Attendance

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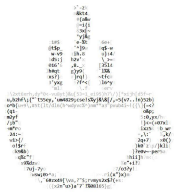

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Software Saturdays

Spring 2022 - Lesson 6

Intermediate JavaScript

Review of the Intermediate Track

- 5 Lessons
  - JSX and Intro to ReactJS
  - More ReactJS
  - APIs and ReactJS
  - Intermediate JavaScript
  - NoSQL Databases
- 2 Project Days

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Help Available

- Recorded Learning Sessions
- Weekly Office Hours
- Slack Channels

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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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Part 1: Review

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APIs and ReactJS

- useEffect() can be used to cause *effects* to occur at certain stages of a component's lifecycle
- The `map()` function creates an array based on an input array
- APIs are used everywhere on the web, and React can display data from an API to a user

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Part 2: Functional Components

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Functional Components

- Functional components are what we have been using all this time
- The old methodology, class based components, are soft deprecated and the creators of React are trying to move away from them

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So why Functional components?

- Most parts of a UI don't need a full class based component
  - Blog post, comment card, navigation menu
- We can abstract these common UI elements away into a single file and import only what we need
- Hooks allow us to provide the same lifecycle management that classes allowed

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Making functional components

- Just write a normal JavaScript function that returns JSX
- Use the function name as the tag name and React will render it

```
function Hello() {
    return <h1>Big Text</h1>;
}
```

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Demo Program #1

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Imports and Exports

- You may have noticed that we use 'export' and 'import' in our code a lot to call code in different files
- We were creating ES6 modules!

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JavaScript Modules

- JavaScript modules are a mechanism to share code across files
- Modules can 'import' and 'export' any code: variables, functions, arrays, classes, etc.
- Unlike other languages, module exports must be explicitly defined - assumed private until exported

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Types of JavaScript exports

- There are two types of JavaScript exports
  - Named exports
    - 0 to infinite per file
  - Default exports
    - Maximum 1 per file

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Named vs Default Exports

- Named exports must be imported with the same name
- Default exports can be imported with any name

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Named vs Default Exports

```
const variable = 10;
export { variable };
```

```
import { variable } from '...';
```

```
const variable = 10;
export default variable;
```

```
import something from '...';
```

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Demo Program #2

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Checkpoint #1

Create a basic blog site

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Checkpoint #1

Build a basic blog site using functional components.

Design a Post component, a Comment component, and an Avatar component.

Store these three components in a file and use named exports to import them into your App.js file.

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Part 3: Asynchronous Code

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Asynchronous Code

- JavaScript prefers code run 'asynchronous' or not at the same time
- Has performance effects for network code, long operations, timers, etc.

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JavaScript Promises

- To use async code, JavaScript has 'Promises'
- Promise functions immediately return with the promise to call some other function when they finish
- This course will not go into creating Promises

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Using Promises

- Call the promise function
- Attach success callbacks with `.then(...)`
- Attach failure callbacks with `.catch(...)`

- Promise callbacks can be 'chained' using multiple promise functions - the `fetch(...)` function requires this

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Async/Await

- Sometimes we want our code to depend on the results of an asynchronous operation
- Instead of using a callback we can turn the promise back into synchronous code
- We did this in lesson 5!

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Async/Await

- Labeling a function 'async' allows us to use 'await' and turn other async function calls into synchronous function calls
- Wrap the 'await' function call in a try-catch to emulate the `.catch(...)` from earlier

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Demo Program #3

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Part 4: Unnamed Functions

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Unnamed Functions

- Similar to other languages, JavaScript allows for functions to be unnamed
  - Like lambdas
- Useful for callback functions

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Types of Functions

- Named functions
  - Normal function declaration
- Anonymous function
  - Function declaration with no name
- Arrow function
  - Lambda function, exists temporarily

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Types of Functions

- Named functions are always loaded at the start of the script
- Anonymous functions are only loaded when they are defined
- Arrow functions work like anonymous functions but are shorter

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When to use unnamed functions

- Arrow functions are typically used in callback functions and when storing a function in a variable
- Anonymous functions not really used anywhere in React anymore unless you really want to shoehorn it in
- Named functions used for creating functional components

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Demo Program #4

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Checkpoint #2

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Checkpoint #2

Update the blog components from Checkpoint 1 to pull data from the PokeAPI.

In your App.js file, use a Promise without async/await to get data and pass it to the components of the blog.

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Thanks for coming!

Please give us some feedback!

- Any Questions?
  - Open review hours
    - T/TH, 4:30 pm to 5:30 pm
    - W, 2:00 pm to 3:00 pm
  - Ask a mentor during the meeting or on Slack

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