# **Programming Assignment Unit 5**

Computer Science, University of the People

CS 1101-01 Programming Fundamentals - AY2024-T1

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## String Manipulation

For this exercise, we were asked to write a program that asks the user to input a string and then perform some manipulations and calculations on the string. The manipulations are:

1. Display n characters from left. (Accept n as input from the user)
2. Count the number of vowels.
3. Reverse it.

I will first demonstrate the code and then explain it in detail:



The first function takes two parameters and returns the n number of characters from the left of the string. To do this we use array manipulation. When we pass the [:n] array parenthesis we are saying to the interpreter that we want to slice the array n characters from the start of the array/string.



The next function we build will take the string in as a parameter and return the string in reversed order. We can accomplish this using another array manipulation command, by using the slice command again, but this time we add the step indicator telling the interpreter that we want to take steps backwards which will result in a reversed string.



The next function is intended to count the number of vowels in the string that is passed as the parameter. For this we first declare a list of vowels, remembering to use both lower- and upper-case vowels. Next, we declare and initialize a counter variable which will store the count as we iterate through the string.

Next, we start the string iteration meaning that we will check each character in the string one by one. For each character, we will check if it is one of the characters found in the pre-defined vowels parameter. If it is on the list, then we will increment our counter. If not, we will do nothing and continue to the next loop iteration.

Finally, we will return the final value of the counter which will represent the number of vowels in the string.



The final section of the code is the part where we combine all our functions and ask the user for his input. In stage one we get the user's input and store it in a variable called ‘name’. Next, we move to stage two, where we ask our user how many characters he wants from the left of the string. We take that input, cast it as an integer and store it in a variable called ‘n’. In stage three we start calling our functions starting with ‘display\_n\_charecters’ we pass in the user’s inputs, name and n. The result from the function is saved and then printed out to the console.

In stage four we call our function ‘count\_vowels’ and we pass the user’s input. The result again is stored and then printed out to the console. Finally, in stage five we call our function ‘reverse\_string’ and again pass in the user’s input. The result is again stored and then printed out to the console.



The last line of code calls our main function which makes our code run. The following is the output from running our code and inputting some data:



**Conclusion**

In this assignment, we learned and applied the multiple ways of manipulating strings and using loops. We took our exercise and broke it down into multiple functions that made the solution more manageable and easy to explain.

## References

Python 3 Documentation

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

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

Chapters 1-8

Source Scripts:

