


React Practice

App Component

```
export default function App() {  
  async function getAdvice() {  
    const response = await fetch("https://api.adviceslip.com/advice");  
    const data = await response.json();  
    console.log(data);  
  }  
  
  return (  
    <div>  
      <h1>Hello World!</h1>  
      <button onClick={getAdvice}>Get Advice!</button>  
    </div>  
  );  
}
```



```
import { useEffect, useState } from "react";
```

```
export default function App() {  
  /* useState is a function that returns an array in react  
  and here we are destructuring that array 1st position of the  
  array is value of the state, the 2nd value is a setter function that  
  we can use to update the piece of state */  
  const [advice, setAdvice] = useState("");  
  const [count, setCount] = useState(0);  
  
  async function getAdvice() {  
    const res = await fetch("https://api.adviceslip.com/advice");  
    const data = await res.json();  
    setAdvice(data.slip.advice);  
    /* Now in this getAdvice function we can use setAdvice function to  
    update the state, whenever the piece of state is updated  
    user interface will also be updated */  
    // take current count add 1 and that will become the new count  
    setCount((c) => c + 1);  
  }  
  
  // Generate very first piece of advice when loaded  
  /* useEffect takes two arguments 1st a function that  
  we want to execute at the beginning when the component loads and 2nd  
  argument is dependency array */
```

```

useEffect(function () {
  getAdvice();
}, []);
return (
  <div>
    <h1>{advice}</h1>
    <button onClick={getAdvice}>Get Advice!</button>
    {/* include this component like it is another html element */}
    {/* Pass count as a prop to Message. Props are like parameters
    to function. We call the prop count and pass in the prop
    value */}
    <Message count={count} />
  </div>
);
}

// In react we divide user interfaces into components
// components are reusable pieces of code
// components are used to render UI
// Name of all components should start with capital letter(convention)
// Now accept the props object as a parameter. In this props object count is
now a property
function Message(props) {
  // update count dynamically
  return (
    <p>
      You have read <strong>{props.count}</strong> pieces of advice
    </p>
  );
}

```

JSX Template: Babel transpiles JSX code by transforming it into regular JavaScript code. JSX (JavaScript XML) is a syntax extension for JavaScript that allows developers to write HTML-like code within JavaScript. Babel is a toolchain that is primarily used to convert ECMAScript 2015+ (ES6+) code into a backwards-compatible version of JavaScript that can be run in older browsers or environments.

When Babel encounters JSX code, it transforms it into function calls that create React elements. Here's a simplified explanation of how Babel transpiles JSX:

1. ****Parsing****: Babel first parses the JSX syntax into an Abstract Syntax Tree (AST), which is a structured representation of the code.

2. **Transformation**: Babel then transforms the JSX AST into equivalent JavaScript code. This transformation involves replacing JSX elements with `React.createElement()` function calls.

3. **Generation**: Finally, Babel generates the transpiled JavaScript code from the transformed AST.

For example, given the following JSX code:

```
```jsx
const element = <h1>Hello, world!</h1>;
```
```

Babel transpiles it into the following JavaScript code:

```
```javascript
const element = React.createElement("h1", null, "Hello, world!");
```
```

In this transpiled code, `React.createElement()` is used to create a React element representing the `<h1>` element with the text content "Hello, world!".

It's important to note that Babel itself doesn't understand JSX syntax natively; instead, it relies on plugins like `@babel/preset-react` to handle JSX transformation. This preset includes the necessary plugins to transform JSX into JavaScript that can be understood by browsers or other JavaScript environments.

App.js:

```
-----
import "./App.css";
function App() {
  const title = "Welcome to the new blog!";
  const likes = 50;
  // can output: number, string, and array
  // can't output: boolean and objects
  const link = "https://www.google.com/";

  const ninja = { name: "Yoshi", age: 30 };
  // returning dynamic values
  return (
    <div className="App">
      <div className="content">
        <h1>{title}</h1>
        <p>Liked {likes} times</p>
        { /* <p>{ninja}</p> */ }
      </div>
    </div>
  );
}
```

```

    <p>`${ninja.name} is a ${ninja.age} years old ninja!`</p>
    { /* bunch different element in arrays together and bunch them as string
*/}

    <p>{[1, 25, 686]}</p>
    { /* use dynamic values as attribute values in element tags */}
    <p>{Math.random() * 20}</p>
    <a rel="noreferrer" target="_blank" href={link}>
      Link to google!
    </a>
  </div>
</div>
);
}

```

```
export default App;
```

Components contain template which makes up the html along with js logic. Components return jsx and In background a transpiler named babel converts all this jsx template into regular JavaScript code when we save the file. class is a reserved keyword in js so we can't use it in jsx.

Components return jsx and exported to use elsewhere.

React converts out (whatever data type we give it to it) into strings before it renders it in the browser.

can output: number, string, and array
 can't output: boolean and objects

Lesson 6 (Adding Styles):

React styles are not bound to a single component, it will be applied to all components in the browser at that time (inspect to see), cause react takes all these styles and adds them to head of the webpage. check out styles tag inside head element.

The styles are not scoped into single component, we can use css modules or styled components to scope styles into components.

We can create a global index.css file to implement all our styles.

Inline styling in react:

```
    {/* Inline styling in jsx, the first {} denote dynamic value and inside {} denote an object inside its key-value pair, key = css property, value = css property value (string) */}
```

```
    <a
      href="/create"
      style={{
        color: "#fff",
        backgroundColor: "#f1356d",
        borderRadius: "8px",
      }}
    >
      New Blog
    </a>
```

Lesson 7 (click events):

Home.js

```
const Home = () => {
  const handleClick = (e) => {
    console.log("Hello Ninjas!", e);
  };
  const handleClickAgain = (name, e) => {
    console.log(`Hello ${name}!, ${e.target}`);
  };
  return (
    <div className="home">
      <h2>Homepage</h2>
      {/* passing function reference {handleClick} on clicking function will be
invoked, calling it handleClick() will invoke the function without clicking
*/}
      <button onClick={handleClick}>Click me!</button>
      {/*Avoid this handleClickAgain(name) as it will invoke the function
without clicking it, passing in argument to function: wrap inside anonymous
function '() => {
        handleClickAgain("Mario");
      }', e.g. handleClick is similar like () => { console.log(Hello
Ninjas!)} as we are not invoking the function with () we are referencing it, on
clicking the anonymous function is invoked then handleClickAgain("Mario") with
"Mario" argument, we can also remove curly braces ({})) cause it's one line, in
jsx {} indicates dynamic value */}
      <button onClick={{(e) => handleClickAgain("Mario", e)}}>
        Click me again!
      </button>
```

```
    {/* Event object/parameter we automatically get access to it when an
event occurs. As the first parameter of the function (referenced function), In
the second case: anonymous function gets access to event object, now will pass
that in handleClickAgain("Mario") function as 2nd argument */}
```

```
    </div>
```

```
  );
```

```
};
```

```
export default Home;
```

Lesson 8(useState hook):

State of a component means data being used on that component in a particular time.

It could be an array of values, booleans, string, objects or any other data that our component uses.

We created some variables and used them in our template before (refer to React Practice.pdf App.js file) but if we need to change variable or data over time or in reaction to some event (user clicking a button)

Home.js (Before using useState Hook):

```
// Destructure useState hook from react library, this grabs us the function
from the react library, now we can use it in our component
import { useState } from "react";
```

```
const Home = () => {
  let name = "Mario";
  const handleClick = () => {
    // Updating the value will not reflect in the template
    name = "Luigi";
    /* name itself changed to luigi but it doesn't get updated in the template
(view in browser console) cause the variable we have created is not reactive
(let name = "Mario") means react doesn't watch it for changes, when its value
changes it doesn't trigger react to re-render the template with the new value
inside it (name variable in this case) and we continue to see the old value
(Mario) in the browser, to make this work we need to make the value reactive so
that when it changes react detects that and it re-renders the template with the
new value (where we output it in the template) and updated value is visible to
the browser to implement this we use hook which is called useState(). Hook in
react is a special type of function that does a certain job, it generally
starts with the word use. useState hook provides us a way to make reactive
```

value, also provides a way to change that value whenever we want. So to use useState hook we need to import it */

```
    console.log(name);
  };

  // const handleClickAgain = (name, e) => {
  //   console.log(`Hello ${name}!, ${e.target}`);
  // };

  return (
    <div className="home">
      <h2>Homepage</h2>

      <p>{name}</p>
      {/* onclicking button change the value of name variable */}
      <button onClick={handleClick}>Click me!</button>
      {/* <button onClick={(e) => handleClickAgain("Mario", e)}>
        Click me again!
      </button> */}
    </div>
  );
};
```

export default Home;

Home.js (After using useState Hook):

// Destructure useState hook from react library, this grabs us the function from the react library, now we can use it in our component

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

```
const Home = () => {
  // let name = "Mario";
  // Make a reactive value using useState, we give this useState a initial value for example (Mario), we want to store this in some variable. We use array destructuring to grab 2 values that this hook returns to us, first value is the initial value (name), 2nd value is a function that we can use to change that value most times it's called set[whatever the name of value to be changed]
  const [name, setName] = useState("Mario");
  const [age, setAge] = useState(23);
  const handleClick = () => {
    /* changing the state data using setName, this useState value is reactive if we change it it's gonna change in the template as well, when we use this function to change the value that triggers react to re-render the component upon re-rendering it has the new value of name cause it's been updated. We can
```

```

use this hook (useState) as many times in our component for different values
other than name like it can be array, object, boolean etc. like 'const [age,
setAge] = useState(0)' The data type of state we are using doesn't matter */
    setName("Luigi");
    // update age to 30
    setAge(30);
  };

  return (
    <div className="home">
      <h2>Homepage</h2>
      /* At first it will give us the initial value (Mario), to change this
value we can use the setName function */
      <p>
        {name} is {age} years old.
      </p>
      <button onClick={handleClick}>Click me!</button>
    </div>
  );
};

```

/* Conclusion: When we need a reactive value something that might change at some point we use the useState hook to do that we pass in an initial value and we can output that value in the template and then we just call the set function 2nd value we get in the destructured array to update it and that triggers re-render and the new value is going to be output to the browser in this template, so this hook is very useful 😊 */

```
export default Home;
```

Lesson 9 (React Dev Tools):

React Dev tools integrate with browser development tools and gives us extra features that we can use on any website created with react. To extra tabs components, and profiler is available. Components is more useful. This gives us component diagram or component tree of our current app. Hovering over it provides extra info about the component.

Important tabs in react dev tools:

1. Inspect the matching DOM element. (eye icon)
2. Log this component data to the console. (bug icon)

Change of state (data) under hooks tab can be viewed in home (by selecting it from component tree) component by clicking the button (click me). Changes in state in a component can be tracked here.

If we log the home component to the console we can see the hooks property with array of objects and each object represents the piece of state we have with properties name, value, id, isStateEditable etc.

Lesson 10 (Outputting Lists):

Goal: Outputting list of blogs in our template.

