Hands-On

Hands-On ini digunakan pada kegiatan Microcredential Associate Data Scientist 2021

Pertemuan 9

Pertemuan 9 (sembilan) pada Microcredential Associate Data Scientist 2021 menyampaikan materi mengenai Mengkonstruksi Data

Pada Tugas Mandiri Pertemuan 9

silakan Anda kerjakan Latihan 1 s/d 10. Output yang anda lihat merupakan panduan yang dapat Anda ikuti dalam penulisan code :)

Latihan (1)

Melakukan import library yang dibutuhkan

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
from scipy import ndimage
from PIL import Image
from sklearn.cluster import KMeans
from skimage.filters import sobel
import skimage.segmentation
import skimage
import warnings
warnings.filterwarnings("ignore")
```

Latihan (2)

Menghitung nilai null pada dataset :

1. Load dataset Iris_Unclean
2. Tampilkan dataset
3. Hitung jumlah nilai null pada dataset

In [2]:
```
# load dataset Iris_Unclean
iris = pd.read_csv('Iris_unclean.csv')
```

In [3]:
```
# tampilkan dataset

iris.head()
```

Out[3]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	NaN	3.5	1.4	0.2	Iris-setosa
1	4.9	2000.0	1.4	0.2	Iris-setosa
2	4.7	3.2	-1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa

In [4]:
```
# hitung jumlah nilai null pada dataset

iris.isnull().sum()
```

Out[4]:
```
SepalLengthCm    2
SepalWidthCm     0
PetalLengthCm    0
PetalWidthCm     0
Species          0
dtype: int64
```

Latihan (3)

Melakukan handle missing value dengan Imputasi Mean:

1. Load dataset Iris_Unclean
2. Ambil 10 data teratas "SepalLengthCm", kemudian tampilkan
3. Mengganti missing value Imputasi dengan mean, kemudian masukkan ke variable
4. Tampilkan 10 data teratas "SepalLengthCm" setelah handle missing value dengan Imputasi mean()

In [5]:
```
# load dataset Iris_Unclean
iris = pd.read_csv('Iris_unclean.csv')
```

In [6]:
```
# ambil 10 data teratas SepalLengthCm, kemudian tampilkan

iris = iris['SepalLengthCm']
iris.head(11)
```

Out[6]:
```
0     NaN
1     4.9
2     4.7
3     4.6
4     5.0
5     5.4
6     NaN
7     5.0
8     4.4
9     4.9
10    5.4
Name: SepalLengthCm, dtype: float64
```

In [7]:
```
# mengganti missing value dengan mean(), kemudian masukkan ke variabel

iris = iris.fillna(iris.mean())
```

In [8]:
```
# tampilkan 10 data teratas SepalLengthCm setelah handle missing value dengan imp

iris.head(11)
```

Out[8]:
```
0     5.856757
1     4.900000
2     4.700000
3     4.600000
4     5.000000
5     5.400000
6     5.856757
7     5.000000
8     4.400000
9     4.900000
10    5.400000
Name: SepalLengthCm, dtype: float64
```

Latihan (4)

Melakukan handle missing value dengan nilai suka-suka (Arbitrary):

1. Load dataset Iris_Unclean
2. Ambil 10 data teratas "SepalLengthCm", kemudian tampilkan
3. Mengganti missing value dengan imputasi nilai suka-suka (Arbitrary), kemudian masukkan ke variable
4. Tampilkan 10 data teratas "SepalLengthCm" setelah handle missing value dengan nilai suka-suka

In [9]:
```
# load dataset Iris_Unclean

iris = pd.read_csv('Iris_unclean.csv')
```

In [10]:
```
# ambil 10 data teratas SepalLengthCm, kemudian tampilkan

iris = iris['SepalWidthCm']
iris.head(10)
```

Out[10]:
```
0       3.5
1    2000.0
2       3.2
3       3.1
4       3.6
5       3.9
6       3.4
7       3.4
8    1500.0
9       3.1
Name: SepalWidthCm, dtype: float64
```

In [11]:
```
# melakukan imputasi nilai suka-suka (Arbitrary), masukkan ke dalam variabel

