**BASIC PROGRAMMING ASSIGNMENT\_13-SUBMITTED BY SAMUEL DEVDAS**

|  |
| --- |
| 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

Ans. import math

C=50

H=30

D=input('Enter D as 100,150,180 :\n')

split=D.split(sep=',')

intsplit=[int(i) for i in split]

answer=[]

for D in intsplit:

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

answer.append(int(Q))

print('The Output of the program is:\n',answer[0],',',answer[1],',',answer[2])

|  |  |
| --- | --- |
| 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]] |
|  |

Ans. D=input('Enter two digits like eg.3,5 :\n')

split=D.split(sep=',')

intsplit=[int(i) for i in split]

x=intsplit[0]

y=intsplit[1]

array=[]

for i in range(x):

array.append([])

i=[i for i in range(x)]

j=[j for j in range(y)]

for elem in i:

for num in j:

array[elem].append(elem\*num)

print('\nThe output of the program:\n',array)

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

Ans. D=input('Enter comma separated sequence of words:\n')

split=D.split(sep=',')

wordsplit=[i for i in split]

wordsplit.sort()

print('\nThe output is:\n',wordsplit[0],',',wordsplit[1],',',wordsplit[2],',',wordsplit[3])

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

Ans. D=input('Enter whitespace separated sequence of words:\n')

split=D.split()

wordsplit=[i for i in split]

wordset=set(wordsplit)

wordlist=list(wordset)

sortlist=wordlist.sort()

print('\nThe output is:\n',wordlist[0],wordlist[1],wordlist[2],wordlist[3],wordlist[4],wordlist[5],wordlist[6])

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

Ans. D=input('Enter a sentence:\n')

letters=[]

for elem in D:

if elem.isalpha():

letters.append(elem)

digits=[]

for elem in D:

if elem.isdigit():

digits.append(elem)

print('\nLETTERS',len(letters))

print('DIGITS',len(digits))

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

Ans. Password=input('Enter the passwords separated with a comma:\n')

split=Password.split(sep=',')

#atleast one letter between [a-z]

a\_to\_z=[]

for elem in split:

for j in elem:

if (j.isalpha() and j.islower()):

a\_to\_z.append(elem)

#At least 1 letter between [A-Z]

A\_to\_Z=[]

for elem in a\_to\_z:

for j in elem:

if (j.isalpha() and j.isupper()):

A\_to\_Z.append(elem)

A\_to\_Z=list(set(A\_to\_Z))

#At least 1 number between [0-9]

zero\_to\_9=[]

for elem in A\_to\_Z:

for j in elem:

if j.isdigit():

zero\_to\_9.append(elem)

zero\_to\_9=list(set(zero\_to\_9))

#At least 1 character from [$#@]

special\_char=['$','#','@']

chars=[]

for elem in zero\_to\_9:

for j in elem:

if j in special\_char:

chars.append(elem)

#Minimum length of transaction password: 6

#Maximum length of transaction password: 12

length=[]

for elem in chars:

if 13>len(elem)>5:

length.append(elem)

print('\nThe output of the program:\n',length[0])