Attendance

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Software Saturdays

Spring 2023 - Lesson 5

APIs and ReactJS

Review of the Beginner Track

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

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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

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Help Available

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

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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

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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

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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

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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 “lesson5-template” branch
  - Repository -> Open with Visual Studio Code
- From the command line:

```
git clone https://github.com/SoftwareSaturdays/2023-Spring-ReactJS.git
git checkout lesson5-template
```

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Part 1: Review

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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

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Basic ReactJS

- `props` are like parameters - they can change how a React component works
- `useState` is a hook that changes the state of variables
- To make a React component have an on-click, you must add the event handler to the the component

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Part 2: More ReactJS

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React Component Lifecycle

- Each React component is loaded or unloaded at certain times
- Using effects, we can do things at certain points in the component's lifecycle

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Our next hook: useEffect()

- Do something right after a component has loaded and when one of the specified dependencies is modified
- If we specify a return function, will execute at end of component lifecycle and after everytime effect triggers
- `import { useEffect } from “react”`
- `useEffect(effectFunction, dependencies)`

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Demo Program #1

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Lists and Maps

- The JavaScript `map()` function creates an array by running a function on another array
- Similar to lambdas or list comprehension in Python

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Lists and Maps

- Syntax is just map, iteration variable, function, output array

```
let mapOutput = someArray.map((element) => element * 2);
```

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Map React Components

- You can use the map() function to create a list of JSX elements to display
- This will be useful in a few slides!

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Demo Program #2

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Checkpoint #1

Using the provided 'card' component, map an array of information onto the 'card' components.

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Part 3: APIs

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APIs

- An API is an **A**pplication **P**rogramming **I**nterface
- Used to send data to or from our code and another server
- Used everywhere on the web - *EVERYTHING* is an API somewhere

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More about APIs

- Web-based APIs have standardized on using JSON (JavaScript Object Notation) to send data using key-value pairs
- The API we will use is **https://pokeapi.co/**

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React and APIs

- Data from an API can be mapped onto React components
- Allows us to create a user interface that will change depending on the data we receive

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Demo Program #3

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Checkpoint #2

Try to write some code to download data from the API, similar to Demo 3

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Thanks for coming!

Please give us some feedback!

- Any Questions?
  - Office Hours T/TH 4:30 - 5:30, W 2:00 - 3:00
  - Ask a mentor during the meeting or on Slack

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