Create some states to represent these blogs. We will be using useState hook cause data might change at some point we might delete the blog, we need react to update the DOM when that happens.

Home.js (lecture 10: Outputting List)

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

const Home = () => {
  /* destructure the two values, initial value of this state is an array of
  objects, each objects represent a blog with title, body, author, and id
  property. This id is going to be used by react when we output this data, each
  id needs to be unique for each one of the items/blogs. */
  const [blogs, setBlogs] = useState([
    { title: "My new website", body: "lorem ipsum...", author: "mario", id: 1
  },
    { title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2
  },
    {
      title: "Web dev top tips",
      body: "lorem ipsum...",
      author: "mario",
      id: 3,
    },
  ]);
  return (
    <div className="home">
      {/* iterate/loop through blogs array using map method, for each iteration
      as we iterate through this we get access to the item we are currently iterating
      that is blog in this case, when we output list using map method each root
      element in the template that we return must have a key property now this key
      property is something that react uses to keep track of each item in the dom as
      it outputs it, so if data changes at any point say we remove/add new items to
      the array react can keep track of those items. So we must add a key attribute
      to each item that we output, otherwise react can't distinguish between list
      items in the DOM. This normally an id property for each item in the array (we
      already have that in our array of objects) */}
      {blogs.map((blog) => (
```

```

    // what we want to output for each blog
    <div className="blog-preview" key={blog.id}>
      <h2>{blog.title}</h2>
      <p>Written by {blog.author}</p>
    </div>
  )})
</div>
);
};

```

/* Summary: That is how we output a list of data in react. We have a list in this case an array of object which is stored in useState the we map through the data and we take each item into that as we map through it an we output a bit of template for each one (in this case see comment what we want to output for each blog) and each one has a key property which is id in our case but it could be any unique property. Now some css is added for each blog template (view after 'blog previews / list' comment in index.css) */

```
export default Home;
```

Lesson 11 (Props):

If we are building a real blog we might have the list of blogs in various places on our website it might be the homepage, search, category or tag page. So several different areas may use the same logic where we cycling/iterating through blogs and outputting a blog preview for each one. To implement that in our project we'll be repeating the code (map function iteration) over and over again in different components for different pages. Where we have pieces of components or bits of templates that might be reused in different positions or different places in the website we like to make that bit of template into its own reusable component. e.g. if we make a component blog list then we could drop this blog list component in any other components in the project. So if we have category page later on we could just get the blog list component and drop it in. To pass in different data into reusable component every time use it we will do that in form of props. E.g. in the homepage we might list all the blogs and show a preview for all the blogs starting from the latest one but on a search page or search component, we might only show the blogs that match the search term so the data is going to be different the structure is the same (of map function iteration BlogList component) but the blogs that we are going to use (state array of objects/blogs) is going to be different, so we can pass in data into these external components as well in the form of props. An external component of BlogList will contain all the logic/template(jsx) of map iteration and listing blog preview.

Home.js

```

import { useState } from "react";
import BlogList from "../BlogList";

const Home = () => {
  const [blogs, setBlogs] = useState([
    { title: "My new website", body: "lorem ipsum...", author: "mario", id: 1 },
    { title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2 },
    {
      title: "Web dev top tips",
      body: "lorem ipsum...",
      author: "mario",
      id: 3,
    },
  ]);
  return (
    <div className="home">
      { /* {} - Dynamic value */ }
      <BlogList blogs={blogs} title="All Blogs!" />
    </div>
  );
};

/* Conclusion: That's how we can make a component take in props data and then
use that data inside that component. It makes the Bloglist component more
reusable and it does, we can now use this BlogList component anywhere in our
application whether in home component or in different page component later on
*/
export default Home;

```

BlogList.js

```

// const BlogList = (props) => {
const BlogList = ({ blogs, title }) => {
  /* storing blog property of props object in blogs, we are passing in
properties to props object and grabbing this different properties from this
props object and storing these in this variables now an easier way to do this
is destructuring ('{blogs, title}') as we want blogs and title from props
object */
  // const blogs = props.blogs;
  // const title = props.title;
  // const { blogs, title } = props;
  // console.log(props, blogs);
  return (
    /* In the BlogList component we are trying to map through the blogs data
but this component has no idea of what blogs is. The blogs data is not defined

```

in this component. We can't just use any data in another where it's defined (Home component in this case) right here in home component because it can't reach that. There is 2 ways to fix this: 1st option is to redeclare all this data into BlogList component instead of home (data - ' const [blogs, setBlogs] = useState([

```
{ title: "My new website", body: "lorem ipsum...", author: "mario", id: 1
},
{ title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2
},
{
  title: "Web dev top tips",
  body: "lorem ipsum...",
  author: "mario",
  id: 3,
},
]);
```

the 2nd option is to use props whereby we pass this data from this home component into the BlogList here the 2nd option props will be used for 3 reasons 1st: It's gonna make our BlogList component more reusable and we'll see exactly how later on. 2nd: It allows us to still use this data in home component later on (cause we are not removing it) if we need it in future cause the data is still gonna be declared here in home component. 3rd: It allows to learn how to use props 🤔. Props are a way to pass data from one component(a parent component) into a child component. In this case Home is parent component and BlogList is child component, we will be passing the blogs data into the BlogList component to do that we will make a property name on <BlogList/> tag. We can call it whatever we want it's blogs in this case. So, <BlogList blogs={blogs} /> now this is being passed into BlogList component (check home component code) as a prop (blogs={blogs} - this is a prop). We need to receive it here in BlogList component we get access to an argument inside this function/component called props. Now this blogs property will be in props object. Any props that we send through (like blogs={blogs}) into a component will be attached to this props object which we automatically get as an argument in the component ('const BlogList = (props)=>{') and we can access them like props.blogs. We can pass in multiple props if we want to like we can pass in title="All Blogs" with a string value */

