COMP 1005/1405
Summer 2017 - Tutorial #2

Objectives

- Practice writing Python code in a text editor
- Practice running Python code from a command line
- Practice basic I/O using input(), print() and variables
- Practice writing code using basic conditional/branching statements

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Problem 1 (Basic I/O)

When it is evaluated, the input function displays a prompt and reads text from the console (i.e., typed in using the keyboard). When executed, the following program code will prompt a user to enter their name, assign the input string to the variable called `name`, and then print it out to the screen.

```
name = input("Enter your name : ")
print("Hello, " + name)
```

Write a simple program that prompts a user for their name and birth year. The program will then display (output) a greeting to the user (with their name) and say how old the person is. For example, when the program is executed, the output may look like the following (what the user types in with the keyboard is highlighted)

```
Enter your name: Kitty
What year were you born in Kitty? 2013
Hello, Kitty. You are now 3 years old.
```

Note: The input() functions returns the input as a string. In order to convert the string into an integer use the **`int()`** function. For example, if `x = "12"`, then `int(x)` is the integer 12. Also recall that the **`str()`** function will convert a number to a string.

Problem 2 (Basic I/O, temperature)

Write a Python program that asks the user for a temperature in Celcius. Your program will then print out that temperature in Celsius, Fahrenheit, and Kelvin.

If C is the temperature in Celsius, then the temperature in Fahrenheit can be calculated with the equation $F = (9/5) \times C + 32$, and the temperature in Kelvin is $K = C + 273$.

Here are some examples of temperature values (in all three units) to test your code.

- 30 Celsius = 86 Fahrenheit = 303 Kelvin
- 21 Celsius = 69.8 Fahrenheit = 294 Kelvin
- -10 Celsius = 14 Fahrenheit = 263 Kelvin

Problem 3 (Simple Calculator)

Write a program that performs the function of a simple integer calculator. This program should ask the user for an operation (including the functionality for at least addition, subtraction, multiplication, and long division) and after the user has selected a valid operation, ask the user for the two operands (i.e., the integers used in the operation). If the user enters an invalid operation, the program should print out a message telling them so.

Please also note that long division of integers requires that you provide both a quotient and a remainder - refer to https://docs.python.org/3/library/stdtypes.html - numeric-types-int-float-complex if you do not recall how to compute the remainder when you divide two integers.

Sample Outputs (user input highlighted)

(A)ddition
(S)ubtraction
(M)ultiplication
(D)ivision (Long)
Please select an operation from the list above: Vaporize
This program does not support the operation "Vaporize".

Please select an operation from the list above: M
Please provide the 1st integer: 3
Please provide the 2nd integer: 5

3 * 5 = 15

(A)ddition
(S)ubtraction
(M)ultiplication
(D)ivision (Long)
Please select an operation from the list above: D
Please provide the 1st integer: 16
Please provide the 2nd integer: 3

16 / 3 = 5 with remainder 1

Problem 4 (Movie Ratings)

In Python there is a function len(), which takes one string input and returns a single integer output. More precisely, when you pass a string as input to this function it will return the length of the string (i.e., the number of characters in the string). For example, `len("cat")` returns 3, `len("digdog")` returns 6, and if `word="octopus"`, `len(word)` returns 7.

Write a Python program that asks the user for the name of a movie and a 5-star rating of it. The 5-star rating should be entered as stars/asterisks (not a number) and no 1/2 stars are allowed. By calculating the number of stars typed in by the user (i.e., by finding the length of the text that was input), you can determine how much they liked the movie.

Your program should then output a message based on the rating. Your message should also include the name of the movie title the user typed in. Assuming the movie title they typed in was Shrek, possible messages could be something like:

- wow, 5 stars. You really liked Shrek.
- Shrek must have been pretty good to give it 4 stars.
  ...
- One star? Was Shrek really that bad?
- Zero stars! I will stay away from Shrek.

You can assume that the user will always enter just stars when asked for the rating. (Hitting return with no stars is valid). You should use the len() function to determine the number of stars and use a single flattened conditional (if, elif, ..., elif, else) to determine the output.

Sample Outputs

```
movie title : Shrek
rating: ****
Shrek must have been pretty good to give it 4 stars.
```

```
movie title : Lord of the Rings - Return of the King
rating: *****
Wow, 5 stars. You really liked Lord of the Rings - Return of the
King
```

Problem 5 (Movie Questions)

Write a program that presents the user with four possible movies that an actor/actress has been in. The user should mentally select one of these movies. The program should then ask the user exactly two questions about the content of the movie they picked and, using the user's responses, determine which of the four possible movies was being considered by the user. To accomplish this your program will contain three calls to the input() function but only two of them will ever actually occur (i.e., the decision to ask the second or third question will depend on the response you receive for the first question).

This is known as an expert system and for this exercise you should restrict your expert system to movies starring a specific actor of your choice. Consider, as a clarifying example, the spoiler-filled sample output below for an expert system associated with Nicolas Cage:

Sample Output (1 of 2)
The actor being considered is Nicolas Cage.
The possible movies are: "The Wicker Man", "Next", "Kick-Ass", and "Con Air".

Does his character die by the end of the movie and stay dead? Yes
Does his character ever use the phrase "Not the bees!"? Yes

The movie you are thinking of is "The Wicker Man".

Sample Output (2 of 2)
The actor being considered is Nicolas Cage.
The possible movies are: "The Wicker Man", "Next", "Kick-Ass", and "Con Air"

Does his character die by the end of the movie and stay dead? No
Can his character see into the future? No

The movie you are thinking of is "Con Air".