IRIS DATASET VISUALIZATION (SEABORN, MATPLOTLIB)

In [1]:

```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import warnings
warnings.filterwarnings('ignore')
```

In [2]:

```
iris= pd.read_csv(r'C:\Users\Twinkele\OneDrive\Desktop\Iris.csv')
```

In [3]:

```
iris
```

Out[3]:

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

150 rows × 6 columns

In [4]:

```
iris.head()
```

Out[4]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

In [5]:

```
iris.tail()
```

Out[5]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
145	146	6.7	3.0	5.2	2.3	Iris-virginica
146	147	6.3	2.5	5.0	1.9	Iris-virginica
147	148	6.5	3.0	5.2	2.0	Iris-virginica
148	149	6.2	3.4	5.4	2.3	Iris-virginica
149	150	5.9	3.0	5.1	1.8	Iris-virginica

In [7]:

```
iris.drop('Id', axis=1, inplace=True)
```

In [8]:

```
iris.head()
```

Out[8]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	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 [9]:

```
iris.info()
```

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

In [14]:

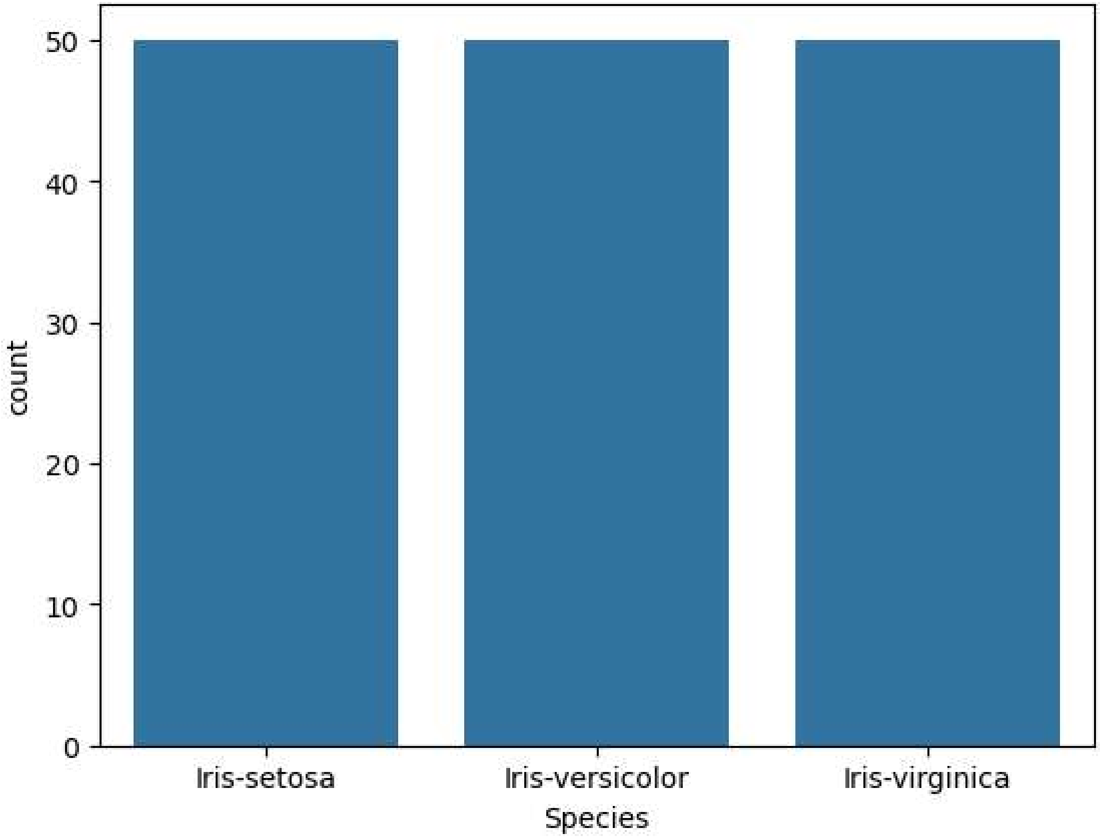
```
iris['Species'].value_counts()
```

Out[14]:

```
Species
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: count, dtype: int64
```

In [16]:

```
sns.countplot(x='Species',data=iris)
plt.show()
```

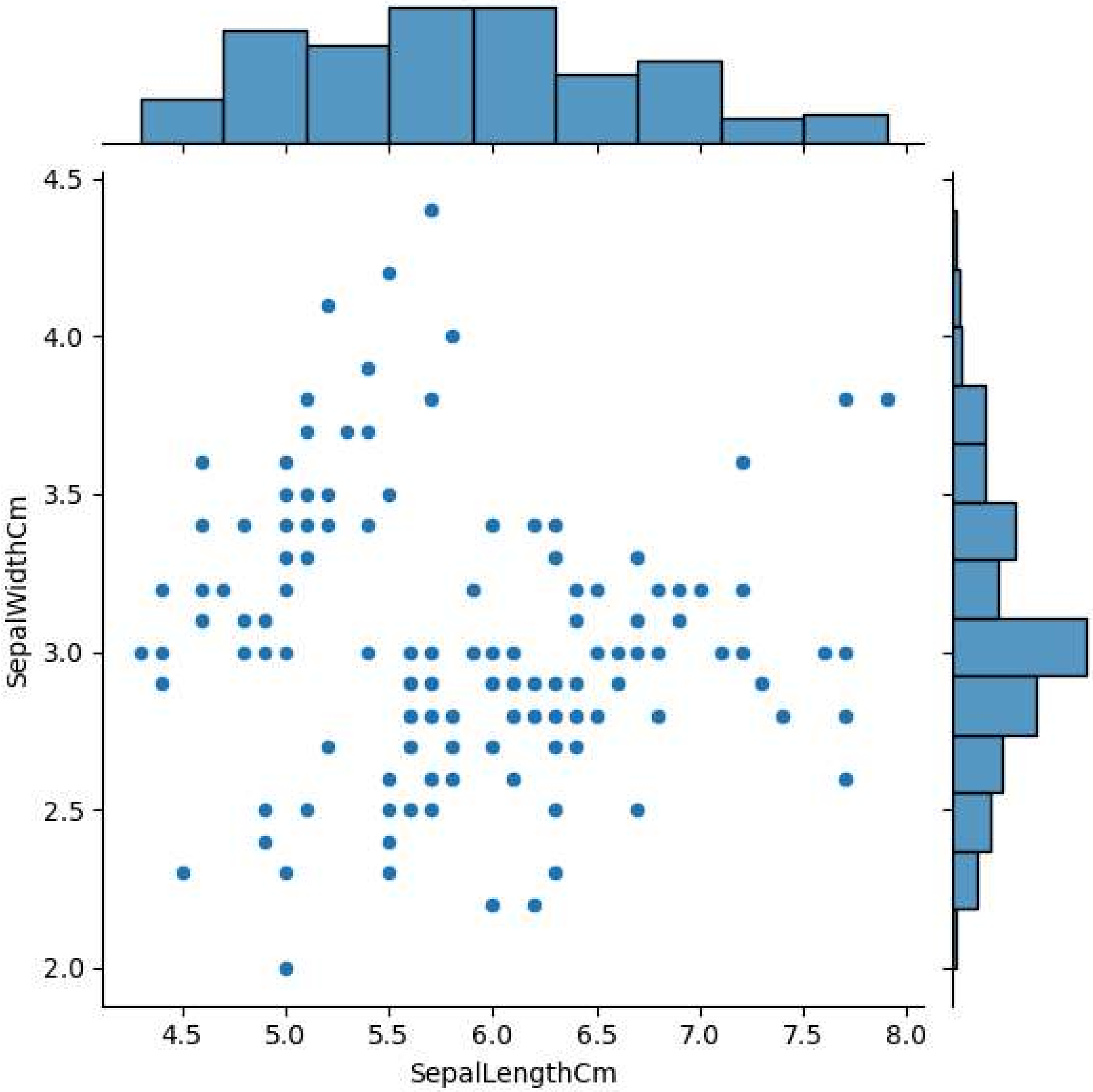


In [17]:
```
iris.head()
```

Out[17]:

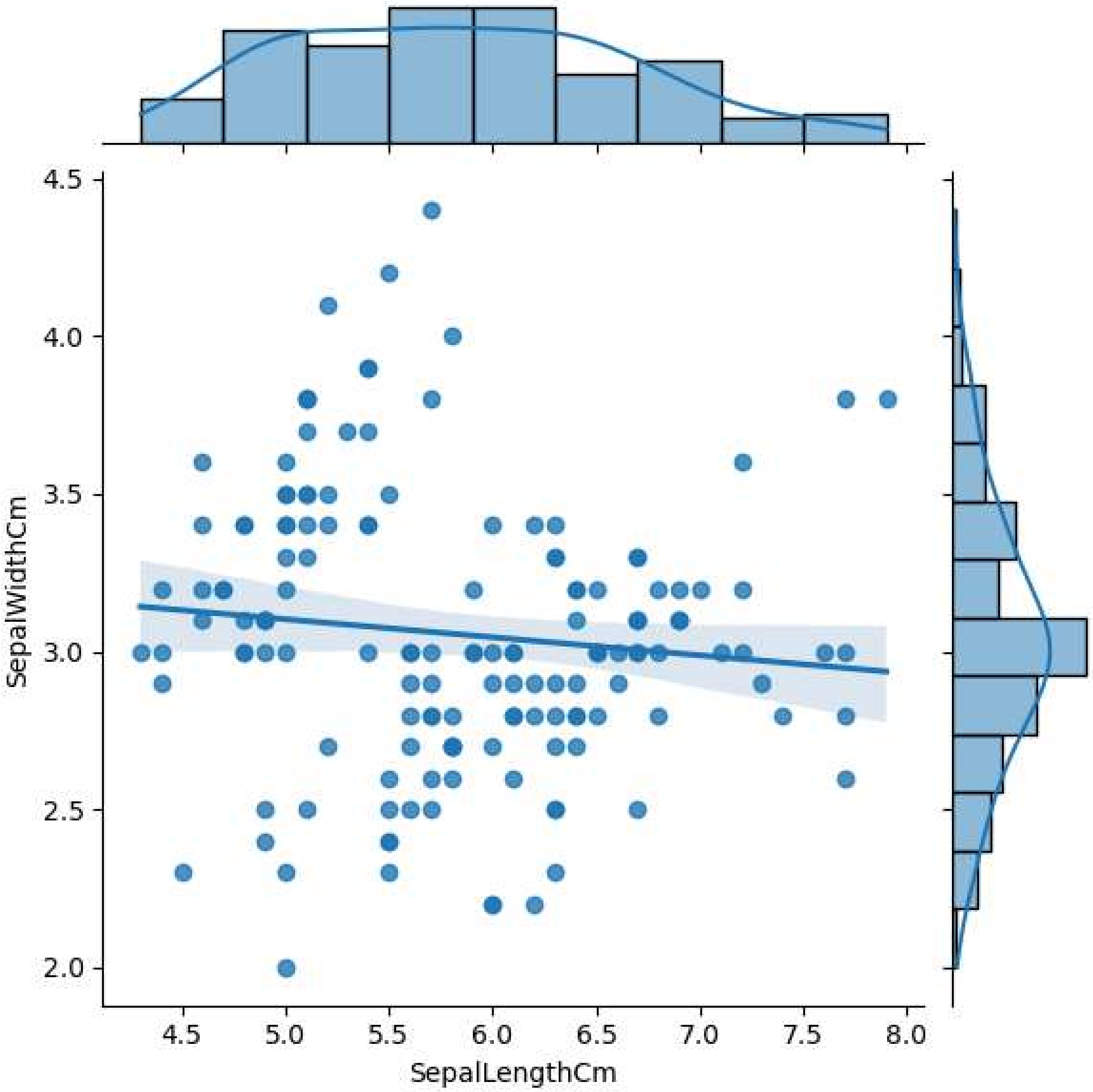
	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa

In [18]:
```
fig=sns.jointplot(x='SepalLengthCm', y='SepalWidthCm', data=iris)
```



