5.1 | React Deep dive

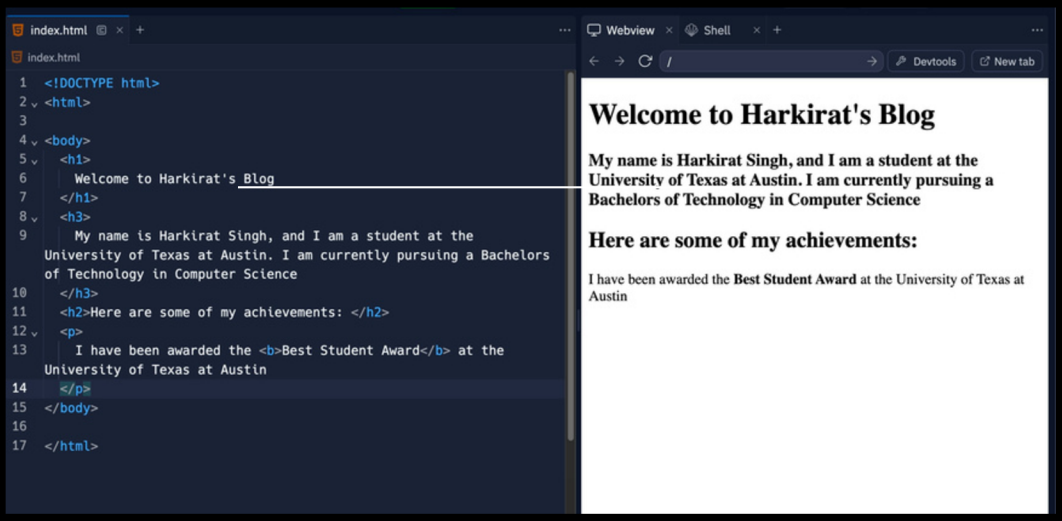
Understanding React from examples

Jargon we'll learn today

Jsx, class vs className, static vs dynamic websites,
State, components, re-rendering

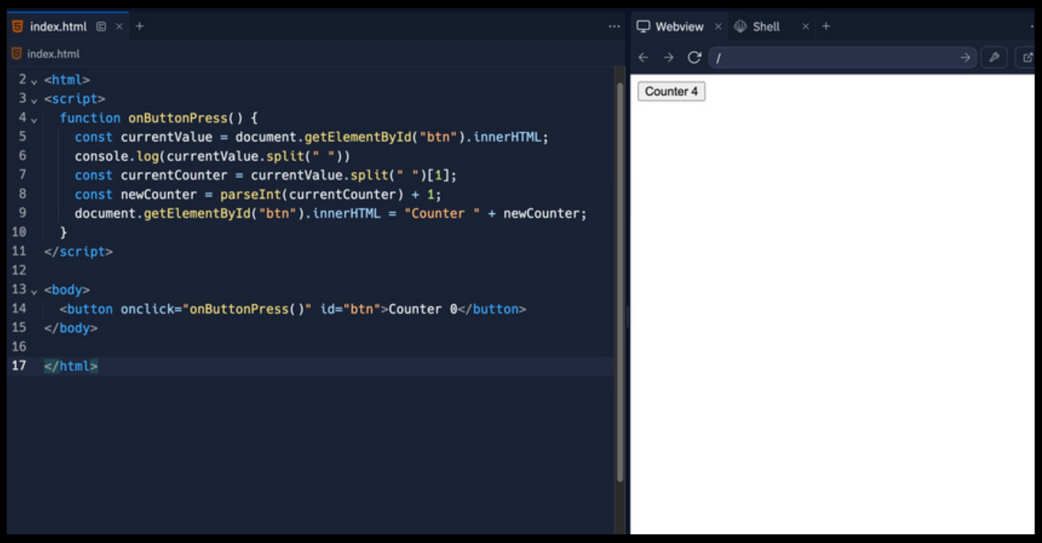
Why do you need React?

For static websites, you don't!

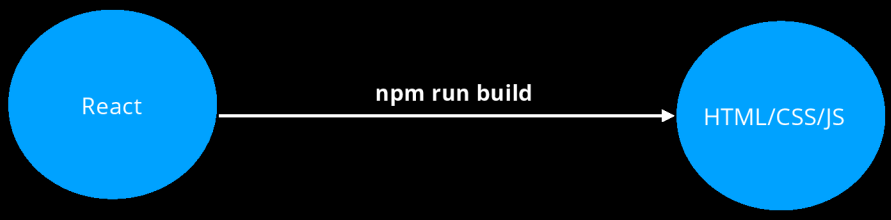


Why do you need React?

