

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA Batch - 51
AAD Practical 1

Institute of Computer Technology
B. Tech Computer Science and Engineering

Sub: Algorithm Analysis and Design

Practical 1

There are 2 chefs, namely chef 1 and chef 2 in the MasterChef competition. The judge is going to judge on the basis of 3 categories: presentation, taste and hygiene to prepare the dishes. The marking is scaling from 1 to 100. The rating for chef 1 challenge is the triplet $a = (a[0], a[1], a[2])$, and the rating for Chef 2 challenge is the triplet $b = (b[0], b[1], b[2])$, where 0 index is presentation, 1 index is taste and 2 index is hygiene. 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 Chef 1 is awarded 1 point. If $a[i] < b[i]$, then Chef 2 is awarded 1 point. If $a[i] = b[i]$, then neither person receives a point. Comparison points are the total points a person earned. Given a and b , determine their respective comparison points. Design the algorithm for the same and implement using the programming language of your choice. Make comparative analysis for various use cases & input size.

Sample Input 1

27 48 70

89 26 7

Sample Output 1

2 1

Explanation 1

Comparing the 0th elements, $27 < 89$ so Chef 2 receives a point.

Comparing the 1st and 2nd elements, $48 > 26$ and $70 > 7$ so Chef 1 receives two points. The return array is $[2, 1]$.

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA Batch - 51
AAD Practical 1

Code:

```
from YSL_io import *
from array import *

def compare(a, b):
    p1 = 0
    p2 = 0
    for one in range(len(a)):
        for two in range(len(b)):
            if one == two:
                if a[one] > b[two]:
                    p1 = p1 + 1
                elif a[one] < b[two]:
                    p2 = p2 + 1
            else:
                pass
    return p1, p2

# a1 = int(inputGRN('\nEnter presentation score of Chef-1 : '))
# a2 = int(inputGRN('Enter taste score of Chef-1 : '))
# a3 = int(inputGRN('Enter hygiene score of Chef-1 : '))

# b1 = int(inputMGNTA('\nEnter presentation score of Chef-2 : '))
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA Batch - 51
AAD Practical 1

```
# b2 = int(inputMGNTA('Enter taste score of Chef-2 : '))
# b3 = int(inputMGNTA('Enter hygiene score of Chef-2 : '))

# a = array('I', [a1, a2, a3])
# b = array('I', [b1, b2, b3])

n = int(inputORNG('\nEnter number of categories to compare : '))
a = array('I', range(n))
b = array('I', range(n))

print()
for i in range(n):
    a[i] = int(inputGRN(f'Enter category-{i + 1} score of Chef-1 : '))
print()
for i in range(n):
    b[i] = int(inputMGNTA(f'Enter category-{i + 1} score of Chef-2 : '))

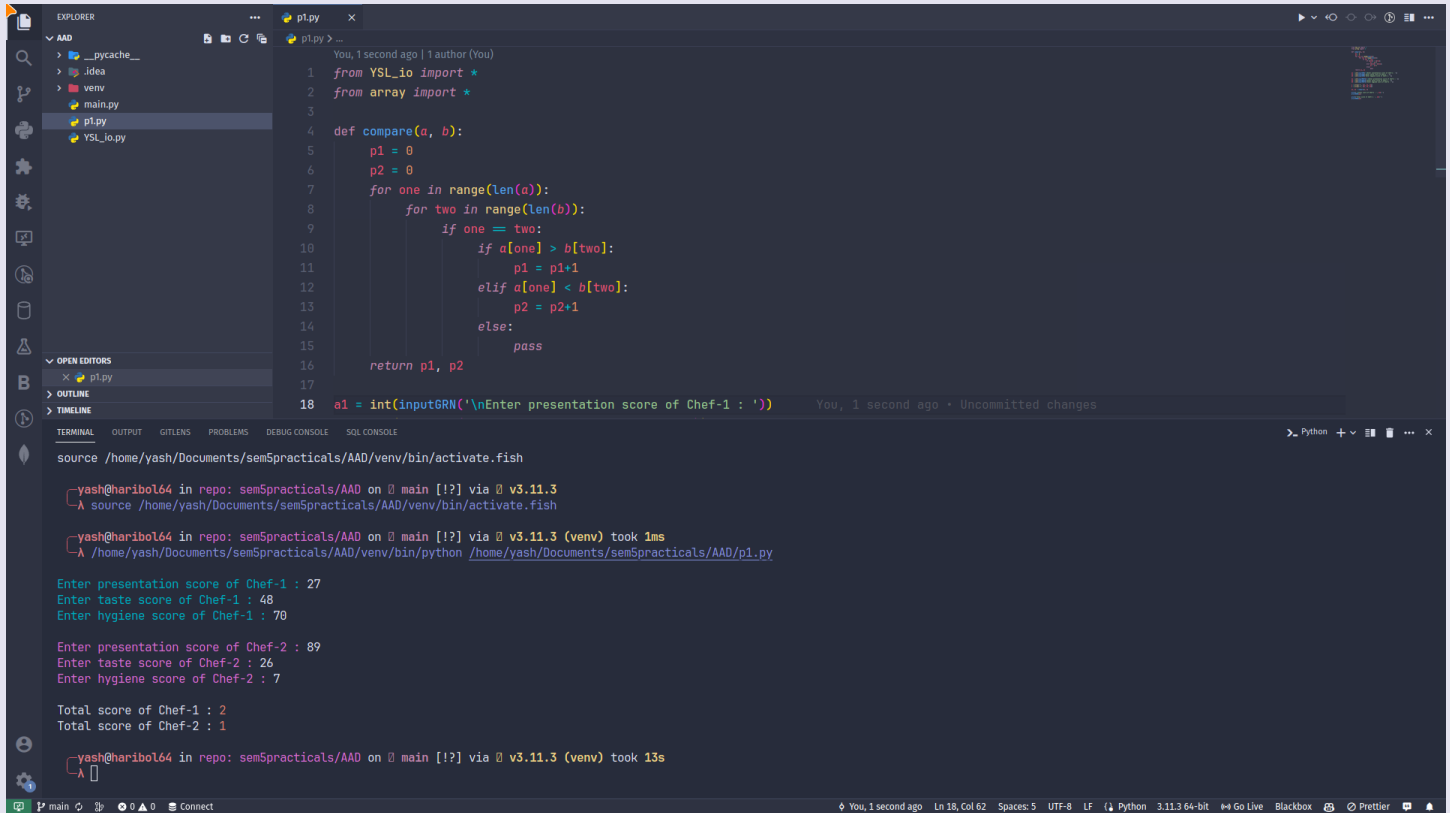
p1, p2 = compare(a, b)

