



Assessment Task: Lab 6

Qualification national code and title	22603VIC Certificate IV in Cybersecurity
Unit/s national code/s and title/s	ICTPRG434 - Automate processes ICTPRG435 - Write script for software applications

Assessment type (☑):

- ☐ Questioning (Oral/Written)
- ☐ Practical Demonstration
- ☐ 3rd Party Report
- ☒ Other – Lab

Assessment Resources:

The base requirements this assessment task include:

- IDE or editor for developing Python programs (*only IDLE and PyCharm supported by the college*)
- Access to Office 365 & Microsoft Word
- Virtual machine

You may not need all these for every part in this assessment

Assessment Due:

This assessment is due after the weekly session, **Week 6, Friday 17:00**.

Assessment Instructions:

1. Your code must be written in IDLE or PyCharm IDEs. If you are using a different IDEs or a different structure for your application, then assistance from your lecturers may be limited (at best). Discuss with your lecturer before straying too far off the path!
2. All resources used should be referenced with the question. Answers may not be copied and pasted from any resource. All answers must be reworded to display your understanding.
3. You may only use Python functionality, methods and libraries which were taught in this unit.
4. First line of code in a program should have the student's name and number, as proof of authenticity.
5. Screenshots of all programs must be included in this document, with the appropriate question.
6. Screenshots of testing, showing your code works as intended, should be included with the relevant question.
7. Python programs should be named: `XXX_Lab##_SYY_QZZ`
 Replace `XXX` with your initials
 Replace `##` with Lab number
 Replace `YY` with Section number,
 Replace `ZZ` with Question number
8. It is a submission requirement that all screen shots be signed in some way. Some acceptable examples of signed screen shots are shown below.



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```

IDLE Shell 3.10.6
File Edit Shell Debug Options Window Help
Python 3.10.6 (main, Nov 14 2022, 16:10:14) [GCC 11.3.0] on linux
Type "help", "copyright", "credits" or "license()" for more information.
>>> 1+1
2
>>> "bob" * 5
'bobbbobbbob'
>>> True and False
False
>>>
  
```

Example 1: Signed using a simple drawing tool.

```

IDLE Shell 3.10.6
File Edit Shell Debug Options Window Help
Python 3.10.6 (main, Nov 14 2022, 16:10:14) [GCC 11.3.0] on linux
Type "help", "copyright", "credits" or "license()" for more information.
>>> 1+1
2
>>> "bob" * 5
'bobbbobbbob'
>>> True and False
False
>>>
  
```

Example 2: Water marked signature.

```

JW_Lab01_S2_Q3.py - C:/Users/.../Desktop/JW_Lab01_S2_Q3.py (3.11.0)
File Edit Format Run Options Window Help
#Student Name: John Williams Student number: 20065987
number = 1 + 2
print("Number is", number)
  
```

Example 3: Program named as prescribed, as well as first line comment with student name and number. Program saved as pre-described.

- All python programs must be included in the submission, as well as this document.

Assessment Instrument:

Section 1: Sequences in strings

Run the following comparisons in the shell/interpreter.

Code	Screenshot
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quote = "Pull yourself together, Gary! We need you now more than ever!"	
quote[0]	<pre>>>> quote = "Pull yourself together, Gary! We need you now more than ever!" >>> quote[0] 'P'</pre> RHK
quote[0:10]	<pre>>>> quote[0:10] 'Pull yours'</pre> RHK
quote[1:]	<pre>>>> quote[1:] 'ull yourself together, Gary! We need you now more than ever!'</pre> RHK
quote[-1]	<pre>>>> quote[-1] '.'</pre> RHK
1. Can you change any of the characters in any position of an existing string?	
No, because strings are immutable in Python	

Section 2: Working with strings

Frequently in Python, you will be required to work with string comparisons or determining if a condition exists based on a string. Complete the following tasks in the Python shell/interpreter.

- Run the following string operations and evaluate the output:

Code	Screenshot
"a" in "awesome"	<pre>>>> "a" in "awesome" True</pre> RHK
"A" in "awesome"	<pre>>>> "A" in "awesome" False</pre> RHK
"word" == "word"	<pre>>>> "word" == "word" True</pre> RHK
"Word" == "word"	<pre>>>> "Word" == "word" False</pre> RHK
"word" == "word" and "pie" == "pie"	<pre>>>> "word" == "word" and "pie" == "pie" True</pre> RHK

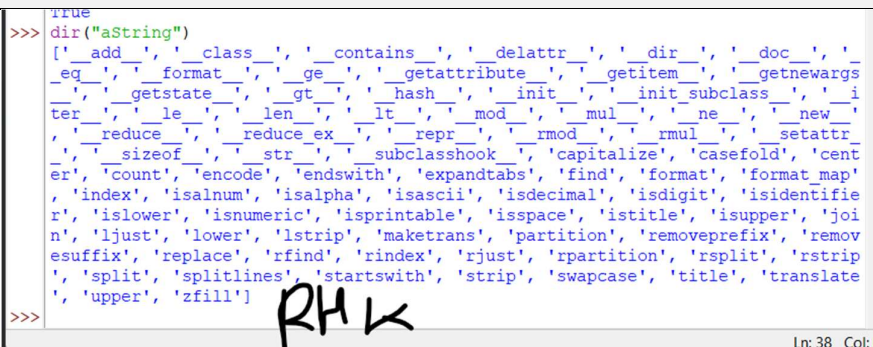
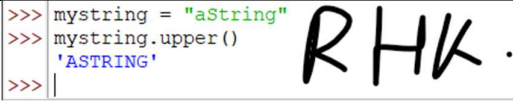
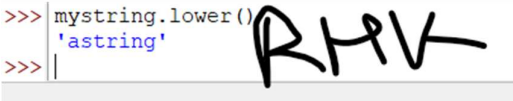
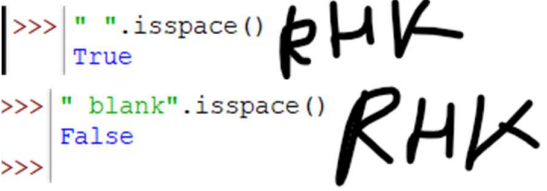
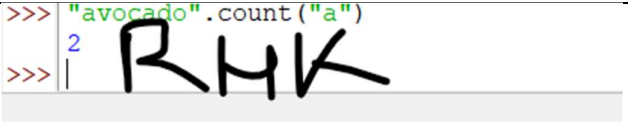
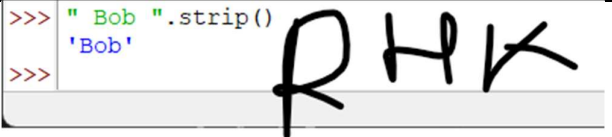



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Section 3: String methods

There are many things you can do with a string. Complete the following tasks in the Python shell/interpreter using string methods.

Code	Screenshot
1. Run the following code and evaluate the output: <code>>>> dir("aString")</code>	 Ln: 38 Col: 0
2. Using the output of the above command, find, execute, and provide screen shots of the appropriate string methods for each of the following tasks:	
Code	Screenshot of code and output
a) Change a string to all capital letters.	
b) Change a string to all lower-case letters	
c) Check if a string is blank (only made of white space). Two possible outcomes so a screen shot showing each	
d) Count all the occurrences of a particular character in a string.	
e) Remove the white space at the end of a string (example, " Bob ").	
f) Find the starting index of the substring 'ox', the substring 'mpd' and the substring 'zy d' in the string "The quick brown	



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fox jumped over the lazy dogs"	<pre>>>> sString.index("mpd") Traceback (most recent call last): File "<pyshell#28>", line 1, in <module> sString.index("mpd") ValueError: substring not found</pre> <p>RHK</p> <pre>>>> sString.index("zy d") 38</pre> <p>RHK</p>
g) Determine if a string is made of digits. Two possible outcomes so a screen shot showing each	<pre>>>> "38".isdigit() True</pre> <p>RHK</p> <pre>>>> "38a".isdigit() False</pre> <p>RHK</p>

Section 4: Pseudocode review

Identify at least two examples of **invalid pseudocode** in the sample provided. Explain why it is not valid

1. IMPORT RANDOM, MATH
2. GENERATE A RANDOM INTEGER BETWEEN 5 AND 10
3. ASK THE USER TO ENTER A STRING OF LETTERS OF THE ALPHABET, WITH AS MANY LETTERS AS THE RANDOMLY GENERATED NUMBER.
4. CONVERT THE STRING TO ALL LOWERCASE LETTERS
5. FOR EACH LETTER IN STRING:
 1. ASCII VALUE = LETTER.ORD
 2. ADD THE ASCII VALUE OF LETTER TO THE TOTAL
6. TOTAL = TOTAL/10
7. DIM NUM1 AS INTEGER
8. NUM1 = MATH.FLOOR(TOTAL)
9. TELL THE USER THAT THEY HAVE 5 GUESSES TO GUESS A NUMBER BETWEEN 48 AND 122.
10. GUESSES = 0
11. WHILE THE USER HAS HAD LESS THAN 5 GUESSES
 1. INPUT(PLEASE INPUT YOUR GUESS)
 2. IF THEIR GUESS IS EQUAL TO 'NUM1'
 1. OUTPUT MESSAGE TELLING THEM THEY GUESSED CORRECTLY
 2. SYSTEM.EXIT
 3. OTHERWISE IF GUESS IS LESS THAT 'NUM1'
 1. PRINTLN(" THE NUMBER IS HIGHER")
 4. OTHERWISE



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<ol style="list-style-type: none"> 1. PUTS "THE NUMBER IS LOWER" 5. END IF 6. GUESSES EQUALS GUESSES PLUS ONE 12. END WHILE 13. OUTPUT THAT THEY HAVE USED ALL THEIR GUESSES AND SHOW 'NUM1' 14. END IF
Issue 1:
<ol style="list-style-type: none"> 1. DIM NUM1 AS INTEGER <p>Here DIM is a keyword from a particular programming language but pseudocode should be independent of any particular programming language</p>
Issue 2:
<ol style="list-style-type: none"> 1. NUM1 = MATH.FLOOR(TOTAL) <p>Instead of using the calculation it could be written as a generic statement</p>

Section 5: A challenge

Complete the following challenge by writing pseudocode, creating code, and demonstrating its functionality.

You are required to create a script that will ask a user to input five words and tell the user which of those words has the most letters. The prompt for the user input must be of the format:

Enter word 1 of 5:

The word number increases each time a valid input is entered

For the purposes of this challenge a word is defined as a collection of characters, not actual words from any language. Only words that do not contain white space or hyphens are allowed. All other characters are permissible.

Where there is more than one word with the most letters it is acceptable if your code only identifies one of them

Begin the challenge by writing a basic algorithm (pseudocode) to meet the requirements.

Further develop your algorithm pseudocode to demonstrate how your algorithm will function. Your pseudocode must:

Contain at least one loop.

Contain at least one "if" statement.

Account for all situations by handling any invalid input by the user.

Complete your solution by translating your pseudocode into Python code.

Note: To be marked as satisfactory for this task, your solution must:

Produce and submit your pseudocode.

Demonstrate through screen shots, that your solution addresses all the above points.



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You must submit the code file with this document.
Contain comprehensive commenting – one comment per line

Screenshot of pseudocode

