

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment- 1.1

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Semester: 5th

Subject Name: Advanced Programming

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Section/Group: ST 802-A

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Subject Code: 21CSP-259

1. Aim:

Solve the following problems on hackerrank:

1. Diagonal Difference
2. Compare the triplets.

2. Objective: To perform different operations on arrays.

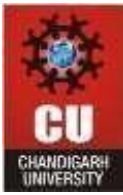
3. Code :

Program -1

```
import math
import os
import random
import re
import sys

#
# Complete the 'diagonalDifference' function below.
#
# The function is expected to return an INTEGER.
# The function accepts 2D_INTEGER_ARRAY arr as parameter.
#

def diagonalDifference(arr):
```



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```
temp = 0
emp = 0
for i in range(0,len(arr)):
    temp = temp + arr[i][i]

for j in range(0,len(arr)):
    emp = emp + arr[j][len(arr)-1-j]

return abs(temp - emp)

if __name__ == '__main__':
    fptr = open(os.environ['OUTPUT_PATH'], 'w')

    n = int(input().strip())

    arr = []

    for _ in range(n):
        arr.append(list(map(int, input().rstrip().split())))

    result = diagonalDifference(arr)

    fptr.write(str(result) + '\n')

    fptr.close()
```

Program -2

```
#!/bin/python3
```

```
import math
import os
import random
```



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```
import re
import sys
```

```
#
# Complete the 'compareTriplets' function below.
#
# The function is expected to return an INTEGER_ARRAY.
# The function accepts following parameters:
# 1. INTEGER_ARRAY a
# 2. INTEGER_ARRAY b
#
```

```
def compareTriplets(a, b):
    # Write your code here
```

```
if __name__ == '__main__':
    fptr = open(os.environ['OUTPUT_PATH'], 'w')
```

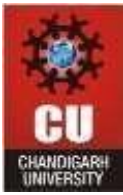
```
    a = list(map(int, input().rstrip().split()))
```

```
    b = list(map(int, input().rstrip().split()))
```

```
    result = compareTriplets(a, b)
```

```
    fptr.write(' '.join(map(str, result)))
    fptr.write('\n')
```

```
    fptr.close()
```



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5. Output: Program 1:

The screenshot shows the HackerRank interface for the 'Diagonal Difference' problem. The problem description states: "Given a square matrix, calculate the absolute difference between the sums of its diagonals. For example, the square matrix *arr* is shown below:

1	2	3
4	5	6
9	8	9

The left-to-right diagonal = $1 + 5 + 9 = 15$. The right to left diagonal = $3 + 5 + 9 = 17$. Their absolute difference is $|15 - 17| = 2$.

Function description
Complete the `diagonalDifference` function in the editor below.
`diagonalDifference` takes the following parameter:

- `int arr[n][m]`: an array of integers

Return
• `int`: the absolute diagonal difference

Input Format
The first line contains a single integer, *n*, the number of rows and columns in the square matrix *arr*.
Each of the next *n* lines describes a row, *arr[i]*, and consists of *n* space-separated integers *arr[i][j]*.

Constraints
• $-100 \leq arr[i][j] \leq 100$

Output Format

The code in the editor is:

```
result = diagonalDifference(arr)

fptr.write(str(result) + '\n')

fptr.close()
```

The output shows "Congratulations! You have passed the sample test cases. Click the submit button to run your code against all the test cases."

Sample Test case 0

Input (stdin)	Download
3	
11 2 4	
4 5 6	
10 8 -12	

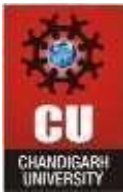
Your Output (stdout)

15

Expected Output

15

Program 2:



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The screenshot displays the HackerRank interface for the 'Compare the Triplets' problem. The left sidebar contains navigation links: Problem, Submissions, Leaderboard, and Discussions. The main content area on the left provides the problem description, which involves comparing two triplets based on their elements. It includes an example where triplet a = [1, 2, 3] and triplet b = [3, 2, 1] result in a score of [1, 1] for Alice and Bob respectively. The 'Function Description' section states that the function compareTriplets(a, b) should return an array of two integers representing the scores. The right side of the interface features a code editor with a Python solution, a 'Run Code' button, and a 'Submit Code' button. Below the code editor, a 'Congratulations!' message indicates that the sample test cases have been passed. The test cases section shows two sample cases with their respective inputs and outputs.

Problem

Alice and Bob each created one problem for HackerRank. A reviewer rates the two challenges, awarding points on a scale from 1 to 100 for three categories: problem clarity, originality, and difficulty.

The rating for Alice's challenge is the triplet $a = (a[0], a[1], a[2])$, and the rating for Bob's challenge is the triplet $b = (b[0], b[1], b[2])$.

The task is to find their comparison points by comparing $a[0]$ with $b[0]$, $a[1]$ with $b[1]$, and $a[2]$ with $b[2]$.

- If $a[i] > b[i]$, then Alice is awarded 1 point.
- If $a[i] < b[i]$, then Bob is awarded 1 point.
- If $a[i] = b[i]$, then neither person receives a point.

Comparison points is the total points a person earned.

Given a and b , determine their respective comparison points.

Example

$a = [1, 2, 3]$
 $b = [3, 2, 1]$

- For elements $a[0]$, Bob is awarded a point because $a[0] < b[0]$.
- For the equal elements $a[1]$ and $b[1]$, no points are earned.
- Finally, for elements $a[2]$, $a[2] > b[2]$ so Alice receives a point.

The return array is $[1, 1]$ with Alice's score first and Bob's second.

Function Description

Complete the function `compareTriplets` in the editor below.

`compareTriplets` has the following parameter(s):

- `int a[3]`: Alice's challenge rating
- `int b[3]`: Bob's challenge rating

```
result = compareTriplets(a, b)

fptr.write(' '.join(map(str, result)))
fptr.write('\n')

fptr.close()
```

Line: 38 Col: 17

Upload Code as File ☐ Test against custom input **Run Code** **Submit Code**

Congratulations!

You have passed the sample test cases. Click the submit button to run your code against all the test cases.

Sample Test case 0 [Download](#)

Sample Test case 1 [Download](#)

Input (stdin)

```
1 5 6 7
2 3 6 10
```

Your Output (stdout)

```
1 1 1
```

Expected Output [Download](#)

```
1 1 1
```

6. Learning outcomes:

1. Develop essential skills in array manipulation, traversal, and indexing.
2. Strengthen your logical reasoning and problem-solving abilities through array comparisons and calculations.



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