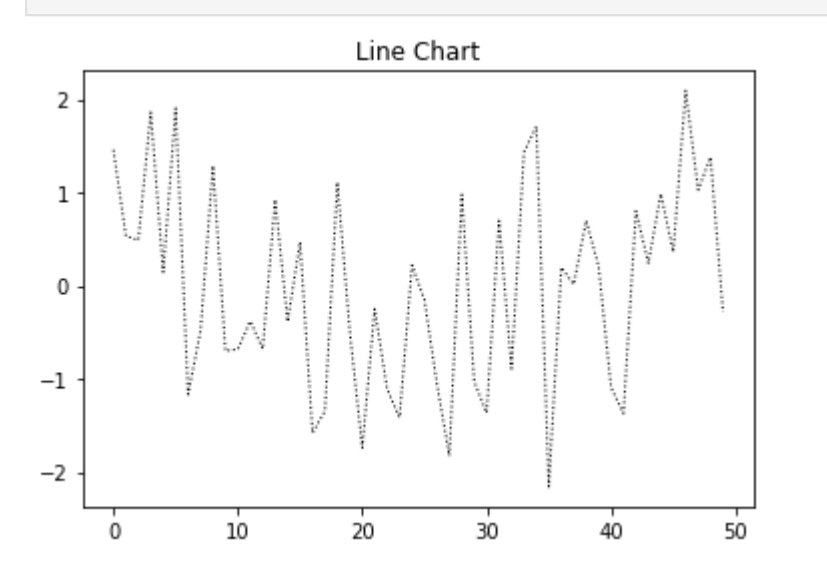
DATA VISUALIZATION

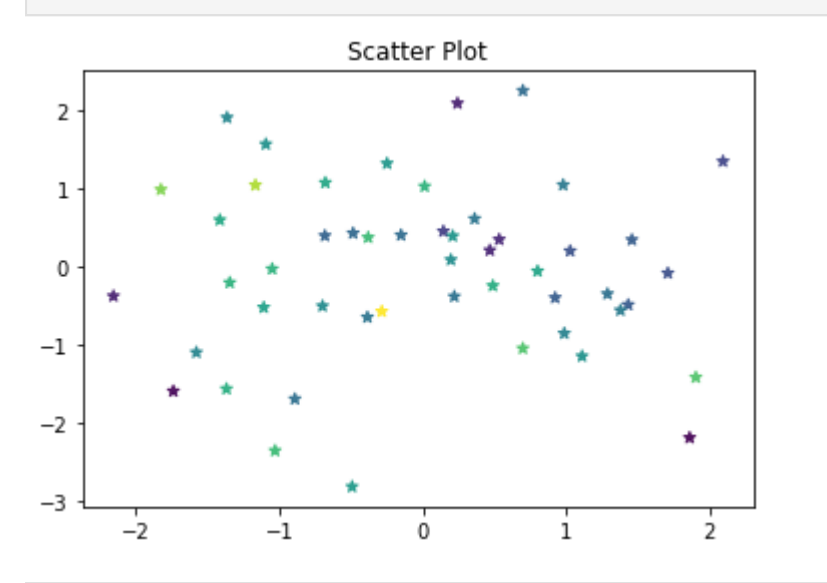
Data : iris.csv

SET A

In [2]:
```
#Q1.
from matplotlib import pyplot as plt
import numpy as np
# generate random array using NumPy
a1 = np.random.randn(50)
a2 = np.random.randn(50)
plt.plot(a1,color="k",linewidth=1,linestyle=':')
plt.title("Line Chart")
plt.show()
```

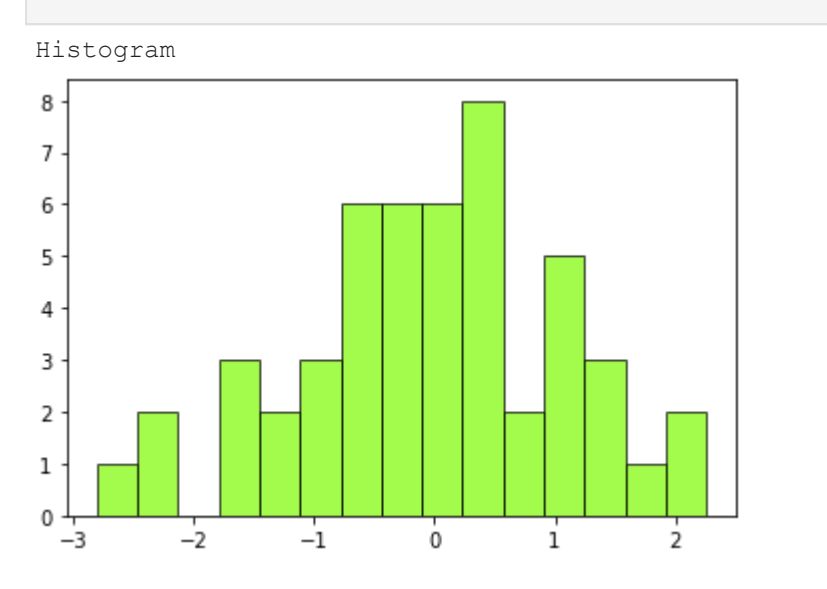


In [3]:
```
plt.scatter(a1,a2,c=np.random.randn(50) ,marker ='*'
,alpha = 0.9)
plt.title("Scatter Plot")
plt.show()
```



