21053250

February 9, 2024

[2]:
```
import numpy as np
```

[4]:
```
import pandas as pd
```

[5]:
```
data =pd.read_csv('iris.csv')
```

[6]:
```
data
```

[6]:
```
       Id  SepalLengthCm  SepalWidthCm  PetalLengthCm  PetalWidthCm  \
0       1            5.1           3.5            1.4           0.2
1       2            4.9           3.0            1.4           0.2
2       3            4.7           3.2            1.3           0.2
3       4            4.6           3.1            1.5           0.2
4       5            5.0           3.6            1.4           0.2
..    ...            ...           ...            ...           ...
145   146            6.7           3.0            5.2           2.3
146   147            6.3           2.5            5.0           1.9
147   148            6.5           3.0            5.2           2.0
148   149            6.2           3.4            5.4           2.3
149   150            5.9           3.0            5.1           1.8

            Species
0       Iris-setosa
1       Iris-setosa
2       Iris-setosa
3       Iris-setosa
4       Iris-setosa
..              ...
145  Iris-virginica
146  Iris-virginica
147  Iris-virginica
148  Iris-virginica
149  Iris-virginica

[150 rows x 6 columns]
```

[8]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Id             150 non-null    int64
 1   SepalLengthCm  150 non-null    float64
 2   SepalWidthCm   150 non-null    float64
 3   PetalLengthCm  150 non-null    float64
 4   PetalWidthCm   150 non-null    float64
 5   Species        150 non-null    object
dtypes: float64(4), int64(1), object(1)
memory usage: 7.2+ KB
```

[50]:
```
#What is the sepal length of the first flower in the dataset?
fsp = data.loc[0, 'SepalLengthCm']
print(fsp)
```

```
5.1
```

[51]:
```
#What is the species of the flower with the longest petal length?
i=data['PetalLengthCm'].idxmax()
print(data.loc[i, 'Species'])
```

```
Iris-virginica
```

[52]:
```
#How many flowers in the dataset have a sepal width greater than 3.5?
num = len(data[data['SepalWidthCm'] > 3.5])
print(num)
```

```
18
```

[53]:
```
#What is the mean petal width of the flowers classified as 'versicolor'?
data[data['Species'] == 'Iris-versicolor']['PetalWidthCm'].mean()
```

[53]:
```
1.3259999999999998
```

[54]:
```
#Which flower has the smallest sepal area (sepal_length * sepal_width)
data['SepalArea'] = data['SepalLengthCm'] * data['SepalWidthCm']
print(data.loc[data['SepalArea'].idxmin()])
data.drop(columns=['SepalArea'],inplace=True)
```

```
Id                            61
SepalLengthCm                5.0
SepalWidthCm                 2.0
PetalLengthCm                3.5
PetalWidthCm                 1.0
Species          Iris-versicolor
SepalArea                   10.0
Name: 60, dtype: object
```

[55]:
```
#How many flowers belong to the 'virginica' species?
print(len(data[data['Species'] == 'Iris-virginica']))
```

```
50
```

[56]:
```
#What is the maximum sepal length among flowers with a petal width less than 0.2?
df=data[data['PetalWidthCm'] < 0.2]
i=df['SepalLengthCm'].idxmax()
data.loc[i, 'SepalLengthCm']
```

[56]: 5.2

[57]:
```
#What is the median petal length of the flowers with a sepal length between 5.5␣
 ↪and 6.5?
df=data[data['SepalLengthCm'] < 6.5]
df=df[df['SepalLengthCm'] > 5.5]
df['PetalLengthCm'].median()
```

[57]: 4.7

[58]:
```
#What is the average sepal width of flowers with a petal length greater than 5␣
 ↪and a sepal length less than 6?
df=data[data['PetalLengthCm'] > 5]
df=df[df['SepalLengthCm'] < 6]
df['SepalWidthCm'].mean()
```

[58]: 2.8

[59]:
```
#Which flower has the highest petal length to width ratio?
data['PetalLengthToWidthRatio'] = data['PetalLengthCm'] / data['PetalWidthCm']
print( data.loc[data['PetalLengthToWidthRatio'].idxmax()])
data.drop(columns=['PetalLengthToWidthRatio'],inplace=True)
```

```
Id                                10
SepalLengthCm                    4.9
SepalWidthCm                     3.1
PetalLengthCm                    1.5
PetalWidthCm                     0.1
Species                  Iris-setosa
PetalLengthToWidthRatio         15.0
Name: 9, dtype: object
```

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