iris.fillna(99)
```

Out[11]:
```
0         3.5
1      2000.0
2         3.2
3         3.1
4         3.6
         ...
145       3.0
146       2.5
147       3.0
148       3.4
149       3.0
Name: SepalWidthCm, Length: 150, dtype: float64
```

In [12]:
```
iris.head(10)
```

Out[12]:
```
0       3.5
1    2000.0
2       3.2
3       3.1
4       3.6
5       3.9
6       3.4
7       3.4
8    1500.0
9       3.1
Name: SepalWidthCm, dtype: float64
```

Latihan (5)

Melakukan handle missing value dengan frequent category / modus:

1. Load dataset Iris_Unclean
2. Ambil 10 data teratas "SepalLengthCm", kemudian tampilkan
3. Mengganti missing value dengan frequent category / modus
4. Tampilkan hasil imputasi "SepalLengthCm" setelah handle dengan frequent category / modus

In [13]:
```
# load dataset Iris_Unclean

iris = pd.read_csv('Iris_unclean.csv')
```

In [14]:
```
# tampilkan 10 data teratas kolom SepalLengthCm

iris.head(10)
```

Out[14]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	NaN	3.5	1.4	0.2	Iris-setosa
1	4.9	2000.0	1.4	0.2	Iris-setosa
2	4.7	3.2	-1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.4	3.9	1.7	0.4	Iris-setosa
6	NaN	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	-1.5	0.2	Iris-setosa
8	4.4	1500.0	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa

In [15]:
```
# Import SimpleImputer dari sklearn.impute

from sklearn.impute import SimpleImputer

# Mengatasi missing value dengan frequent category / modus

imp = SimpleImputer(strategy='most_frequent')
```

In [16]:
```
# Tampilkan hasil imputasi "SepalLengthCm"

imp.fit_transform(iris)
```

Out[16]:
```
array([[5.0, 3.5, 1.4, 0.2, 'Iris-setosa'],
       [4.9, 2000.0, 1.4, 0.2, 'Iris-setosa'],
       [4.7, 3.2, -1.3, 0.2, 'Iris-setosa'],
       [4.6, 3.1, 1.5, 0.2, 'Iris-setosa'],
       [5.0, 3.6, 1.4, 0.2, 'Iris-setosa'],
       [5.4, 3.9, 1.7, 0.4, 'Iris-setosa'],
       [5.0, 3.4, 1.4, 0.3, 'Iris-setosa'],
       [5.0, 3.4, -1.5, 0.2, 'Iris-setosa'],
       [4.4, 1500.0, 1.4, 0.2, 'Iris-setosa'],
       [4.9, 3.1, 1.5, 0.1, 'Iris-setosa'],
       [5.4, 3.7, 1.5, 0.2, 'Iris-setosa'],
       [4.8, 3.4, 1.6, 0.2, 'Iris-setosa'],
       [4.8, 3.0, 1.4, 0.1, 'Iris-setosa'],
       [4.3, 3.0, 1.1, 0.1, 'Iris-setosa'],
       [5.8, 4.0, 1.2, 0.2, 'Iris-setosa'],
       [5.7, 4.4, 1.5, 0.4, 'Iris-setosa'],
       [5.4, 3.9, 1.3, 0.4, 'Iris-setosa'],
       [5.1, 3.5, 1.4, 0.3, 'Iris-setosa'],
       [5.7, 3.8, 1.7, 0.3, 'Iris-setosa'],
       [5.1, 3.8, 1.5, 0.3, 'Iris-setosa'],
       [5.4, 3.4, 1.7, 0.2, 'Iris-setosa'],
       [5.1, 3.7, 1.5, 0.4, 'Iris-setosa'],
       [4.6, 3.6, 1.0, 0.2, 'Iris-setosa'],
       [5.1, 3.3, 1.7, 0.5, 'Iris-setosa'],
       [4.8, 3.4, 1.9, 0.2, 'Iris-setosa'],
       [5.0, 3.0, 1.6, 0.2, 'Iris-setosa'],
       [5.0, 3.4, 1.6, 0.4, 'Iris-setosa'],
       [5.2, 3.5, 1.5, 0.2, 'Iris-setosa'],
       [5.2, 3.4, 1.4, 0.2, 'Iris-setosa'],
       [4.7, 3.2, 1.6, 0.2, 'Iris-setosa'],
       [4.8, 3.1, 1.6, 0.2, 'Iris-setosa'],
       [5.4, 3.4, 1.5, 0.4, 'Iris-setosa'],
       [5.2, 4.1, 1.5, 0.1, 'Iris-setosa'],
       [5.5, 4.2, 1.4, 0.2, 'Iris-setosa'],
       [4.9, 3.1, 1.5, 0.1, 'Iris-setosa'],
       [5.0, 3.2, 1.2, 0.2, 'Iris-setosa'],
       [5.5, 3.5, 1.3, 0.2, 'Iris-setosa'],
       [4.9, 3.1, 1.5, 0.1, 'Iris-setosa'],
       [4.4, 3.0, 1.3, 0.2, 'Iris-setosa'],
       [5.1, 3.4, 1.5, 0.2, 'Iris-setosa'],
       [5.0, 3.5, 1.3, 0.3, 'Iris-setosa'],
       [4.5, 2.3, 1.3, 0.3, 'Iris-setosa'],
       [4.4, 3.2, 1.3, 0.2, 'Iris-setosa'],
       [5.0, 3.5, 1.6, 0.6, 'Iris-setosa'],
       [5.1, 3.8, 1.9, 0.4, 'Iris-setosa'],
       [4.8, 3.0, 1.4, 0.3, 'Iris-setosa'],
       [5.1, 3.8, 1.6, 0.2, 'Iris-setosa'],
       [4.6, 3.2, 1.4, 0.2, 'Iris-setosa'],
       [5.3, 3.7, 1.5, 0.2, 'Iris-setosa'],
       [5.0, 3.3, 1.4, 0.2, 'Iris-setosa'],
       [7.0, 3.2, 4.7, 1.4, 'Iris-versicolor'],
       [6.4, 3.2, 4.5, 1.5, 'Iris-versicolor'],
```

