How to split Dataset

```
# Data set
fish_length = [25.4, 26.3, 26.5, 29.0, 29.0, 29.7, 29.7, 30.0, 30.0, 30.7, 31.0, 31.0,
               31.5, 32.0, 32.0, 32.0, 33.0, 33.0, 33.5, 33.5, 34.0, 34.0, 34.5, 35.0,
               35.0, 35.0, 35.0, 36.0, 36.0, 37.0, 38.5, 38.5, 39.5, 41.0, 41.0, 9.8,
               10.5, 10.6, 11.0, 11.2, 11.3, 11.8, 11.8, 12.0, 12.2, 12.4, 13.0, 14.3, 15.0]
fish_weight = [242.0, 290.0, 340.0, 363.0, 430.0, 450.0, 500.0, 390.0, 450.0, 500.0, 475.0, 500.0,
               500.0, 340.0, 600.0, 600.0, 700.0, 700.0, 610.0, 650.0, 575.0, 685.0, 620.0, 680.0,
               700.0, 725.0, 720.0, 714.0, 850.0, 1000.0, 920.0, 955.0, 925.0, 975.0, 950.0, 6.7,
               7.5, 7.0, 9.7, 9.8, 8.7, 10.0, 9.9, 9.8, 12.2, 13.4, 12.2, 19.7, 19.9]

fish_target  = [1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0,

```

make dataset

```
# input data = { fish_length, weight }
import numpy as np

fish_data = [[l, w] for l, w in zip(fish_length, fish_weight)]
# [25.4, 242.0], [26.3, 290.0], ...]

print(fish_data)
print(len(fish_data))

input_arr = np.array(fish_data) # R (49 X 2)
target_arr = np.array(fish_target) # R (49 X 1)
```

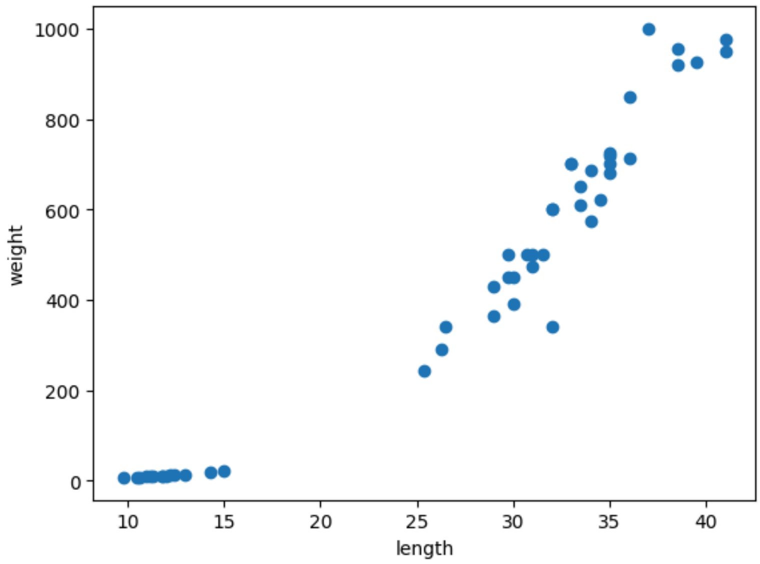
```
[[25.4, 242.0], [26.3, 290.0], [26.5, 340.0], [29.0, 363.0], [29.0, 430.0], [29.7, 450.0], [29.7, 500.0], [30.0, 390.0], [30.0, 450.0], [30.7, 5
49
```

analysis of dataset

```
import matplotlib.pyplot as plt

plt.scatter(input_arr[:, 0], input_arr[:, 1])
plt.xlabel('length')
plt.ylabel('weight')
plt.show()

