C++ Interview Question and Answers

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| **1.** | **What is C++** |
|  | C++ is created by Bjarne Stroustrup of AT&T Bell Labs as an extension of C, C++ is an object-oriented computer language used in the development of enterprise and commercial applications. Microsoft’s Visual C++ became the premier language of choice among developers and programmers. |

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| **2.** | **What are the basic concepts of object oriented programming?** |
|  | It is necessary to understand some of the concepts used extensively in object oriented programming.These include   * Objects * Classes * Data abstraction and encapsulation * Inheritance * Polymorphism * Dynamic Binding * Message passing |

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| **3.** | **Define inheritance?** |
|  | The mechanism of deriving a new class (derived) from an old class (base class) is called inheritance. It allows the extension and reuse of existing code without having to rewrite the code from scratch. Inheritance is the process by which objects of one class acquire properties of objects of another class. |

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| **4.** | **Define polymorphism?** |
|  | Polymorphism means one name, multiple forms. It allows us to have more than one function with the same name in a program.It allows us to have overloading of operators so that an operation can exhibit different behaviours in different instances. |

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| **5.** | **What is encapsulation?** |
|  | The wrapping up of data and functions into a single unit (called class) is known as encapsulation. Encapsulation containing and hiding information about an object, such as internal data structures and code. |
| **6.** | **What is message passing?** |
|  | An object oriented program consists of a set of objects that communicate with each other. Message passing involves specifying the name of the object, the name of the function and the information to be sent. |

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| **7.** | **What are tokens in C++?** |
|  | The smallest individual units of a program is known as tokens. c++ has the following tokens :   * Keywords * Identifiers * Constants * Strings * Operators |

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| **8.** | **What is the use of enumerated data type?** |
|  | An enumerated data type is another user defined type which provides a way for attaching names to numbers thereby increasing comprehensibility of the code. The enum keyword automatically enumerates a list of words by assigning them values 0,1,2, and so on. |

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| **9.** | **What is the use of default constructor?** |
|  | A constructors that accepts no parameters is called the default constructor.If no user-defined constructor exists for a class A and one is needed, the compiler implicitly declares a default parameterless constructor A::A(). This constructor is an inline public member of its class. The compiler will implicitly define A::A() when the compiler uses this constructor to create an object of type A. The constructor will have no constructor initializer and a null body. |

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| **10.** | **Define Constructors?** |
|  | A constructor is a member function with the same name as its class. The constructor is invoked whenever an object of its associated class is created.It is called constructor because it constructs the values of data members of the class. |
| **11.** | **How variable declaration in c++ differs that in c?** |
|  | C requires all the variables to be declared at the beginning of a scope but in c++ we can declare variables anywhere in the scope. This makes the programmer easier to understand because the variables are declared in the context of their use. |

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| **12.** | **Define destuctors?** |
|  | A destructor is called for a class object when that object passes out of scope or is explicitly deleted.A destructors as the name implies is used to destroy the objects that have been created by a constructors.Like a constructor , the destructor is a member function whose name is the same as the class name but is precided by a tilde. |

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| **13.** | **What is a class?** |
|  | A class is a collection of objects. |

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| **14.** | **what is the difference between c &c++?** |
|  | c++ ia an object oriented programing but c is a procedure oriented programing.c is super set of c++. c can't suport inheritance,function overloading, method overloading etc. but c++ can do this.In c-programe the main function could not return a value but in the c++ the main function shuld return a value. |

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| **15.** | **What is copy constructor?** |
|  | Copy constructor is a constructor function with the same name as the class and used to make deep copy of objects. |
| **16.** | **What is default constructor?** |
|  | A default constructor is a constructor that either has no parameters, or if it has parameters, all the parameters have default values. |

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| **17.** | **What is a scope resolution operator?** |
|  | The scope resolution operator permits a program to reference an identifier in the global scope that has been hidden by another identifier with the same name in the local scope. |

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| **18.** | **What is the difference between Object and Instance?** |
|  | An instance of a user-defined type is called an object. We can instantiate many objects from one class. An object is an instance of a class. |

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| **19.** | **What is the difference between macro and iniine?** |
|  | Inline follows strict parameter type checking, macros do not. Macros are always expanded by preprocessor, whereas compiler may or may not replace the inline definitions. |

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| **20.** | **How variable declaration in c++ differs that in c?** |
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| **21.** | **What is multiple inheritance?** |
|  | A class can inherit properties from more than one class which is known as multiple inheritance. |

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| **22.** | **what is the use of virtual destructor in c++?** |
|  | A destructor is automatically called when the object is destroyed. A virtual destructor in C++ is used primarily to prevent resource leaks by performing a clean-up of the object. |

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| **23.** | **What do you mean by reference variable in c++?** |
|  | A reference variable provides an alias to a previously defined variable. Data -type & reference-name = variable name |

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| **24.** | **What do you mean by implicit conversion?** |
|  | * Whenever data types are mixed in an expression then c++ performs the conversion automatically. * Here smaller type is converted to wider type. * Example : in case of integer and float integer is converted into float type. |

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| **25.** | **What are virtual functions?** |
|  | * The virtual fuctions must be members of some class. * They cannot be static members. * They are accessed by using object pointers. * A virtual function can be a friend of another class. |
| **26.** | **What is the difference between class and structure?** |
|  | * By default, the members ot structures are public while that tor class is private. * structures doesn’t provide something like data hiding which is provided by the classes. * structures contains only data while class bind both data and member functions. |

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| **27.** | **What are storage qualifiers in C++ ?** |
|  | *Const*Keyword indicates that memory once initialized, should not be altered by a program. *Volatile* keyword indicates that the value in the memory location can be altered even though nothing in the program. *Mutable* keyword indicates that particular member of a structure or class can be altered even if a particular structure variable, class, or class member function is constant. |

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| **28.** | **What is virtual class and friend class?** |
|  | Friend classes are used when two or more classes and virtual base class aids in multiple inheritance. Virtual class is used for run time polymorphism when object is linked to procedure call at run time. |

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| **29.** | **what is an abstract base class?** |
|  | An abstract class is a class that is designed to be specifically used as a base class. An abstract class contains at least one pure virtual function. |

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| **30.** | **What is dynamic binding?** |
|  | Dynamic binding (also known as late binding) means that the code associated with a given procedure call is not known until the time of the call at run time.It is associated with polymorphism and inheritance. |
| **31.** | **what is difference between function overloading and operator overloading?** |
|  | A function is overloaded when same name is given to different function. While overloading a function, the return type of the functions need to be the same. |

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| **32.** | **What are the advantages of inheritance?** |
|  | * Code reusability * Saves time in program development. |

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| **33.** | **What is a dynamic constructor?** |
|  | The constructor can also be used to allocate memory while creating objects. Allocation of memory to objects at the time of their construction is known as dynamic construction of objects.The memory is allocated with the help of the new operator. |

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| **34.** | **What is the difference between an Array and a List?** |
|  | The main difference between an array and a list is how they internally store the data. whereas Array is collection of homogeneous elements. List is collection of heterogeneous elements. |

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| **35.** | **What is the use of ‘using’ declaration?** |
|  | A using declaration makes it possible to use a name from a namespace. |
| **36.** | **What is the difference between a template class and class template?** |
|  | **Template class**A generic definition or a parameterized class not instantiated until the client provides the needed information. It’s jargon for plain templates. **Class template***A class template specifies how individual classes can be constructed much like the way a class specifies how individual objects can be constructed. It’s jargon for plain classes.* |

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| **37.** | **What is friend function?** |
|  | The function declaration should be preceded by the keyword friend.The function definitions does not use either the keyword or the scope operator ::. The functions that are declared with the keyword friend as friend function.Thus, a friend function is an ordinary function or a member of another class. |

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| **38.** | **What is a scope resolution operator?** |
|  | A scope resolution operator (::), can be used to define the member functions of a class outside the class. |

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| **39.** | **What do you mean by pure virtual functions?** |
|  | A pure virtual member function is a member function that the base class forces derived classes to provide. Any class containing any pure virtual function cannot be used to create object of its own type. |