```
[6.9, 3.1, 4.9, 1.5, 'Iris-versicolor'],
[5.5, 2.3, 4.0, 1.3, 'Iris-versicolor'],
[6.5, 2.8, 4.6, 1.5, 'Iris-versicolor'],
[5.7, 2.8, 4.5, 1.3, 'Iris-versicolor'],
[6.3, 3.3, 4.7, 1.6, 'Iris-versicolor'],
[4.9, 2.4, 3.3, 1.0, 'Iris-versicolor'],
[6.6, 2.9, 4.6, 1.3, 'Iris-versicolor'],
[5.2, 2.7, 3.9, 1.4, 'Iris-versicolor'],
[5.0, 2.0, 3.5, 1.0, 'Iris-versicolor'],
[5.9, 3.0, 4.2, 1.5, 'Iris-versicolor'],
[6.0, 2.2, 4.0, 1.0, 'Iris-versicolor'],
[6.1, 2.9, 4.7, 1.4, 'Iris-versicolor'],
[5.6, 2.9, 3.6, 1.3, 'Iris-versicolor'],
[6.7, 3.1, 4.4, 1.4, 'Iris-versicolor'],
[5.6, 3.0, 4.5, 1.5, 'Iris-versicolor'],
[5.8, 2.7, 4.1, 1.0, 'Iris-versicolor'],
[6.2, 2.2, 4.5, 1.5, 'Iris-versicolor'],
[5.6, 2.5, 3.9, 1.1, 'Iris-versicolor'],
[5.9, 3.2, 4.8, 1.8, 'Iris-versicolor'],
[6.1, 2.8, 4.0, 1.3, 'Iris-versicolor'],
[6.3, 2.5, 4.9, 1.5, 'Iris-versicolor'],
[6.1, 2.8, 4.7, 1.2, 'Iris-versicolor'],
[6.4, 2.9, 4.3, 1.3, 'Iris-versicolor'],
[6.6, 3.0, 4.4, 1.4, 'Iris-versicolor'],
[6.8, 2.8, 4.8, 1.4, 'Iris-versicolor'],
[6.7, 3.0, 5.0, 1.7, 'Iris-versicolor'],
[6.0, 2.9, 4.5, 1.5, 'Iris-versicolor'],
[5.7, 2.6, 3.5, 1.0, 'Iris-versicolor'],
[5.5, 2.4, 3.8, 1.1, 'Iris-versicolor'],
[5.5, 2.4, 3.7, 1.0, 'Iris-versicolor'],
[5.8, 2.7, 3.9, 1.2, 'Iris-versicolor'],
[6.0, 2.7, 5.1, 1.6, 'Iris-versicolor'],
[5.4, 3.0, 4.5, 1.5, 'Iris-versicolor'],
[6.0, 3.4, 4.5, 1.6, 'Iris-versicolor'],
[6.7, 3.1, 4.7, 1.5, 'Iris-versicolor'],
[6.3, 2.3, 4.4, 1.3, 'Iris-versicolor'],
[5.6, 3.0, 4.1, 1.3, 'Iris-versicolor'],
[5.5, 2.5, 4.0, 1.3, 'Iris-versicolor'],
[5.5, 2.6, 4.4, 1.2, 'Iris-versicolor'],
[6.1, 3.0, 4.6, 1.4, 'Iris-versicolor'],
[5.8, 2.6, 4.0, 1.2, 'Iris-versicolor'],
[5.0, 2.3, 3.3, 1.0, 'Iris-versicolor'],
[5.6, 2.7, 4.2, 1.3, 'Iris-versicolor'],
[5.7, 3.0, 4.2, 1.2, 'Iris-versicolor'],
[5.7, 2.9, 4.2, 1.3, 'Iris-versicolor'],
[6.2, 2.9, 4.3, 1.3, 'Iris-versicolor'],
[5.1, 2.5, 3.0, 1.1, 'Iris-versicolor'],
[5.7, 2.8, 4.1, 1.3, 'Iris-versicolor'],
[6.3, 3.3, 6.0, 2.5, 'Iris-virginica'],
[5.8, 2.7, 5.1, 1.9, 'Iris-virginica'],
[7.1, 3.0, 5.9, 2.1, 'Iris-virginica'],
[6.3, 2.9, 5.6, 1.8, 'Iris-virginica'],
[6.5, 3.0, 5.8, 2.2, 'Iris-virginica'],
[7.6, 3.0, 6.6, 2.1, 'Iris-virginica'],
[4.9, 2.5, 4.5, 1.7, 'Iris-virginica'],
[7.3, 2.9, 6.3, 1.8, 'Iris-virginica'],
[6.7, 2.5, 5.8, 1.8, 'Iris-virginica'],
```

