Test 1, Sat Oct 3, 2020, worth 11%

START WORK: 12pm
ENDWORK: 1:30pm
You have up to 10 min to submit.
Brightspace submission server will close at 1:40pm

Important notes:

- You test solutions will be compared using similarity measuring software
- During the test ITI1120 discord servers will be monitored by TAs
- Late submissions will not be accepted
- You may use without referencing anything posted on Brightspace (so anything we did in labs, lectures, assignments), anything from the textbook and, any documentation from python.org. The rest you need to reference in declaration-YOUR-FULL-NAME.txt file

Important: You cannot use loops, lists/arrays, tuples, sets, dictionaries ...
You also cannot use global variables in the body of your functions.
This is an individual test. It has 4 programming questions. Each question asks you to design one function. Put all these functions (for all the questions below) in ONE file only. You must call the file test1_xxxxxx.py (where xxxxxx is replaced with your student number).
Once you are done and BEFORE the deadline submit just test1_xxxxxx.py to Brightspace - under Test 1 (just like you did Assignment 1). If you have something to reference submit also a file declaration-YOUR-FULL-NAME.txt.
For what needs to be in this file recall Assignment 2 or go to the end of this test.
As always, you can make multiple submissions, but only the last submission before the deadline will be graded.
You should test your functions for your own sake, but unlike in Assignment 1, you do NOT need to submit the text file with your tests. Your program must run without syntax errors. In particular, when grading your test, TAs will first open your file test1_xxxxxx.py with IDLE and press Run Module. If pressing Run Module causes any syntax error, the grade becomes zero.

QUESTIONS:

For all of these questions you have to write docstring containing TYPE CONTRACT only. (You do not need to write function description nor Preconditions)

1 atlantic(sn) - 10 points

Write, a Python function called atlantic that takes as input a string, sn. If sn has 9 or more characters, the function should return a string 'new', otherwise it should return a string 'old'.

```
>>> atlantic("12345678988")
'new'
>>> atlantic("300056789")
'new'
>>> atlantic("8899234")
'old'
>>> atlantic("today")
'old
```

2 southern(n) - 10 points

Write, a Python function called southern that takes as input integer, n where n is 1 or 2. (You may assume that n will be 1 or 2, i.e. your function will not be tested with values for n different from 1 and 2).

If n is 1 the function should prompt the user for the weight in pounds first and then weight in ounces, and then it should print a message about the total weight in kilograms. Here is the conversion forumla:

kilograms = (pounds _ 16 + ounces) _ 0:02835

If n is 2, the the function should prompt the user for the name and then for his/her student number. If the student number has at least 9 digits, a message should be print informing the student that they have new uOttawa student number, otherwise that they have old uOttawa student number. In this part (n is 2 part) you **must** make a call to atlantic function from Question 1.

```
>>> southern(1)
Enter a numberof the weight in pounds: 1
Enter a numberof the weight in ounces: 2.2
1.0 pounds and 2.2 ounces is (approximately) 0.5159699999999999
kilograms.
>>>
>>> southern(1)
Enter a numberof the weight in pounds: 55.235
Enter a numberof the weight in ounces: 3.5
55.235 pounds and 3.5 ounces is (approximately) 25.153821 kilograms.
>>>
>>> southern(2)
What is your name? Campion
What is your student number? 300056789
Campion you have new student number.
>>>
>>> southern(2)
What is your name? Tempest
What is your student number? 8878654
Tempest you have old student number.
```

3 pacific(g1, g2, g3) - 10 points

Consider a grading system where for each course students get a numerical grade between 0 to 100 (inclusively). A numerical greater or equal to 50 is considered passing grade. In addition, a numerical grade greater or equal to 80 is also an A.

Write, a Python function called pacific that takes as input three numbers each between 0 to 100 (inclusively). (You may assume that your function will only be tested with numbers between 0 and 100 inclusively.)

The three numbers, g1, g2, g3 represent numerical grades in 3 courses. The function should return True if all three grades are passing and at least one is A. Otherwise the function should return False.

In this question you are not supposed to use if statements. If you use if statements, you will loose at least 20% of the grade for this question.

```
>>> pacific(49.8, 82, 70.5)
False
>>> pacific(55, 82, 70.5)
True
>>> pacific(80.1, 82, 70.5)
True
```

4 arctic(n) - 10 points

A number is called palindromic if the sequence of digits from left to right is the same as from the right to left. Equivalently, a number is palindromic if the first digit is equal to the last, and, if the second digit is equal to the second from the back, and if the third digit is equal to the third from the back ... and so on. For example, 123321 palindromic, but 123421 is not.

Write, a Python function called arctic that takes as input an integer, n, where n can only be a 4-digit or 6-digit positive integer. (You may assume that your function will only be tested with 4-digit or 6-digit positive integers.). The function should return True if n is palindromic and otherwise it should return False.

In this question you are not supposed to use strings. If you use strings only to figure out if the number if 4 or 6 digit, you will loose 20% or your grade. If you use it to check palindromic requirement, you will loose additional 20% of the grade for this question.

```
>>> arctic(5225)
True
>>> arctic(123123)
False
>>> arctic(3123)
False
>>> arctic(434434)
True
```

About declaration-YOUR-FULL-NAME.txt file:

It needs to be a plain text file and it must contain references to any code you used that you did not write yourself,

including any code you got from a friend, internet, social media/forums (including Stack Overflow and discord) or any other source or person. The only exclusion from that rule is the code that we did in class or as part of the lab work. So here is what needs to be written in that file. In every question where you used code from somebody else, you must write:
1. question number
2. copy-pasted parts of the code that were written by somebody else. That includes the code you found/were-given that you then slightly modified.
3. whose code it is: name of a person or place on internet/book where you found it.
While you may not get points for that part of the question, you will not be in position of being accused of plagiarism.

Not including declaration-YOUR-FULL-NAME.txt will be taken as you are declaring that all the code in the assignment was written by you. Any student caught in plagiarism will receive zero for the whole assignment and will be reported to the dean. Finally showing/giving any part of your assignment code to a friend also constitute plagiarism and the same penalties will apply.