Lab Programs 1-5

1. import numpy as np

```
student_scores = np.array([
   [85, 78, 92, 74],
   [88, 82, 79, 90],
   [76, 85, 88, 80],
   [90, 88, 84, 86]
])
subject_averages = np.mean(student_scores, axis=0)
subjects = ['Math', 'Science', 'English', 'History']
highest_average_subject = subjects[np.argmax(subject_averages)]
print("Average score for each subject:", subject_averages)
print("Subject with the highest average score:", highest_average_subject)
```

OUTPUT:

```
Average score for each subject: [84.75 83.25 85.75 82.5 ]
Subject with the highest average score: English
```

2. import numpy as np

```
sales_data = np.array([
   [1200, 1350, 1400],
   [900, 1100, 1500],
   [1000, 1150, 1300]
])
avg_price = np.mean(sales_data)
print("Average product price:", avg_price)
```

OUTPUT:

```
Average product price: 1211.111111111111
```

3. import numpy as np

```
house_data = np.array([
   [3, 1800, 250000],
   [5, 2500, 480000],
```

```
    [6, 3000, 550000],
    [4, 2000, 300000]
])
filtered = house_data[house_data[:, 0] > 4]
avg_price = np.mean(filtered[:, 2])
print("Average price of houses with >4 bedrooms:", avg_price)
```

OUTPUT:

```
Average price of houses with >4 bedrooms: 515000.0
```

4.
```
import numpy as np
sales_data = np.array([25000, 30000, 35000, 45000])
total_sales = np.sum(sales_data)
percent_increase = ((sales_data[3] - sales_data[0]) / sales_data[0]) * 100
print("Total yearly sales:", total_sales)
print("Percentage increase Q1 to Q4:", percent_increase, "%")
```

OUTPUT:

```
Total yearly sales: 135000
Percentage increase Q1 to Q4: 80.0 %
```

5.
```
import numpy as np
fuel_efficiency = np.array([18, 20, 22, 25, 30])
avg_eff = np.mean(fuel_efficiency)
model1 = fuel_efficiency[1]   # Example model A
model2 = fuel_efficiency[4]   # Example model B
improvement = ((model2 - model1) / model1) * 100
print("Average Fuel Efficiency:", avg_eff)
print("Percentage Improvement:", improvement, "%")
```

OUTPUT:

```
Average Fuel Efficiency: 23.0
Percentage Improvement: 50.0 %
```