```
 [7.2, 3.6, 6.1, 2.5, 'Iris-virginica'],
 [6.5, 3.2, 5.1, 2.0, 'Iris-virginica'],
 [6.4, 2.7, 5.3, 1.9, 'Iris-virginica'],
 [6.8, 3.0, 5.5, 2.1, 'Iris-virginica'],
 [5.7, 2.5, 5.0, 2.0, 'Iris-virginica'],
 [5.8, 2.8, 5.1, 2.4, 'Iris-virginica'],
 [6.4, 3.2, 5.3, 2.3, 'Iris-virginica'],
 [6.5, 3.0, 5.5, 1.8, 'Iris-virginica'],
 [7.7, 3.8, 6.7, 2.2, 'Iris-virginica'],
 [7.7, 2.6, 6.9, 2.3, 'Iris-virginica'],
 [6.0, 2.2, 5.0, 1.5, 'Iris-virginica'],
 [6.9, 3.2, 5.7, 2.3, 'Iris-virginica'],
 [5.6, 2.8, 4.9, 2.0, 'Iris-virginica'],
 [7.7, 2.8, 6.7, 2.0, 'Iris-virginica'],
 [6.3, 2.7, 4.9, 1.8, 'Iris-virginica'],
 [6.7, 3.3, 5.7, 2.1, 'Iris-virginica'],
 [7.2, 3.2, 6.0, 1.8, 'Iris-virginica'],
 [6.2, 2.8, 4.8, 1.8, 'Iris-virginica'],
 [6.1, 3.0, 4.9, 1.8, 'Iris-virginica'],
 [6.4, 2.8, 5.6, 2.1, 'Iris-virginica'],
 [7.2, 3.0, 5.8, 1.6, 'Iris-virginica'],
 [7.4, 2.8, 6.1, 1.9, 'Iris-virginica'],
 [7.9, 3.8, 6.4, 2.0, 'Iris-virginica'],
 [6.4, 2.8, 5.6, 2.2, 'Iris-virginica'],
 [6.3, 2.8, 5.1, 1.5, 'Iris-virginica'],
 [6.1, 2.6, 5.6, 1.4, 'Iris-virginica'],
 [7.7, 3.0, 6.1, 2.3, 'Iris-virginica'],
 [6.3, 3.4, 5.6, 2.4, 'Iris-virginica'],
 [6.4, 3.1, 5.5, 1.8, 'Iris-virginica'],
 [6.0, 3.0, 4.8, 1.8, 'Iris-virginica'],
 [6.9, 3.1, 5.4, 2.1, 'Iris-virginica'],
 [6.7, 3.1, 5.6, 2.4, 'Iris-virginica'],
 [6.9, 3.1, 5.1, 2.3, 'Iris-virginica'],
 [5.8, 2.7, 5.1, 1.9, 'Iris-virginica'],
 [6.8, 3.2, 5.9, 2.3, 'Iris-virginica'],
 [6.7, 3.3, 5.7, 2.5, 'Iris-virginica'],
 [6.7, 3.0, 5.2, 2.3, 'Iris-virginica'],
 [6.3, 2.5, 5.0, 1.9, 'Iris-virginica'],
 [6.5, 3.0, 5.2, 2.0, 'Iris-virginica'],
 [6.2, 3.4, 5.4, 2.3, 'Iris-virginica'],
 [5.9, 3.0, 5.1, 1.8, 'Iris-virginica']], dtype=object)
```

Latihan (6)

Melakukan handle missing value dengan Imputasi Random Sample:

1. Load dataset Iris_Unclean
2. Tampilkan 10 data teratas
3. Membuat imputer random sample dengan random state = 5
4. Cocokan imputer ke data
5. Ubah data dengan imputer masukkan ke dalam variable
6. Tampilkan hasil imputasi data "SepalLengthCm"

In [17]:
```
# load dataset Iris_Unclean

