

CS21 Assignment #10

Please use the given names for your scripts! (Be sure you see that there are two programs in this assignment).

1. (*gradesummary.py*) The file `letter_grades.txt` contains an unknown number of lines. Each line contains a student name followed by a colon, then their grade. For example:

```
Sally Wright : B
Samuel Van Munchin :C
```

Make no assumption about how many names a student has; the name is everything before the colon.
Make no assumptions about spacing before and after the colon.

Write a program that reads the entire file and produces a grade summary file. The summary file will contain a list of each grade and the count of the number of students that received that grade, followed by each grade and a list of students that received that grade. See the end of this document for a sample input and output file.

Requirements:

- Prompt the user to enter the filename of a text file
- You must use two dictionaries, one for the grade counts and one for the list of students receiving each grade

```
grade_dict = {'A':0, 'B':0, 'C':0, 'D':0, 'F':0}
students_dict = {'A':[], 'B':[], 'C':[], 'D':[], 'F':[]}
```

- Read the contents of the input text file and fill both dictionaries
- Use the contents of the dictionaries to create the summary file named `'grades_summary.txt'`
- Use exception handling to handle file open exceptions.

2. (*Bingo.py*) Earlier this semester (week 5) we had a homework assignment about games that involved randomness. One of those games was Bingo. At the time, the bingo draws were not related, meaning you could have the same two numbers pop up in the same game of Bingo. In reality, this is not how Bingo is played. Now that we have learned about sets, we can use one to track previous Bingo draws and ensure we don't repeat the same draw during the same game of Bingo.

In the week 5 homework assignment, we wrote a function that would randomly generate a number from 1-75, assign it the correct BINGO letter and then print it to the screen. We want to modify this function to return a string with the Bingo draw (ex "B11") instead of printing it to the screen.

After doing that, we want to create a main function to play Bingo. In the main function we will make a bingo draw, ensure it hasn't been made before (if so, re-draw a new number) and then print it to the screen. Then we will ask the user if a player has won the game. If the user says no-one has won yet, then we will draw again. This continues until someone finally wins.

Once someone wins, the current game of Bingo ends. At this point the user can choose to play again, or quit. If the user plays again, it should clear the history of previously drawn numbers as we are starting a new game.

This program is not trying to track individual players or their boards. It is just responsible for drawing the numbers to be called out to the players.

You must use a set to track the draws and determine if a draw is a duplicate.

Sample Run:

```
The current draw is: N39
Did anyone win the game? Y/N n
The current draw is: G47
Did anyone win the game? Y/N h
Please respond with just the letters Y or N
Did anyone win the game? Y/N n
The current draw is: O68
Did anyone win the game? Y/N n
The current draw is: B8
Did anyone win the game? Y/N n
The current draw is: N43
Did anyone win the game? Y/N e
Please respond with just the letters Y or N
Did anyone win the game? Y/N n
The current draw is: G50
Did anyone win the game? Y/N n
The current draw is: G49
Did anyone win the game? Y/N y
Would you like to play again? Y/N y
The current draw is: N34
Did anyone win the game? Y/N n
The current draw is: N40
Did anyone win the game? Y/N n
The current draw is: G49
Did anyone win the game? Y/N n
The current draw is: O63
Did anyone win the game? Y/N n
The current draw is: O62
Did anyone win the game? Y/N n
The current draw is: G57
Did anyone win the game? Y/N n
The current draw is: B8
Did anyone win the game? Y/N n
The current draw is: N36
Did anyone win the game? Y/N n
```

The current draw is: N45
Did anyone win the game? Y/N y
Would you like to play again? Y/N f
Please respond with just the letters Y or N
Would you like to play again? Y/N n

Reminders (not following will result in point deductions):

- It is expected that you will use exception handling and error handling to ensure your programs are robust and will not crash.
- If a function's task doesn't include output to the user, do not do it!
- Use constants! No magic numbers! No global variables!
- Comment first, then code!
- Be sure to include comments at the top of the program that include your name, class and a short description of the program.
- Each function should begin with a comment describing the task the function will perform.
- Be sure all output is formatted. Unless otherwise, specified, displays non-integer values with 2 digits after the decimal point.

Any work you submit for this assignment should be authored entirely by yourself. Assistance is permitted from the instructor or teaching assistants only. All submitted programming assignments are subject to originality verification through software designed and used for the Measure Of Software Similarity (MOSS).

Sample input file:

CS21 Grade summary

As: 5
Bs: 18
Cs: 3
Ds: 2
Fs: 1

Penny Widmore : B
Boone Carlyle : B
Shannon Rutherford : B
Michael Dawson : B
Claire Littleton : B
Jack Shepherd : A
Charlotte Lewis : A
Hugo Reyes : D
Sayid Jarrah : B
Ethan Rom : F
Danielle Rousseau : A

Anna Lucia Cortez : C
Juliett Burke : B
Anthony Cooper : A
Jin-Soo Kwon : D
Sun-Hwa Kwon : B
Frank Lapidus : B
Richard Alpert : B
Miles Straume : B
John Locke : A
Ben Linus : B
Kate Austin : B
Charlie Pace : B
Walt Lloyd : C
Desmond Hume : B
Nikki Fernandez : B
Daniel Farraday : C
James Ford : B
Jacob : B

Sample output file that would result from sample input file.

CS21 Grade summary

As: 5
Bs: 18
Cs: 3
Ds: 2
Fs: 1

Students receiving each grade

A

Jack Shepherd
Charlotte Lewis
Danielle Rousseau
Anthony Cooper
John Locke

B

Penny Widmore
Boone Carlyle
Shannon Rutherford
Michael Dawson
Claire Littleton
Sayid Jarrah
Juliett Burke
Sun-Hwa Kwon
Frank Lapidus
Richard Alpert
Miles Straume
Ben Linus
Kate Austin
Charlie Pace
Desmond Hume
Nikki Fernandez
James Ford
Jacob

C

Anna Lucia Cortez
Walt Lloyd
Daniel Farraday

D

Hugo Reyes
Jin-Soo Kwon

F

Ethan Rom