

Question3

February 10, 2024

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[4]: import numpy as np
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[5]: exam_scores = [[85,92,78,90],
                    [76,88,92,80],
                    [90,85,88,95],
                    [82,78,88,75],
                    [88,90,85,92],
                    ]
```

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[6]: np.array(exam_scores)
```

```
[6]: array([[85, 92, 78, 90],
           [76, 88, 92, 80],
           [90, 85, 88, 95],
           [82, 78, 88, 75],
           [88, 90, 85, 92]])
```

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[7]: #What is the difference between numpy and lists ?. Explain.
print("Lists can store different types of data types, while homogenous arrays_
↳can only store of the same data type,also numpy is more efficient for_
↳computing")
```

Lists can store different types of data types, while homogenous arrays can only store of the same data type,also numpy is more efficient for computing

```
[13]: #2. Calculate and print the maximum and minimum scores for each subject.
max_score_subject = np.max(exam_scores, axis=0)
print("max score from each subject =", max_score_subject)
min_score_subject = np.min(exam_scores, axis=0)
print("min score from each subject =", min_score_subject)
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max score from each subject = [90 92 92 95]
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min score from each subject = [76 78 78 75]
```

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[20]: #Identify and print the names (row indices) of the students who performed the_
↳best and
#worst overall (considering the total score across all subjects). Explain your_
↳findings.
total = np.sum(exam_scores, axis=1)
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index_best_student = np.argmax(total)
index_worst_student = np.argmin(total)
print(total)
print("Index of best sport", index_best_student, "-", total[index_best_student])
print("Index of worst sport", index_worst_student, "-",
      ↪total[index_worst_student])

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[345 336 358 323 355]
Index of best sport 2 - 358
Index of worst sport 3 - 323

```

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[16]: print("The index shows that the 3rd student, with the index of 2 has the best
      ↪total, while the 4th student, with the index of 3 has the worst")

```

The index shows that the 3rd student, with the index of 2 has the best total, while the 4th student, with the index of 3 has the worst

```

[17]: #Identify and print the subject (column index) with the highest and lowest
      ↪average scores
      #across all students. Explain your findings.
total_averages = np.mean(exam_scores, axis=0)
print(total_averages)

```

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[84.2 86.6 86.2 86.4]

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[21]: highest_avg_index = np.argmax(total_averages)
lowest_avg_index = np.argmin(total_averages)
print("Highest average index =", highest_avg_index, "-",
      ↪total_averages[highest_avg_index])
print("Lowest average index =", lowest_avg_index, "-",
      ↪total_averages[lowest_avg_index])

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Highest average index = 1 - 86.6
Lowest average index = 0 - 84.2

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[ ]:

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