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| **40.** | **What is a conversion constructor?** |
|  | A converting constructor is a single-parameter constructor that is declared without the function specifier explicit. The compiler uses converting constructors to convert objects from the type of the first parameter to the type of the converting constructor’s class. |
| **41.** | **What is a container class? What are the types of container classes?** |
|  | A container class is a class that is used to hold objects in memory or external storage. A container class acts as a generic holder. A container class has a predefined behavior and a wellknown interface. A container class is a supporting class whose purpose is to hide the topology used for maintaining the list of objects in memory. When a container class contains a group of mixed objects, the container is called a heterogeneous container; when the container is holding a group of objects that are all the same, the container is called a homogeneous container. |

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| **42.** | **What is Associative container?** |
|  | Associative containers are designed to support direct access to elements using keys. They are not sequential. There are four types of associatives containers :   * Set * Multiset * Map * Multimap |

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| **43.** | **What is an iterator?** |
|  | Iterators are like pointers. They are used to access the elements of containers thus providing a link between algorithms and containers. Iterators are defined for specific containers and used as arguments to algorithms. |

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| **44.** | **What are the defining traits of an object-oriented language?** |
|  | The defining traits of an object-oriented langauge are :   * Encapsulation * Inheritance * Polymorphism |

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| **45.** | **Name some pure object oriented languages?** |
|  | * Smalltalk * Java * Eiffel * Sather |
| **46.** | **What is this pointer?** |
|  | It is a pointer that points to the current object. This can be used to access the members of the current object with the help of the arrow operator. |

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| **47.** | **What is encapsulation?** |
|  | Encapsulation (or information hiding) is the process of combining data and functions into a single unit called class. |

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| **48.** | **What is problem with Runtime type identification?** |
|  | The run time type identification comes at a cost of performance penalty. Compiler maintains the class. |

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| **49.** | **What are the differences between new and malloc?** |
|  | * New initializes the allocated memory by calling the constructor. Memory allocated with new should be released with delete. * Malloc allocates uninitialized memory. * The allocated memory has to be released with free.new automatically calls the constructor while malloc(dosen’t) |

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| **50.** | **What is conversion operator?** |
|  | You can define a member function of a class, called a conversion function, that converts from the type of its class to another specified type. |
| **51.** | **What is difference between template and macro?** |
|  | A template can be used to create a family of classes or function.A template describes a set of related classes or set of related functions in which a list of parameters in the declaration describe how the members of the set vary. Identifiers that represent statements or expressions are called macros. |

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| **52.** | **What is reference?** |
|  | Reference is a name that acts as an alias, or alternative name, for a previously defined variable or an object. |

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| **53.** | **What are the access specifier in c++?** |
|  | There are three types of access specifier in c++ . They are   * Public * protected * private |

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| **54.** | **What is difference between C++ and Java?** |
|  | * C++ has pointers Java does not. * Java is the platform independent as it works on any type of operating systems. * java has no pointers where c ++ has pointers. * Java has garbage collection C++ does not. |

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| **55.** | **What is namespace?** |
|  | The C++ language provides a single global namespace.Namespaces allow to group entities like classes, objects and functions under a name. |
| **56.** | **What is an explicit constructor?** |
|  | A conversion constructor declared with the explicit keyword. The compiler does not use an explicit constructor to implement an implied conversion of types. It’s purpose is reserved explicitly for construction.Explicit constructors are simply constructors that cannot take part in an implicit conversion. |

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| **57.** | **What is the use of storage class specifiers?** |
|  | A storage class specifier is used to refine the declaration of a variable, a function, and parameters. The following are storage class specifiers :   * auto * register * static * extern |

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| **58.** | **what is assignment operator in c++?** |
|  | Default assignment operator handles assigning one object to another of the same class. Member to member copy (shallow copy). |

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| **59.** | **Can destructor be private?** |
|  | Yes destructors can be private. But according it is not advisable to have destructors to be private. |

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| **60.** | **What is strstream?** |
|  | stringstream provides an interface to manipulate strings as if they were input/output streams. ‹ strstream› to define several classes that support iostreams operations on sequences stored in an allocated array of char object. |