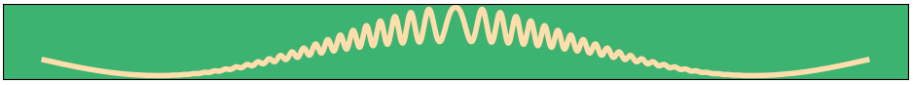
Exercise

CS359 Applications for the Web

19 April 2023



Guide to reading

- We can define a component with a class or a function. Does the way in which we use the two kinds of components differ?
- There is a note in Chapter 2 that appears next to a picture of a bird and that tells us something about self-closing tags. What does it say?
- A class component must define which method?
- Why might we prefer function components?
- Should we prefer stateful or stateless components?
- What are some of the points that Stoyan Stefanov makes in the section of Chapter 2 named "Event Handling in the Old Days?"
- How can we give properties default values?
- List React's lifecycle methods.
- A note that appears next to a picture of a squirrel gives us a reason to enclose the value that a function returns to its caller in parentheses. What is that reason?

- When does the rendering phase take place?
- When does the commit phase take place?
- Which lifecycle methods do React programmers use most often?

Code to study...

1. What does this program do?

```
1  // Define a recursive function.
2  //   sequence is an array of integers.
3  //   n is a non-negative integer.
4  const f = function( sequence, n ) {
5      if( n === 0 ) {
6          return sequence;
7      } // if
8      else {
9          if( sequence.length === 0 ) {
10             sequence.push( 1 );
11         } // if
12         else if( sequence.length === 1 ) {
13             sequence.push( 1 );
14         } // else if
15         else {
16             const i = sequence.length - 1;
17             current = sequence[i];
18             previous = sequence[i - 1];
19             sequence.push( current + previous );
20         } // else
21
22         return f( sequence, n - 1 );
23     } // else
24 };
25
26 // Define a second function.
27 const g = n => f( [], n );
28
29 // Call the function.
30 const n = 12;
31 g(n).map( (k) => console.log(k) );
```

2. What does Stoyan Stefanov want us to learn from the experiment?

```
1  <!DOCTYPE html>
2  <html>
```

```
  <head>
    <title>Hello</title>
    <meta charset="utf-8">
  </head>

  <body>

    <div id ="app">
    </div>

    <script src="react/react.js"></script>
    <script src="react/react-dom.js"></script>

    <script>
      const MyComponent = function() {
        return React.createElement( 'span',
            null, 'I am so custom' );
      };

      ReactDOM.render(
        MyComponent(),
        document.getElementById('app')
      );
    </script>

  </body>
</html>
```

3. What does Stoyan Stefanov want us to learn from the experiment?

```
<html>
  <head>
    <title>this.state</title>
    <meta charset="utf-8"/>
    <link
      rel="stylesheet"
      type="text/css"
      href="styles/00.normal.css"/>
  </head>

  <body>
    <div id="app">
      <!-- my app renders here -->
    </div>

    <script src="react/react.js"></script>
```

```
17      <script src="react/react-dom.js"></script>
18      <script src="react/babel.js"></script>
19
20      <script type="text/babel">
21
22        class TextAreaCounter extends React.Component {
23            constructor() {
24                super();
25                this.state = {};
26                this.onTextChange =
27                    this.onTextChange.bind( this );
28            } // constructor()
29
30            onTextChange( event ) {
31                this.setState( {
32                    text: event.target.value,
33                });
34            } // onTextChange()
35
36            render() {
37                const text = 'text' in this.state ?
38                    this.state.text : this.props.text;
39                return (
40                    <div>
41                        <textarea
42                            defaultValue={text}
43                            onChange={this.onTextChange}
44                        />
45                        <h3>{text.length}</h3>
46                    </div>
47                );
48            } // render()
49        } // TextAreaCounter
50
51        TextAreaCounter.defaultProps = {
52            text: 'Count the letters in the message.',
53        };
54
55        ReactDOM.render(
56            <TextAreaCounter
57                text="Karl Friedrich Gauss"
58            />,
59            document.getElementById( 'app' ),
60        );
61
62      </script>
```

```
63      </body>
64
65  </html>
```