VINUNIVERSITY

MIDTERM - FALL 2021

COMP1010 Introduction to Programming **November 3, 2021**

(Practical Portion)

Test duration: 1 hour and 50 minutes (4.00 PM – 5.50 PM)

Exam Submission Instructions:

- You should follow "Instructions for Workspace Setup (Midterm Exam)" before starting the exam. Students who do not meet the setup requirements will not be able to receive results.
- Variables and functions should have meaningful names, and code should be organized into functions/methods where appropriate.
- Academic honesty is required in all work you submit to be graded. You should **NOT** copy or share your code with other students to avoid plagiarism issues.
- **This is closed-book exam, and no Internet access is allowed (except for Canvas submission); hence, no CMS system is used**. Use, e.g, help(print) to check the built-in function usage if necessary.
- Drafting paper and pen/pencil are allowed. DO NOT USE any web-based drafting/drawing tools during the exam.
- You can use all the built-in functions, package, knowledge you know to solve these problems (must be in Python).
- You should upload your .py file(s) to the Canvas **before the end of the exam session (5.50PM, Nov 5, 2021)**. Please submit separate .py files for each problem with the following naming format, for example: **V202000999_Midterm_P1.py** for problem 1, **V202000999_Midterm_P2.py** for problem 2, etc.
- Late submission of exam without an approved extension will incur at least 50% point deduction (or not graded at all).
- **You should not use `'for-loop'` or `'while-loop'` in this exam.**
- You can resubmit the file multiple times. Your last submission will be graded.

Problem 1 (20-pts)

Prompt user to input a sentence, and

(a) (5-pts) Print out number of characters of this sentence.

(b) (5-pts) Print out number of words of this sentence.

(c) (10-pts) Select a random word in this sentence, print out this word with its position (with quotation).

(d) (5-pts) Print out the sentence with the selected word to be capitalized.

An example of the output is below. The print out strings need to be formatted exactly as appeared in the example, otherwise up to 5-points will be deducted.:

```
Enter a sentence: A university of excellence that educates and develops talents for the future
Number of characters is 76
Number of words is 12
The word at position 7 is "develops"
New sentence is:
A university of excellence that educates and DEVELOPS talents for the future
```

Problem 2 (20-pts)

Write a function named `fizzbuzz` that takes in a single integer parameter from user and print it out. You may assume the integer parameter is non-negative. If the number is a multiple of 3, you should print out the word ‘‘`Fizz`’’ instead of the number. If the number is a multiple of 5, you should print out ‘‘`Buzz`’’ instead of the number. If the number is a multiple of both 3 and 5, you should print out ‘‘`FizzBuzz`’’ instead of the number. If it is zero, your function should do nothing. See several examples programs below:

Example run #1:

```
Enter a number:  15
FizzBuzz
```

Example run #2:

```
Enter a number:  9
Fizz
```

Example run #3:

```
Enter a number:  7
7
```

Example run #4:

```
Enter a number:  0
```

Problem 3 (30-pts)

The restaurant Thang Long has many discounts on meals. Every Thursday, the lower cost item is **10**% off. Every Friday, the lower cost item is **50**% off. If the month name starts with "**M**" or "**J**", you will get $**5** off your meal after other discounts. Note that the total should not be negative.

Write the function `lunchPrice(item1, item2, day, month)` that has four parameters: `item1` and `item2` are floats representing the cost of two food items, `day` is a string representing the current day of the week, and `month` is a string representing the current month. This function returns the total cost of lunch after applying discounts explained above. Finally, call the following scripts:

```
lunchPrice(8.5, 4.0, "Wednesday", "March")
lunchPrice(8.5, 4.0, "Thursday", "August'')
lunchPrice(2.5, 2.0, "Friday", "June")
```

Problem 4 (15-pts)

Given a nested list as the follows:

```
list = [[1, 2, 3], [-2, 4, -5], [1, -1, 1]]
```

Write a Python program to remove the 3rd column from a given list. Sample program is provided below:

```
Original Nested list:
[[1, 2, 3], [-2, 4, -5], [1, -1, 1]]
After removing 3rd column:
[[1, 2], [-2, 4], [1, -1]]
```

Problem 5 (15-pts)

Consider the following program:

```
1  def compare(state1, state2):
2      if len(state1) = len(state2):
3          if state1<state2:
4              print(state1+" should be listed first.")
5          else:
6              print(state2+" should be listed first.")
7          print(True)
8      else:
9          print(False)
10
11     if name1 == name2:
12         print("The strings are identical!")
13     else:
14         print("The strings are NOT identical!")
15
16 name1 = 'North Carolina'
17 name2 = 'South Carolina'
18 name3 = 'Virginia'
19 result1 = compare(name1, name2)
20 result2 = compare(name2, name3)
21 print("The result of the comparison is", result1)
22 print("The result of the comparison is", result2)
```

This code contains at least one error. In this problem, we ask you to rewrite the program above and provide us the correct version. Below is the output of the correct program.

```
North Carolina should be listed first.
True
The strings are NOT identical!
False
The strings are NOT identical!
```

You can download a copy of the program above from Canvas at `https://vinuni.instructure.com/courses/757/assignments/7327`.