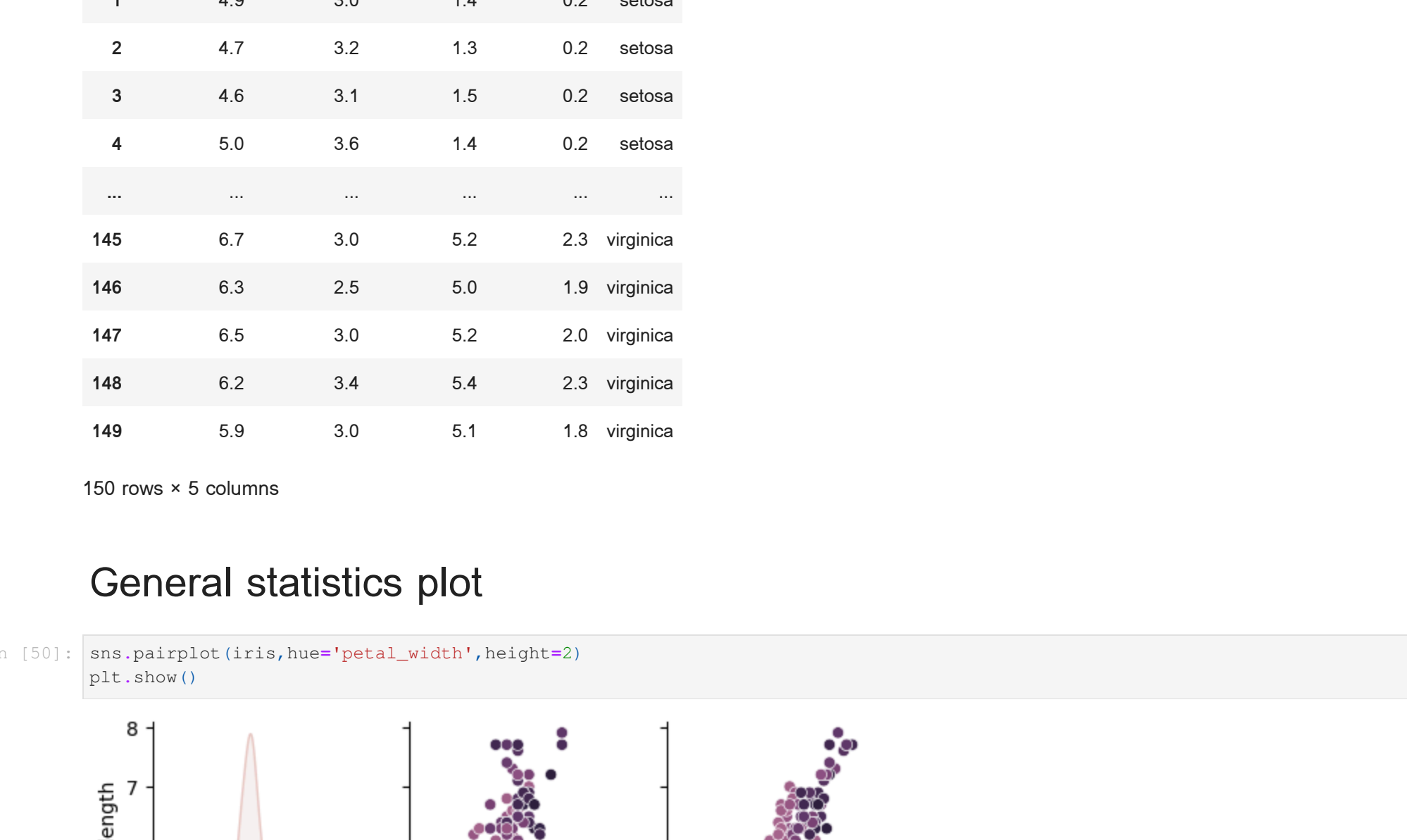


Data visualization using Matplotlib and Seaborn.

LOAD THE IRIS DATA SET

```
In [5]: #import seaborn and matplotlib
import matplotlib.pyplot as plt
import seaborn as sns
iris=sns.load_dataset('iris')
iris
```

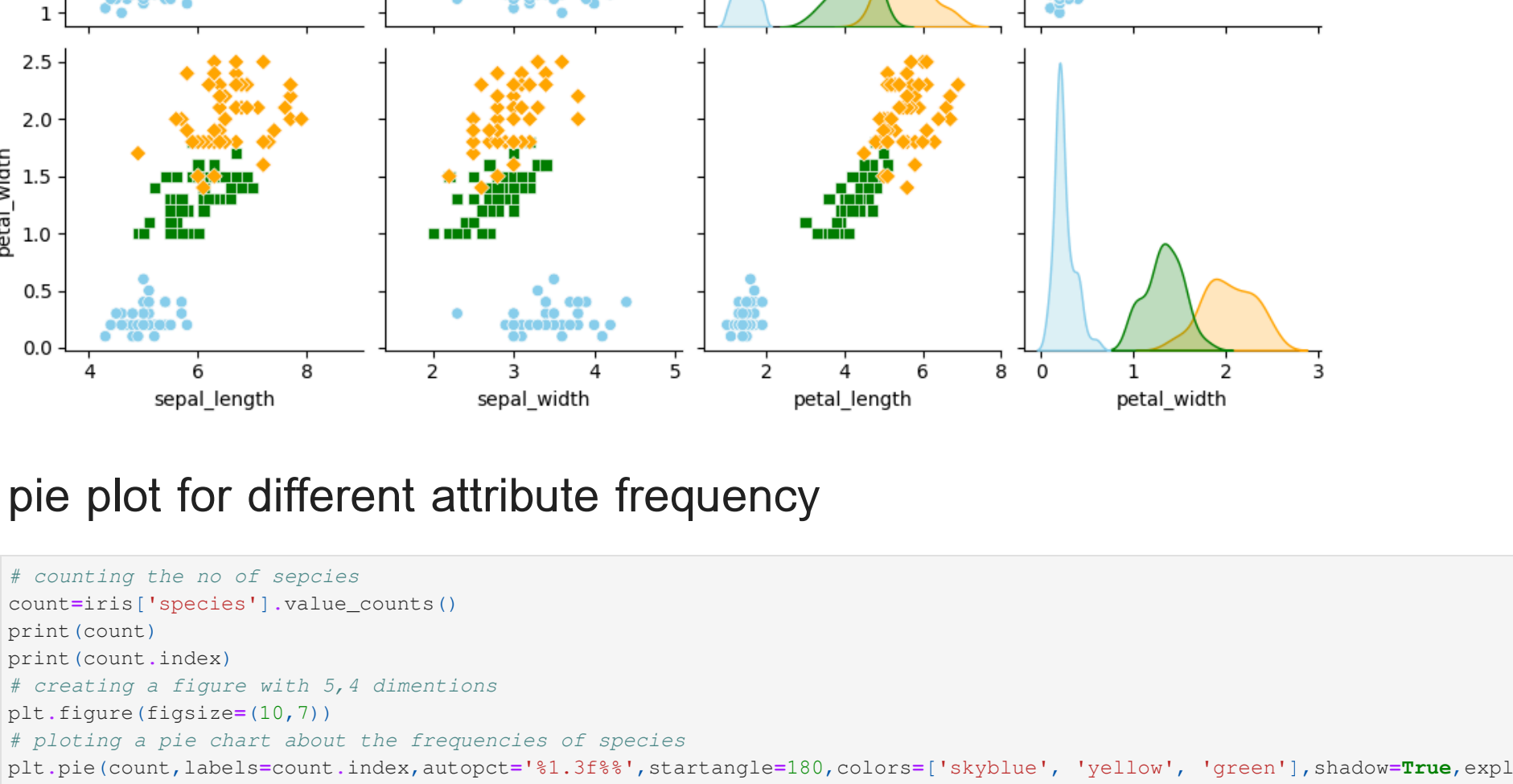


General statistics plot

```
In [50]: sns.pairplot(iris,hue='petal_width',height=2)
plt.show()
```



```
In [59]: sns.pairplot(iris, hue='species', markers=["o", "s", "D"],palette=['skyblue', 'green', 'orange'])
plt.show()
```

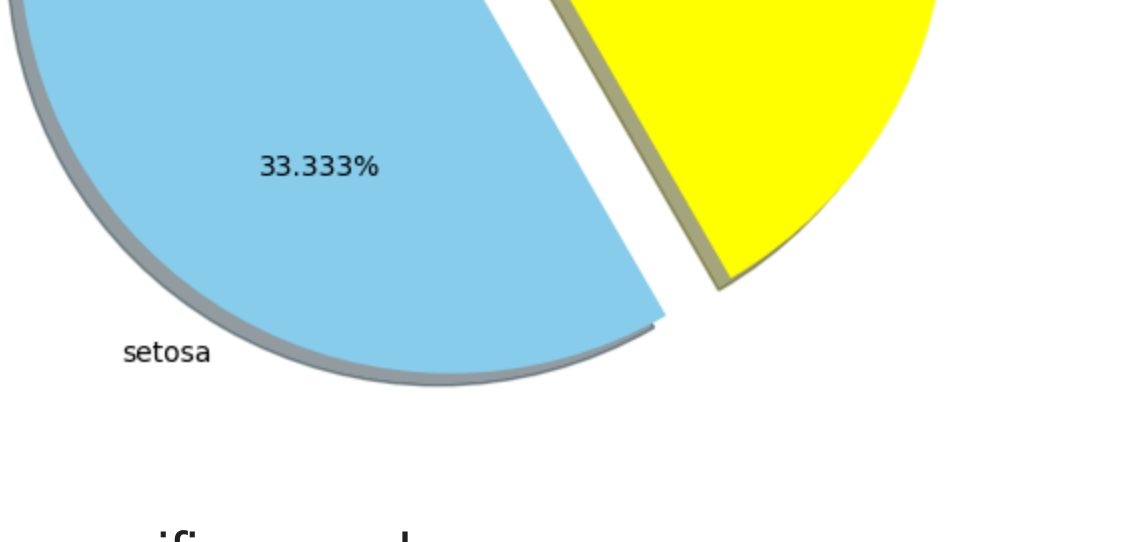


pie plot for different attribute frequency

```
In [66]: # counting the no of species
count=iris['species'].value_counts()
print(count)
print(count.index)
# creating a figure with 5,4 dimentions
plt.figure(figsize=(10,7))
# plotting a pie chart about the frequencies of species
plt.pie(count,labels=count.index,autopct='%1.3f%%',startangle=180,colors=['skyblue', 'yellow', 'green'],shadow=True,explode=0.1)
plt.title('frequency of species in iris dataset',fontsize=16, fontweight='bold')
plt.show()
```

species
setosa 50
versicolor 50
virginica 50
Name: count, dtype: int64
Index(['setosa', 'versicolor', 'virginica'], dtype='object', name='species')

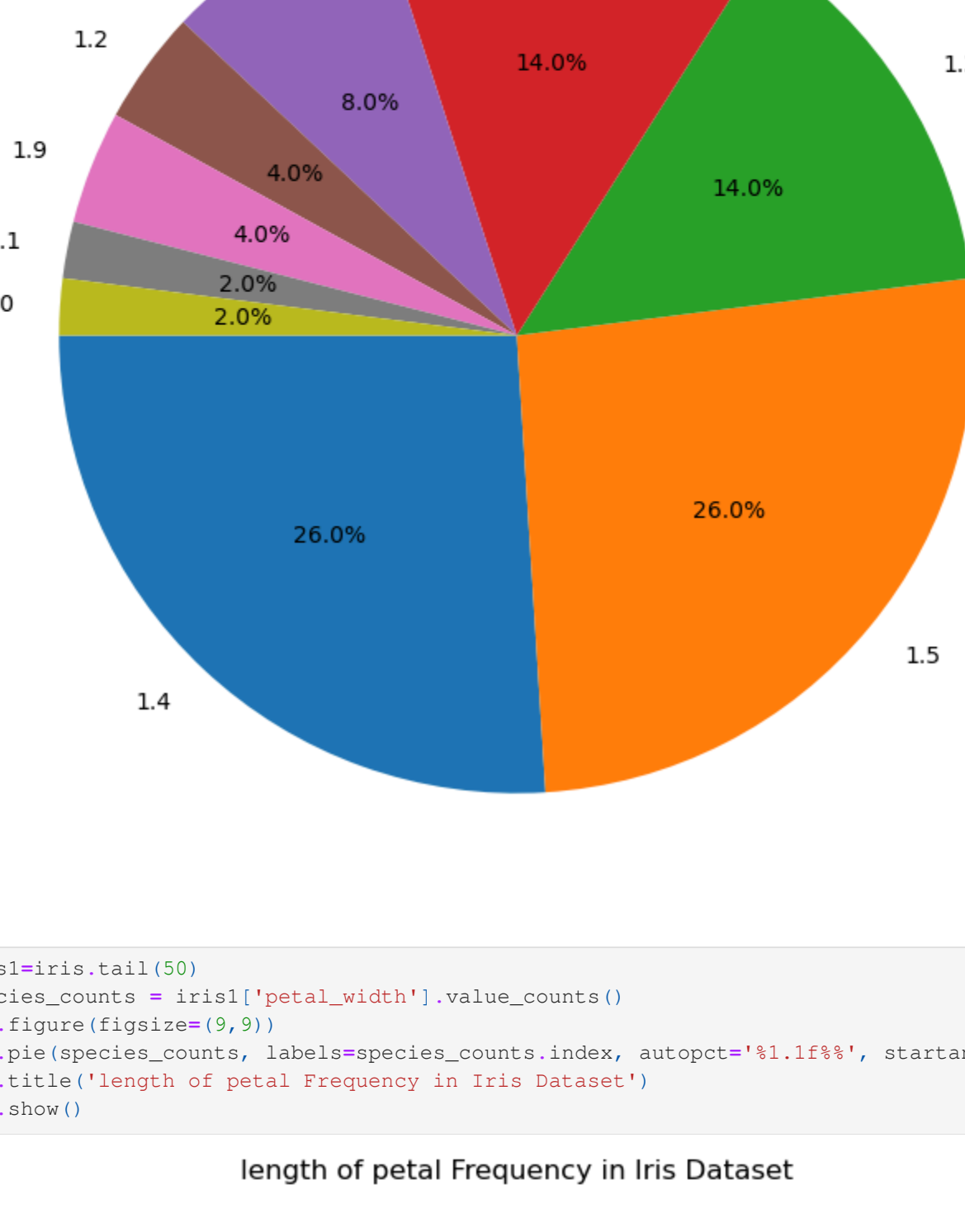
frequency of species in iris dataset



for specific records

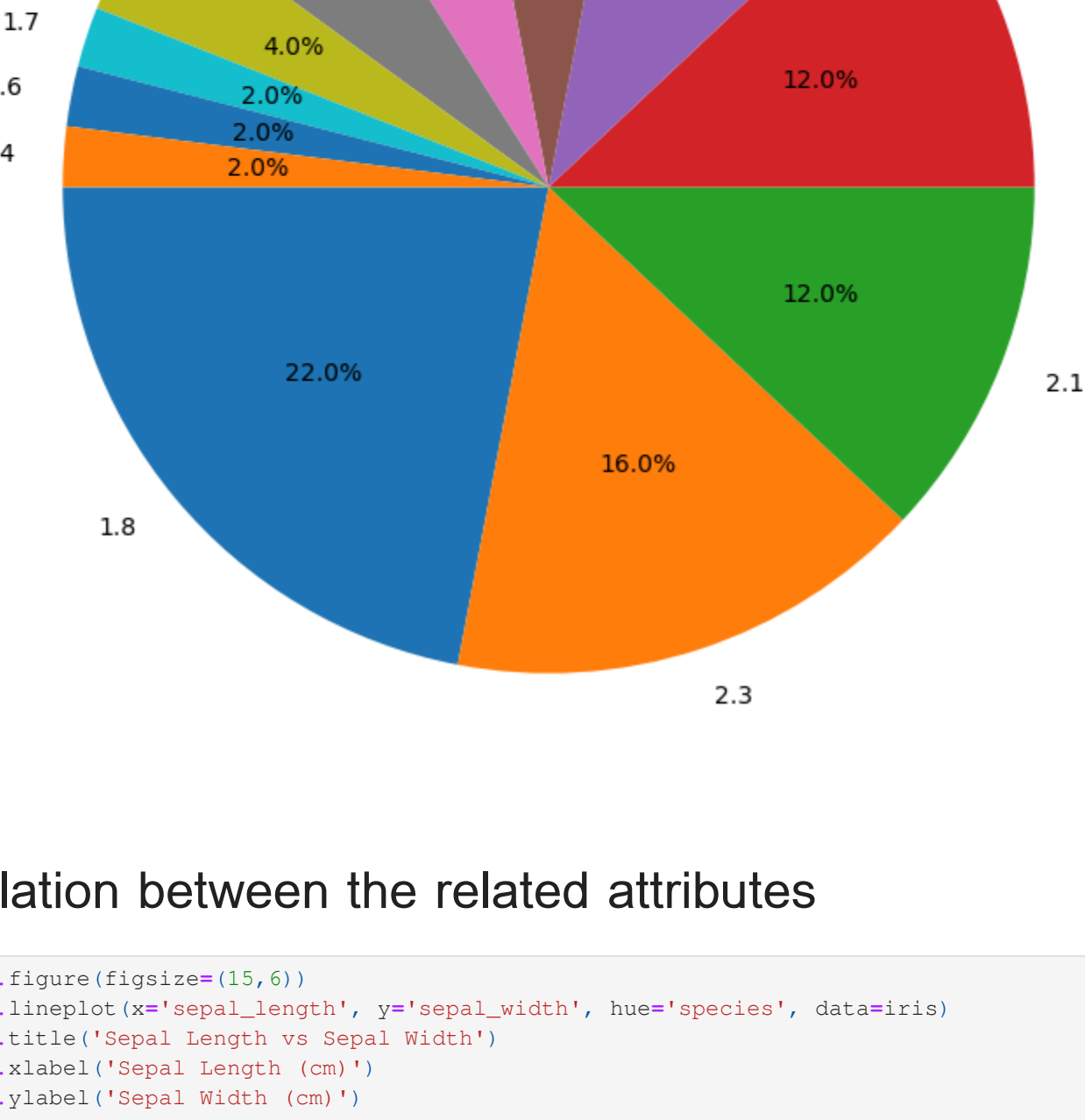
```
In [176]: iris=iris.head(50)
species_counts = iris['petal_length'].value_counts()
plt.figure(figsize=(9,9))
plt.pie(species_counts, labels=species_counts.index, autopct='%1.1f%%', startangle=180)
plt.title('length of petal Frequency in Iris Dataset')
plt.show()
```

length of petal Frequency in Iris Dataset



```
In [174]: iris=iris.tail(50)
species_counts = iris['petal_width'].value_counts()
plt.figure(figsize=(9,9))
plt.pie(species_counts, labels=species_counts.index, autopct='%1.1f%%', startangle=180)
plt.title('length of petal Frequency in Iris Dataset')
plt.show()
```

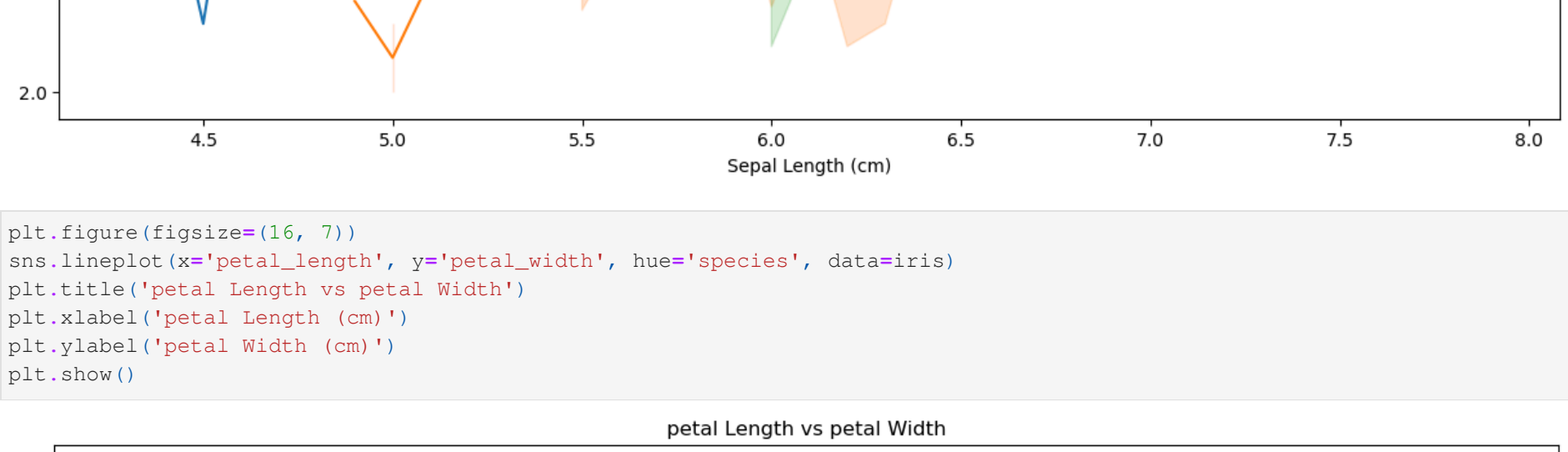
length of petal Frequency in Iris Dataset



relation between the related attributes

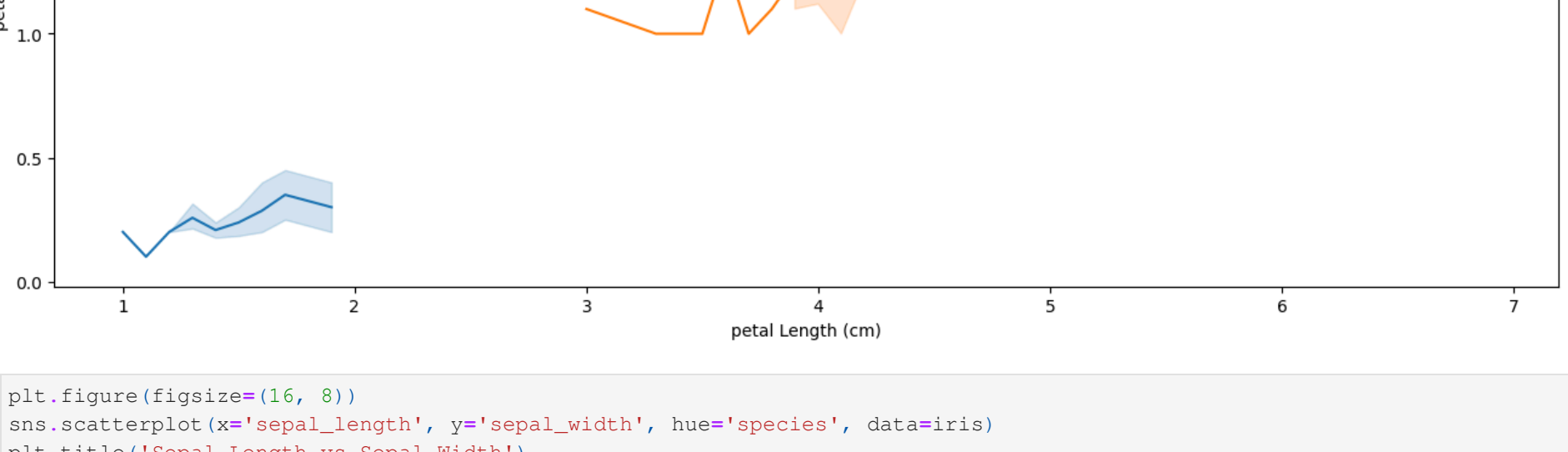
```
In [161]: plt.figure(figsize=(15,6))
sns.lineplot(x='sepal_length', y='sepal_width', hue='species', data=iris)
plt.title('Sepal Length vs Sepal Width')
plt.xlabel('Sepal Length (cm)')
plt.ylabel('Sepal Width (cm)')
plt.show()
```

Sepal Length vs Sepal Width



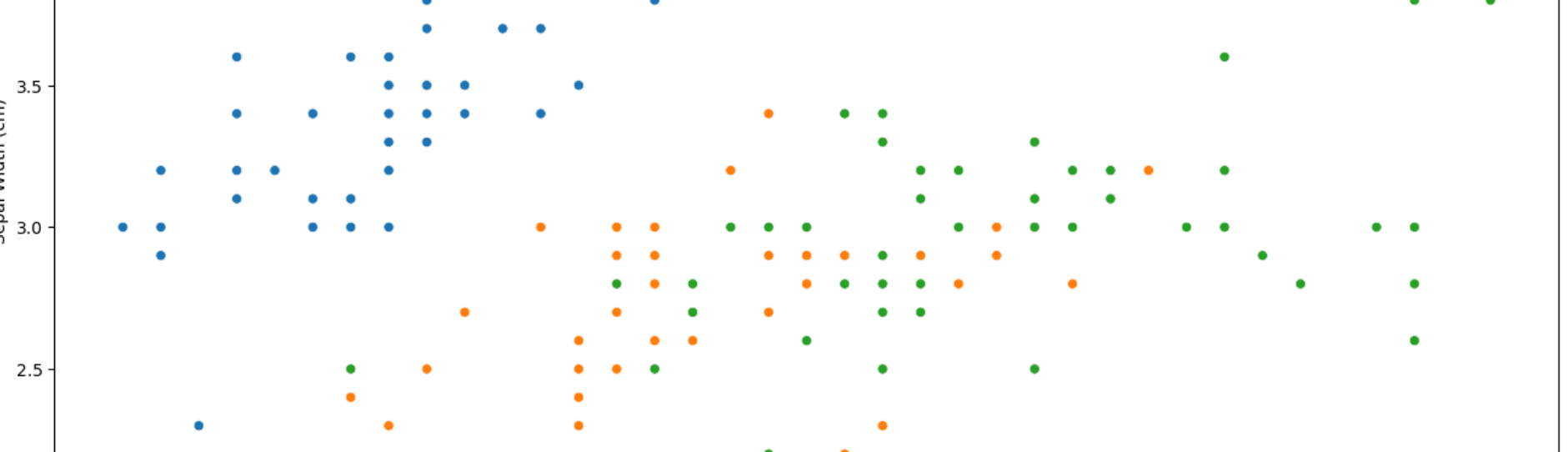
```
In [184]: plt.figure(figsize=(10, 7))
sns.lineplot(x='petal_length', y='petal_width', hue='species', data=iris)
plt.title('petal Length vs petal Width')
plt.xlabel('petal Length (cm)')
plt.ylabel('petal Width (cm)')
plt.show()
```

petal Length vs petal Width



```
In [192]: plt.figure(figsize=(16, 8))
sns.scatterplot(x='sepal_length', y='sepal_width', hue='species', data=iris)
plt.title('Sepal Length vs Sepal Width')
plt.xlabel('Sepal Length (cm)')
plt.ylabel('Sepal Width (cm)')
plt.show()
```

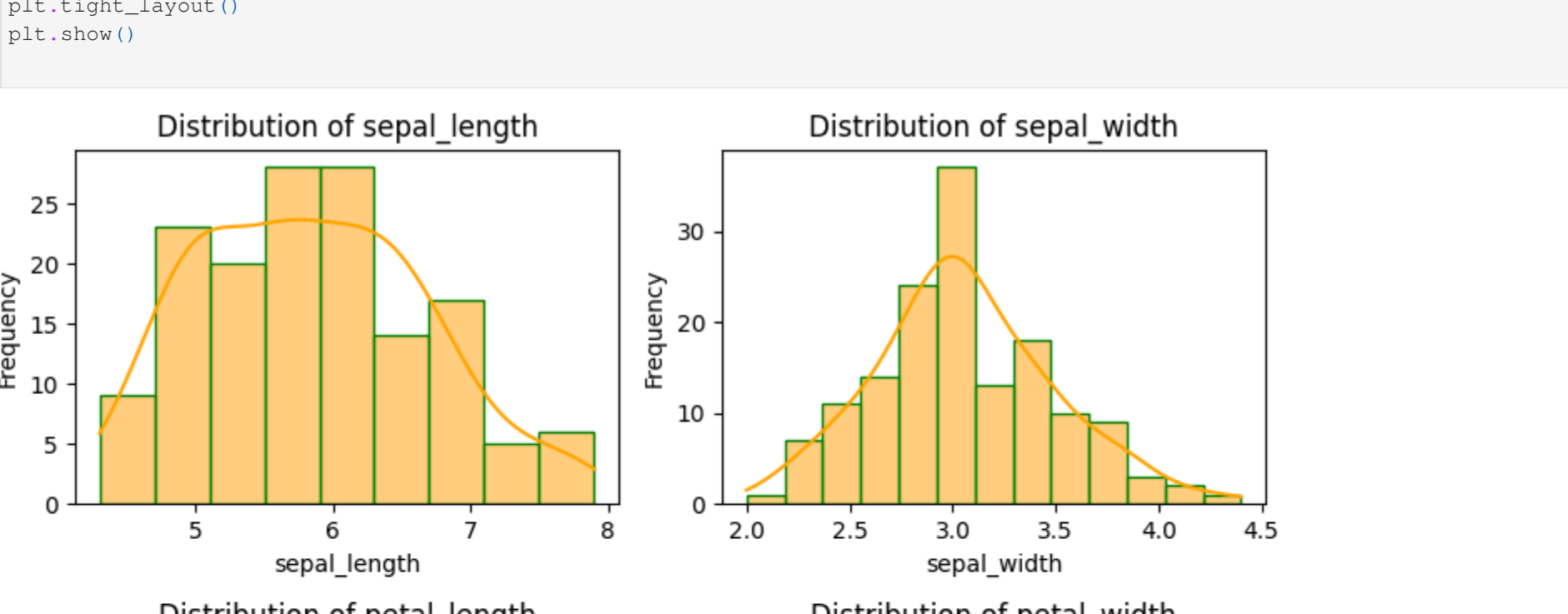
Sepal Length vs Sepal Width



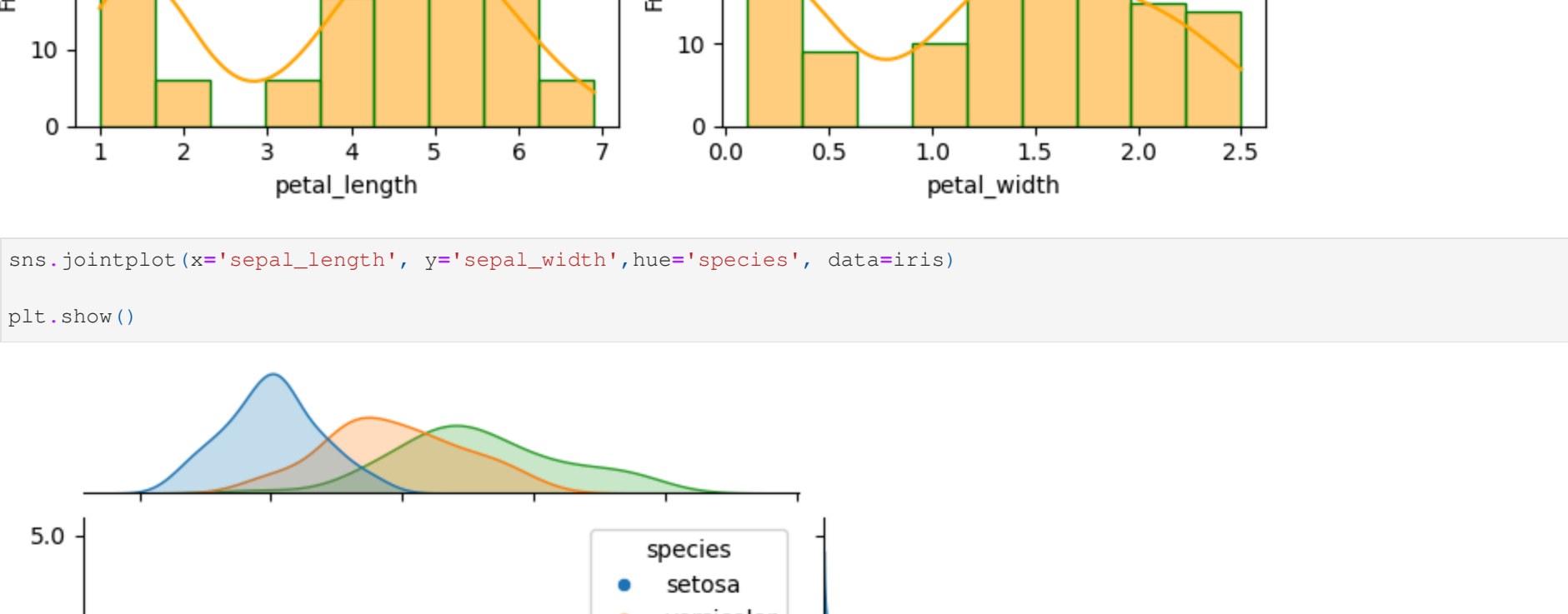
Distribution of Sepal and Petal Features

Jointplot of attributes

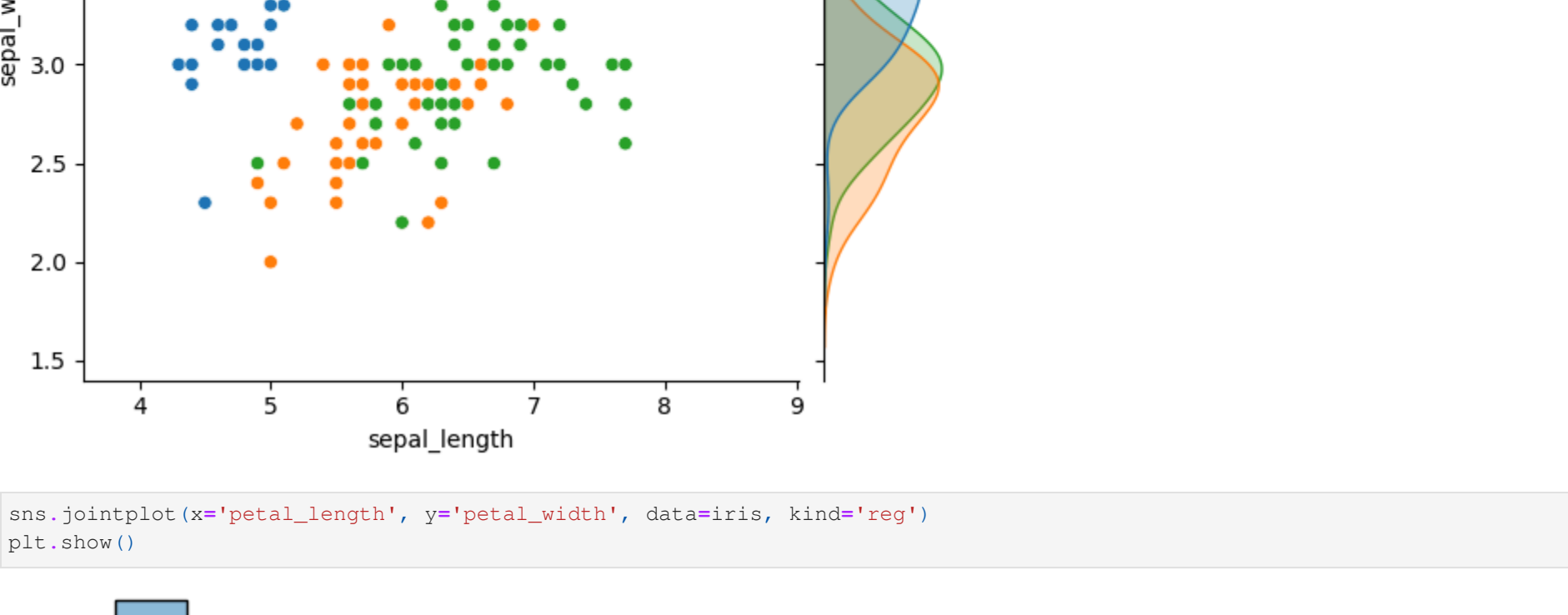
```
In [73]: # Creating a figure with subplots
fig, axes = plt.subplots(nrows=2, ncols=2, figsize=(8, 6))
# Flatten the 2D array of axes for easy iteration
axes = axes.flatten()
# Feature names
features = ['sepal_length', 'sepal_width', 'petal_length', 'petal_width']
# Plotting histograms for each feature using a loop
for i, feature in enumerate(features):
    sns.histplot(iris[feature], kde=True, ax=axes[i], color='orange', edgecolor='g')
    axes[i].set_title('Distribution of ' + feature[i])
    axes[i].set_xlabel(feature[i])
    axes[i].set_ylabel('Frequency')
# Adjust Layout
plt.tight_layout()
plt.show()
```



```
In [270]: sns.jointplot(x='sepal_length', y='sepal_width', hue='species', data=iris)
plt.show()
```



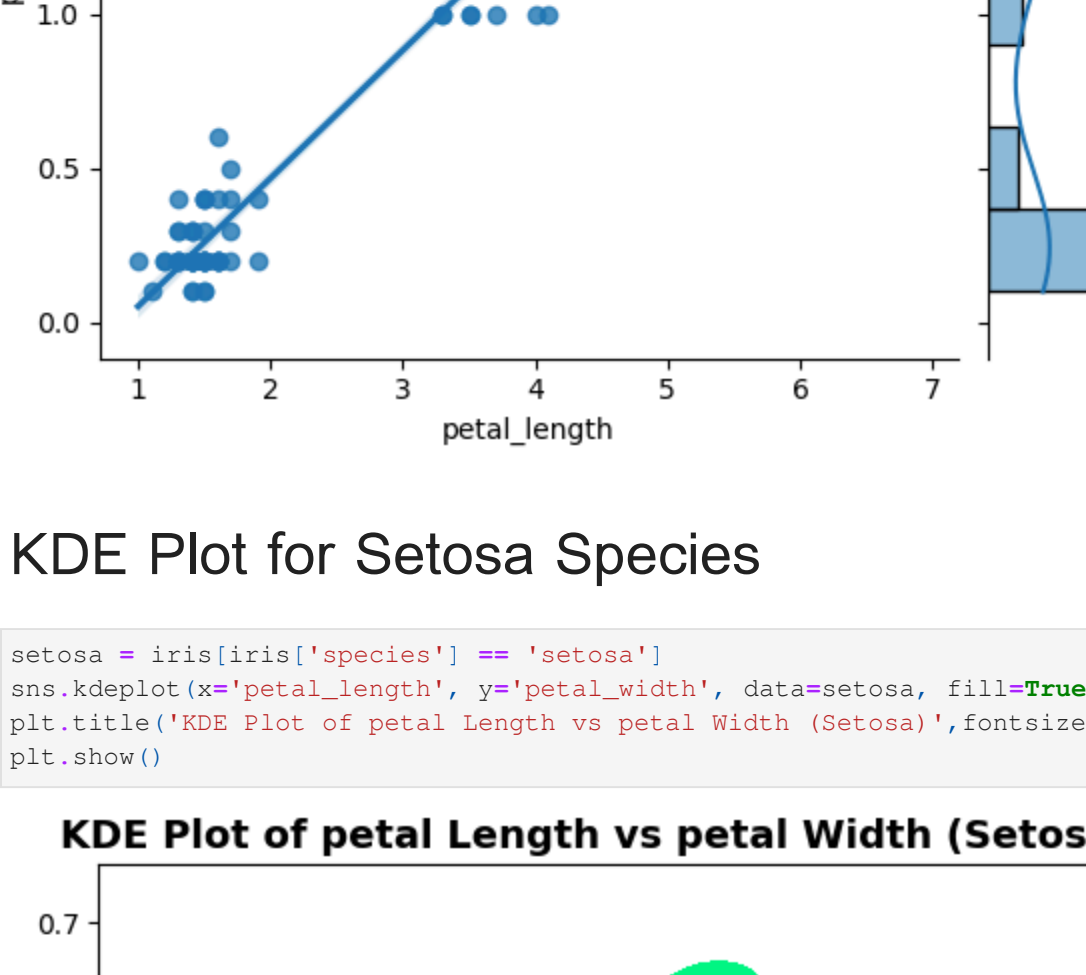
```
In [239]: sns.jointplot(x='petal_length', y='petal_width', data=iris, kind='reg')
plt.show()
```



KDE Plot for Setosa Species

```
In [75]: setosa = iris[iris['species']=='setosa']
sns.kdeplot(x='petal_length', y='petal_width', data=setosa, fill=True, cmap='winter_r')
plt.title('KDE Plot of petal Length vs petal Width (Setosa)', fontsize=16, fontweight='bold')
plt.show()
```

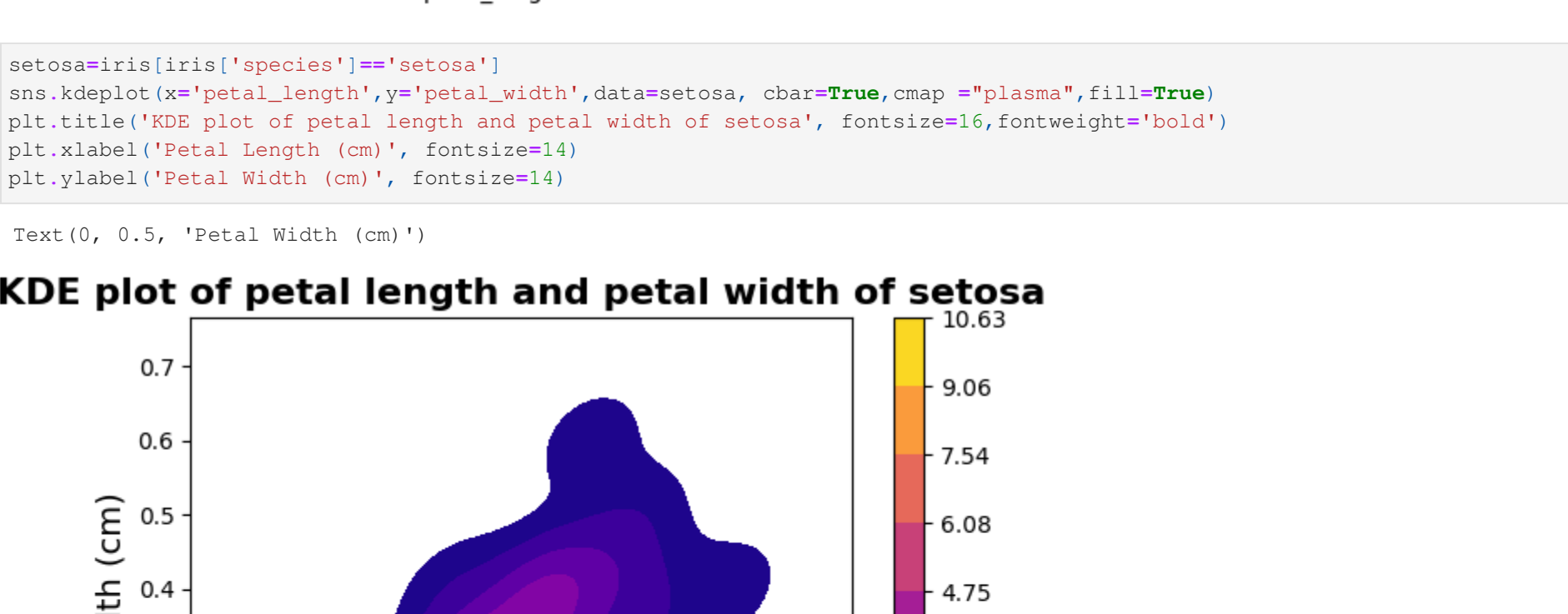
KDE Plot of petal Length vs petal Width (Setosa)



```
In [74]: setosa=iris[iris['species']=='setosa']
sns.kdeplot(x='petal_length', y='petal_width', data=setosa, cbar=True, cmap='plasma', fill=True)
plt.title('KDE plot of petal length and petal width of setosa', fontsize=16, fontweight='bold')
plt.xlabel('Petal Length (cm)', fontsize=14)
plt.ylabel('Petal Width (cm)', fontsize=14)
```

```
Out [74]: Text(0, 0.5, 'Petal Width (cm)')
```

KDE plot of petal length and petal width of setosa



```
In [ ]:
```