React JS-2

Hooks in react js

Hooks were added to React in version 16.8.

Hooks allow function components to have access to state and other React features. Because of this, class components are generally no longer needed.

React provides a bunch of standard in-built hooks:

a) **useState**: To manage states. Returns a stateful value and an updater function to update it.

b) **useEffect**: To manage side-effects like API calls, subscriptions, timers, mutations, and more.

c) **useContext**: To return the current value for a context.

d) **useReducer**: A useState alternative to help with complex state management.

There are 3 rules for hooks:

- Hooks can only be called inside React function components.
- Hooks can only be called at the top level of a component.
- Hooks cannot be conditional

The useState Hook can be used to keep track of strings, numbers, booleans, arrays, objects, and any combination of these!

Import Hooks from react.

```
import { *Hook type } from "react";
```

1.To use the **useState** Hook (keep track of the application state)

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

2.To use the **useState and useContext** Hook

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

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.

Initialize useState

We initialize our state by calling useState in our function component. It accepts an initial state and returns two values:

- The current state.
- A function that updates the state.

Syntax:

Const [current state, function to update state] =useState (initial state)

Example 1: Write a program to build React app having a button which increase count by 1 while clicking it.

US1.js

```
import React, { useState } from 'react';

function US1() {
  // Declare a new state variable, which we'll call "count"
  const [count, setCount] = useState(0);
//count is current state and setCount is function that is used to update our state.

  function handleCount () {
    setCount(count+1)
  }

  return (
    <div>
      <p>You clicked {count} times</p>
      <button onClick={handleCount}>
        Click me
      </button>
    </div>
  );
}
export default US1
```

Example 2: Create a program to build React app having buttons to increment and decrement the number by clicking that respective button. Also, increment of the number should be performed only if number is less than 10 and decrement of the number should be performed if number is greater than 0.

US2.js

```
import { useState } from "react";
function US2 (){
   const [num,setnum]=useState(0)
   function increment(){
      if(num<10){
         setnum(num+1);
      }else{
         return false;
      }
   }
   function decrement(){
      if(num > 0){
         setnum(num-1);
      }else{
         return false;
      }
      }
   return (
      <div>
         <button onClick={increment}>Increment</button>
         <button onClick={decrement}>Decrement</button>
         <h1> {num} </h1>
      </div>
   )
}
export default US2
```

- **useState- In CSS**

Example 3: Write a program to build React app having a button which changes background color of a text by clicking it.

```
import React, { useState } from 'react';
function US3() {
        const [style,setstyle]=useState("red");
        function TextChange(){
                        setstyle("green")
                                }
```

```
  return (
    <div>
<button onClick={TextChange}>Change Text Color</button>
<h1 style={{backgroundColor:style}}>useState in CSS</h1>
    </div>
  ) }
export default US3
```

- **useState- In Image**

Example 4: Write a program to build React app having a button which changes image by clicking it.

```
import React, { useState } from 'react';
import img1 from "./img1.jpg";
import img2 from "./img2.jpg";
function US4() {
        const [pic,setpic]=useState(img1);
        function ImageChange(){
                                        setpic(img2)
                                       }
return (
                    <div>
                            <img src={pic} heigth="200px" width="200px" alt="logo" />
                            <button onClick={ImageChange}>Change Image</button>
                   </div>
                    ) }
export default US4
```

- **useState- with Input**

Example 5: Write a program to build React app having 2 input fields and display the entered value on the same page.

```
import React, { useState } from 'react'

function US5() {
   const[firstName,setFirstName]=useState("");
   const[lastName,setLastName]=useState("");

   function handleChange(event)
   {
      setFirstName(event.target.value);
    }
   function handleChange1(event)
```

```
  {
     setLastName(event.target.value);
  }
 return (
  <div>
   <h3>Enter Your First Name</h3>
   <input name="firstName" value={firstName} onChange={handleChange}/>
   <br/>
   <h3>Enter Your Last Name</h3>
   <input name="lastName" value={lastName} onChange={handleChange1}/>
   <br/>
    <h1>First Name: {firstName} <br/>Lastname: {lastName}</h1>
  </div>
 ) }
export default US5
```