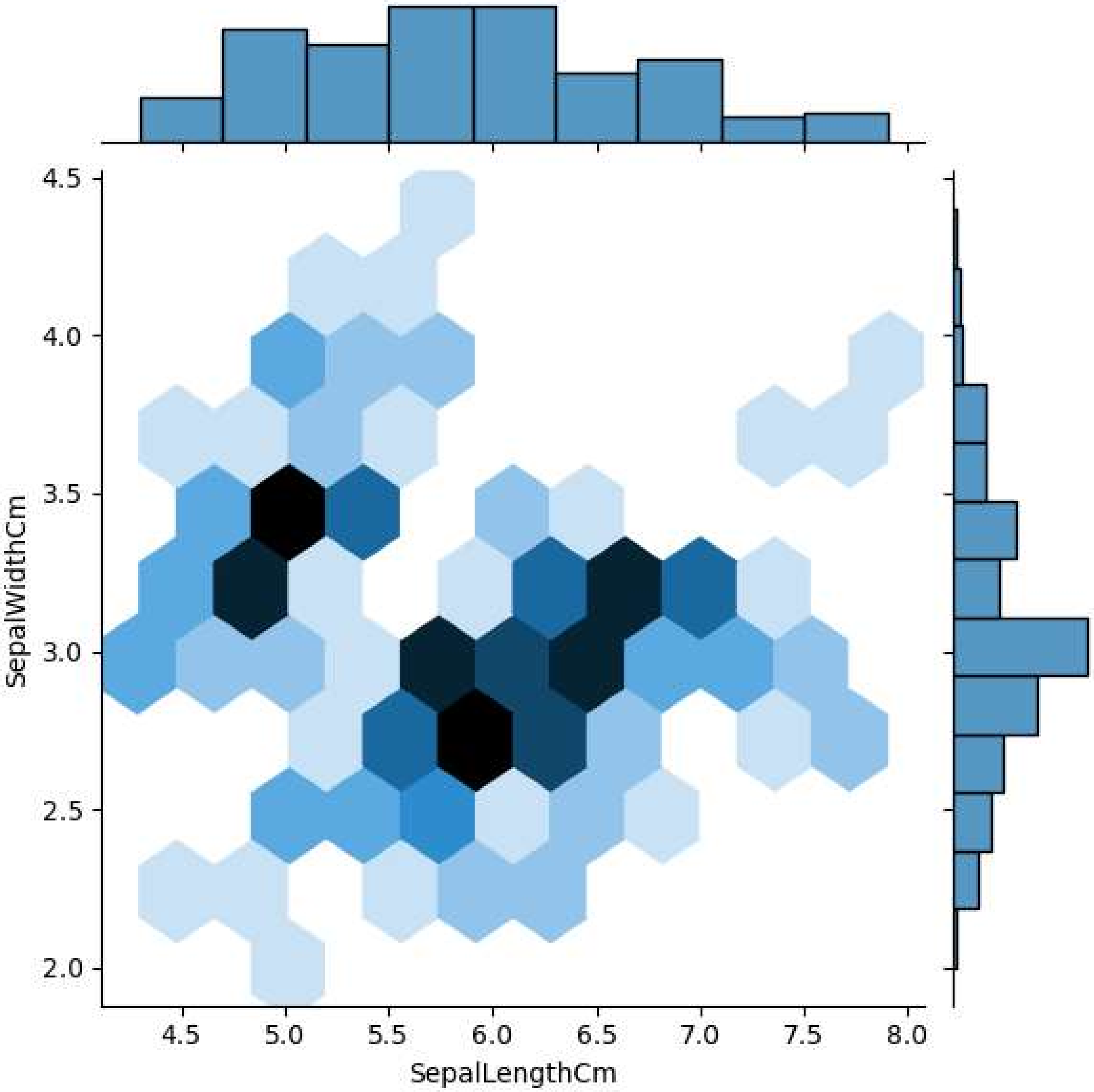
```
In [20]: sns.jointplot(x="SepalLengthCm", y="SepalWidthCm", data=iris, kind="reg")
```

```
Out[20]: <seaborn.axisgrid.JointGrid at 0x1b6dd167250>
```



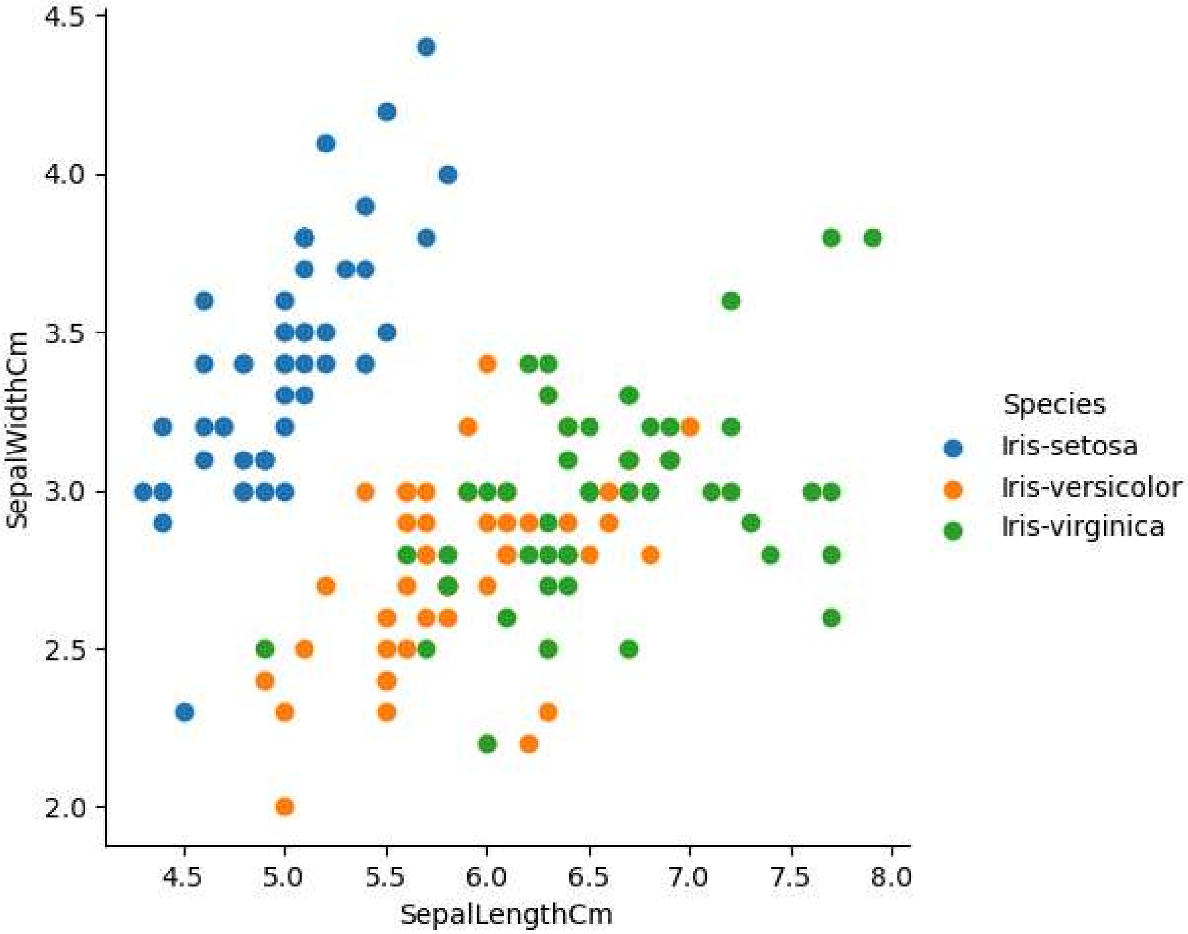
```
In [21]: sns.jointplot(x="SepalLengthCm", y="SepalWidthCm", data=iris, kind="hex")
```

```
Out[21]: <seaborn.axisgrid.JointGrid at 0x1b6dd495450>
```



In [37]:

```
import matplotlib.pyplot as plt
%matplotlib inline
sns.FacetGrid(iris,hue='Species',height=5)\
.map(plt.scatter,'SepalLengthCm', 'SepalWidthCm')\
.add_legend()
plt.show()
```



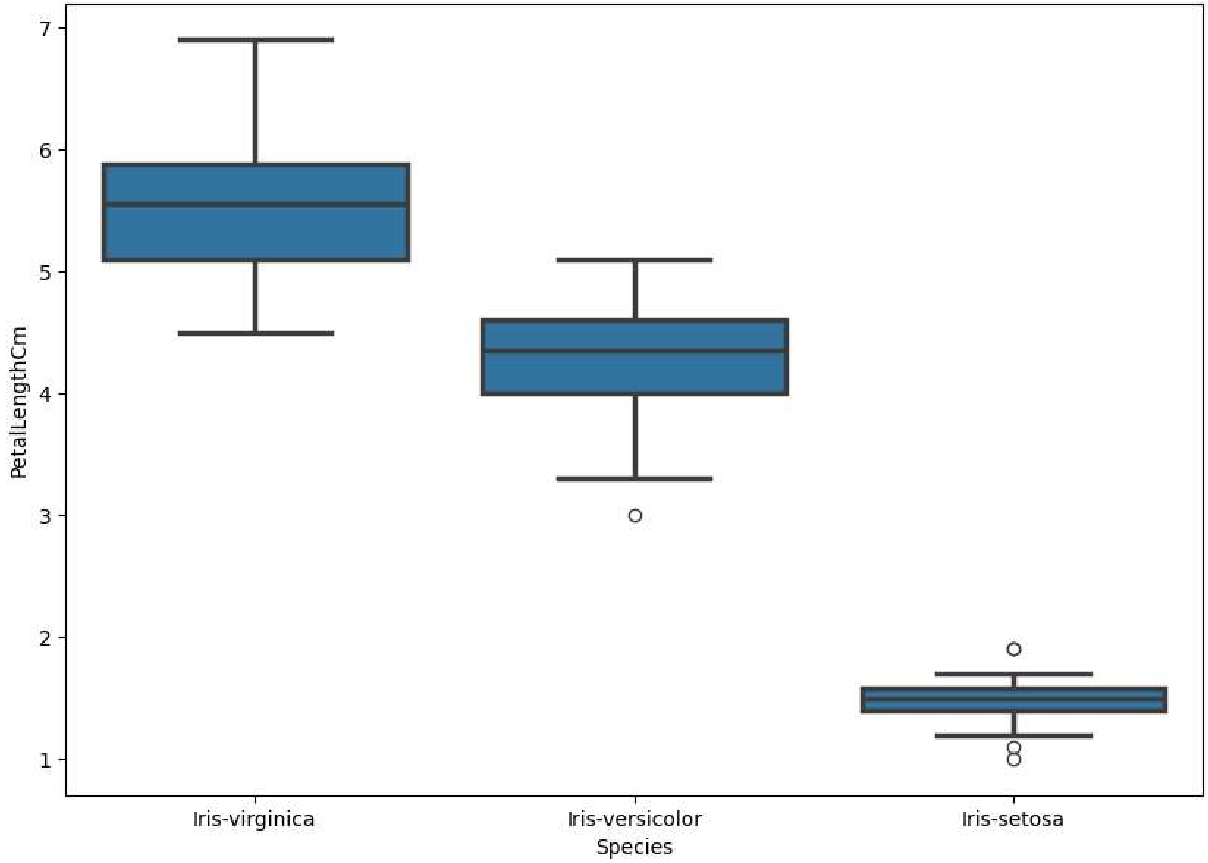
```
In [38]: iris.head()
```

Out[38]:

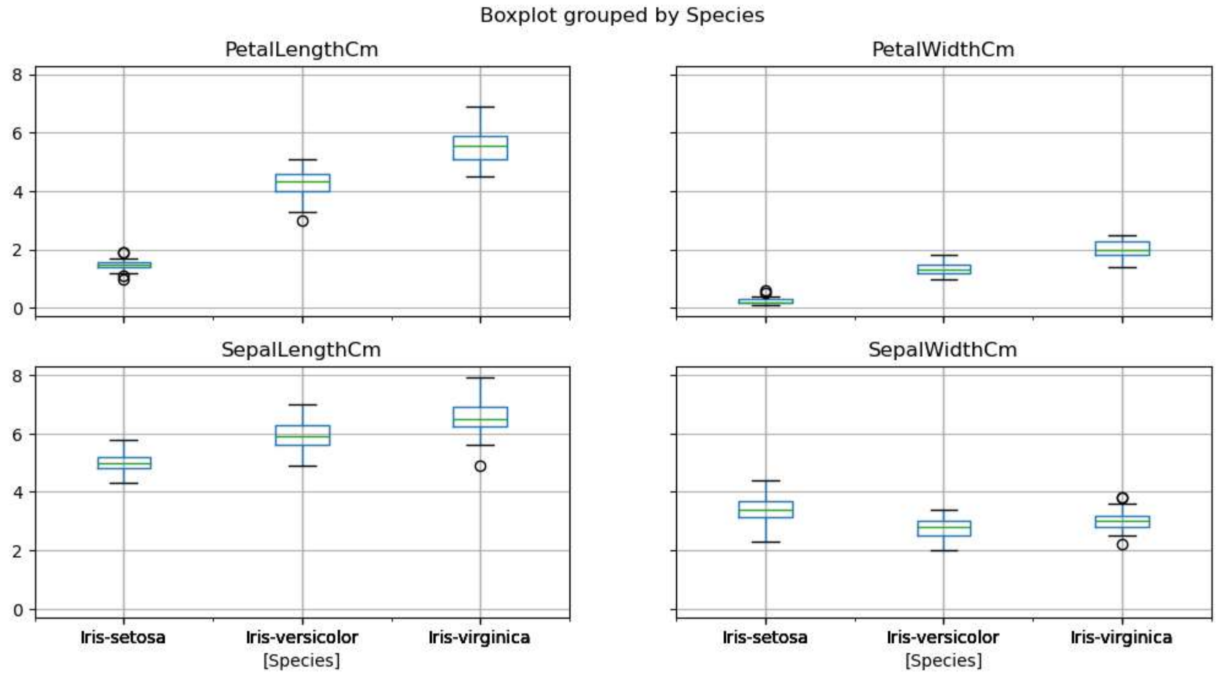
	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa

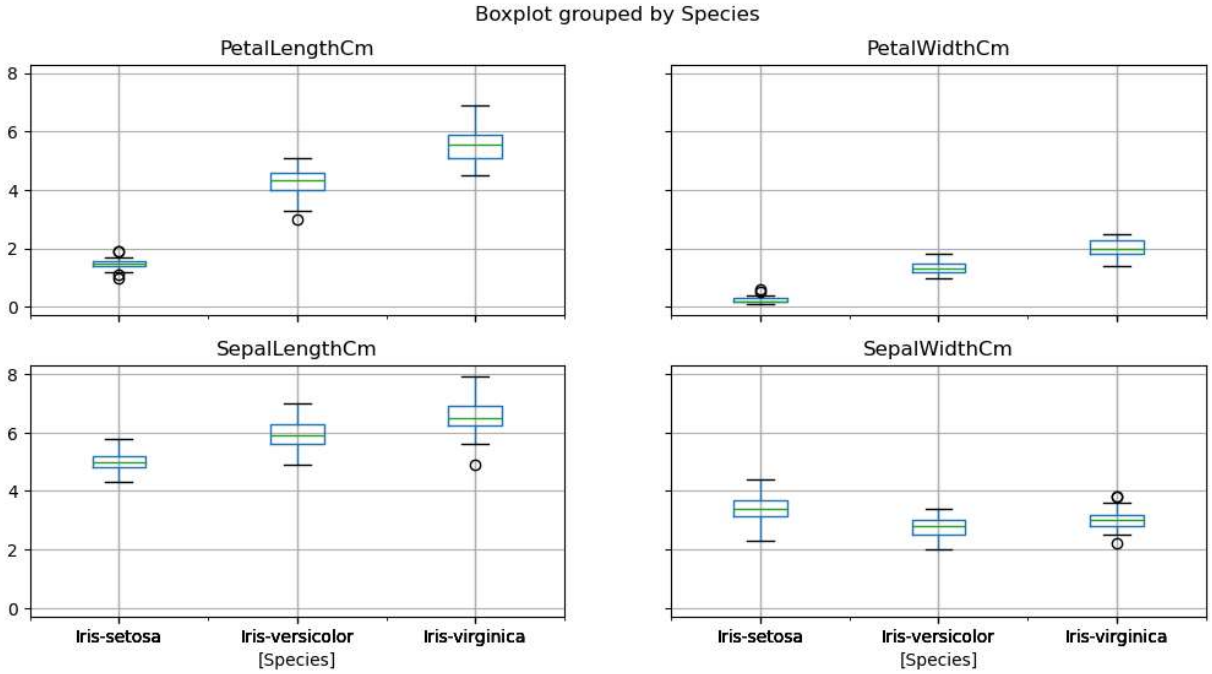
```
In [42]: fig=plt.gcf()
         fig.set_size_inches(10,7)
         fig=sns.boxplot(x='Species',y='PetalLengthCm',data=iris,order=['Iris-virginica','Ir
```

```
In [43]: plt.show()
```



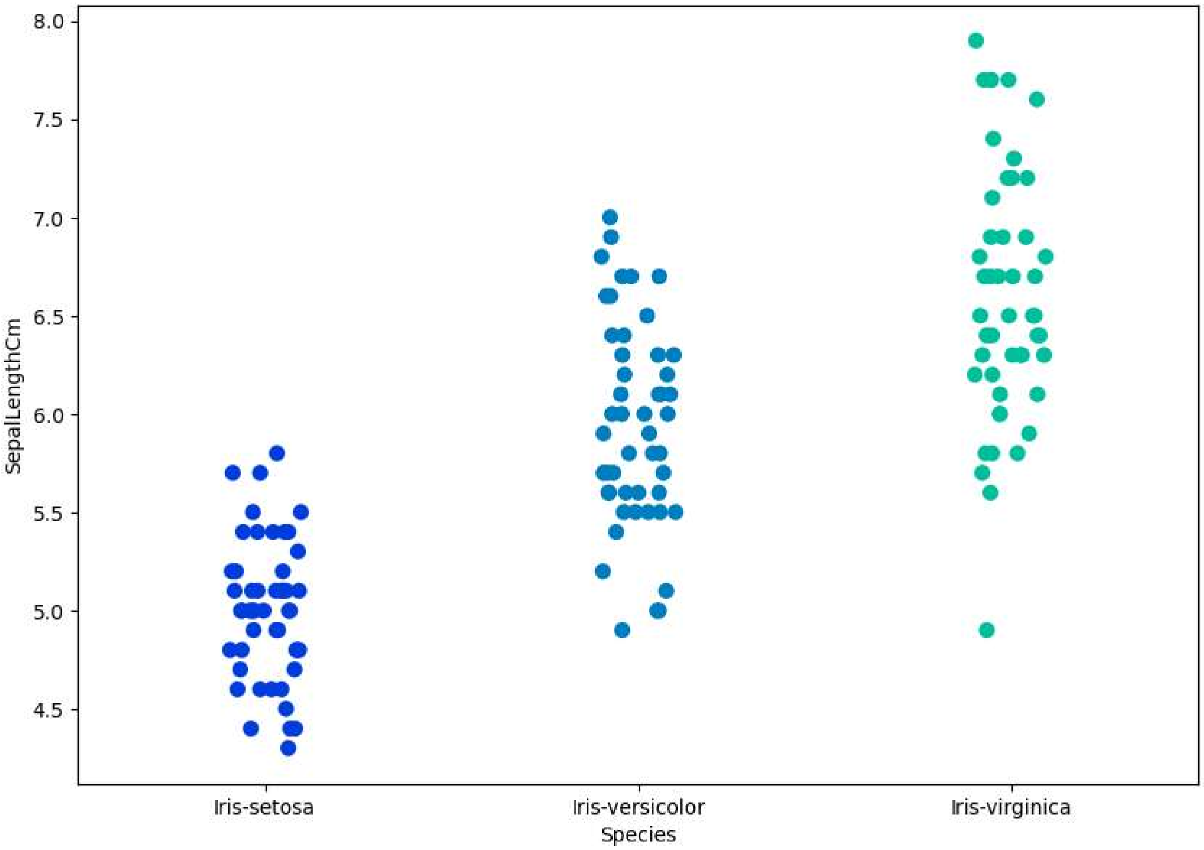
```
In [45]: iris.boxplot(by="Species",figsize=(12,6))
         plt.show()
```





In [46]:

```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.stripplot(x='Species',y='SepalLengthCm',data=iris,jitter=True,edgecolor='gr
plt.show()
```



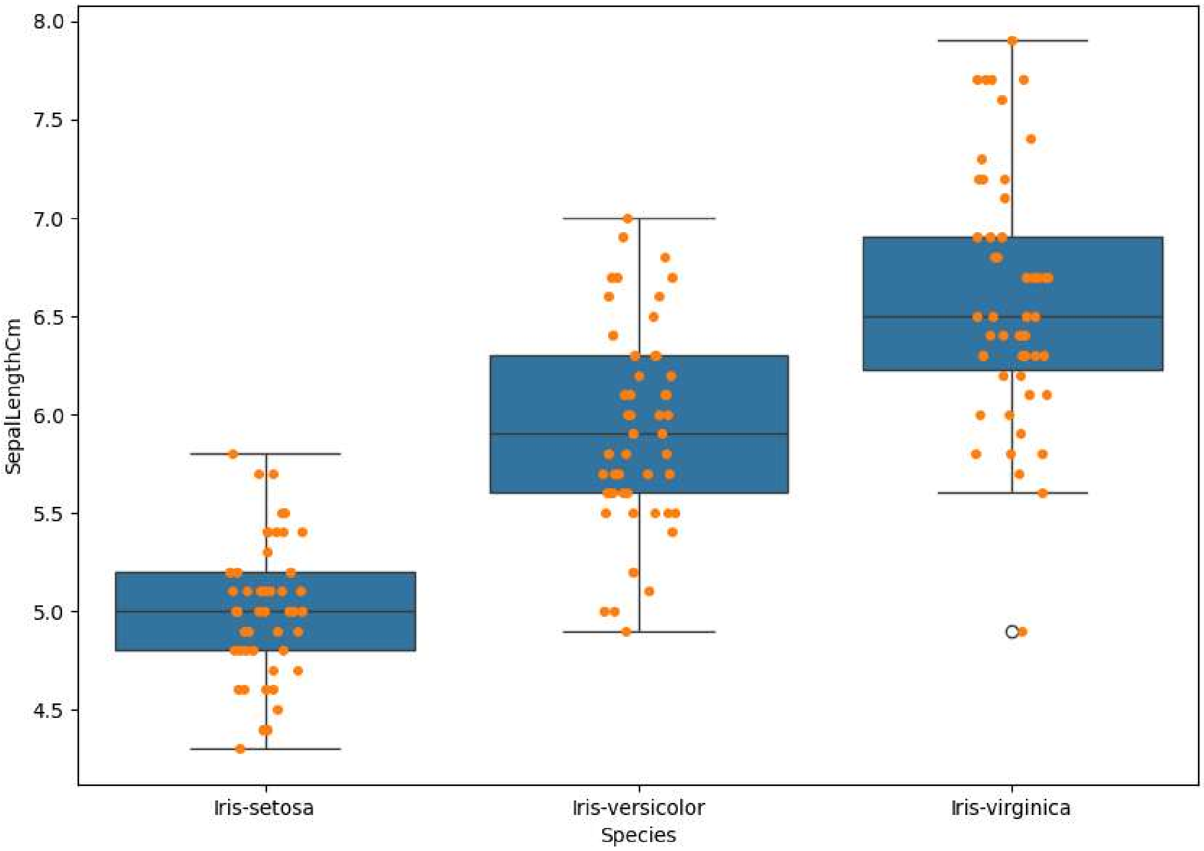
In [47]:

```
fig=plt.gcf()
fig.set_size_inches(10,7)
```

```
fig=sns.boxplot(x='Species',y='SepalLengthCm',data=iris)
fig=sns.stripplot(x='Species',y='SepalLengthCm',data=iris,jitter=True,edgecolor='gr
```

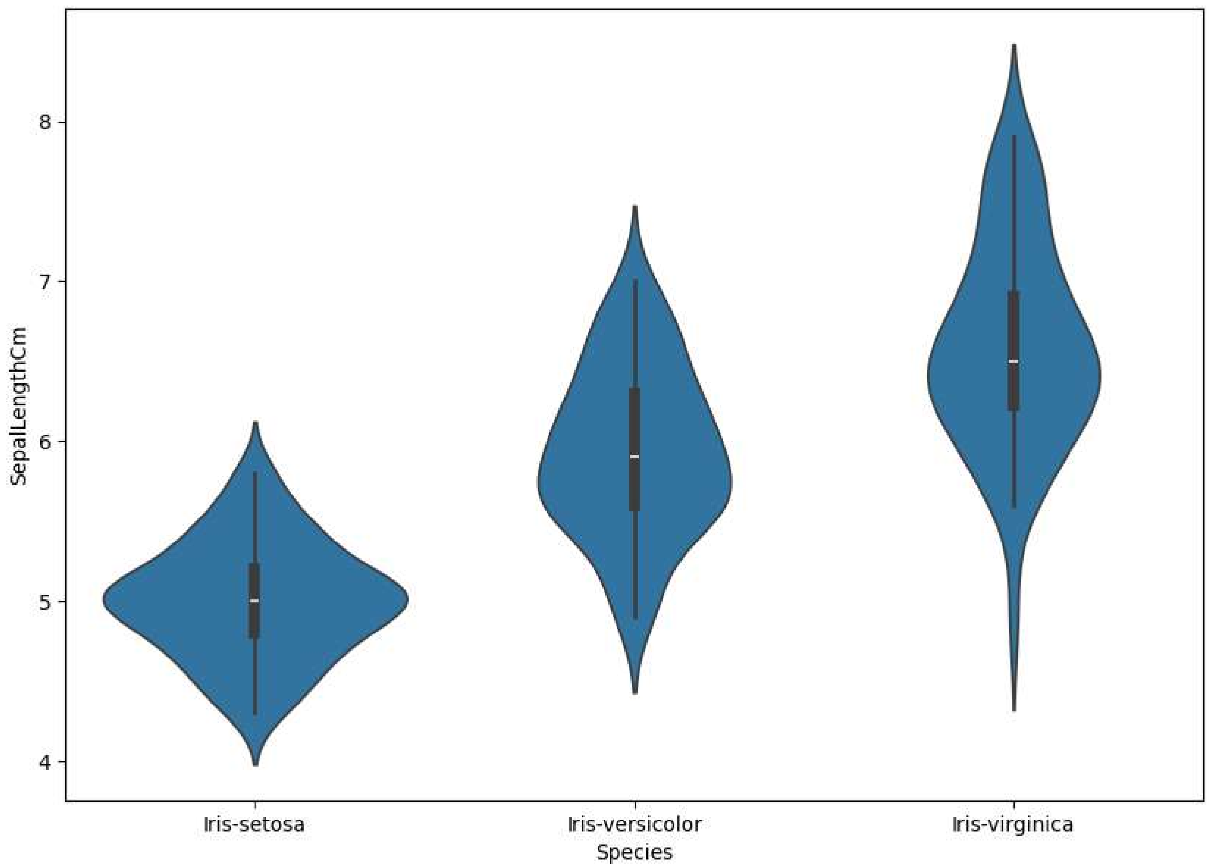
In [48]:

```
plt.show()
```



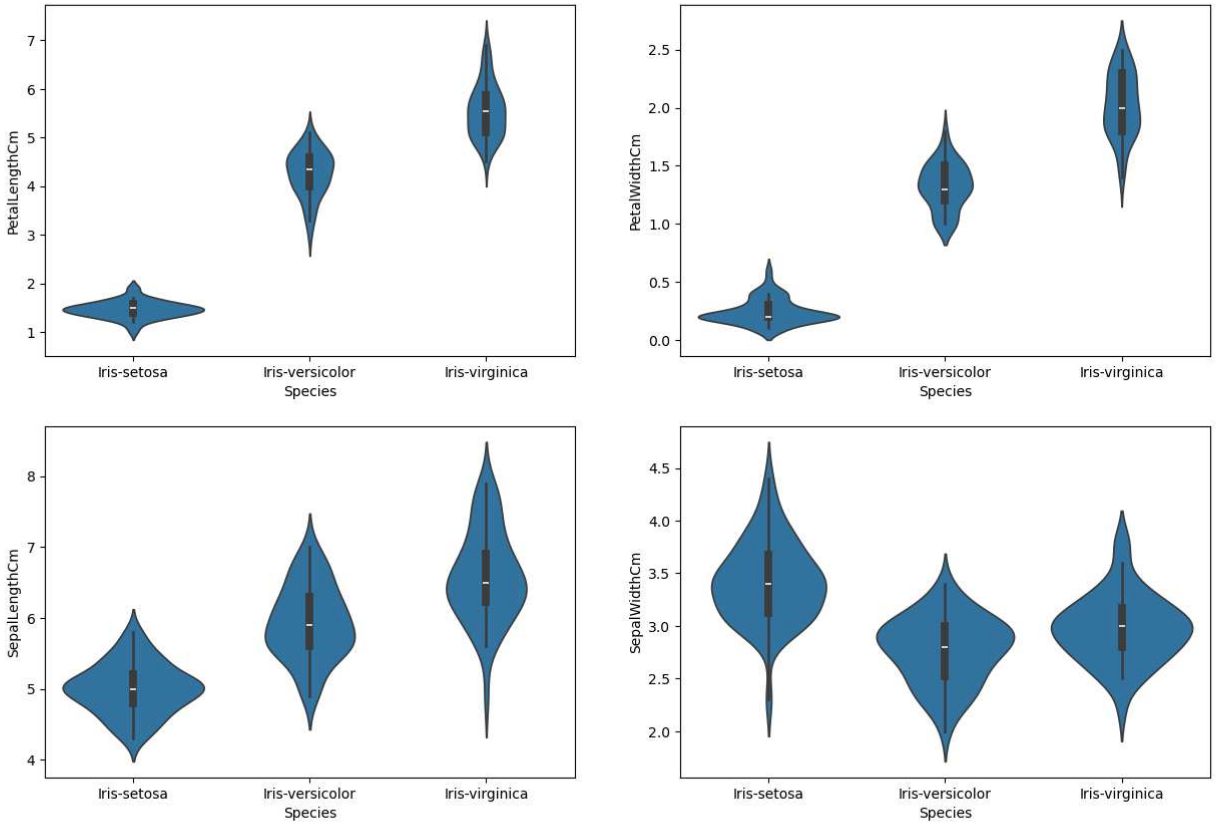
In [54]:

```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.violinplot(x='Species',y='SepalLengthCm',data=iris)
plt.show()
```



In [55]:

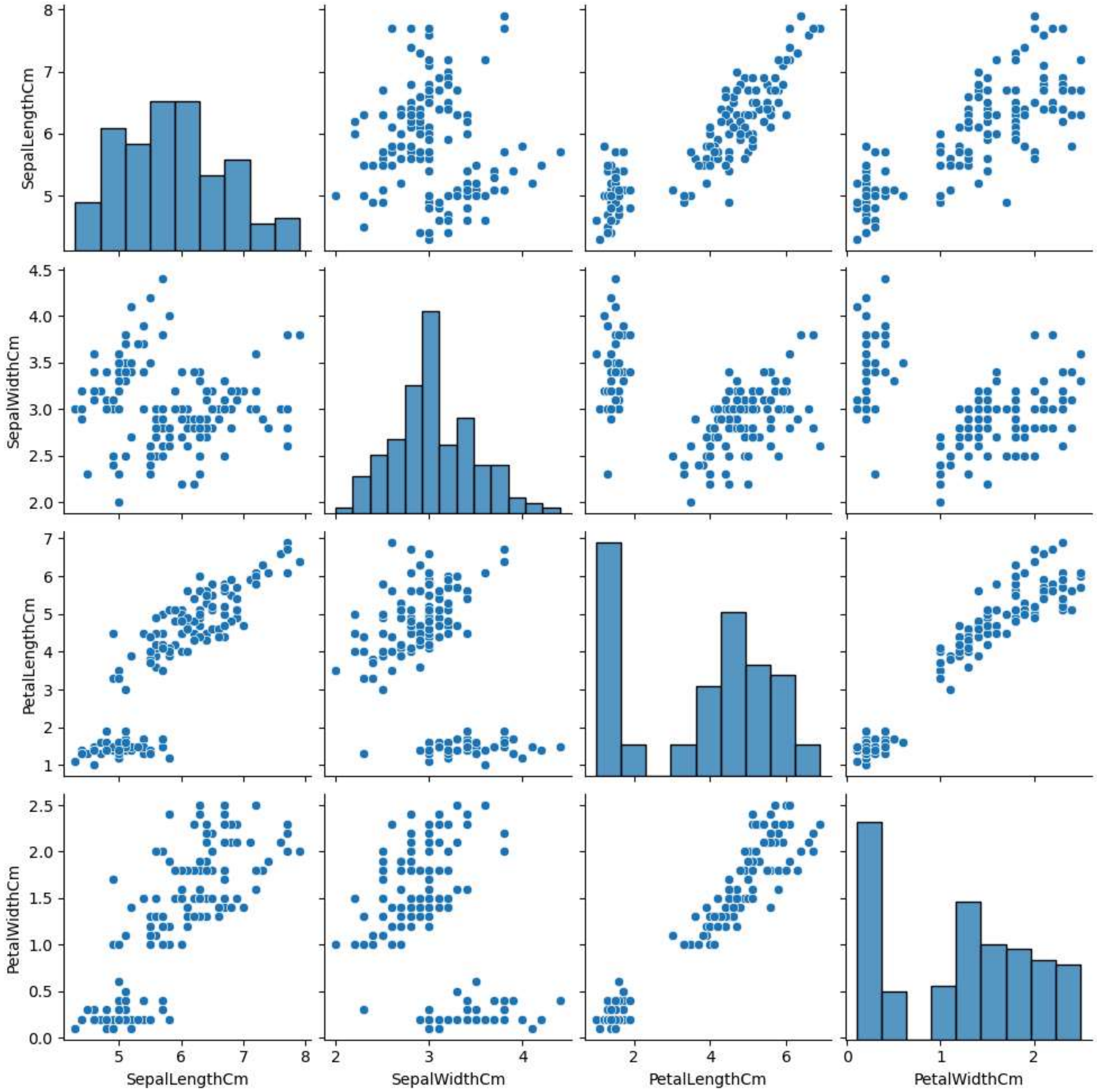
```
plt.figure(figsize=(15,10))
plt.subplot(2,2,1)
sns.violinplot(x='Species',y='PetalLengthCm',data=iris)
plt.subplot(2,2,2)
sns.violinplot(x='Species',y='PetalWidthCm',data=iris)
plt.subplot(2,2,3)
sns.violinplot(x='Species',y='SepalLengthCm',data=iris)
plt.subplot(2,2,4)
sns.violinplot(x='Species',y='SepalWidthCm',data=iris)
plt.show()
```



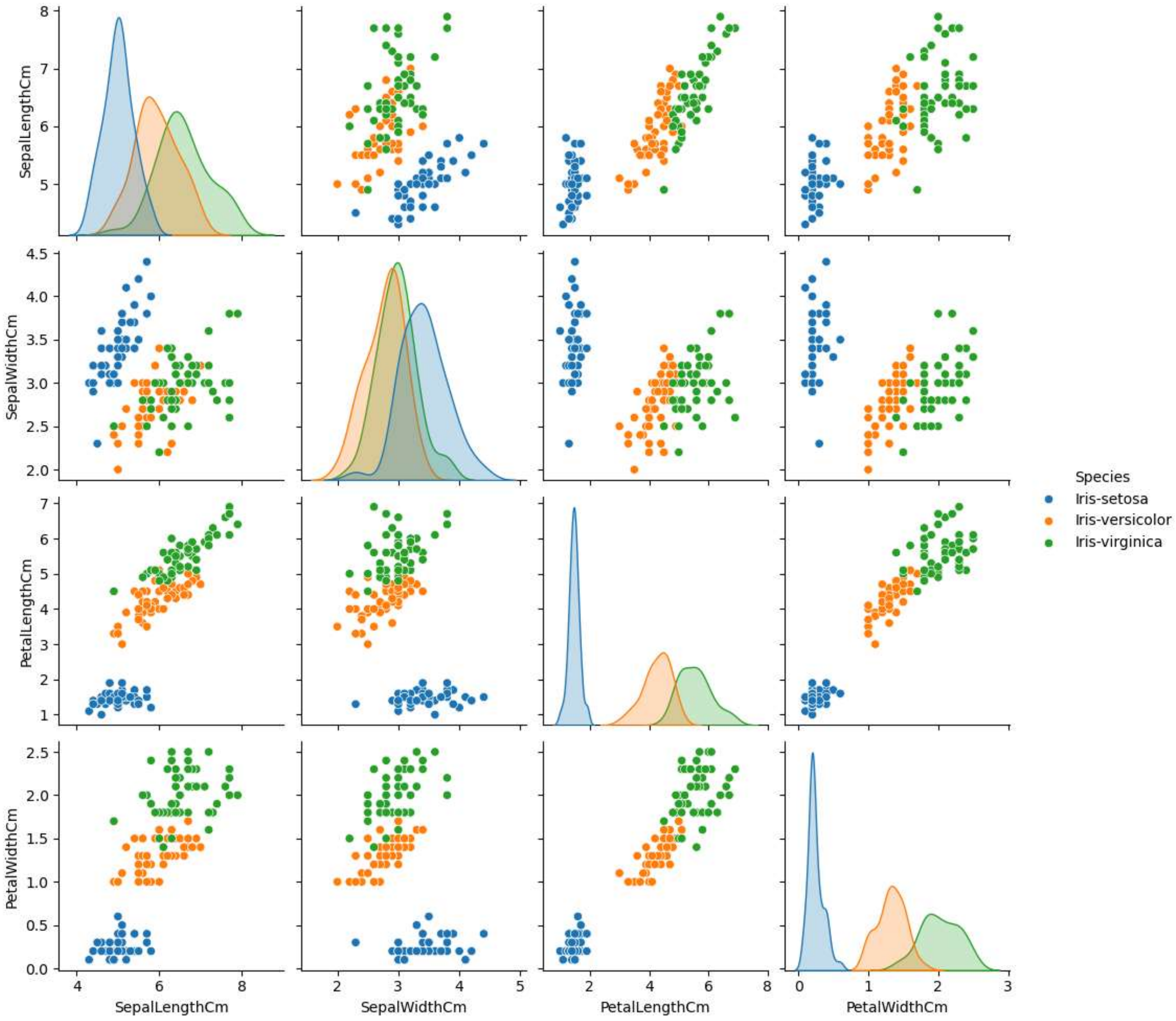
```
In [56]: sns.pairplot(data=iris, kind='scatter')
```

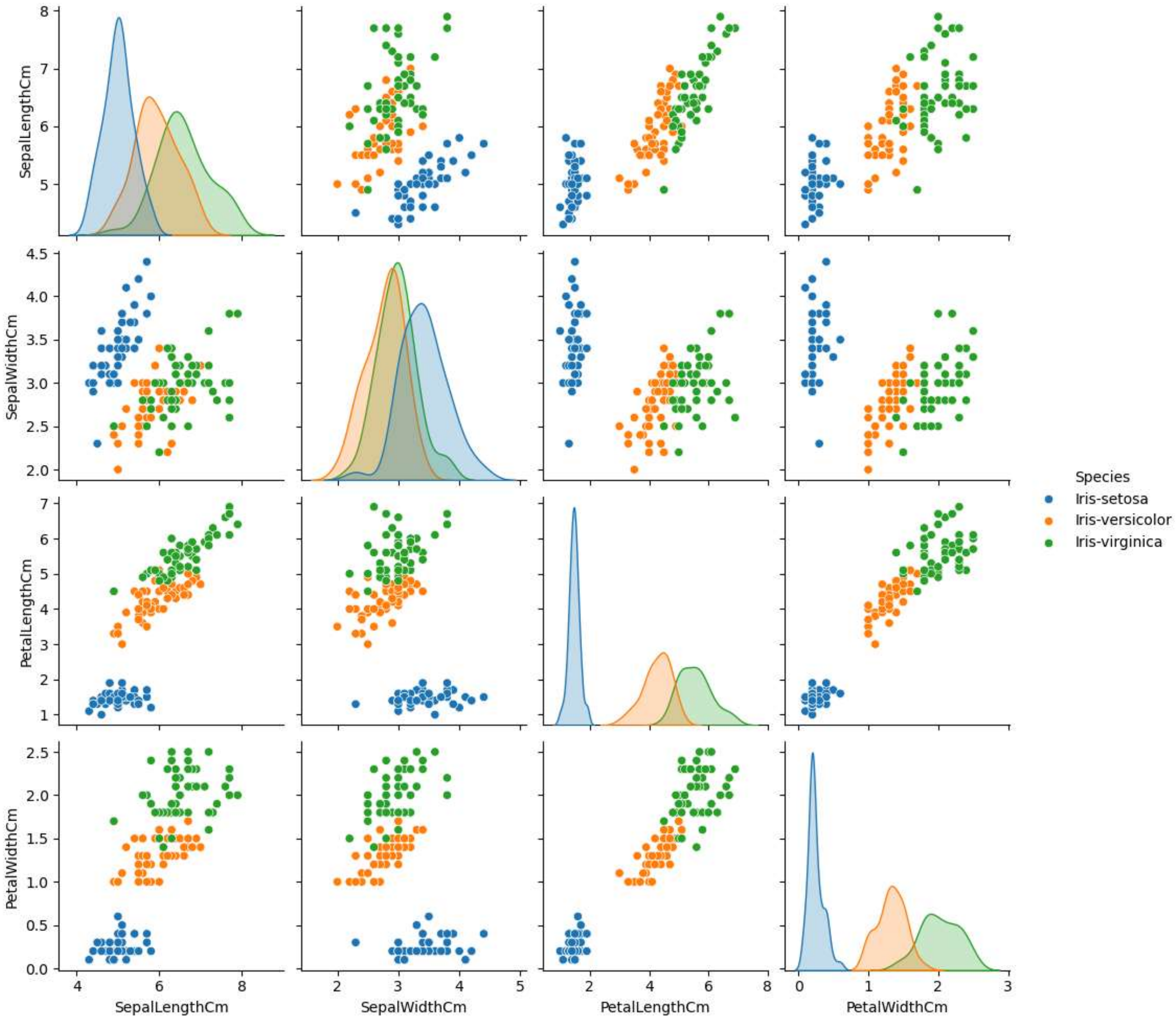
```
Out[56]: <seaborn.axisgrid.PairGrid at 0x1b6d700b380>
```

