Intro to Web Development + React

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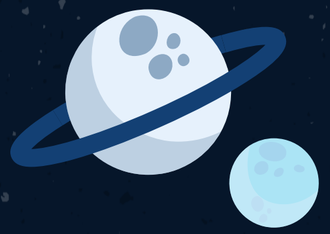
Installations

VSCode Git GitHub Account Node.js



02

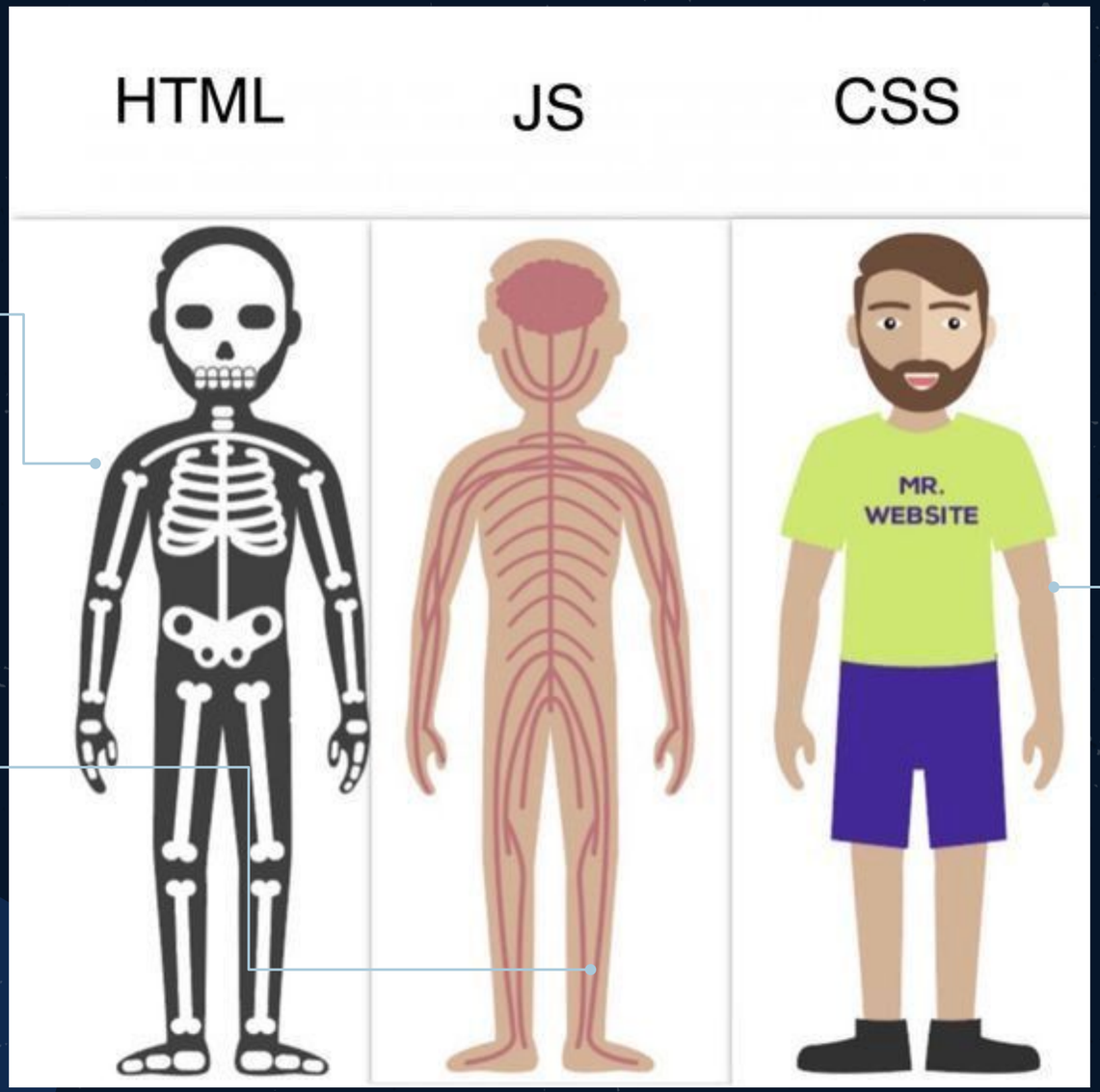
Web Dev Basics

HTML

the structure of your website like your skeleton

JS

nervous system, tells the body what to do



CSS

styling - makes the body look nice

1. HTML

```html
<!DOCTYPE html>
<html>
<body>

<h1>My First Heading</h1>

<p>My first paragraph.</p>

</body>
</html>
```

2. JS

```js
const div = document.body.appendChild(document.createElement('div'))
const list = div.appendChild(document.createElement('ol'))

const dayNames = new Map()

for (let i = 0; i < 7; ++i) {
    const d = Temporal.PlainDate.from({
        year: Temporal.Now.plainDateISO().year,
        month: 1,
        day: i + 1,
    })

    dayNames.set(d.dayOfWeek, d.toLocaleString(LOCALE, { weekday: 'long' }))
}

for (const num of [ ...dayNames.keys()].sort((a, b) => a - b)) {
    list.appendChild(Object.assign(
        document.createElement('li'),
        { textContent: dayNames.get(num) },
```

3. CSS

```css
.nav {
  background-color: #4F4D53;
  height: 48px;
  width: 100%
}

.logo {
  position: relative;
  left: 25%;
  padding-top: 10px
}
```

Everything React

What is React and why do we use it?

What is React?

- Simplify the ability to write web applications
- JavaScript library
- FAST
- Virtual DOM
- REusable components
- Store and update information / state (hooks)
- Uses JSX (mix of HTML + JavaScript)

04

Components

Components

- What a React app is made of
- Building blocks of your website
- Reusable
- Components can contain components!
  - https://tinyurl.com/5cmx462a

HTML → React

```
You, 1 second ago | 1 author (You)
<html>
  <body>      You, 2 weeks ago • lab 2
    <div class="Navbar">
      <ul class="NavList">
        <li class="NavItem">
          <a href="M"> McDonald's log</a>
        </li>
        <li class="NavItem">
          <a href="B"> Our Menu</a>
        </li>
        <li class="NavItem">
          <a href="C"> Our Locations</a>
        </li>
        <li class="NavItem">
          <a href="D"> Our History</a>
        </li>
      </ul>
      <ul class="SidebardMenu">
        <li class="SidebardItem">
          <a href="E"> Our Menu</a>
        </li>
        <li class="SidebardItem">
          <a href="F"> Our Locations</a>
        </li>
        <li class="SidebardItem">
          <a href="G"> Our History</a>
        </li>
      </ul>
      <ul class="Menu">
        <li class = "MenuItem">
          <a href="H"> McChicken</a>
        </li>
        <li class = "MenuItem">
          <a href="I"> Big Mac</a>
        </li>
        <li class = "MenuItem">
          <a href="J"> Quarter Pounder</a>
        </li>
        <li class = "MenuItem">
          <a href="K"> Chicken McNuggets</a>
        </li>
      </ul>
    </div>
  </body>
</html>
```

```
// App component combining all components
const App = () => {
  return (
    <div className="McdonaldsPage">
      <Navbar />
      <Sidebar/>
      <Menu/>
    </div>
  );
};
```

What are props?

