day11_assignment

January 12, 2023

1 Assignments:

1. Change x and y axis labels in plot

2. Draw Plots using Iris Dataset

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1.1 1. Change x and y axis labels in plot

- **Import Libraries**

[ ]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

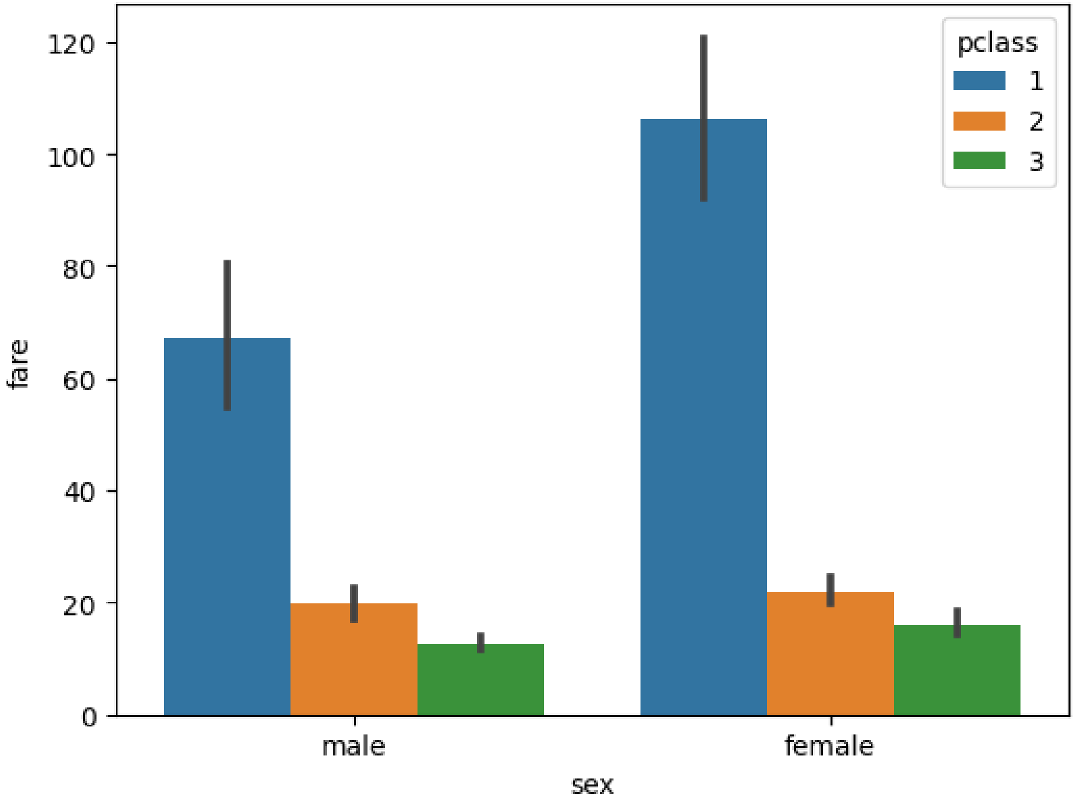
- **Load Dataset**

[ ]:
```
kashti = sns.load_dataset('titanic')
```

1.1.1 1-With Un-changed titles

[ ]:
```
sns.barplot(x='sex', y='fare', hue='pclass', data=kashti)
```

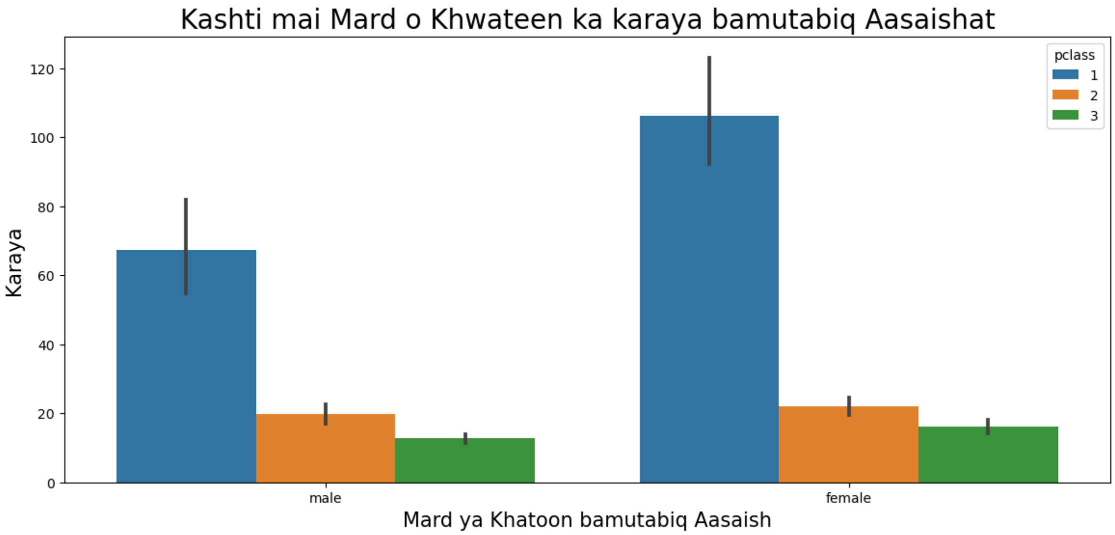
[ ]:
```
<AxesSubplot:xlabel='sex', ylabel='fare'>
```



1.1.2 2-With Changed titles

[ ]:

```
plt.figure(figsize=(14, 6))
sns.barplot(x='sex', y='fare', hue='pclass', data=kashti)
plt.xlabel('Mard ya Khatoon bamutabiq Aasaish', fontsize=15)
plt.ylabel('Karaya', fontsize=15)
plt.title('Kashti mai Mard o Khwateen ka karaya bamutabiq Aasaishat',␣
  ↪fontsize=20)
plt.show()
```



1.2 2. Visualization on Iris Dataset

Importing the libraries

```
[ ]: import pandas as pd
     import matplotlib.pyplot as plt
     import numpy as np
     import seaborn as sns
```

Import dataset

```
[ ]: phool = sns.load_dataset('iris')
     phool.info()
```

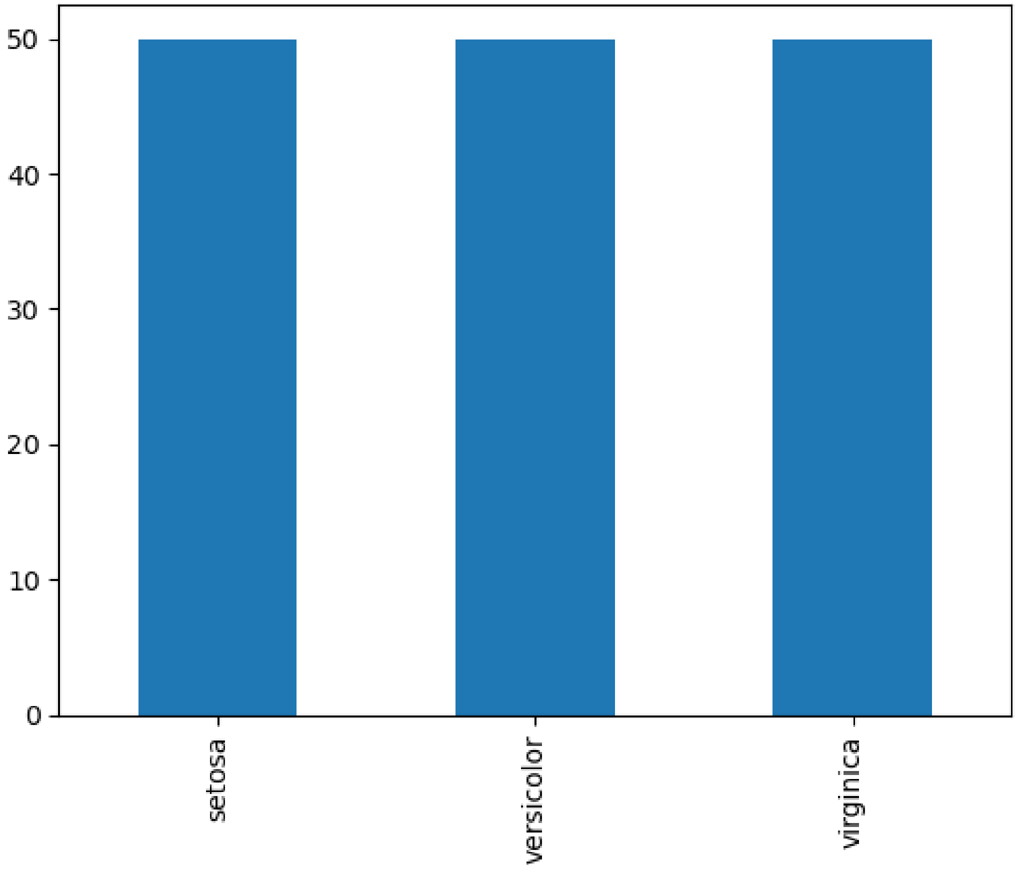
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   sepal_length  150 non-null    float64
 1   sepal_width   150 non-null    float64
 2   petal_length  150 non-null    float64
 3   petal_width   150 non-null    float64
 4   species       150 non-null    object
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

```
[ ]: phool.isnull().sum()
[ ]: sepal_length    0
     sepal_width     0
     petal_length    0
     petal_width     0
     species         0
     dtype: int64
```

1.2.1 1-Bar-Plot

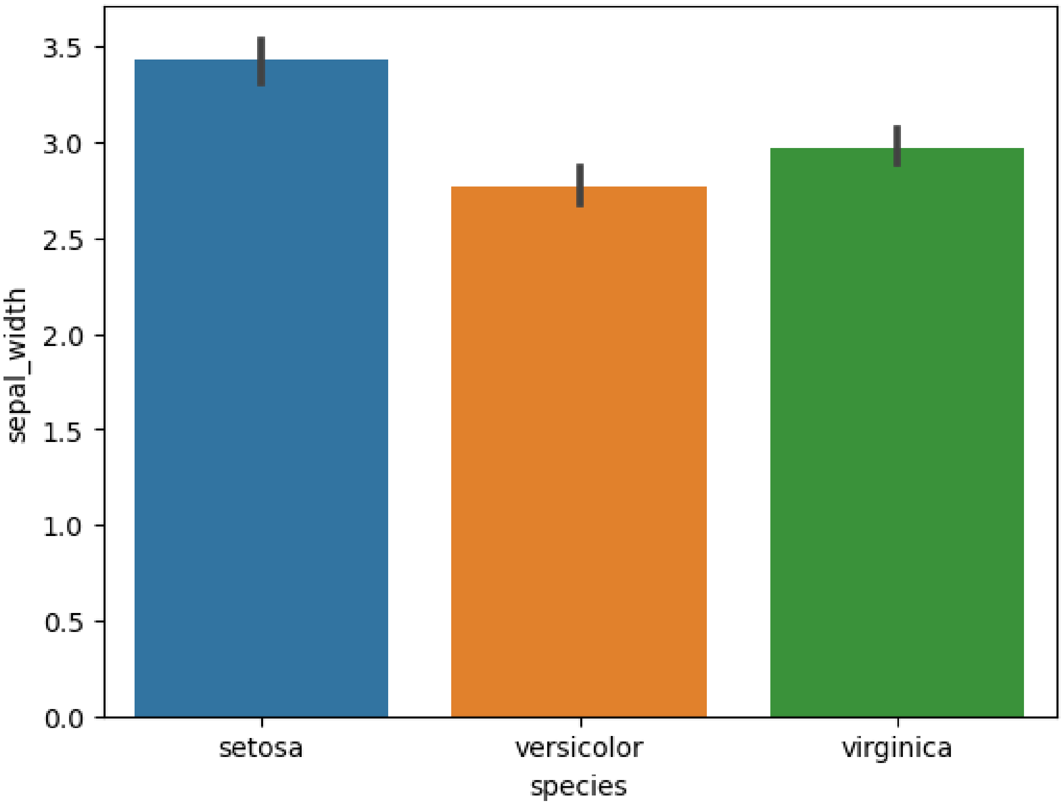
```
[ ]: phool.species.value_counts().plot(kind='bar')
```

```
[ ]: <AxesSubplot:>
```



```
[ ]: sns.barplot(x='species', y='sepal_width', data=phool)
```