```
<div className="blog-list">
  <h2>{title}</h2>
  {/* {props.blogs.map((blog) => ( */}
  {blogs.map((blog) => (
    // what we want to output for each blog
    <div className="blog-preview" key={blog.id}>
      <h2>{blog.title}</h2>
      <p>Written by {blog.author}</p>
    </div>
  )}}
</div>
```

```

    );
};

export default BlogList;
-----

```

Lesson 12 (Reusing components):

We took all this logic (map iteration) from home component and externalized it into BlogList component and we passed props into that component the data which it uses and externalizing all this logic into different component, makes that code more reusable, we can reuse this component in different places in our application where we need it and we can pass different data to it each time.

```

-----
Home.js
-----
import { useState } from "react";
import BlogList from "../BlogList";

const Home = () => {
  const [blogs, setBlogs] = useState([
    { title: "My new website", body: "lorem ipsum...", author: "mario", id: 1 },
    { title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2 },
    {
      title: "Web dev top tips",
      body: "lorem ipsum...",
      author: "mario",
      id: 3,
    },
  ]);
  return (
    <div className="home">
      <BlogList blogs={blogs} title="All Blogs!" />
      {/* pass in filtered data from blogs array, we will take out the blogs
which doesn't have a author of mario, pass in title of 'Mario's Blogs' which
was 'All Blogs!' previously, filter method fires a callBack function for each
item in the array now if we return true for that item it keeps it in the array
and if we return false it filters it out of the array and it returns a new
array with the items except filtered out ones and we are passing this that data
(filtered out array) as a prop, so this BlogList component can be reused and we
can reuse it with different data which makes it really useful for doing things
like a search page whereby the title matches the search term for example */}
      <BlogList

```

```

        blogs={blogs.filter((blog) => blog.author === "mario")}
        title="Mario's Blogs!"
      />
    </div>
  );
};

```

```
export default Home;
```

```
-----
BlogList.js
```

```

const BlogList = ({ blogs, title }) => {
  return (
    <div className="blog-list">
      <h2>{title}</h2>

      {blogs.map((blog) => (
        <div className="blog-preview" key={blog.id}>
          <h2>{blog.title}</h2>
          <p>Written by {blog.author}</p>
        </div>
      ))}
    </div>
  );
};

```

```
export default BlogList;
```

```
-----
Next Lesson: Updating the state by deleting items from data array (state of
array of objects/blogs)
-----
```

Lesson 13 (Functions as Props Delete an item):


Allow users to delete blogs by clicking on the button. We need a button inside the BlogList component for each blog that we output doing that below the author {blog.author}.

```
BlogList.js
```

```

const BlogList = ({ blogs, title, handleDelete }) => {
  /* function to delete blog using id: here we want to delete the blog with
  that id from blog data, now the data is initialize in home component useState
  (this is where the state is), we don't want to directly edit the blogs prop
  (blogs prop - that is passed in in this component from Home component) (we

```

shouldn't do that) instead we need to use `setBlogs` method inside `Home` component to the update the state (change the state after deleting an item (blog)) that's what we need to do, it's not good to defined `handleDelete` function in here (in `BlogList` component) instead we want it to be defined in the home component, so we can interact with the data directly and then we can pass in this data (returned data from `handleDelete` function, the data after deleting) through as prop, so we can create a prop called `handleDelete` in `Home` component and set it equal to `handleDelete` function e.g. `handleDelete={handleDelete}` and the in `BlogList` we can accept this function as a prop in `BlogList` component and we are using it in the `onClick` event see below , So we are invoking this function which is defined in the parent home component and inside home component we can use `setBlogs` function to update the state and we can remove the blog with this id (check `handleDelete` function in `Home` component) */

```
return (  
  <div className="blog-list">  
    <h2>{title}</h2>  
    {blogs.map((blog) => (  
      <div className="blog-preview" key={blog.id}>  
        <h2>{blog.title}</h2>  
        <p>Written by {blog.author}</p>  
        {/* button with click event handler (onClick), invoke an anonymous  
function while clicking it (Note: We pass in function expression (body of  
function or function name)), we'll pass in the id of the blog we want to delete  
so that we can find it in the array and delete it, we have access to the blog  
and the id property is in the blog, so we are passing that (blog.id) into  
handleDelete function so we know in here which blog to delete, this click event  
invokes the handleDelete function defined in Home component */}  
        <button onClick={() => handleDelete(blog.id)}>Delete blog!</button>  
      </div>  
    )})  
  </div>  
);  
};
```

```
export default BlogList;
```

Home.js

```
import { useState } from "react";  
import BlogList from "../BlogList";
```

```
const Home = () => {  
  const [blogs, setBlogs] = useState([
```

```

    { title: "My new website", body: "lorem ipsum...", author: "mario", id: 1
  },
  { title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2
},
  {
    title: "Web dev top tips",
    body: "lorem ipsum...",
    author: "mario",
    id: 3,
  },
]);

```

```

const handleDelete = (id) => {
  /* store the new array temporarily in newBlogs, the filter method doesn't
  change the original (blogs) array it doesn't mutate (change) it, It returns a
  new filtered array, blog id that doesn't match this passed id will remain in
  the array id that is not matched is removed, the new array is stored in
  newBlogs */
  const newBlogs = blogs.filter((blog) => blog.id !== id);
  /* we will use setBlogs to set new value (filtered array of objects/blogs
  (newBlogs)) for blogs, see the defined array of objects up 👉 in the useState
  that is previous (initial) value and we will update the state by setting the
  value of blogs to newBlogs, fingers crossed 🤞, upon refreshing the modified
  newBlogs state will not persist the state will set back to initial state as it
  re rendering, re-running the code, that's how we are passing functions
  (handleDelete) into other components (BlogList) as props from parent
  component(Home) */
  setBlogs(newBlogs);
};

return (
  <div className="home">
    /* we can pass in this data (returned data from handleDelete function,
the
    data after deleting) through as prop, so we can create a prop called
    handleDelete in Home component and set it equal to handleDelete function
    e.g. handleDelete={handleDelete} */
    <BlogList blogs={blogs} title="All Blogs!" handleDelete={handleDelete} />
  </div>
);
};

```

/* conclusion: handleDelete function is defined where the original initial data is in the home component we will not be modifying blogs prop instead we will pass this handleDelete function as prop to BlogList component and use it in there in the onClick method by invoking it with the id of the blog to be

deleted this handleDelete function defined in Home component since then invoked and uses setBlogs(newBlogs) to change value of blogs to newBlogs filtered array upon refreshing the code reruns and the state(data) of blogs is set back to initial value */

```
export default Home;
```

Lesson 14 (useEffect Hook):

We have seen a useState hook that is used to create some state for the component. But there are many other hooks that we can use in React. One such is useEffect - this hook runs a function at every render of the components, remember the component renders initially when it first loads and the rendering also happens when the state changes it re renders the dom so we can update that state in the browser, so this useEffect hook is a way to run code on every render and that can be useful for many different reasons which we're going to see later on, now focus on how can we use it.

First thing to do import it from react - (import { useState, useEffect } from "react")

Home.js

```
import { useState, useEffect } from "react";
import BlogList from "../BlogList";

const Home = () => {
  const [blogs, setBlogs] = useState([
    { title: "My new website", body: "lorem ipsum...", author: "mario", id: 1 },
    { title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2 },
    {
      title: "Web dev top tips",
      body: "lorem ipsum...",
      author: "mario",
      id: 3,
    },
  ]);

  const handleDelete = (id) => {
    const newBlogs = blogs.filter((blog) => blog.id !== id);
    setBlogs(newBlogs);
  };
};
```

/* use useEffect hook - we don't store it inside a constant it doesn't return anything all we need to do is pass as an argument a function, this function the function that's going to run every time there is a re-render so once initially when the component first loads but thereafter anytime the data changes, normally in this function inside useEffect we could do something like fetch data or communicate with some kind of authentication service and those things are known as side effects in react, but for now we are doing simple console.log, if we see in browser console we can observe useEffect ran on refresh and when we delete a blog(changing the data (state) (re-rendering)) so useEffect runs on every render. We can also access the state inside useEffect, so if we want to output the blogs we can do 'console.log(blogs)' inside useEffect. If we inspect the browser console we can see the blogs data on every render as useEffect runs, Need to be careful about changing the state inside useEffect because because we could end up in a loop of continuous renders (e.g. setting state inside useEffect 'setBlogs(newBlogs)') 😊. In this scenario, Initially the component renders to the DOM which will trigger useEffect function to run that would then update the state and the state(data) would change and that would trigger a re-render on that re-render again that triggers this function in useEffect to run and this goes on again and again creating a endless loop, there are ways to fix it which we will see later */

```
useEffect(() => {
  console.log("useEffect ran");
  console.log(blogs);
});

return (
  <div className="home">
    <BlogList blogs={blogs} title="All Blogs!" handleDelete={handleDelete} />
  </div>
);
};
```

/* Conclusion: This useEffect hook is really really useful for running any kind of code that we need to run at every render. It can be used for things like fetching data we're gonna see that later. Next up we gonna look at dependencies of useEffect */

export default Home;

Lesson 15 (useEffect Dependencies):

useEffect hook the function inside it fires after every render, that happens once initially when the component first loads but thereafter every time the state changes and we re-render the template. But we don't want to run a function after every single render rather maybe only after certain renders to

do that we can use dependency array, this is an array that we can pass into `useEffect` hook as a second argument like this:

```
useEffect(() => {
  console.log("useEffect ran");
  console.log(blogs);
}, []);
  🖱️ (2nd argument)
```

Passing an empty array - this ensures that `useEffect` hook runs only after the first initial render, thereafter if the state (data) changes it won't run the function again. It only runs it once. This is useful if we want to only run the function once after the first render.

Now we can also add actual dependencies to this array, meaning any state (data) values that should trigger the `useEffect` function to run when they change. To demonstrate we are creating another piece of state.

Home.js

```
import { useState, useEffect } from "react";
import BlogList from "../BlogList";

const Home = () => {
  const [blogs, setBlogs] = useState([
    { title: "My new website", body: "lorem ipsum...", author: "mario", id: 1 },
    { title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2 },
    {
      title: "Web dev top tips",
      body: "lorem ipsum...",
      author: "mario",
      id: 3,
    },
  ]);

  const [name, setName] = useState("Mario");

  const handleDelete = (id) => {
    const newBlogs = blogs.filter((blog) => blog.id !== id);
    setBlogs(newBlogs);
  };