- Parameters passed to components for configuration and data
- Used to pass data from parent to child components

```
function getGreeting(user) {
  if (user) {
    return <h1>Hello, {formatName(user)}!</h1>;
  }
  return <h1>Hello, Stranger.</h1>;
}
```

JSX

A mixture of JavaScript and HTML

Example 01

Big Mac®

mono-repo-5 - MenuItem.jsx

```jsx
import React from 'react'

export default function MenuItem(image, name, price) {
  return (
    <div>
        <image src={image} />
        <h1>{name}</h1>
        <p>{price}</p>
    </div>
  )
}

```

Example 02

McDonald's Menu

Featured Favorites

Spicy McCrispy™

Big Mac®

Chicken McNuggets®

Quarter Pounder®* with Cheese

Iced Coffee

Egg McMuffin®

mono-repo-5 - Menu.jsx

```jsx
import React from 'react';

export default function Menu(menuData) {
  return (
    <div>
      <h1>McDonald's Menu</h1>

      <h2>Featured Items</h2>

      {menuData.map((item) => (
        <MenuItem
          image={item.image}
          name={item.name}
          price={item.price}
        />

      ))}
    </div>
  );
}
```

Using React

Explore more tools of React!

What is a hook?

- Built in React function
- REACT to changes
- Always start with “use”
  - useState: keeps track of state
  - useEffect: does something if state changes

What is a state?

- Store information in a component that CHANGES over time
- Component re-renders when state changes
- Examples:
  - To Do List
  - Counters

How to set a state?

UseState hook

- Function that takes in the initial state
- returns a LIST
- [current state, function that sets state]

DEMO!

- const [toDoListState, setToDoList] = useState([])



useState Example

mono-repo-5 - useState.jsx

```jsx
import React, { usestate } from 'react';
function usestateExample() {
  // Declare a new state variable, which we'll call "count"
  const [count, setcount] = usestate(0);

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={() => setcount(count + 1)}>Click me</button>
    </div>
  );
}
```

useEffect Example

mono-repo-5 - useState.jsx

```jsx

import { useState, useEffect } from "react";
import ReactDOM from "react-dom/client";

function Timer() {
  const [count, setCount] = useState(0);

  useEffect(() => {
    setTimeout(() => {
      setCount((count) => count + 1);
    }, 1000);
  });

  return <h1>I have been on this page for {count} seconds!</h1>;
}

const root = ReactDOM.createRoot(document.getElementById('root'));
root.render(<Timer />);

```

What are events?

- A user action
- Event Handler: function that executes upon user action on an HTML element
- Event handlers:
  - onClick
  - onChange

Examples

```
<button onClick={activateLasers}>
  Activate Lasers
</button>
```

```
function activeLasers() {
   console.log("activate lasers");
}
```

onClick

Function that happens when a user clicks on a button, or a div

onChange

Function that happens when changes the content of an HTML element

```
return (
  <input name="firstName" onChange={handleChange} />
);
```

Exercise

Let’s apply what we’ve learned!
First let’s set it all up though

Node Package Manager (NPM)

- package = other people's code
- NPM is a tool to use other people's code in your own code
- makes your life much easier

Getting Started

- Install Node (**https://nodejs.org/en/download/**)
- Download a text editor: such as VSCode (**https://code.visualstudio.com/download**)
- Create a GitHub account
- Install git in terminal
  - Windows: git-scm.com/downloads
  - Mac: git-- version
  - Test it works with: git

Configuring

You may be asked to configure your username & password

```
git config --global user.name "your_username"
git config --global user.email
"your_email_address@example.com"
git config --global --list
```