```

24
25  # declare a counter
26  # declare a list to store valid words
27  # declare a list to keep track of the lengths of the valid words
28  # get user input for 5 words
29  # remove all space from start & end of user input
30  # validate the user input so that it does not contain any hyphen or space
31  # add the word into the word list
32  # add the word length in the count list
33  # determine the max count from the count list
34  # get the word with max length by using the index of the max count from count list
35

```

RHV

Screenshot of output:



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```
PS C:\Users\rajib\OneDrive\Documents\tafe-python> & C:/Users/rajib/AppData/Local/Programs/Python/Python38-32/Python.exe C:/Users/rajib/OneDrive\Documents\tafe-python/lab-6.py
Enter word 1 of 5: Abba
Enter word 2 of 5: Amma
Enter word 3 of 5: Babu
Enter word 4 of 5: Mitu
Enter word 5 of 5: Shahida
Shahida has the most letters 7
PS C:\Users\rajib\OneDrive\Documents\tafe-python> |
```

RHK

Screenshot of code:

```
lab-6.py > ...
1 # declaring counter to control the loop
2 count = 1
3 # declaring list to add the valid words
4 wordList = []
5 # declaring list to track the count of letters in the valid word
6 countList = []
7
8 # declaring a loop to get input from the user
9 while count < 6: # checking to counter to determine when to break the loop
10     newWord = input(f"Enter word {count} of 5: ") # getting user input
11     validWord = newWord.strip() # stripping of the spaces
12     # validating the user input
13     if validWord.find("-") == -1 and validWord.isspace() == False:
14         wordList.append(validWord) # appending valid word to the list
15         # appending valid word'd length to the list
16         countList.append(len(validWord))
17         count += 1 # incrementing the counter
18
19 maxCount = max(countList) # determing max count
20 # determing the word with max count
21 result = wordList[countList.index(maxCount)]
22 print(f"{result} has the most letters {maxCount}") # printing the result
23
```

RHK