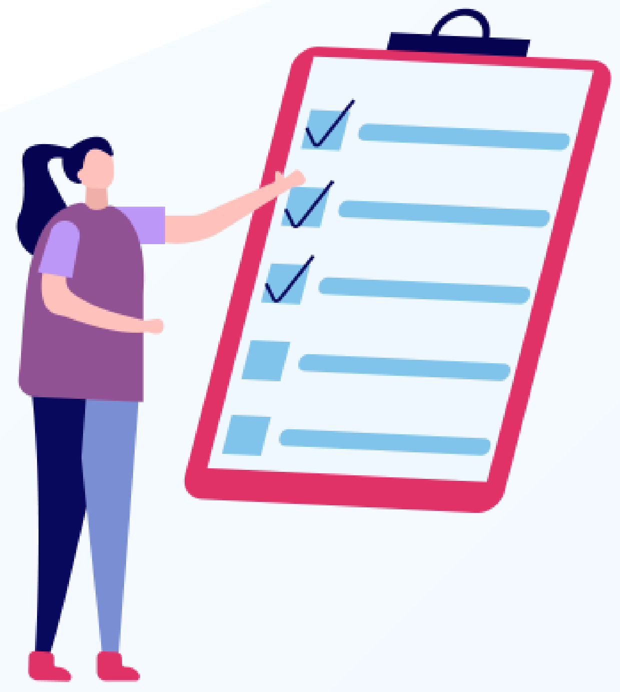


Steps to be followed:

1. Create a class component
2. Create an **onClick()** function to update the counter value
3. Create a render method to return the counter value only if it is even

Key Takeaways

- The component-based architecture of React breaks down an application into small, individual parts. These are made into complex UIs.
- There are two components: a stateless functional component and a stateful class component.
- React supports the features of stateful components in functional components. It allows state features without using classes.
- Prop is the optional input that a component can accept.
- Destructuring pulls data from an array or object and assigns it to its variables.



Thank You