## Table of Contents

## Programming Assignment 4 – PA-4: Iteration

**Learning Outcomes**

- Solve basic programming problems using a variety of skills and strategies.
- Analyse the structures within pseudo code, source code, and flowchart.
- Create entry-level programs.

**Learning Objectives**

- Analyse and design solutions to programming problems involving iteration control structure.
- Apply problem solving skills using sequence control structures, modularization, variables, selection control structures, iteration control structures, pseudocode, flowchart, and basic code creation in a programming language.
- Demonstrate knowledge of topics covered in the module.

**Directions**

Due date: Please see D2L.

Rubric: Please see D2L

Topics covered: Up to Module 5. You are **not** allowed to apply material covered in subsequent modules.

Libraries: Please consult with your instructor before incorporating any third-party library or non-standard library in your submission.

Collaboration model: This is an **pair programming** assignment. You can discuss potential approaches to a solution with others but you **must not** exchange or copy code, pseudocode, flowchart, or descriptions from others. You **must not** copy code from online sources or any other source (books, magazines, etc.) either.

*Keep track of every source you consult (people, online sources, etc.) as you must disclose **all** of them in your submission file or near the actual usage when it makes sense.*

You are allowed to consult material regarding:
- General problem solving techniques
- Pseudocode conventions
- Flowchart symbols and usage
- Python documentation
- Code convention and styles

Ask your instructor if you have questions regarding the assignment and submission instructions.
Commits should reflect that the two of you actually worked on the problem.

**General Submission Guidelines**

1. Commit deliverables to your *private* GitLab assignment repository (keep max file size at 5MB):
   ```
   PF_TermYear_PA4
   ```

2. Once you are ready to submit your assignment for marking, drop the submission file in the D2L assignment drop box. The file should contain:
   - Your identification information (see below).
   - Your repository address with specific revision you want to be considered.
   - External sources disclosure. Use "No external sources" when appropriate.
   - Self-reflection (individual).

3. Submission file should be named as follows:
   ```
   PF_TermYear_PA4_Firstname_MyBVCUsername.md
   ```

4. All files should identify the author with the following information:
   ```
   Course code     : SODV1101
   Semester/Year   : TermYear
   Assignment code : PA4
   Author(s)       :
   BVC username    :
   Date created    : YYYY-MM-DD
   Description      : ...
   ```

5. Add `readme.md` file to the root of your repository. Add a brief description to it.

6. When a file contains multiple answers, clearly separate and identify each one with a header markup. For instance: `**a – Algorithm description**`

7. Pseudocode should use Markdown code markup.

8. Make sure to properly document your code, use consistent code conventions, give descriptive names to variables and methods, and use a coherent set of style and formatting rules. Strive for readable and maintainable code as well as proper selection of control structures.

9. Give sensible names to your project files. Be concise but expressive.

10. Use the following Python style guide:
    https://www.python.org/dev/peps/pep-0008/

11. Add the result of Google YAPF format checker as a text file:
    https://github.com/google/yapf/

12. Source code/config files should be at the root of your repository, all other deliverables should be placed under a folder named "`deliverables`".

**Assignment Description**

Write a program that will allow a teacher to calculate the average test score along with a message for a student. The teacher can enter the number of assignments, and then the score for each assignment.  Your program will then calculate average score, the message, and print out the result.
Discard the lowest score on the average when the student has more than 5 assignments.

Your program must use the appropriate iteration control structures, modules, and run multiple times for different sets of assignment scores.

Range and messages are as follows:

```
Range                   Message
------------------      -------
< 50                       :-(
>= 50 and < 75             :-|
>= 75 and < 95             :-)
>= 95                    Wow!
```

Your sample output should look as follows:

```
How many assignments the student handed in: 9
Enter assignment 1 score: 98
Enter assignment 2 score: 78
Enter assignment 3 score: 99
Enter assignment 4 score: 92
Enter assignment 5 score: 87
Enter assignment 6 score: 100
Enter assignment 7 score: 88
Enter assignment 8 score: 81
Enter assignment 9 score: 79
The average score is 89 :-)
Do you want to end program? (Press <ENTER> to continue): yes
```

**Deliverables**

a) A private GitLab repository containing your work.
   *Make sure you grant **Reporter** access to your instructor on your repository.*

b) Commits showing changes to your repository.

c) Self-reflection (as part of your submission file, **individual**).
   *e.g. How did you arrive to the solution? What did you struggle with? Which kind of tests did you use to validate your solution? And so on.*

d) Algorithm description in plain English

e) IPO chart

f) Hierarchy chart.

g) Pseudocode

h) Flowchart.

i) Python code

j) PyLint report.

k) **PRIVATE** Codacy report: Dashboard, Commits, Issues, Code Patterns

   Filename: `PF_TermYear_PA4_YourInitials_codacy.pdf`

l) Submission file (**individual**)

   Filename: `PF_TermYear_PA4_Firstname_MyBVCUsername.md`


Items *d*, *e*, and *g* should be added to a single Markdown file:
   `PF_TermYear_PA4_YourInitials_pc.md`

Items *f*, and *h* should be added to a single pdf file:
   `PF_TermYear_PA4_YourInitials_diagrams.pdf`


Penalty for late submission is 5% of mark for each hour late, at instructor's discretion.
Assignment will not be accepted after submission end date (see D2L).
File(s) with wrong name and/or format/extension will be ignored and will not receive marks.
You will receive 0 (zero) if the URL for your commit is not correct or accessible to your instructor.

**If any part of the assignment is deemed to be not original (plagiarized) EVERYBODY involved will receive 0 (zero).**


**\*\*\* end of assignment**