* **Why React**

Application is fast, single page application (having only one html page to build complete application).

Ex. Instagram , Facebook, GitHub, flipkart

React is component based architecture

Npm create vite@latest = download latest version

Npm create vite@[Specify version ] = download mention version ex @18.00.00

* **Component**

1. **Component is reusable block of code which is used to perform specific task. A component represents single function or a single class.**
2. **Component should always start with uppercase character**.
3. We can return JSX from an component and that JSX return to the caller.
4. We can have multiple components inside a single module but it recommended to have only one.
5. While the naming the Module be careful.
6. Component are divided into two types
   1. Function Based Component.
   2. Class based Component.

* **Module**

1. Module is single js or JSX file.
2. JS or JSX file become module only when we have mention type= ”module”
3. We can achieve import and export between the modules only.
4. In react we create module with .js and .jsx extension.
5. In one Module we can have multiple components.

**Q. Difference Between Class based and Function based Component.**

|  |  |
| --- | --- |
| **CBC** | **FBC** |
| We use classes for creating CBC | We use function for creating FBC |
| The extends Component from react and it has render method means each CBC must have render method. | Not extends Component and no need for render method for each component we use render method with main.jsx file only |
| It has inbuild state object and setState() method | Does not have any inbuild state. To manage the state we have to take the help of state management like redux/ ToolKit or Hooks (useState, useReducer) |
| We don’t have any Hooks with CBC | We have Hooks with FBC (useState, useReducer, useParams, useCallback) |
| It has life-cycle methods ( componentDidMount, componedtDidUpdate, componentWillUnmount) | It not have any inbuild life-cycle method but we can achieve them using useEffectHook |
| Difficult to maintain | Easy to maintain |

* **State**

Any update operation you have to perform that only possible through state

Note : If we make any changes in state whole component is re-render.

* **Function Based Component**

{} – Called as JSX Expression.

* **JSX (JavaScript XML)**

**Rules**

1. We have to return only one JSX element which can have n number of nested element (Entire JSX code wrap into single container)
2. JSX element always written in lowercase (Uppercase Consider as Component).
3. Use JSX element to their respective work (div can’t come inside paragraph).
4. All JSX element must be closed even it is paired or unpaired. (<> **</>**)
5. We have alternative name for some attributes ( html = class, for : JSX = className, htmlFor )
6. We can use JSX expression for writing JavaScript code inside JSX ( **{ Js }** )
7. We can only write only ternary operator as an conditional statement in JSX expression (Inside function possible to write if else)
8. We can write only higher order function( For looping ) that should return anything (map, filter, reduce etc.) Traditional loops (for, while, do-while) are not allowed. For each also HOF but it not returns anything so not recommended use HOF which not return anything. (Inside function possible to write traditional loops)
9. We can use react fragment to avoid extra nodes in Dom tree.
10. **< />** = You keep empty fragment only when key attribute is not required.
11. **<React.Fragment>** = When we want to give attribute then use this (Key Attributes)
12. **< Fragment>** import { Fragment } from ‘react’

* **Hooks**

Inbuild function that given by react.

In React, Hooks are special functions that let you to use state and other React features in function-based components.

**Why Hooks?**

Before Hooks, only class components could use features like state, lifecycle methods, etc.

Hooks allow function-based components to do the same —> making code simpler and more reusable.

* **useState**
* **Props (Properties)**

It is an Object.

We can pass props from parent component to child component.

We can pass any type of data in key-value paired.

**Default Props** = Default props are values that a component uses if no value is passed for that prop from the parent. They help prevent undefined errors and define fallback behavior.