| 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

**ANSWER:**

import math

d = [int(i) for i in input('Enter the values of d: ').split(",")]

c = 50

h = 30

q = []

for i in d:

q.append(int(math.sqrt((2\*c\*i)/h)))

print(q)

>>>Enter the values of d: 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]]  **ANSWER:** |
| --- |
|  |

columns,rows = [int(i) for i in input().split(',')]

result = []

for i in range(columns):

result.append([j\*i for j in range(rows)])

print(result)

>>>3,5

[[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

list\_of\_words = sorted([i for i in input().split(',')])

print(list\_of\_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

list\_of\_words = sorted(set([i for i in input().split(' ')]))

print(\*list\_of\_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

**ANSWER:**

digits = letters = 0

for i in input():

if i.isalpha():

letters += 1

elif i.isnumeric():

digits += 1

else:

pass

print('LETTERS: ',letters)

print('DIGITS: ',digits)

>>>hello world! 123

LETTERS: 10

DIGITS: 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] |
| --- |
|  |

| 1. At least 1 letter between [A-Z] |
| --- |
|  |

| 3. At least 1 character from [$#@] |
| --- |
|  |

| 4. Minimum length of transaction password: 6 |
| --- |
|  |

| 5. 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

**ANSWER:**

**import re**

**passwords= [i for i in input("Input your password: ").split(',')]**

**x = True**

**result = []**

**for p in passwords:**

**while x:**

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

**break**

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

**break**

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

**break**

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

**break**

**elif not re.search("[$#@]",p):**

**break**

**elif re.search("\s",p):**

**break**

**else:**

**result.append(p)**

**break**

**print(result)**

**>>>Input your password: ABd1234@1,a F1#,2w3E\*,2We3345**

**['ABd1234@1']**