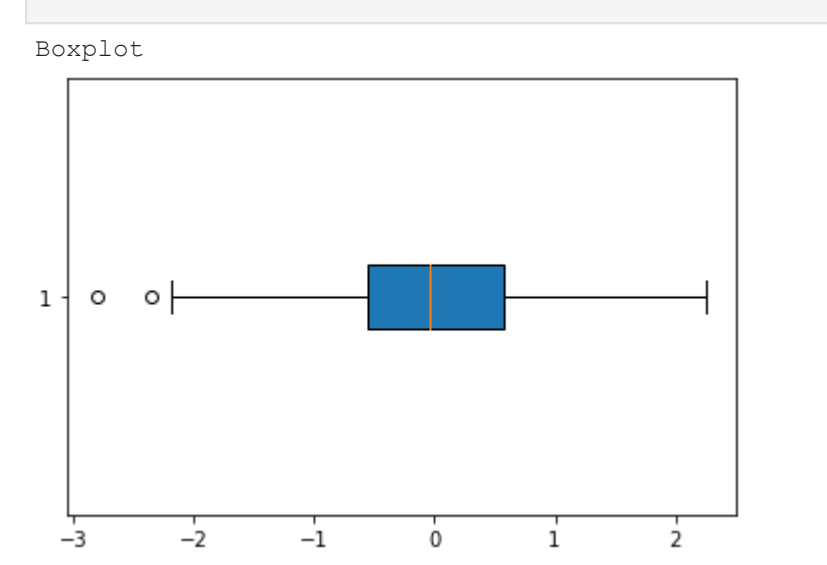
In [4]:
```
plt.hist(a2,bins=15,facecolor ='lawngreen',edgecolor = "k",alpha=0.7)
print("Histogram")
```

Histogram



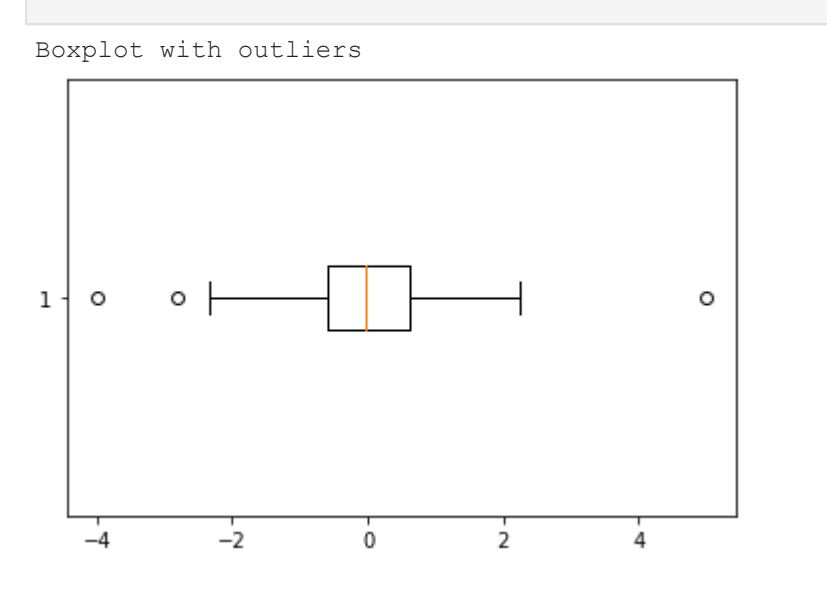
In [5]:
```
box=plt.boxplot(a2,vert=False,patch_artist = True)
print("Boxplot")
```

Boxplot



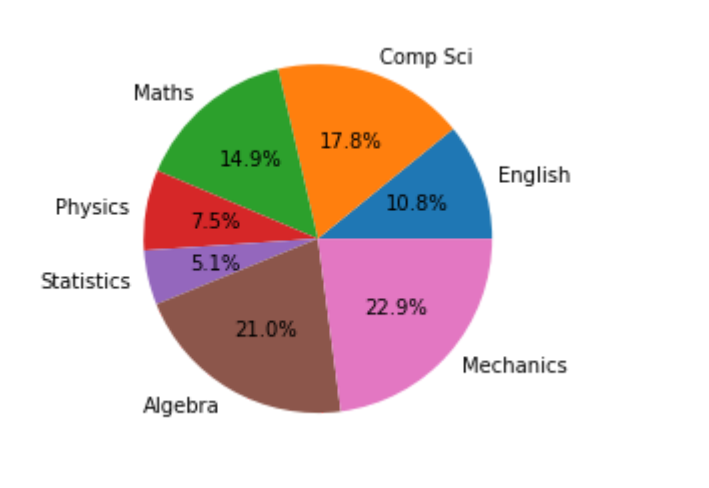
In [6]:
```
#Q2.
a3=np.append(a2,[[5,-4]])
plt.boxplot(a3,vert=False)
print("Boxplot with outliers")
plt.show()
```

