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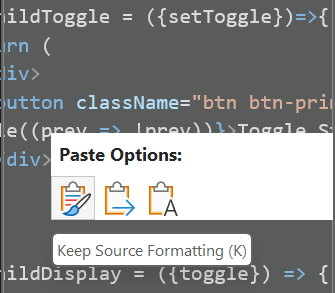
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# What’s a Hook?

**What is a Hook?** A Hook is a special function that lets you “hook into” React features. For example, useState is a Hook that lets you add React state to function components.

## useState

The React useState Hook allows us to track state in a function component.

State generally refers to data or properties that need to be tracking in an application.

import React, { useState } from "react";

const UseStateExample = () => {

  //using vanila javascript, the dom value of cnt wont update on UI

  let cnt = 0;

  const incrementCnt = () => {

    cnt = cnt + 1;

    console.log(`cnt ${cnt}`);

  };

  // using useState,  the dom value of count  update on UI

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

  const increment = () => {

    setCount((previous) => previous + 1);

    console.log(`count ${count}`);

  };

  return (

    <div>

      <h1>{cnt}</h1>

      <button className="btn btn-primary" onClick={incrementCnt}>

        Increment Using vanila Javascript

      </button>

      <h1>{count}</h1>

      <button className="btn btn-primary" onClick={increment}>

        Increment Using React State

      </button>

    </div>

  );

};

export default UseStateExample;

## useEffect

If we want to run a function, every time a value changes, we can use useEffect hook.

It lets you run the code after the component renders, on a set of circumstances.

If I want to run a function every time state changes the value, we can use useEffect

Example of usage: We can use this for fetching data from an API, immediately when page renders

console.log("you will see useEffect running twice on page load, this is only for development  build, but for production build you see only once");

  useEffect(() => {

    console.log("runs every time  state changes");

  });

  useEffect(() => {

    console.log("runs only once during initial page render");

  }, []);

  let [value, setValue] = useState("N");

  useEffect(() => {

    console.log("runs on initial render and also if value changes");

  }, [value]);

## useContext

<https://medium.com/zestgeek/mastering-reacts-usecontext-hook-simplifying-state-management-65894e6dc431>

In the world of React development, efficient state management is key to building robust and scalable applications. While there are various state management solutions available, React provides its own built-in mechanism called the useContext hook, which offers a straightforward and elegant way to manage state across components

**Understanding the useContext Hook**

The useContext hook is a part of React’s hooks API introduced in React 16.8. It allows components to consume state or context without the need for prop drilling, which can lead to cleaner and more maintainable code. Context provides a way to share values like themes, user authentication status, or preferred language across the component tree without having to pass props down manually at every level.

Problem: If we want to pass parent values to child, then we need to pass them as part of props. Imagine we have 4 levels of parent -> child, then we need to pass 3 levels down

import UseContextExample from "./hooks/UseContextExample";

function App() {

  return (

    <div className="container-fluid mt-5 mx-5">

      <UseContextExample />

    </div>

  );

}

export default App;

import React, { useState } from 'react'

const UseContextExample = () => {

  const[toggle,setToggle]=useState(false);

    return (

    <div>

        <h1>Parent Component </h1>

        <ChildToggle setToggle={setToggle}/>

        <ChildDisplay toggle={toggle}/>

    </div>

  )

}

const ChildToggle = ({setToggle})=>{

    return (

      <div>

      <button className="btn btn-primary" type="button"   onClick={() => setToggle((prev => !prev))}>Toggle State</button>

      </div>

    )

}

const ChildDisplay = ({toggle}) => {

    return (

      <div>Current State is {toggle ?"ON":"OFF"}</div>

    )

}

export default UseContextExample;

Using Context

import React, { createContext, useState,useContext } from "react";

//Technically, all this components will be there in seperate files, but here we are storing in one file.

// We should import GlobalStateContext in each component

export const GlobalStateContext = createContext();

const UseContextExample = () => {

  const [toggle, setToggle] = useState(false);

  return (

    <GlobalStateContext.Provider value={{toggle,setToggle}}>

      <div>

        <h1>Parent Component</h1>

        <ChildToggle/>

        <ChildDisplay/>

      </div>

    </GlobalStateContext.Provider>

  );

};

const ChildToggle = () => {

    const {setToggle}=useContext(GlobalStateContext)

    return (

    <div>

      <button

        className="btn btn-primary"

        type="button"

        onClick={() => setToggle((prev) => !prev)}

      >

        Toggle State

      </button>

    </div>

  );

};

const ChildDisplay = () => {

    const {toggle}=useContext(GlobalStateContext)

  return <div>Current State is {toggle ? "ON" : "OFF"}</div>;

};

export default UseContextExample;

**Conclusion**

The useContext hook in React is a versatile tool for managing global state and context in your applications. Whether you’re handling user authentication, language preferences, themes, or any other shared data, useContext simplifies your code by eliminating prop drilling and providing a cleaner way to access context values. Incorporate useContext into your React projects to enhance maintainability, readability, and scalability, making your development process more efficient and enjoyable.

## useReducer

In the world of React.js, managing state is a fundamental aspect of building dynamic and interactive user interfaces. While the useState hook serves as a versatile tool for managing simpler state needs, there comes a time in every developer's journey when more complex state management requirements emerge. Enter the unsung hero of React hooks: useReducer.

import { type } from "@testing-library/user-event/dist/type";

import React, { useReducer, useState } from "react";

const UseReducerExample = () => {

  const myReducerFunction = (state, action) => {

    switch (action.type) {

      case "increment":

        return { count: state.count + 1 };

      case "multiply":

        return { count: state.count \* 2 };

      case "square":

        return { count: state.count \* state.count };

      default:

        return { count: 1 };

    }

  };

  // useReducer is similar to useState, but if we wan to handle complex logic

  const [state, dispatch] = useReducer(myReducerFunction, { count: 0 });

  return (

    <div>

      <h1>{state.count}</h1>

      <button className="btn btn-primary mx-2" onClick={() => dispatch({ type: "increment" })}>Increment By 1</button>

      <button className="btn btn-primary mx-2" onClick={() => dispatch({ type: "multiply" })}>Multiply By 2</button>

      <button className="btn btn-primary mx-2" onClick={() => dispatch({ type: "square" })}>Square</button>

      <button className="btn btn-primary mx-2" onClick={() => dispatch({ type: "clear" })}>Clear</button>

    </div>

  );

};

export default UseReducerExample;

Understanding the Basics: At its core, the useReducer hook provides a powerful alternative to useState for managing state in React functional components. Inspired by the concept of reducers in functional programming, useReducer offers a structured approach to handling state transitions by encapsulating them within a single function.

The Anatomy of useReducer: The useReducer hook takes two parameters: a reducer function and an initial state value. The reducer function, akin to a reducer in Redux or similar state management libraries, accepts the current state and an action, and returns the new state based on the action type.

const [state, dispatch] = useReducer(reducer, initialState);

Harnessing the Power of Reducers: Reducers serve as the backbone of useReducer, empowering developers to manage complex state logic with ease. By centralizing state transitions within a reducer function, developers can maintain a clear and predictable state management flow, making code maintenance and debugging a breeze.

const myReducerFunction = (state, action) => {

    switch (action.type) {

      case "increment":

        return { count: state.count + 1 };

      case "multiply":

        return { count: state.count \* 2 };

      case "square":

        return { count: state.count \* state.count };

      default:

        return { count: 1 };

    }

  };

Seamless Integration with Context: One of the key advantages of useReducer is its seamless integration with React context. By combining useReducer with context, developers can efficiently manage global state in their applications, facilitating communication between components and promoting code reusability.

Optimizing Performance with Memoization: In addition to simplifying state management, useReducer empowers developers to optimize performance through memoization. By memoizing state transitions within reducers and selectively dispatching actions, developers can minimize unnecessary re-renders and enhance the responsiveness of their applications.

In conclusion, the useReducer hook represents a paradigm shift in React state management, offering developers a robust solution for handling complex state logic with elegance and efficiency. By embracing the power of reducers, developers can unlock new possibilities for building scalable and maintainable React applications. So, the next time you encounter a state management challenge in your React project, remember to reach for the useReducer hook and unleash the full potential of your application. Happy coding!