Example 6: Write a program having a button “show”. By clicking a button, it will display text and button text will be changed as “Hide”. By clicking Hide button, the text will be disappeared and button text will become “show” again.

```
import React,{useState} from 'react'
function US7 () {

const[buttontext,setButtontext]= useState("show the value")
const[text,setText]= useState("")
function showhide() {
  if(buttontext==="show the value")
   {
    setButtontext("hide");
    setText("Hello");
   }
   else{
    setButtontext("show the value");
    setText("");
  } }
 return (
  <div>
 <button onClick = {showhide}> {buttontext}</button>
 {text}
 </div>
 ) }
  export default US7;
```

Example7: Write a program to build React app for task todo list.

- Add 1 input field and button and by clicking on button display entered task on the same page.
- Also, add delete button with each added task to delete the task.

Todo.js

```
import React,{useState} from 'react'

function Todo() {
   const[Task, setTask]= useState("");
   const[Todolist, setTodoList]=useState([]);
   function handleChange(event) {
      setTask(event.target.value);
   }
   function addTask(event) {
      setTodoList([...Todolist,Task]);
   };

// Not to allow duplicate entry
function addTask(event) {

   if (!Todolist.includes(Task)) {
      setTodoList([...Todolist, Task]);
   } else {
      alert('Task already entered');
   }
   };

   // To Delete Task
    function deleteTask (taskName){
      setTodoList(
         Todolist.filter((task)=>{
            if (task!==taskName){
               return true;
            } else{
               return false;
            }
         })
      )
   }

return (
   <div>
   <h1> Enter Task </h1>
```

```
   <input  onChange={handleChange}/>
      <button  onClick={addTask}> Add Task </button>

      {/* Code If do not want to delete Task
      {
         Todolist.map((val)=>
         {
            return <h1>{val}</h1>
         })
      } */}

  {/* If want to add delete Task functionality */}
      {Todolist.map((task)=>{
         return(
            <div>
               <h1> {task}</h1>
               <button onClick={() => deleteTask(task)}>Delete</button>
            </div>
         );
      })}
   </div>
  );
}
export default Todo
```

useReducer

The useReducer Hook is the better alternative to the useState hook and is generally more preferred over the useState hook when you have complex state-building logic or when the next state value depends upon its previous value or when the components are needed to be optimized.

You can add a reducer to your component using the useReducer hook. Import the useReducer method from the library like this:

```
import { useReducer } from 'react'
```

The useReducer method gives you a state variable and a dispatch method to make state changes. You can define state in the following way:

```
const [state, dispatch] = useReducer(reducerFunction, initialValue)
```

The reducer function contains your state logic. You can choose which state logic to call using the dispatch function. The state can also have some initial value similar to the useState hook.

Example:1 Perform incement using useReducer

The useReducer(reducer, initialState) hook accepts 2 arguments: the reducer function and the initial state. The hook then returns an array of 2 items: the current state and the dispatch function.

```
import React, { useReducer } from 'react';
const initialstate = 0;
function UR1() {
  const [state, dispatch] = useReducer(reducer, initialstate);
  function reducer(state,action){
     if(action.type==='increment'){
        return state+1;
     }
  }
  return (
       <button onClick={()=> dispatch({type:"increment"})}>
     Click me ({state})
   </button>
  );
}
export default UR1
```

A. Initial state

The initial state is the value the state is initialized with. Here initialized with 0.

B. Reducer function

The reducer is a pure function that accepts 2 parameters: **the current state and an action object.** Depending on the action object, the reducer function must update the state in an immutable manner, and return the new state.

C. Action object

An action object is an object that describes how to update the state.
Typically, the action object has a property **type** — a string describing what kind of state update the reducer must do.