```



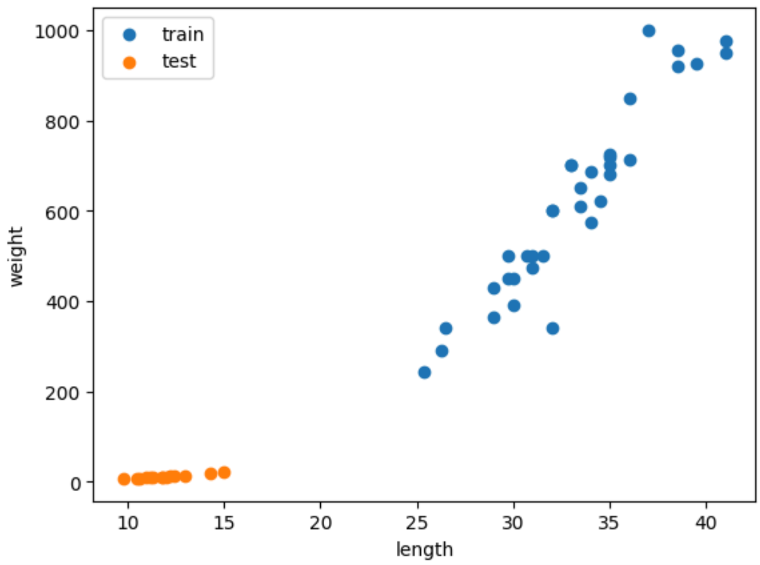
spilit dataset (try #1)

```
train_input = input_arr[:35]
train_target = target_arr[:35]

test_input = input_arr[35:]
```

```
test_target = target_arr[35:]

plt.scatter(train_input[:, 0], train_input[:, 1], label='train')
plt.scatter(test_input[:, 0], test_input[:, 1], label='test')
plt.xlabel('length')
plt.ylabel('weight')
plt.legend()
plt.show()
# 데이터 편향
```



spilit dataset (try #2: random shuffle)

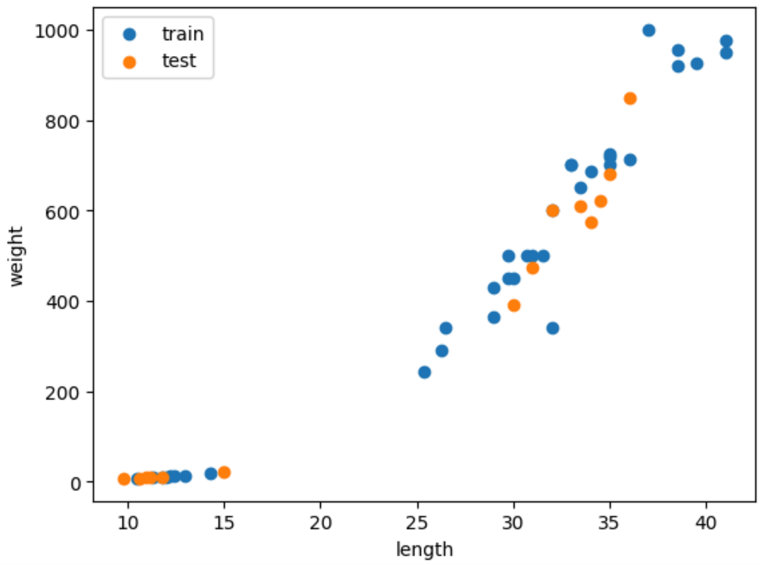
```
np.random.seed(42)
index = np.arange(len(input_arr))
np.random.shuffle(index)

train_input = input_arr[index[:35]]
train_target = target_arr[index[:35]]

test_input = input_arr[index[35:]]
test_target = target_arr[index[35:]]

plt.scatter(train_input[:, 0], train_input[:, 1], label='train')
plt.scatter(test_input[:, 0], test_input[:, 1], label='test')
plt.xlabel('length')
plt.ylabel('weight')
plt.legend()
plt.show()

