Class 1: Inception

- Video Notes
  - Is React a library or a framework?
    - React is a library
    - Library vs Framework
      - Framework: When a website or app is built, it requires routing to navigate to different pages, and needs to have many components.
      - Examples - Image carousels: It is a javascript library.
      - It takes minimum effort for a library to put into our code.
  - What extensions to use?
    - Better comments
    - Bracket pair Colorization Toggler
    - ES7+ React/Redux/React Native
    - ESLint
    - GitLens supercharged
    - Prettier
    - vscode-icons
  - Emmet in HTML
    - Used by vs code to give basic HTML code.
    - Ex: using ‘html:5’ or ‘!’ gives a boilerplate HTML code.
  - Basic Hello world in HTML
    - Open index.js in chrome to see the output.

```
<!DOCTYPE html>
<html lang="en">
```

```
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Namaste React</title>
  </head>
  <body>
    <h1>Namaste Everyone</h1>
  </body>
</html>
```

▼ Hello World in JavaScript

- To print the same message in js we need to manipulate DOM using js.

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Namaste React</title>
  </head>
  <body>
    <div id="root"></div>

  <script>
    const heading = document.createElement("h1");

    heading.innerHTML = "Namaste Eveyone from JavaScript";

    const root = document.getElementById("root");

    root.appendChild(heading);
  </script>
</body>
</html>
```

- Inspect the elements tab to see if the <h1> is visible in the root.

▼ How does the browser run this code?

- How does it know what is `document.createElement` is?
- It comes from Browser APIs.
- The browser has a JS Engine. It knows what's happening inside the browser.

- The browser knows about the window.
- Try doing `window.document` in the console.
- This functionality comes from JS Engine.

▼ How to do the same in React

- React is a JavaScript library. We can inject it into our code using bare-minimum things.
- We can write the same program in React by adding the CDN links.
- We can copy the CDN links from React homepage to the script tag in our vs code.
- What are these CDN files?
- What is inside these JS files? Code written by Facebook engineers to be able to add React to JS code.

```
 <!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Namaste React</title>
  </head>
  <body>
    <div id="root"></div>

  <script
    crossorigin
    src="https://unpkg.com/react@18/umd/react.development.js"
  ></script>
  <script
    crossorigin
    src="https://unpkg.com/react-dom@18/umd/react-dom.development.js"
  ></script>
  <script>
    const heading = React.createElement(
      "h1",
      {},
      "Namaste Everyone from React"
```

```
    );

    const root = ReactDOM.createRoot(document.getElementById("root"));

    root.render(heading);

  </script>
</body>
</html>
```

- React.createElement is pure React (without using JSX)
- The createElement, createRoot comes from ReactAPI

▼ What is a CDN?

Content Delivery Network. Check assignment.

▼ What is cross-origin used in the React CDN link?

Check assignment.

▼ Shortest program in javascript

- An empty file is the shortest prog in javascript

▼ Shortest program in React

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Namaste React</title>
  </head>
  <body>
    <div id="root"></div>

  <script
```

```
    crossorigin
    src="https://unpkg.com/react@18/umd/react.development.js"
  ></script>
  <script
    crossorigin
    src="https://unpkg.com/react-dom@18/umd/react-dom.development.js"
  ></script>
</body>
</html>
```

- It is just adding CDN links to an HTML file.
- Run the code and go to the console.
- Type ‘React’ and press ‘enter’ to see some React code.
- Where did this come from? This is code that is injected from CDN links
- React is a global object and can be used anywhere in the code.
- The order of the script tag matters in the javascript file.

▼ Difference between React and ReactDOM CDNs

- The React @ 18 means we’re using the 18th / latest version of React in our code.
- This is the core library of React.
- React can exist without JSX. React can exist without Typescript.

What is DOM?

- The web version of React.
- We have injected the web version of React.
- This is the library which gives access to the DOM (Document Object Model) of the browser.
- Responsible for all the DOM operations.

▼ React create element

React.create element - it takes 3 arguments

1. name of the tag,
2. object - takes in props,
3. children/ react elements - which is an object

React here is a global variable which comes from the injected React js files.

- If we do a `console.log(heading)` :
- We get an object of type h1.
- React element is nothing but an object of type h1.

▼ play with props with the createElement

- put null instead of {} - Works with null as well
- Try to see if you can add style - Yes
- Try to see if you can add className and id in it - Yes

```
const heading = React.createElement(
        "h1",
        {
          title: "heading",
          style: { backgroundColor: "pink" },
          className: "headingClass",
          id: "headingID",
        },
        "Namaste React"
      );
```

▼ React render

- render modifies the DOM
- React DOM overrides the root

- If there’s something already in the root, React will override it with whatever is passed in React.render

▼ Can we have multiple roots?

A root is a single place where we inject our React and everything will be built inside the root.

▼ We can use React in an existing project by just adding it to the root.

```
<div id="header"><h1>Header</h1></div>
<div id="root"></div>
<div id="footer"><h1>Footer</h1></div>
```

▼ The difference between async and defer

Check the Namaste JS youtube video

▼ Why is CSS always imported in the head tag?

CSS files are linked in the head because they get applied regardless of whether DOM is already rendered or not.