If the action object must carry some useful information to be used by the reducer, then you can add additional properties to the action object. **Here we have defined type "increment".**

D. Dispatch function

The dispatch is a special function that dispatches an action object.
The dispatch function is created for you by the useReducer() hook:

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

Whenever you want to update the state (usually from an event handler or after completing a fetch request), you simply call the dispatch function with the appropriate action object: dispatch(actionObject).
Like as below in above example

```
<button onClick={()=> dispatch({type:"increment"})}>
```

In simpler terms, dispatching means a request to update the state.

What Is a Reducer and Why do You Need It?

Let's take an example of a To-Do app. This app involves adding, deleting, and updating items in the todo list. The update operation itself may involve updating the item or marking it as complete.

When you implement a todo list, you'll have a state variable todoList and make state updates to perform each operation. However, these state updates may appear at different places, sometimes not even inside the component.
To make your code more readable, you can move all your state updates into a single function that can exist outside your component. While performing the required operations, your component just has to call a single method and select the operation it wants to perform.

The function which contains all your state updates is called the reducer. This is because you are reducing the state logic into a separate function. The method you call to perform the operations is the dispatch method.

Example 2: Create react js app to increase value by 5 while clicking on button. Initialize value with 20. Use useReducer hook to perform the task.

UR2.js

```
import React, { useReducer } from 'react'
function UR2  (){
   const [state,dispatch]=useReducer(reducer ,20);
   function reducer(state,action){
      return state+action;
   }
 return (
   <div align="center">
      <h1 align="center">{state}</h1>
      <button onClick={()=>dispatch(5)}>Add</button>
   </div>
 )}
export default UR2
```

Example 3: Create react js app to increase value by 1 while clicking on button “Increment” and decrease value by 1 while clicking on button “Decrement”. Initialize value with 0. Use useReducer hook to perform the task.

UR3.js

```
import React, { useReducer } from "react";
function UR3(){
   const[state,dispatch] = useReducer(reducer,0);
   function reducer(state,action){
      //console.log(state,action)
      if(action.type==='increment'){
         return state+1;
      }
      if(action.type==='decrement'){
         return state-1;
      } }
return(
   <>
      <h1>{state}</h1>
      <button onClick={()=> dispatch({type:"increment"})}> Increment </button>
      <button onClick={()=> dispatch({type:"decrement"})}> Decrement </button>
   </>
   ) }
export default UR3
```

useContext

In React, useContext is a hook that allows you to access and consume values from the React Context API. The Context API provides a way to pass data down the component tree without having to pass props explicitly at every level. It's useful when you want to share data between multiple components without the need for prop drilling.

Context provides a way to pass data or state through the component tree without having to pass props down manually through each nested component. It is designed to share data that can be considered as global data for a tree of React components.

How to use the context

Using the context in React requires 3 simple steps:

- creating the context,
- providing the context,
- consuming the context.

Example 1: Write a reactJS program to perform the tasks as asked below.

- Create one main file (parent file) name Main.js and other 2 component files UC1.js and UC2.js
- Pass First name and Last name from Main.js file to UC2.js file. And display Welcome ABC XYZ (suppose firstname is ABC and Last name is XYZ) in browser.

A. Creating the context

The built-in function createContext(default) creates a context instance:

```
import React, { createContext } from "react"
const Variablename = createContext();
```

B. Providing the context

Context.Provider component available on the context instance is used to provide the context to its child components, no matter how deep they are.

To set the value of context use the **value prop**

```
< Variablename.Provider value=”Test” />
```

Main.js

```
import React, { createContext } from "react"
import UC1 from "./UC1"
// To create context for firstname and lastname
const Fname = createContext();
const Lname = createContext();

function Main(){
   return (
```

```
  <>
    <Fname.Provider value="ABC">  // to provide the value which should be passed
      <Lname.Provider value="XYZ">
        <UC1/>
      </Lname.Provider>
    </Fname.Provider>
  </>
  ) }
export default Main
export {Fname,Lname} //Each component must have one default export, so the context should be exported using {} as object.
```

