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| Question 1: |
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| Write a program that calculates and prints the value according to the given formula: |
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| Q = Square root of [(2 \* C \* D)/H] |
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| Following are the fixed values of C and H: |
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| C is 50. H is 30. |
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| D is the variable whose values should be input to your program in a comma-separated sequence. |
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| Example |
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| Let us assume the following comma separated input sequence is given to the program: |
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| 100,150,180 |
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| The output of the program should be: |
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18,22,24

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

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

# import match package

import math

# Declare constants C, H

C = 50

H = 30

# Declare D = 100 and calculate Q

D = 100

Q = round(math.sqrt(2 \* C \* D/H))

print(Q) # The output should be 18

# Declare D = 150 and calculate Q

D = 150

Q = round(math.sqrt(2 \* C \* D/H))

print(Q) # The output should be 22

# Declare D = 180 and calculate Q

D = 180

Q = round(math.sqrt(2 \* C \* D/H))

print(Q) # The output should be 24

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| 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. | |
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| Note: i=0,1.., X-1; j=0,1,¡­Y-1. |
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| Example |
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| Suppose the following inputs are given to the program: |
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| 3,5 |
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| Then, the output of the program should be: |
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| [[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]] |
| # 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  # if the user enters value 3,5 the output of the program should be [[0, 0, 0, 0, 0], [0, 1, 2, 3, 4], [0, 2, 4, 6, 8]]  X = int(input("Enter number of rows: "))  Y = int(input("Enter number of columns: "))  list1 = [[0 for col in range(Y)] for row in range(X)]  for row in range(X):  for col in range(Y):  list1[row][col]= row\*col  # Print the 2 dimensional array  print(list1) |
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Question 3:

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

# 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.

# Define a string variable which accepts input from the user

s = input(str("Enter a string of words seperated by comma"))

# Define a function, function1 which sorts the words of the string

def function1(s):

# split the string into words and then sort it

words = s.split(",")

words.sort()

return ",".join([str(elem) for elem in words])

# print the sorted string

print(function1("without,hello,bag,world"))

Question 4:

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

again and hello makes perfect practice world

# 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.

# Define a function, function1

def function1(s):

l1 = s.split(" ")

l2 = list(set(l1))

l2.sort()

return l2

# call the function, function1 with sample input and check results

string1 = "hello world and practice makes perfect and hello world again"

print(function1(string1))

Question 5:

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| Write a program that accepts a sentence and calculate the number of letters and digits. |
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| Suppose the following input is supplied to the program: |
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| --- |
| hello world! 123 |
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| Then, the output should be: |
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| LETTERS 10 |
|  |

DIGITS 3

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

# import regular expression package

import re

# Declare a sting variable

s = "hello world! 123"

# Calculate total no letters and digits from the string given

no\_of\_letters = len(re.findall('[0-9]',s))

no\_of\_digits = len(re.findall('[A-z]',s))

# Print the total no of letters and digits

print("Total no of letters : ",no\_of\_letters) # The output should be LETTERS 10

print("Total no of digits : ",no\_of\_digits) # The output should be DIGITS 3

Question 6:

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| A website requires the users to input username and password to register. Write a program to check the validity of password input by users. |
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| Following are the criteria for checking the password: |
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| 1. At least 1 letter between [a-z] |
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| 2. At least 1 number between [0-9] |
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| --- |
| 1. At least 1 letter between [A-Z] |
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| --- |
| 3. At least 1 character from [$#@] |
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| --- |
| 4. Minimum length of transaction password: 6 |
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| 5. Maximum length of transaction password: 12 |
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| 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. |
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| Example |
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| If the following passwords are given as input to the program: |
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| ABd1234@1,a F1#,2w3E\*,2We3345 |
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| Then, the output of the program should be: |
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ABd1234@1

# Write a program to check the validity of password input by users.

# get the password from user

s = input(str("Enter a password"))

# Declare these variables

l,u,p,d = 0, 0, 0, 0

# Use if condition to validate the password

if len(s)>=6 and len(s)<= 12:

for i in s:

if(i.islower()):

l+=1

if(i.isupper()):

u+=1

if(i.isdigit()):

d+=1

if(i=='$' or i=='@' or i=='#'):

p+=1

# Check for presence of lowercase , uppercase, digit, special character

if (l >= 1 and u >= 1 and d >= 1 and p >= 1):

print("Entered password matches all requirements. Success")

else:

if (l < 1):

print("The password should contain atleast one lowercase letter")

if (u < 1):

print("The password should contain atleast one uppercase letter")

if (d < 1):

print("The password should contain atleast one digit")

if (p < 1):

print("The password should contain atleast one special character @ $ #")

else:

print("Password length should be between 6 to 12 characters")