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**1. React**

JavaScript library which is used to make interactive user interfaces.

HTML for creating content

CSS for style content.

JavaScript for generating dynamic content/ generating live content/ for events also.

**2. Advantages of using react**

There are the following advantages

Increase performance.

Decrease the line of code.

Faster development.

**3. How does react work- react concept**

Component-based development library.

Component is a piece/ part of UI- theory wise.

Create components separately.

Every component has its own/separate HTML (JSX), CSS, and JS.



Component reusability.

Components can be used again on the same page and again but with different data.

Components are not dependent on each other

**4. Setup react project**

**Node:**

(Provides)It is a Java script environment/runtime.

Js runtime = running environment for JS.

**Note:** run JavaScript anywhere on PC without using any HTML.

Brower by default running environment for JavaScript.

Note: if we want to run JavaScript outside the browser, we need node JS.

Download and install node

>node –version

>node -v

**NPM (Node Package Manager):**

There are a lot of libraries, and react is one of them.

NPM is a tool that you get when you install node js to help you install, uninstall, and manage libraries in your project.

**NPX (ode Package eXecute):**

Sometimes don’t you want to download the tool and directly use the library, then use npx. Npx executes the package from the internet without even downloading to the pc

**Create React project**

>cd react project

>npm create-react-app myapp

>cd myapp

>npm start

>ctrl+c

>npm run build

**5. Folder structure**

**Package.json: -** just an overview of libraries

It is the heart of any JS project.

The configuration file of any js project.

Keep track of project information.

**Package-Lock \_JSON:**

Extended version of pakage.json

Information about dependencies/libraries in details

**Node Module:** contains dependencies

All dependencies mentioned in package.js are present in the node module folder.

Libraries are also called modules.

Modules are simply nothing but collections of function.

The library is nothing but a collection of modules

>delete node module folder

>npm install

**Public (Index.htm):**

Note: The public folder keeps assets.

Two components have a single js file.

**SRC Folder:**

Contains components.

Component is nothing but a function returning some html that’s all – coding wise.

**Guideline for component**

1 - Comp file name should be started with capital & follow camel case.

2 - To create component use capital letter so that is can be identified as a component.

3 - The component name should be as component file name.

4 - To differentiate between component and element we start component name with capital letter.



**6. Creating Component**

Component is nothing but a function returning some html that’s all – coding wise.

import './Header.css';

function Header() {

  return (

    <div className="header">

      <h1>this is header</h1>

    </div>

  );

}

export default Header;

Creating function by extension rafc

function return jsx (JavaScript XML) not html.

Should be one parent/wrapper element like div section main <> etc.

**JSX Guidelines-**

1. Attribute should be in camel case conventional

Like class= className

1. Tag should be closed
2. Self-closing tag like img and input should be closed.
3. To write java script inside jsx use {} brackets.
4. Comment in jsx.
5. function Product(props) {
6. return (
7. <div className="product">
8. {/\* <h3>{props.name}</h3>
9. <p>Rs {props. Price}</p> \*/}
10. </div>
11. );
12. }
13. export default Product;

**Babel-**

This is a library & compiler which is responsible for compiling this jsx into java script.

Like <h1></h1>

Babel compile/transpiler this jsx into js

document. createElement(‘h1’)

**difference between js/jsx**

js is a programming language and jsx is way of writing java Script in terms of html.

**7. Styling Component**

1. **Separate CSS file**

**Header.css**

.header {

  border: 5px solid green;

}

**Import CSS file**

import './Header.css'; //importing

function Header() {

  return (

    <div className="header">

      <h1>this is header</h1>

    </div>

  );

}

export default Header;

1. **inline CSS**

import "./Header.css";

function Header() {

  return (

    <div className="header">

      <h1 style= {{ backgroundColor: "yellow", color: "white" }}>// inline css

        this is header

      </h1>

    </div>

  );

}

export default Header;

1. **Note**
2. we can apply class name to child component and style in App.css too
3. App.css is only work for App Component and its Childs components.

**Note index.css -global CSS**

We can write global CSS for whole application.

**Style Priority**

Inline-highest

Separate CSS file between App.css

Separate CSS file>App.css

**8. Component export and import**

****

**9. Props – Properties**

Props stands for properties in react.

Props in react are nothing but properties of a component.

Properties of an individual component are called props.