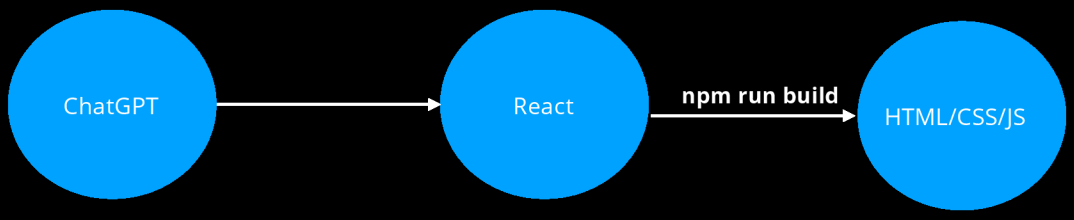
For dynamic websites, these libraries make it easier to do DOM manipulation



React is just an easier way to write normal HTML/CSS/JS
It’s a new syntax, that under the hood gets converted to HTML/CSS/JS



Just how ChatGPT is an easier way to write code,
React is an easier way to write HTML/CSS

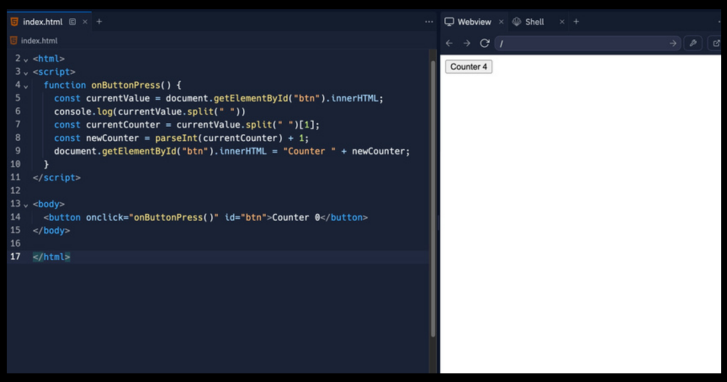


Why React?

People realised it's harder to do DOM manipulation the conventional way
There were libraries that came into the picture that made it slightly easy, but still for a very big app it's very hard (JQuery)
Eventually, VueJS/React created a new syntax to do frontends
Under the hood, the react compiler convert your code to HTML/CSS/JS

Let’s look at a simple example

Problem with this approach
1.Too much code you have to write as the developer
2.As your app scales (todo app for eg), this gets harder and harder.

