LAB GUIDE – SEMESTER 2
COURSE: Java Programming I
LAB: 04

Java Programming I
Lab 4

Objectives:

In this session, you will be practicing with:

- Implement inheritance in java
- Overriding
- super keyword
- final keyword
- Upcasting and Downcasting

Part 1 – Getting started (60 minutes)

Exercise 3 Using super key word to access constructor super class (15 minutes).

The following code shows how to to access constructor super class

Scan and retype the code. Discuss with your class mate or instructor.

```
public class Car
{
    public String color;
    public Car(){
        System.out.println("Car is buiding");
    }
}
```

```
public class SportCar extends Car
{
    public SportCar(){
        super();
        System.out.println("SportCar is buiding");
    }
}
```

```
public class Main
```

```
{
    public static void main(){
                new SportCar();
    }
}
```

Exercise 3 Applying down casting (10 minutes).

The following code shows how to to access constructor super class

Scan and retype the code. Discuss with your class mate or instructor.

```
public class Car
{
    public void accelerate(){

        System.out.println("Car is accelerating!");

    }
}
```

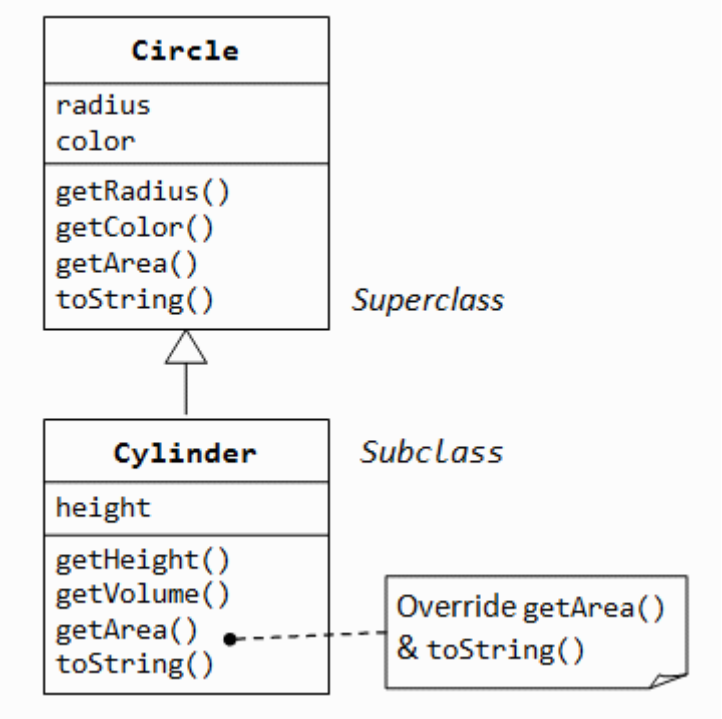
```
public class LuxuryCar extends Car
{
    public void service(){

        System.out.println("LuxuryCar is in service!");

    }
}
```

```
public class Main
{
    public static void main(){
                Car c = new LuxuryCar();
        //We can not use c.service()
        //But we can use downcasing to use
        ((LuxuryCar) c).service();
    }
}
```

Part 3 – Lab Assignment (60 minutes)

Do the following assignments. Discuss with your class-mates and your instructor if needed.

Exercise 1: Write a program with has design as shown bellow:



A class called `Circle` is to be defined with two variables: `radius` of type `double` and `color` of type `String`; and four methods: `getRadius()`, `getColor()`, and `getArea()`. The class `Cylinder` inherits all the member variables (`radius` and `color`) and methods (`getRadius()`, `getArea()`, among others) from its superclass `Circle`. It further defines a variable called `height`, four public methods – `getHeight()` and `getVolume()` and its own constructors. Write another class called `TestCylinder` with `main()` method for testing the `Cylinder` class.