

1) What is C++?

C++ is an object oriented programming language created by Bjarne Stroustrup. It is released in 1985.

2) What are the advantages of C++?

C++ doesn't only maintain all aspects from C language, it also simplifies memory management and add several features like:

- Includes a new datatype known as a class.
 - Allows object oriented programming.
-

3) What is the difference between C and C++?

No.	C	C++
1)	C follows the procedural style programming.	C++ is multi-paradigm. It supports both p oriented.
2)	Data is less secured in C.	In C++, you can use modifiers for class r inaccessible for outside users.
3)	C follows the top-down approach.	C++ follows the bottom-up approach.
4)	C does not support function overloading.	C++ supports function overloading.
5)	In C, you can't use functions in structure.	In C++, you can use functions in structure.
6)	C does not support reference variables.	C++ supports reference variables.
6)	In C, scanf() and printf() are mainly used for input/output.	C++ mainly uses stream cin and cout to perf operations.

4) What is the difference between reference and pointer?

No.	Reference	Pointer
-----	-----------	---------

1)	References are less powerful than pointers. Once a reference is created, it can't refer to other object later.	Pointers provide t than references.
2)	References are safer and easier to use than pointers.	Pointers are comp use.

5) What is a class?

Class is a user-defined data type. Class defines the type definition of category of things. It defines a datatype, but it does not define the data it just specifies the structure of data.

You can create N number of objects from a class.

6) What is an object?

Object is the instance of a class. A class provides a blueprint for objects. So you can create an object from a class. The objects of a class are declared with the same sort of declaration that we declare variables of basic types.

7) What are the C++ access specifiers?

The access specifiers are used to define how to functions and variables can be accessed outside the class.

There are three types of access specifiers:

- **Private:** Functions and variables declared as private can be accessed only within the same class and they cannot be accessed outside the class they are declared.
 - **Public:** Functions and variables declared under public can be accessed from anywhere.
 - **Protected:** Functions and variables declared as protected cannot be accessed outside the class except a child class. This specifier is generally used in inheritance.
-

8) What is Object Oriented Programming (OOP)?

OOP is a methodology or paradigm that provides many concepts. The basic concepts of Object Oriented Programming are given below:

Classes and Objects: Classes are used to specify the structure of the data. They define datatype. You can create any number of objects from a class. Objects are the instances of classes.

Encapsulation: Encapsulation is a mechanism which binds the data and associated operations together and thus hide the data from outside world. Encapsulation is also known as data hiding. In C++, It is achieved using the access specifiers i.e. public, private and protected .

Abstraction: Abstraction is used to hide the internal implementations and show only the necessary details to the outer world. Data abstraction is implemented using interfaces and abstract classes in C++.

Some people confused about Encapsulation and abstraction. But they both are different.

Inheritance: Inheritance is used to inherit the property of one class into another class. It facilitates you to define one class in term of another class.

9) What is the difference between array and a list?

- Array is a collection of homogeneous elements while list is a collection of heterogeneous elements.
- Array memory allocation is static and continuous while List memory allocation is dynamic and random.
- In Array, users don't need to keep in track of next memory allocation while In list user has to keep in track of next location where memory is allocated.

10) What is the difference between new() and malloc()?

- new() is a preprocessor while malloc() is a function.
- There is no need to allocate the memory while using "new" but in malloc() you have to use sizeof().

- "new" initializes the new memory to 0 while malloc() gives random value in the newly allotted memory location.
-

11) What are the methods of exporting a function from a DLL?

There are two ways:

- By using the DLL's type library.
 - Taking a reference to the function from the DLL instance.
-

12) Define friend function.

Friend function acts as friend of the class. It can access the private and protected members of the class. The friend function is not a member of the class but it must be listed in the class definition.

13) What is virtual function?

A virtual function is used to replace the implementation provided by the base class. The replacement is always called whenever the object in question is actually of the derived class, even if the object is accessed by a base pointer rather than a derived pointer.

14) When should we use multiple inheritance?

You can answer this question in three manners:

- Never
 - Rarely
 - If you find that the problem domain cannot be accurately modeled any other way.
-

15) What is the destructor?

Destructor is used to delete any extra resources allocated by the object.

16) What is an overflow error?

It is a type of arithmetical error. It happens when the result of an arithmetical operation is greater than the actual space provided by the system.

17) What is overloading?

C++ facilitates you to specify more than one definition for a function name or an operator in the same scope. It is called function overloading and operator overloading respectively.

18) What is function overriding?

If you inherit a class into a derived class and provide a definition for one of the base class's function again inside the derived class, then this function is called overridden function and this mechanism is known as function overriding.

19) What is virtual inheritance?

Virtual inheritance facilitates you to create only one copy of each object even if the object appears more than one in the hierarchy.

20) What is constructor?

Constructor is a special method that initializes object. Its name must be the same as the class name.

21) What is the purpose of "delete" operator?

The "delete" operator is used to release the dynamic memory created by "new" operator.

22) Explain this pointer?

This pointer holds the address of current object.

23) What does Scope Resolution operator?

A scope resolution operator(::) is used to define the member function outside the class.

