Lab 3

Problem 1. In your Lab 3 folder there is a package lesson3.labs.prob1 containing two classes, Person and PersonWithJob. In each class, the equals method has been overridden. Run the main method in the PersonWithJob class. In the main method, two instances of Person have been compared to determine if they are equal. The comparison is done in two different ways. One way leads to a "false", the other to a "true." Explain why this has happened. Then provide a solution by replacing inheritance with composition.

Problem 2. Design a solution to the problem given in the next slide, and then implement in code. Hard code a few buildings, apartments and their rental fees in the main method of a separate Main class, to test your code. In your main method, calculate the income for your hardcoded values

Problem 2: Problem Statement

A landlord owns multiple buildings, each building has multiple apartments. Each apartment has a rent associated with it. Each building generates profit which is the sum of all the apartment rents minus the building maintenance costs. Write a program that will calculate the landlord's monthly total profits.

Problem 3. UML classes Circle and Cylinder are given below, pictured in an inheritance relationship.

A. Write the code for Circle and Cylinder in Java, making use of the inheritance relationship.

B. Redo the design using composition, and write the resulting code in Java.

Circle
-radius:double = 1.0 -color:String = "red"
+Circle() +Circle(radius:double) +getRadius():double +getArea():double +toString():String

△ *superclass*

subclass

Cylinder
-height:double = 1.0
+Cylinder() +Cylinder(radius:double) +Cylinder(radius:double,height:double) +getHeight():double +getVolume():double