Ex. No. 5	Inheritance
Date of Exercise	09-02-2018

Aim:

Create an abstract class called Shape in pkg1, Square and Rectangle classes in pkg2, Triangle and Circle classes in pkg3. Classes in pkg2 and pkg3 inherit Shape class. Import the necessary packages in a Test class which contains a menu driven program to calculate the area of various shapes.

Algorithm:

1) Start.
2) Create an abstract class called Shape in pkg1.
3) Create classes Square and Rectangle in pkg2.
4) Create Triangle and Circle classes in pkg3.
5) Import the necessary packages in a Test class which contains a menu driven program to calculate the area of various shapes.
6) In main function, use switch cases and accordingly calculate the area.
7) End.

Source Code:

```
package exp5;

import java.util.Scanner;

import pkg1.*;

import pkg2.*;

import pkg3.*;

/**

 *

 * @author JUSTIN PAUL

 */

public class Exp5 {
```

```
    public static void main(String[] args) {
        Scanner s=new Scanner(System.in);
        while(true){
        System.out.println("\nChoice to do.....,");
        System.out.println("1.Area of Square\n2.Area of Rectangle\n3.Area of Traingle\n4.Area of
Circle\n5.Exit");
        System.out.print("\nEnter your choice: ");
        int p=s.nextInt();
           switch(p){
              case 1:
                 //Area of Square
                 System.out.print("\nEnter the side of the square: ");
                 int side=s.nextInt();
                 Square t1=new Square();
                 t1.setSide(side);
                 t1.cal_area();
                 break;
              case 2:
                 //Area of Rectangle
                 System.out.print("\nEnter the length of the rectangle: ");
                 int len=s.nextInt();
                 System.out.print("Enter the breadth of Rectangle: ");
                 int bre=s.nextInt();
                 Rectangle t2=new Rectangle();
                 t2.setBreadth(len);
                 t2.setLength(bre);
                 t2.cal_area();
```

```
            break;
        case 3:
            //Area of Rectangle
            System.out.print("\nEnter the height of the traingle: ");
            int ht=s.nextInt();
            System.out.print("Enter the base of the triangle: ");
            int ba=s.nextInt();
            Triangle a=new Triangle();
            a.setBase(ba);
            a.setHeight(ht);
            a.cal_area();
            break;
        case 4:
            //Area of Circle
            System.out.print("\nEnter the radius of the circle: ");
            int rd=s.nextInt();
            Circle c1=new Circle();
            c1.setRadius(rd);
            c1.cal_area();
            break;
        case 5:
            System.exit(0);
        default:
            System.out.println("\nWrong choice!!!!Try again.....");
            break;
}}}}
```

```
package pkg1;
public abstract class Shape {
    abstract public void cal_area();
}
package pkg2;
import pkg1.*;
public class Square extends Shape{
     private int side;
    @Override
    public void cal_area(){
            System.out.println("Area of Square is: "+(side*side));
    }
    public int getSide() {
        return side;
    }

    public void setSide(int side) {
        this.side = side;}}
 package pkg2;
import pkg1.*;
/**
 *
 * @author JUSTIN PAUL
 */
public class Rectangle extends Shape{
    private int length ;
```

