OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

Advanced Programming for Business Analytics

MS5114 2022-2023

Individual Assignment 1

Objective	The objective of this assignment is to access your understanding of the basics of Python language.
Lecturer	**Name** / **Office** / **E-mail** Dr Umair ul Hassan / CA369 / umair.ulhassan@universityofgalway.ie
Marks Awarded	This assignment carries **15%** of the overall marks for the module.
Submission Process	You should submit your completed assignment through Blackboard's Assignment tool. Any member of a group can submit on behalf of the whole group. If you are unable to submit your assignment via Blackboard, please email it to your lecturer whilst also copying business@universityofgalway.ie in the same email and clearly state the issue that you have faced while uploading to Blackboard.
Assignment Deadline(s)	**8th February 2023 at 5:00pm Irish time:** • Python code file To avoid technical issues, it is strongly advised that you **upload your submission well in advance of the deadline**. You may submit at any time on any day prior to the deadline. You will have multiple attempts to submit, and last submitted version will be graded.
Late or No Submission	Blackboard will record late submissions. Except in extenuating circumstances, late submissions will carry a penalty up to 24 hrs after the deadline, after which time any submissions will not be marked. Non submission of assignment will carry a mark of zero in determination of overall marks for this sitting. There is no opportunity to resubmit continuous assessment before the next offering of the module, should student(s) fail to submit by specified deadlines.
Deliverables	The **Python code** file, as "*MS5114_Assignment1_YOURNAME_code.py*" file.
Academic Integrity	Each module instructor reserves the right to follow up with a student by interview if there is any concern in relation to the integrity of the assignment. For any assignments not submitted via Turnitin, we reserve the right to check it using Turnitin where required.
Plagiarism	Plagiarism is the use of another person's ideas or work without appropriate acknowledgement or credit. Plagiarism may be intentional or unintentional.

	Intentional plagiarism is the clear intent to pass off another person's work or ideas as your own for your own gain. Unintentional plagiarism may occur if you do not understand the appropriate way to acknowledge the source of your ideas and information. If you are unsure of the acceptable methods of acknowledgment you should refer to the University of Galway Code of Practice for Dealing with Plagiarism, consult with your lecturer or the library staff. Proven plagiarism is a very serious matter which may result in severe disciplinary action and/or exclusion from the University. Ensure all assignment submissions include a signed plagiarism statement.
Referencing & Citation	Correct referencing and citation avoids plagiarism. There are varying referencing styles available but the most popular is the Harvard Referencing Style. Details on how to reference journal articles, books, electronic information and various other supports is available from the NUI, Galway Library at the following link: http://libguides.library.nuigalway.ie/c.php?g=543943&p=4591416
Blackboard Ally	Blackboard Ally supports you to access more user-friendly file formats. Please contact the lecturer if you experience any accessibility issues for this module material. Should you have a visual impairment and require the document in another format, please contact the lecturer to explore alternative format options.
Special Requirements	If you are registered with the Disability Support Service (DSS), you will find recommended accommodations listed on your Learning and Educational Needs Summary (LENS) report. If the alternative assessment offered for this module does not fully meet the recommendations in your LENS report, please email your lecturer as well as whilst also copying business@universityofgalway.ie, stating clearly how you feel the recommendations are not being met. Please ensure you attach a copy of your LENS report to this email.

MS5114 Individual Assignment 1
2022-2023

This is an individual assignment that is worth 15% of your grade.

1. Download the **assignment1.py** file from the Blackboard;
2. Solve each problem in this file by completing the code of each function;
    1. You **CAN'T** change any function header (the name and arguments of the function cannot be changed).
    2. You **HAVE** to implement each function code and its correct **RETURN** statement so that it solves the problem as described in the comments.
    3. You **CAN'T** use the "*input*" function inside the functions that need implementation. If you want to test your functions with user input, you can do that inside a new function made for the purpose of your own tests.
    4. You **CAN'T** call any function in your file, **unless** the function is being called inside another function (e.g.: *some_test_function()*), or inside a *if __name__ == "__main__"* block.
3. **Make sure** the code **returns exactly** the output that is described in each function comment.
4. Make sure your code is **running without errors.**
5. Remember that **RETURN IS NOT THE SAME AS PRINT**, read carefully and make sure you are **returning** the correct values in each function.
6. Submit your code file (the same one you download and implemented the functions) for grading.

That is, once you are done you should have a **.py** file with all its functions implemented (this include the return statements), and you submit this python file in Blackboard as your solution to the assignment.

The evaluation will be done by executing each function you created and checking if the output it is producing is the correct one, according to what is described in each function comment, so double-check if your code is working and if it's returning the output as expected.

To further help you on your task, following is the set inputs that will be used for testing your code:

```
==== donuts ====
Inputs Tested:
 4
 5
 9
 99

==== both_ends ====
Inputs Tested:
 spring
 Hello
 a
 xyz
```

```
==== fix_start ====
Inputs Tested:
 babble
 aardvark
 google
 donut

==== mix_up ====
Inputs Tested:
 ('mix', 'pod')
 ('dog', 'dinner')
 ('gnash', 'sport')
 ('pezzy', 'firm')

==== match_ends ====
Inputs Tested:
 (['aba', 'xyz', 'aa', 'x', 'bbb'],)
 (['', 'x', 'xy', 'xyx', 'xx'],)
 (['aaa', 'be', 'abc', 'hello'],)

==== front_x ====
Inputs Tested:
 (['bbb', 'ccc', 'axx', 'xzz', 'xaa'],)
 (['ccc', 'bbb', 'aaa', 'xcc', 'xaa'],)
 (['mix', 'xyz', 'apple', 'xanadu', 'aardvark'],)

==== sort_last ====
Inputs Tested:
 ([(1, 3), (3, 2), (2, 1)],)
 ([(2, 3), (1, 2), (3, 1)],)
 ([(1, 7), (1, 3), (3, 4, 5), (2, 2)],)

==== front_back ====
Inputs Tested:
 ('abcd', 'xy')
 ('abcde', 'xyz')
 ('Kitten', 'Donut')

==== linear_merge ====
Inputs Tested:
 (['aa', 'xx', 'zz'], ['bb', 'cc'])
 (['aa', 'xx'], ['bb', 'cc', 'zz'])
 (['aa', 'aa'], ['aa', 'bb', 'bb'])

==== accept_login ====
Inputs Tested:
 [{'user1': 'password1', 'user2': 'password2', 'user3': 'password3'}, 'user1', 'password1']
 [{'user1': 'password1', 'user2': 'password2', 'user3': 'password3'}, 'mary', 'password1']
 [{'user1': 'password1', 'user2': 'password2', 'user3': 'password3'}, 'user2', 'password1']

==== find_value ====
Inputs Tested:
 [{'day1': 'sunny', 'day2': 'rainy', 'day3': 'sunny'}, 'sunny']
 [{'day1': 'sunny', 'day2': 'rainy', 'day3': 'sunny'}, 'rainy']
 [{'day1': 'sunny', 'day2': 'rainy', 'day3': 'sunny'}, 'cloudy']

==== invert_dict ====
Inputs Tested:
 {'key1': 'value1', 'key2': 'value2', 'key3': 'value1'}
 {'week1': 'workout1', 'week2': 'workout2', 'week3': 'workout1', 'week4': 'workout3'}
```

```
==== word_frequencies ====
Inputs Tested:
 (['a', 'a', 'a', 'a', 'a', 'b', 'b', 'b', 'b', 'c', 'c', 'c', 'd', 'd', 'e'],)
 (['The', 'greatest', 'glory', 'in', 'living', 'lies', 'not', 'in', 'never', 'falling', 'but', 'in', 'rising', 'every', 'time',
'we', 'fall'],)
```