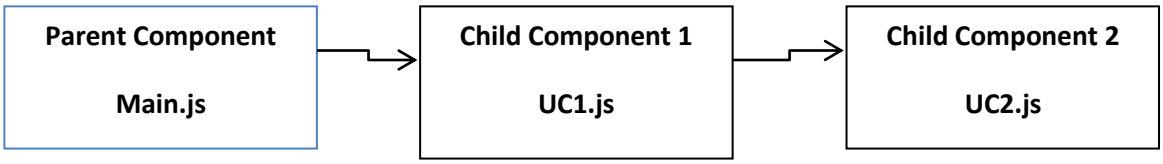
Again, what's important here is that all the components that'd like later to consume the context have to be wrapped inside the provider component.
If you want to change the context value, simply update the value prop.

C. Consuming the context

Consuming the context can be performed by the useContext(Context) React hook:

The hook returns the value of the context: value = useContext(Context). The hook also makes sure to re-render the component when the context value changes.

Suppose, we have one parent component and we want to access its data in child component 3. Then, we can use createContext for creating a context and usecontext to use the context.



UC1.js

```
import React from "react"
import UC2 from "./UC2"
function UC1(){
  return (
    <UC2/>
  ) }
export default UC1
```

UC2.js

```
import React, { useContext } from "react"
import { Fname,Lname } from "./Main"
function UC2(){
   const firstname = useContext(Fname)
   const surname = useContext(Lname)
   return (
   <h1>Welcome {firstname} {surname}</h1>
   ) }
export default UC2
```

***Call only Main.js in App.js**
App.js <- Main.js <- UC1.js <- UC2.js
So, First Name and Last Name are defined in Main.js component and are used directly in UC2.js component without passing data to all other hierarchical components.

Example 2: Write a reactJS program to perform the tasks as asked below.

- Create one main file (parent file) name Comp.js and other 3 component files Comp1.js, Comp2.js, Comp3.js.
- Pass Number1 and Number 2 from Comp.js file to Comp3.js file. Calculate multiplication of the numbers using useContext.

Comp.js

```
import React, { createContext } from "react"
import Comp1 from "./comp1"
const Num1 = createContext();
const Num2 = createContext();
function Comp(){
   return (
   <>
      <Num1.Provider value="20">
         <Num2.Provider value="5">
            <Comp1/>
         </Num2.Provider>
      </Num1.Provider>
   </>
   )}
export default Comp
export {Num1,Num2}
```

Comp1.js

```
import React from "react"
import Comp2 from "./comp2"

function Comp1(){
   return ( <Comp2/> )
}
export default Comp1
```

Comp2.js

```
import React from "react"
import Comp3 from "./comp3"

function Comp2(){
   return (
         <Comp3/>
   )
}
export default Comp2
```

Comp3.js

```
import React, { useContext } from "react"
import { Num1,Num2 } from "./comp"

function Comp3(){
   const num1 = useContext(Num1)
   const num2 = useContext(Num2)
   return (
   <h1>Multiplication of numbers in component-3: {num1 * num2}</h1>
   )
}
export default Comp3
```

App.js file:

```
import Comp from "./Comp"
function App() {
  return (
    <div>
          <Comp/>
    </div>
  )  }
export default App;
```

useEffect

The useEffect Hook allows you to perform side effects in your components. Some examples of side effects are: fetching data, directly updating the DOM, and timers.

useEffect accepts two arguments. The second argument is optional.

```
useEffect(function, [dependency])
```

To import useEffect

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

Below is the example to understand concept of empty array and array with value of useEffect

Example 1: Write react js app to perform the tasks as asked below.

- Add two buttons and increment count by one with each click.
- Display alert as an effect on specified conditions.
  - Effect will be triggered only when page rendered for the 1st time. (empty array)
  - Effect will be triggered every time the button A is clicked. (array with value)

UE1.js

```
import React, {useState,useEffect } from 'react'
function UE1 (){
   const[countA,setcountA]=useState(0);
   const[countB,setcountB]=useState(0);
//Triggered every time when Button A(count) clicked.
    useEffect(()=>
    {
      alert("Clicked")
    },[countA]);
//Triggered only once when the page is rendered
//useEffect(()=>
    //{
      //alert("Clicked")
    //},[]);
//Triggered Everytime when the page is rendered
//useEffect(()=>
    //{
      //alert("Clicked")
    //});

    function changeCountA(){
      setcountA(countA+1);
    }
```

```
    const changeCountB=()=>{
      setcountB(countB+1);
    }
  return (
    <div>
      <button onClick={changeCountA}>Button A {countA}</button><br/>
      <button onClick={ changeCountB}>Button B { countB}</button>
    </div>
  ) }
export default UE1
```

Example2: Write a ReactJS script to create a digital clock running continuously. (useEffect)

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

function USE1() {
  const [date, setDate] = useState(new Date());
  useEffect(() => {
    setInterval(() => {
      setDate(new Date());
    }, 1000)
  }, [])
  return (
    <h1>
      Time using Localtimestring - {date.toLocaleTimeString()}<br/>
      Hour-{date.getHours()}:Min-{date.getMinutes()}:Sec-{date.getSeconds()}
    </h1>
  )}
export default USE1;
```

React Forms

Forms are an integral part of any modern web application. It allows the users to interact with the application as well as gather information from the users.

Forms can perform many tasks that depend on the nature of your business requirements and logic such as authentication of the user, adding user, searching, filtering, booking, ordering, etc. A form can contain text fields, buttons, checkbox, radio button, etc.

In React, form data is usually handled by the components. When the data is handled by the components, all the data is stored in the component state. You can control changes by adding event handlers in the onChange attribute and that event handler will be used to update the state of the variable.

Adding Forms in React like any other element:

```
function MyForm() {
   return (
   <form>
      <label>Enter your name:
            <input type="text" />
     </label>
   </form>
   ) }
export default MyForm
```

Handling Forms

Handling forms is about how you handle the data when it changes value or gets submitted.

In React, form data is usually handled by the components. When the data is handled by the components, all the data is stored in the component state. You can control changes by adding event handlers in the onChange attribute. We can use the useState Hook to keep track of each inputs.

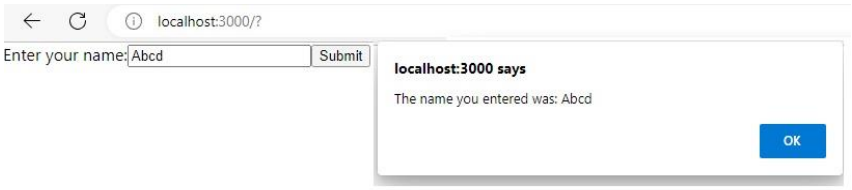
```
import { useState } from 'react';
function MyForm() {
 const [name, setName] = useState("");
 return (
 <form>
 <label>Enter your name:
  <input type="text"  value={name}   onChange={(e) => setName(e.target.value)} />
 </label>
{/*<br/> <h1> Entered Value: {name}</h1>  To check entered values*/}
 </form>
 ) }
export default MyForm
```

Submitting Forms

You can control the submit action by adding an event handler in the **onSubmit** attribute for the **<form>:**

```
import { useState } from 'react';
function MyForm() {
        const [name, setName] = useState("");
        const handleSubmit = (event) => {
              event.preventDefault();
              alert(`The name you entered was: ${name}`)
        }
 return (
 <form onSubmit={handleSubmit}>
   <label>Enter your name:
        <input type="text" value={name} onChange={(e) => setName(e.target.value)} />
 </label>
{/*<br/> <h1> Entered Value: {name}</h1>  */}
        <input type="submit" />
        </form>
 ) }
export default MyForm
```

Output:



- **Textarea**

The textarea element in React is slightly different from ordinary HTML. In React the value of a textarea is placed in a value attribute. We'll use the useState Hook to mange the value of the textarea:

```
import { useState } from 'react';
function MyForm() {
const [txtarea, setTextarea] = useState(
"The content of a textarea goes in the value attribute"
);
const handleChange = (event) => {
setTextarea(event.target.value)
}
return (
<form>
<textarea value={txtarea} onChange={handleChange} />
</form>
)} export default MyForm
```

- **Select**

A drop-down list, or a select box, in React is also a bit different from HTML.

In React, the selected value is defined with a **value** attribute on the **select** tag:

```
import { useState } from 'react';
function MyForm() {
   const [myCar, setMyCar] = useState("Volvo");
      const handleChange = (event) => {
      setMyCar(event.target.value)
   }
   return (
   <form>
         <select value={myCar} onChange={handleChange}>
         <option value="Ford">Ford</option>
         <option value="Volvo">Volvo</option>
         <option value="Fiat">Fiat</option>
         </select>
   </form>
   ) }
export default MyForm
```

- **Radio Button**

Example: - Create a React Form for select any of pizza size using radio button.

```
import React from 'react';
import { useState } from 'react';
function Myform() {
         const [size, setsize] = useState('Select size');
         function onOptionChange(e){
         setsize(e.target.value);
                  };
 return (
 <div>
     <h3>Select Pizza Size</h3>
  <form>
  <input type='radio' name='size' value='Regular' onChange={onOptionChange} />Regular
   <input type='radio' name='size' value='Medium' onChange={onOptionChange} />Medium
   <input type='radio' name='size' value='Large' onChange={onOptionChange} />Large
  </form>
   <p>    Selected size <strong>{size}</strong>   </p>
 </div>
 ) }
export default Myform
```

Example 1:

Create react app which contains form with following fields.

- First Name(Input type text)
- Lastname(Input type text)
- Email(Input type email)
- Password(Input type password)
- Message (Textarea)
- Gender(Radio Button)
- City (Dropdown)

Display submitted values in alert box. (Using useState Hook)

Myform2.js

```
import React, { useState } from 'react'
function Myform2() {
 const[formdata,setformdata]=useState({});

function handlechange(event){

 const name = event.target.name;
 const value = event.target.value;

 setformdata({...formdata, [name]: value})
 }
function handlesubmit(e) {
 e.preventDefault();
 alert("Your form has been submitted.\nName: " + formdata.fname +"\nEmail: " + formdata.eid
+ "\nCity: "+ formdata.city +"\nGender:"+formdata.gender)
 }

return (
 <div>
 <form className="form-data" onSubmit={handlesubmit}>

 <label>First Name:</label>
 <input type="text" name="fname" onChange={handlechange} /><br/>

 <label>Email Id:</label>
 <input type="email" name="eid" onChange={handlechange} /><br/>

 <label>Password:</label>
 <input type="password" name="pass" onChange={handlechange}required/><br/>

 <label>Message : </label>
 <textarea name="msg" onChange={handlechange} /><br/>
```

```
<select onChange={handlechange} name='city'>
<option value="Ahmedabad">Ahmedabad</option>
<option value="Rajkot">Rajkot</option>
</select>

<input type="radio" name="gender" value="Male"onChange={handlechange} />Male
<input type="radio" name="gender" value="Female"onChange={handlechange}/>Female

<button type="submit">Submit</button> <br/>
</form>
</div>
)
}
export default Myform2
```

Example 2:

Create react app which contains form with following fields.

- Email(Input type email)
- Password(Input type password)
- Confirm Password(Input type password)

[For Ref.: Add validation using regex to validate email id and password (Must contain at least 8 characters and must contain at least 1 uppercase, 1 lowercase and 1 digit).]

Also values of password and confirm password must be same. Display email in alert box. (Using useState Hook)

```
import React, { useState } from 'react'
function Myform3 () {
const[formdata,setformdata]=useState({});

function handlechange(event){
const name = event.target.name;
const value = event.target.value;
setformdata({...formdata, [name]: value})
}

function handlesubmit(e){
e.preventDefault();
const emailregex=/^([a-zA-Z0-9._-]+@[a-zA-Z]+\.[a-zA-Z]{2,4}$)/;
const passregex=/(?=.*[0-9])(?=.*[a-z])(?=.*[A-Z]).{8,}/;
if(!emailregex.test(formdata.eid))
```

