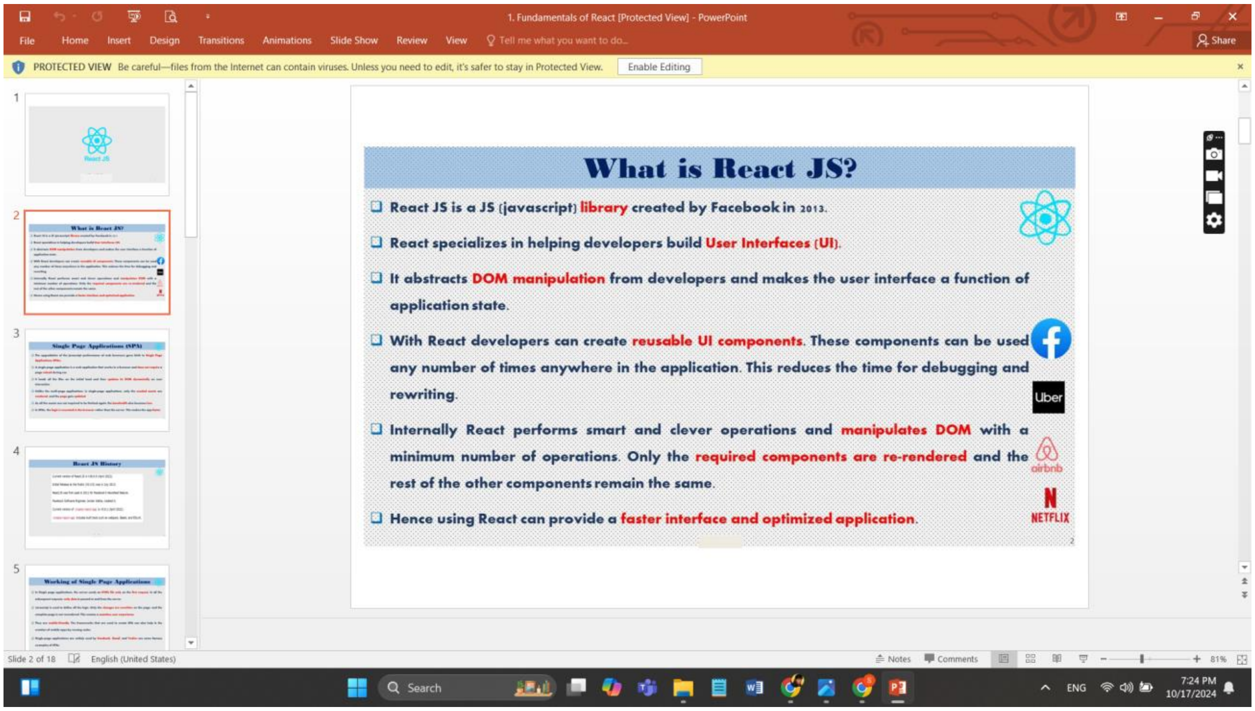
Question bank for S-II of WC

Module- III

1) What is React JS? What are the advantages of react JS?

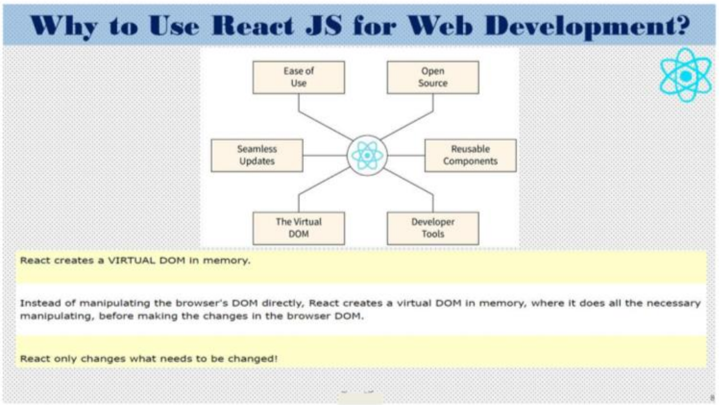


PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View.

What is React JS?

- ❑ React JS is a JS (javascript) library created by Facebook in 2013.
- ❑ React specializes in helping developers build User Interfaces (UI).
- ❑ It abstracts DOM manipulation from developers and makes the user interface a function of application state.
- ❑ With React developers can create reusable UI components. These components can be used any number of times anywhere in the application. This reduces the time for debugging and rewriting.
- ❑ Internally React performs smart and clever operations and manipulates DOM with a minimum number of operations. Only the required components are re-rendered and the rest of the other components remain the same.
- ❑ Hence using React can provide a faster interface and optimized application.

Slide 2 of 18 English (United States)



Why to Use React JS for Web Development?

React creates a VIRTUAL DOM in memory.

Instead of manipulating the browser's DOM directly, React creates a virtual DOM in memory, where it does all the necessary manipulating, before making the changes in the browser DOM.

React only changes what needs to be changed!

2) What are the features of React JS ?

React.js, a popular JavaScript library for building user interfaces, offers several key features:

1. Component-Based Architecture:
React allows you to build reusable UI components, making it easier to manage and maintain code. Components can be nested, managed, and reused.

2.Virtual DOM:
React uses a virtual DOM to optimize rendering. It creates a lightweight copy of the actual DOM and updates only the components that have changed, leading to faster updates and smoother performance.

3. JSX (JavaScript XML):
JSX is a syntax extension for JavaScript that looks similar to HTML, making it easier to write and understand component structures. It enables you to write HTML elements and components directly within JavaScript.

4. One-Way Data Binding:
React's one-way data flow ensures that data flows from parent components to child components. This makes it easier to debug and track changes in the application state.

5. State Management:
React provides a built-in way to manage component states, allowing you to control how components respond to user interactions and data changes.

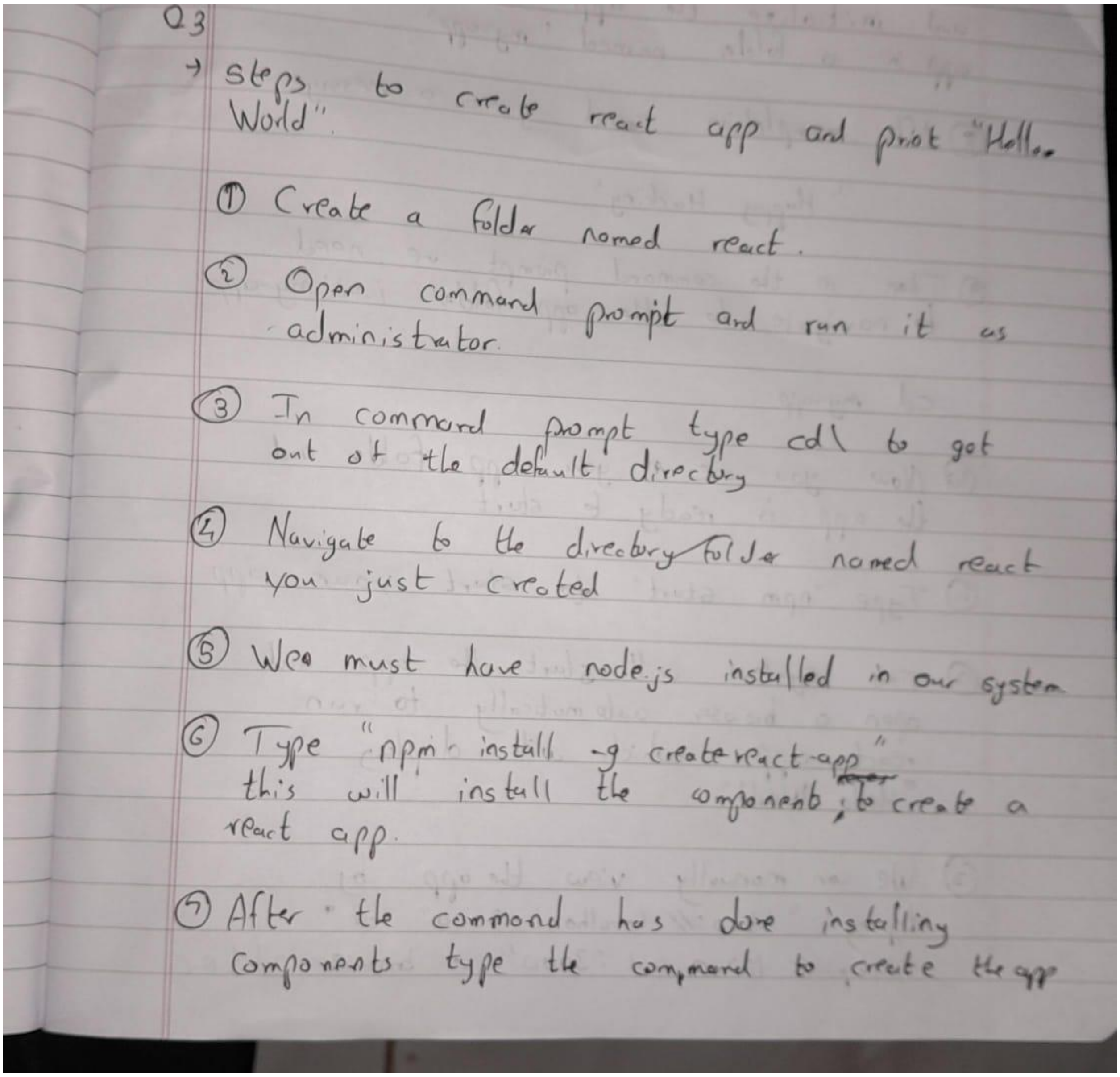
6. Hooks:
Hooks, like \`useState\` and \`useEffect\`, allow you to use state and other React features without writing class components. This enables functional components to manage local state and side effects.

7. React Router:
React Router is a library for routing in React apps. It allows you to create single-page applications with dynamic routing, enabling smooth navigation without page refreshes.

8. Extensive Ecosystem:
React has a vast ecosystem with numerous libraries and tools like Redux for state management, Axios for API requests, and Material-UI for UI components, providing flexibility in app development.

9. Cross-Platform Development:
React can be used with frameworks like React Native to build mobile applications for iOS and Android, making it a versatile choice for both web and mobile development.

3) Write a stepwise Process to create an app using React JS to print “Hello World”?



Q3

→ steps to create react app and print "Hello World".

① Create a folder named react.

② Open command prompt and run it as administrator.

③ In command prompt type cd\ to get out of the default directory

④ Navigate to the directory folder named react you just created

⑤ We must have node.js installed in our system.

⑥ Type "npm install -g create-react-app" this will install the components; to create a react app.

⑦ After the command has done installing components type the command to create the app

"Create-react-app my-app"

You can give ~~ap~~ custom app name in place of "my-app"

This command will process to create and initialize the app and create app in a folder named "my-app"

⑧ After completion comd gives a message

"Happy Hacking"

⑨ Then in the command prompt we need to navigate to the app folder i.e. "my-app"

```
cd my-app
```

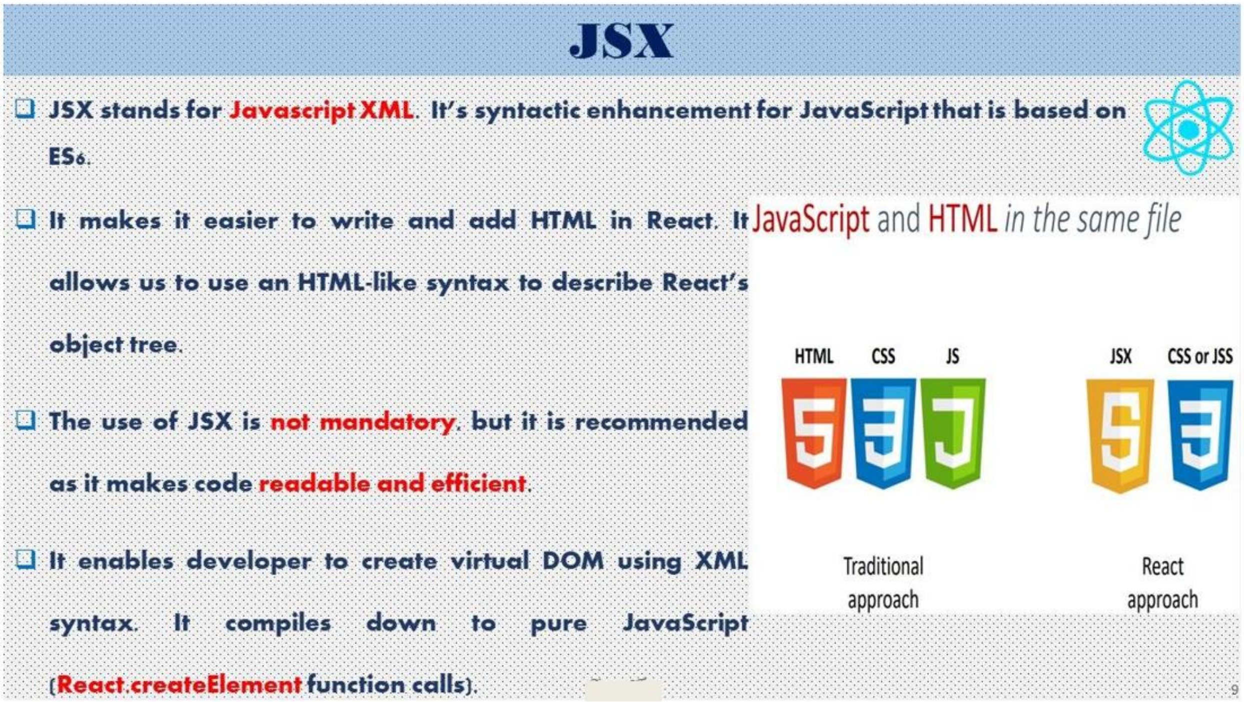
⑩ Now you are in your app folder and the app is ready to start

⑪ Type "npm start" to start your app

⑫ The system will start the app and open a browser automatically to run react app which will display "Hello World".

⑬ We can manually view the app by typing "http:// localhost:3000" or "http:// 127.0.0.1:3000" in browser after starting the app

4) What is JSX? What are the advantages of JSX?

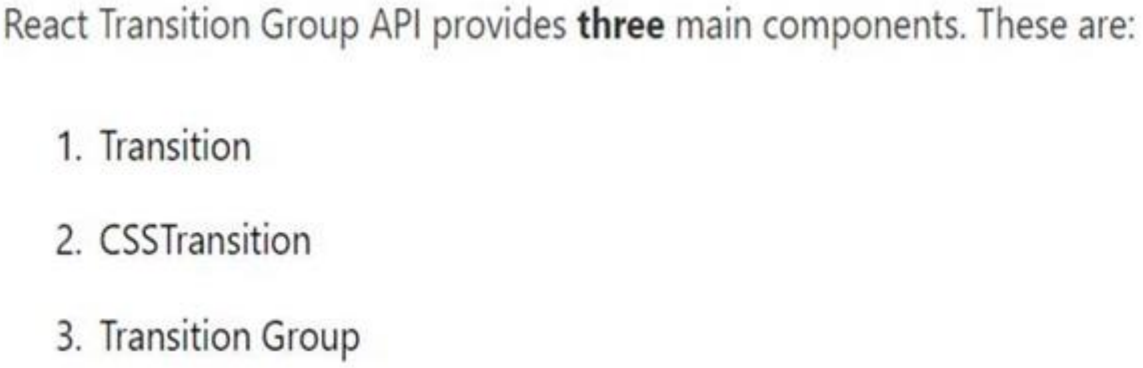


JSX

- □ JSX stands for **Javascript XML**. It's syntactic enhancement for JavaScript that is based on ES6.
- □ It makes it easier to write and add HTML in React. It allows us to use an HTML-like syntax to describe React's object tree.
- □ The use of JSX is **not mandatory**, but it is recommended as it makes code **readable and efficient**.
- □ It enables developer to create virtual DOM using XML syntax. It compiles down to pure JavaScript (**React.createElement** function calls).

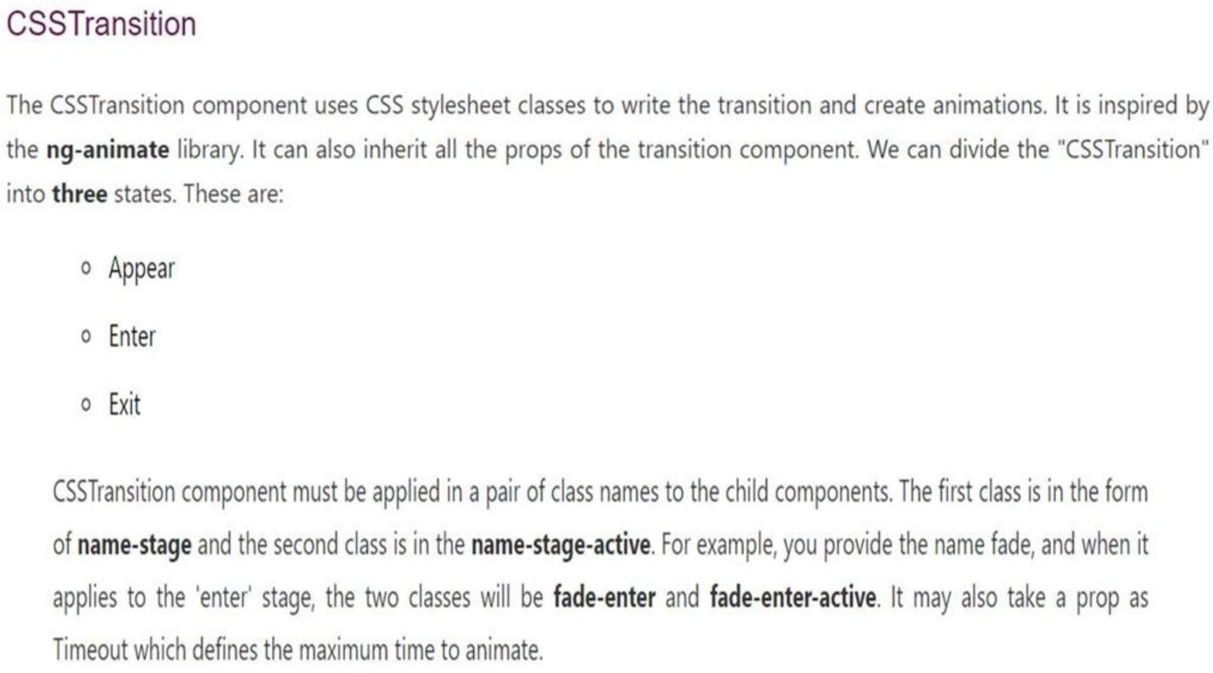
5) What are the different React JS animations? Give one example?

- □ In React, we can add animation using an explicit group of components known as the *React Transition Group*.
- □ React Transition Group is an add-on component for managing component states and useful for defining **entering** and **exiting** transitions.



React Transition Group API provides **three** main components. These are:

1. Transition
2. CSSTransition
3. Transition Group



CSSTransition

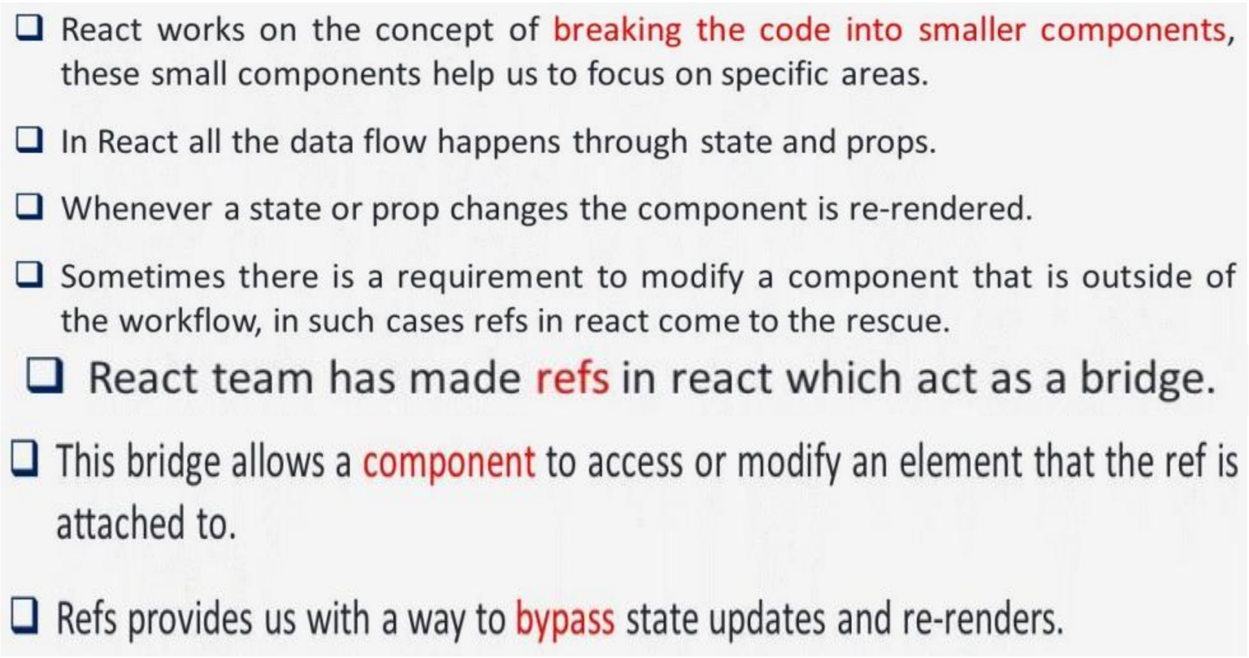
The CSSTransition component uses CSS stylesheet classes to write the transition and create animations. It is inspired by the **ng-animate** library. It can also inherit all the props of the transition component. We can divide the "CSSTransition" into **three** states. These are:

- Appear
- Enter
- Exit

CSSTransition component must be applied in a pair of class names to the child components. The first class is in the form of **name-stage** and the second class is in the **name-stage-active**. For example, you provide the name fade, and when it applies to the 'enter' stage, the two classes will be **fade-enter** and **fade-enter-active**. It may also take a prop as Timeout which defines the maximum time to animate.

<u>Module- IV</u>

6) What are Refs? When to use refs and when not to use refs?



□ React works on the concept of breaking the code into smaller components, these small components help us to focus on specific areas.

□ In React all the data flow happens through state and props.

□ Whenever a state or prop changes the component is re-rendered.

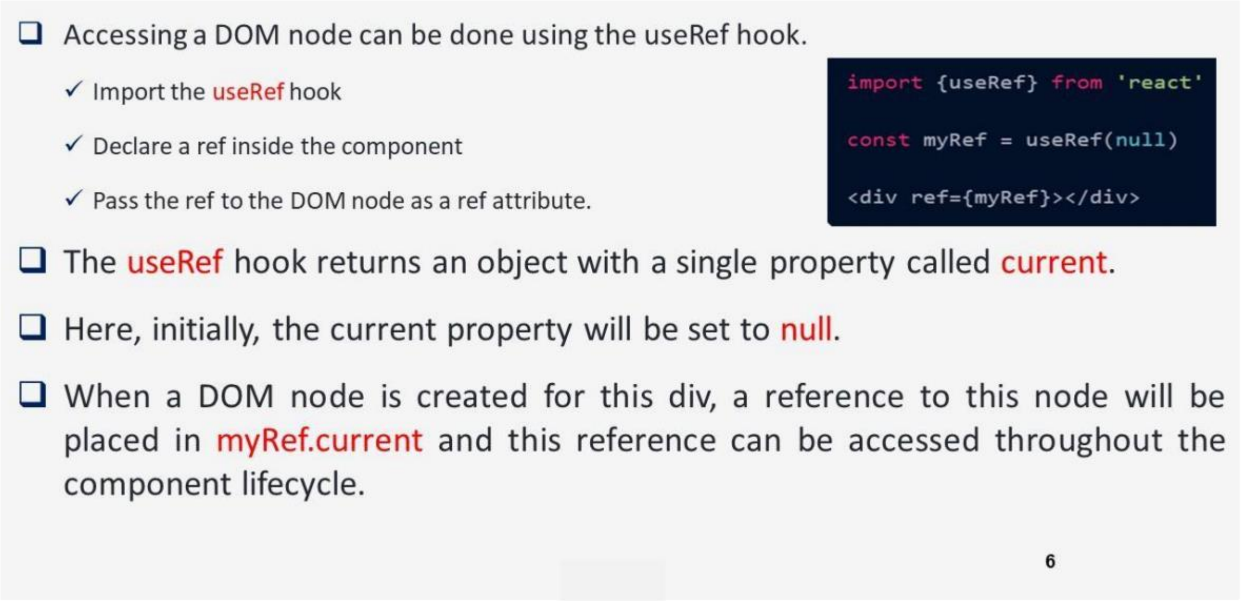
□ Sometimes there is a requirement to modify a component that is outside of the workflow, in such cases refs in react come to the rescue.

□ React team has made refs in react which act as a bridge.

□ This bridge allows a component to access or modify an element that the ref is attached to.

□ Refs provides us with a way to bypass state updates and re-renders.

7) How to add refs to DOM elements?



- ❑ Accessing a DOM node can be done using the useRef hook.
  - ✓ Import the useRef hook
  - ✓ Declare a ref inside the component
  - ✓ Pass the ref to the DOM node as a ref attribute.

```
import {useRef} from 'react'

const myRef = useRef(null)

<div ref={myRef}></div>
```

- ❑ The useRef hook returns an object with a single property called current.
- ❑ Here, initially, the current property will be set to null.
- ❑ When a DOM node is created for this div, a reference to this node will be placed in myRef.current and this reference can be accessed throughout the component lifecycle.

