13016209 Object-Oriented Concepts and Programming

Lab 8

Start your program with your information using the following format:

```
/*
ID:
Name:
Lab No:
Question No:
Date:
*/
```

1. Modify program in Lab 7 by adding the copy constructors and overload the assignment operator.
2. From the following Rectangle class:

```
class Rectangle {
  private:
    double width, length;
  public:
  void setWidth(int aWidth) {
    width = aWidth;
  }
  void setLength(int aLength) {
    length = aLength;
  }
  double getWidth() const {
    return width;
  }
  double getLength() const {
    return length;
  }
```

```
  double getArea() const {
        return  width * length;
  }
};
```

2.1 Add the default constructor to set the width and the length to be zero.

2.2 Add the 2-parameter constructor to set the width and the length based on the value specified by the parameters.

2.3

2.4 Create the class Box that inherits from the class Rectangle, the class Box must have;

2.4.1 One additional variable height

2.4.2 Setter and Getter methods for height.

2.4.3 2 constructors those are the default constructor that set width, length, and height to 0, and the 3-parameter constructor to set the width, length and height based on the value specified by the parameters.

2.4.4 Override the getArea() function of the Rectangle, the area of the box can be calculated using this formula: 2 * (length * width + length * height + width * height);

2.4.5 The function that returns volume of the box. The formula is width * length * height.

2.5 Create class PrintRectangleShape that has 3 static functions, printAreaInfo() for Rectangle, printAreaInfo() for Box, and printVolumeInfo() for Box.

2.6 Write the main program that works as shown by the following example output.

1.Rectangle

2.Box

0.Exit

Your choice: 1

Enter width of the rectangle: 4

Enter length of the rectangle: 5

area of the retangle with width = 4 and length = 5 is 20

1.Rectangle

2.Box

0.Exit

Your choice: 2

Enter width of the box: 5

Enter length of the box: 4

Enter height of the box: 6

area of the box with width = 5 and length = 4 and height = 6 is 110

volume of the box with width = 5 and length = 4 and height = 6 is 120

1.Rectangle

2.Box

0.Exit

Your choice: 0

Good bye