

# Practicum Coding Activity

## Student Record Keeper

You are asked by your school to create some software in Python to help teachers record marks and calculate averages for different subjects. Here is what they need (their *requirements*):

- **A menu** with the following options:
  1. Enter grades for a new subject
  2. Calculate average for each subject
  3. Count failures (marks under 50) for all subject
  4. Write marks to CSV or text file
  5. Exit
- Console interaction for each one of these options
- Once an option has been completed, the menu should be presented again.

The program has been broken down into different parts. You are encouraged to implement this **one part at a time**, and use top-down coding as well as `print()` statements for debugging, to implement and test one part before moving to the next piece.

You have been provided with some starting code (`practicum_part2_starting.py`) that contains some helpful hints as well as a `main()` function. Guidance to specific course units in D2L that could be useful is given in the different parts below. Don't be afraid to ask questions about anything that is unclear.

1. A global list of lists called **subject\_marks** like that in Figure 1 (Unit 9)

- the first value in each list is the subject name (a **string**, will not be numeric),
- the remaining values in each list should be student grades for that subject (floats).

```
subject_marks = [['Basket Weaving', 98.0, 54.5, 21.9, 100.0]]
```

*Figure 1 - Sample starting list of lists for subject\_marks*

2. A function for the menu. (Assignments 6-10)

- Takes no parameters.
- Displays the menu options, similar to Figure 2 below.
- Asks the user which choice they want.
- Returns the option the user has selected.
- *\*\*Bonus: Repeatedly asks for input until user enters valid option.\*\**

```
Welcome to Subject Grade Program
Menu options...
1.Enter grades for a new subject
2.Calculate average for each subject
3.Count failures for all subject combined
4.Write marks to file
5.Exit
Please enter the number corresponding to your choice: |
```

*Figure 2 Sample menu*

3. A **function** to allow the user to **enter grades** for a new subject.

- Takes no parameters.
- Asks for the **subject name** and **stores it in a temporary list**. (Unit 9)
- Using a loop: (Unit 6)
  - Asks the user to **input a valid grade** or 'x' to quit. (Unit 4)
  - If user doesn't enter 'x', should **make sure that value entered is numeric between 0 and 100**. (Unit 5)
    - *\*\*Bonus: Use exception handling to catch this.\*\** (Unit 11)
    - If valid, the **grades** entered should each be **converted to float** and **appended to the temporary list**.
  - Otherwise, if the user enters 'x', the loop should break.
- Once the loop is over, the **temporary list** should be **appended to subject\_marks**. You can print the list for debugging purposes (Unit 8)
  - Since subject\_marks is global, doesn't need to return anything.

```
Please enter the number corresponding to your choice: 1
Subject name: gym
Grade: 99.9
Grade: 65.5
Grade: 42.7
Grade: x
DEBUG: [['Basket Weaving', 98.0, 54.5, 21.9, 100.0], ['gym', 99.9, 65.5, 42.7]]
```

Figure 3 Sample console output for function in Part 3

4. A function that **calculates** the **average** for the subject specified. (Unit 7)

- Takes the **name of the subject** as a function **parameter** (should be requested from user in main()).
- Using the provided argument, it will **get that subject's grades** from **subject\_marks**.
- It will **calculate the average** of those marks.
- **Returns** the average, as a float with no more than 2 decimal places.

```
Please enter the number corresponding to your choice: 2
Subject: gym
Average for gym is 69.37
Menu options...
1.Enter grades for a new subject
2.Calculate average for each subject
3.Count failures for all subject combined
4.Write marks to file
5.Exit
Please enter the number corresponding to your choice: 2
Subject: Basket Weaving
Average for Basket Weaving is 68.6
```

Figure 4 Sample console output for function created for Part 4. User subject input used as argument in call to function.

5. A function that **counts** the number of failure marks.

- Takes no parameters.
- **Returns** how many marks in subject\_marks were less than 50.

```
DEBUG: [['Basket Weaving', 98.0, 54.5, 21.9, 100.0], ['gym', 99.9, 65.5, 42.7]]
Menu options...
1.Enter grades for a new subject
2.Calculate average for each subject
3.Count failures for all subject combined
4.Write marks to file
5.Exit
Please enter the number corresponding to your choice: 3
Total number of failures is 2
```

Figure 5 Sample output for function created for Part 5.

Note that in the DEBUG info, we can confirm that there are two grades less than 50.0

6. A **function** to **write** the **subject marks** into a **CSV or text file** (your choice) (Unit 10)

- Assume that the file name is either **marks.csv** or **marks.txt** (depending on your choice).
- Uses appropriate file operations to either create a CSV file with rows and columns or a text file.

Submit your Code and your marks.csv or marks.txt files to the “**Practicum Coding Activity**” Dropbox in your CNA D2L Shell.