75 Solidity interview questions to ask to hire top developers

Questions

1. Can you explain what Solidity is and its primary use case?
2. How does Solidity handle contract inheritance?
3. What are the key differences between 'memory' and 'storage' in Solidity?
4. Explain the concept of 'gas' in Ethereum and how it relates to Solidity programming.
5. What are events in Solidity and why are they useful?
6. How do you handle errors and exceptions in Solidity?
7. What are the main security considerations when developing smart contracts in Solidity?
8. How would you optimize a Solidity contract to reduce gas costs?
9. What is the difference between a contract and an interface in Solidity?
10. How do you create a constructor in Solidity and what is its purpose?
11. Can you explain the concept of 'fallback function' in Solidity?
12. What are 'modifiers' in Solidity, and how would you use them?
13. How do you implement a self-destruct mechanism in a Solidity contract?
14. Can you discuss the role of 'mapping' in Solidity?
15. How do you perform unit testing in Solidity?
16. What is the significance of the 'require' statement in Solidity?
17. How would you handle versioning in Solidity?
18. Can you explain the concept of 'abstract contracts' and when to use them?
19. What is the purpose of the 'delegatecall' function, and how does it differ from 'call'?
20. Explain how external and public functions differ in Solidity.
21. What is a library in Solidity and how is it used?
22. How do you handle ownership and permissions in Solidity contracts?
23. Can you explain the process of deploying a Solidity contract on the Ethereum network?
24. What are the best practices for ensuring code readability and maintainability in Solidity?
25. How do you handle float numbers in Solidity?
26. What is the 'reentrancy attack' and how do you prevent it?
27. Can you discuss how to use 'structs' in Solidity?
28. What is the role of the 'transfer' function in Solidity?
29. How do you manage state variables in a Solidity contract?
30. What is the purpose of the 'constructor' function in Solidity?
31. Can you explain the difference between 'internal' and 'private' functions in Solidity?
32. What are the advantages of using 'modifier' in Solidity?
33. How do you handle contract upgrades in Solidity?
34. What is a 'multi-signature' wallet, and why is it used in Solidity?
35. How do you approach debugging and troubleshooting Solidity contracts?
36. What is the 'self-destruct' function in Solidity, and when should it be used?
37. How do you handle access control in Solidity contracts?
38. What are the gas optimizations techniques you would use in a Solidity contract?
39. How would you implement a proxy pattern for upgradeable contracts in Solidity?
40. Can you explain the concept of 'assembly' in Solidity and provide an example of when you might use it?
41. What are the implications of using 'view' and 'pure' function modifiers in terms of gas costs and security?
42. How would you implement a token standard like ERC-20 or ERC-721 in Solidity?
43. Can you describe how you would use the 'selfdestruct' function in a contract and its potential risks?
44. What strategies would you employ to minimize storage costs in a complex Solidity contract?
45. How would you implement a decentralized voting system using Solidity?
46. Can you explain the concept of 'tight variable packing' and its importance in Solidity?
47. How would you handle time-based logic in Solidity, considering the potential manipulation of block timestamps?
48. What are the security implications of using 'tx.origin' vs 'msg.sender' in Solidity?
49. How would you implement a multi-signature wallet contract in Solidity?
50. Can you explain the concept of 'commit-reveal' schemes and how you might implement one in Solidity?
51. How would you approach implementing a decentralized exchange (DEX) in Solidity?
52. What are the considerations and best practices for implementing cross-contract communication in Solidity?
53. How would you design a contract to handle large-scale data storage and retrieval efficiently in Solidity?
54. How would you explain the concept of 'gas' in Ethereum to a non-technical stakeholder?
55. Can you describe a situation where you had to optimize a smart contract for gas efficiency?
56. How would you implement a time-lock feature in a smart contract?
57. Explain the concept of 'reentrancy' and how you would prevent it in your smart contracts.
58. How would you design a smart contract system for a decentralized voting application?
59. How would you ensure the security of a smart contract in Solidity?
60. What are common security vulnerabilities in Solidity and how can they be mitigated?
61. How do you handle the risks associated with external calls in Solidity?
62. What steps would you take to avoid denial-of-service (DoS) attacks in Solidity?
63. How would you secure sensitive data within a Solidity contract?
64. What is the importance of conducting security audits on Solidity smart contracts?
65. How do you handle private data in Solidity, given that the blockchain is public?
66. What are the best practices for writing secure smart contracts in Solidity?
67. How would you design a smart contract system for a decentralized lending platform?
68. Describe a situation where you had to optimize a complex Solidity contract for gas efficiency. What strategies did you employ?
69. How would you implement a voting system in Solidity that ensures one vote per address while maintaining voter privacy?
70. Explain how you would design a token vesting contract with multiple beneficiaries and varying vesting schedules.
71. How would you implement a decentralized exchange (DEX) in Solidity, and what key features would you include?
72. Describe how you would implement a multi-signature wallet contract in Solidity.
73. How would you design a contract system for a decentralized insurance platform?
74. Explain how you would implement a yield farming contract in Solidity.