Assignment - 7

Q1 What is Microservice?

It is an architectural Style used in Software development where a Complex application is broken down into Smaller, independent Services. Each Service is responsible for a Specific business capability and operates as a seperate entity. Communicating with other Services through well-defined APIs (Application Programming Interface.

The key principles of microservices.

① Decentralize , ② Single Responsiblity.

③ Independence , ④ API-Based Communication

⑤ Resilience , ⑥ Scalability.

Q2 What is Monolith Architecture?

Monolith architecture is a traditional Software design approach where an entire application is built as a Single, Self-Contained unit. In a Monolith architecture, all components and functionality of an application are tigetly integerated and deployed together. The term 'monolith' refers to the fact that the Applications is treated as a Single, indivisible entity.

In this Architecture.

→ All modules or Components of the application share the Same Codebase, database and runtime environment. The application is usually deployed as a Single executable or a deployment package

Key characteristics.

→ Single Codebase → Tight Coupling

→ Shared Database → Centralized Deployment

→ Limited Technology flexibility.

What is Difference between Monolith and Microservice.

Monolith	Microservice.
① Single unit	① Decentralized Service.
② Tight Coupling	② Loose Coupling
③ Limited Scalability	③ Scalability and flexibility
④ Technology Constraints	④ Fault isolation.
⑤ Deployment Complexity	⑤ Distributed Deployment

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Q4 Why do we need a useEffect Hook?

The useEffect hooks takes in two argument a callback function and Dependency array. The callback function after the component has rendered and the DOM has been updated. It can perform asynchronous tasks and ~~fg~~ Subscription.

The Dependency array is used to specify Dependency that the effect depends on. If any of the Dependencies change between renders, the effect will be ~~rendered~~ Executed. If the Dependency array is Omitted, the Effect will run after Every render.

The UseEffect Hook is useful in Scenario where you are interact with External Data Sources or perform operations that cannot be done during the rendering phase of the component. It improves code Organization and maintainability.

Q5 What is optional chaining?

It is a feature introduced in J.S. that allows you to access properties or call method on an object without explicitly checking if immediate properties exist. It provides a concise way to handle cases where you need to access nested properties or call methods on an object may be null or undefined at some level.

The optional chaining operator is represented by a question mark (?) placed before the (.).

Const Phone number = person. Contact ?. PhoneNumber;

Q8 what is the Difference between JS Expression and JS Statement

In JavaScript Expression and Statement are two fundamental.

JS Expression → It's a piece of code that produces a value It can be a Combination of ~~result~~ literals, variables, operators, and function invocation that are evaluated to produce a result. Expression Can be a Simple as a ~~single~~ Single value or as complex as a nested Combination of multiple expression.

```
5+3
"Hello" + name.
function Call().
```

JS Statement → A Statement is a complete unit of Code that performs an action or a Sequence of actions. Unlike Expression, Statement do not produce a value, Instead they are executed for their Side Effect, which

Can include modifying variables, controlling program flow, or interacting with the Environment

```
if (condition) {          for(int i=0; i<n ; i++)
    //Code                  {
}                              //Code block }.
```

Q7 What is Conditional Rendering, explain with a Code Example.

It is in JS and framework like React. refers to the ability to Conditional display or hide. Certain parts of the User interface based on Specific Condition. It allows you to render different Content or Component based on the Current State or props of the application.

Example

```
import React from 'react';

export default function APP () {
    Const isloggedIn = true;

    return (
      <div>
      {isLoggedIn ? (

          <h1> Welcome, User! </h1>) :
          ( <button> Login </button>)}
          </div>
    );
}
```

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Q8 What is CORS?.

CORS stands for CROSS Origin Resource Sharing. It is a Security mechanism implemented in web browser. that controls access to resources. (Such as API or web fonts) hosted on. different domain. CORS prevent, or allows web application to make Cross -Origin HTTP requests, which are request sent from Domain to a different domain.

By Defaults, web browser enforce the Same -Origin Policy, which restrict, cross - Origin request, The Same-Origin policy ensure that JavaScript code running on a web page Can only access resources (Such data or API's) that Originate from the Same domain and protocol as the page itself. this policy is in place to prevent unauthorized access to. sensitive data or actions.

CORS provide a way to relax the Same-Origin Policy selectively. when a web application make Cross - Origin HTTP request, the browser. Includes an aditional HTTP header Called Origin. that Specific domain from which the request Originated

If server's response allows the Cross-Origin request (by including the appropriate CORS headers); the browser proceed with the actual Cross-Origin request. Otherwise, the browser blocks the request, and JavaScript on the web page cannot access the response data.

Q9 What is async & await function?

Async and await features are introduced in JS to simplify working with asynchronous Code. particularly with promises. They provide a more readable and synchronous like Syntax for handling asynchronous Operation

Async function → The 'async' keyword is used to define an asynchronous 'function. - when a function is declared as 'async', It automatically returns a Promise. Within an 'async function'. You can use the await keyword to pause the Execution and wait for the response data.

Await Expression → The 'await' keyword is used within an 'async' function to pause the Execution and wait for a promise to resolve. It can only be used inside an 'async' function.

Q10 What is the use of 'Const JSON = await data.json();' in getRestaurants()'.

The line in the getRestaurant() function is used to asynchronously parse the response data as JSON.
~~let's be~~

The purpose of this line is to convert the response data, which is typically in the form of a JSON string, into a JavaScript object that can be easily accessed and manipulated in the code. By parsing the response body as JSON, the data becomes structured and can be used for the subsequent code logic