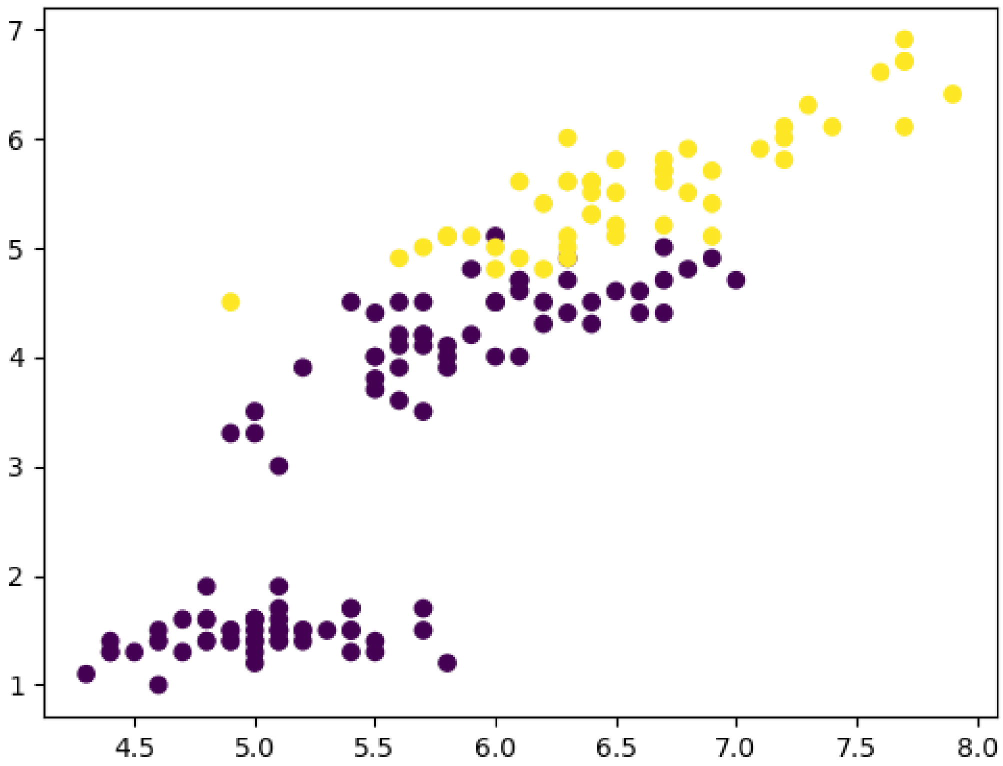
```
[ ]: <AxesSubplot:xlabel='species', ylabel='sepal_width'>
```



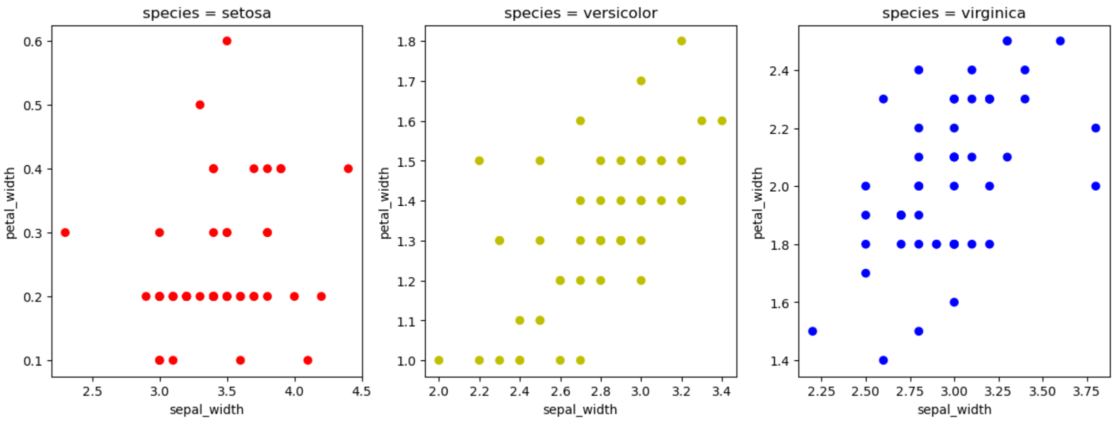
1.2.2 2-Scatter-Plot

```
[ ]: X=phool[['sepal_length', 'petal_length']]
     Y=phool['species'] == 'virginica'      # This can be changed to 'setosa' and␣
      ↪'versicolor' (unique values)
     plt.scatter(X['sepal_length'], X['petal_length'], c=Y)
                                            # yellow = selected specie, blue = other␣
      ↪species (as per the above line)
```

```
[ ]: <matplotlib.collections.PathCollection at 0x1af3e838520>
```