## useRef

The useRef hook is a powerful tool in React that often flies under the radar for many developers. While its primary purpose is to reference a DOM element, it can also be used to persist values across renders without causing a re-render.

**What is**useRef**?**

The useRef hook returns a mutable object with a .current property that you can use to store a value. Unlike useState, updating a useRef value does not trigger a component re-render. Here’s a basic example:

import React, { useRef } from 'react';

const UseRefExample =()=> {

  const inputRef = useRef(null);

  const focusInput = () => {

    inputRef.current.focus();

  };

  return (

    <div>

      <input type="text"  ref={inputRef} />

      <button className="btn btn-primary mx-2" onClick={focusInput}>Focus Input</button>

    </div>

  );

}

export default UseRefExample

**1.Accessing DOM Elements**

//click Tab button and see

import React, { useRef } from 'react';

const UseRefExample = () => {

    // Create a ref to hold a reference to the input element

    const firstNameRef = useRef(null);

    const lastNameRef = useRef(null);

    const emailRef = useRef(null);

    const phoneRef = useRef(null);

    // Function to focus on the input field

    const focusInput = (e) => {

        // Focus on the input field when the button is clicked

        console.log(e.target.name);

        if(e.target.name==='firstName'){

            console.log(e.target.name);

            lastNameRef.current.focus();

        }else if(e.target.name==='lastName'){

            console.log(e.target.name);

            emailRef.current.focus();

        }else if(e.target.name==='email'){

            console.log(e.target.name);

            phoneRef.current.focus();

        }

    };

    return (

        <div>

            <table>

                <tr>

                    <td><input type="text" name="firstName" onBlur={focusInput} ref={firstNameRef} className='mx-2' placeholder='FirstName' /></td>

                    <td><input type="text" name="email" onBlur={focusInput} ref={emailRef}  className='mx-2' placeholder='Email'/></td>

                </tr>

                <tr>

                    <td><input type="text" name="lastName" onBlur={focusInput} ref={lastNameRef}  className='mx-2' placeholder='LastName'/></td>

                    <td><input type="text" name="phone" onBlur={focusInput} ref={phoneRef}  className='mx-2' placeholder='Phone'/></td>

                </tr>

                <tr>

                    <td colSpan={2}>

                        <button onClick={()=>{console.log('submitting')}} className="btn btn-primary mx-2">Submit</button>

                    </td>

                </tr>

            </table>

        </div>

    );

};

**2.Persisting Values Across Renders**

Sometimes, you need to persist a value across renders without triggering a re-render. This is where useRef comes in handy.

import React, { useRef,useState, useEffect } from 'react';

const UseRefExample = () => {

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

    const renderCount = useRef(0);

    useEffect(() => {

      renderCount.current++;

    });

    return (

      <div>

        <p>Count: {count}</p>

        <p>This component has re-rendered {renderCount.current} times</p>

        <button onClick={() => setCount(count + 1)}>Increment</button>

      </div>

    );

  }

  export default UseRefExample;

Here, useRef is used to track how many times the component has re-rendered. Unlike state, updating renderCount.current does not cause the component to re-render.

**3.Storing Previous State Values**

import React, { useState, useEffect, useRef } from 'react';

const UseRefExample = () => {

  const [name, setName] = useState('David');

  const prevNameRef = useRef('');

  useEffect(() => {

    prevNameRef.current = name;

  }, [name]);

  return (

    <div>

      <p>Current Name: {name}</p>

      <p>Previous Name: {prevNameRef.current}</p>

      <input

        type="text"

        value={name}

        onChange={(e) => setName(e.target.value)}

      />

    </div>

  );

}

import React, { useEffect, useRef, useState } from 'react'

const UseRefExample = () => {

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

      const previousCount = useRef(0);

      useEffect(()=>{

        previousCount.current=count;

      },[count]);

  return (

    <div>

      <h1>Count:{count}</h1>

      <h1>Previous Count {previousCount.current}</h1>

      <button className="btn btn-primary" onClick={()=>setCount(prev=>prev+1)}>Increment</button>

    </div>

  )

}

export default UseRefExample;