iris = pd.read_csv('Iris_unclean.csv')
```

In [18]:
```
# tampilkan 10 data teratas SepalLengthCm

iris.head(10)
```

Out[18]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	NaN	3.5	1.4	0.2	Iris-setosa
1	4.9	2000.0	1.4	0.2	Iris-setosa
2	4.7	3.2	-1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.4	3.9	1.7	0.4	Iris-setosa
6	NaN	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	-1.5	0.2	Iris-setosa
8	4.4	1500.0	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa

In [30]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split

from feature_engine.imputation import RandomSampleImputer
```

In [32]:
```
# Membuat imputer random sample dengan random state = 5

imputer = RandomSampleImputer(random_state = 5)

# Cocokan imputer ke data

imputer.fit(iris)

# Ubah data dengan imputer masukkan ke dalam variable

test_t= imputer.transform(iris)
```

In [33]:
```
# Tampilkan data hasil imputasi data "SepalLengthCm"

test_t
```

Out[33]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	5.8	3.5	1.4	0.2	Iris-setosa
1	4.9	2000.0	1.4	0.2	Iris-setosa
2	4.7	3.2	-1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 5 columns

Latihan (7)

Melakukan Winsorizing

1. Import library winsorize dari scipy
2. Load data Iris_AfterClean
3. Ambil 10 data teratas "SepalLengthCm", kemudian masukkan ke dalam var iabel datan tampilkan
4. Winsorize data dengan batas nilai terendah 10% dan batas nilai tinggi 20%
5. Tampilkan hasil winsorize

In [43]:
```
# Import library scipy

import numpy as np
from scipy.stats.mstats import winsorize
from scipy.stats.mstats import trima
```

In [44]:
```
# Load data Iris_AfterClean
data = pd.read_csv('Iris_AfterClean.csv')

# Ambil 10 data teratas "SepalLengthCm", kemudian masukkan ke dalam variabel data

a = data['SepalLengthCm']
a
```

Out[44]:
```
0      4.6
1      5.0
2      5.4
3      4.9
4      5.4
      ...
135    6.7
136    6.3
137    6.5
138    6.2
139    5.9
Name: SepalLengthCm, Length: 140, dtype: float64
```