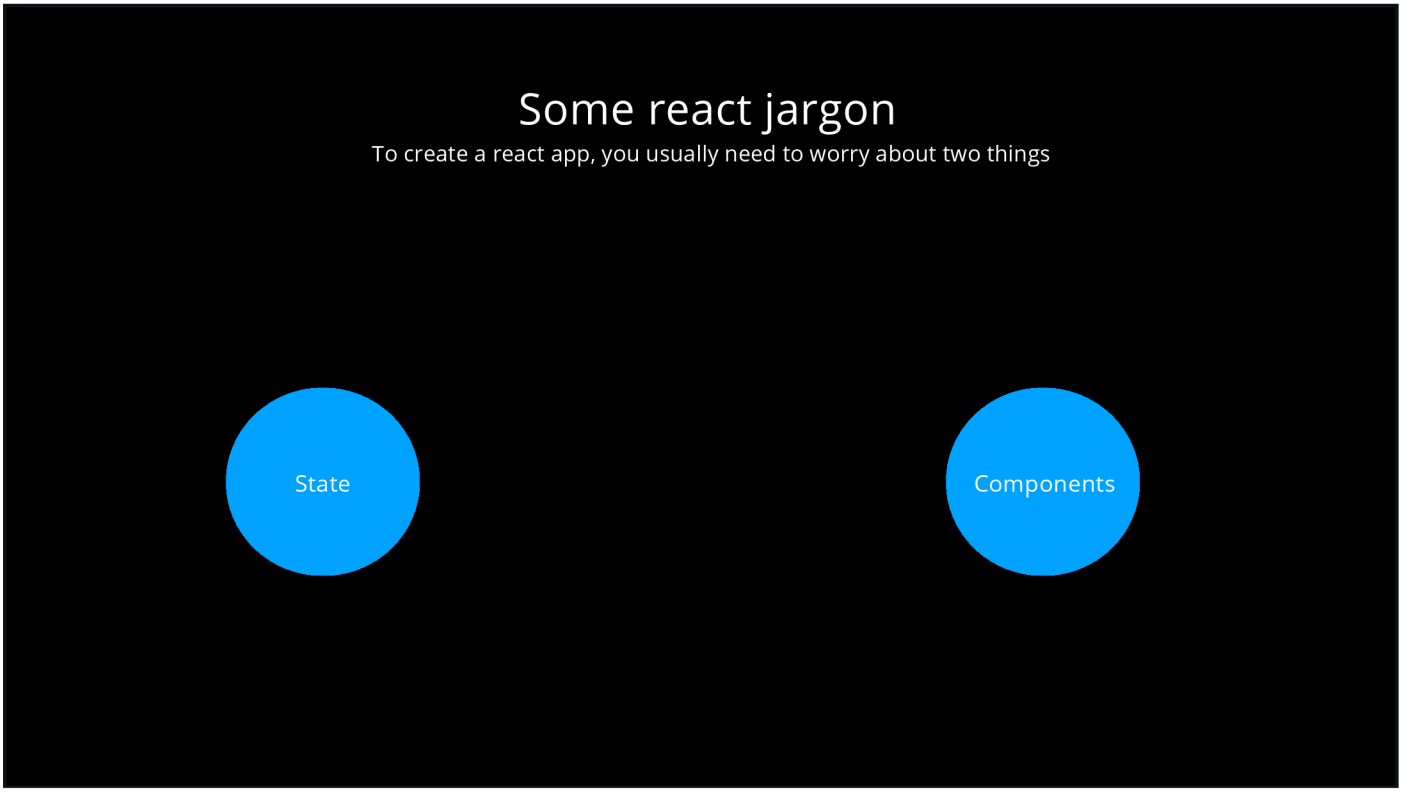


https://gist.github.com/hkirat/0c22122a9485d4d592b92677570e6be8

Some react jargon

Some react jargon

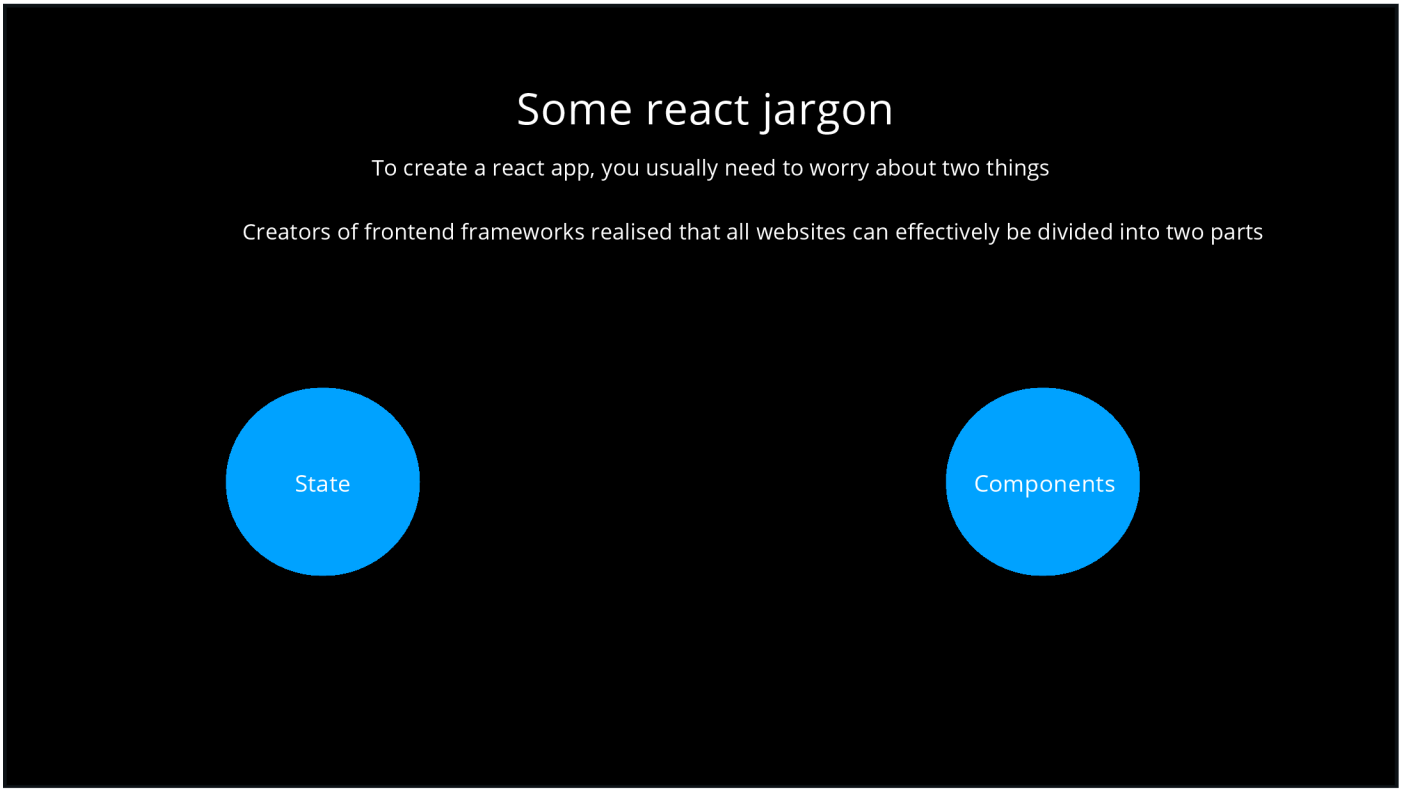
To create a react app, you usually need to worry about two things


Some react jargon
To create a react app, you usually need to worry about two things
State
Components

