LIST OF COMMONLY ASKED TECHNICAL INTERVIEW QUESTIONS

Minimum number of queues needed to implement the priority queue?
Two. One queue is used for actual storing of data and another for storing priorities.

What is the difference between a constructor and a method?
The important difference between constructors and methods are:

Constructors create and initialize objects that don't exist yet, while methods perform operations on objects that already exist.

Constructors can't be called directly; they are called implicitly when the new keyword creates an object. Methods can be called directly on an object that has already been created with new keyword.

Constructors must be named with the same name as the class name. They can't return anything, even void (the object itself is the implicit return). Methods must be declared to return something, although it can be void.

List out the areas in which data structures are applied extensively?

- Compiler Design,
- Operating System,
- Database Management System,
- Statistical analysis package,
- Numerical Analysis,
- Graphics,
- Artificial Intelligence,
- Simulation

What is the full form of SDLC?
The full form of SDLC is Software Development Life Cycle. It is a well-known process that provides quality software products in a short time.

Name some popular operating systems.
Microsoft, OSX, Linux, and Windows are some popular operating systems.

What is the purpose of garbage collection in Java, and when is it used?
The purpose of garbage collection is to identify and discard objects that are no longer needed by a program so that their resources can be reclaimed and reused.

A Java object is subject to garbage collection when it becomes unreachable to the program in which it is used.

Describe synchronization in respect to multithreading.
With respect to multithreading, synchronization is the capability to control the access of multiple threads to shared resources.

Without synchonization, it is possible for one thread to modify a shared variable while another thread is in the process of using or updating same shared variable. This usually leads to significant errors.

What is an abstract class?
Abstract class must be extended/subclassed (to be useful). It serves as a template. A class that is abstract may not be instantiated (ie. you may not call its constructor), abstract class may contain static data.

Any class with an abstract method is automatically abstract itself, and must be declared as such. A class may be declared abstract even if it has no abstract methods. This prevents it from being instantiated.

What is the difference between an Interface and an Abstract class?
An abstract class can have instance methods that implement a default behavior. An Interface can only declare constants and instance methods, but cannot implement default behavior and all methods are implicitly abstract.

An interface has all public members and no implementation. An abstract class is a class which may have the usual flavors of class members (private, protected, etc.), but has some abstract methods.

Explain different way of using thread?
The thread could be implemented by using runnable interface or by inheriting from the Thread class. The former is more advantageous, 'cause when you are going for multiple inheritance, the only interface can help.

What is linear data structure?
A linear data-structure has sequentially arranged data items. The next time can be located in the next memory address. It is stored and accessed in a sequential manner. Array and list are example of linear data structure.

Give some examples greedy algorithms.
The below given problems find their solution using greedy algorithm approach −

- Travelling Salesman Problem
- Prim's Minimal Spanning Tree Algorithm
- Kruskal's Minimal Spanning Tree Algorithm
- Dijkstra's Minimal Spanning Tree Algorithm
- Graph - Map Coloring
- Graph - Vertex Cover
- Knapsack Problem
- Job Scheduling Problem

What is meant by a database?

A Database is an organized, consistent, and logical collection of data that can easily be updated, accessed, and managed. Database mostly contains sets of tables or objects (anything created using create command is a database object) which consist of records and fields. A tuple or a row represents a single entry in a table. An attribute or a column represents the basic units of data storage, which contain information about a particular aspect of the table. DBMS extracts data from a database in the form of queries given by the user.

Mention the issues with traditional file-based systems that make DBMS a better choice?

The absence of indexing in a traditional file-based system leaves us with the only option of scanning the full page and hence making the access of content tedious and super slow. The other issue is redundancy and inconsistency as files have many duplicate and redundant data and changing one of them makes all of them inconsistent. Accessing data is harder in traditional file-based systems because data is unorganized in them.

Another issue is the lack of concurrency control, which leads to one operation locking the entire page, as compared to DBMS where multiple operations can work on a single file simultaneously.

Integrity check, data isolation, atomicity, security, etc. are some other issues with traditional file-based systems for which DBMSs have provided some good solutions.

What is meant by ACID properties in DBMS?

ACID stands for Atomicity, Consistency, Isolation, and Durability in a DBMS these are those properties that ensure a safe and secure way of sharing data among multiple users.