  /* We want to run this useEffect at the beginning when the component first
  renders but also whenever a certain value changes (in this case name meaning if
```

this state changes - ``const [name, setName] = useState("Mario")`` so the `useEffect` function will run only when the name state changes, given name will become the dependency we add into the 2nd argument ``[name]`` - now `useEffect` is going to watch this value and if it changes it will run the function. Now on the first render `useEffect` still runs displayed `console.log(name)` output `mario` on browser console. If if we delete the blogs it will not run cause it's only watching for changes in name state not in blogs state cause blogs is not in the dependency array, but if we change the name it does run the function (see the console) cause name is in the dependency array & when it changes the function inside `useEffect` is ran). Now one thing to notice: after changing the name state to `luigi`, if we click the change name button again it will not run again. Cause although it is using `setName("Luigi")` function to change the state it's not actually changing the value anymore cause it's already `luigi` at this point (we already clicked the button changing the state to `luigi`) so state is not changing and we are not triggering that re-render and therefore the function inside `useEffect` (`useEffect`) in general is not running */

```
useEffect(() => {
  console.log("useEffect ran");
  // console.log(blogs);
  console.log(name);
}, [name]);

return (
  <div className="home">
    <BlogList blogs={blogs} title="All Blogs!" handleDelete={handleDelete} />
    {/* this onClick event will invoke an anonymous function which then
invokes the setName(function that changes the state - data) */}
    <button onClick={() => setName("Luigi")}>Change name</button>
    {/* Outputting, the name in a paragraph */}
    <p>{name}</p>
  </div>
);
};
```

/* Conclusion: That's how we can use dependencies this dependency array is the 2nd argument to `useEffect` to control when this `useEffect` function runs */

```
export default Home;
```

Lesson 16(Using Json Server):

Fetching Data using `useEffect` - it is good place to fetch data in a component cause we know it runs the function (function inside `useEffect` sent as 1st argument) when the component first renders initially, and that's generally when

we want to go and fetch some data and then we can use that data in our application instead of the data that we already have in the blogs state:

```
`const [blogs, setBlogs] = useState([
  { title: "My new website", body: "lorem ipsum...", author: "mario", id: 1
},
  { title: "Welcome party!", body: "lorem ipsum...", author: "yoshi", id: 2
},
  {
    title: "Web dev top tips",
    body: "lorem ipsum...",
    author: "mario",
    id: 3,
  },
])`
```

Cause typically in an web app we will not have hard coded data like this, instead it will probably come from a database using an api endpoint (rest api). We are gonna using json server which will allow us to build a fake rest api just using a json file that we can use to test this out.

1st step is to create a json file which is going to act as our database, this will reside in data folder of root directory of dojo-blog. in `data/db.json`

[db.json is one property called blogs with an array of two other objects]

```
db.json
-----
{
  "blogs": [
    {
      "title": "My First Blog",
      "body": "Why do we use it?\nIt is a long established fact that a reader
will be distracted ",
      "author": "mario",
      "id": 1
    },
    {
      "title": "Opening Party",
      "body": "Why do we use it?\nIt is a long established fact that a reader
will be distracted ",
      "author": "yoshi",
      "id": 2
    }
  ]
}
```

so each object is a blog with title, body, author, and id, we have two objects/blogs in total and when we're using json server each top level property is considered a resource so we just have one top level property blogs (which contains the array with 2 objects) so it sees that as resource and creates endpoints for us to interact with this resource so we can do things like delete items from it, add items to it, edit items, get the items etc so that is db.json file in a nutshell.

```
// comments are not allowed in json
```

```
-----  
-----
```

Now we'll use json server package to watch this file (db.json) and wrap it with some endpoints. So there is 2 options here either 1. Install json server package locally into this project and then use it or 2. Use npx like we did to create-react-app to run the code from web and it will still watch our file right here `db.json`, that's is what we are gonna do. Open up different terminal rather than that's running our local development server(localhost:3000).

We need to install json-server with 2 flags: (watch and port)