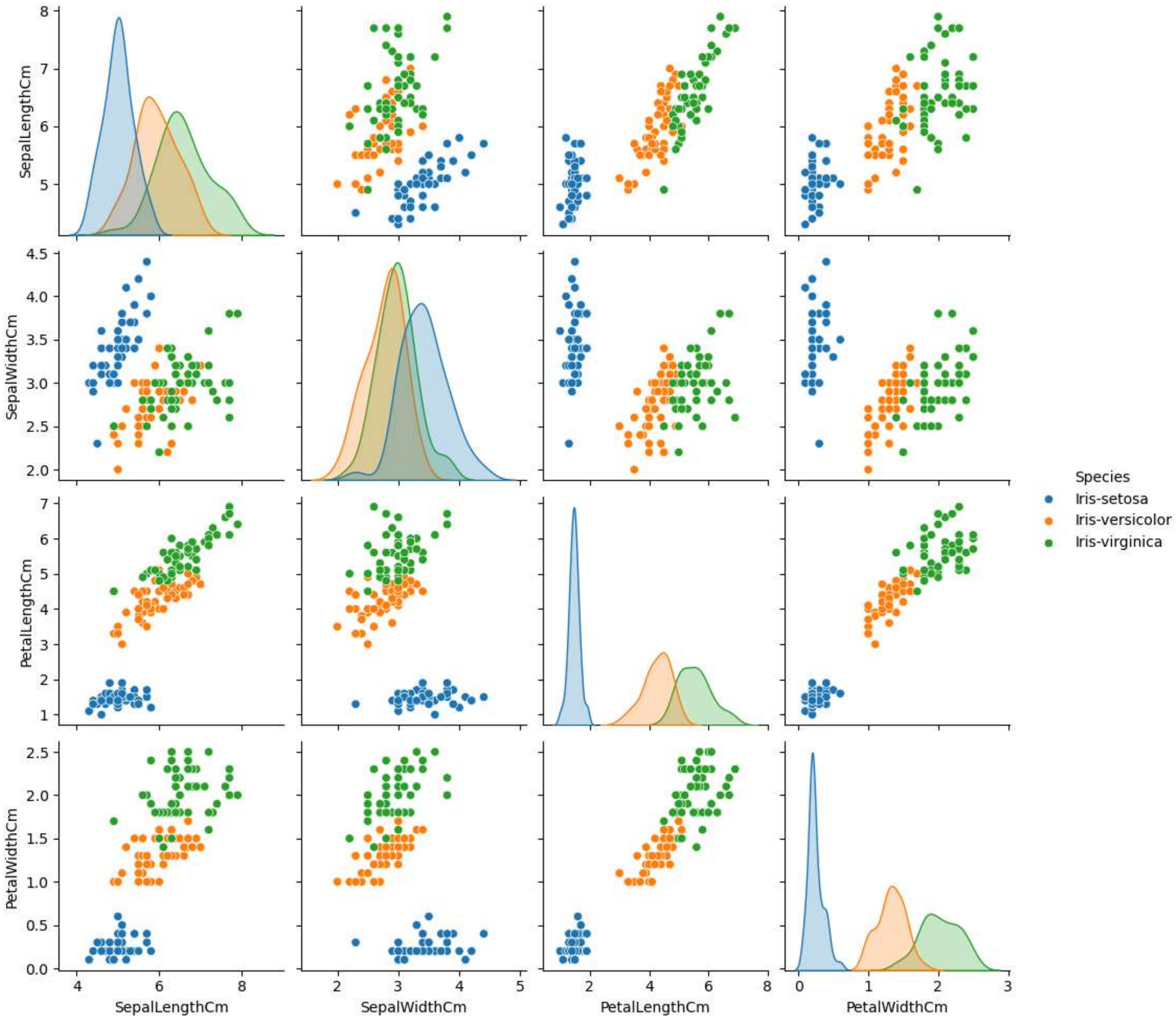
```
In [57]: plt.show()
```



```
In [61]: sns.pairplot(iris,hue='Species');
         plt.show()
```


SepalLengthCm
SepalWidthCm
PetalLengthCm
PetalWidthCm
Species
Iris-setosa
Iris-versicolor
Iris-virginica
8
7
6
5
4.5
4.0
3.5
3.0
2.5
2.0
7
6
5
4
3
2
1
2.5
2.0
1.5
1.0
0.5
0.0
4
6
8
2
3
4
5
2
4
6
8
0
1
2
3

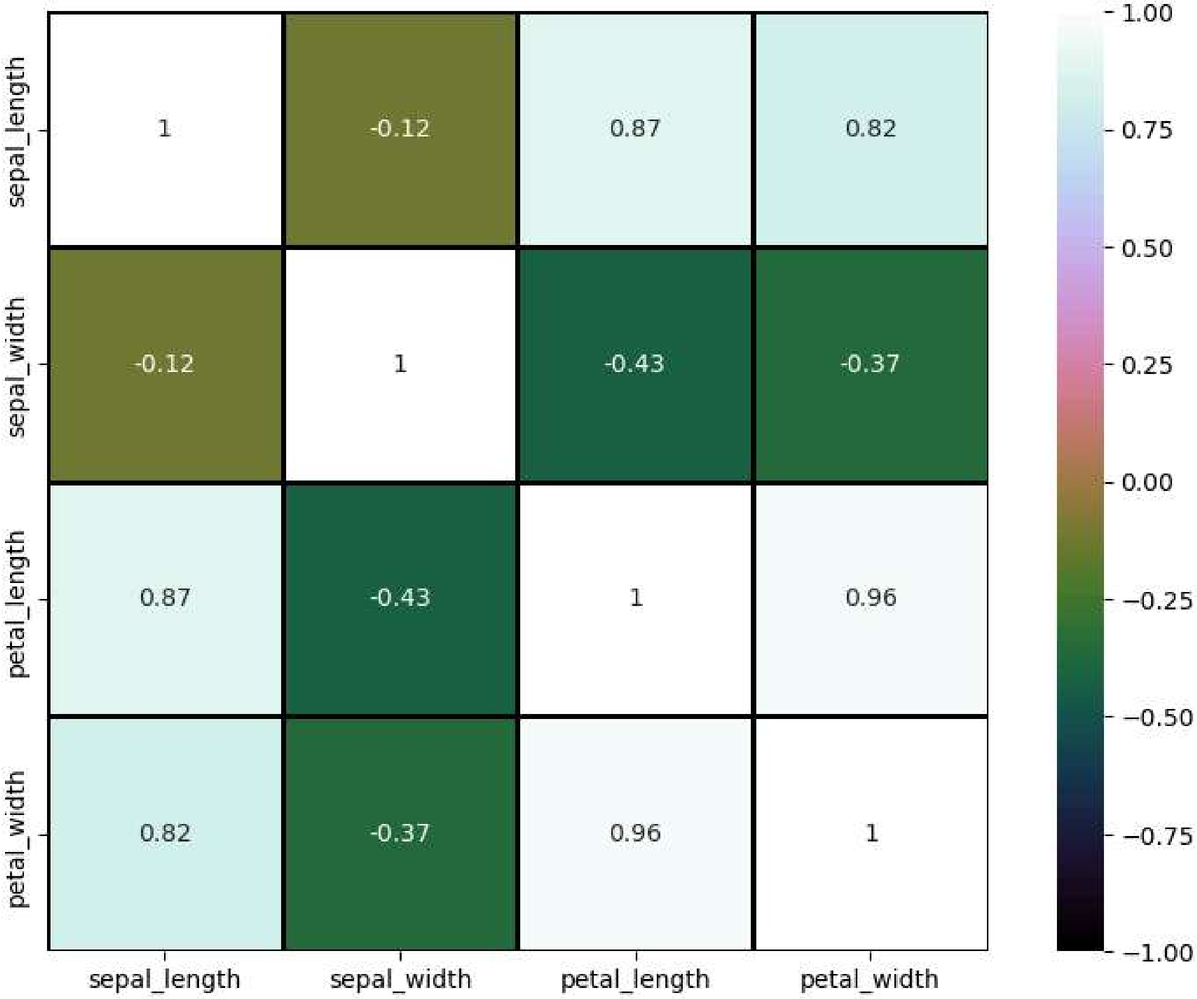

SepalLengthCm
SepalWidthCm
PetalLengthCm
PetalWidthCm
8
7
6
5
4.5
4.0
3.5
3.0
2.5
2.0
7
6
5
4
3
2
1
2.5
2.0
1.5
1.0
0.5
0.0
4
6
8
2
3
4
5
2
4
6
8
0
1
2
3
SepalLengthCm
SepalWidthCm
PetalLengthCm
PetalWidthCm
Species
● Iris-setosa
● Iris-versicolor
● Iris-virginica



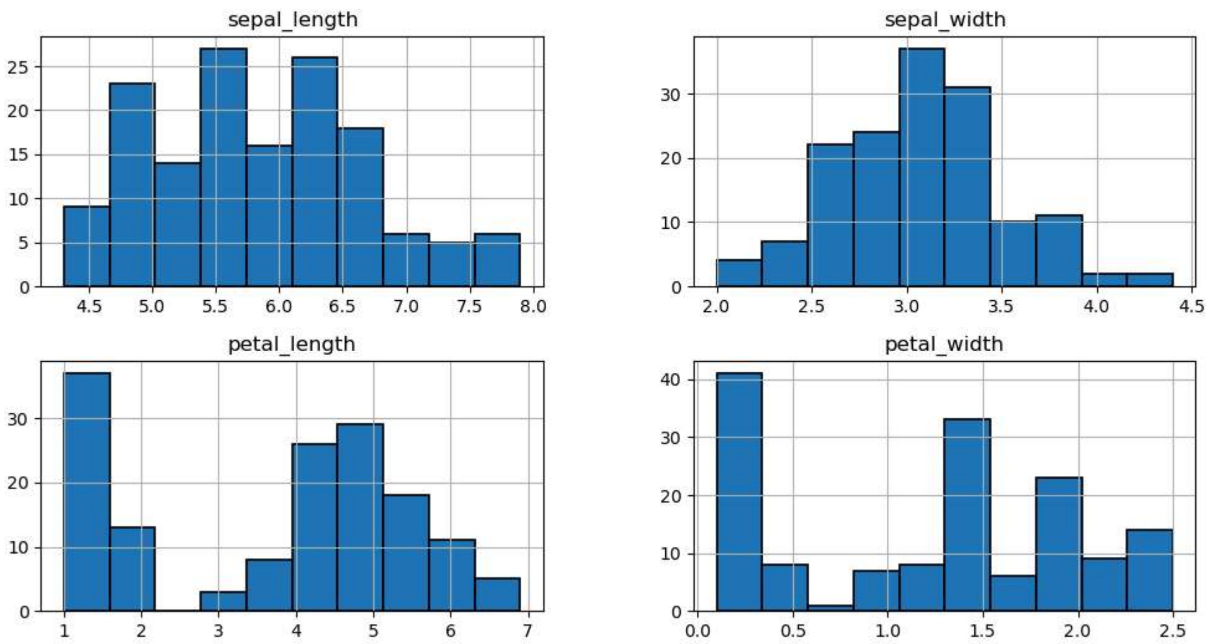
In [67]:

```python
import seaborn as sns
import matplotlib.pyplot as plt
import numpy as np

iris = sns.load_dataset('iris')

# select numeric columns only
numeric = iris.select_dtypes(include=[np.number])
corr = numeric.corr()

fig, ax = plt.subplots(figsize=(10, 7))
sns.heatmap(
    corr,
    annot=True,
    cmap='cubehelix',
    linewidths=1,
    linecolor='k',
    square=True,
    vmin=-1,
    vmax=1,
    cbar_kws={"orientation": "vertical"},
    ax=ax
)
plt.show()
```

```
<Figure size 1000x700 with 0 Axes>
```

