IBM Technical & Coding

1. What is the advantage of inheritance in OOPS?

The most frequent use of inheritance is for deriving classes using existing classes, which provides reusability. The existing classes remain unaltered. By reusability, the development time of software is reduced. The derived classes extend the properties of base classes to generate more dominant objects.

2. What is an Array? What is the Importance of an Array?

An array is a data structure that contains a group of elements. Regularly, these elements are of the same data type such as integer or string. Arrays are commonly used in computer programs to organize data so that a related set of values can be easily sorted or searched.

Importance:

It is a better and convenient way of storing data of the same data type with the same size.

It allows users to store a number of elements in it.

3. Differentiate between variable/ function declaration and definition in the context of any OOPs programming language.

The purpose of a variable declaration is to tell the compiler of the following information: the variable's name, the kind of value it stores, and the initial value if any. Declaration, in other words, provides information about a variable's attributes. The definition of a variable allocates memory space for the variable and specifies where the variable will be stored.

4. Explain function overloading and function overriding in the context of C++ programming language

Function Overloading – It allows for multiple definitions of the function by modifying the signature, i.e. the number of parameters, the data type of the parameters, and the return type.

Function Overriding – It is the redefining of a base class function in a derived class with the same signature, that is, the return type and parameters. It's only possible in derived classes.

5. What is Variable Scope?

A scope is a region of the program and broadly speaking there are three places, where variables can be declared inside a function or a block which is called local variables. In the definition of function parameters which are called formal parameters. Outside of all functions which are called global variables.

6. Differentiate between struct and union in the context of C programming language.

Struct: In C, a structure is a user-defined data type that allows you to combine data objects of various types. A record is represented by a structure.

Example –

```
struct structureName
{
member definition;
member definition;
…
member definition;
};
```

Union: In C, a union is a unique data type that allows you to store many data types in the same memory region. A union can have numerous members, but only one of them can have value at any given time. Unions are a useful approach to reuse the same memory space for numerous purposes.

Example –

```
union unionName
{
member definition;
member definition;
…
member definition;
};
```

7. What is Procedural Programming?

Procedural programming is a programming paradigm that uses a linear or top-down approach. It relies on procedures or subroutines to perform computations. Procedural programming is also known as imperative programming.

8. What is an inner join? Explain with Business use?

Inner join is nothing but fetching common records from two or more tables. When 2 tables are connected such that it should retrieve only the matching records in both tables.Inner join

select only the matching records between 2 tables. You can use the Equal to(=) operator or Inner join keyword to apply the inner join. This join is the most widely used joins in real-life applications, reporting, webapps, android apps.

9. What is Correlated Subquery in DBMS?

A Subquery is also known as a nested query i.e. a query written inside some query. When a Subquery is executed for each of the rows of the outer query then it is termed as a Correlated Subquery.

10.An example of Non-Correlated Subquery

SELECT * from EMP WHERE 'JOHN' IN (SELECT Name from DEPT WHERE EMP.EMPID=DEPT.EMPID);

11.What is the query to find record no 17 from the database?

Select * from (Select Employee.*, rownum Rn from Employee) Where Rn=17;

12.How do you find a Block in a Cache?

Block's tag is recorded by each place in the cache along with its data. The place in the cache might be unoccupied, so it usually maintains a valid bit.

Thus, to find the block in cache:

Determine the place or set of places used in the index of block address.

Check if a valid bit is set for each place and compare the tag with that address block parallelly for all places in a set.

13.What is 'beaconing'?

Beaconing is the process that allows a network to self-repair network problems. This is among the important networking interview questions and you must prepare for the related terminologies as well.

14. What are the different factors that affect the reliability of a network?

Frequency of failure

Recovery time of a network after a failure

15.Difference between equals() and hashcode()?

Both methods are from the Object class. Equals() method is used to compare the contents of an object or reference. But, the hashcode() method is used to get the unique hash code for any object. Hashcode is used for Hash implementations like HashMap, HashTable, HashSet, etc.