```

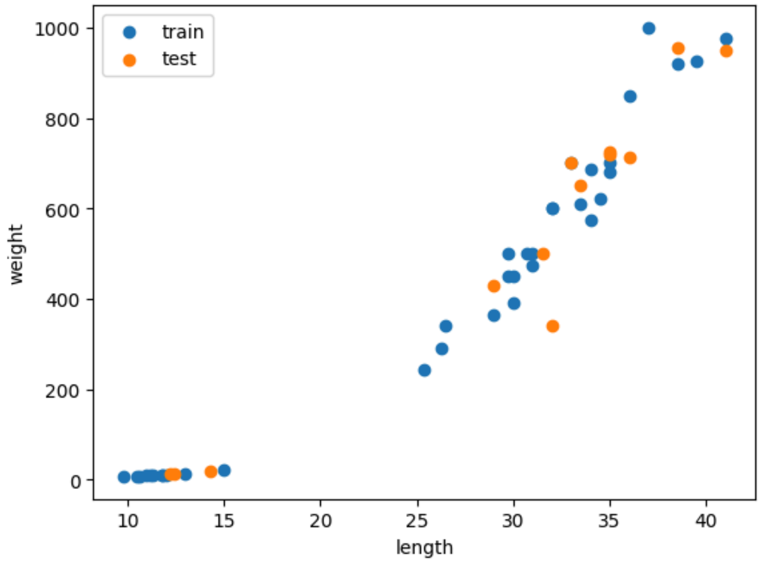


spilit dataset (try #3: using sklearn)

```
from sklearn.model_selection import train_test_split

train_input, test_input, train_target, test_target = train_test_split(
  fish_data, fish_target, random_state=42)

train_input = np.array(train_input)
test_input = np.array(test_input)
plt.scatter(train_input[:, 0], train_input[:, 1], label='train')
plt.scatter(test_input[:, 0], test_input[:, 1], label='test')
plt.xlabel('length')
plt.ylabel('weight')
plt.legend()
plt.show()
```

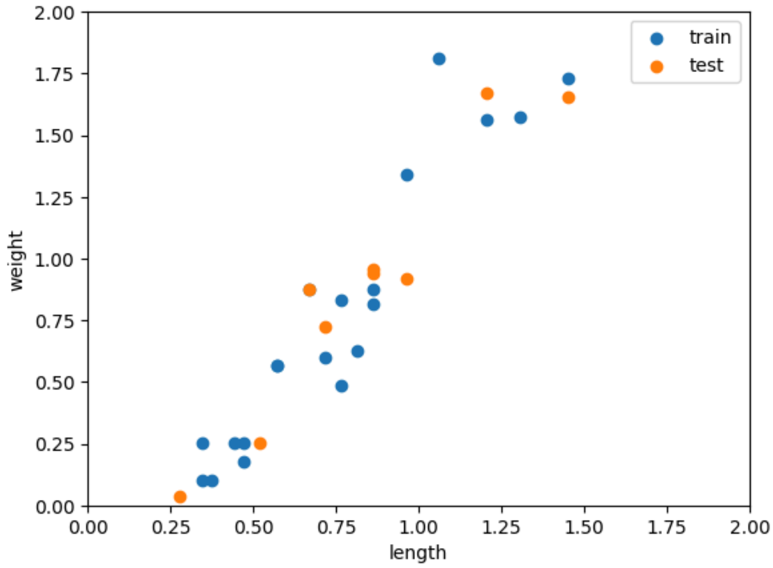


spilit dataset (try #4: standardization)

```
mean = np.mean(train_input, axis=0)
std = np.std(train_input, axis=0)

train_input_scaled = (train_input - mean) / std
test_input_scaled = (test_input - mean) / std

plt.scatter(train_input_scaled[:, 0], train_input_scaled[:, 1], label='train')
plt.scatter(test_input_scaled[:, 0], test_input_scaled[:, 1], label='test')
plt.xlim((0,2))
plt.ylim((0,2))
plt.xlabel('length')
plt.ylabel('weight')
plt.legend()
plt.show()
```


train
test
weight
length