

Assignment 13

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.

```
In [1]: import math
c=50
h=30
a = []
items=[x for x in input().split(',')]
for d in items:
    a.append(str(int(round(math.sqrt(2*c*float(d)/h))))

print(','.join(a))

25,96,32
9,18,10
```

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.

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]: rows = int(input("Enter the number of rows required: "))
columns = int(input("Enter the number of columns required: "))
list1 = [[0 for col in range(columns)] for row in range(rows)]
for row in range(rows):
    for col in range(columns):
        list1[row][col]=row*col
print(list1)

Enter the number of rows required: 2
Enter the number of columns required: 3
[[0, 0, 0], [0, 1, 2]]
```

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 [3]: y=input("Enter the words here : ")
y=sorted(y.split(","))
print(",".join(y))

Enter comma separated sequence of words : without,hello,bag,world
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 [4]: a=input("Enter the words : ")
b=sorted(set(a.split(" ")))
print(" ".join(b))

Enter the words : hello world and practice makes perfect and hello world again,
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 [6]: a = input("Enter the words: ")
d=l=0
for c in a:
    if c.isdigit():
        d=d+1
    elif c.isalpha():
        l=l+1
    else:
        pass
print("Letters", l)
print("Digits", d)

Enter the words: Hello Everyone 5629
Letters 13
Digits 4
```

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:At least 1 letter between [a-z],At least 1 number between [0-9].....

```
In [2]: import re

password = input("Please enter the password ")
a = password.split(",")

accepted = []
for i in a:

    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:
        accepted.append(i)

print((" ").join(accepted))

Please enter the password ABd1234@1,a F1#,2w3E*,2We3345
ABd1234@1
```

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In [ ]:
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In [ ]:
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