Ex

<div class=” abs” id= ‘one>

Class and id are nothing but properties of that elements

Attributes of the element is called the property of that element.

In react we can give custom property to an element/component.

<Product name =” nike” price = ”2000”></Product>

Name = “nazim”- string

Age = {35}, age = ‘’2000’’ - number or string

Ismarried = {true} – Boolean

Icon ={<McCall>} - component



Note - Property pass to the component are the property of the props object.

Note- to verify props object we can use console log in js and pre tag in jsx.

Console.log(props)

<pre>{JSON.stringify(props)} </pre>

**10. Default Props & Props Type**



**11. Handle Events in React**

Function without parameter.

function App () {

  function myfun () {

    let num = prompt ("enter a number");

    alert (num \* num);

  }

  return (

    <div className="App">

      <button onClick={myfun}>click</button>

    </div>

  );

}

If we use {myfun ()} instead of {myfun}, then the function will be called automatically.

An event handler is like a button or image where I click, dbclick, mouseover, mouseout.

Event listener is a function that gets called wherever I perform the event.

Function with parameter

function App()

{

  function myfun(name) {

    alert ("hello " + name);

  }

  return (

<div className="App">

    <button onClick= {() =>{myfun("Nazim");}}>click</button>

</div>

  );

}

export default App;

Note – first calling this function () => {} this function doing nothing but calling another

Function myfun ().

Function with event object

function App() {

  function myfun(name) {

    alert("hello " + name);

  }

  return (

    <div className="App">

      <button onClick={(event) => {console.log(event); myfun("Nazim");}}>

        click

      </button>

    </div>

  );

}

export default App;

event object provides info about whole event.

**12. If else**

Return jsx with return keyword.

Cannot write directly if else condition inside Jsx return (no if else)

import "./App.css";

function App() {

  let login = true;

  if (login) {

    return (

      <div className="App">

        <h1>true</h1>

      </div>

    );

  } else {

    return (

      <div>

        <h1>false</h1>

      </div>

    );

  }

}

export default App;

Note –

If else login base condition

Let login =0 false

Let login =1 true (any number)

Let login false (only declared)

Let login =” nazim” true

Let login= true Boolean

Let login = false Boolean

**13. Ternary Operator**

We can apply the condition inside JSX) with the help of the ternary of the operator.

Syntax- Condition (expression)? Expression if true: expression if false.

import "./App.css";

function App() {

  //let login;//false

  //let login = "nazim";//true

  //let login = 0; //false

  let login = 1; //true

  return (<div className="App">{login ? <h1>true</h1> : <h1>false</h1>}</div>)

}

export default App;

**14. How to use if else inside jsx**

Alternate of ternary operator and apply if else and else if.

We can apply the condition inside the jsx.

Syntax

{ ()() }

{

( () =>{if-else} ) ()

}

import "./App.css";

function App() {

  let login = 0;

  return (

    <div className="App">

      {(() => {

        if (login) {

          return (

            <div>

              <h1>true</h1>

            </div>

          );

        } else {

          return (

            <div>

              <h1>False</h1>

            </div>

          );

        }

      })()}

    </div>

  );

}

export default App;

**15. Hook**

The function that lets you use react features.

Some functions that let you use react features.

Hooks are nothing but some inbuilt function that lets you use the react features or which lets you connect to the react feature.

**16. State**

Every component can have a state.

The state is not nothing but the data of a component.

Let name = “Nazim”

it is a fixed data/normal variable of the component because it does not change the component /UI so it is not stated.

If a state changes, the component should change. This is state

import "./App.css";

function App () {

  let name = "nazim";

  function myfun () {

    name ="khan";

    alert(name);

  }

  return (

  < div className="App">

      <h1>{name}</h1>

      <button onClick={myfun}>Click me</button>

    </div>)

}

export default App;

In js variable update but not update component/UI

1. **useState**

useState hook is used for state management.

useState hook is used for Dom manipulation

Syntax

import {useState} from ‘react’; - useState fun provide by react library

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

count = state variable - can hold any type of data like array object, string, number Boolean, etc. like a normal variable.

setCount = state fun

import "./App.css";

import {useState} from "react";

function App() {

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

function myfun(){

    setName("Anit")

  }

  return (

  <div className="App">

      <h1>{name}</h1>

      <button onClick={myfun}>Click me</button>

    </div>)

}

export default App;

example of useState

import "./App.css";

import { useState } from "react";

function App() {

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

  return (

  <div className="App">

      <h1>{name}</h1>

      <button onClick={() =>{setName("anil")}}>Click me</button>

    </div>)

}

export default App;

use directly inside an anonymous function

React understands this is a state variable if it changes, react re-renders/refreshes and reloads the same component. App/Page is not reloaded only that component re-render.

Whenever the value of the state variable changes, the component re-render but the normal variable does not do so and avoids use of the normal variable until it is a fixed variable.

**17. How to read the value input box in react**

Read value from input

import "./App.css";

function App() {

  function myfun(){

    const value = document.querySelector('input').value;

    alert(value)

  }

  return (

  < div className="App">

      <h4>Enter your name</h4>

     <input type='text'/>

      <button onClick={myfun}>click</button>

  </div>)

}

export default App;

this is the normal way in js

Read value from input box in react

import "./App.css";

import {useState} from 'react';

function App() {

  let [name, setName] = useState('')

  return (

  < div className="App">

      <h4>Enter your name</h4>

     {/\* <input type='text' onChange={(event)=>{ console.log(event.target.value) }}/>   \*/}

     <input type='text' onChange={(event)=>{ setName(event.target.value) }} value={name}/>

  </div>)

}

export default App;

example 1

reading input value and storing in an object

import "./App.css";

import { useState } from "react";

function App() {

  let [name, setName] = useState("");

  let [age, setAge] = useState();

  let person = { userName: name, userAge: age };

  console.log(person);

  return (

    <div className="App">

      <h4>Enter your name</h4>

      <h2>{name}</h2>

      <h2>{age}</h2>

      <input type="text" onChange={(event) => {setName(event.target.value); }}placeholder="Enter Name"/>

      <input type="text"  onChange={(event) => {setAge(event.target.value);  }}placeholder="Enter age" />

    </div>

  );

}

export default App;

example2

**18. Map function in React**

import "./App.css";

function App() {

  let coountries = [

    { name: "india", capital: "New Delhi" },

    { name: "South Africa", capital: "Cape Town"},

    { name: "New Zealand", capital: "Wellington"},

  ];

  return (

    <div className="App">

      <div className="data">

        <h3>{coountries[0].name}</h3>

        <h3>{coountries[0].capital}</h3>

      </div>

      <hr />

      <div className="data">

        <h3>{coountries[1].name}</h3>

        <h3>{coountries[2].capital}</h3>

      </div>

      <hr />

      <div className="data">

        <h3>{coountries[2].name}</h3>

        <h3>{coountries[2].capital}</h3>

      </div>

    </div>

  );

}

normal way (hard code)

import "./App.css";

function App () {

  let countries = [

    { name: "India", capital: "New Delhi" },

    { name: "South Africa", capital: "Cape Town" },

    { name: "New Zealand", capital: "Wellington" },

  ];

  return (

    <div className="App">

      {

countries.map((element, index) => {

        return (

          <div key={index}>

            <h1>{element.name}</h1>

            <h2>{element.capital}</h2>

            <hr />

          </div>

        );

      })

}

    </div>

  );

}

export default App;

using map function data on the same component

import "./App.css";

import Header from "./components/Header";

import Movie from "./components/Movie";

import movies from "./movies.json";

function App () {

  return (

    <div className="App">

      <Header />

      <div className="main">

        {

movies.map((element, index) => {

          return (

            <Movie

              key={index}

              title={element.Title}

              year={element.Year}

              img={element.Poster}

            />

          );

        })

}

      </div>

    </div>

  );

}

export default App;

map function data in an external file in JSON format

[

    {

      "imdbID": "tt0096895",

      "Title": "Batman",

      "Year": "1998",

      "Poster": "https://images-na.ssl-images-amazon.com/images/M/MV5BMTYwNjAyODIyMF5BMl5BanBnXkFtZTYwNDMwMDk2.\_V1\_.jpg"

    },

    {

      "imdbID": "tt0468569",

      "Title": "The Dark Knight",

      "Year": "2008",

      "Poster": "https://ia.media-imdb.com/images/M/MV5BMTMxNTMwODM0NF5BMl5BanBnXkFtZTcwODAyMTk2Mw@@.\_V1\_UX182\_CR0,0,182,268\_AL\_.jpg"

    },

    {

      "imdbID": "tt2975590",

      "Title": "Batman v Superman: Dawn of Justice",

Data in array form

**19. The life cycle of a component**

Every component created in React has something that is called a life cycle.

When a component is loaded in the webpage first time that is called a mounting component.

When a component is removed from the webpage that is called unmounting component

There are 3 things that component does

1. mounting (when first-time load).
2. whenever the state change component refreshes itself that is called reloading/updating/re-rendering component.
3. Component unload/ unmounted

Mounting -loading

Re-renders – reloading only when state change

Unmounting -removal of component

**20. useEffect function**

**Hooks**

hooks are functions that let you connect to react features.

useEffect connects to the life cycle method.

Because it is called when a component is mounted, remounted, or unmounted

we don’t call useEffect function, we only use it.

It is internally made to be called when a component is mounted /reloaded/unmounted

We write code inside the useEffect function

When we perform a task whenever the component mounts/load , reload and the component unmounts

useEffect is a side effect function

useEffect is a function that is by default called when the component mounted, reloaded/rendered and unmounted.

**useEffect Syntax**

****



Note: - why app running twice?

React is running in strict mode.

The first time it runs only for checking the app

The Second time it runs as final all

import "./App.css";

import Product from './components/Product'

import {useEffect} from 'react';

function App() {

  useEffect(()=>{

    console.log("component rendered");

  })

  return (

    <div className="App">

          <Product name = "samsung" price="20000"/>

    </div>

  );

}

export default App;

useEffect is called when the component mount for first time

import "./App.css";

import Product from './components/Product'

import {useEffect, useState} from 'react';

function App() {

  const[name, setName]=useState("nazim")

  useEffect(()=>{

    console.log("component rendered");

  })

  return (

    <div className="App">

          <Product name = "samsung" price="20000"/>

          <h2>Welcome {name}</h2>

          <button onClick={()=>{setName("anit")}}> click me </button>

    </div>

  );

}

export default App;

useEffect gets called again when the component re-render due to state variable change

We know whenever the state variable changes

that particular component re-render.

**Example of useEffect**

import "./App.css";

import Product from './components/Product'

import {useEffect, useState} from 'react';

function App() {

  const[name, setName]=useState("nazim")

  useEffect(()=>{

    fetch('https://jsonplaceholder.typicode.com/todos/1')

      .then(response => response.json())

      .then(json => console.log(json))

  })

  return (

    <div className="App">

          <Product name = "samsung" price="20000"/>

          <h2>Welcome {name}</h2>

          <button onClick={()=>{setName("anil")}}> click me </button>

    </div>

  );

}

export default App;

now data inside useEffect is coming on component load due to useEffect fun and also on reload because state variable change cause component re-render.

import "./App.css";

import Product from './components/Product'

import {useEffect, useState} from 'react';

function App() {

  const[name, setName]=useState("nazim")

  useEffect(()=>{

    fetch('https://jsonplaceholder.typicode.com/todos/1')

      .then(response => response.json())

      .then(json => console.log(json))

  },[])

  return (

    <div className="App">

          <Product name = "samsung" price="20000"/>

          <h2>Welcome {name}</h2>

          <button onClick={()=>{setName("anil")}}> click me </button>

    </div>

  );

}

export default App;

due to blank dependency array [] useEffect runs only when component load and not run when component re-render due to state variable change.

import "./App.css";

import Product from './components/Product'

import {useEffect, useState} from 'react';

function App() {

  const[name, setName]=useState("nazim")

  const[age, setAge] = useState(35);

  useEffect(()=>{

    fetch('https://jsonplaceholder.typicode.com/todos/1')

      .then(response => response.json())

      .then(json => console.log(json))

  },[age])

  return (

    <div className="App">

          <Product name = "samsung" price="20000"/>

          <h2>Welcome {name}</h2>

           <h2>{age}</h2>

          <button onClick={()=>{setName("anil")}}> click me </button>

          <button onClick={()=>{setAge(36)}}> click me </button>

    </div>

  );

}

export default App;

useEffect fun run for the first time when the component load and the second time when the state variable inside the dependency array [] will change/ when the component re-renders because of age state variable.

Note –

1. By default, useEffect fun is called for every render and re-render.
2. You can stop it from getting called on re-render by applying a blank dependency array [].
3. You can also pass a variable (props, state) in a dependency array for which particular re-render you want to call useEffec fun.