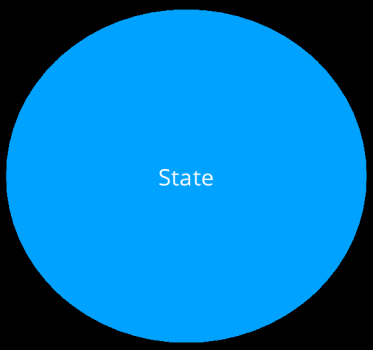
Some react jargon

To create a react app, you usually need to worry about two things

Creators of frontend frameworks realised that all websites can effectively be divided into two parts



State/Components/Re-rendering

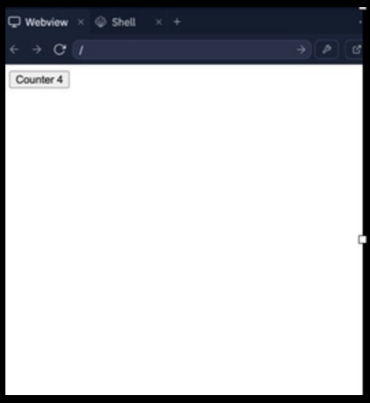


An object that represents the current state of the app

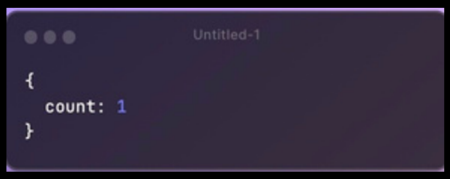
It represents the dynamic things in your app (things that change)

For example, the value of the counter

State/Components/Re-rendering

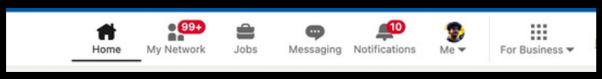


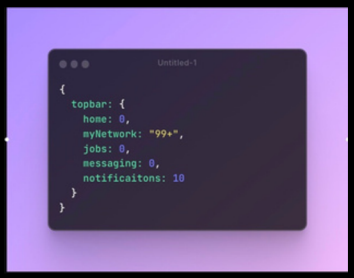
For the counter app, it could look something like this -



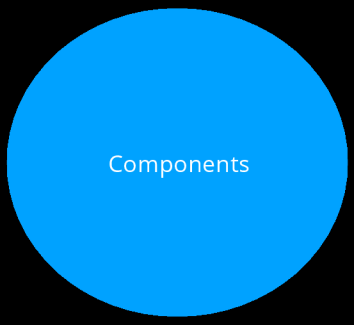
State/Components/Re-rendering

For the LinkedIn Topbar, it could be something like this -





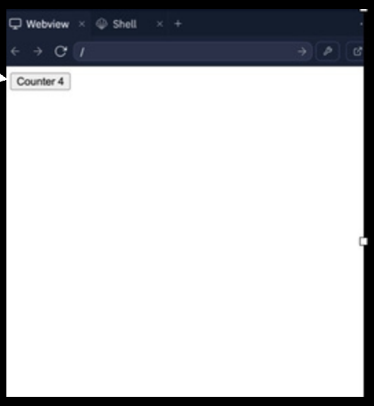
State/Components/Re-rendering



How a DOM element should render, given a state
It is a re-usable, dynamic, HTML snippet that changes given the state

State/Components/Re-rendering

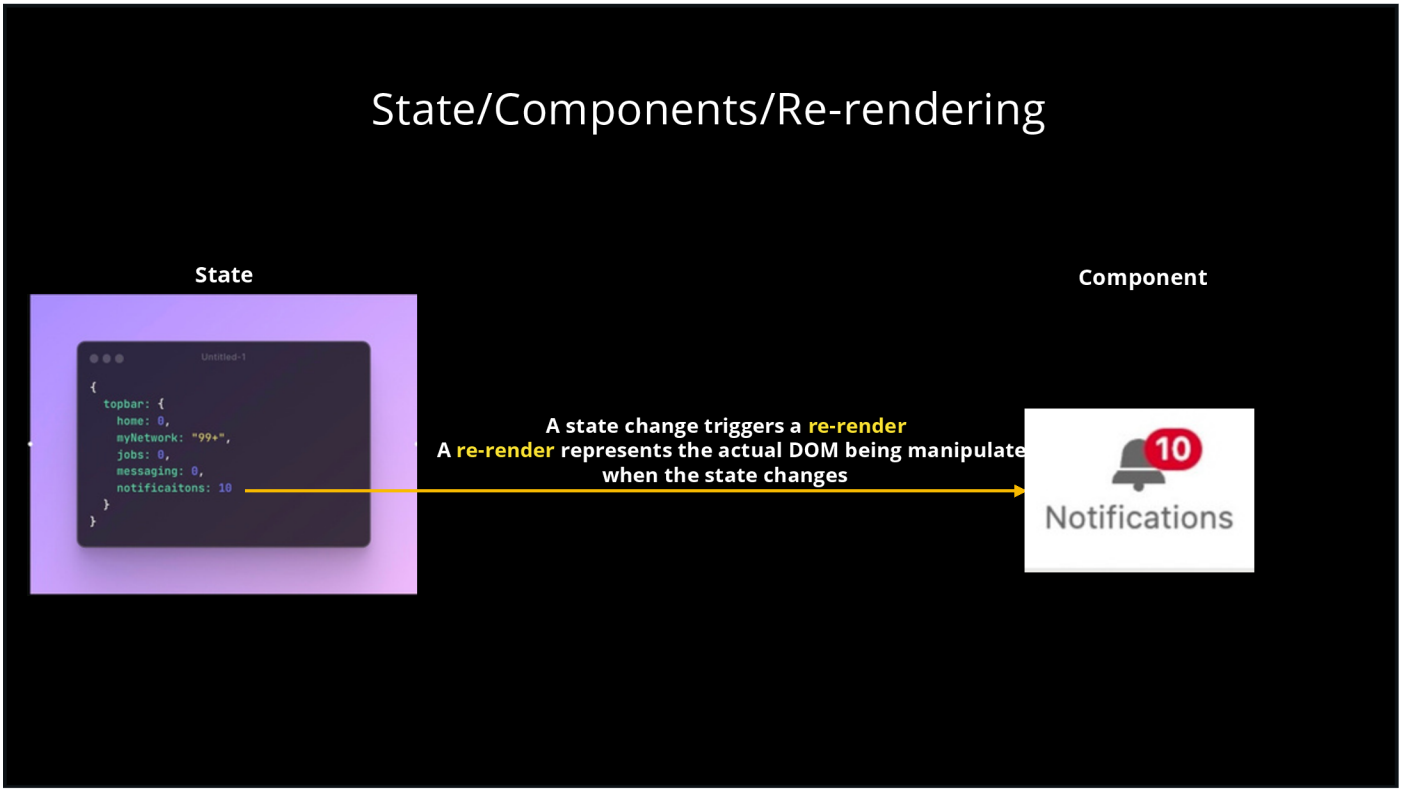
This button is a component
It takes the state (currentCount) as an input
And is supposed to render accordingly



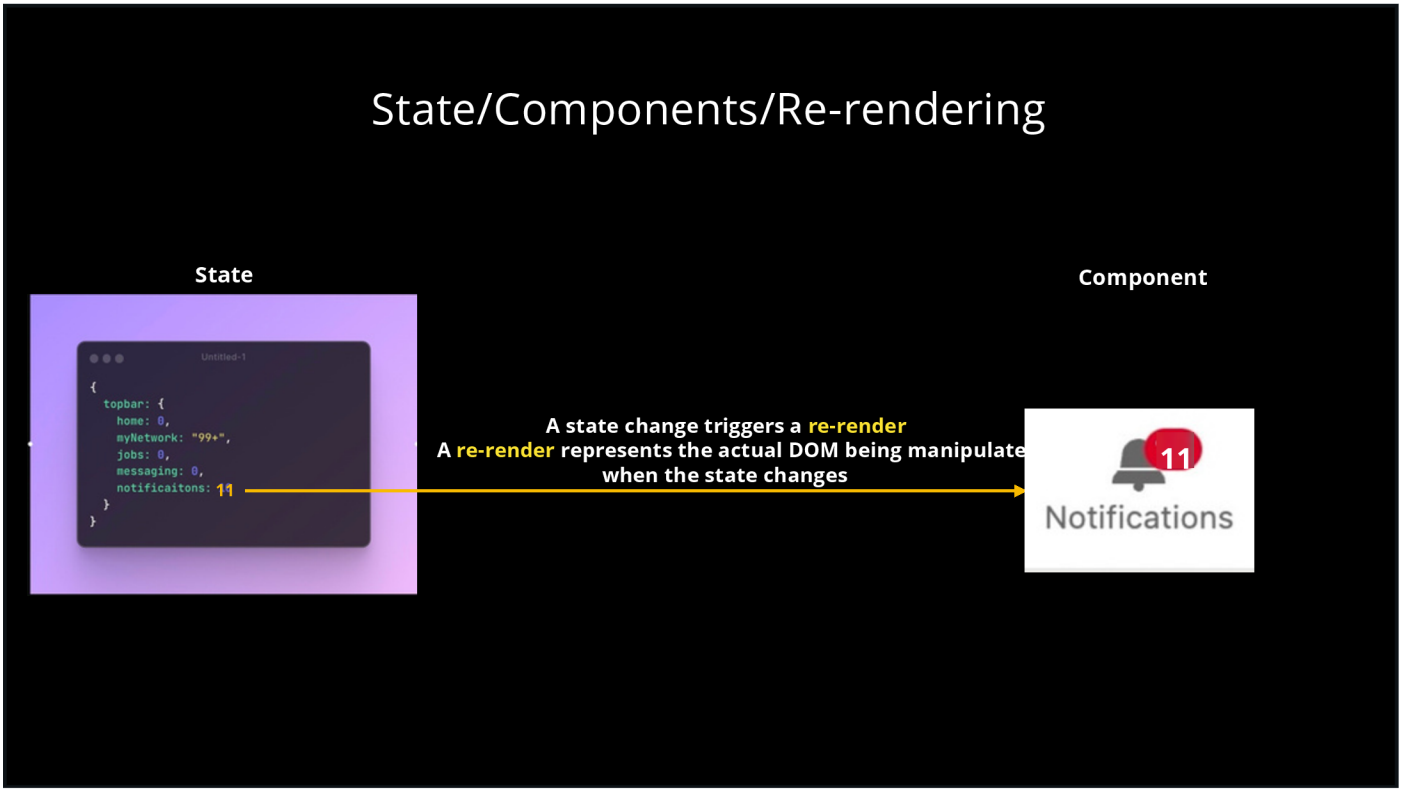
State/Components/Re-rendering

State/Components/Re-rendering

State/Components/Re-rendering



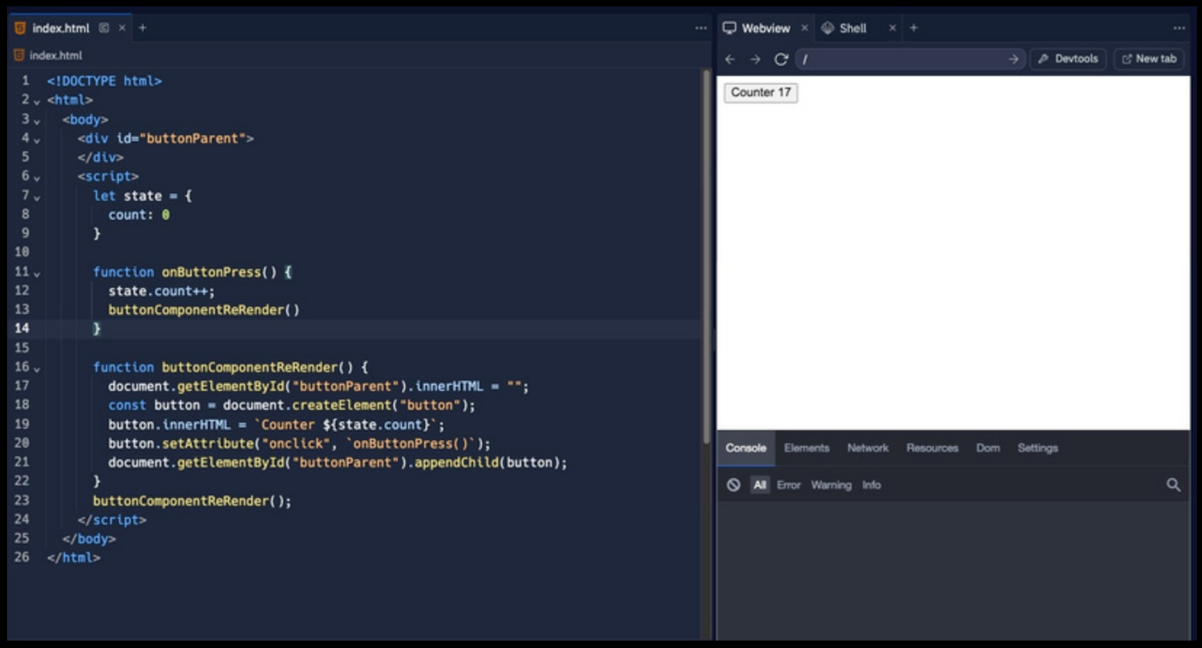
State/Components/Re-rendering



State/Components/Re-rendering

You usually have to define all your components once
And then all you have to do is update the state of your app, React takes care of re-rendering your app

Let’s create a counter app using state/components



https://gist.github.com/hkirat/c3d98735cec445e718b08f972dda7

Let’s create a counter app using state/components

1. State initialisation

```
<!DOCTYPE html>
<html>

<body>
  <div id="buttonParent">
  </div>
  <script>
    let state = {
      count: 0
    }

    function onButtonPress() {
      state.count++;
      buttonComponentReRender()
    }

    function buttonComponentReRender() {
      document.getElementById("buttonParent").innerHTML = "";
      const component = buttonComponent(state.count);
      document.getElementById("buttonParent").appendChild(component);
    }

    function buttonComponent(count) {
      const button = document.createElement("button");
      button.innerHTML = `Counter ${count}`;
      button.setAttribute("onclick", `onButtonPress()`);
      return button;
    }

    buttonComponentReRender();

  </script>
</body>

</html>
```

Let’s create a counter app using state/components

2. Defining the button component

```
<!DOCTYPE html>
<html>

<body>
  <div id="buttonParent">
  </div>
  <script>
    let state = {
      count: 0
    }

    function onButtonPress() {
      state.count++;
      buttonComponentReRender()
    }

    function buttonComponentReRender() {
      document.getElementById("buttonParent").innerHTML = "";
      const component = buttonComponent(state.count);
      document.getElementById("buttonParent").appendChild(component);
    }

    function buttonComponent(count) {
      const button = document.createElement("button");
      button.innerHTML = `Counter ${count}`;
      button.setAttribute("onclick", `onButtonPress()`);
      return button;
    }

    buttonComponentReRender();

  </script>
</body>

</html>
```