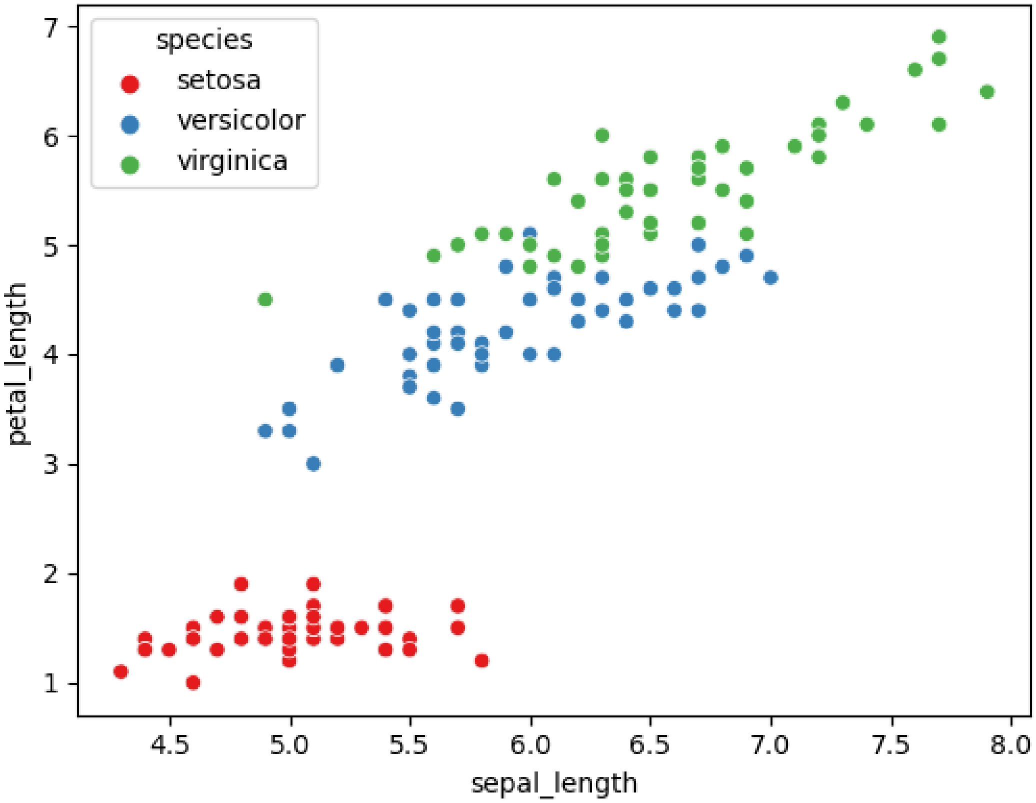


[ ]:
```
fig, ax = plt.subplots(1,3, figsize=(15,5))
species_list=['setosa', 'versicolor', 'virginica']

for i in range(3):
    subset_phool = phool[phool['species'] == species_list[i]]
    ax[i].scatter(subset_phool['sepal_width'], subset_phool['petal_width'],
                  c=subset_phool['species'].map({'setosa':'r', 'versicolor':
 ↪'y', 'virginica':'b'}))
    ax[i].set_title('species = ' + str(species_list[i]))
    ax[i].set_xlabel('sepal_width')
    ax[i].set_ylabel('petal_width')
plt.show()
```



```
[ ]: sns.scatterplot(x='sepal_length', y='petal_length', hue='species', data=phool,␣
      ↪palette='Set1')
```

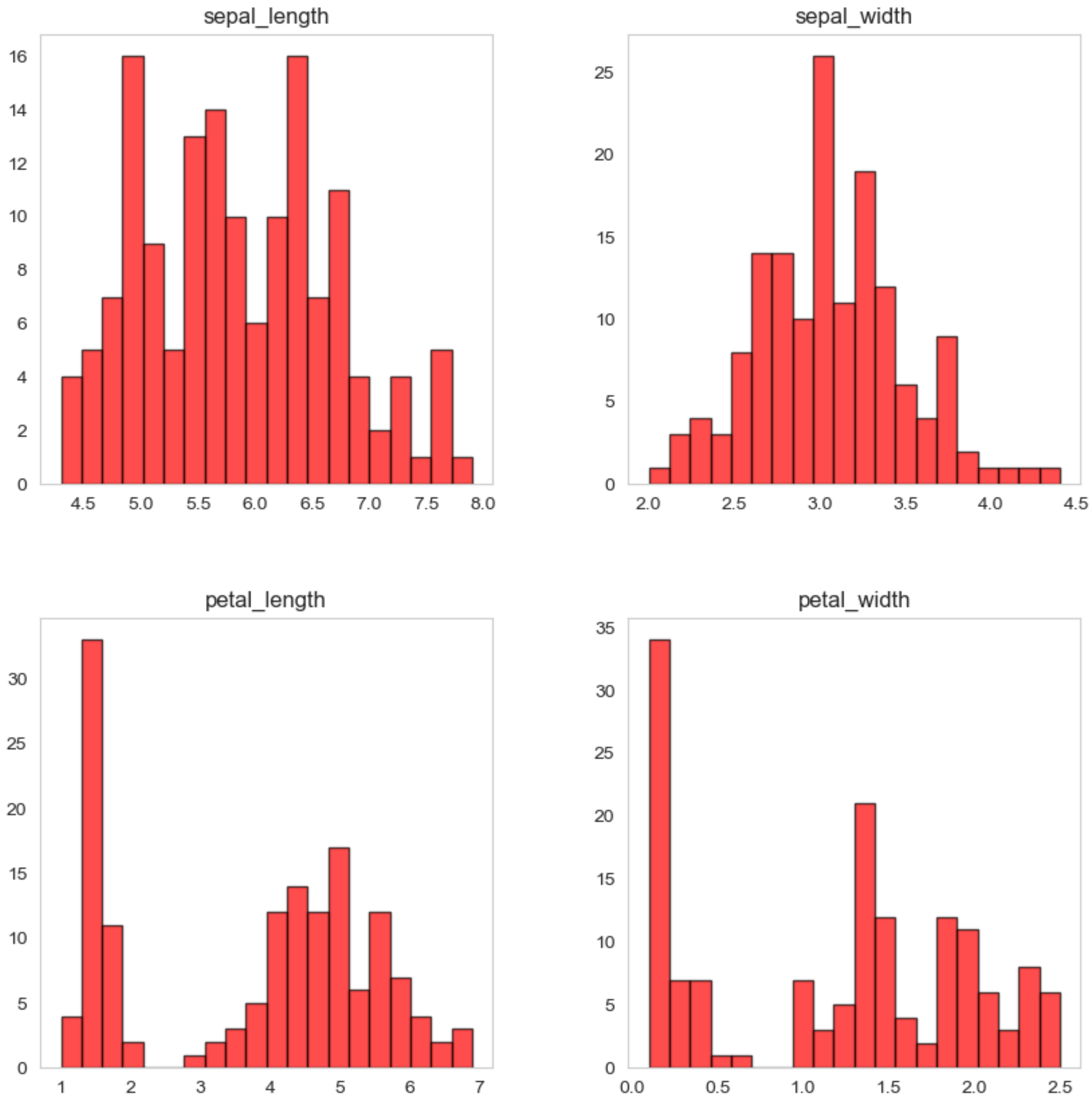
```
[ ]: <AxesSubplot:xlabel='sepal_length', ylabel='petal_length'>
```



1.2.3 3-Hist-Plot

```
[ ]: phool.hist(figsize=(10,10), grid=False, layout=(2,2),
                   bins=20, color='r', edgecolor='k', alpha=0.7)
```

```
[ ]: array([[<AxesSubplot:title={'center':'sepal_length'}>,
             <AxesSubplot:title={'center':'sepal_width'}>],
            [<AxesSubplot:title={'center':'petal_length'}>,
             <AxesSubplot:title={'center':'petal_width'}>]], dtype=object)
```



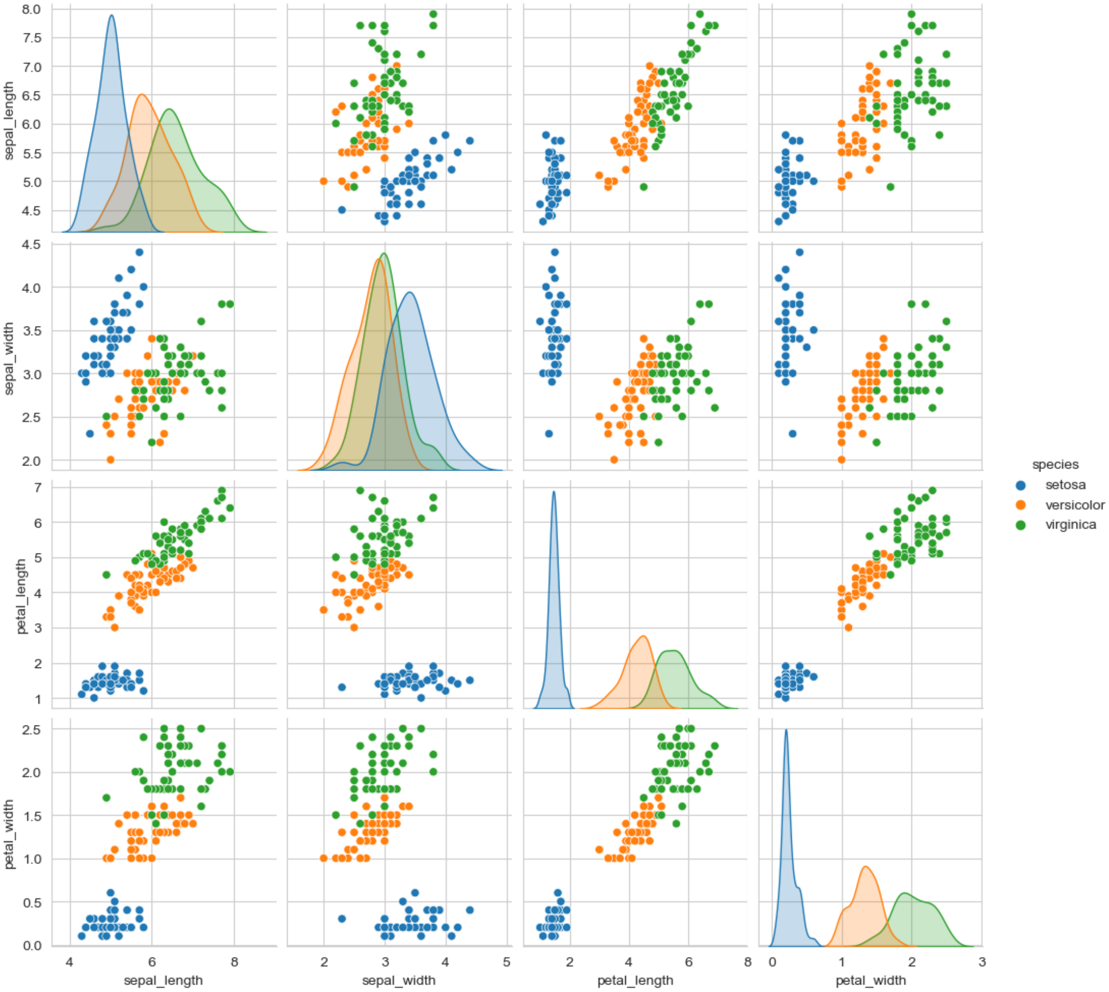
1.2.4 4-Pair-Plot

[ ]:

```
sns.pairplot(phool, diag_kind='kde', hue='species')
```

[ ]:

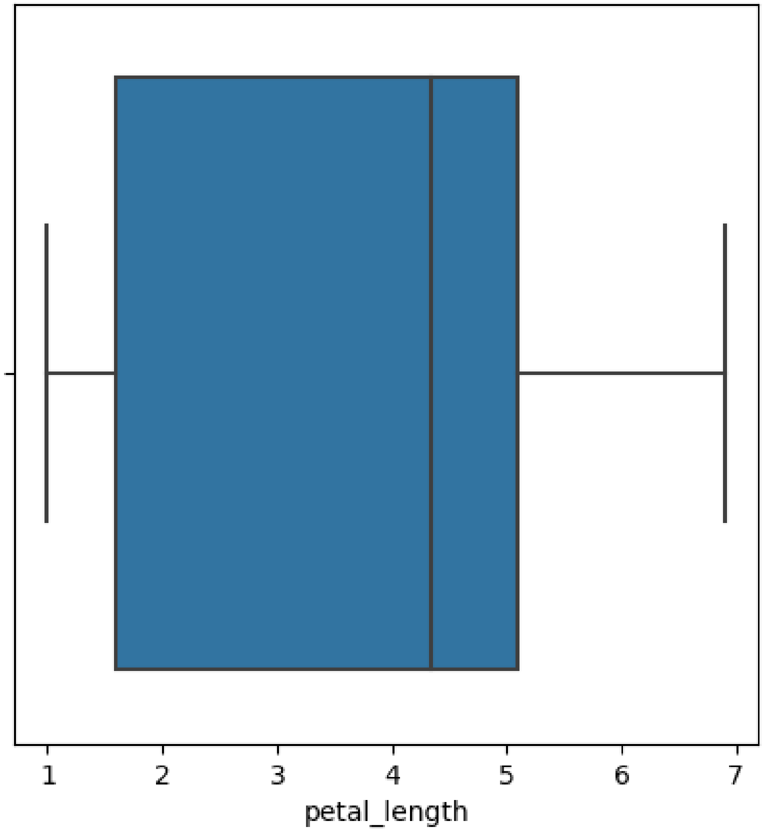
```
<seaborn.axisgrid.PairGrid at 0x168df0abdf0>
```



1.2.5 5-Box-Plot

[ ]:

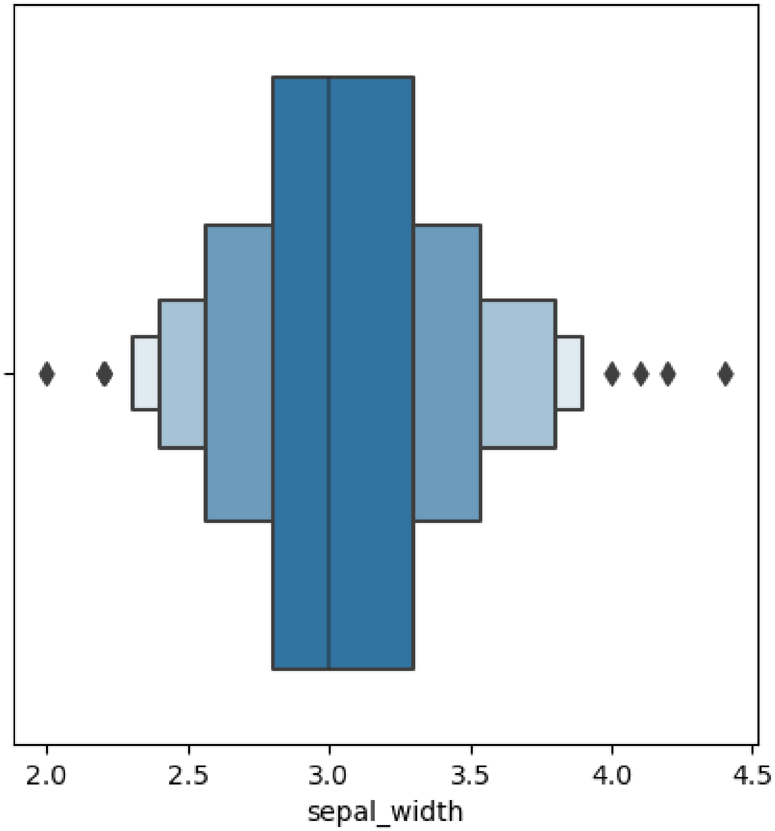
```
plt.figure(figsize=(5,5))
sns.boxplot(x='petal_length', data=phool)
plt.show()
```



1.2.6 6-Boxen-Plot

[ ]:

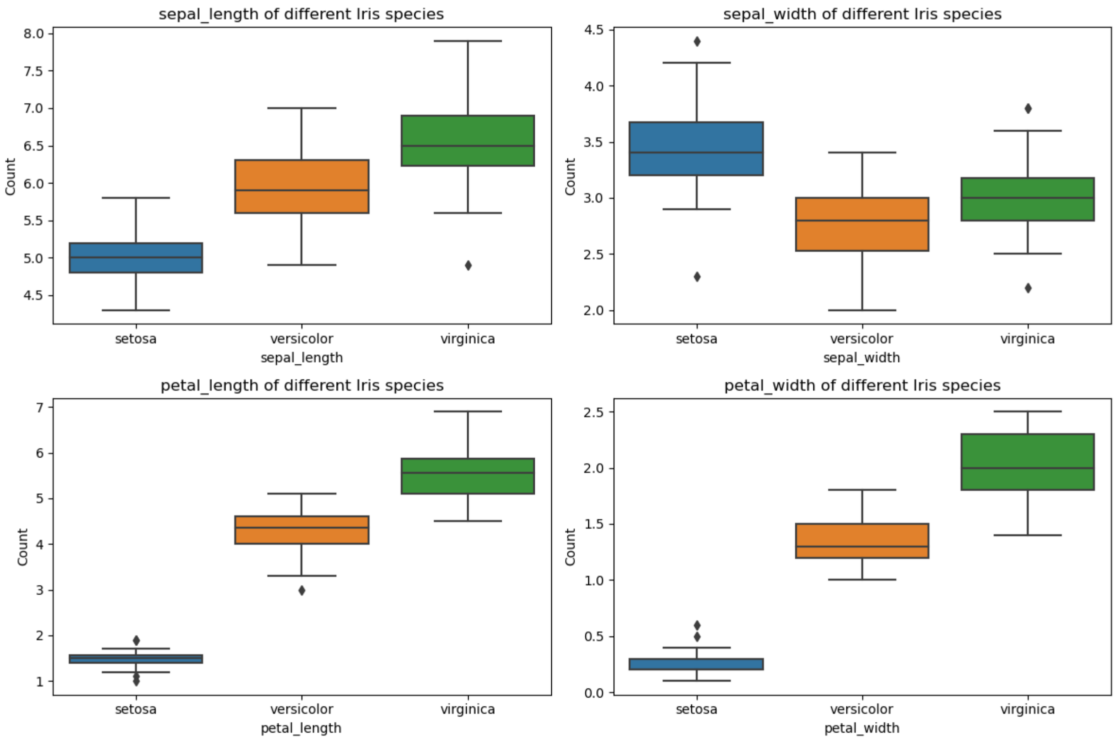
```
plt.figure(figsize=(5,5))
sns.boxenplot(x='sepal_width', data=phool)
plt.show()
```



1.2.7 7-Sub-Plots

[ ]:

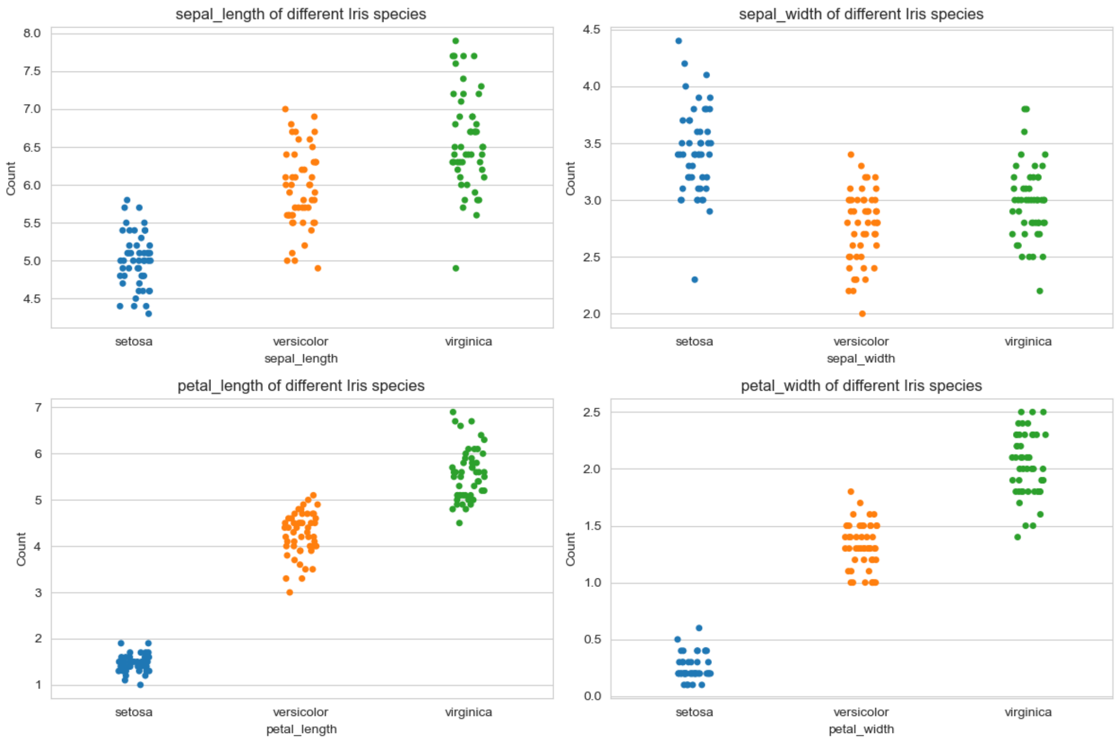
```
# Create a figure and subplots for each feature
fig, axes = plt.subplots(nrows=2, ncols=2, figsize=(12, 8))
axes = axes.flatten()

# Create a list of features to iterate over
features = ['sepal_length', 'sepal_width', 'petal_length', 'petal_width']

# Iterate over the features and plot the data for each species on its␣
 ↪corresponding subplot
for ax, feature in zip(axes, features):
    sns.boxplot(x='species', y=feature, data=phool, ax=ax)
    ax.set_title(f'{feature} of different Iris species')
    ax.set_xlabel(feature)
    ax.set_ylabel('Count')

plt.tight_layout()
plt.show()
```



1.2.8 8-Strip-Plot

[ ]:

```
fig, axes = plt.subplots(nrows=2, ncols=2, figsize=(12, 8))
axes = axes.flatten()
features = ['sepal_length', 'sepal_width', 'petal_length', 'petal_width']
for ax, feature in zip(axes, features):
    sns.stripplot(x='species', y=feature, data=phool, ax=ax)
    ax.set_title(f'{feature} of different Iris species')
    ax.set_xlabel(feature)
    ax.set_ylabel('Count')
plt.tight_layout()
plt.show()
```