```
 {
 alert("Please enter a valid Email ID");
 }
 else if(!passregex.test(formdata.pass))
 {
 alert("Password must contain atleast 8 characters ( Atleast 1 digit, 1lowercase & 1 uppercase
alphabets )");
 }
 else if(formdata.pass !== formdata.cpass){
 alert("password and confirm password must be same");
 }
 else{
 alert("Your form has been submitted.\nEmail: " + formdata.eid )
 }
 }

 return (
 <div>
 <form onSubmit={handlesubmit}>

 <label>Email Id:</label>
 <input type="email" name="eid" onChange={handlechange} /><br/>
 <label>Password:</label>
 <input type="password" name="pass" onChange={handlechange}/><br/>
 <label>Confirm Password:</label>
 <input type="password" name="cpass" onChange={handlechange} /><br/>
 <button type="submit">Submit</button> <br/>
 </form>
 </div>
 )
}
export default Myform3
```

- ^ represents the starting of the string.
- (represents the starting of the group.
- [A-Za-z0-9._-] represents the domain name should be a-z or A-Z or 0-9 and .,_,-.
- \. represents the string followed by a dot.
-)+ represents the ending of the group, this group must appear at least 1 time, but allowed multiple times for subdomain.
- [A-Za-z]{2, 6} represents , must be A-Z or a-z between 2 and 4 characters long.
- $ represents the ending of the string.

API integration with Axios

What is Axios?

It is a library which is used to make requests to an API, return data from the API, and then do things with that data in our React application.
Axios is a very popular (over 78k stars on Github) HTTP client, which allows us to make HTTP requests from the browser.

Syntax:

```
const getPostsData = () => {
 axios
 .get("API URL")
 .then(data => console.log(data.data))
 .catch(error => console.log(error));
 };
getPostsData();
```

Installing Axios

- In order to use Axios with React, we need to install Axios. It does not come as a native JavaScript API, so that's why we have to manually import into our project.
- Open up a new terminal window, move to your project's root directory, and run any of the following commands to add Axios to your project.

Using npm:

```
npm install axios
```

To perform this request when the component mounts, you use the useEffect hook. This involves importing Axios, using the .get() method to make a GET request to your endpoint, and using a .then() callback to get back all of the response data.

.catch() callback function : What if there's an error while making a request? For example, you might pass along the wrong data, make a request to the wrong endpoint, or have a network error.

In this case, instead of executing the .then() callback, Axios will throw an error and run the .catch() callback function. In this function, we are taking the error data and putting it in state to alert our user about the error. so if we have an error, we will display that error message.

Example: Create react app to display API data by clicking on button using Axios.

```
import React,{ useState,useEffect } from 'react'
import axios from "axios";
const Randomjokeapi = () =>
{
   const[joke,setJoke]=useState("");

   function fetchJoke(){
      axios
      .get("https://official-joke-api.appspot.com/random_joke")
      .then((response)=>
      {
      setJoke(response.data);
      })
      .catch((error)=>{
      console.error(error);
      }
      )
   }
useEffect(() => {
       setInterval(() => {
          setJoke(joke);
       }, 8000)
      },[])

   return(
      <div>
      <h1>{joke.setup}</h1>
      <h3>{joke.punchline}</h3>
      <button onClick={fetchJoke} >Generate Joke </button>



      </div>
   )
}
export default Randomjokeapi


//https://official-joke-api.appspot.com/random_joke
//https://dog.ceo/api/breeds/image/random
```

For more free API's: https://apipheny.io/free-api/

Example: Create a react program to generate random Dog Image using API.

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

const baseURL = "https://dog.ceo/api/breeds/image/random";

export default function API() {
  const [post, setPost] = useState(“”);

useEffect(() => {
    axios.get(baseURL).then((response) => {
        console.log(response.data)
        setPost(response.data);
    });
  });

  return (
    <div>
      {/* <h1>{post.title}</h1> */}
      <img src={post.message} width="500px" height="500px"/>
    </div>
  );
}
```