

TCS Interview Questions for Freshers



TCS Technical Interview Questions for Freshers

TCS Technical Interview Questions C/ C++/ OOPS Concepts

1. Explain the four storage classes in C

Storage Classes are used to describe the features of a variable/ function. The four storage classes in C are Extern, Auto, Static, Register

- **Extern** - Extern storage class simply tells us that the variable is defined elsewhere and not within the same block where it is used.
- **Auto** - This is the default storage class for all the variables declared inside a function or a block.
- **Static** - This storage class is used to declare static variables which are popularly used while writing programs in C language.
- **Register** - It declares register variables that have the same functionality as that of the auto variables.

2. What are structures in C?

A structure is a user-defined data type in C/ C++. A structure creates a data type that can be used to group items of possibly different types into a single type.

3. What is inheritance?

In Object-Oriented Programming, inheritance is a mechanism based on classes. Inheritance refers to inhering the data members and properties of a parent class to a child class. A class that is derived from another level is often called a sub-class or a child class, and the type from which the child class is obtained is known as super-class or parent class.

4. What are the four basic principles of OOPS?

The four basic principles of Object-Oriented Programming Systems are Abstraction, Inheritance, Encapsulation, Polymorphism.

5. Differentiate between a Structure and a Class

A structure is the same as a class except for a few differences. The most important of them is security. A Structure is not secure and cannot hide its implementation details from the end-user while a class is secure and can hide its programming and design details.

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6. What is operator overloading?

Operator Overloading is a very essential element to perform the operations on user-defined data types. By operator overloading we can modify the default meaning of the operators like +, -, *, /, <=

7. What do you mean by call by value and call by reference?

- In the **call by value method**, we pass a copy of the parameter is passed to the functions. For these copied values a new memory is assigned and changes made to these values do not reflect the variable in the main function.
- In the **call by reference method**, we pass the address of the variable and the address is used to access the actual argument used in the function call. So changes made in the parameter alter the passing argument.

8. Are Variables in C static or Dynamic scoped?

In C, variables are always statically (or lexically) scoped i.e., binding of a variable can be determined by program text and is independent of the run-time function call stack.

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9. What is the meaning of a command-line argument in C?

Command-line arguments are used to get parameters from the command prompt in C. There are three arguments to the main function in C, they are Argument Counter, Argument Vector, Environment Vector.

10. Explain constructor in C++

The constructor is a member function that is executed automatically whenever an object is created. Constructors have the same name as the class of which they are members so that compiler knows that the member function is a constructor. And no return type is used for constructors.

TCS Technical Interview Questions on JAVA

1. Why Java is not a purely Object-Oriented Language?

Java supports OOPs properties like Inheritance, Encapsulation, Polymorphism, Abstraction, etc. but it misses on some properties which makes it not a Pure Object-Oriented Language.

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2. What is Null Pointer Exception In Java?

Null Pointer Exception is a Runtime Exception. In Java, a special null value can be assigned to an object reference. Null Pointer Exception is thrown when a program attempts to use an object reference that has the null value.

3. What do you understand by an instance variable and a local variable?

- **Instance variables** are those variables that are accessible by all the methods in the class. They are declared outside the methods and inside the class. These variables describe the properties of an object and remain bound to it at any cost. All the objects of the class will have their copy of the variables for utilization. If any modification is done on these variables, then only that instance will be impacted by it, and all other class instances continue to remain unaffected.
- **Local variables** are those variables present within a block, function, or constructor and can be accessed only inside them. The utilization of the variable is restricted to the block scope. Whenever a local variable is declared inside a method, the other class methods don't have any knowledge about the local variable.

4. What do you mean by data encapsulation?

- Data Encapsulation is an Object-Oriented Programming concept of hiding the data attributes and their behaviors in a single unit.
- It helps developers to follow modularity while developing software by ensuring that each object is independent of other objects by having its own methods, attributes, and functionalities.
- It is used for the security of the private properties of an object and hence serves the purpose of data hiding.

5. What are access modifiers in Java?

In Java, access modifiers are special keywords that are used to restrict the access of a class, constructor, data member, and method in another class. Java supports four types of access modifiers they are **Default, Private, Protected, Public**.

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TCS Technical Interview Questions on Data Structures

1. What is the difference between a Clustered index and a non-clustered index?

- A **clustered index** is a special type of index that reorders the way records in the table are physically stored.
- A **non clustered index** is a special type of index in which the logical order of the index does not match the physical stored order of the rows on disk.