24) What is the difference between delete and delete[]?

Delete [] is used to release the array of allocated memory which was allocated using new[] whereas delete is used to release one chunk of memory which was allocated using new.

25) Define the private, protected and public in C++?

Private: The data members and functions cannot be accessed from outside the class.

Protected: The data members and functions are accessible to derived class only.

Public: The data members and functions can be accessed from outside the class.

15) What is constructor?

- Constructor is just like a method that is used to initialize the state of an object. It is invoked at the time of object creation.
-

16) What is the purpose of default constructor?

- The default constructor provides the default values to the objects. The java compiler creates a default constructor only if there is no constructor in the class.
-

17) Does constructor return any value?

Ans:yes, that is current instance (You cannot use return type yet it returns a value).

18)Is constructor inherited?

No, constructor is not inherited.

19) Can you make a constructor final?

No, constructor can't be final.

Core Java - OOPs Concepts: static keyword Interview Questions

20) What is static variable?

- static variable is used to refer the common property of all objects (that is not unique for each object) e.g. company name of employees, college name of students etc.
 - static variable gets memory only once in class area at the time of class loading.
-

21) What is static method?

- A static method belongs to the class rather than object of a class.
 - A static method can be invoked without the need for creating an instance of a class.
 - static method can access static data member and can change the value of it.
-

22) Why main method is static?

because object is not required to call static method if It were non-static method, jvm , creates object first then call main() method that will lead to the problem of extra memory allocation.

23) What is static block?

- Is used to initialize the static data member.
 - It is executed before main method at the time of class loading.
-

24) Can we execute a program without main () method?

Ans) Yes, one of the way is static block.

25) What if the static modifier is removed from the signature of the main method?

Program compiles. But at runtime throws an error "NoSuchMethodError".

26) What is difference between static (class) method and instance method?

static or class method	instance method
1)A method i.e. declared as static is known as static method.	A method i.e. not declared as static is known as instance method.
2)Object is not required to call static method.	Object is required to call instance methods.

3)Non-static (instance) members cannot be accessed in static context (static method, static block and static nested class) directly.	static and non-static variables both can be accessed in instance methods
4)For example: <pre>public static int cube(int n){ return n*n*n;}</pre>	For example: <pre>public void msg(){...}</pre>

Core Java - OOPs Concepts: Inheritance Interview Questions

27) What is this in java?

It is a keyword that that refers to the current object.

28)What is Inheritance?

Inheritance is a mechanism in which one object acquires all the properties and behavior of another object of another class. It represents IS-A relationship. It is used for Code Reusability and Method Overriding.

29) Which class is the superclass for every class.

Object class.

30) Why multiple inheritance is not supported in java?

- To reduce the complexity and simplify the language, multiple inheritance is not supported in java in case of class.

31) What is composition?

Holding the reference of the other class within some other class is known as composition.

32) What is difference between aggregation and composition?

Aggregation represents weak relationship whereas composition represents strong relationship. For example: bike has an indicator (aggregation) but bike has an engine (composition).

33) Why Java does not support pointers?

Pointer is a variable that refers to the memory address. They are not used in java because they are unsafe(unsecured) and complex to understand.

34) What is super in java?

It is a keyword that refers to the immediate parent class object.

35) Can you use this () and super () both in a constructor?

No. Because super () or this () must be the first statement.

36)What is object cloning?

The object cloning is used to create the exact copy of an object.

37) What is method overloading?

If a class have multiple methods by same name but different parameters, it is known as Method Overloading. It increases the readability of the program.

38) Why method overloading is not possible by changing the return type in java?

Because of ambiguity.

39) Can we overload main () method?

Yes, You can have many main () methods in a class by overloading the main method.

Core Java - OOPs Concepts: Method Overriding Interview Questions

40) What is method overriding:

If a subclass provides a specific implementation of a method that is already provided by its parent class, it is known as Method Overriding. It is used for runtime polymorphism and to provide the specific implementation of the method.

41) Can we override static method?

No, you can't override the static method because they are the part of class not object.

42) Why we cannot override static method?

It is because the static method is the part of class and it is bound with class whereas instance method is bound with object and static gets memory in class area and instance gets memory in heap.

43) Can we override the overloaded method?

Yes.

44) Difference between method Overloading and Overriding.

Method Overloading	Method Overriding
1) Method overloading increases the readability of the program.	Method overriding provides the specific implementation already provided by its super class.
2) method overloading is occurs within the class.	Method overriding occurs in two classes that have IS-A
3) In this case, parameter must be different.	In this case, parameter must be same.

45) Can you have virtual functions in Java?

Yes, all functions in Java are virtual by default.

47) What is final variable?

If you make any variable as final, you cannot change the value of final variable (It will be constant)

48) What is final method?

Final methods can't be overridden.

49) What is final class?

Final class can't be inherited.

50) What is blank final variable?

A final variable, not initialized at the time of declaration, is known as blank final variable.

51) Can we initialize blank final variable?

Yes, only in constructor if it is non-static. If it is static blank final variable, it can be initialized only in the static block.

52) Can you declare the main method as final?

Yes, such as, `public static final void main(String[] args){}`.