

## CS 150 Lab 8 Files & Nested Loops

The main objective of today's lab is to process data from a file. The first part of the processing will use a single loop and we will then modify the data file to require a nested loop solution. Specifically, we will write a simple grading program for a single student and then modify the program to be able to handle multiple students.

Be sure your output looks exactly like the specified output.

Be sure to submit the completed project to CS150-02 Lab by Friday at 5pm.

Show the instructor or TA your solution after part is implemented below.

### Lab 8.1

#### Part A:

Write a complete C++ program in a project **08\_1\_Grader** that will process exam grades for a single individual. The line of data will include a student's PUNetID, a number of exam scores, followed by each exam score. Each exam will be out of 100 points. The data file is to be a text file called **grades.txt** and is to be placed in the Resource Files folder.

A simple data file might look like the following:

```
smit4321 3 93 78 88
```

You are to process this single line of data and output the following results:

```
*****  
*           Pacific Grading Program           *  
*****  
  
    PUNetID    Average  
    - - - - -    - - - - -  
smit4321      86.33
```

#### Show the instructor or TA your solution

#### Part B:

You are to add the ability to process a large data file where the first line of the file contains the number of students in the class and each subsequent line contains each student's exam information.

A simple data file might look like the following:

```
3  
smit4321 3 93 78 88  
will11234 3 85 82 91  
hall9876 3 62 74 77
```

You are to process this entire file and output the following results:

```
*****
*           Pacific Grading Program           *
*****

  PUNetID   Average
  - - - - -
smit4321    86.33
will1234    86.00
hall9876    71.00
```

**Show the instructor or TA your solution**

**Part C:**

Finally, add grades such that [90,100] is an A, [80,90) is a B, and so on.

```
*****
*           Pacific Grading Program           *
*****

  PUNetID   Average   Grade
  - - - - -   - - - - -   - - - - -
smit4321    86.33      B
will1234    86.00      B
hall9876    71.00      C
```

**Show the instructor or TA your solution**

**Optional Challenge1:** As summary statistics, print the entire class average, the PUNetID of the person in the class with the highest class average and their corresponding class average.

**Optional Challenge2:** A minimal data file will have a single integer value of 0 indicating there are no students in the class. Make sure your program can handle this testcase.

- 1) Your program is to compile without any errors or warnings.
- 2) Do not use any magic constants in your program. Define your constants before defining the rest of your program's variables.

Once your project is complete, place your solution PUNetIDLabs into the CS150-02 Drop folder on Turing. Your solution is to have ALL previous projects completely working and correct.