Enterprise application development

QUESTIONS

1. What is the difference between monolithic and microservices architecture?
2. How do you approach designing a scalable enterprise application?
3. What is the role of APIs in enterprise application development?
4. What is Agile development, and how is it used in enterprise application development?
5. Define the following terms as they are used in Enterprise Application Development.
    a. Serialization
    b. Authentication
    c. Authorization
    d. Encryption
6. How does DevOps impact enterprise application development?
7. What is the difference between Waterfall and Spiral development methodologies?
8. What is the role of Java in enterprise application development?
9. How is cloud computing used in enterprise application development?
10. What is the difference between .NET and Java frameworks?
11. What are the key security concerns in enterprise application development?
12. How do you ensure compliance with regulatory requirements in enterprise application development?
13. What is the role of access control in enterprise application development?
14. What is the importance of testing in enterprise application development?
15. How do you approach automated testing in enterprise application development?
16. What is the role of continuous integration in enterprise application development?
17. What are the key considerations for deploying an enterprise application?
18. How do you approach monitoring and logging in enterprise application development?
19. What is the role of containerization in enterprise application development?
20. What is the difference between relational and NoSQL databases?
21. How do you approach data modeling in enterprise application development?

22. What is the role of data warehousing in enterprise application development?
23. What is the importance of user experience (UX) in enterprise application development?
24. Describe any five (5) principles that are typically followed by developers when developing mobile applications.
25. Give brief description of the following features of a mobile application framework.
    a. Cross-platform Development
    b. Native-like Performance
    c. UI Components and Customization
    d. Development Tools and IDE Integration
    e. Continuous Updates and Maintenance
26. Outline any four (4) UI controls found in Android application development.
27. Give 4 examples of mobile frameworks.
28. List any three considerations to be kept in mind when consuming REST API in mobile applications development
29. How do you approach designing intuitive user interfaces?
30. What is the role of responsive design in enterprise application development?
31. What is the difference between API-based integration and data-based integration?
32. How do you approach designing RESTful APIs?
33. What is the role of API gateways in enterprise application development?
34. What is the difference between IaaS, PaaS, and SaaS cloud models?
35. How do you approach implementing DevOps practices in enterprise application development?
36. What is the role of containerization in cloud-based enterprise application development?
37. What is the difference between authentication and authorization?
38. How do you approach implementing encryption in enterprise application development?
39. What is the role of compliance frameworks (e.g. HIPAA, PCI-DSS) in enterprise application development?

40. What is the difference between unit testing, integration testing, and UI testing?
41. How do you approach implementing automated testing in enterprise application development?
42. What is the role of continuous testing in DevOps practices?
43. Define the following terms
    a. Programming Framework
    b. SOAP
    c. Web service
    d. Dependency injection
44. What are the benefits and challenges of using microservices architecture?
45. How do you approach designing microservices for an enterprise application?
46. What is the role of service discovery in microservices architecture?
47. What are the characteristics of cloud-native applications?
48. Describe the four action verbs used in REST.
49. How do you approach building cloud-native applications using serverless computing?
50. What is the role of containers in cloud-native application development?
51. What are the benefits and challenges of implementing DevOps practices?
52. How do you approach implementing continuous delivery in an enterprise environment?
53. What is the role of automation in DevOps practices?
54. Given the following program snippets codes in C#:

```
public class Teacher
{
[Key]
        public string EcNumber { get; set; }
        public string? TName { get; set; }
        public ICollection<SubjectTeacher> SubjectTeachers { get; set; }
```

```
}

public interface ITeacherRepository: IMainRepository<Teacher>

{

}
```

a. Give a term given to the word [Key].

b. Write the definition of the interface IMainRepository (The head line only excluding the body)

c. Give a term used to describe the IMainRepository

d. What is the relationship between Teacher and SubjectTeacher? When we are in the actual database which one must be created first.

e. Write the class SubjectTeacher assuming that it has ID as its primary key, and add the necessary properties that fulfills the relationship with class Teacher.

f. Write the ISubjectTeacherRepository that will be derived from the IMainRepository

