Functions and Modules

August 2017

1. Write a program that will print a 4 by 4 matrix of stars:

```
    *    *    *    *
    *    *    *    *
    *    *    *    *
    *    *    *    *
```

```python
print("\t*\t*\t*\t*");
print("\t*\t*\t*\t*");
print("\t*\t*\t*\t*");
print("\t*\t*\t*\t*");
```

```
##   *   *   *   *
##   *   *   *   *
##   *   *   *   *
##   *   *   *   *
```

2. Write a program that will print out all numbers from 1 to 10. Each number should be printed on a separate line and there should be another blankline after each number.

```python
for i in range(1,10):
    print(i)
    print()
```

```
## 1
##
## 2
##
## 3
##
## 4
##
## 5
##
## 6
##
## 7
##
## 8
##
## 9
```

3. Write a program that will accept 5 words from the user. Print these words in alphabetical order.

```python
words = []
for i in range(5):
    words.append(input("Enter a word: "))
words.sort()
print(" ".join(words))
```

4. Write a program that will accept some user input. Count the how many characters in the input are alphabetical, how many are numerical, and how many are neither. Print out these values.

```python
sentence = input("Enter something: ")
count_alpha = 0
count_num = 0
for char in sentence:
    if char.isalpha():
        count_alpha += 1
    elif char.isdigit():
        count_num += 1
        count_other = len(sentence) - count_alpha - count_num
print(count_alpha, "alphabetical characters")
print(count_num, "numerical characters")
print(count_other, "other characters")
```

5. Predict the output of the following code:

```python
string = "lalaboo"
print(string[1::3], string.upper(),end=' ')
print(string.split('a'))
print("%5.1d%5.2d%5.3d" % (1, 2, 3))
```

```
## ab LALABOO ['l', 'l', 'boo']
##     1   02  003
```

6. Take a user input of form MM/DD/YYYY, convert it into a string of form `Day Month Year` and print the string. You will need to split the string that the user enters at the `/` characters (use the split() method) and then use the three substrings to construct a new string. For example, input of `11/21/1989` would produce output `21 November 1989`.

```python
months = ['January', 'February', 'March', 'April',
          'May', 'June', 'July', 'August',
          'September', 'October', 'November', 'December']
string = input("Enter a date in MM/DD/YYYY format: ")
#string="11/21/1989"
string_list = string.split('/')
day = string_list[1]
month = months[int(string_list[0]) - 1]
year = string_list[2]
print (day, month, year)
```

7. Write a program that can take a string as user input and return that string backwards. (Hint: do not use a palindrome as user input to test your program, it could result in you getting a headache). (Challenge: if you are good with the help function, you may be able to find a way to do this question in no more than 3 lines).

```python
#solution 1
entry_string = str(input("Please enter a string to be modified: "))
r_string = ''
length = len(entry_string)
while ( length > 0 ):
    r_string = r_string + entry_string[length - 1 ]
    length = length -1
print (r_string)

#solution 2
entry_string = str(input("Please enter a string to be modified: "))
r_string = ''
```

```
print (r_string.join([entry_string[i] for i in range(len(entry_string) - 1, -1, -1)]))

#solution 3
entry_string = str(input("Please enter a string to be modified: "))
print(entry_string[::-1])
```