Assignment 13 Solutions

1.Write a program that calculates and prints the value according to the given formula:

`Q = Square root of [(2 * C * D)/H]`

Following are the fixed values of C and H:

C is 50. H is 30.

D is the variable whose values should be input to your program in a comma-separated sequence.

Example: Let us assume the following comma separated input sequence is given to the program: `100,150,180`

The output of the program should be: `18,22,24`

In [1]:

```
from math import sqrt
def calculateProgram():
    in_num = eval(input("Enter the Input: "))
    out_num = []
    C = 50 # Declaring and initializing constant C
    H = 30 # Declaring and initializing constant H
    for ele in in_num:
        Q = str(int(sqrt((2*C*ele)/H)))
        out_num.append(Q)
    print("Output: {}".format(','.join(out_num)))

calculateProgram()
```

```
Enter the Input: 100,150,180
Output: 18,22,24
```

2.Write a program which takes 2 digits, X,Y as input and generates a 2-dimensional array. The element value in the i-th row and j-th column of the array should be i*j.

`Note: i=0,1.., X-1; j=0,1,¡Y-1.`

Example: Suppose the following inputs are given to the program: `3,5`

Then, the output of the program should be: `[[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]`

In [2]:

```
def createMatrix(n,m):

    M=[]
    print("Enter the element :")
    for i in range(n):
        #stor row
        row =[]
        for j in range(m):
            row.append(i*j)
        M.append(row)
    return(M)

x = int(input("Enter x : "))
y = int(input("enter y : "))
createMatrix(x,y)
```

```
Enter x : 3
enter y : 5
Enter the element :
```

Out[2]:

```
[[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]
```

3.Write a program that accepts a comma separated sequence of words as input and prints the words in a comma-separated sequence after sorting them alphabetically ?

Suppose the following input is supplied to the program: `without,hello,bag,world`
Then, the output should be: `bag,hello,without,world`

In [4]:

```
def sortString():
    in_string = input('Enter comma seperated words: ')
    out_string = ','.join(sorted(in_string.split(',')))
    print(f'Output: {out_string}')

sortString()
```

```
Enter comma seperated words: without,hello,bag,world
Output: bag,hello,without,world
```

4.Write a program that accepts a sequence of whitespace separated words as input and prints the words after removing all duplicate words and sorting them alphanumerically.

Suppose the following input is supplied to the program: `hello world and practice makes perfect and hello world again`
Then, the output should be: `again and hello makes perfect practice world`

In [5]:

```
def sortAlphaNumerically():
    in_string = input("Enter the Input String: ")
    out_string = ' '.join(sorted(sorted(list(set(in_string.split(" "))))))
    print(f'Output: {out_string}')

sortAlphaNumerically()
```

```
Enter the Input String: hello world and practice makes perfect and hello wor
ld again
Output: again and hello makes perfect practice world
```

5.Write a program that accepts a sentence and calculate the number of letters and digits.

Suppose the following input is supplied to the program: `hello world! 123`

Then, the output should be:

```
LETTERS 10
DIGITS 3
```

In [8]:

```
s = input("Input a string : ")
digits=letters=0
for c in s:
    if c.isdigit():
        digits += 1
    elif c.isalpha():
        letters += 1
    else:
        pass
print("Letters", letters)
print("Digits", digits)
```

```
Input a string : hello world! 123
Letters 10
Digits 3
```

6.A website requires the users to input username and password to register. Write a program to check the validity of password input by users.

Following are the criteria for checking the password:

1. At least 1 letter between [a-z]
2. At least 1 number between [0-9]
3. At least 1 letter between [A-Z]
4. At least 1 character from [$#@]
5. Minimum length of transaction password: 6
6. Maximum length of transaction password: 12

Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.

Example:
If the following passwords are given as input to the program: `ABd1234@1,a F1#,2w3E*,2We3345`
Then, the output of the program should be: `ABd1234@1`

In [10]:

```
def checkPassword():
    in_string = input("Enter the passwords are given as to the program: ")
    small_list = "abcdefghijklmnopqrstuvwxyz"
    cap_list = "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
    num_list = "0123456789"
    special_list = "$#@"
    for ele in in_string.split(","):
        if len(ele) <= 12 and len(ele) >=6 :
            if any(i.isupper() for i in ele):
                if any(i.islower() for i in ele):
                    if any(i for i in ele if i in special_list):
                        print(ele)

checkPassword()
```

```
Enter the passwords are given as to the program: ABd1234@1,a F1#,2w3E*,2We33
45
ABd1234@1
```

In [ ]:

```

```