CS2203 - Object Oriented Programming

Branch: B.E Computer Science and Engineering
Year: II Semester: III

Prepared By,

L. Maria Michael Visuwasam
Assistant Professor, CSE

UNIT-2

1. **Define Constructor.**
   A constructor is a special member function whose task is to initialize the objects of its class. The constructor name is same as class name. It is called constructor because it constructs the values of data members of the class.

2. **List some of the special characteristics of constructor**
   They should be declared in the public section.
   - They are invoked automatically when the objects are created
   - They do not have return types, not even void and they cannot return values.
   - They cannot be inherited ,
   - Constructors cannot be virtual.

3. **Give the various types of constructors.** There are four types
   - Default constructor – constructor that accepts no parameters
   - Parameterized constructor – It can take arguments
     One argument constructor – it can take one argument
     Two argument constructor – it can take two arguments
     Multiple argument Constructor – it can more than 2 arguments.
   - Copy constructor – It takes a reference to an object of the same class as itself as an argument.
   - Dynamic constructor - used to allocate memory while creating objects.

4. **What are the ways in which a constructor can be called?**
   The constructor can be called in two ways, they are.

 By calling the constructor explicitly

Eg: integer int1=integer(0,100);
 By calling the constructor implicitly

Eg: integer int1(0,100);

5. **State the dynamic initialization objects.**
   Class objects can be initialized dynamically. The initial values of an object may be provided during run time. The advantage of dynamic initialization is that we can provide various initialization formats, using overloaded constructors. It provides flexibility of using different data formats.

6. **Define Destructor.**
   A destructor is used to destroy the objects that have been created by a constructor. It is a special member function whose name is same as the class and proceeded by a tilde „~" symbol.

7. **What is an operator function. Describe the syntax of an operator function.**
   The general form is
   Return-type classname :: operator op(arug list)
   { Function body }
   Where return type -> type of value returned Operator -> keyword Op -> operator being overloaded.

8. List the rules for operator overloading.
 Only existing operators can be overloaded
 We cannot change the basic meaning of an operator
 The overloaded operator must have atleast one operand
 Overloaded operators follow the syntax rules of the original operators.

9. List some of operators that cannot overload in C++.
 we can overload all the c++ operators expect the following
 class member access operators(. , .*)
 scope resolution operator(::)
 size operator(sizeof)
 conditional operator(?:)

10. What are the conditions to be satisfied for casting?
 It must be a class member.
 It must not specify a return type.
 It must not have any arguments.

11. What are the types of type conversion?
 conversion from basic type to class type
 conversion from class type to basic type
 conversion from one class type to another

12. What is operator overloading?

The mechanism of giving such special meanings to an operator is known as operator overloading. or In c++ you can give special meanings to operators when they are used with user defined classes. This is called operator overloading.

13. Why is it necessary to overload an operator?

To define a new relation task to an operator, we must specify what it means in relation to the class to which the operator is applied. This is done with the help of a special function called operator function. Or It allows the developer to program using notation closer to the target domain and allow user types to look like types built into the language. Or The ability to tell the compiler how to perform a certain operation when its corresponding operator is used on one or more variables.

14. What is a conversion function? How it is created? Explain its syntax

The type of data to the right of an assignment operator is automatically converted to the type of the variable on the left. For e.g., the statements int m; float x=3.14; m=x; Convert x to an integer before its value is assigned t0 m. thus the fractional part is truncated.

15. When is a friend function compulsory? Give an eg.

A friend function is necessary when you define a function outside the class. And to access the private members of the class or the member function and also friend class can directly access the private and protected data.

16. What is meant by copy constructor?

A copy constructor takes a reference to an object of the same class as itself as an argument.

17. What is the need of object initialization?

 When the object I s declared, it may need to initialize the individual data members to some specific default values.
 Objects may need to be set to special values.
 Dynamic memory allocation may be required when an object is defined.

18. What are the two main functions of constructors?

The two main functions are
1. It automatically initializes the object
2. It usually provides initial values for the data members of the object.

19. What are the rules for defining constructor?

 A constructor must have the same name as the class itself.
 A consequence of the above is that there cannot be more than one constructor with different names and same arguments.
 A constructor cannot specify a return type. Even writing void is not allowed.
 A constructor should not have a return statement in the body of the constructor itself.

20. What are the operators which cannot be overloaded as a friend?

1. Assignment operator =

2. Function call operator ()
3. Array Subscript operator []
4. Access to class member using pointer to object operator ->

21. What are the restrictions of operator overloading

 Operators do not lose their original meaning
 Expect (), no other operator can have a default argument.
 Some of the operators cannot be simply overloaded.
 New operators cannot be devised. Available operators with given restrictions can only be overloaded.
 Operator can only be overloaded for user-defined types. All overloaded must have at least one argument as user defined type.

22. Difference between overloading of unary and binary operator

All operators having a single argument are unary operators. When we overload these operators as member functions, we do not need to pass any argument explicitly. The pointer pointing to invoke object is passed as an implicit argument. Operators with two operand are known as binary operators. They will have a single argument when defined as member.

23. What are function objects.

Objects of the classes where () operator is overloaded. In the case objects can be written with a () and can be treated like functions. Such objects which can be called like a function are known as function objects.

24. What are the different types of conversion? Compare them

A constructor converts from a foreign object to a native object while an operator converts a native object to a foreign object.

25. What is wrapper class. A Class which makes a C-like struct or abuilt-in type data represented as a class. For e.g. an integer wrapper class represents a data type int as a class.

26. Difference between constructor and destructor.

Constructor	Destructor
It is used to construct the object.	It is used to destroy the object.
It can be called automatically when an object comes into existence.	It is called when an object goes out of scope.
The constructor function is called every time an object is created.	The destructor function is called every time the program exits a block.

It is the function invoked first before calling any function.	It is function called at last.
It takes any number of arguments.	It takes no argument.
It can be overloaded.	It cannot be overloaded.
Constructor name and class name should be the same. Eg: student()	Destructor name and class name should be the same but it is prefixed by ~ Eg: ~student()
It cannot be declared as virtual function.	It can be a virtual function.
It behaves like a new operator	It behaves like a delete operator.

27. Comparison between conversion constructor and conversion operator function.

Conversion constructor:

- It is used to convert from some other object to native object. In other words, it converts foreign object to native object.
- If conversion is needed from firs class to second class then constructor is required.

Conversion operator function:

- It is used to convert from native object to other object. In other words, it converts from native object to foreign object.
- It conversion is needed from second class to first class then conversion operator function is required.