```
`npx json-server --watch data/db.json --port 8000`
```

watch followed by the path of the file to watch.

And the port number where json-server will run.

After running it (the command above) is going to watch db.json and will wrap it with some api endpoints.

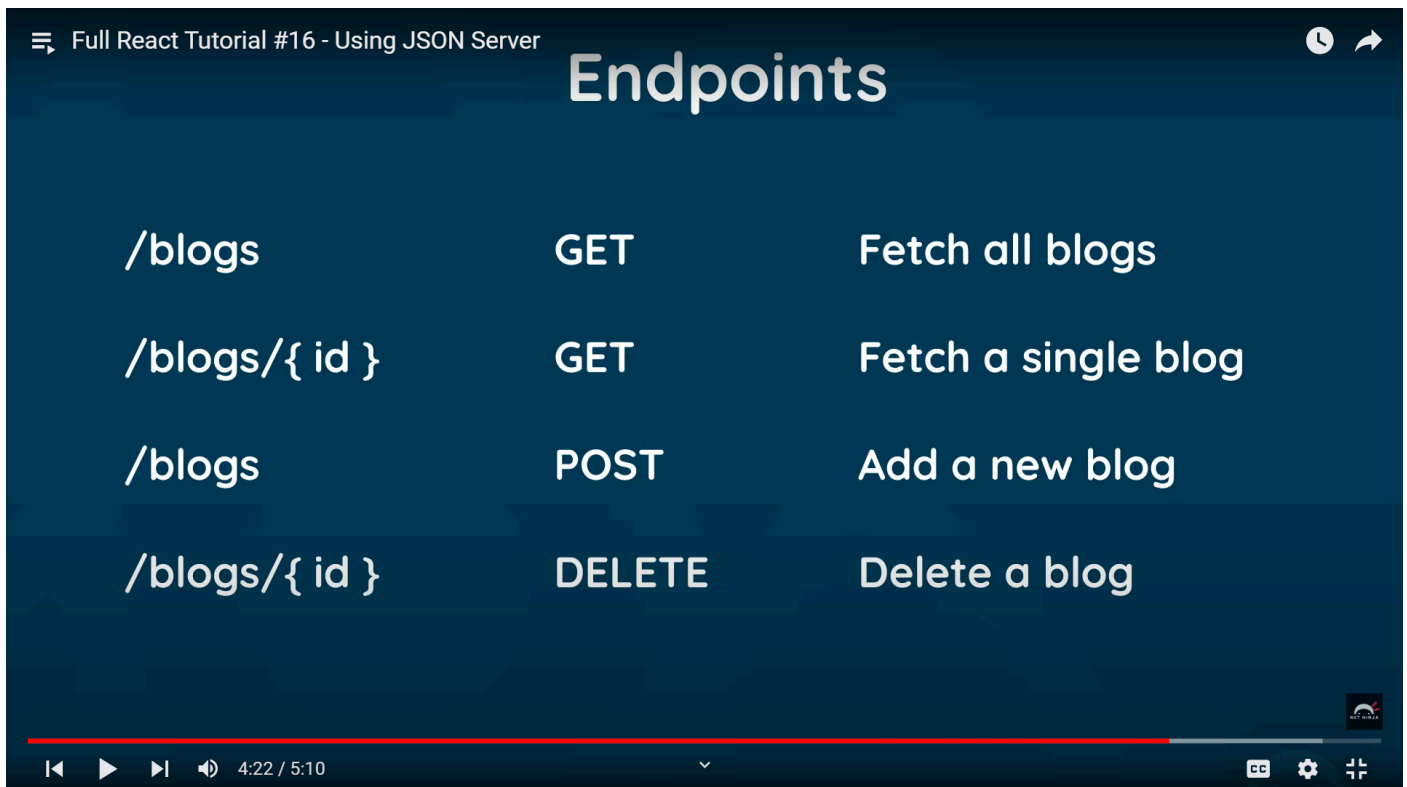
It picked up that we have a blogs resource: <http://localhost:8000/blogs>

So if we want to send a get request to get all of the blogs we would use this endpoint: <http://localhost:8000/blogs> - we can view this url in browser and see the data typically we're not gonna be using the browser to get that data instead we're gonna be using a fetch request inside our component using these different endpoints right here. Now at the moment we can see this:

<http://localhost:8000/blogs> endpoint but it also provides us with other endpoints. The endpoints we are gonna be using (provided by json-server to us) is shown in the JSON server API endpoint image in lecture summary. This is not all of the endpoints, just the ones we will be using. The use of these endpoints is also provided in the image. The first one we already tested in the browser (refer to the image) - <http://localhost:8000/blogs>.

/blogs/{id} - <http://localhost:8000/blogs/1> (1 is the id)

The Image :



Lesson 17 (fetching data using useEffect):

Fetch data inside `useEffect` hook - it's going to run when the component first renders that's is the only time it's going to run cause we passed an `[]` empty dependency array to `useEffect` as 2nd argument.

We are not gonna use initial data hardcoded data for `blogs` state instead we will set the initial value as `null`. Upon successfully fetching the data from `db.json` file we are going to update the `'blogs'` state (data) using `'setBlogs'` with the data we get back.

Let's make that fetch request, `fetch('endpoint')` = format of fetch

Home.js

```
import { useState, useEffect } from "react";
import BlogList from "../BlogList";

const Home = () => {
  const [blogs, setBlogs] = useState(null);

  // const handleDelete = (id) => {
  //   const newBlogs = blogs.filter((blog) => blog.id !== id);
  //   setBlogs(newBlogs);
  // }
```

```
// };

useEffect(() => {
  /* get request to `http://localhost:8000/blogs` this returns to us a
  promise, we can't use async we can't use await inside this to implement that we
  need to externalize a function with all of this logic inside it and make that
  asynchronous. But here we going to use `then` method, so this will fire a
  function once this promise has resolved so once we have the data back, first of
  all we get a response object, this response object is actually not the data is
  just a response object and in order to get the data we have to do something
  with the response object and this is when we just use the fetch api
  (`http://localhost:8000/blogs`), So we need to use `res.json()` to pass the
  json into javascript object */
  fetch("http://localhost:8000/blogs")
    .then((res) => {
      /* and this passes the json into a javascript object, we need to return
      this value and when we return this it returns another promise cause res.json()
      is also asynchronous it takes some time to do. so we need chain another then
      method which is going to fire a function once `res.json` is complete and this
      function (function inside then method that is chained 2nd time) takes in as
      parameter the actual data that `res.json` gets us. So use the res (response)
      object use the json method on that (res.json) and chain another then method
      whereby we get the data. So this data is going to be whatever in here in
      db.json in javascript format or rather a javascript array (the array starting
      from the top level resource `blogs`). We are logging the data inspect browser,
      now we are going to update initial null value given to the blogs state using
      setBlogs, if we put this setBlogs function inside useEffect it is not going to
      cause an infinite loop cause we have put the empty dependency array ensuring it
      only runs after first initial render not whenever the data changes */
      return res.json();
    })
    .then((data) => {
      console.log(data);
      setBlogs(data);
    });
}, []);

