**PREPARATION**

**SCENARIO BASED QUESTIONS**

1. Lets suppose k ap kisi team mn kaam kr rhy hn or senior ap sa kehta k ek functionality add krny k liay usky method sa kren (apny method sa ni) to ap kya kro gy?
2. Ap ek team ko lead kr rhy ho or apki team ka ek member kaam ni kr rha sahi to ap is situation ko kis trah tackle kren gy?
3. Ek confused client ap k paas aya jisy sahi trah sa apny system ki requirements ka ni pta to requirement gathering k liay ap kya kro gy?
4. Ek client aya ap k paas or us k system ki requirements bht zyada hai lets suppose us na ek job portal ee bnwana or time ek week ka hai to ap is situation ko kis trah handle kro gy k client naraz na ho?
5. Ap na ek web application develop kr li hai or kisi hosting server pa live krni hai ab to us time ap kya kya points mind mn rkh k hosting server choose kro gy?
6. Ap na ek system develop kiya hai .. job portal ya campus management system.. ya walkaway .. kch bb jisy use krny k liay ek user required hota jo website open krta or jo b task perform krna hota wo kr leta. Pr agr hm na dosry developers ko specific cheezu ki access deni ho k wo apni website ya application k through hmari website k sath interact kr sken.. Yeh dekh sken k kis user na kon kon c job post ki? To app ko app k sath interact kesy krwaen gy?
7. Lets suppose ap na ek web application develop ki hai jis mn login form hai ya ek web API develop ki hai jis k controller mn ek login ka function hai jisy hit ho ri. Agr koi attacker ata ap ki website pa ya API k endpoint k through login form pa brute force attack lgata.. (multiple passwords k combinations kisi program k through insert krwa k submit krwae ja rha hai form k kbi na kbi to success mily gi or mil jati hai) to is situation ko ap backend programming k through kesy prevent kro gy? Or Networks k through kesy prevent kro gy?
8. Ap team leader ho or SCRUM( ek system hai project management k liay) pa kaam kr rhy ho. Team k sab member time to time commits kr rhy hn changes or client side pa wo changes dekh rha hai sath sath. Pr ek team member srf apny laptop mn ee changes save kri ja ra but commit ni kr rha tha .. or unfortunately us sa data erase ho gya sara.. project ki last phase hai or final delivery deni or is wqt pa data erase ho gya jis ki wajah sa 2 weeks project late ho skta. Ab ap pa responsibility aye hai k ap na client ko handle krna. (i) To client ko kya bolo gy ap? (ii) Ap ko kya lagta k is jo b hua is sb mn kis ki galti thi?
9. Ap ek developer ho or ek aisa system bna rhy ho jis mn time store krwaty hain.. jesy whatsapp ki example la lo k whatsapp pa last seen aa rha hota (Last seen today at 1:04 pm) or apko pta hai k zrori ni k whatsapp pa jo contact list ho wo sary same country ya same city k hon. Or yeh b zruri ni hai k sab ka data ek ee storage server pa para ho (whatsapp ka pakistan mn alag, india mn alag, UK mn alag ho skta) to ap database mn kis trah time store krwao gy k kahen sa b get krty time koi issue na ho. (UK mn us ka time jo mrzi ho pr mujy mery time k mutabiq us ka last seen nazar aye)
10. Lets suppose ap ek game bna rhy oo jis mn player ek jagah sa dosri jagah move krta or us ki future location jis expression ki base pa niklati wo (y=sin(x) + x^2) hai. X input hai I.e., player ki starting position value or Y output hai I.e., player ki last position value. Or is expression sa ek curve banti hai.. Question yeh hai k ek player ki starting or ending value den (x ki 2 values) to ap na btana k player na kitna area cover kiya (area under the curve) to kesy find kren gy?
11. Database indexing kya hoti hai or insert pa is ka kya effect hota?
12. Polymorphism in procedural programming?
13. Ap company k bary mn kya janty o ??
14. Ap na pehly kis kis company mn apply kiya or agr ap ka sb mn ho jata to kon c company choose kro gy?
15. Ap k ilawa b bht sa logu na abi BS computer science complete kiya hai. Hm ap ko kun choose kren or ap un sa kis trah differentiate krty o ?
16. Apni strengths or weaknesses btao (2-2)
17. Kon sa kaam abi tk aisa kiya jis mn proud ho?
18. Abi tk kaam krty hui kis module mn problem face krni pri or wo challenging lga?
19. Apny free time mn kya krty o?

**ANALYTICAL QUESTIONS**

1. Total 8 balls hn jin mn sa 7 light weight or ek ball heavy weight. Ap k pas ek Weighing Machine hai jisy ap 2 dfa use kr skty o or us k baad ap na btana k heavy weight ball konsi.
2. Ek room mn 3 bulb lgy hn or un k button (B1,B2,B3) room k bahir hain. Ap b us room ka bahir ho or buttons k sath khel skty o mtlb on/off kr skty pr aisa krny sa ap ko ni pta chl rha hota k kon sa bulb on off ho rha. Task yeh hai k ap btns k sath jo mrzi kro or jb room mn enter ho to bta do k B1 is bulb ka hai .. B2 iska or B3 iska..
3. Third wali tube mn 7 litre pura krna



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| 4 ltr | | 5 ltr | | . |

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1. Ek cake k 8 pieces krny (7 pieces wala question b) srf 3 cuts mn
2. Amjad age is x and his father age is 2x. After 14 years, his father age is 1.4 times greater than amjad. What is the age of amjad?

