**Python Programming Basic Assignment-13**

**Question 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 [36]:

c**=**50

h**=**30

d1**=**input('Enter the comma separated values:')**.**split(',')

d2**=**[int(i) **for** i **in** d1]

out**=**[]

**for** i **in** d2:

q**=**np**.**sqrt((2**\***c**\***i)**/**h)

out**.**append(q)

print(round(q),end**=**',')

Enter the comma separated values:100,150,180

18,22,24,

**Question 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 [54]:

x**=**int(input('Enter the value of X: '))

y**=**int(input('Enter the value of Y: '))

l1**=**[]

**for** i **in** range(x):

l2**=**[]

**for** j **in** range(y):

l2**.**append(i**\***j)

l1**.**append(l2)

l1

Enter the value of X: 3

Enter the value of Y: 5

Out[54]:

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

**Question 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 [58]:

s**=**input('Enter the comma separated words: ')**.**split(',')

print(sorted(s))

Enter the comma separated words: without,hello,bag,world

['bag', 'hello', 'without', 'world']

**Question 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 [60]:

s**=**input('Enter the sequence of white separated words: ')**.**split(' ')

print(' '**.**join(sorted(set(s))))

Enter the sequence of white separated words: hello world and practice makes perfect and hello world again

again and hello makes perfect practice world

**Question 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 [87]:

s**=**'hello world! 123'

In [88]:

s

Out[88]:

'hello world! 123'

In [89]:

digit**=**[]

letters**=**[]

**for** i **in** s:

**if** i**.**isdigit():

digit**.**append(i)

**elif** i**.**isalpha():

letters**.**append(i)

In [95]:

print('Letters:',len(letters))

print('Digit:',len(digit))

Letters: 10

Digit: 3

**Question 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 [157]:

**import** re

pswd **=** input("Type the passwords in comma separated form: ")**.**split(",")

valid **=** []

**for** i **in** pswd:

**if** len(i) **<** 6 **or** len(i) **>** 12:

**continue**

**elif** **not** re**.**search("([a-z])+", i):

**continue**

**elif** **not** re**.**search("([A-Z])+", i):

**continue**

**elif** **not** re**.**search("([0-9])+", i):

**continue**

**elif** **not** re**.**search("([!@$%^&])+", i):

**continue**

**else**:

valid**.**append(i)

print((" ")**.**join(valid))

**break**

**else**:

print('Invalid password')

Type the passwords in comma separated form: ABd1234@1,a F1#,2w3E\*,2We3345

ABd1234@1

In [ ]: