**Overview**

React is a JavaScript library that allows programmers to write html/css/javascript that is easily and neatly reusable. This is useful when you are designing a frontend because many elements are repetitive (e.g. buttons, headers, etc.). Creating a react app can be done in just 3 commands.

**Creating a React App:**

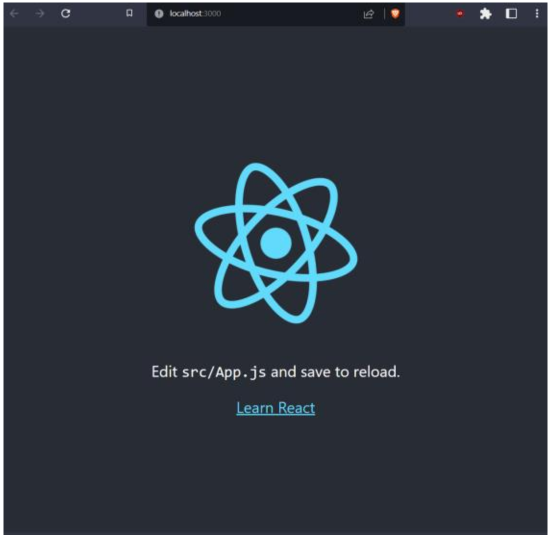
Step 1: Install node.js

Step 2: open a terminal in the directory you want the React app to be in

Step 3: run these commands:

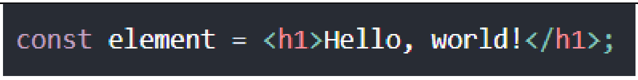
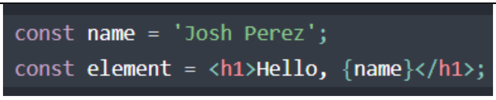
```
$ npx create-react-app sixerr-app
$ cd sixerr-app
$ npm start
```

Step 4: Confirm that this page opens in your browser

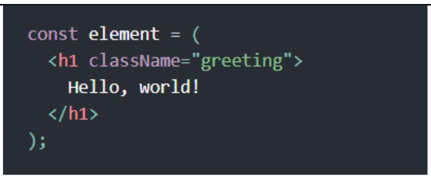


Edit src/App.js and save to reload.

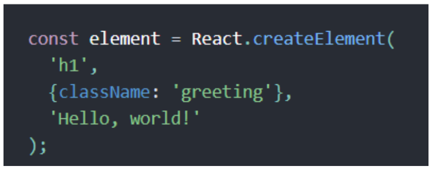
**Basics of React:**

| Vocabulary | Description |
|---|---|
| JSX | <br>`const element = <h1>Hello, world!</h1>;`<br>This variable declaration is neither a string nor html. It is a JavaScript syntax extension called JSX. JSX produces react elements. |
| Embedding JavaScript expression in JSX | <br>`const name = 'Josh Perez';`<br>`const element = <h1>Hello, {name}</h1>;`<br>Any JavaScript expression can be used in JSX by enclosing it inside curly braces {}. |

<table>
<tr><td>React Elements</td><td>



```
const element = (
  <h1 className="greeting">
    Hello, world!
  </h1>
);
```



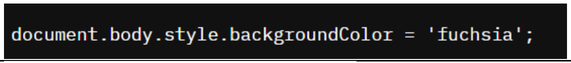
```
const element = React.createElement(
  'h1',
  {className: 'greeting'},
  'Hello, world!'
);
```

These two code snippets are equivalent. They store a react element within the element variable. React.createElement() returns Javascript objects called react elements.

</td></tr>
<tr><td>DOM<br>(Document Object Model)</td><td>

When rendering a website, the web browser takes in an html document. It then creates a DOM (document object) which allows Javascript to manipulate text content and elements of the website as objects. More specifically, the DOM represents a document with a logical tree. Each branch of the tree ends in a node, and each node contains objects.

This is useful because it allows websites to be dynamic. If you typed this into a browser console, the website would make a live change.



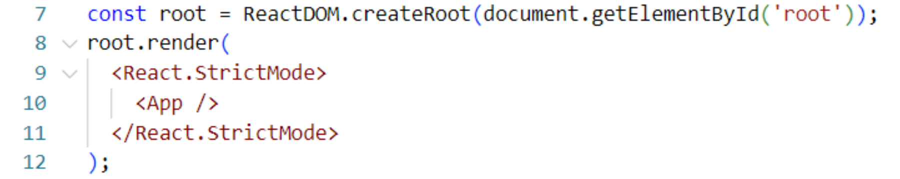
```
document.body.style.backgroundColor = 'fuchsia';
```

</td></tr>
<tr><td>root</td><td>

```
<div id="root"></div>
```

Within ../sixerr-app/public/index.html you will find a div with the root id. This is the root node of the html parse tree that ReactDOM will work with. The html for a page should be within this div.

</td></tr>
<tr><td>Rendering React elements into the DOM (ReactDOM)</td><td>

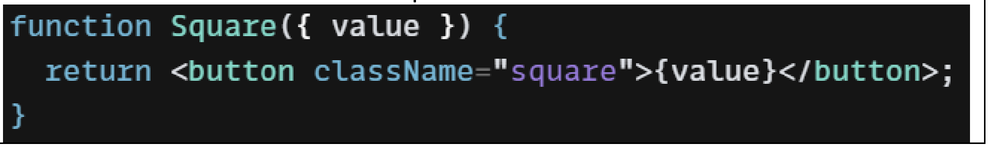


```
const root = ReactDOM.createRoot(document.getElementById('root'));
root.render(
  <React.StrictMode>
    <App />
  </React.StrictMode>
);
```

Within ../sixerr-app/src/index.js you will find the code above. To render a react element, pass the root div to ReactDOM.createRoot(). Then pass the react element to root.render(). In this case, <App /> is the react element we are passing to root.render().

</td></tr>
<tr><td>Components</td><td>

Components are reusable Javascript functions that represents part of the frontend (e.g. a button, header). The function returns a JSX element which is a combination of HTML and Javascript.

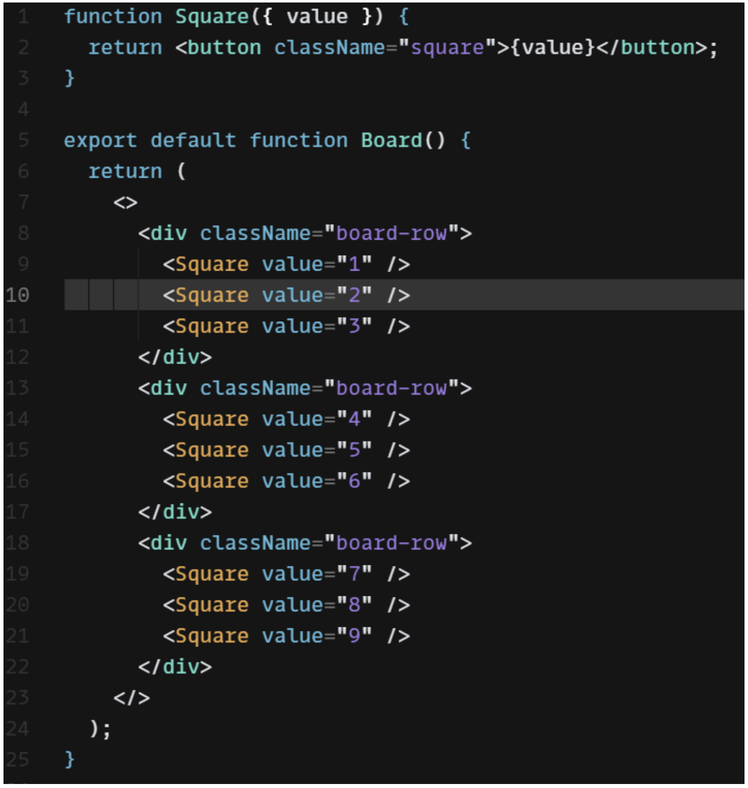


```
function Square({ value }) {
  return <button className="square">{value}</button>;
}
```

</td></tr>
</table>

<table>
<tr>
<td>Props</td>
<td>

Props allows us to pass values through different React components.



```
1   function Square({ value }) {
2     return <button className="square">{value}</button>;
3   }
4
5   export default function Board() {
6     return (
7       <>
8         <div className="board-row">
9           <Square value="1" />
10          <Square value="2" />
11          <Square value="3" />
12        </div>
13        <div className="board-row">
14          <Square value="4" />
15          <Square value="5" />
16          <Square value="6" />
17        </div>
18        <div className="board-row">
19          <Square value="7" />
20          <Square value="8" />
21          <Square value="9" />
22        </div>
23      </>
24    );
25  }
```

Here, value defined in line 1 is a prop. From lines 9-21 different integers are passed in as the value.

</td>
</tr>
</table>

**Helpful Documents about React:**

https://beta.reactjs.org/learn/tutorial-tic-tac-toe

https://reactjs.org/docs/hello-world.html

**https://www.taniarascia.com/getting-started-with-react/**