TCS - Backend Developer

Interview Process

- Interview Round 1: TCS NQT
- Interview round 2: Technical interview
- Interview Round 3: Managerial round
- Interview round 4: HR round

Interview Questions

1. What is Socket Programming? What Are The Benefits And Drawbacks Of Java Sockets?
2. What is IPsec? What are its components?
3. What do you understand about a Subnet Mask?
4. What is NAT?
5. What is piggybacking?
6. What does a database schema imply? What are its types?
7. What is the difference between a clustered index and non non-clustered index?
8. What do you understand about round trip time?
9. What is a Ping?
10. What do you know about SLIP?
11. What is Ethernet?
12. What is the tunnel mode in networking?
13. Discuss the RSA algorithm in brief.
14. In a software program, what is cyclomatic complexity?
15. Give an instance where there was a bug that you didn't find in black box testing but discovered in white box testing.
16. What is slice splicing in software testing? What are its two types?
17. Enlist the differences between AWT and Swing in Java.
18. Explain memory leak in C++. How can you avoid it?
19. What is the meaning of a command line argument in C?
20. What do you mean by concurrency control?
21. What do you mean by SQL Correlated Subqueries?
22. What is a checkpoint in a database management system, and when does it eventuate?
23. In a database management system, what are the two integrity rules?
24. What exactly are macros? What are the benefits and drawbacks?
25. What is the difference between the Java Development Kit (JDK), Java Runtime Environment (JRE), and Java Virtual Machine (JVM)?
26. How will you swap two numbers without the use of a third variable?
27. Write the code to reverse a given number using Command Line Arguments.
28. What is meant by Cycle Stealing?
29. What are the two concepts of swapping in the context of OS? How does swapping help in better memory management?

30. What is the RR Scheduling Algorithm in OS?
31. What are interrupts?
32. Explain the functionality of the linked list.
33. What are the four basic principles of OOPS?
34. What is inheritance?
35. What is Polymorphism?
36. What are the different types of inheritance?
37. What is the difference between classes and interface?
38. What is software development life-cycle?
39. What is normalization of databases, joins, and keys?
40. What are loops?
41. Explain Joins, Views, Normalization, Triggers?
42. List different advantages of DBMS
43. What is a Database Management System?
44. What is database Schema?
45. What are the conditional statements?
46. What is the difference between the foreign key and reference key?
47. What are the differences and similarities between C and C++?
48. What is the structural difference between bitmap and b-tree index?
49. What is the difference between a Clustered index and non-clustered index?
50. Differentiate between socket and session?
51. What is an array?
52. Given an array of 1s and 0s arrange the 1s together and 0s together in a single scan of the array. Optimize the boundary conditions.
53. Define Data Abstraction. What is their importance?
54. Write a function to swap two numbers without using a temporary variable.
55. Memory Allocation in C/C++
56. Write the output of the program.
57. What is virtual function and pure virtual function?
58. What are WPF and WCF?
59. Write a program in C to swap two numbers without the help of a third variable.
60. What is the difference between procedural and object-oriented programming?
61. What is the difference between an abstract class and an interface?
62. Explain the concept of exception handling in programming.
63. What is the significance of unit testing in software development?
64. How does a database index improve query performance?
65. State the difference between HTML and CSS.
66. What are the advantages of using responsive web design?
67. How can you optimize website performance and loading speed?
68. Explain the concept of AJAX in web development.
69. What are the different types of HTTP requests used in web development?
70. What is the difference between supervised learning and unsupervised learning?
71. Explain the concept of overfitting in machine learning.
72. What is the purpose of cross-validation in machine learning?

73. What are the different evaluation metrics used for assessing classification models?
74. How does feature selection or dimensionality reduction benefit machine learning models?
75. What is the difference between scalability and elasticity in cloud computing?
76. Explain the concept of Infrastructure as Code (IaC) in the context of DevOps.
77. What are Continuous Integration (CI) and Continuous Deployment (CD) in DevOps?
78. How does containerization (e.g., Docker) benefit the DevOps process?
79. What is the role of configuration management tools (e.g., Ansible, Puppet) in DevOps?
80. What is the difference between a relational database and a NoSQL database?
81. Explain the concept of ACID properties in database transactions.
82. What is the purpose of database normalization, and what are its normal forms?
83. What are indexes in a database, and how do they improve query performance?
84. Explain the difference between primary and foreign keys in a database.
85. Can you explain the concept of dependency injection and its benefits in software development?
86. How do you handle software bugs and debugging in your development process?
87. Can you explain the concept of design patterns and provide an example?
88. How do you ensure code quality and maintainability in your projects?
89. What are the key differences between front-end and back-end web development?
90. How do you optimize website performance and improve loading times?
91. Can you explain the concept of responsive web design and its importance?
92. How do you handle cross-browser compatibility issues in web development?
93. How do you ensure web security and protect against common vulnerabilities?
94. Write a function to generate a random alphanumeric string of a specified length.