Final Steps

git clone https://github.com/anniealiang/DevWithKTP

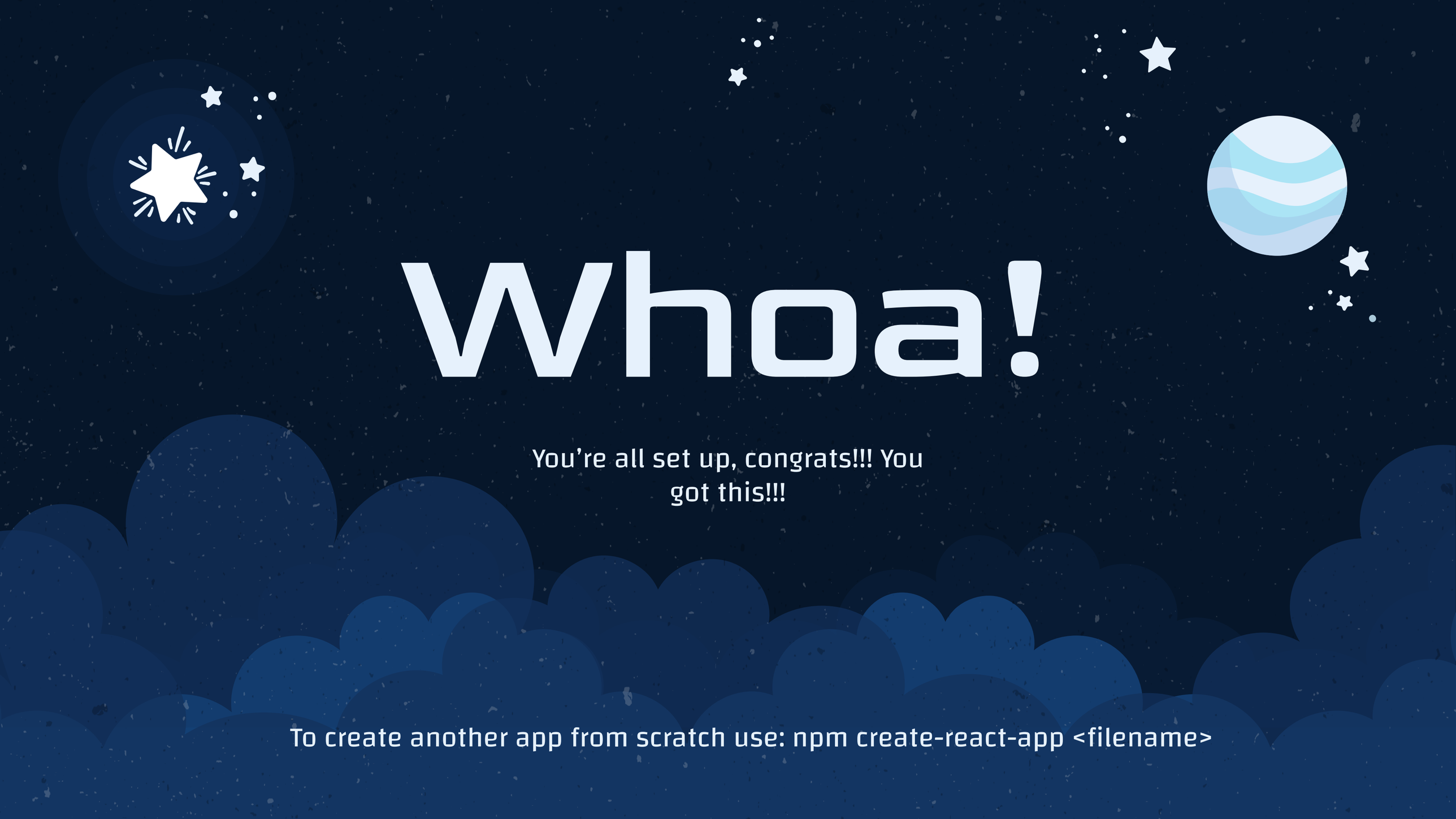
- **this clones “DevWithKTP” to your local computer**

npm install

- **this installs all libraries for this project**

npm start

- **this starts up the web application (will show up in your browser)**


Whoa!
You’re all set up, congrats!!! You got this!!!
To create another app from scratch use: npm create-react-app <filename>

Extra Resources:

- Learn more about React: https://react.dev/learn
- List of free APIs: https://github.com/public-apis/public-apis
- A great design tool: https://figma.com
- UI Component API for your App:
  - https://mui.com/
  - https://getbootstrap.com/
  - https://tailwindcss.com/

Thanks for coming!