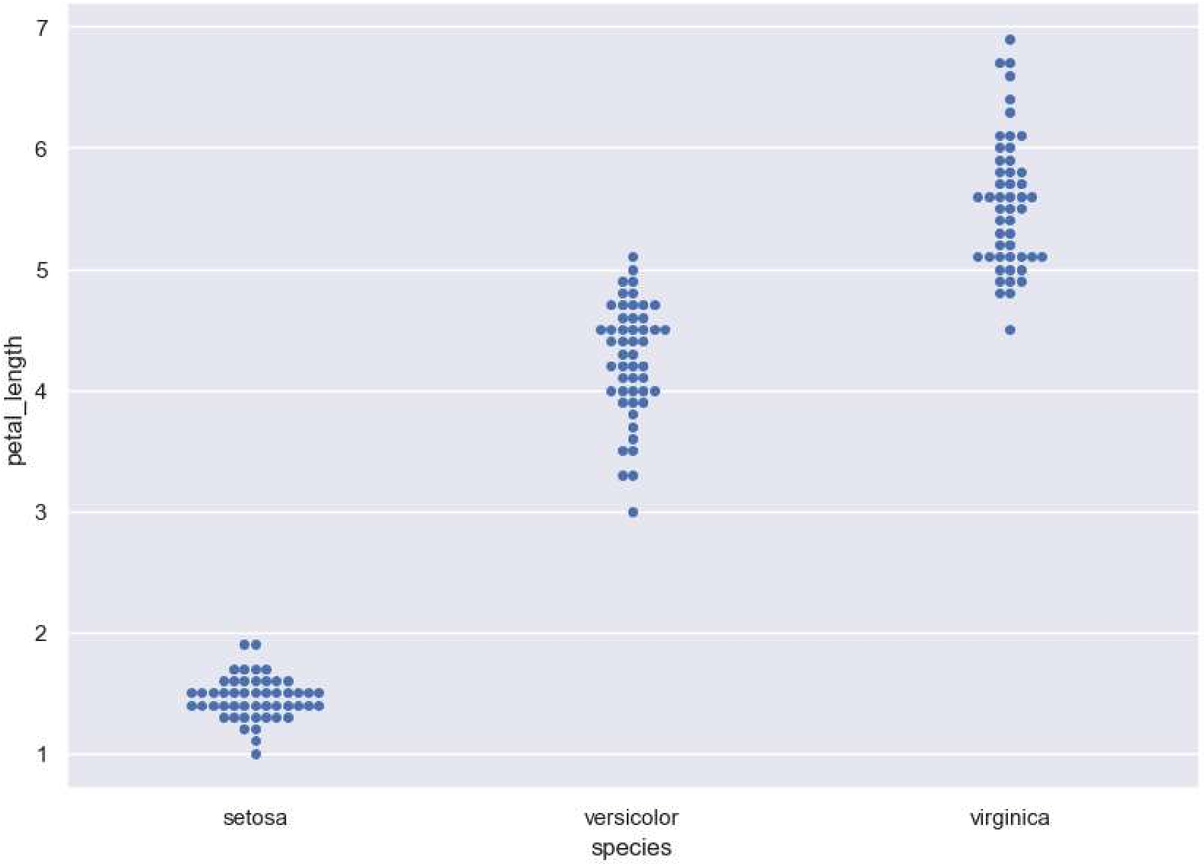


In [68]:
```
iris.hist(edgecolor='black', linewidth=1.2)
fig= plt.gcf()
fig.set_size_inches(12,6)
plt.show()
```



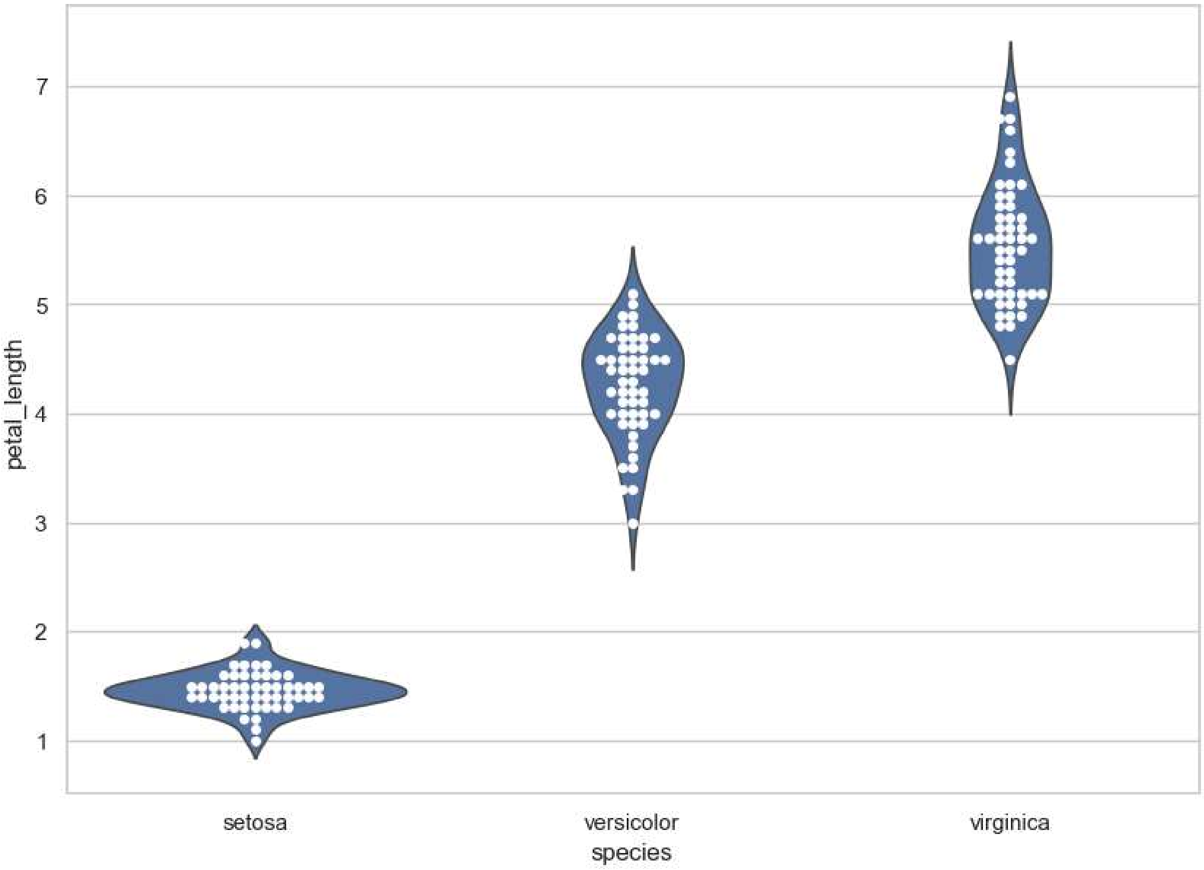
In [73]:
```
sns.set(style="darkgrid")
plt.figure(figsize=(10,7))
sns.swarmplot(x="species", y="petal_length", data=iris)
plt.show()
```

```
<Figure size 1000x700 with 0 Axes>
```



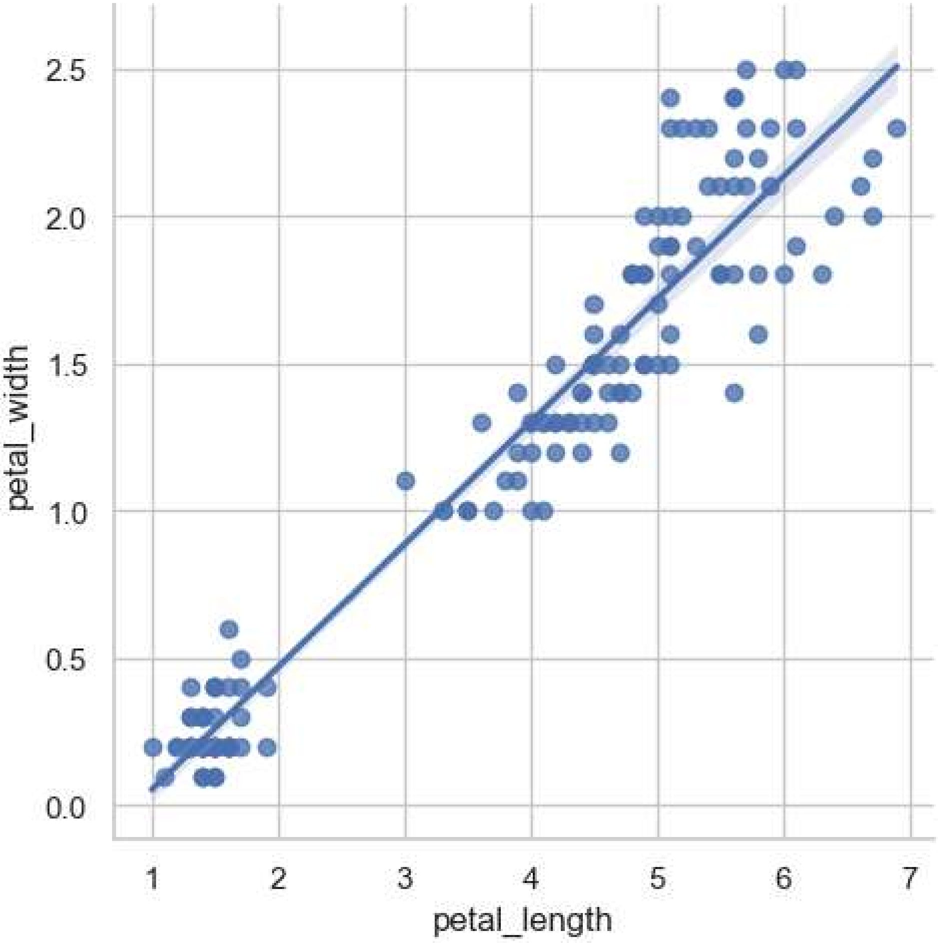
In [78]:
```
sns.set(style="whitegrid")
fig=plt.gcf()
fig.set_size_inches(10,7)
```

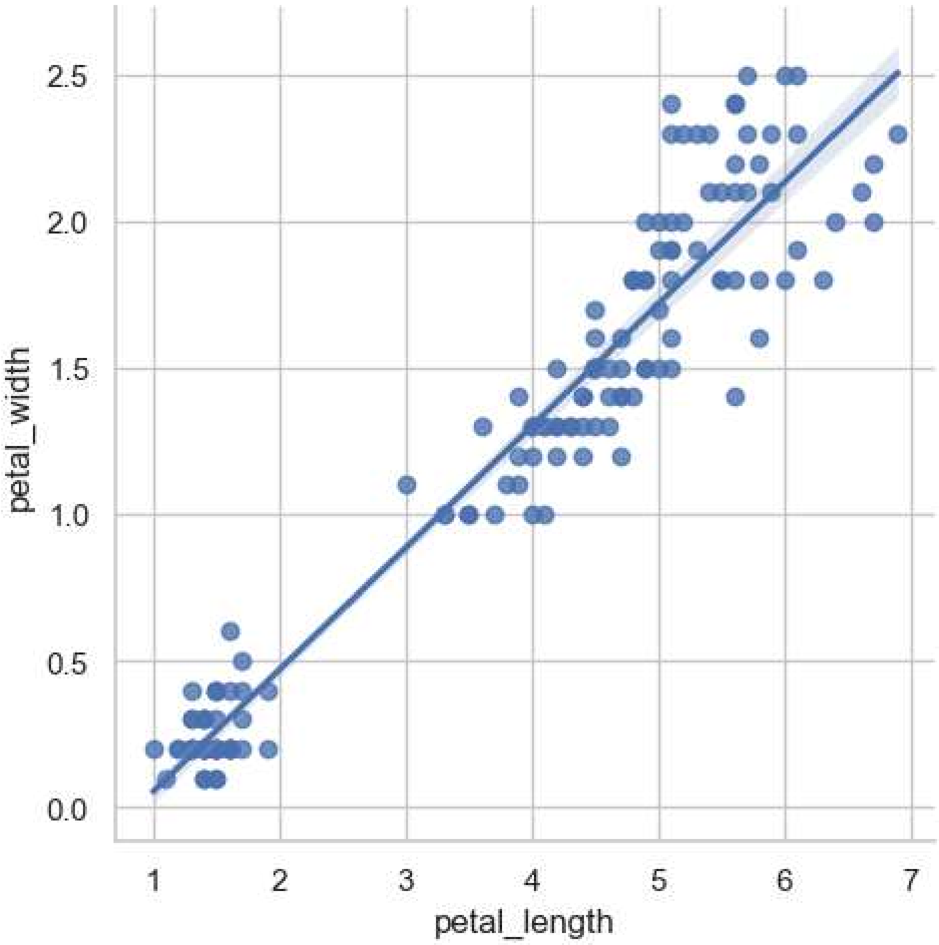
```
ax = sns.violinplot(x="species", y="petal_length", data=iris, inner=None)
ax = sns.swarmplot(x="species", y="petal_length", data=iris,color="white", edgecolo
plt.show()
```



In [81]:

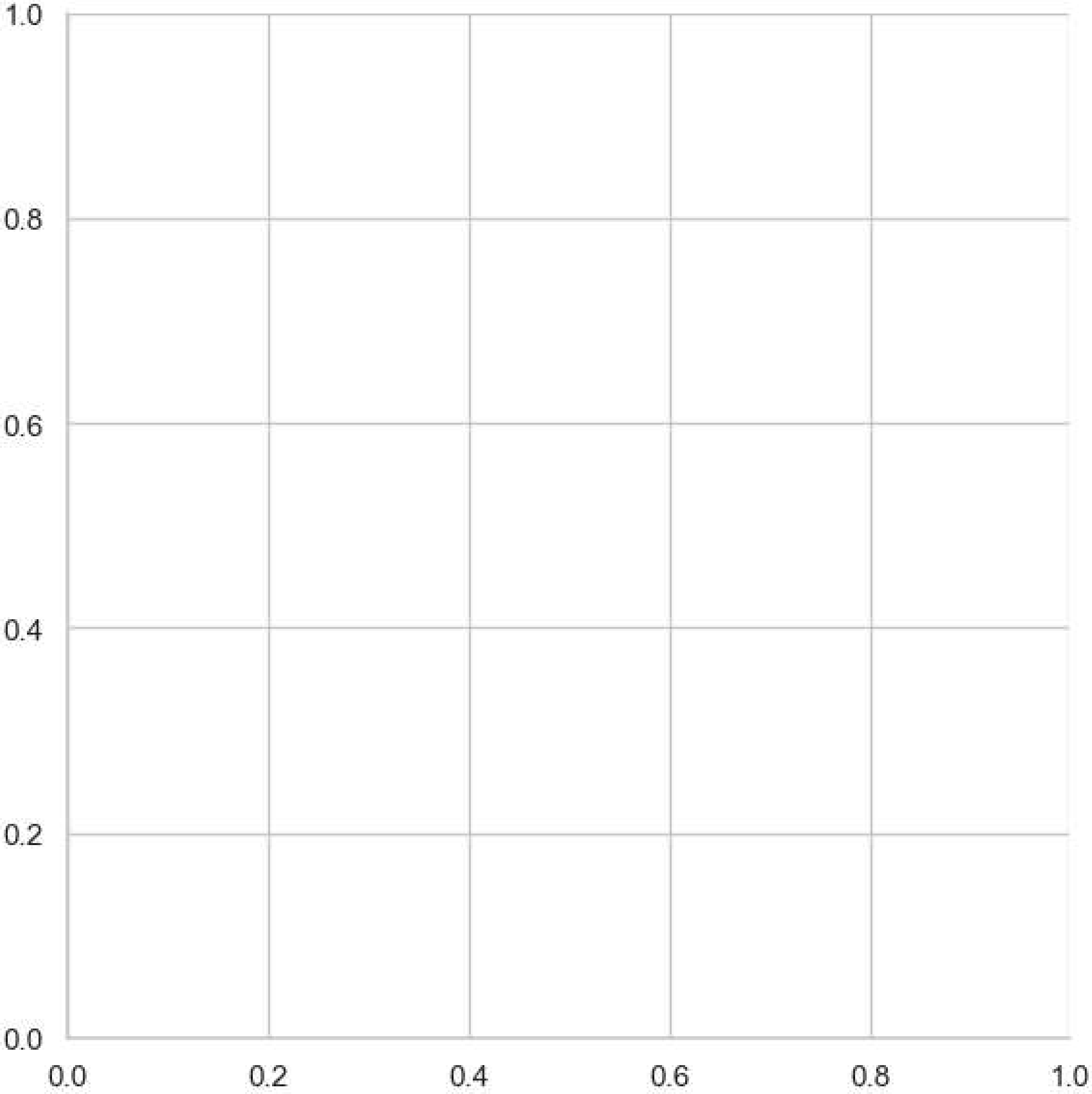
```
fig=sns.lmplot(x="petal_length", y="petal_width",data=iris)
plt.show()
```

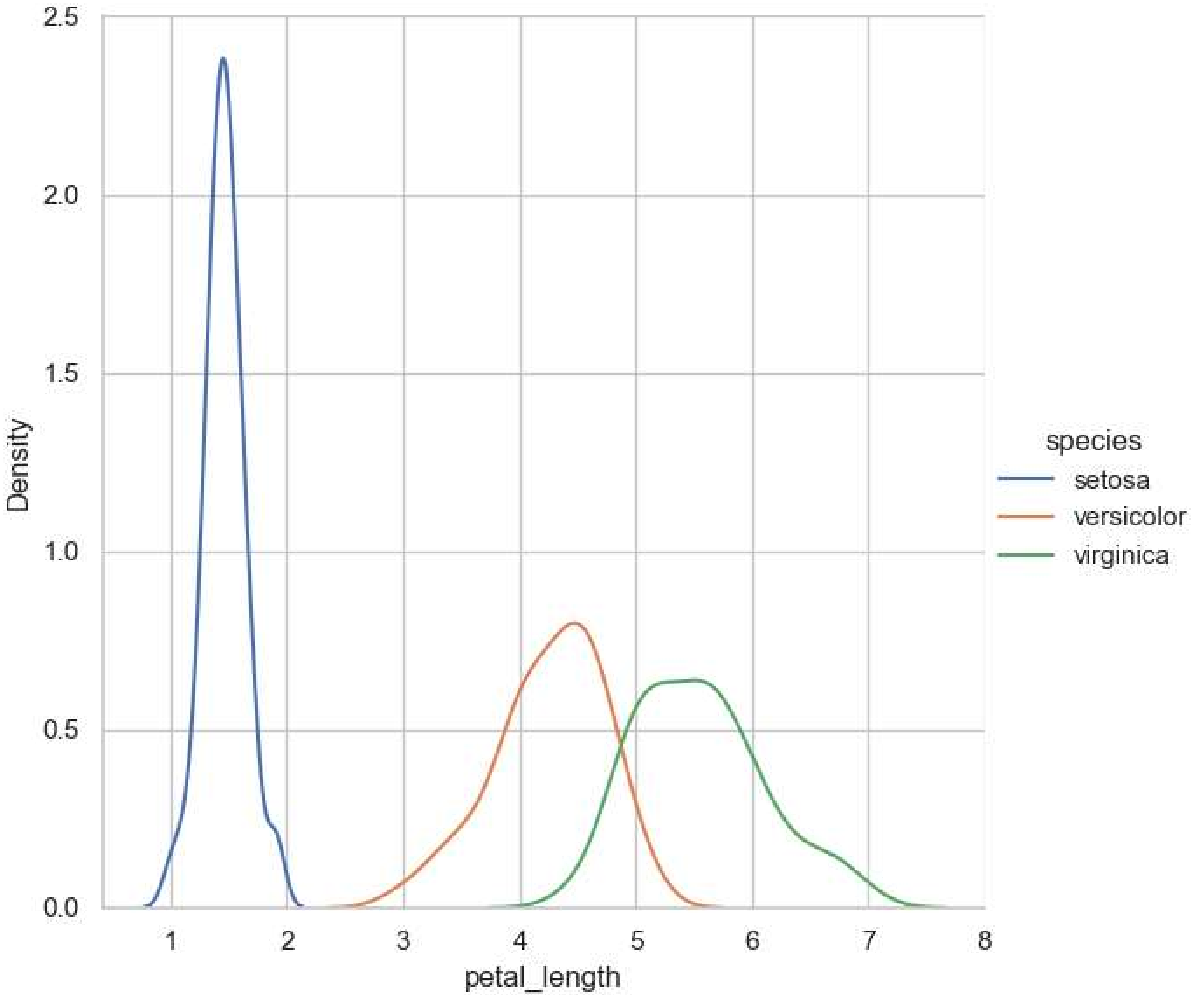

2.5
2.0
1.5
1.0
0.5
0.0
petal_width
1
2
3
4
5
6
7
petal_length



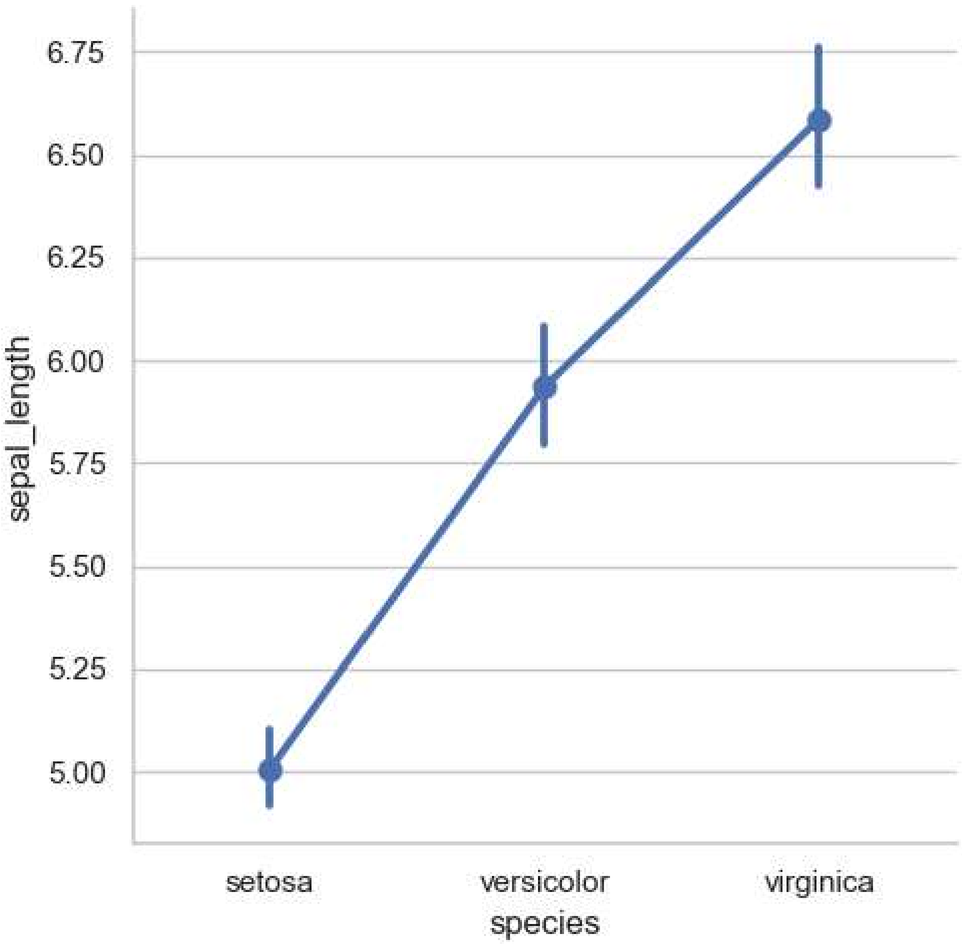
In [87]:

```
sns.FacetGrid(iris, hue="species", height=6) \
   .map(sns.kdeplot, "petal_length") \
   .add_legend()
plt.ioff()
plt.show()
```


1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0

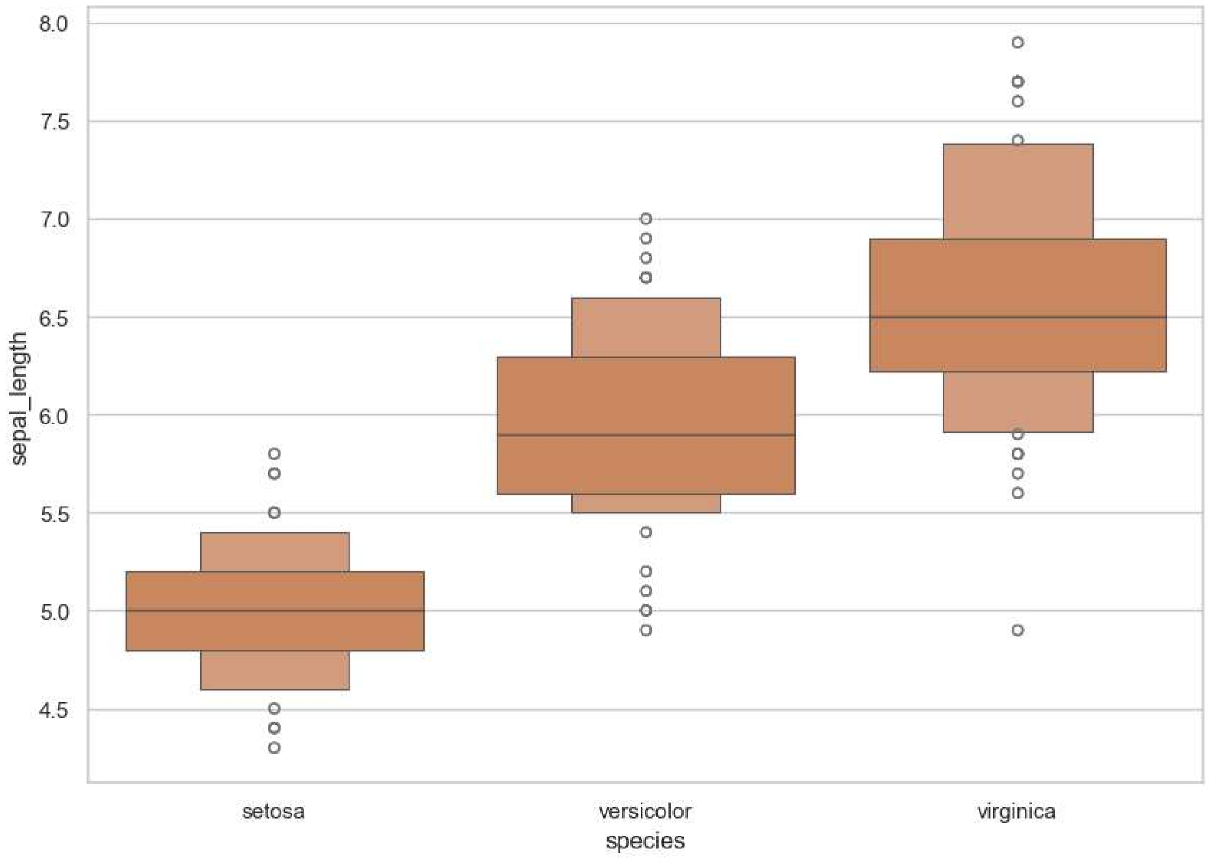


In [91]:
```
sns.catplot(x='species',y='sepal_length',data=iris, kind='point')
plt.ioff()
plt.show()
```



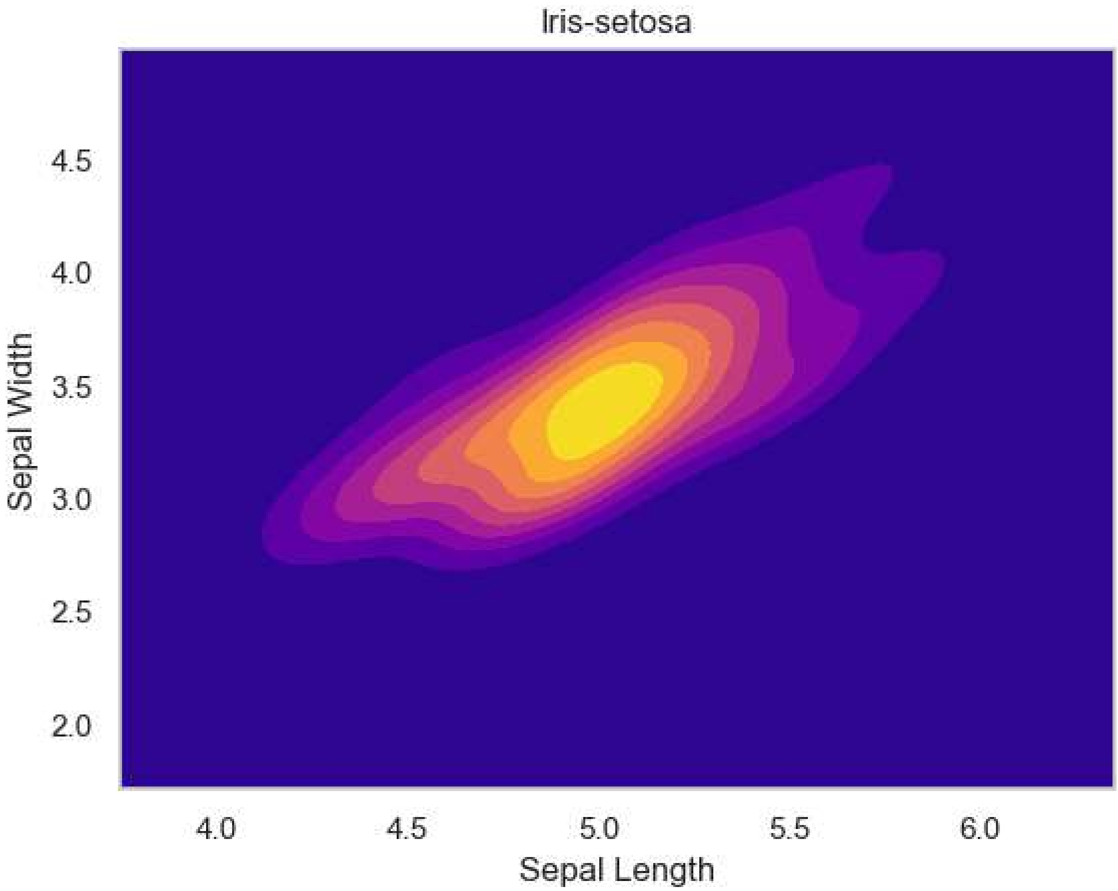
In [96]:

```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.boxenplot(x='species',y='sepal_length',data=iris)
plt.show()
```



In [100…

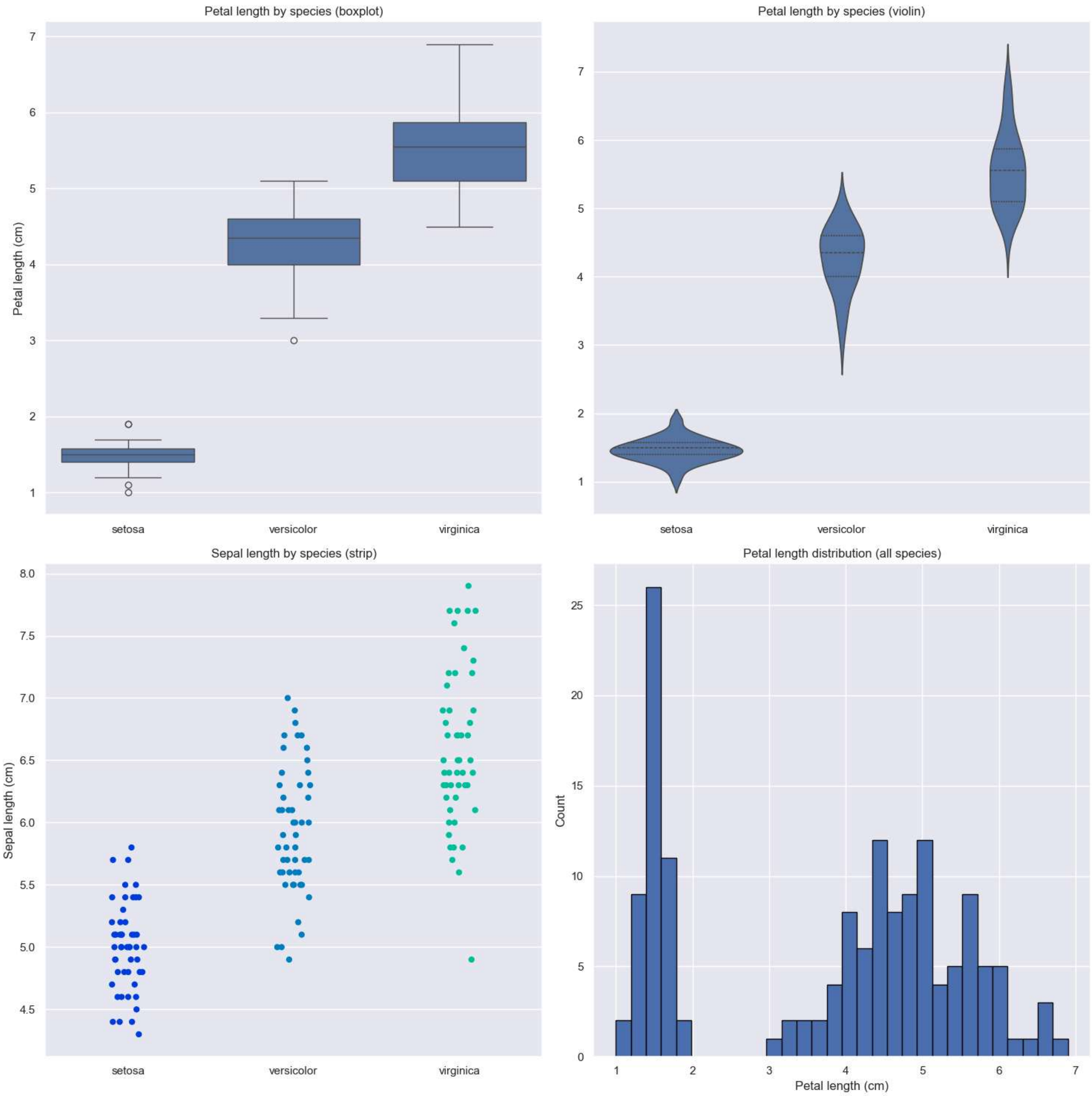
```python
sub = iris[iris['species'] == 'setosa']   # correct name in seaborn iris dataset

sns.kdeplot(
    x=sub['sepal_length'],
    y=sub['sepal_width'],
    cmap="plasma",
    fill=True,        # replaces shade=True
    thresh=0          # replaces shade_lowest=False
)

plt.title('Iris-setosa')
plt.xlabel('Sepal Length')
plt.ylabel('Sepal Width')
plt.show()
```



In [102…

```
# Plotting
sns.set_style('darkgrid')
f, axes = plt.subplots(2, 2, figsize=(15, 15))

# 1) Boxplot (top-left)
sns.boxplot(x="species", y="petal_length", data=iris, ax=axes[0, 0])
axes[0, 0].set_title('Petal length by species (boxplot)')
axes[0, 0].set_xlabel('')
axes[0, 0].set_ylabel('Petal length (cm)')

# 2) Violin plot (top-right)
sns.violinplot(x='species', y='petal_length', data=iris, inner='quartile', ax=axes[
axes[0, 1].set_title('Petal length by species (violin)')
axes[0, 1].set_xlabel('')
axes[0, 1].set_ylabel('')

# 3) Stripplot (bottom-left) - jittered points on sepal length
sns.stripplot(
    x='species',
    y='sepal_length',
    data=iris,
    jitter=True,
    edgecolor='gray',
    size=6,
    palette='winter',
    ax=axes[1, 0]
)
axes[1, 0].set_title('Sepal length by species (strip)')
```

```python
axes[1, 0].set_xlabel('')
axes[1, 0].set_ylabel('Sepal length (cm)')

# 4) Histogram (bottom-right) - petal length distribution
axes[1, 1].hist(iris['petal_length'].dropna(), bins=30, edgecolor='black')
axes[1, 1].set_title('Petal length distribution (all species)')
axes[1, 1].set_xlabel('Petal length (cm)')
axes[1, 1].set_ylabel('Count')

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



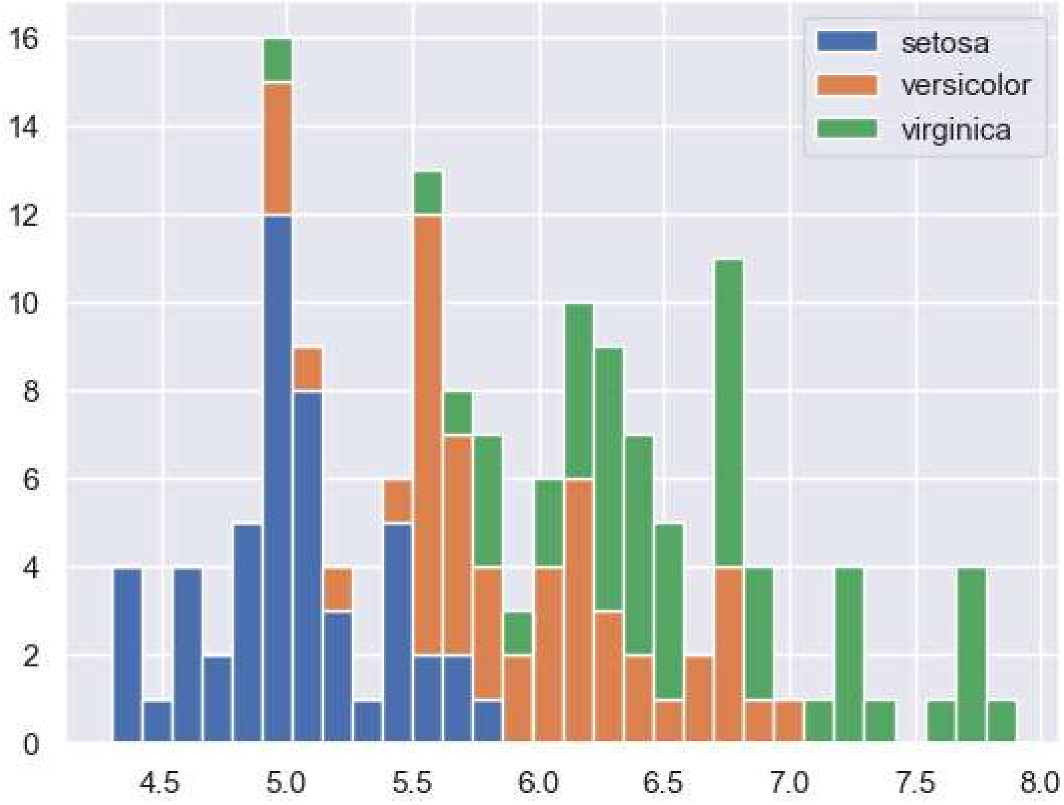
In [105…

```python
iris['species']= iris['species'].astype('category')
```

In [109…

```python
list1=list()
mylabels=list()
for gen in iris.species.cat.categories:
    list1.append(iris[iris.species==gen].sepal_length)
    mylabels.append(gen)
```

```
h=plt.hist(list1,bins=30,stacked=True,rwidth=1,label=mylabels)
plt.legend()
plt.show()
```



```
In [ ]: iris.plot.area(y=['sepal_lengthCm','sepal_width','petal_lengthCm','PetalWidthCm'],a
```