DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING
Discover. Learn. Empower.

EXPERIMENT 1

NAME: Tanmaya Kumar Pani	**UID: 22BCS12986**
BRANCH: CSE	**SECTION: 22BCS_IOT_613B**
SEMESTER: 5	**DATE : 16/7/2024**
SUBJECT : ADVANCED PROGRAMMING-1	**SUBJECT CODE: 22CSP-314**

1.AIM:

I. Given a list of countries, each on a new line, your task is to read them into an array and thenDisplay the element indexed at 0. Note that indexing starts from 3.

II. Given a square matrix, calculate the absolute difference between the sumsof its diagonals.

For example, the square matrix is shown below:

1 2 3

4 5 6

9 8 9

The left-to-right diagonal =. The right to left diagonal =. Their absolute difference is.

Function description

Complete the function in the editor below.

Diagonal Difference takes the following parameter:

1. int arr[n][m]: an array of integersReturn
2. int: the absolute diagonal difference

2. OBJECTIVE :

a. Reading a List of Countries into an Array and Displaying an Element.

b. Calculate the Absolute Difference Between the Sums of Diagonals of a Square Matrix

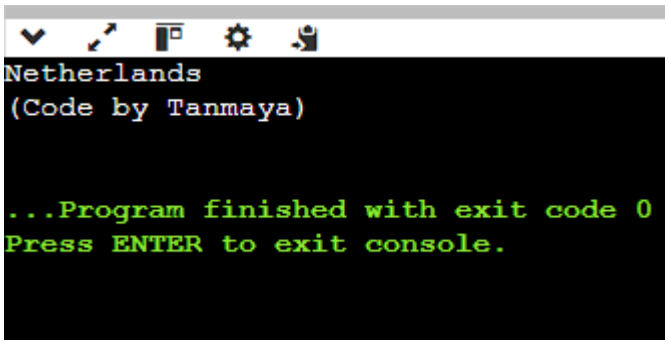
3. IMPLEMENTATION/CODE:

a.
```
def get_country_at_index(countries, index, start_index=3):
    adjusted_index = index - start_index
    if 0 <= adjusted_index < len(countries):
        return countries[adjusted_index]
    else:
        return "Index out of range"
input_countries = """Namibia Nauru Nepal Netherlands NewZealand Nicaragua Niger
Nigeria NorthKorea Norway"""
countries_list = input_countries.split()  # Split by spaces instead of newlines
index_to_access = 6
output_country = get_country_at_index(countries_list, index_to_access)
print(output_country)
print("(Code by Tanmaya)")
```

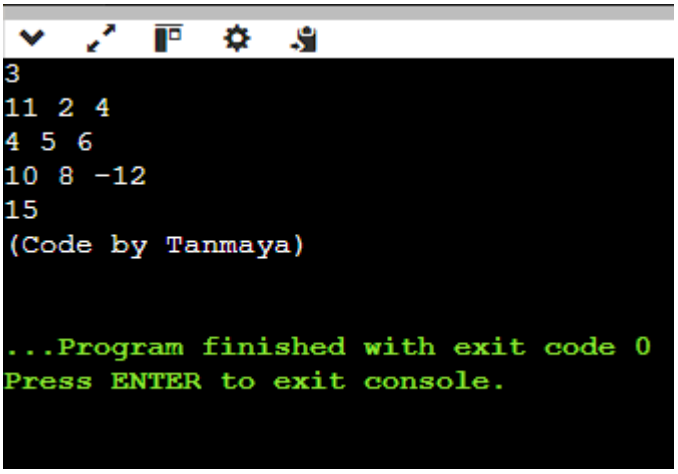
b.
```
def diagonalDifference(arr):
    n = len(arr)
    primary_diagonal_sum = 0
    secondary_diagonal_sum = 0

    for i in range(n):
    primary_diagonal_sum += arr[i][i]
    secondary_diagonal_sum += arr[i][n - 1 - i]

    return abs(primary_diagonal_sum - secondary_diagonal_sum)

    # Example usage
    if __name__ == "__main__":
    n = int(input().strip())
    arr = []
    for _ in range(n):
    arr.append(list(map(int, input().strip().split())))
    result = diagonalDifference(arr)
    print(result)

    print("(Code by Tanmaya)")
```

4. OUTPUT:

a.



b.



5. LEARNING OUTCOMES:

a. Learned how to use the split() method to break a multi-line string into a list of strings.

b. Understood the concept of adjusting indices when a different starting index is provided, reinforcing how to handle non-zero-based indexing.

c. Gained knowledge on how to represent and manipulate a square matrix in Python using a 2D list (list of lists).

d. Learned to read multiple lines of input and convert them into a structured format (a list of lists) using input() and split() methods.