

Attendance



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Software Saturdays

Spring 2023 - Lesson 4

More ReactJS

Review of the Beginner Track

- » 5 Lessons
 - ◇ HTML/CSS
 - ◇ JavaScript
 - ◇ JSX and Intro to ReactJS
 - ◇ More ReactJS
 - ◇ APIs and ReactJS
- » 2 Project Days



Review of the Intermediate Track

- » 5 Lessons
 - ◇ JSX and Intro to ReactJS
 - ◇ More ReactJS
 - ◇ APIs and ReactJS
 - ◇ Functional Components and Async Code
 - ◇ NoSQL Databases
- » 2 Project Days



Help Available

- » Recordings
 - ◇ Every Sunday
- » Weekly Office Hours
 - ◇ T/TH 4:30 - 5:30, W 2:00 - 3:00
- » Slack Channels
 - ◇ Every Day



Before We Begin

All content is available on Brightspace

Join the Software Saturdays Slack!

<https://softwaresaturdays.slack.com>

1. #announcements
2. #general-discussion
3. #spring-2023-reactjs



Before We Begin

- » Please have a text editor to open and edit code files
 - ◇ If you do not have one, Visual Studio Code is a good choice
 - ◇ <https://code.visualstudio.com/download>
- » Demo files and examples are on GitHub
 - ◇ <https://github.com/SoftwareSaturdays/2022-Spring-ReactJS>



Before We Begin

- » We need to install NodeJS and NPM
 - ◇ <https://nodejs.org/en/download/>
- » NodeJS is a very customizable JavaScript toolbox
- » NPM is a JavaScript package installer



Git/Github

- » Code examples and templates on Git/Github
- » Easiest way to handle this is to use Github Desktop
- » Download from: <https://desktop.github.com/>
- » Access all of the demos and checkpoints locally
- » If you are having trouble setting up Git/Github Desktop, message us on Slack or come to Office Hours



Part 1: Review



HTML/CSS Review

- » HTML is the foundation of the web
- » Made up of opening and closing tags
- » Tags create elements that define the layout of a page
- » CSS is a way to style HTML
- » Made of a selector and properties
- » Can style nearly everything on a page



JavaScript Review

- » Has similarities to C and Python
- » Variables have no type, but must be defined with `let` or `const`
- » Used to make HTML more interactive and dynamic
- » Can respond to user interactions and change the HTML or CSS



JSX Review

- » JSX is used to define HTML in JavaScript
- » Can create reusable custom HTML tags
- » Foundation of ReactJS
- » Can be styled like any other HTML tag with CSS



Part 2: More ReactJS



Pulling the demos

» From Github Desktop

- ◇ Click Add Repository -> Clone Repository -> URL

- ◇ Paste this link:

<https://github.com/SoftwareSaturdays/2023-Spring-ReactJS.git>

- ◇ Switch to the “lesson4-template” branch

- ◇ Repository -> Open with Visual Studio Code

» From the command line:

```
git clone https://github.com/SoftwareSaturdays/2023-Spring-ReactJS.git
```

```
git checkout lesson4-template
```



What is ReactJS?

- » ReactJS is a front-end JavaScript framework
 - ◇ Basically, ReactJS can be used to create dynamic and modular web pages using JavaScript
- » Created and used by Facebook, along with many other companies
 - ◇ Twitter, Netflix, New York Times, Tesla, BBC, etc.



ReactJS Rules

- » Follows JavaScript rules
- » The main file (usually index.js) needs a `ReactDOM.render(...);` line at the end to work
 - ◇ Included by default
 - ◇ This tells React to render components



ReactJS Rules

- » Every custom React Component (custom JSX) needs a return function
 - ◇ The template we give you includes this by default



ReactJS Rules

- » By convention, all code you want to add goes inside the App.js file or other component files
 - ◊ Never modify index.js
- » By convention, all custom components go in a component folder



ReactJS vs JSX

- » It's possible to use React without JSX but very unpopular
- » We can pass properties (or props) to React components to make each one different
- » The code for the React component can modify the web page depending on the props given to it



Setting up ReactJS

- » To create a ReactJS project, follow slide 15 from Lesson 3
- » If you don't want to redo that process, you can reuse the code from last week



ReactJS Props

- » Props are a way to pass data from a parent component to a child component
- » Props are only allowed to be changed by the parent component
- » Pass props like HTML attributes
- » Access props from the parameters of your function component



Demo Program #1



Checkpoint #1

See directions on next slide



Checkpoint #1

Create a ReactJS project. Create two custom components, one with props and one without props

Your components should be like a header and an info card

Add these components to your App.js render like in Demo #1



ReactJS Hooks

- » Hooks give us a way to “hook” into the state and lifecycle of a component
- » Replaces the old class based component methodology
- » In a sense, hooks are the API to the class based component methodology
- » We will go over a few hooks throughout this course but there are *many* that exist (you can even write your own!)



Our First Hook: useState()

- » Sets the state and creates a function to update the state for a variable
- » When the state of the variable is updated using its set function, that change is reflected anywhere the variable is referenced
- » `import { useState } from "react";`
- » `const [var, setVar] = useState(initialValue);`



Demo Program #2



Checkpoint #2

See directions on next slide



Checkpoint #2

Modify the info card component from checkpoint #1 to use state variables.

Add a timestamp that is displayed with each card

`(new Date()).toISOString()` gives you a timestamp



Adding User Interactivity

- » ReactJS uses some tricks to create onClick functions
- » You need 2 things to define an onClick
 - ◇ A function to do things after a click (event handler)
 - ◇ Add that function to the onClick attribute



Example

```
const [count, setCount] = useState(0);

const clicked = () => {
  setCount(count + 1);
}

return(
  <>
    <button onClick={ clicked }>{ count }</button>
  </>
);
```



Demo Program #3



Checkpoint #3

See directions on next slide



Checkpoint #3

In the info card component from checkpoint #2, add a button that will update the timestamp displayed to the user

Use `useState()` and an event handler



Thanks for coming!

Please give us some feedback!

» Any Questions?

- ◇ Open review hours
 - ◇ T/Th 4:30-5:30 pm
 - ◇ W 2:00-3:00 pm
- ◇ Ask a mentor during the meeting or on Slack



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