2. What is a multidimensional array?

- Multi-dimensional arrays are those data structures that span across more than one dimension.
- This indicates that there will be more than one index variable for every point of storage.
- This type of data structure is primarily used in cases where data cannot be represented or stored using only one dimension. The most commonly used multidimensional arrays are 2D arrays. <https://www.freshersnow.com/>
- 2D arrays emulate the tabular form structure which provides ease of holding the bulk of data that are accessed using row and column pointers.

3. Are linked lists are linear or non-linear type?

- Linked lists can be considered both linear and non-linear data structures. This depends upon the application that they are used for.
- When the linked list is used for access strategies, it is considered as a linear data structure. When they are used for data storage, they can be considered as a non-linear data structure.

4. The structural difference between bitmap and b-tree index?

- **Btree** - It is made of branch nodes and leaf nodes. Branch nodes hold prefix key values along with the link to the leaf node and the leaf nodes contain the indexed value and rowed.
- **Bitmap** - It consists merely of bits for every single distinct value. It uses a string of bits to locate rows in a table quickly. It is used to index low cardinality columns.

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5. What is a Doubly-Linked List (DLL)?

- This is a complex type of linked list wherein a node has two references - One that connects to the next node in the sequence, Another that connects to the previous node
- This structure allows the traversal of the data elements in both directions (left to right and vice versa).

TCS Technical Interview Questions on DBMS

1. What is a Foreign key?

Foreign Key is a set of attributes in a table that is used to refer to the primary key or alternative key of the same or other tables.

2. What are ACID properties?

ACID stands for Atomicity, Consistency, Isolation, and Durability. In order to maintain consistency in a database, before and after the transaction, certain properties are followed. These are called ACID properties.

3. What do you mean by transparent DBMS?

The transparent DBMS is a type of DBMS that keeps its physical structure hidden from users. Physical structure or physical storage structure implies the memory manager of the DBMS, and it describes how the data is stored on a disk.

4. What is a normalization of databases, joins, and keys?

Normalization is the process of organizing data in a database efficiently. Two goals of the normalization process are: to eliminate redundant data (for example, storing the same data in more than one table) and also ensure data dependencies make sense (only storing related data in a table). These both are important as they reduce the amount of space a database consumes and ensure that data is logically stored.

5. How many types of database languages are?

There are four types of database languages

- Data Definition Language (DDL) - CREATE, ALTER, DROP, TRUNCATE, RENAME,
- Data Manipulation Language (DML) - SELECT, UPDATE, INSERT, DELETE, etc.

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- Data Control Language (DCL)- GRANT and REVOKE
- Transaction Control Language (TCL) - COMMIT, ROLLBACK, and SAVEPOINT

TCS Technical Interview Questions on Operating Systems

1. What is a Pipe and when it is used?

The pipe is generally a connection among two or more processes that are interrelated to each other. It is a mechanism that is used for inter-process communication using message passing. One can easily send information such as the output of one program process to another program process using a pipe. It can be used when two processes want to communicate one-way i.e., inter-process communication (IPC).

2. What is a time-sharing system?

In a Time-sharing system, the CPU executes multiple jobs by switching among them, also known as multitasking. This process happens so fast that users can interact with each program while it is running.

3. Briefly explain FCFS.

FCFS stands for First-come, first-served. It is one type of scheduling algorithm. In this scheme, the process that requests the CPU first is allocated the CPU first. Implementation is managed by a FIFO queue.

4. What is the RR Scheduling Algorithm in OS?

- The RR (round-robin) scheduling algorithm was designed with time-sharing systems in mind. The CPU scheduler goes around a circular queue, allocating CPU to each task for a time period of up to around 10 to 100 milliseconds.
- It is simple and easy to implement. It is preemptive because processes are only allotted CPU for a certain amount of time. All processes get an equal share of CPU. Disadvantages include context switches, low throughput, larger waiting time, and response time.

5. What is thrashing in OS?

It is generally a situation where the CPU performs less productive work and more swapping or paging work. It spends more time swapping or paging activities rather than its execution. By

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evaluating the level of CPU utilization, a system can detect thrashing. It occurs when the process does not have enough pages due to which the page-fault rate is increased. It inhibits much application-level processing that causes computer performance to degrade or collapse.

TCS Technical Interview Questions on Networking

1. What is the backbone network?

A backbone network is a centralized infrastructure that is designed to distribute different routes and data to various networks. It also handles the management of bandwidth and multiple channels. CopyRight To : <https://www.freshersnow.com/>

2. What is the tunnel mode in networking?

Tunnel Mode is a way of transmitting data over the Internet that encrypts both the contents and the original IP address information. It secures communications between security gateways, firewalls, and other devices in a Site-to-Site VPN. In Transport Mode or Tunnel Mode, the Encapsulating Security Payload (ESP) is used. ESP encrypts the data and the IP header information in Tunnel Mode.

3. What is the job of the Network Layer under the OSI reference model?

The Network layer is responsible for data routing, packet switching, and control of network congestion. Routers operate under this layer.

4. What are the advantages of Distributed Processing?

- Distributed database
- Secure
- Collaborative Processing
- Security through redundancy
- Support Encapsulation
- Faster Problem solving

5. What is a DNS forwarder?

- A forwarder is used with a DNS server when it receives DNS queries that cannot be resolved quickly. So it forwards those requests to external DNS servers for resolution.

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- A DNS server that is configured as a forwarder will behave differently than the DNS server which is not configured as a forwarder.

TCS HR Round

TCS HR Interview Questions

1. Tell me about yourself

Tell Me About Yourself or Introduce Yourself seems like the most common question that will be asked by the Interviewer. How well you project yourself by answering this question will determine the result of this interview. The aspirants should be able to present themselves in a unique way that means not generic. Try to present the details which are not explained in the Resume/ CV. Candidates have to tell about their Educational Background, Family Details, The city they come from, and stressing on the qualities which they feel are suitable or desirable for the job profile they are applying for. The key thing on how to handle this question is presenting your real self that means highlighting your personality, showing your confidence, and having clarity of thought.

2. Your Strengths And Weakness

This question will be asked to know the Strengths & Weaknesses of candidates that will be helpful to achieve the positive result in work life and at the same time that will be stopping the aspirants from achieving the same. Therefore, while answering the question, you guys need to focus on the strengths that have helped you guys in the past in achieving the result you have desired (Like Go Getter, Being a Team Player, Communication, etc.,). Do remember to back these strengths with the perfect examples you have. While coming to the Weakness, you have to specify certain weaknesses you have but how you are trying to overcome them gradually.

3. Are you a team player?

For a person to work well in any company he should be a combination of both Individual and Team Player as and when required. Hence, you guys should present the answer to this in such a way that will show how you don't have any problem by being a team player and contributing your efficiency for the benefit of the company. Be sure to provide/ backing your answer with a perfect example where you have done well as a team player in your academic project work/ in any internship that you worked as an intern.<https://www.freshersnow.com/>

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4. If you are rejected today, then what will you do?

This question will project you as an individual and how well you can take bad news. No one likes to be rejected for any cause, be it for not getting your desired job or anything else but how well you take it for your future is matters the most. So, answer this question as to how you will take this opportunity to reflect on what has caused your rejection & how you will rectify it. And specifying that how this rejection is just a short step back & not the end of his future.

5. How will you manage work pressure?

Having work pressure is part & parcel of working life. The interviewer will want to whether you will be able to handle this pressure or not. Therefore, your answer should be in such a way that shows how you will be handling pressure, & how you plan to overcome it so it doesn't affect your work performance. Try to give an example of how you have been under severe pressure but have been able to deliver exceptional performance.

6. Why should we hire you?

This is the most generic question that will be asked by the interviewers. The answer for this should be in such a way that has to show your uniqueness in handling things, the knowledge you have that will help you in doing the work efficiently, Strengths that will help you in achieving the desired results, And what you can contribute for the betterment of the company, and the synergy you can create in the workplace. Present everything that will enable the interviewer to view you as a desirable candidate for which they are looking.

7. What are your expectations from the company?

While answering this question you guys have to be realistic. Don't tell about how you are expecting this much benefit from the company and how you can work well if they present you with something you want. The answer can be about how you will be expecting the company to provide help in the growth of your career both as an individual and also as an employee in the company.

8. Is there anything that makes you different from other candidates?

Again, for this question, you guys have to highlight the things which differ you from others like how you will handle your work, your strengths, your attitude on handling things, and explain how you can create a positive impact on others with your work ethic.

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9. What Do You Know About TCS As A Company?

Doing simple research about the company before going to the interview will help you guys in answering this question in the best way. Tell about the latest technology trends that are being followed in the company, the Latest achievements as a company, Awards earned, Companies Global Ranking, Benefits that are provided by the company for its employees, etc., This shows how you have a keen interest & willing to join the company.

10. Would you be willing to relocate if required?

Candidates have to be okay with the decision of relocation if the job demands. Don't say yes just to gain the job when you are not okay with it. And the same has to be conveyed to the employer at the time of the interview.

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