Let’s create a counter app using state/components

The react library

```
<!DOCTYPE html>
<html>

<body>
  <div id="buttonParent">
  </div>
  <script>
    let state = {
      count: 0
    }

    function onButtonPress() {
      state.count++;
      buttonComponentReRender()
    }

    function buttonComponentReRender() {
      document.getElementById("buttonParent").innerHTML = "";
      const component = buttonComponent(state.count);
      document.getElementById("buttonParent").appendChild(component);
    }

    function buttonComponent(count) {
      const button = document.createElement("button");
      button.innerHTML = `Counter ${count}`;
      button.setAttribute("onclick", `onButtonPress()`);
      return button;
    }

    buttonComponentReRender();

  </script>
</body>

</html>
```

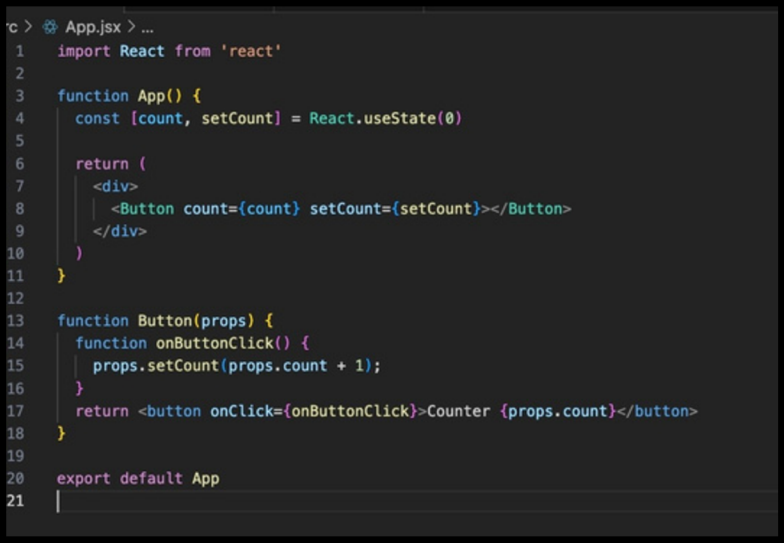
The equivalent code in React looks like this

```html
<!DOCTYPE html>
<html>

<body>
  <div id="buttonParent">
  </div>
  <script>
    let state = {
      count: 0
    }

    function onButtonPress() {
      state.count++;
      buttonComponentReRender()
    }

    function buttonComponentReRender() {
      document.getElementById("buttonParent").innerHTML = "";
      const component = buttonComponent(state.count);
      document.getElementById("buttonParent").appendChild(component);
    }

    function buttonComponent(count) {
      const button = document.createElement("button");
      button.innerHTML = `Counter ${count}`;
      button.setAttribute("onclick", `onButtonPress()`);
      return button;
    }

    buttonComponentReRender();

  </script>
</body>

</html>
```

```jsx
import React from 'react'

function App() {
  const [count, setCount] = React.useState(0)

  return (
    <div>
      <Button count={count} setCount={setCount}></Button>
    </div>
  )
}

function Button(props) {
  function onButtonClick() {
    props.setCount(props.count + 1);
  }
  return <button onClick={onButtonClick}>Counter {props.count}</button>
}

export default App
```

The equivalent code in React looks like this

Lets start small, and then build up to this app



The equivalent code in React looks like this

Lets start with a simple button component

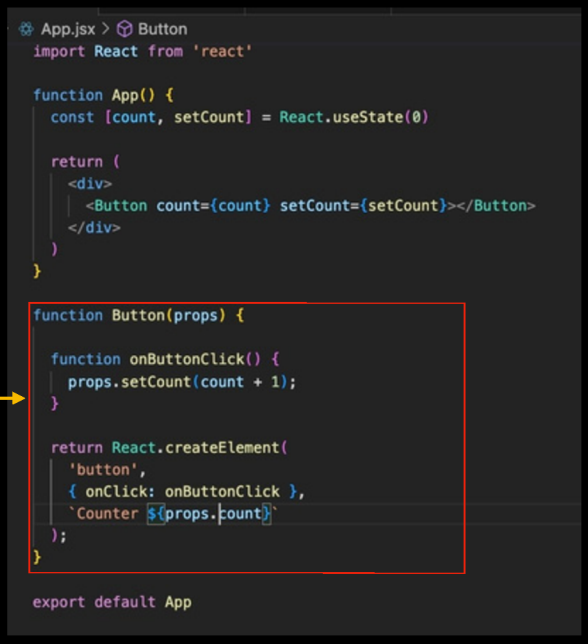
App.jsx > Button

```jsx
import React from 'react'

function App() {
  const [count, setCount] = React.useState(0)

  return (
    <div>
      <Button count={count} setCount={setCount}></Button>
    </div>
  )
}

function Button(props) {

  function onButtonClick() {
    props.setCount(count + 1);
  }

  return React.createElement(
    'button',
    { onClick: onButtonClick },
    `Counter ${props.count}`
  );
}

export default App
```