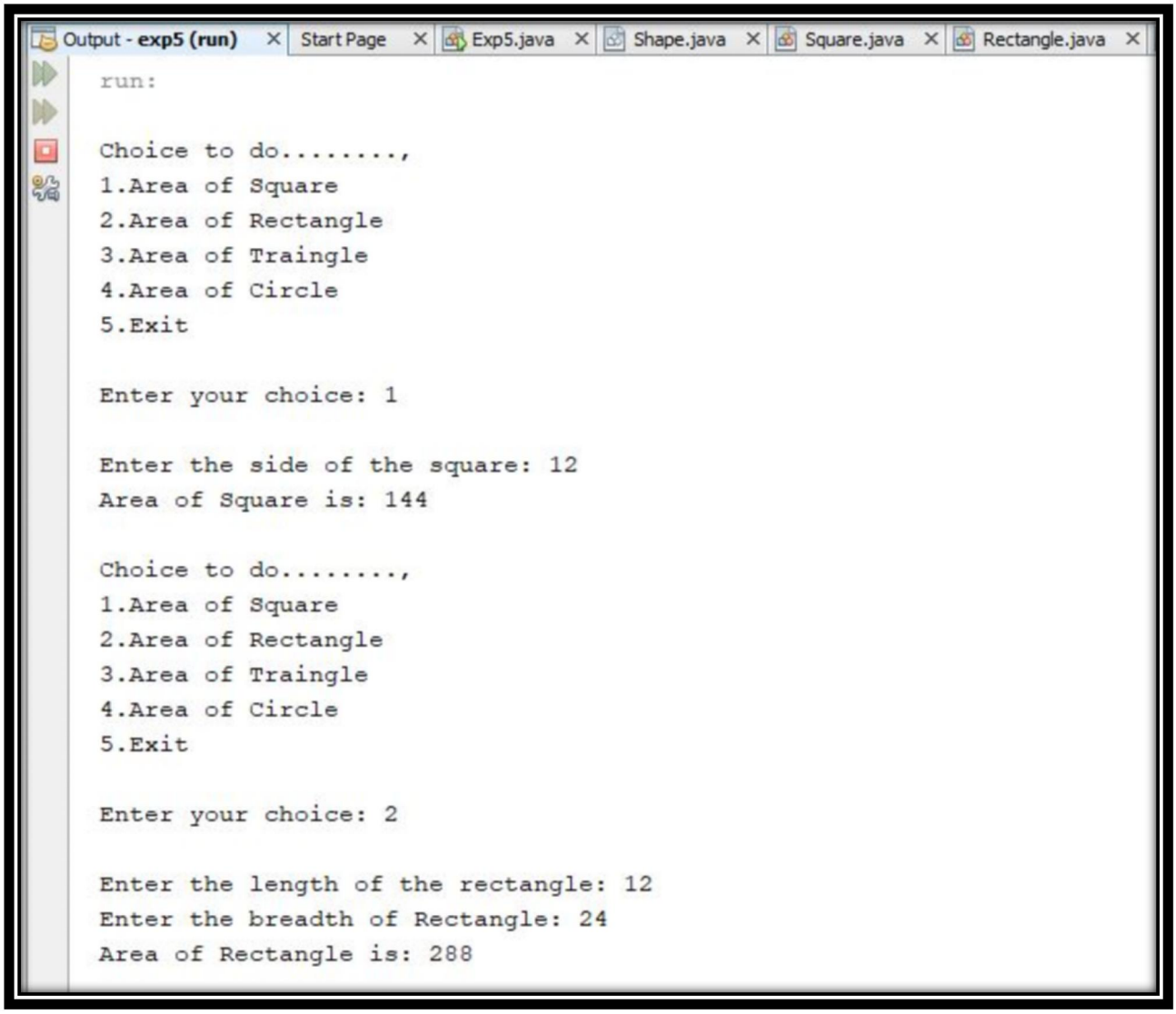
```
    private int breadth;
    public int getLength() {
        return length;
    }
    public void setLength(int length) {
        this.length = length;
    }
    public int getBreadth() {
        return breadth;
    }
    public void setBreadth(int breadth) {
        this.breadth = breadth;
    }
    @Override
    public void cal_area()
    {
        System.out.println("Area of Rectangle is: "+(length * breadth));
    }}
package pkg3;
import pkg1.*;
public class Triangle extends Shape{
    private int base;
    private int height;
    @Override
    public void cal_area()
    {
```