55. What are the applications of artificial intelligence and machine learning in enterprise application development?
56. How do you approach building AI-powered chatbots for customer service?
57. What is the role of machine learning in predictive analytics for business intelligence?
58. What are the applications of blockchain and distributed ledger technology in enterprise application development?
59. How do you approach building blockchain-based solutions for supply chain management?
60. What is the role of smart contracts in blockchain-based enterprise applications?
61. What are the applications of IoT in enterprise application development?
62. How do you approach building IoT-based solutions for industrial automation?
63. What is the role of edge computing in IoT-based enterprise applications?
64. How would you design a scalable e-commerce platform using microservices architecture?
65. What considerations would you take into account when choosing between a monolithic and microservices architecture?
66. How would you implement a service-oriented architecture (SOA) for an enterprise application?

67. How would you implement automated testing for a complex enterprise application using tools like Selenium and JUnit?
68. Write a PHP script to display numbers from 1 to 10 using a loop.
69. Describe two types of Form validation that can be performed in PHP.
70. What do you understand by the php.ini file.
71. Describe any five (5) principles that are typically followed by developers when developing mobile applications.
72. What strategies would you use to improve the performance of a slow enterprise application?
73. How would you implement continuous integration and continuous deployment (CI/CD) for an enterprise application using tools like Jenkins and Docker?
74. How would you implement authentication and authorization for an enterprise application using OAuth and JWT?
75. What measures would you take to ensure the security and compliance of an enterprise application handling sensitive customer data?
76. How would you implement data encryption and access controls for an enterprise application?
77. How would you deploy an enterprise application to a cloud platform like AWS or Azure?
78. What strategies would you use to monitor and troubleshoot issues in a production enterprise application?
79. Give brief description of the following features of a mobile application framework.
    a. Cross-platform Development
    b. Native-like Performance
    c. UI Components and Customization
    d. Development Tools and IDE Integration
    e. Continuous Updates and Maintenance
80. Outline any four (4) UI controls found in Android application development.
81. Give 4 examples of mobile frameworks.
82. List any three considerations to be kept in mind when consuming REST API in mobile applications development.

83. How would you implement a disaster recovery plan for an enterprise application?
84. How would you design a data warehouse for an enterprise application using tools like Oracle and Informatica?
85. What considerations would you take into account when choosing between relational and NoSQL databases for an enterprise application?
86. How would you implement data governance and quality control for an enterprise application?
87. Define the following terms as they are used in Enterprise Application Development.
    a. Serialization
    b. Authentication
    c. Authorization
    d. Encryption
88. How would you migrate an on-premise enterprise application to a cloud platform like AWS or Azure?
89. What considerations would you take into account when choosing between IaaS, PaaS, and SaaS cloud models?
90. How would you implement cloud security and compliance for an enterprise application?
91. How would you implement continuous integration and continuous deployment (CI/CD) for an enterprise application using tools like Jenkins and Docker?
92. What strategies would you use to improve the speed and quality of software releases in an enterprise environment?
93. How would you implement automated testing and deployment for an enterprise application?
94. How would you implement a machine learning model for predictive analytics in an enterprise application?
95. Giving examples where appropriate, describe the roles of APIs Integration.
96. Outline any 5 best practices for API Integration
97. List any two error codes that are used in REST outline their meanings.
98. Describe the four action verbs used in REST.

99. What considerations would you take into account when choosing between supervised and unsupervised machine learning algorithms?

100. How would you integrate AI-powered chatbots with an enterprise application for customer service?

101. How would you design an IoT-based solution for industrial automation using devices like sensors and actuators?

102. What considerations would you take into account when choosing between different IoT protocols like MQTT and CoAP?

103. How would you implement data analytics and machine learning for IoT-based applications?

104. How would you implement a blockchain-based solution for supply chain management using platforms like Hyperledger Fabric?

105. What considerations would you take into account when choosing between different blockchain platforms like Ethereum and Corda?

106. How would you integrate blockchain-based solutions with existing enterprise applications?

107. Give the three (3) components that make up the MVC pattern. On each component outline its responsibility.

108. Using a Login page in a web application developed following the MVC pattern, describe how the components stated in (a) will work.

109. Outline any three advantages using Repository pattern.

110. Give any two scenarios where you can recommend the use of Repository pattern.

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