https://gist.github.com/hkirat/db15d13b42c906269b3114efb96d820f

The equivalent code in React looks like this

Defining Button component



https://gist.github.com/hkirat/8801c2cfad70853decd0ad1759d4e63c

The equivalent code in React looks like this

Defining Button component

```
<!DOCTYPE html>
<html>

<body>
  <div id="buttonParent">
  </div>
  <script>
    let state = {
      count: 0
    }

    function onButtonPress() {
      state.count++;
      buttonComponentReRender()
    }

    function buttonComponentReRender() {
      document.getElementById("buttonParent").innerHTML = "";
      const component = buttonComponent(state.count);
      document.getElementById("buttonParent").appendChild(component);
    }

    function buttonComponent(count) {
      const button = document.createElement("button");
      button.innerHTML = `Counter ${count}`;
      button.setAttribute("onclick", `onButtonPress()`);
      return button;
    }

    buttonComponentReRender();

  </script>
</body>

</html>
```

App.jsx > Button

```
import React from 'react'

function App() {
  const [count, setCount] = React.useState(0)

  return (
    <div>
      <Button count={count} setCount={setCount}></Button>
    </div>
  )
}

function Button(props) {

  function onButtonClick() {
    props.setCount(count + 1);
  }

  return React.createElement(
    'button',
    { onClick: onButtonClick },
    `Counter ${props.count}`
  );
}

export default App
```

https://gist.github.com/hkirat/8801c2cfad70853decd0ad1759d4e63c

The equivalent code in React looks like this

Triggering re-render

```
<!DOCTYPE html>
<html>

<body>
  <div id="buttonParent">
  </div>
  <script>
    let state = {
      count: 0
    }

    function onButtonPress() {
      state.count++;
      buttonComponentReRender()
    }

    function buttonComponentReRender() {
      document.getElementById("buttonParent").innerHTML = "";
      const component = buttonComponent(state.count);
      document.getElementById("buttonParent").appendChild(component);
    }

    function buttonComponent(count) {
      const button = document.createElement("button");
      button.innerHTML = `Counter ${count}`;
      button.setAttribute("onclick", `onButtonPress()`);
      return button;
    }

    buttonComponentReRender();

  </script>
</body>

</html>
```

App.jsx > Button

```
import React from 'react'

function App() {
  const [count, setCount] = React.useState(0)

  return (
    <div>
      <Button count={count} setCount={setCount}></Button>
    </div>
  )
}

function Button(props) {

  function onButtonClick() {
    props.setCount(count + 1);
  }

  return React.createElement(
    'button',
    { onClick: onButtonClick },
    `Counter ${props.count}`
  );
}

export default App
```

https://gist.github.com/hkirat/8801c2cfad70853decd0ad1759d4e63c

The equivalent code in React looks like this

Jsx syntax is a cleaner way to wrote components

App.jsx > Button

```
import React from 'react'

function App() {
  const [count, setCount] = React.useState(0)

  return (
    <div>
      <Button count={count} setCount={setCount}></Button>
    </div>
  )
}

function Button(props) {

  function onButtonClick() {
    props.setCount(count + 1);
  }

  return React.createElement(
    'button',
    { onClick: onButtonClick },
    `Counter ${props.count}`
  );
}

export default App
```

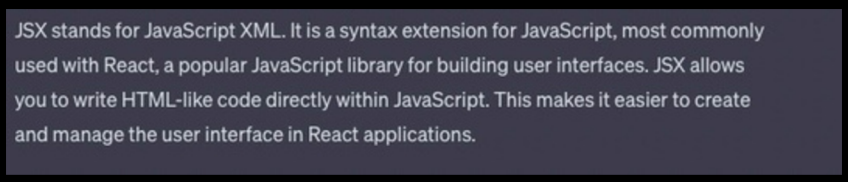
src > App.jsx > ...

```
1  import React from 'react'
2
3  function App() {
4    const [count, setCount] = React.useState(0)
5
6    return (
7      <div>
8        <Button count={count} setCount={setCount}></Button>
9      </div>
10   )
11 }
12
13 function Button(props) {
14   function onButtonClick() {
15     props.setCount(props.count + 1);
16   }
17   return <button onClick={onButtonClick}>Counter {props.count}</button>
18 }
19
20 export default App
21
```

https://gist.github.com/hkirat/8801c2cfad70853decd0ad1759d4e63c

The equivalent code in React looks like this

What Is jsx



https://gist.github.com/hkirat/dcc85803a20639826bf8f64c6be24a31