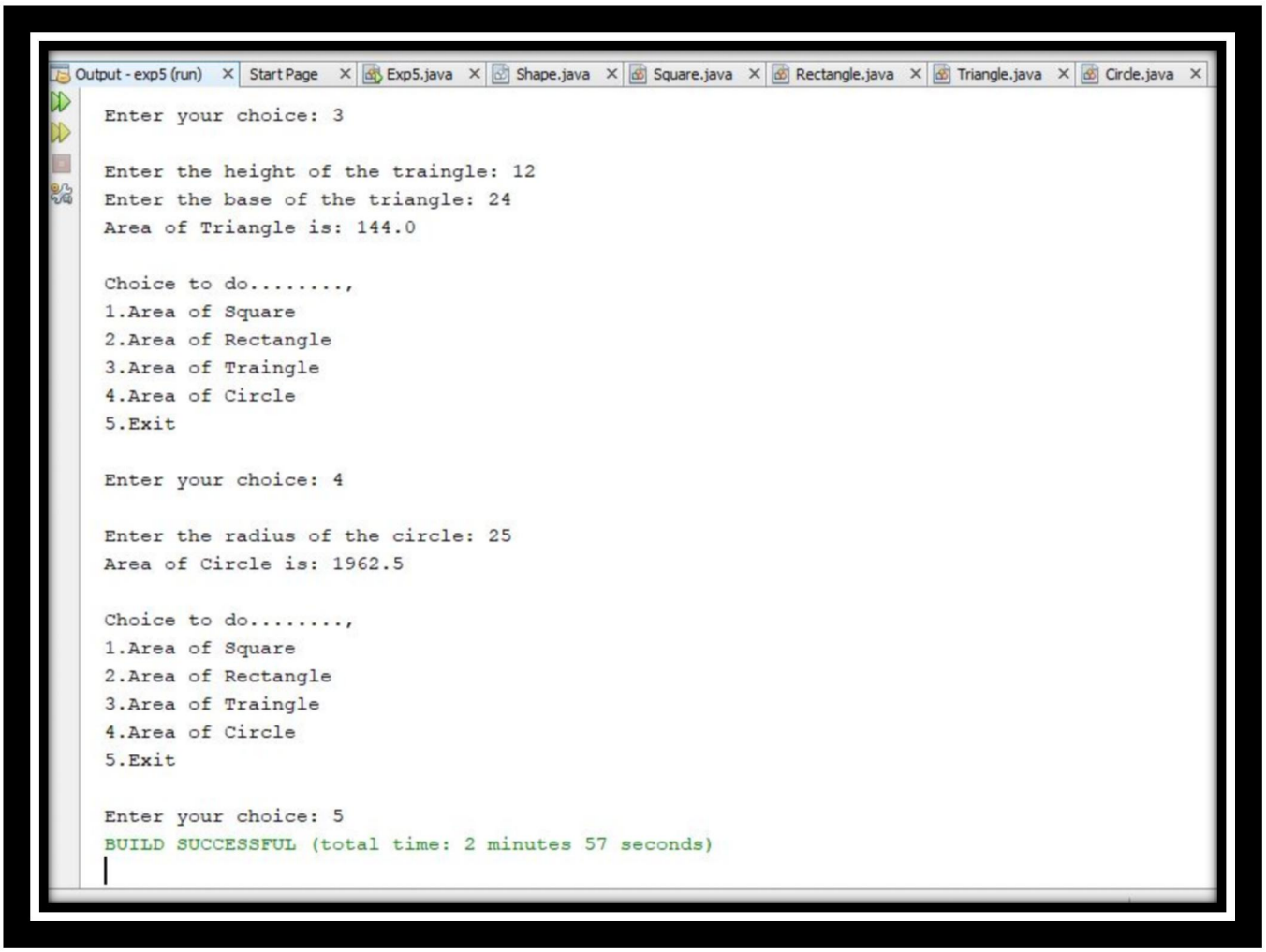
```
        System.out.println("Area of Triangle is: "+(base * height*0.5));
    }
    public int getBase() {
        return base;
    }
    public void setBase(int base) {
        this.base = base;
    }
    public int getHeight(int height) {
        return height;
    }
    public void setHeight(int height) {
        this.height = height;
    }}
package pkg3;
import pkg1.*;
public class Circle extends Shape{
    private int radius;

    public int getRadius() {
        return radius;
    }
    public void setRadius(int radius) {
        this.radius = radius;
    }
    @Override
```

```
    public void cal_area()
    {
        System.out.println("Area of Circle is: "+(3.14 * radius*radius));
    }
}
```

Input & Output:


Output - exp5 (run)
Start Page
Exp5.java
Shape.java
Square.java
Rectangle.java
run:
Choice to do.....,
1.Area of Square
2.Area of Rectangle
3.Area of Traingle
4.Area of Circle
5.Exit
Enter your choice: 1
Enter the side of the square: 12
Area of Square is: 144
Choice to do.....,
1.Area of Square
2.Area of Rectangle
3.Area of Traingle
4.Area of Circle
5.Exit
Enter your choice: 2
Enter the length of the rectangle: 12
Enter the breadth of Rectangle: 24
Area of Rectangle is: 288



Video URL:

https://www.youtube.com/watch?v=JFUbNDcLQjQ

Result:

The program to a create a menu driven java application to use packages in java class is implemented successfully, and the output is verified.