Interview Questions

1. Frontend Development

- **Task**: Implement a React component that fetches and displays user data from an API.
  - How would you handle loading states and error scenarios?
  - Explain your approach to styling the component and ensuring responsiveness.
- **Questions**:
  - What is the virtual DOM in React and how does it contribute to performance?
  - Describe the lifecycle methods of a React component.
  - How would you optimize a React application for better performance?

2. Backend Development

- **Task**: Design and implement a REST API endpoint for creating and retrieving blog posts.
  - Describe the HTTP methods you would use and the corresponding responses.
  - How would you handle authentication and authorization for the endpoint?
- **Questions**:
  - Explain the difference between SQL and NoSQL databases.
  - What is the role of middleware in a Node.js application?
  - How would you ensure the security of sensitive data stored in the backend?

3. Blockchain and Smart Contracts

- **Task**: Write a Solidity smart contract for a simple voting system.
  - How would you ensure that each user can only vote once?
  - Describe the process of deploying and interacting with the smart contract.
- **Questions**:
  - What are the key features of the Ethereum blockchain?
  - Explain the concept of gas in Ethereum transactions.
  - How would you handle potential security vulnerabilities in a smart contract?

4. DevOps and Infrastructure

- **Questions**:
  - Describe your experience with containerization technologies like Docker.
  - What is the role of continuous integration and continuous deployment (CI/CD) in the development process?
  - How would you monitor and troubleshoot issues in a production environment?

5. Problem Solving and Algorithmic Thinking

- **Task**: Implement a function to find the second largest element in an array.
  - What is the time complexity of your solution?
  - How would you modify the function to handle edge cases, such as an empty array or multiple occurrences of the second largest element?
- **Questions**:

- Explain the difference between a stack and a queue data structure.
- How would you approach solving a problem that you're unfamiliar with?
- Describe a challenging bug you encountered in your previous projects and how you resolved it.