1 What is React?

React is a open source front-end JavaScript library user interface especially for single page application it is used for developing interactive view layer of web and mobile apps it was created by Jordon walke a software engineer at Facebook developed by Facebook in 2011 .

reusable components React is easy to learn and use. Scope for testing the codes. Creating dynamic web applications is easy.
React has a rich set of libraries.

3) What are Props properties?

Props stand for "Properties" in React. They are read-only inputs to components. React props are like function arguments in props pass data from the parent to the child components throughout the application. Props are immutable so we cannot modify the props from inside the component. Inside the components, we can add attributes called props.

4) What is a Pure Function

Pure Function is a function (block of code) that always returns the same result if the same arguments are passed it does not depend on any state or data change during programs execution.

5) What is the Higher Order Components (HOC)?

HOC is a function that takes a component and returns a new component. It is used for Code Reusability, Props manipulation, State manipulation, Render high jacking.

7 npm ?

Npm stands for **N**ode **P**ackage **M**anager. It is a package manager for the Node JavaScript platform.

Npm is known as the world's largest software registry. Open-source developers all over the world use npm to publish and share their source code.

The website allows you to find third-party packages, set up profiles, and manage your packages.

The command-line interface or npm CLI that runs from a terminal to allow you to interact with npm.

The registry is a large public database of JavaScript code.

every npm project has a file called package.json located in the root directory. The package.json is a plain text file that contains important information that npm uses to identify the project and handle dependencies.

2React Features

JSX ,Components , One-way Data Binding, Virtual DOM, Simplicity, Performance

1 What is JSX?

JSX stands for JavaScript XML. It is a React extension which allows us to write html in react It makes easy to write and add html in react Jsx allow us to write html elements in JavaScript and place them in the Dom without any createElement() or appendchild() method.

2 Components

ReactJS is all about components. ReactJS application is made up of multiple components, and each component has its own logic and controls. These components can be reusable which help you to maintain the code when working on larger scale projects.

3One-wayData Binding

ReactJS is designed in such a manner that follows unidirectional data flow or one-way data binding. The benefits of one-way data binding give you better control throughout the application. If the data flow is in another direction, then it requires additional features. It is because components are supposed to be immutable and the data within them cannot be changed.

4 Virtual DOM

1. Whenever any data changes in the React App, the entire UI is re-rendered in Virtual DOM representation.
2. Now, the difference between the previous DOM representation and the new DOM is calculated.
3. Once the calculations are completed, the real DOM updated with only those things which are changed.

5 Simplicity

ReactJS uses JSX file which makes the application simple and to code as well as understand.

6 Performance

ReactJS is known to be a great performer. This feature makes it much better than other frameworks out there today. The reason behind this is that it manages a virtual DOM.

6) What is React Routing/ Router?

Routing is a process in which a user is directed to different pages based on their action or request. Developing a sing page web application. 3types: memory router, Browser Router, Hash Router,

React Router is a standard routing library system built on top of the React. It is used to create Routing in the React application using React Router Package.

8) Component:

A **Component** is one of the core building blocks of React. In other words, we can say that every application you will develop in React will be made up of pieces called components 2 types of components

3.1) Functional component and class component?

A functional component is just a plain JavaScript function that accepts props as an argument and returns a React element .	A class component requires you to extend from React. Component and create a render function which returns a React element.
There is no render method used in functional components.	It must have the render() method returning JSX
Also known as Stateless components	Also known as Stateful components
React lifecycle methods cannot be used in functional components.	React lifecycle methods can be used inside class components.

9) Different phases of react component life cycle

Mounting Phase: In this phase, the instance of a component is created and added into the DOM.

Updating: the component is updated whenever there is a change in the components state or props.

Unmounting: the next phase in the life cycle is when a component is removed or unmounted from the DOM.

lifecycle methods of React components in detail.

componentWillMount(): It is executed before a component gets rendered into the DOM.

componentDidMount(): It is executed when the component gets rendered and placed on the DOM.

render() This method is defined in each and every component. It is responsible for returning a single root **HTML node** element.

8)Parts of Redux. Explain?

9) Hooks in reactjs :

7) What is Redux?

Redux is an open-source JavaScript library used to manage application state. Building the user interface. Redux is a predictable state container for JavaScript apps. Redux can be used as a data store **for any UI layer.** It encourages good 'React' architecture.
It implements many performance optimizations internally, which allows to components re-render only when it actually needs.

1 STORE 2 ACTION 3 REDUCER

STORE: A Store is a place where the entire state of your application lists. It manages the status of the application and has a dispatch(action) function. It is like a brain responsible for all moving parts in Redux.

ACTION: Action is sent or dispatched from the view which are payloads that can be read by Reducers. It is a pure object created to store the information of the user's event. It includes information such as type of action, time of occurrence, location of occurrence, its coordinates, and which state it aims to change.

REDUCER: Reducer read the payloads from the actions and then updates the store via the state accordingly. It is a pure function to return a new state from the initial state.

10) Explain Mango DB and Crud Method (operations)?

Mangodb: Open source NOSQL database management program Mango dB is a tool that can manage document-oriented information store or retrieve information.

Mango DB and Crud operations:

Create operation: add new documents to a collection. – db.collection.insertone()

Read: retrieve documents from a collection. – db.collection.find() or db.collection.findone()

Update: modify existing documents in a collection. – db.collection.updateone() or updatemany()

Delete: remove documents from a collection. - db.collection.deteone() or db.collection.deletemany().

11) What is the Dom manipulation?

Document Object Model the process by which one can dynamically changes the content of the web page. DOM is an application programming interface for manipulating html and xml documents. When a web page is loaded the browser creates a dom of the page. DOM manipulation is interacting with the DOM API to change/modify the HTML document that is to be rendered on the web browser. This HTML document can be changed/modified to add elements, remove elements, edit elements, move elements around, etc. By manipulating the DOM you can create applications that will update the data of the page without a refresh, change the layout of a page without a refresh. You can shuffle, move or delete elements across the document.

Hooks are new features added in the react it allows to use all react features without writing class components. One reason to introduce hooks was the complexity in dealing with this keyword inside class components. If not handled properly third will take some other value that will result in breaking lines like this.Setstate(). React hooks 3 types:

Use state 2 use effect 3 use context

1 Use State: use state is a hook that allows you to have state variable in functional components. You pass the initial state to this function and it returns a variable with the current value and another function to update this value.

2 Use Effect: it allows you to perform side effects in your components ex: fetching data directly updating the dom and Timers.

3 Use Context: context provides a way to pass data though the component tree without having to pass props down manually at every level.

Addition hooks:

1 use Reducer: The *useReducer* is a hook is managing the state of the application. It is very similar to the *useState* hook, just more complex. It acts as an alternate hook to the *useState* hook to manage complex state in your application.

2 use memo: he React useMemo Hook returns a memoized value. Think of memoization as caching a value so that it does not need to be recalculated. The useMemo Hook only runs when one of its dependencies update. This can improve performance.

3 use callback: The useCallback hook is used when you have a component in which the child is rerendering again and again without need. Pass an inline callback and an array of dependencies. useCallback will return a memoized version of the callback that only changes if one of the dependencies has changed.

4 use ref: The useRef Hook allows you to persist values between renders. It can be used to store a mutable value that does not cause a re-render when updated. It can be used to access a DOM element directly.

13) use effect syntax:

useEffect(<function>, <dependency>)import React, { useState, useEffect }

14) Function based component program?

import React from 'react'; import ReactDOM from 'react-dom'; const Demo=()=> { return <h1>Welcome to GeeksforGeeks</h1>; }export default Demo;

12) Node js:

Node js is an open source cross plateform runtime environment for developing server-side and networking applications. Node js application are wriiten in JavaScript. Its used for collecting a data, processing, past and sclable applictions, real time appications, browser gamming.

15) difference between Real DOM and Virtual DOM?