In [46]:
```
# Winsorize data dengan batas nilai terendah 10% dan batas nilai tinggi 20%

wins = winsorize(a, limits=[0.1, 0.2])

# Tampilkan hasil winsorize
print(wins)
```

```
[4.9 5.  5.4 4.9 5.4 4.9 4.9 4.9 5.8 5.4 5.1 5.7 5.1 5.4 5.1 4.9 5.1 4.9
 5.  5.  5.2 5.2 4.9 4.9 5.4 4.9 5.  5.5 4.9 4.9 5.1 5.  4.9 4.9 5.  5.1
 4.9 5.1 4.9 5.3 5.  6.6 6.4 6.6 5.5 6.5 5.7 6.3 4.9 6.6 5.2 5.9 6.  6.1
 5.6 6.6 5.6 5.8 6.2 5.6 5.9 6.1 6.3 6.1 6.4 6.6 6.6 6.6 6.  5.7 5.5 5.5
 5.8 6.  5.4 6.  6.6 6.3 5.6 5.5 5.5 6.1 5.8 5.  5.6 5.7 5.7 6.2 5.1 5.7
 6.3 5.8 6.6 6.3 6.5 6.6 4.9 6.6 6.6 6.6 6.5 6.4 6.6 5.7 5.8 6.4 6.5 6.6
 6.6 6.  6.6 5.6 6.6 6.3 6.6 6.6 6.2 6.1 6.4 6.6 6.6 6.6 6.4 6.3 6.1 6.6
 6.3 6.4 6.  6.6 6.6 6.6 5.8 6.6 6.6 6.6 6.3 6.5 6.2 5.9]
```

Latihan (8)

Melakukan Trimming

1. Import library trima dari scopy
2. Load data Iris_AfterClean
3. Ambil 10 data teratas "SepalLengthCm", kemudian masukkan ke dalam var iabel datan tampilkan
4. Trimming data dengan batas nilai terendah 2 dan batas nilai tinggi 5
5. Tampilkan hasil trimming

In [47]:
```
# Import library trima dari scopy
import numpy as np
from scipy.stats.mstats import winsorize
from scipy.stats.mstats import trima
```

In [48]:
```
# Load data Iris_AfterClean
data = pd.read_csv('Iris_AfterClean.csv')

# Ambil 10 data teratas "SepalLengthCm", kemudian masukkan ke dalam variabel data
data = data['SepalLengthCm']
data.head(11)
```

Out[48]:
```
0     4.6
1     5.0
2     5.4
3     4.9
4     5.4
5     4.8
6     4.8
7     4.3
8     5.8
9     5.4
10    5.1
Name: SepalLengthCm, dtype: float64
```

In [49]:
```
# Trimming data dengan batas nilai terendah 2 dan batas nilai tinggi 5
trims = trima(a, limits=(2,5))

# Tampilkan hasil trimming

print(trims)
```

```
[4.6 5.0 -- 4.9 -- 4.8 4.8 4.3 -- -- -- -- -- -- -- 4.6 -- 4.8 5.0 5.0 --
 -- 4.7 4.8 -- 4.9 5.0 -- 4.9 4.4 -- 5.0 4.5 4.4 5.0 -- 4.8 -- 4.6 -- 5.0
 -- -- -- -- -- -- -- 4.9 -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
 -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- 5.0 -- -- -- -- --
 -- -- -- -- -- -- -- 4.9 -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
 -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
 -- -- --]
```

Latihan (9)

Melakukan Scaling: Normalisasi

1. Load data Iris_AfterClean
2. Ambil 10 data teratas SepalLengthCm dan SepalWidthCm
3. Menghitung mean data
4. Menghitung max - min pada data
5. Menerapkan transformasi ke data
6. Tampilkan hasil scalling

In [51]:
```
# Load data Iris_AfterClean

data = pd.read_csv("Iris_AfterClean.csv")


# Ambil 10 data teratas SepalLengthCm dan SepalWidthCm

data = data[['SepalLengthCm','SepalWidthCm']]
data.head(11)
```

Out[51]:

	SepalLengthCm	SepalWidthCm
0	4.6	3.1
1	5.0	3.6
2	5.4	3.9
3	4.9	3.1
4	5.4	3.7
5	4.8	3.4
6	4.8	3.0
7	4.3	3.0
8	5.8	4.0
9	5.4	3.9
10	5.1	3.5

In [52]:
```
# Menghitung mean
means = data.mean(axis = 0)


# menghitung max - min
max_min = data.max(axis = 0) - data.min(axis = 0)

# menerapkan transformasi ke data
train_scaled = (data - means) / max_min
```

In [53]:
```
# Tampilkan hasil scalling

train_scaled
```

Out[53]:

	SepalLengthCm	SepalWidthCm
0	-0.361905	0.039683
1	-0.250794	0.317460
2	-0.139683	0.484127
3	-0.278571	0.039683
4	-0.139683	0.373016
...	...	...
135	0.221429	-0.015873
136	0.110317	-0.293651
137	0.165873	-0.015873
138	0.082540	0.206349
139	-0.000794	-0.015873

140 rows × 2 columns

Latihan (10)

Melakukan Scaling: Standardisasi

1. Load data Iris_AfterClean
2. Ambil 10 data teratas SepalLengthCm dan SepalWidthCm
2. Import library StandardScaler dari sklearn
3. Membuat objek scaler
4. Sesuaikan scaler dengan data
5. Mengubah data
6. Tampilkan hasil scalling dengan standarisasi

In [57]:
```
# Load data Iris_AfterClean

data = pd.read_csv("Iris_AfterClean.csv")

# Ambil 10 data teratas SepalLengthCm dan SepalWidthCm

data = data[['SepalLengthCm','SepalWidthCm']]
data.head(10)
```

Out[57]:

	SepalLengthCm	SepalWidthCm
0	4.6	3.1
1	5.0	3.6
2	5.4	3.9
3	4.9	3.1
4	5.4	3.7
5	4.8	3.4
6	4.8	3.0
7	4.3	3.0
8	5.8	4.0
9	5.4	3.9

In [58]:
```
# import library StandardScaler dari sklearn

import pandas as pd
from sklearn.preprocessing import StandardScaler

# Buat objek scaler
scaler = StandardScaler()


#Sesuaikan scaler dengan data
scaler.fit(data)

#Mengubah data kereta
train_scaled = scaler.transform(data)
```