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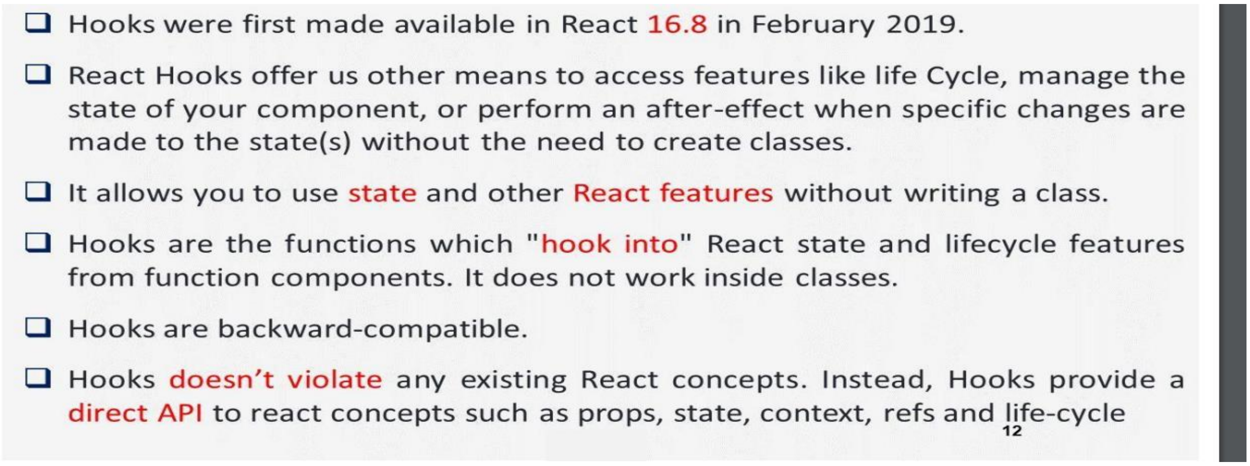
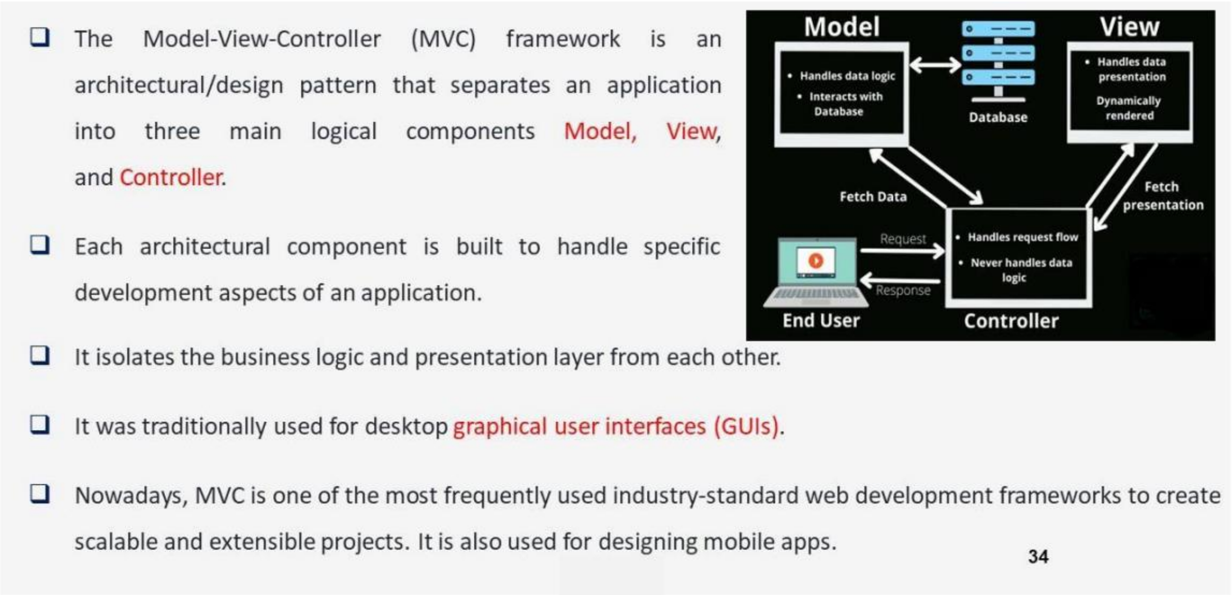
8) What are callback refs?

9) What is Hook state?