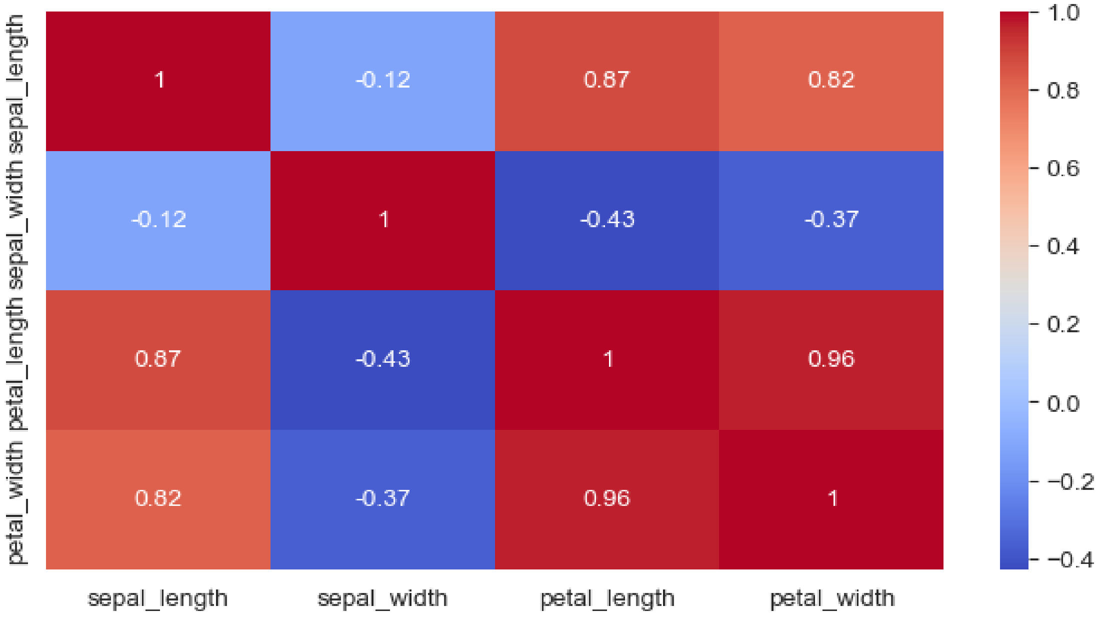
1.2.9 9-Heatmap

[ ]:

```
corr = phool.corr()
plt.figure(figsize=(8,4))
sns.heatmap(corr, annot=True, cmap='coolwarm')
```

[ ]:

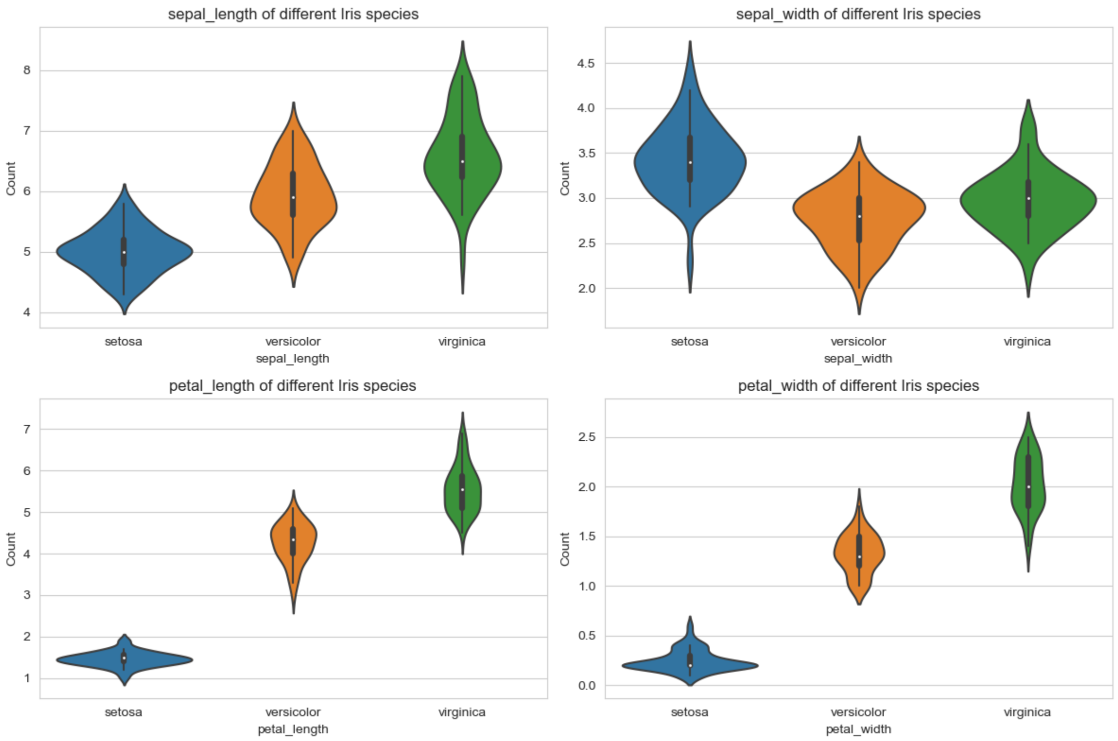
```
<AxesSubplot:>
```



1.2.10 10-Violin-Plot

[ ]:

```
fig, axes = plt.subplots(nrows=2, ncols=2, figsize=(12, 8))
axes = axes.flatten()
features = ['sepal_length', 'sepal_width', 'petal_length', 'petal_width']
for ax, feature in zip(axes, features):
    sns.violinplot(x='species', y=feature, data=phool, ax=ax)
    ax.set_title(f'{feature} of different Iris species')
    ax.set_xlabel(feature)
    ax.set_ylabel('Count')
plt.tight_layout()
plt.show()
```


sepal_length of different Iris species
Count
8
7
6
5
4
setosa
versicolor
virginica
sepal_length
sepal_width of different Iris species
Count
4.5
4.0
3.5
3.0
2.5
2.0
setosa
versicolor
virginica
sepal_width
petal_length of different Iris species
Count
7
6
5
4
3
2
1
setosa
versicolor
virginica
petal_length
petal_width of different Iris species
Count
2.5
2.0
1.5
1.0
0.5
0.0
setosa
versicolor
virginica
petal_width