In [60]:
```
# Tampilkan hasil

train_scaled
```

Out[60]:
```
array([[-1.59579136,  0.17975613],
       [-1.10585542,  1.43804903],
       [-0.61591947,  2.19302477],
       [-1.22833941,  0.17975613],
       [-0.61591947,  1.68970761],
       [-1.35082339,  0.93473187],
       [-1.35082339, -0.07190245],
       [-1.96324332, -0.07190245],
       [-0.12598353,  2.44468335],
       [-0.61591947,  2.19302477],
       [-0.98337143,  1.18639045],
       [-0.24846751,  1.94136619],
       [-0.98337143,  1.94136619],
       [-0.61591947,  0.93473187],
       [-0.98337143,  1.68970761],
       [-1.59579136,  1.43804903],
       [-0.98337143,  0.68307329],
       [-1.35082339,  0.93473187],
       [-1.10585542, -0.07190245],
       [-1.10585542,  0.93473187],
       [-0.86088745,  1.18639045],
       [-0.86088745,  0.93473187],
       [-1.47330738,  0.43141471],
       [-1.35082339,  0.17975613],
       [-0.61591947,  0.93473187],
       [-1.22833941,  0.17975613],
       [-1.10585542,  0.43141471],
       [-0.49343549,  1.18639045],
       [-1.22833941,  0.17975613],
       [-1.84075934, -0.07190245],
       [-0.98337143,  0.93473187],
       [-1.10585542,  1.18639045],
       [-1.71827535, -1.83351251],
       [-1.84075934,  0.43141471],
       [-1.10585542,  1.18639045],
       [-0.98337143,  1.94136619],
       [-1.35082339, -0.07190245],
       [-0.98337143,  1.94136619],
       [-1.59579136,  0.43141471],
       [-0.73840346,  1.68970761],
       [-1.10585542,  0.68307329],
       [ 1.34382431,  0.43141471],
       [ 0.60892039,  0.43141471],
       [ 1.22134032,  0.17975613],
       [-0.49343549, -1.83351251],
       [ 0.73140438, -0.57521961],
       [-0.24846751, -0.57521961],
       [ 0.4864364 ,  0.68307329],
       [-1.22833941, -1.58185393],
       [ 0.85388836, -0.32356103],
       [-0.86088745, -0.82687819],
       [-0.00349954, -0.07190245],
```

```
[ 0.11898444, -2.08517109],
[ 0.24146843, -0.32356103],
[-0.3709515 , -0.32356103],
[ 0.97637235,  0.17975613],
[-0.3709515 , -0.07190245],
[-0.12598353, -0.82687819],
[ 0.36395242, -2.08517109],
[-0.3709515 , -1.33019535],
[-0.00349954,  0.43141471],
[ 0.24146843, -0.57521961],
[ 0.4864364 , -1.33019535],
[ 0.24146843, -0.57521961],
[ 0.60892039, -0.32356103],
[ 0.85388836, -0.07190245],
[ 1.09885633, -0.57521961],
[ 0.97637235, -0.07190245],
[ 0.11898444, -0.32356103],
[-0.24846751, -1.07853677],
[-0.49343549, -1.58185393],
[-0.49343549, -1.58185393],
[-0.12598353, -0.82687819],
[ 0.11898444, -0.82687819],
[-0.61591947, -0.07190245],
[ 0.11898444,  0.93473187],
[ 0.97637235,  0.17975613],
[ 0.4864364 , -1.83351251],
[-0.3709515 , -0.07190245],
[-0.49343549, -1.33019535],
[-0.49343549, -1.07853677],
[ 0.24146843, -0.07190245],
[-0.12598353, -1.07853677],
[-1.10585542, -1.83351251],
[-0.3709515 , -0.82687819],
[-0.24846751, -0.07190245],
[-0.24846751, -0.32356103],
[ 0.36395242, -0.32356103],
[-0.98337143, -1.33019535],
[-0.24846751, -0.57521961],
[ 0.4864364 ,  0.68307329],
[-0.12598353, -0.82687819],
[ 1.46630829, -0.07190245],
[ 0.4864364 , -0.32356103],
[ 0.73140438, -0.07190245],
[ 2.07872822, -0.07190245],
[-1.22833941, -1.33019535],
[ 1.71127627, -0.32356103],
[ 0.97637235, -1.33019535],
[ 1.58879228,  1.43804903],
[ 0.73140438,  0.43141471],
[ 0.60892039, -0.82687819],
[ 1.09885633, -0.07190245],
[-0.24846751, -1.33019535],
[-0.12598353, -0.57521961],
[ 0.60892039,  0.43141471],
[ 0.73140438, -0.07190245],
[ 2.20121221,  1.94136619],
[ 2.20121221, -1.07853677],
```

```
[ 0.11898444, -2.08517109],
[ 1.22134032,  0.43141471],
[-0.3709515 , -0.57521961],
[ 2.20121221, -0.57521961],
[ 0.4864364 , -0.82687819],
[ 0.97637235,  0.68307329],
[ 1.58879228,  0.43141471],
[ 0.36395242, -0.57521961],
[ 0.24146843, -0.07190245],
[ 0.60892039, -0.57521961],
[ 1.58879228, -0.07190245],
[ 1.83376025, -0.57521961],
[ 2.44618018,  1.94136619],
[ 0.60892039, -0.57521961],
[ 0.4864364 , -0.57521961],
[ 0.24146843, -1.07853677],
[ 2.20121221, -0.07190245],
[ 0.4864364 ,  0.93473187],
[ 0.60892039,  0.17975613],
[ 0.11898444, -0.07190245],
[ 1.22134032,  0.17975613],
[ 0.97637235,  0.17975613],
[ 1.22134032,  0.17975613],
[-0.12598353, -0.82687819],
[ 1.09885633,  0.43141471],
[ 0.97637235,  0.68307329],
[ 0.97637235, -0.07190245],
[ 0.4864364 , -1.33019535],
[ 0.73140438, -0.07190245],
[ 0.36395242,  0.93473187],
[-0.00349954, -0.07190245]])
```

**# Friska Andalusia_Pertemuan 9 _*Universitas Telkom*