**DAILY ASSESSMENT FORMAT**

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| **Date:** | **24th June 2020** | **Name:** | **Divyashree lv** |
| **Course:** | **C++ programming** | **USN:** | **4AL17EC030** |
| **Topic:** | **Destructor ,this pointer,**  **friend function** | **Semester & Section:** | **6th sem ‘A’ sec** |
| **Github Repository:** | **Divya lv** |  |  |

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| **FORENOON SESSION DETAILS** |
| **Image of session**   OOPs Concepts The major purpose of C++ programming is to introduce the concept of object orientation to the C programming language.Object Oriented Programming is a paradigm that provides many concepts such as **inheritance, data binding, polymorphism etc.**The programming paradigm where everything is represented as an object is known as truly object-oriented programming language. **Smalltalk** is considered as the first truly object-oriented programming language. OOPs (Object Oriented Programming System) **Object** means a real word entity such as pen, chair, table etc. **Object-Oriented Programming** is a methodology or paradigm to design a program using classes and objects. It simplifies the software development and maintenance by providing some concepts:   * Object * Class * Inheritance * Polymorphism * Abstraction * Encapsulation  Object In C++, Object is a real world entity, for example, chair, car, pen, mobile, laptop etc.In other words, object is an entity that has state and behavior. Here, state means data and behavior means functionality.Object is a runtime entity, it is created at runtime.Object is an instance of a class. All the members of the class can be accessed through object.  Let's see an example to create object of student class using s1 as the reference variable.   1. Student s1;  //creating an object of Student  Class: In C++, object is a group of similar objects. It is a template from which objects are created. It can have fields, methods, constructors etc.  Let's see an example of C++ class that has three fields only.   1. class Student 2. { 3. public: 4. int id;  //field or data member 5. float salary; //field or data member 6. String name;//field or data member 7. }  Object and Class Example Let's see an example of class that has two fields: id and name. It creates instance of the class, initializes the object and prints the object value.   1. #include <iostream> 2. using namespace std; 3. class Student { 4. public: 5. int id;//data member (also instance variable) 6. string name;//data member(also instance variable) 7. }; 8. int main() { 9. Student s1; //creating an object of Student 10. s1.id = 201; 11. s1.name = "Sonoo Jaiswal"; 12. cout<<s1.id<<endl; 13. cout<<s1.name<<endl; 14. return 0; 15. }  Constructor: In C++, constructor is a special method which is invoked automatically at the time of object creation. It is used to initialize the data members of new object generally. The constructor in C++ has the same name as class or structure.  There can be two types of constructors in C++.   * Default constructor * Parameterized constructor  Default Constructor: A constructor which has no argument is known as default constructor. It is invoked at the time of creating object.   1. Let's see the simple example of C++ default Constructor. 2. #include <iostream> 3. using namespace std; 4. class Employee 5. { 6. public: 7. Employee() 8. { 9. cout<<"Default Constructor Invoked"<<endl; 10. } 11. }; 12. int main(void) 13. { 14. Employee e1; //creating an object of Employee 15. Employee e2; 16. return 0; 17. }  Parameterized Constructor: A constructor which has parameters is called parameterized constructor. It is used to provide different values to distinct objects.  Let's see the simple example of C++ Parameterized Constructor.  #include <iostream>  using namespace std;  class Employee {  public:  int id;//data member (also instance variable)  string name;//data member(also instance variable)  float salary;  Employee(int i, string n, float s)  {  id = i;  name = n;  salary = s;  }  void display()  {  cout<<id<<" "<<name<<" "<<salary<<endl;  }  };  int main(void) {  Employee e1 =Employee(101, "Sonoo", 890000); //creating an object of Employee  Employee e2=Employee(102, "Nakul", 59000);  e1.display();  e2.display();  return 0;  } |
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| **AFTERNOON SESSION DETAILS** |
| **Image of session**   Destructor: A destructor works opposite to constructor; it destructs the objects of classes. It can be defined only once in a class. Like constructors, it is invoked automatically.  A destructor is defined like constructor. It must have same name as class. But it is prefixed with a tilde sign (~).   1. #include <iostream> 2. using namespace std; 3. class Employee 4. { 5. public: 6. Employee() 7. { 8. cout<<"Constructor Invoked"<<endl; 9. } 10. ~Employee() 11. { 12. cout<<"Destructor Invoked"<<endl; 13. } 14. }; 15. int main(void) 16. { 17. Employee e1; //creating an object of Employee 18. Employee e2; //creating an object of Employee 19. return 0; 20. }  this Pointer: In C++ programming, **this** is a keyword that refers to the current instance of the class. There can be 3 main usage of this keyword in C++.   * It can be used **to pass current object as a parameter to another method.** * It can be used **to refer current class instance variable.** * It can be used **to declare indexers.**  1. #include <iostream> 2. using namespace std; 3. class Employee { 4. public: 5. int id; //data member (also instance variable) 6. string name; //data member(also instance variable) 7. float salary; 8. Employee**(**int id, string name, float salary) 9. { 10. this->id = id; 11. this->name = name; 12. this->salary = salary; 13. } 14. void display() 15. { 16. cout<<id<<"  "<<name<<"  "<<salary<<endl; 17. } 18. }; 19. int main(void) { 20. Employee e1 =Employee(101, "Sonoo", 890000); //creating an object of Employee 21. Employee e2=Employee(102, "Nakul", 59000); //creating an object of Employee 22. e1.display(); 23. e2.display(); 24. return 0; 25. }  Friend function: If a function is defined as a friend function in C++, then the protected and private data of a class can be accessed using the function.  By using the keyword friend compiler knows the given function is a friend function.  For accessing the data, the declaration of a friend function should be done inside the body of a class starting with the keyword friend  **Characteristics of a Friend function:**   * The function is not in the scope of the class to which it has been declared as a friend. * It cannot be called using the object as it is not in the scope of that class. * It can be invoked like a normal function without using the object. * It cannot access the member names directly and has to use an object name and dot membership operator with the member name. * It can be declared either in the private or the public part.  1. #include <iostream> 2. using namespace std; 3. class Box 4. { 5. private: 6. int length; 7. public: 8. Box(): length(0) { } 9. friend int printLength(Box); //friend function 10. }; 11. int printLength(Box b) 12. { 13. b.length += 10; 14. return b.length; 15. } 16. int main() 17. { 18. Box b; 19. cout<<"Length of box: "<< printLength(b)<<endl; 20. return 0; 21. } |
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