print('\nTotal score of Chef-1 : ', end='')
printORNG(p1)

print('Total score of Chef-2 : ', end='')
printORNG(p2)
```

Name - Yash Lakhtariya
Enrollment number - 21162101012
Branch - CBA Batch - 51
AAD Practical 1

Output :



The screenshot displays a VS Code editor with a Python file named `p1.py` open. The file contains a function `compare(a, b)` that compares two lists `a` and `b` element-wise. It uses nested loops: the outer loop iterates over the length of `a`, and the inner loop iterates over the length of `b`. For each pair of elements, it checks if `a[one] > b[two]`, `a[one] < b[two]`, or they are equal. If `a[one] > b[two]`, it increments `p1`; if `a[one] < b[two]`, it increments `p2`; otherwise, it does nothing. The function returns the tuple `(p1, p2)`.

Below the editor, the terminal shows the execution of the script. It starts with the command `source /home/yash/Documents/sem5practicals/AAD/venv/bin/activate.fish`. Then, it runs `python /home/yash/Documents/sem5practicals/AAD/p1.py`. The program prompts for the presentation score of Chef-1 (27), taste score of Chef-1 (48), and hygiene score of Chef-1 (70). It then prompts for the presentation score of Chef-2 (89), taste score of Chef-2 (26), and hygiene score of Chef-2 (7). Finally, it displays the total scores: Chef-1 has a total score of 2, and Chef-2 has a total score of 1.

```
1 from YSL_io import *
2 from array import *
3
4 def compare(a, b):
5     p1 = 0
6     p2 = 0
7     for one in range(len(a)):
8         for two in range(len(b)):
9             if one == two:
10                 if a[one] > b[two]:
11                     p1 = p1+1
12                 elif a[one] < b[two]:
13                     p2 = p2+1
14                 else:
15                     pass
16     return p1, p2
17
18 a1 = int(inputGRN('\nEnter presentation score of Chef-1 : '))
```

```
source /home/yash/Documents/sem5practicals/AAD/venv/bin/activate.fish
yash@haribol64 in repo: sem5practicals/AAD on main [!?] via v3.11.3
└─ source /home/yash/Documents/sem5practicals/AAD/venv/bin/activate.fish

yash@haribol64 in repo: sem5practicals/AAD on main [!?] via v3.11.3 (venv) took 1ms
└─ /home/yash/Documents/sem5practicals/AAD/venv/bin/python /home/yash/Documents/sem5practicals/AAD/p1.py

Enter presentation score of Chef-1 : 27
Enter taste score of Chef-1 : 48
Enter hygiene score of Chef-1 : 70

Enter presentation score of Chef-2 : 89
Enter taste score of Chef-2 : 26
Enter hygiene score of Chef-2 : 7

Total score of Chef-1 : 2
Total score of Chef-2 : 1

yash@haribol64 in repo: sem5practicals/AAD on main [!?] via v3.11.3 (venv) took 13s
└─
```