CPAN 222 Assignment 1

## Goals

To learn how to recognize and utilize class hierarchies and polymorphism.

## Description

A school needs to calculate the marks for a group of students. The program will read the marks for each student and then print out the final mark for the student as a percent. The program only needs to calculate the final marks for one student at a time. The program can be re-run to enter and calculate the marks for the next student. The student will do a variable number of labs, assignments and quizzes during the semester. Each of these are graded as:

* Labs and assignments which are given a letter grade (A, B, C, D, F),
* Quizzes which are given a grade as a percent.

Every mark has:

* A name identifying the lab, assignment, or quiz,
* the percent of the final grade (weight) that this mark represents.

The percent of final grade is the weight of that mark in the calculation of the final grade. For example, you might have 2 quizzes worth 15% each, 5 assignments worth 10% each and 5 labs worth 6% each. The total percentage must add up to 100%. To calculate the final grade for a student, you take the percent achieved on each item, multiply by its weight, and add them up. This gives the correct final mark for the student.

The school has decided that letter grades can be converted to percents as:

A=90, B= 80, C=70, D=60, F=40

You need to create a superclass for all marks and subclasses for marks that are letter grades and another subclass for marks that are percents. Each class should have a readMark(Scanner s) method that asks the user to enter the mark for the item and then uses a scanner to read the value entered, converts it to a percent and stores it. Each mark will have a method called getWeightedMark() which returns the mark multiplied by its weight so it can be used in the calculation of the final mark for the student. (NOTE: you can use 1 scanner and reuse it by passing it as a parameter to the readMark() method)

Write a main program which creates a series 2 labs(total 40%), 1 assignment (40%) and 1 quizz(20%). The program should then prompt the user for each mark and print the final grade for the student after all marks have been entered.

Running the program for the data above would look like:

Enter the mark for Lab 1:

C

Enter the mark for Lab 2:

B

Enter the mark for Assignment 1:

A

Enter the mark for Quiz 1:

80

Final Grade = 82%

The calculation of the final grade was performed as follows:

(0.7 \* 20) + (0.8 \* 20) + ( 0.9 \* 40) + (0.8 \* 20) = 82

## Deliverables

Submit a zip file of all of the NetBeans directory of your project.