**21. Load component on button**

To see the mounting and unmounting

import "./App.css";

import Product from "./components/Product.js";

function App() {

  return (

    <div className="App">

      <h2>Welcome</h2>

      <Product name="samsung" price="2000" />

    </div>

  );

}

export default App;

by default, component load this way

Conditional rendering for mounting and unmounting the component

import "./App.css";

import Product from "./components/Product.js";

import { useState } from "react";

function App() {

  const [productVisible, setProductVisible] = useState(false);

  return (

    <div className="App">

      {<h2>Welcome</h2>}

      {productVisible == true ? <Product name="samsung" price="20000" /> : null}

      <button onClick={() => setProductVisible(true)}>Show product</button>

      <button onClick={() => setProductVisible(false)}>Hide product</button>

    </div>

  );

}

export default App;

on component mounting useEffect fun gets call that is inside Product comp

import "./Product.css";

import { useEffect } from "react";

function Product(props) {

  useEffect(() => {

    fetch("https://jsonplaceholder.typicode.com/todos/1")

      .then((response) => response.json())

      .then((json) => console.log(json));

  });

  return (

    <div className="product">

      <h3>{props.name}</h3>

      <p>{props.price}</p>

    </div>

  );

}

export default Product;

Component is mounting and unmounting by clicking on button in app.js. (Product Comp)

Note: - useEffect get call when the component mount but not get call when unmount the component by clicking the button until we add

return function() { console.log(‘dummy data’)} inside useEffect fun

import "./Product.css";

import { useEffect } from "react";

function Product(props) {

  useEffect(() => {

    fetch("https://jsonplaceholder.typicode.com/todos/1")

      .then((response) => response.json())

      .then((json) => console.log(json));

      return function () {

      fetch("https://jsonplaceholder.typicode.com/todos/1")

        .then((response) => response.json())

        .then((json) => console.log(json));

    };

  });

  return (

    <div className="product">

      <h3>{props.name}</h3>

      <p>{props.price}</p>

    </div>

  );

}

export default Product;

Now use effect getting call on component mount and as well as component unmount

**22. Getting data from API**

import "./App.css";

import { useEffect, useState } from "react";

function App() {

  const [users, setUser] = useState([]);

  useEffect(() => {

    fetch(`https://jsonplaceholder.typicode.com/users`)

      .then((res) =>{ if(!res.ok){

        throw Error(res.statusTex)};

        return res.json()})

      .then((data) => {

        console.log(data);

        setUser(data);

      }).catch(error=>alert(error));

  }, []);

  return (

    <div className="App">

      <h1>hello world</h1>

      {/\* <pre>{JSON.stringify(users)}</pre> \*/}

      {users.map((elm, index) => {

        return (

          <div key={index}>

            <h3>Name - {elm.name}</h3>

            <h3>email - {elm.email}</h3>

          </div>

        );

      })}

    </div>

  );

}

export default App;

fetching data from API using promise then

import "./App.css";

import { useEffect, useState  } from "react";

function App() {

  const [users, setUser] = useState([]);

  useEffect(() => {

    async function fetchData () {

      try{

        const res = await fetch(`https://jsonplaceholder.typicode.com/users`);

        if(!res.ok){

          throw Error(res.statusText)

        }

        const data = await res.json();

        console.log(data);

        console.log(typeof data)//object

        setUser(data);

      }

      catch(error){

       alert(error)

      }

    }

   fetchData();

  }, []);

  return (

    <div className="App">

      <h1>hello world</h1>

      <pre>{JSON.stringify(users)}</pre>

      {

        users.map((elm, key)=>{

          return (

            <div key={key}>

                <h1>{elm.name}</h1>

                <h2>{elm.email}</h2>

            </div>

          )

        })

      }

    </div>

  );

}

export default App;

fetching data from API using async function

**Random**

React is all about component, props and state that is all

If that data retenders the component, then it is a state variable and not then it is fixed variable.

<button onClick= {function () {console.log(‘hello’} }>click me</button>

<button onClick={ ()=>{console.log(‘hello’} }>click me</button>

Npx create-react-app secondapp -> extension js

Npx creae-vite secondapp –template react -> extension jsx

Npm install

**useState and useEffect**

useState is used to create state variable

useEffect is a function and get called when component load/mount, reload, and unmount

whenever the state variable changes the component re-renders/reloads

whenever the component reload useffect function gets called