



Atma Ram Sanatan Dharma College

Class Assignment

Practical File

Question 4

SUBMITTED BY

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Course : Bsc.(Hons) Computer Science
Roll no : 22/28006
Semester : 2
Subject : Discrete Mathematical Structures
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4)For any number n, write a program to list all the solutions of the equation $x_1 + x_2 + x_3 + \dots + x_n = C$, where C is a constant ($C \leq 10$) and $x_1, x_2, x_3, \dots, x_n$ are nonnegative integers using brute force strategy.

CODE

question4 > 4.py > main

```
1
2 #For any number n, write a program to list all the solutions of the equation  $x_1+x_2+x_3+\dots+x_n=C$ , where the constant ( $C \leq 10$ ) and
3 # $x_1, x_2, x_3, \dots, x_n$  are nonnegative integers using brute force strategy.
4
5 def findSolutions(n,c):           #function calculating all the possible solutions for function
6     solutions=[]                 #2-dimensional list storing the list of the available solutions
7     for i in range(c+1):
8         for j in range(c+1-i):
9             for k in range(c+1-i-j):
10                 if i+j+k==c:      #checking if the current values of the variables satisfies the equation
11                     solutions.append([i,j,k])
12
13     return solutions
14
15 #main function
16 def main():
17     n=int(input("enter the value for n:")) #taking value of n from the user
18     c=int(input("enter the value for c:")) #taking value of c from the user
19     solutions=findSolutions(n,c) #calling the function
20     print(f"solutions for  $x_1 + x_2 + x_3 = \{c\}$ , where  $n=\{n\}$ :")
21     for i in solutions:
22         print(i)
23
24 main()
```

Output

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

enter the value for n:3
enter the value for c:5
solutions for $x_1 + x_2 + x_3 = 5$, where $n=3$:
[0, 0, 5]
[0, 1, 4]
[0, 2, 3]
[0, 3, 2]
[0, 4, 1]
[0, 5, 0]
[1, 0, 4]
[1, 1, 3]
[1, 2, 2]
[1, 3, 1]
[1, 4, 0]
[2, 0, 3]
[2, 1, 2]
[2, 2, 1]
[2, 3, 0]
[3, 0, 2]
[3, 1, 1]
[3, 2, 0]
[4, 0, 1]
[4, 1, 0]
[5, 0, 0]

