# **Programming Assignment Unit 1**

Computer Science, University of the People

CS 1101-01 Programming Fundamentals - AY2024-T1

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## Part 1: LEARN FROM YOUR MISTAKES!

For this assignment we were asked to purposefully make some common daily mistakes encountered by programmers. We need to explain why the errors/bugs occur and why they are not valid coding. As an assumption, all the code and information in this exercise will be done using Python 3 interpreter running on Windows. The following are the issues we were asked to create and the explanations:

1. If you are trying to print your name, what happens if you leave out one of the quotation marks or both, and why?
   1. When we remove one of the quotation marks, either the starting or the closing. We will get the error:   
      **Explanation:**   
      Python defines a string as series of characters surrounded by quotation marks, either single (') or double ("). When one or both quotation marks are removed or left out the Python interpreter is unable to determine where the string begins or ends. And for this reason, we are told that the interpreter cannot determine the string since it is missing wither the opening or closing quotation mark. This can be a commonly found error since programmers might forget to or accidentally delete one of the quotation marks when typing.

>>> print('Hello)

File "<stdin>", line 1

print('Hello)

^

SyntaxError: unterminated string literal (detected at line 1)

>>> print(Hello')

File "<stdin>", line 1

print(Hello')

^

SyntaxError: unterminated string literal (detected at line 1)

* 1. When we remove both quotation marks, we will get the error:  
       
     **Explanation:**  
     If we completely omit the quotation marks the interpreter does not know to treat the characters as a string and so it tries to execute them as a command or reference them as a variable. This is why we are told that the character series is undefined, since in this case there is no function, command or variable of that name that the interpreter can call on. This error can happen if the programmer is new to the language and does not understand how strings are represented in Python.

>>> print(Hello)

Traceback (most recent call last):

File "<stdin>", line 1, in <module>

NameError: name 'Hello' is not defined

1. What is the difference between \* and \*\* operators in Python? Explain with the help of an example.
   1. The \* operator represents the multiplication command, meaning the interpreter will multiple the value either side of the operator with each other.  
      Example: 2 \* 3 = 6
   2. The \*\* operator represents the exponent command, meaning that the interpreter will multiply the value to the left of the operator by itself the number of times given to the right of the operator.  
      Example: 2 \*\* 3 = 23 = 8
   3. The two operators might get mixed up accidentally either by typing the same character twice or by not understanding the operator's designed intention.
2. In Python, is it possible to display an integer like 09? Justify your answer.
   1. Since we are running our code using Python 3 interpreter the answer is no, the value 09, or any integer value with leading zeros is considered in-correct code. And would result in the error:

SyntaxError: leading zeros in decimal integer literals are not permitted; use an 0o prefix for octal integers

* 1. If on the other hand, we were to run the same command using the older Python 2 interpreter we would get a different result. This is because the older interpreter translates leading zeros to mean that the number is Octal (8-base) so for example if the value 010 the interpreter would translate this to the decimal (base-10) value of 8.

1. Run the commands type('67') and type(67). What is the difference in the output and why?
   1. The command type('67') would result in the following:  
        
      **Explanation:**The command type() is a built in function that comes with Python. The function takes in a value as a parameter and returns the type of that value. In the case of the command above we are parsing a string value to the function, this is represented as two quotation marks surrounding the characters.

>>> type('67')

<class 'str'>

* 1. The command type(67) would result in the following:  
       
     **Explanation:**  
     As before the type() command returns the type of the value passed into it. This time however we passed in an integer/numeric value. This results in the type function returning the 'int' type and printing it to the console output.

>>> type(67)

<class 'int'>

## Part 2: Write a Python program for each of the following questions.

For this assignment we were asked to write a python program that produces the requested result from the following:

1. To multiply your age by 2 and display it. For example, if your age is 16, so 16 \* 2 = 32  
   **Result:**  
    **Explanation:**for the input we enter my current age [42] as an integer and multiply it using the multiplication operator [\*] by the value [2]. This will result in the response of [84] which is the age provided multiplied by two.

>>> 42 \* 2

84

1. Display the name of the city, country, and continent you are living in.   
   **Result:**  
    **Explanation:**For this program we used the print() function, which takes values as parameters and displays them as a string to the console output. Each time we called the function we passed in a different string each time representing a different part of my current location (City->Country->Continent). The print command outputted the string value that I passed into it to the console.

>>> print('City: Hadera')

City: Hadera

>>> print('Country: Israel')

Country: Israel

>>> print('Continent: Asia')

Continent: Asia

1. To display the examination schedule (i.e., the starting and the ending day) of this term.   
   **Result:**  
     
   **Explanation:**In this program we had to import the datetime class from the date library. This allowed us to create two variables to hold the date values. The variables we created and initiated a new object of type datetime and inserted it into each variable. The value of the start of the current term is 07-Sep-2023. The value of the end of the current term is 08-Nov-2023. We then used the print() function to print out the datetime object to the console.

>>> from datetime import date

>>> startTerm = date(2023, 9, 7)

>>> endTerm = date(2023, 11, 8)

>>> print(startTerm)

2023-09-07

>>> print(endTerm)

2023-11-08

1. Display the temperature of your country on the day the assignment is attempted by you.  
   **Result:**  
     
   **Explanation:**  
   For this program we used the print() function again, this time we passed in a string value that included an escaped Unicode character to represent the [°] character. The current temperature in Hadera, Israel is 25 degrees Celsius as of the time writing this answer [14-Sep-2023].

>>> print('25 \u00B0C')

25 °C

## Conclusion

To conclude this assignment, we learned how we can make mistakes and fix them while programming. We practiced our debugging skills and understood how we might avoid making some common mistakes. We also learned the importance of correct language syntax and that there are some commands and operators that might look alike but have very different uses and results.

## References

Python 3 Documentation

<https://docs.python.org/3/>

The Weather Channel – An IBM Business

<https://weather.com/weather/today/l/32.43,34.95?par=google>

University Of the People – Online Campus – Calendar

<https://my.uopeople.edu/calendar/view.php?view=month&time=1698814800>

Think Python - How to Think Like a Computer Scientist (2nd Edition, Version 2.4.0)

Chapter 1 - The way of the program