ATMA RAM SANATAN DHARM COLLEGE

Course Title: Discrete Mathematical Structure Practical

Submitted To:

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Submitted By:

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Course : B.Sc. Computer Science Hons.

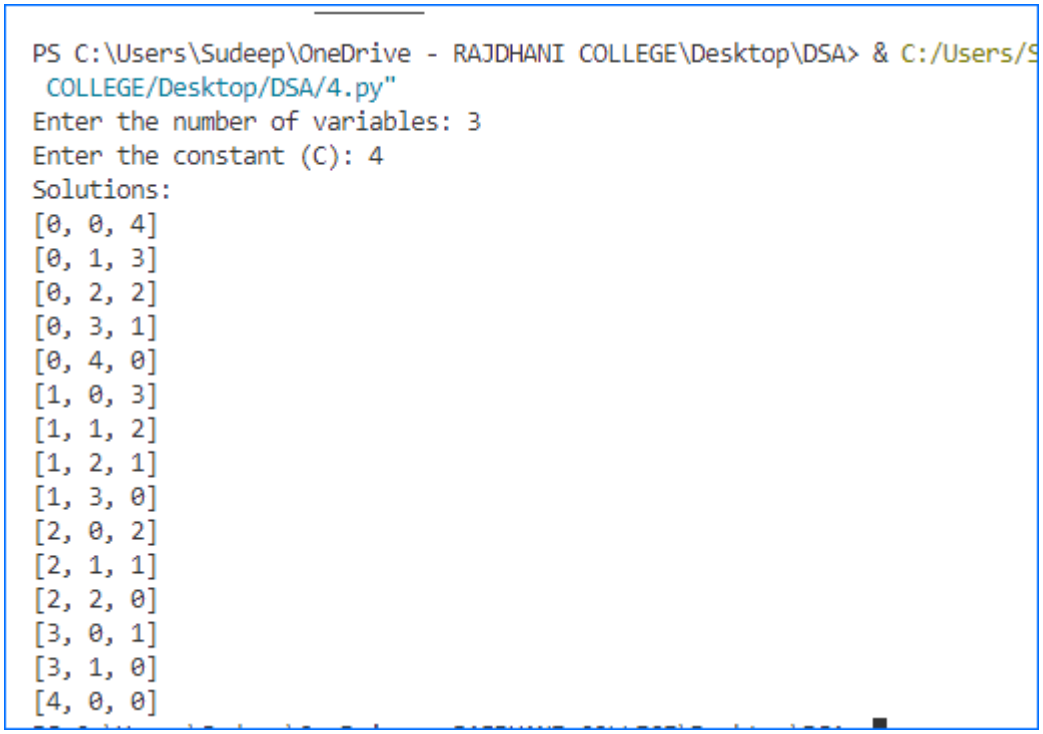
4. For any number n, write a program to list all the solutions of the equation $x_1 + x_2 + x_3 + ... + x_n = C$, where C is a constant (C-10) and x_1, x_2, x_3, ... , x_n are nonnegative integers, using brute force strategy.

Code:

4.py > ...

```python
# Defining the find_equation_solutions functions with two parameters num_variable and constant
def find_equation_solutions(num_variable, constant):
    solutions = []

    def solve_equation(variables, remaining):
        if len(variables) == num_variable:
            if remaining == 0:
                solutions.append(variables)
            return

        for i in range(remaining + 1):
            solve_equation(variables + [i], remaining - i)

    solve_equation([], constant)
    return solutions

def main():
    num_variable = int(input("Enter the number of variables: "))
    constant = int(input("Enter the constant (C): "))

    solutions = find_equation_solutions(num_variable, constant)

    print("Solutions:")
    for solution in solutions:
        print(solution)

if __name__ == "__main__":
    main()
```

Output:


PS C:\Users\Sudeep\OneDrive - RAJDHANI COLLEGE\Desktop\DSA> & C:/Users/S
COLLEGE/Desktop/DSA/4.py"
Enter the number of variables: 3
Enter the constant (C): 4
Solutions:
[0, 0, 4]
[0, 1, 3]
[0, 2, 2]
[0, 3, 1]
[0, 4, 0]
[1, 0, 3]
[1, 1, 2]
[1, 2, 1]
[1, 3, 0]
[2, 0, 2]
[2, 1, 1]
[2, 2, 0]
[3, 0, 1]
[3, 1, 0]
[4, 0, 0]