Lab 11 Drop Lowest Score and Average

Learning Objectives: Demonstrate understanding of list methods append, min, remove, and create a list from a file.
The purpose of this lab is to create a list from a file with students' tests scores. Use the data to find the average grade of a student when the lowest test score is removed.
Your math professor gives a series of tests during the semester. At the end of the semester, she drops the students' lowest test scores and replaces them with final test scores if the final test scores are higher. You are asked to design a program that reads from txt file with the students' names and tests scores and calculates the average with the lowest score replaced by the final score if the final score is higher.

Step 1: Create a function that generates a list from the grades.txt file

Write a function called *get_list* that takes no parameter and returns a list.
Open the grades.txt file.
Read from the grades.txt file to create a list using a split.
Close the file.
Return grades list.

Step 2: Create a function that finds the average of a list

Write a function called *average* that takes one parameter: list. The function should return the average.
Use a for loop to add the total.
Divide the total by the length of the list.
Return the average.

Step 3: Create a function that finds the students' grade

Write a function called *create_student_grade* that takes one parameter: grades. The function should return the students' final grades.
Create an empty list for the student's final grade tuples.
Use a for loop to create 6 different lists with values of each student's name and grades. Ignore the first row.
For each of the lists extract the exams values and convert them to float. If the min between the first three exams is smaller than the final, replace the final with the min exam. For example, if your first three exams are 80, 68, 90, and the final exam grade is 85, then the min for the first three exams is 68 and the final grade of 85 is greater than the min. Replace the final exam grade for the min exam, to have 80, 85, 90, and 85 as the new grades. If the min of the first three exams is greater than the final exam grade then the grades stay as they are.

Step 4: Create a function that plots the graph

Write a function called *plot_graph* that takes one parameter: tuple list. The function should not return but display the graph.
Create an x coordinate list and y coordinate list.
Extract the first coordinate from each tuple and save it on the x coordinate list. Repeat for y coordinate.
Use plt.bar to set the x coordinate and y coordinate.
Use plt.title to set the tile to "Students Grades."
Use plt.xlabel to set the label to "Students."
Use plt.ylabel to set the label to "Grades."
Use plt.grid and set it to True.
Use plt.show to display the graph.

Step 5: Create the main function

Write the main function. The function should set up the following:
Call the create_students_grade(get_list) and save the return value on a variable.
Call the plotting_graph(return value from the create_students_grade(get_list)).
Well done, you have created a user login name and validated a password.

Submit

There are no automated tests for this lab so make sure the above steps are completed and your program is working before submitting. As always, drop into student hours, send an email, check in with a peer, or stop by the STEM Center if you need any assistance.