Information Technologies for Industrial Engineers

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React Basics

JSX

App.tsx

```tsx
import "./App.css";

function App() {
  const msg = "This is from a variable.";
  const num = 0;
  return (
    <div>
      <div>This is just like HTML.</div>
      <div>{msg}</div>
      <div>Calculation: {num + 1}</div>
      <div>Call function: {sum(1, 2)}</div>
    </div>
  );
}

export default App;
```

`App.tsx` (Below)

```tsx
function sum(a: number, b: number) {
  return a + b;
}
```

Style

`index.css`

```css
body {
  margin: 0;
  padding: 0;
  font-family: Arial, Helvetica, sans-serif;
}
```

app.css

```css
.wrapper {
  margin: 0.5em auto;
  width: 95vh;
}

.header {
  color: teal;
}
```

`App.tsx`

```tsx
function App() {
  // ...
  return (
    <div className="wrapper">
      // ...
      <div className="header">Test CSS</div>
    </div>
  );
}
```

- Note the keyword `className`

Event

`App.tsx`

```tsx
return (
  // ...
  <button onClick="{handleClick}">Click</button>
);

function handleClick() {
  alert("Hello!");
}
```

- Note the keyword `onClick`

Component

- Components are foundation upon which you build user interfaces (UI).

- Components are functions that return `JSX` (called React Nodes).

./src/Nav.tsx

```tsx
function Nav() {
  return (
    <div className="nav">
      <span>🔥</span>
      <span>Home</span>
      <span>About Me</span>
    </div>
  );
}

export default Nav;
```

`App.tsx`

```tsx
import Nav from "./Nav"; 👈

function App() {
  return (
    <>
      <Nav /> 👈
      <div className="wrapper">// ...</div>
    </>
  );
}
```

- Notice the use of `<>...</>`

App.css

```css
.nav {
  display: flex;
  align-items: center;
  gap: 0.5em;
  color: teal;
  background-color: rgb(243, 243, 243);
  padding: 0.2em 0.5em;
}
```

Counter app

```
function App() {
  let counter = 0;
  function handleClick() {
    counter += 1;
    console.log(counter);
  }
  return (
    <>
      <div>{counter}</div>
      <button onClick={handleClick}>Add</button>
    </>
  );
}
```

Why doesn't this work?

- React doc

`useState` hook (function)

```javascript
import { useState } from "react";

function App() {
  const [counter, setCounter] = useState(0); 👈
  function handleClick() {
    setCounter(counter + 1); 👈
    console.log(counter);
  }
  return (
    // ...
  );
}
```

- Code

Common mistake

- Do not put `setCounter` in the main body.

Form app

- Use `htmlFor` in `<label>`
- Type of event in an even handler is `ChangeEvent<HTMLInputElement>`
- Use `e.target.id` to determine the input clicked.
- use `e.target.value` to get the typed value.

Code

Todo app

- Use `interface` to specify object shape.
- Display a list of items using `map` array method.
  - Two ways of writing the arrow function.
- Use `todoInput` state to capture use input.
- Use `value={todoInput}` to sync the value of the form to the value of the state.
  - Controlled input form.
- Prevent adding item when the input is blank

Code