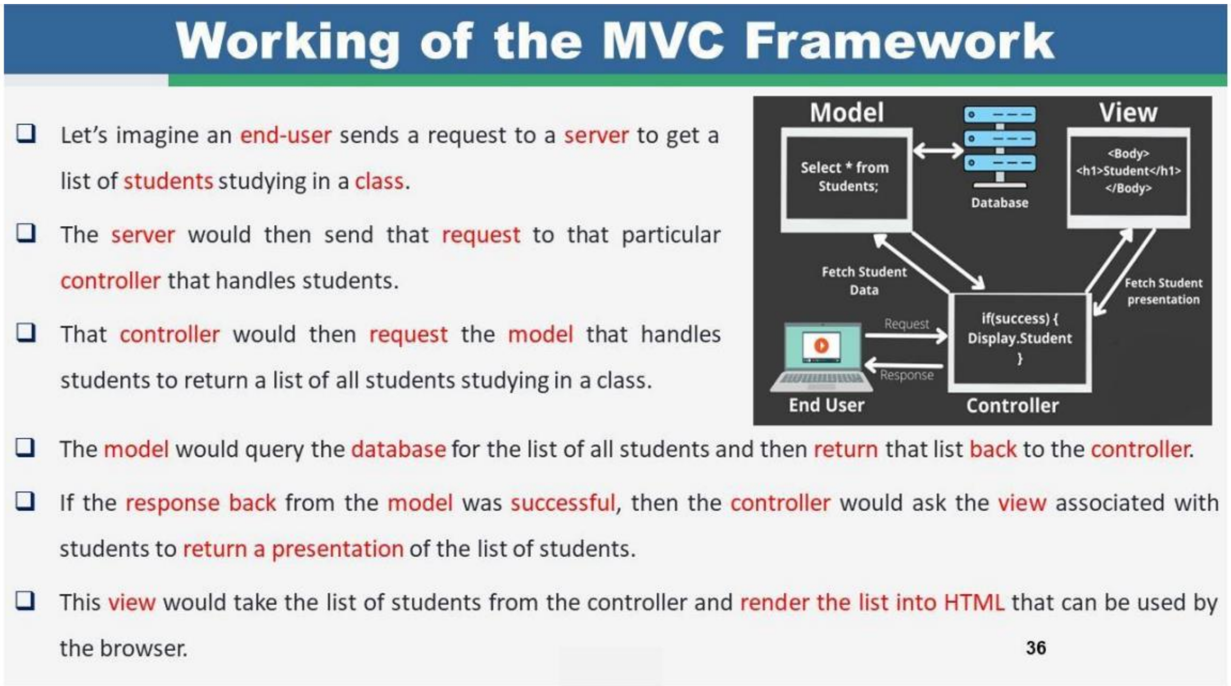


- ❑ Hooks were first made available in React 16.8 in February 2019.
- ❑ React Hooks offer us other means to access features like life Cycle, manage the state of your component, or perform an after-effect when specific changes are made to the state(s) without the need to create classes.
- ❑ It allows you to use state and other React features without writing a class.
- ❑ Hooks are the functions which "hook into" React state and lifecycle features from function components. It does not work inside classes.
- ❑ Hooks are backward-compatible.
- ❑ Hooks doesn't violate any existing React concepts. Instead, Hooks provide a direct API to react concepts such as props, state, context, refs and life-cycle

10) Explain in detail MVC framework?

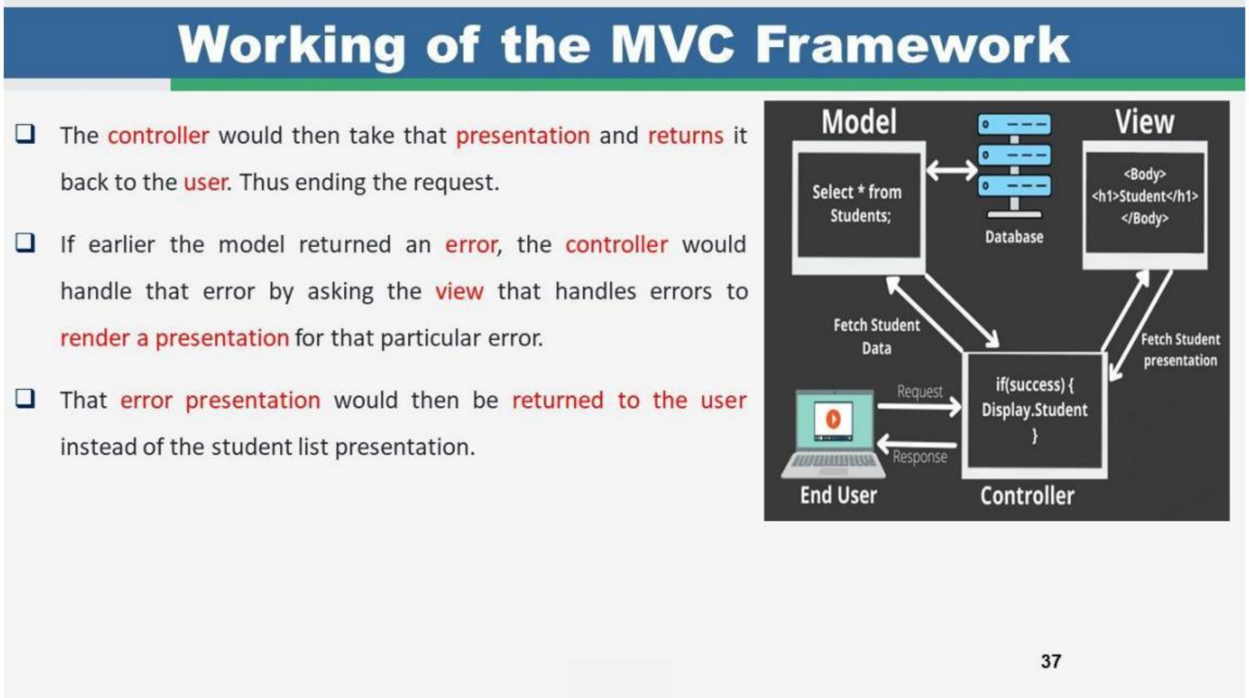


- ❑ The Model-View-Controller (MVC) framework is an architectural/design pattern that separates an application into three main logical components Model, View, and Controller.
- ❑ Each architectural component is built to handle specific development aspects of an application.
- ❑ It isolates the business logic and presentation layer from each other.
- ❑ It was traditionally used for desktop graphical user interfaces (GUIs).
- ❑ Nowadays, MVC is one of the most frequently used industry-standard web development frameworks to create scalable and extensible projects. It is also used for designing mobile apps.



Working of the MVC Framework

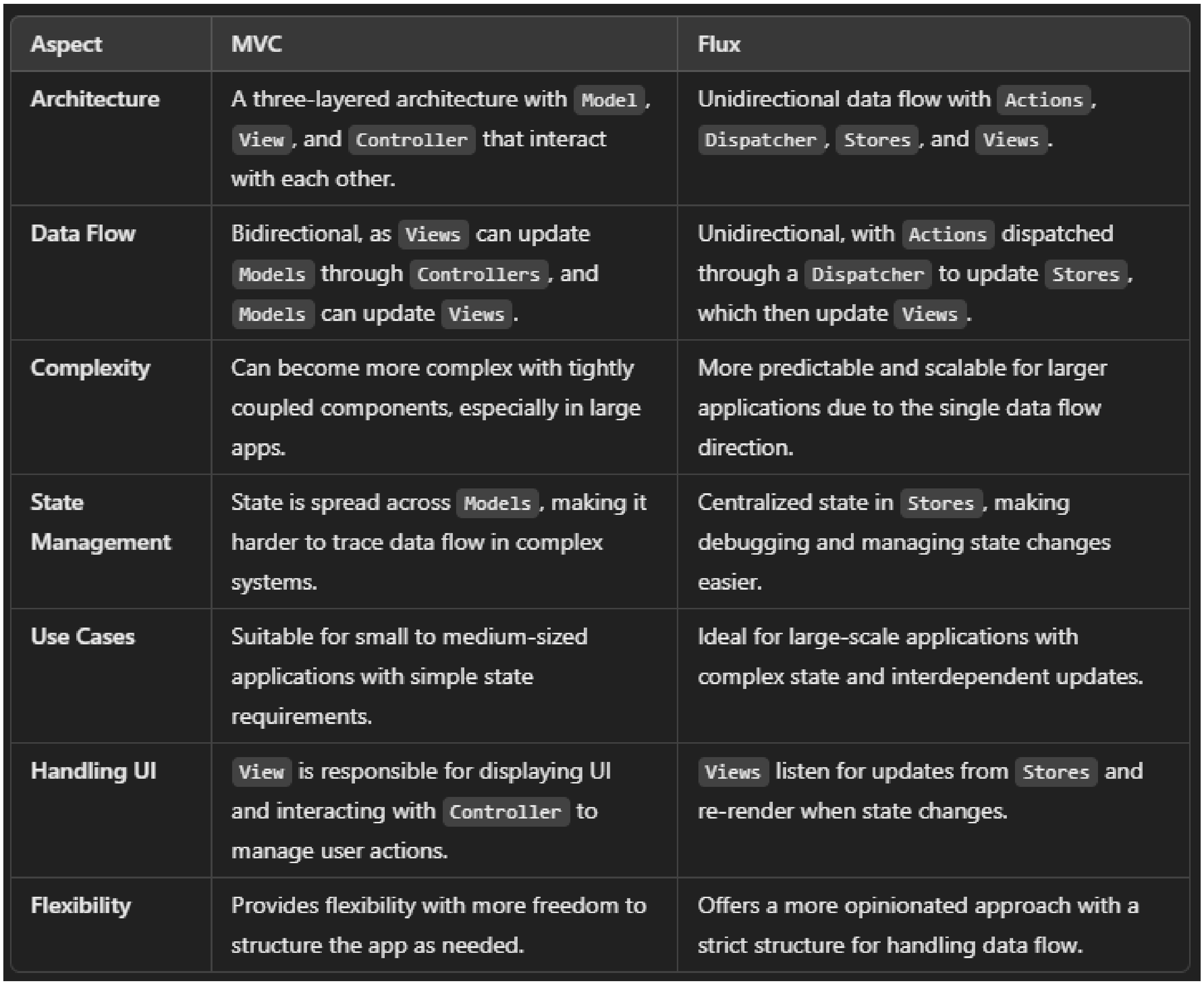
- ❑ Let's imagine an end-user sends a request to a server to get a list of students studying in a class.
- ❑ The server would then send that request to that particular controller that handles students.
- ❑ That controller would then request the model that handles students to return a list of all students studying in a class.
- ❑ The model would query the database for the list of all students and then return that list back to the controller.
- ❑ If the response back from the model was successful, then the controller would ask the view associated with students to return a presentation of the list of students.
- ❑ This view would take the list of students from the controller and render the list into HTML that can be used by the browser.



Working of the MVC Framework

- ❑ The controller would then take that presentation and returns it back to the user. Thus ending the request.
- ❑ If earlier the model returned an error, the controller would handle that error by asking the view that handles errors to render a presentation for that particular error.
- ❑ That error presentation would then be returned to the user instead of the student list presentation.

11) Write the comparison between MVC and Flux?



Aspect	MVC	Flux
Architecture	A three-layered architecture with `Model`, `View`, and `Controller` that interact with each other.	Unidirectional data flow with `Actions`, `Dispatcher`, `Stores`, and `Views`.
Data Flow	Bidirectional, as `Views` can update `Models` through `Controllers`, and `Models` can update `Views`.	Unidirectional, with `Actions` dispatched through a `Dispatcher` to update `Stores`, which then update `Views`.
Complexity	Can become more complex with tightly coupled components, especially in large apps.	More predictable and scalable for larger applications due to the single data flow direction.
State Management	State is spread across `Models`, making it harder to trace data flow in complex systems.	Centralized state in `Stores`, making debugging and managing state changes easier.
Use Cases	Suitable for small to medium-sized applications with simple state requirements.	Ideal for large-scale applications with complex state and interdependent updates.
Handling UI	`View` is responsible for displaying UI and interacting with `Controller` to manage user actions.	`Views` listen for updates from `Stores` and re-render when state changes.
Flexibility	Provides flexibility with more freedom to structure the app as needed.	Offers a more opinionated approach with a strict structure for handling data flow.

12) Explain in detail Webpack Core?