Real DOM	Virtual DOM
1 The real DOM updates slower.	The virtual DOM updates faster.
2 The real DOM can directly update HTML	The virtual DOM cannot directly update HTML
3 In real DOM, DOM manipulation is very expensive.	In virtual DOM, DOM manipulation is very easy.
4 There is a lot of memory wastage in The real DOM.	There is no memory wastage in the virtual DOM.

16) controlled and uncontrolled components?

Controlled	Uncontrolled
1 It does not maintain its internal state.	It maintains its internal states.
2 data is controlled by the parent component.	2 data is controlled by the DOM itself.
3 It accepts its current value as a prop.	3 It uses a ref for their current values.
4 It allows validation control.	4 It does not allow validation control.
5 It has better control over the form elements and data.	5 It has limited control over the form elements and data.

12 Differentiate between States and Props.

Props	State
Props are read-only.	State changes can be asynchronous.
Props are immutable.	State is mutable.
Props make components reusable.	The State cannot make components reusable.
Props can be accessed by the child component	State cannot be accessed by child components.
Props allow you to pass data from one component to other components as an argument.	State holds information about the components.
The stateless component can have Props.	The stateless components cannot have State.

14)stateless and stateful components.

Stateless Component	Stateful Component
1 The stateless components do not hold or manage state.	1 The stateful components can hold or manage state.
2 It is also known as a functional component	2 It is also known as a class component.
3 It is simple and easy to understand.	3 It is complex as compared to the stateless component.
4 It does not work with any lifecycle method of React.	4 It can work with all lifecycle method of React
5 The stateless components cannot be reused	5 The stateful components can be reused..

12) What is a State in React? **14) What is an event in React?**

state of a component is an object which holds the data and information It may be changed over the lifetime of the component. **15) What are synthetic events in React?** A synthetic event is an object which acts as a cross-browser wrapper around the browser's native event. It combines the behavior of different browser's native event into one API, including stopPropagation() and preventDefault(). **19 refs in React?** Refs is the shorthand used for references in React. It is an attribute which helps to store a reference to particular DOM nodes or React elements. It provides a way to access React DOM nodes or React elements and how to interact with it. It is used when we want to change the value of a child component, without making the use of props. It is used to return a reference to the element. It is used when integrating with third-party DOM libraries. It can also use as in callbacks. **76) What are the advantages of Redux?** React Redux is the official UI bindings for react Application. It is kept up-to-date with any API changes to ensure that your React components behave as expected. It encourages good 'React' architecture. It implements many performance optimizations internally, which allows to components re-render only when it actually needs. It makes the code maintenance easy. Redux's code written as functions which are small, pure, and isolated, which makes the code testable and independent	An event is an action which triggers as a result of the user action or system generated event like a mouse click, loading of a web page, pressing a key, window resizes, etc. In React, the event handling system is very similar to handling events in DOM elements. The React event handling system is known as Synthetic Event, which is a cross-browser wrapper of the browser's native event. **17)key :**A key is a unique identifier. In React, it is used to identify which items have changed, updated, or deleted from the Lists. It is useful when we dynamically created components or when the users alter the lists. **55) List down the advantages of React Router.** In this, it is not necessary to set the browser history manually. Link uses to navigate the internal links in the application. It is similar to the anchor tag. It uses Switch feature for rendering. The Router needs only a Single Child element. In this, every component is specified in <Route>. The packages are split into three packages, which are Web, Native, and Core. It supports the compact size of the React application.

18) What is the difference between Element and Component?

Element	Component
It only holds information about the component type, its properties, and any child elements inside it.	It can contain state and props and has access to the React lifecycle methods.
It is immutable.	It is mutable.
We cannot apply any methods on elements. **Redux** 1 Store's State is immutable. 2 In this, Store and change logic are separate. 3 It has only a single Store. 4 Redux does not have Dispatcher concept.	We can apply methods on components. **Flux** 1 Store's State is mutable. 2 In this, the Store contains State and change logic. 3 It can have multiple Store. 4 It has single Dispatcher, and all actions pass through that Dispatcher.