In [1]:
```python
#27-01-2025


import pandas as pd
from sklearn.preprocessing import MinMaxScaler

# Sample dataset with multiple features
data = {
    "age": [25, 30, 35, 40, 45],
    "height": [33, 45, 64, 71, 54],
    "width": [2, 3, 4, 5, 6],
}

# Convert the data into DataFrame
df = pd.DataFrame(data)

# Initialize MinMaxScaler
scaler = MinMaxScaler()

# Normalize the data
normalized_data = scaler.fit_transform(df)

# Create a new DataFrame with normalized values
normalized_df = pd.DataFrame(normalized_data, columns=df.columns)

print("\nNormalized DataFrame (scaled to range [0, 1]):")
print(normalized_df)
```

```
Normalized DataFrame (scaled to range [0, 1]):
    age    height  width
0  0.00  0.000000   0.00
1  0.25  0.315789   0.25
2  0.50  0.815789   0.50
3  0.75  1.000000   0.75
4  1.00  0.552632   1.00
```

In [3]:
```python
import pandas as pd
from sklearn.preprocessing import StandardScaler

# Sample dataset with multiple features
data = {
    "age": [25, 30, 35, 40, 45],
    "height": [133, 145, 164, 171, 154],
    "width": [2, 3, 4, 5, 6],
}

# Convert the data into DataFrame
df = pd.DataFrame(data)

print("Original DataFrame:")
print(df)

# Initialize StandardScaler
scaler = StandardScaler()

# Apply StandardScaler
standardized_data = scaler.fit_transform(df)

# Create a new DataFrame with standardized values
standardized_df = pd.DataFrame(standardized_data, columns=df.columns)

print("\nStandardized DataFrame (zero mean, unit variance):")
print(standardized_df)
```

```
Original DataFrame:
   age  height  width
0   25     133      2
1   30     145      3
2   35     164      4
3   40     171      5
4   45     154      6

Standardized DataFrame (zero mean, unit variance):
        age    height     width
0 -1.414214 -1.512814 -1.414214
1 -0.707107 -0.622923 -0.707107
2  0.000000  0.786070  0.000000
```

```
3  0.707107  1.305173  0.707107
4  1.414214  0.044495  1.414214
```

In [ ]: