**Lab Five - Extend Weighted Grades**

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**UML Diagram:**

Diagram

Description automatically generated

**Description**:

There are totally three classes, all the methods are in ExtendedWeightedGrades class, Main class calls its method, and Scanner is a class in java. util package used for inputting.

In the ExtendedWeightedGrades class, totalPoints, percents and earnedPoints are three key attributes in LinkedList<Integer> type that save the input. CaculatedPoint is a double attribute as the final scores, and grade is the final grade. Three status attributes define the status of the three input values, which means that whether they could be recalled or not.

There are mainly four kinds of methods, the first one is status methods, like begin\_totalPoints() and end\_totalPoints(), which mean that the corresponding attribute could be recalled or unrecalled. The second one is to set values, like setTotalPoints() and set\_single\_TotalPoints(). The third one is to get the values like getPercents(). The last one is revocation(), designed for recalling, in case that the user input a wrong number and can use this method to recall.

**Discussion:**

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Limitations:

* Didn’t take exception into consideration

Possible improvements:

* using [try…catch…finally] could be a solution to exception

Limitations:

* Lack of input checking.
* For example, user inputs a earned points of 120, but the total points of this assignment is 100; and the input number is negative; and the sum of each percents is not equal to 100.

Possible improvements:

* Write a method for input checking.
* Total points should be no less than 0, earned points should be no bigger than corresponding total points and no less than 0, and the sum of percent should be 100.

Limitations:

* Although in my work I created a method for recalling, but there are still some other situations that need recall, such as reentering the total points, or one of the numbers which have been input is wrong.

Possible improvements:

* Create a method to revise any attributes

Limitations:

* Exist redundant iterations

Possible improvements:

* Since the linked lists of total point, earned points and percents should have the same length, we can just calculate the length of the first input attribute and automatically terminate when the number entered reaches the length in the subsequent attributes input.