

Data Structures Assignment 2

Gradebook ArrayLists

Create a new Class called Assign2_GradeBook.

First 60%

a) Setting up the ArrayLists

You are about to set up five PARALLEL ArrayLists where you hardcode in all the data.

- Set up a String ArrayList that stores the **names** of **SIX-TEN** people.
- Set up an Integer ArrayList called **gradeNum** that stores what grade (10, 11 or 12) each of these people are in. Set two of them to be in each grade.
- Set up a Double ArrayList called **exam1** that stores marks (out of 100) for all these people. You can make up all these marks but this was a hard exam. Have at least 3 of your students fail this exam (less than 50).
 - Heads up, you may need to put decimals in your numbers because it is a Double list. `exam1.add(67.0);`
- Set up a Double ArrayList called **exam2** that stores marks (out of 100) for all these people. Include a wide range of marks.
- Set up a Double ArrayList called **exam3** that stores marks (out of 100) for all these people. Include a wide range of marks.

b) Using a for loop, print EVERYONE's data on one line each

Bob 11 56 76 81

c) The teacher has decided to give bonus marks on **exam3**.

- Using the SET function `____.set(i,newnumber)`, increase the **exam3** marks for each person by FIVE. It is ok if some go above 100.
- Write one SET line for each of your six students. **Do NOT try to use a FOR loop** unless you are feeling really confident in everything so far.
 - `exam1.set(3, 61);` //hard code a higher mark for each of them

d) Println the following: `/*****Updated Exam3 Marks*****/`
Then reprint everything, exactly as you did for step b.

Next 10%

Println the following: `/*****Filtered Print - Grade 10s and 11s*****/`

a) Using a new FOR loop, print the **name and grade** (no need to print the marks) of students who are in grades 10 or 11.

Next 10%

Println the following: `/*****Filtered Print - Exam 1 failures*****/`

b) Using a new FOR loop, print the **name and the exam1** mark of only the students who failed exam 1.

Final 20%

Println the following: /*****Class Averages - Final 20%*****/

Using For Loops, calculate and print the class average of each of the 3 exams.

- Hint: Do this separately for each of the 3 exams.
- Hint: We did an 'average' algorithm in one or more of our examples. To get the average, just divide the total by 6 (or by exam1.size()) before printing it. Note that these numbers are Doubles so your total variable will also need to be a double

Extra Challenge (not for marks)

Println the following: /*****Extra Challenges*****/

The above asked you to calculate the average for each exam. For this challenge, you are to calculate the average of each person.

- Start with one person only. This will require you to add that individual's three exam marks together and then divide by 3. You will NOT use a FOR loop to do this.
- ... but once it is working for 1 person, you COULD use a FOR loop to repeat the process for all the students.