Lab 1

1. Write a Python program to implement Standard Scalar.

Program:

```
from sklearn.preprocessing import StandardScaler

import numpy as np

print("Name: Jiya Hona")

print("Symbol: 29097/078\n")

data = np.array([[10, 20],

                 [15, 25],

                 [20, 30],

                 [25, 35]])

scaler = StandardScaler()

scaled_data = scaler.fit_transform(data)

print("Original Data:\n", data)

print("\nStandardized Data:\n", scaled_data)

print("\nMean of each feature:", scaler.mean_)

print("Standard deviation of each feature:", np.sqrt(scaler.var_))
```

Output:

```
Name: Jiya Hona
Symbol: 29097/078

Original Data:
 [[10 20]
 [15 25]
 [20 30]
 [25 35]]

Standardized Data:
 [[-1.34164079 -1.34164079]
 [-0.4472136  -0.4472136 ]
 [ 0.4472136   0.4472136 ]
 [ 1.34164079  1.34164079]]

Mean of each feature: [17.5 27.5]
Standard deviation of each feature: [5.59016994 5.59016994]
```

[ ]:

2. **Write a Python program to implement Min-max Scalar.**

Program:

```
from sklearn.preprocessing import MinMaxScaler
import numpy as np
print("Name: Jiya Hona")
print("Symbol: 29097/078\n")
data = np.array([[10, 20],
                 [15, 25],
                 [20, 30],
                 [25, 35]])
scaler = MinMaxScaler()
scaled_data = scaler.fit_transform(data)
print("Original Data:\n", data)
print("\nMin-Max Scaled Data:\n", scaled_data)
print("\nData Min (per feature):", scaler.data_min_)
print("Data Max (per feature):", scaler.data_max_)
```

Output:

```
Name: Jiya Hona
Symbol: 29097/078

Original Data:
 [[10 20]
 [15 25]
 [20 30]
 [25 35]]

Min-Max Scaled Data:
 [[0.         0.        ]
 [0.33333333 0.33333333]
 [0.66666667 0.66666667]
 [1.         1.        ]]

Data Min (per feature): [10. 20.]
Data Max (per feature): [25. 35.]
```

```
[ ]:
```