Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III
2021-22

Lab Number:	**9**
Student Name:	**Sanskar Kumar**
Roll No :	**35**

Title:

1. Write a java program to create an abstract class named Shape that contains two integers and an abstract method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea() that prints the area of the given shape.

Learning Objective:

Students will be able to implement abstract class and abstract method programs.

Learning Outcome:

- Understanding the abstraction concept and hiding of the unnecessary code.

Course Outcome:

ECL304.4	1. Implement different programming applications using packaging.

Theory:

- Explain in details about necessity of data hiding in any application / project.

A Data hiding is an extreme version of encapsulation where you not only don't want the user to access the data members, but you also don't even want them to be able to see what they are.

Data hiding ensures exclusive data access to class members and protects object integrity by preventing unintended or intended changes.

Data hiding also reduces system complexity for increased robustness by limiting interdependencies between software components.

Data hiding focuses on securing the data while hiding the complexity. Data hiding is data protecting process.Data hiding uses private access modifier.

Explain abstract class and abstract methods.

ABSTRACT CLASS

The class is created for the purpose of providing common fields and members to all subclasses then this type of class is called an abstract class.
While we are declaring a class if we used abstract keyword that is abstract class.
Abstract class is a collection of abstract members and non abstract members.
We cannot use private access modifier for abstract class.

SYNTAX

```
abstract class <class name>
        {
         //abstract Members;
                    or
         //Non abstract members;
         }
```

ABSTRACT METHOD

Abstract members can contain only declaration part in abstract class that means it will contain only skeleton of the member.
The definition of abstract member or implementation of abstract member should be in derived class.
We should implement abstract members in derived class using override keyword.
We have to access members using derived class object only.
We cannot use private access modifier for abstract members.

SYNTAX

abstract <return type> <method name>();

EXAMPLE : abstract void display();

Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III
2021-22

Algorithm :	Step 1 - Start Step 2 - Create abstract class Shape. Step 3 - int length , breadth ,Create object. Step 4 - Create class Rectangle inherit shape Step 5 - Enter value of length ,breadth Calculate area of rec = l*b,Print. Step 6 - Create class triangle inherit shape Step 7 - int base, height .Enter the value of base, height. Step 8 - Calculate area of tri = 1/2*base*height ,Print. Step 9 - Create class Circle inherit shape. Step 10 - int radius,Enter the value of radius. Step 11 - Calculate area of cir = 3.14*r*r, Print. Step 12 - Create object of Rec ,Tri ,Cir. Step 13 - Stop
Program:	https://github.com/SanskarKumar777/Skill-Lab-with-OOPM/commit/678a7aa92f21b072cdb2a88789b46a4e83daa84e
Input given:	Length = 2 Breadth = 4 Base = 4 Height = 5 Radius = 5

Faculty: Ms. Deepali Kayande

Height =	<terminated> AbstractClass [Java Application] C:\Users\sansk\.p2\pool\plugins\org.eclips Area of Rectangle... : Enter length and breadth: 2 4 The area of Rectangle is: 8 Area of Triangle Enter Base And Height: 4 5 The area of Triangle is: 10 ** Finding the Area of Cricle ** Enter radius: 5 The area of Cricle is: 78.5