**DATABASE QUESTIONS**

1. Database transaction
2. Difference between file system and DBMS why we need DBMS while already we have file system.
3. Atomicity, consistency, isolation, duribility (ACID PROPERTIES)?
4. Serializability?
5. Data redundancy?
6. Purpose of normalization?
7. Anamolies? insert,update,delete ananmolies?
8. DDL, DCL, DML,DQL?
9. Primary key, candidate key, super key, composite key?
10. Tuple, attribute?
11. Normalizaion? 1NF, 2NF, 3NF
12. Functional dependancy
13. Partial dependancy?
14. Transitive dependancy
15. Why we use Indexing? Impacts of indexing over INSERT, UPDATE, RETRIEVAL
16. From, Where, Group by, Having, Order by?
17. Joins.. Left outer join? Right outer join? Full outer join? Inner join?
18. Union, Union all?
19. Aggregate functions? Why we use them?
20. Difference between count and count(\*)
21. How DROP, TRUNCATE, DELETE differ from each other?
22. SQL injection
23. Storage Engines
24. Batch processing
25. Stored Function and stored procedure

**OBJECT ORIENTED PROGRAMMING QUESTIONS**

1. OOP Object and class?
2. Composition
3. Aggregation (HAS A)
4. Inheritance (IS A)
5. Polymorphism
6. Abstraction
7. Encapsulation
8. Primitive and non-primitive datatypes
9. Structure and class difference?
10. Stack and Heap?
11. Reference type and Value type?
12. Constructor and destructor presidence?
13. Interface and abstract class?
14. Abstract method?
15. Final method?
16. Virtual Keyword
17. Static method and variable?
18. Function overloading vs overriding
19. Static vs dynamic binding
20. Pure virtual method?
21. Shallow copy and deep copy?
22. Exception handling?
23. Access Modifiers? Private, Protected, Public, Default data members?
24. Singleton class? How to implement? Or singleton pattern
25. Upcasting and downcasting?
26. Member Initializer list
27. Copy Constructor
28. Operator Overloading
29. Cohesion and coupling
30. early binding and late binding
31. What is runtime and compile time
32. Reference and pointer

**DATA STRUCTURES AND ALGORITHMS QUESTIONS**

1. Linked lists, singly, doubly, circular?
2. Vectors
3. Hashing?
4. Max heap, min heap?
5. Binary search?
6. Merge sort, Quick sort, Heap sort, Insertion sort, Selection sort?
7. Binary tree, Binary search tree?
8. Linear probing in hashtable?
9. Which data structure is thread safe and why I.e link list is thread safe or array list? Stack is thread safe

**EXTRAS**

1. SOAP,WSDL ?
2. Web services
3. RESTful Services
4. Servlets, JSP’s
5. Composition, Aggregation, Inheritance, Polymorphism, Static Class, Interface, Abstract Class, Concrete Class, ki real word examples
6. Session cookies
7. Difference between MVC and three tiers architecture
8. Framework architecture

**OPERATING SYSTEM QUESTIONS**

1. Scheduling
2. Threading
3. Process Control Block
4. Mutex and Semaphore
5. Deadlocks
6. Virtual memory
7. Thrashing
8. Convoy Effect Paging
9. Kernel
10. Clustering

**Software engineering:**

1. All type of testing like black box, white box

***REFERENCE LINKS***

|  |  |
| --- | --- |
| **Title** | **Link** |
| **INDEXING**  **IN**  **DBMS** | <https://www.youtube.com/watch?v=EZ3jBam2IEA> |
| <https://www.javatpoint.com/indexing-in-dbms> |
| <https://chartio.com/learn/databases/how-does-indexing-work/> |
| <https://db.apache.org/derby/docs/10.4/tuning/ctunoptimz856914.html> |
| **OOP concepts** | <https://www.javatpoint.com/java-oops-concepts> |
| <https://www.studytonight.com/cpp/cpp-and-oops-concepts.php> |
| **Normalization** | [https://youtu.be/xoTyrdT9SZI?list=PLLGlmW7jT-nTr1ory9o2MgsOmmx2w8FB3](https://youtu.be/xoTyrdT9SZI?list=PLLGlmW7jT-nTr1ory9o2MgsOmmx2w8FB3#search/maham/_blank) |
| **1NF** | <https://www.youtube.com/watch?v=mUtAPbb1ECM&list=PLLGlmW7jT-nTr1ory9o2MgsOmmx2w8FB3&index=2> |
| **2NF** | <https://www.youtube.com/watch?v=R7UblSu4744&list=PLLGlmW7jT-nTr1ory9o2MgsOmmx2w8FB3&index=3> |
| **3NF** | <https://www.youtube.com/watch?v=aAx_JoEDXQA&list=PLLGlmW7jT-nTr1ory9o2MgsOmmx2w8FB3&index=4> |
| **Association, Composition, Aggregation** | <https://www.geeksforgeeks.org/association-composition-aggregation-java/> |
| [https://www.c-sharpcorner.com/UploadFile/ff2f08/association-aggregation-and-composition/](https://www.c-sharpcorner.com/UploadFile/ff2f08/association-aggregation-and-composition/#search/maham/_blank) |
| **SDLC VS STLC** | [https://www.educba.com/sdlc-vs-stlc/](https://www.educba.com/sdlc-vs-stlc/#search/maham/_blank) |
| **DATABASE** | <https://www.studytonight.com/dbms/> |
| <https://www.w3schools.in/dbms/intro/> |
| <https://www.tutorialspoint.com/dbms/index.htm> |
| <https://www.w3schools.com/sql/> |
| **WEB SERVICES** | <https://www.guru99.com/web-service-architecture.html?fbclid=IwAR1S1zV8i2pemcFYKbxyRb8Lmtp0RHlfhttR2UIlyAhevbYEL5XCOdu35UU> |