return (
  <div className="home">
    /* Upon uncommenting the following line there might still be a error,
    here we are passing blogs as a prop to the BlogList component and then inside
    the BlogList the error is occuring in the map method, where we trying to map
    through the blogs that we pass through now the blogs should be the data that we
    have seen in the console `console.log('data')` in 2nd chained then method. So
    why it is not working? It's not working cause it takes a fraction of time to
    get that data and initially the value of blogs is null and we're passing in
```


null (in below line as prop to BlogList `blogs={blogs}`) when the app first loads in the browser so in the BlogList component blogs (blog property destructured from props object and stored in blogs `blogs = props.blogs`) is null and we are trying to use map method on null at the very start once we get the data it should work fine but to begin with until we have that data we get the error. So how do we combat this? So we don't want to output the below line until we have a value for blogs. So we are going to short circuit && operator by wrapping the whole line in {} which denotes javascript [&& ShortCircuiting: When first value is true the and operator will automatically return the second operand. No matter what that is. When first value is false (here null is a falsy value) the and operator will automatically return first value and doesn't check the second value. That is short circuiting. This acts little bit like if statement]. This is called conditional templating in react. So if the the left operand (here that is null and evaluates to false) is false it doesn't even bother checking the right operand (it short circuits), the <BlogList/> is not outputted here. If the blogs left operand evaluates as true, this moves to the right operand and evaluates <BlogList/> by evaluating this it outputs it to the screen. So the right operand is only ever going to be output if the left operand is true and that's generally how we can conditionally output parts of template🔥(I think it means one template or the other) we're going to see more of this later. So that's all */

```
    {blogs && <BlogList blogs={blogs} title="All Blogs!" />}
  </div>
);
};
```

/* Conclusion: So we are fetching the data as soon as the component first renders at that moment in time once we have the data we update the state right here `setBlogs(data)` once we update the state it has a value it outputs this `<BlogList/>` and this passes through that value `blogs={blogs}` then we cycle through them in BlogList component and render them to DOM */

/* Now we are going to remove the buttons to delete the blog because if we are deleting the blog it's just from local data and yes it'll work because we're storing this into local data in the state `in blogs state. Also notice we're updating blogs state upon deleting using setBlogs(newBlogs) in handleDelete function that runs on onClick event` but ultimately we are going to make delete request to db.json file so let's get rid of handleDelete functionality cause we don't need that anymore from Home component and in BlogList component, that is passed function as prop to BlogList component. So now it's gone */

/* Next up we're going to see more about conditional templates (using logical operators) and how to output a loading message as we're trying to fetch the data */

```
export default Home;
```

BlogList.js

```
/* Removing the handleDelete function that was passed as prop from home
component to BlogList component, also the button that is used to invoke it */
```

```
const BlogList = ({ blogs, title }) => {
  return (
    <div className="blog-list">
      <h2>{title}</h2>
      {blogs.map((blog) => (
        <div className="blog-preview" key={blog.id}>
          <h2>{blog.title}</h2>
          <p>Written by {blog.author}</p>
          {/* <button onClick={() => handleDelete(blog.id)}>Delete
blog!</button> */}
        </div>
      ))}
    </div>
  );
};
```

```
export default BlogList;
```

Lesson 18 (Conditional Loading Message):

Currently in our app we render the BlogList `{blogs && <BlogList blogs={blogs} title="All Blogs!" />}` once we have blogs data and until then we don't render it. Now it would be nice to create a loading message while the data is being fetched so that user knows something is loading if it takes time to do, now our fetch is very quick because we're just making a fetch locally to our computer. But most times fetch will be to another server over the internet and slower in which case the user will see that loading message while we fetch the data.

To do this, we're going to create an additional piece of state inside the home component and this is going to be called isPending and the function to change it's value that is setIsPending with initial value set to true:

```
const [isPending, setIsPending] = useState("true");
```

Now we will implement another conditional template ->

Home.js

```
import { useState, useEffect } from "react";
import BlogList from "../BlogList";
```

```

const Home = () => {
  const [blogs, setBlogs] = useState(null);
  const [isPending, setIsPending] = useState("true");

  useEffect(() => {
    /* Since it happens too fast we're gonna add 1 sec/1000 millisec delay to
    it, so that we can show the loading message. This setTimeout function (the
    anonymous function inside it) will fire after 1 sec then we can perform the
    fetching operation, so that just makes fetch a little more realistic in terms
    of the amount of time it takes to get the data. Don't use setTimeout for
    real-world apps 😊 cause we're just forcing our user to wait another 1 second
    when they don't need to. This is just to kind of simulate the idea of the
    request taking little bit of time so it makes it a bit more realistic */
    setTimeout(() => {
      fetch("http://localhost:8000/blogs")
        .then((res) => {
          return res.json();
        })
        .then((data) => {
          console.log(data);
          setBlogs(data);
          // Setting isPending to false once we have the data, therefore
updating the state
          setIsPending(false);
        });
    }, 1000);
  }, []);

  return (
    <div className="home">
      {/* only when isPending is true we want to show a loading message. Now to
      begin with isPending is true it is true as it's initial value set to true so
      user will see it. This shows it, but we want to show it only when the fetch is
      going on and We don't want to show it once we have the data. So once we have
      the data in 2nd chained .then method available to us we can set isPending to
      false. See Up 🙌. Upon refreshing we can see the loading h2 for split second.
      To see it better we can use chrome dev tools and set the throttling to
      mid-tier-mobile. */}
      {isPending && <h2>Loading.....</h2>}
      {blogs && <BlogList blogs={blogs} title="All Blogs!" />}
    </div>
  );
};

/* Conclusion: That's how we can conditionally output a loading message */
export default Home;

```

Next up we're gonna look at fetching errors🔥
