Lab 06 – Inheritance and Packages

1. Write a program with a parent class **Shape** and a subclass **Triangle**. Shape contains width and height of a 2d object and Triangle contains the area() method

2. Illustrate the 3 ways to access a package from another package:

    a. import package.*;

    b. import package.classname;

    c. fully qualified name

    // javac -d <directory> <filename.java> // to compile the package

    // java filename // to run the file

3. Create a class **Person** with private instance variables for the person's name and birth date. Add appropriate accessor methods and constructors for these variables. Create a subclass **CollegeGrad** with private instance variables for the student's GPA and year of graduation and appropriate accessors and constructors for these variables.

4. Define a class **Max** with the following methods:

    a. max(int a, int b, int c) – largest amongst three integers

    b. max(float a, float b, float c) – largest amongst three floating numbers

    c. max(int[] a) – largest element in an array

    d. max(int[][] matrix) – largest element in a matrix

    Place this in a package **p1**. Let this package be in the **myPackages** folder that you can create in your current working directory. Write a main() method to import the package/methods and use them.

5. Create an abstract class **Figure** with abstract method area and two integer dimensions. Extend this class to inherit three more classes **Rectangle, Triangle** and **Square** which implement the area method. Show how the area can be computer dynamically during run time for Rectangle, Square and Triangle to achieve dynamic polymorphism. Show **dynamic method dispatching** too.

6. Create a **Building** class and two subclasses, **House** and **School**. Follow the instructions below:

    a. The Building class contains fields for square footage and stories.

    b. The House class contains additional fields for number of bedrooms and baths.

    c. The School class contains additional fields for number of classrooms and grade level.

    d. All classes contains getter and setter methods.

    e. Place all the three classes in a package called **com.course.buildings**