Assignment 2 Question 1

February 14, 2024

[22]:
```
print('Enter the number of N students')
n = int(input())
mega_list = []
for i in range(n):
    student_data = []
    value1 = str(input('Enter the name of the student '))
    student_data.append(value1)
    value2 = float(input('Enter the grade value '))
    student_data.append(value2)
    mega_list.append(student_data)

print(mega_list)

#In this block we create a list of lists (nested list) where each value of␣
 ↪mega_list is a list which has two values, names and grade.
```

```
Enter the number of N students
5
Enter the name of the student omega
Enter the grade value 30
Enter the name of the student beta
Enter the grade value 40
Enter the name of the student chi
Enter the grade value 50
Enter the name of the student zeta
Enter the grade value 40
Enter the name of the student theta
Enter the grade value 70
[['omega ', 30.0], ['beta ', 40.0], ['chi', 50.0], ['zeta ', 40.0], ['theta ',
70.0]]
```

[30]:
```
grade_list = []
for y in range(n):
    grade_list.append(mega_list[y][1])
print(grade_list)
```

```
#In the above code in this block, we create a grade_list and then sort it with␣
 ↪the code below

sorted_grade_list = sorted(grade_list)
print(sorted_grade_list)
```

```
[30.0, 40.0, 50.0, 40.0, 70.0]
[30.0, 40.0, 40.0, 50.0, 70.0]
```

[34]:
```
minimum_grade = min(sorted_grade_list)
print('minimum grade is '+ str(minimum_grade))

#We find the minimum grade using min function

for k in range(n):
    if sorted_grade_list[k] > minimum_grade:
        second_lowest_grade = sorted_grade_list[k]
        break

print('second lowest grade is '+ str(second_lowest_grade))

#We iterate from 0 to the 'n-1th' index (n = number of students)
#We find the grade which is immediately greater than the lowest grade
#Using 'break' we break out of the loop after we find the value next to the␣
 ↪lowest grade
#That value is the second lowest grade


name_list = []
for m in range(n):
    if mega_list[m][1] == second_lowest_grade:
        name_list.append(mega_list[m][0])

#We create a list of names and using the second lowest grade value we find the␣
 ↪corresponding name/s
#We append those names to the list we have created initially
#Those will be the names we require

name_list = sorted(name_list)
print(name_list)

#We sort the list of names in alphabetical order using sorted function

for l in name_list:
    print(l)
```

```
#Finally we print each of the values of the list which have been sorted in␣
 ↪alphabetical order
```

```
minimum grade is 30.0
second lowest grade is 40.0
['beta ', 'zeta ']
beta
zeta
```

Assignment 2 Question 2

February 14, 2024

[16]:
```
nums = []
n = int(input('Enter the number of values of the array '))

print('Enter the values if the array')
for x in range(n):
    values = int(input())
    nums.append(values)

print(nums)

#We create a list of array of numbers here
```

```
Enter the number of values of the array 4
Enter the values if the array
2
7
11
15
[2, 7, 11, 15]
```

[17]:
```
target = int(input('Enter the target value '))
#We allow for target value to be given here
```

```
Enter the target value 17
```

[22]:
```
index_list = []

for y in range(n):
    y += 1
    for k in range(n):
        if y < n:
            if y == k:
                continue
            else:
                if nums[y] + nums[k] == target:
                    index_list.append(y)
                    index_list.append(k)
```

```
print(index_list)

#In this block, we create an empty list and append the values of the relevant␣
 ↪indices to the created list

#In the range of 0 to n-1 (n = number of integers in the array), we create an␣
 ↪outer loop and inner loop and in the outer loop

#we increment y value by 1 such that y = 1 and then from the range of 0 to n-1,␣
 ↪the sum of nums[y] + nums[k] will be checked

#Initially y = 1 and k = 0 and the sum of nums[1] and nums[0] will be checked␣
 ↪for a match with target value

#If not sum of nums[1] and nums[1] should be checked BUT

#Since nums[1] and nums[1] are the same value, according to the condition given␣
 ↪in the question, two same values cannot be added

#So we use 'continue' to skip that iteration and move on to checking the sum of␣
 ↪nums[1] and nums[2] and so on

#Once the inner loop is exhausted y is again incremented by 1 such that y now␣
 ↪becomes 2 (y = 2)

#Sums are once again checked between nums[2] and nums[0] and so on

#Wherever the indices are found to be equal by the code that iteration of sum␣
 ↪is skipped via continue

#This process is repeated ONLY if y < n, and finally we find the indices and␣
 ↪appened the index values to the list we created earlier

#We then print the values of the index list which has the required indices
```

```
[3, 0]
```

[23]:
```
nums = []
n = int(input('Enter the number of values of the array '))

print('Enter the values if the array')
for x in range(n):
    values = int(input())
    nums.append(values)

print(nums)
```

```
target = int(input('Enter the target value '))

index_list = []

for y in range(n):
    y += 1
    for k in range(n):
        if y < n:
            if y == k:
                continue
            else:
                if nums[y] + nums[k] == target:
                    index_list.append(y)
                    index_list.append(k)


print(index_list)

#In this scenario the target value is 13 and we find the indices to be 2 and 0 of the list, which has the integers 11 and 2 respectively.
```

```
Enter the number of values of the array 4
Enter the values if the array
2
7
11
15
[2, 7, 11, 15]
Enter the target value 13
[2, 0]
```