Boxplot with outliers



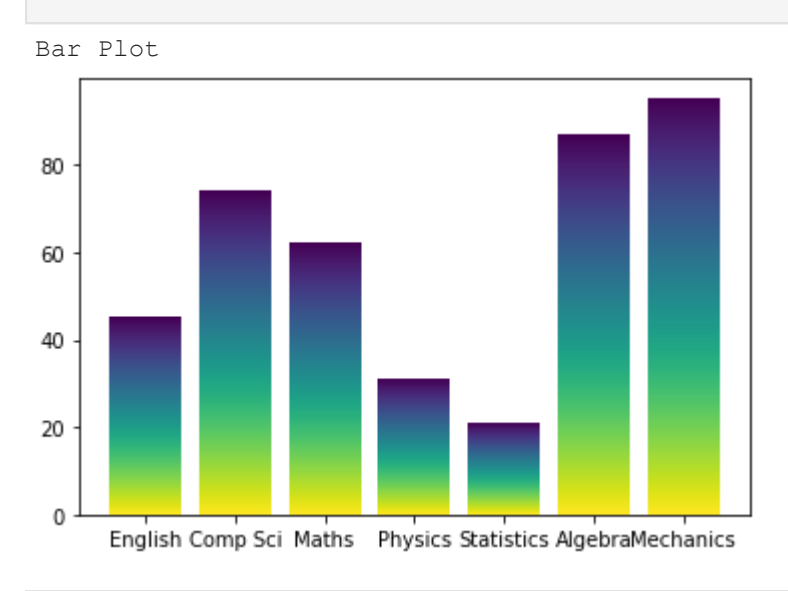
In [7]:
```
#Q3.
from matplotlib import pyplot as plt
import numpy as np
subjects=['English','Comp Sci','Maths','Physics','Statistics','Algebra','Mechanics']
marks =[45,74,62,31,21,87,95]
plt.pie(marks,labels = subjects,autopct='%1.1f%%')
print("Pie Plot")
plt.show()
```

Pie Plot

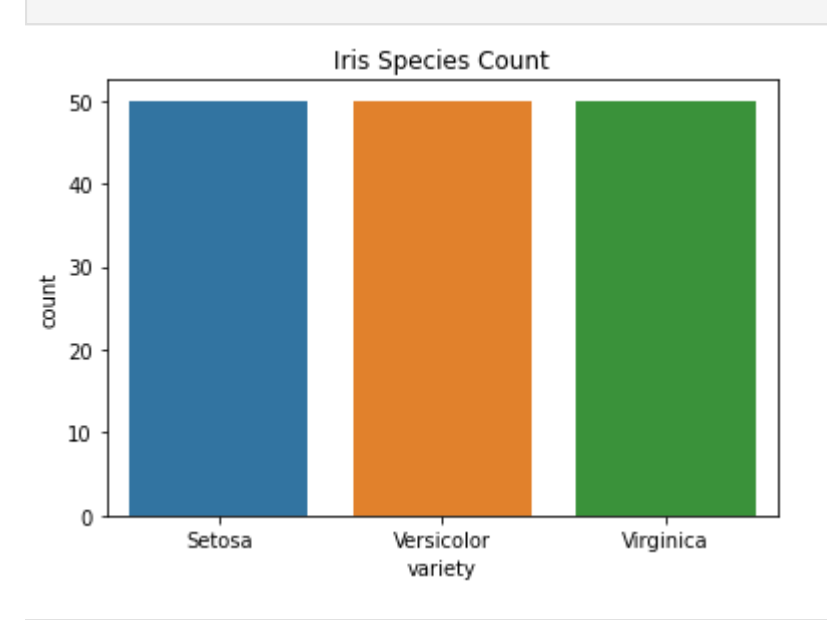


In [8]:
```
print("Bar Plot")
bar=plt.bar(subjects,marks,color='g')
def gradientbars(bars):
    grad = np.atleast_2d(np.linspace(0,1,256)).T
    ax = bars[0].axes
    lim = ax.get_xlim()+ax.get_ylim()
    for bar in bars:
        bar.set_zorder(1)
        bar.set_facecolor("none")
        x,y = bar.get_xy()
        w, h = bar.get_width(), bar.get_height()
        ax.imshow(grad, extent=[x,x+w,y,y+h], aspect="auto", zorder=0)
    ax.axis(lim)
gradientbars(bar)
plt.show()
```

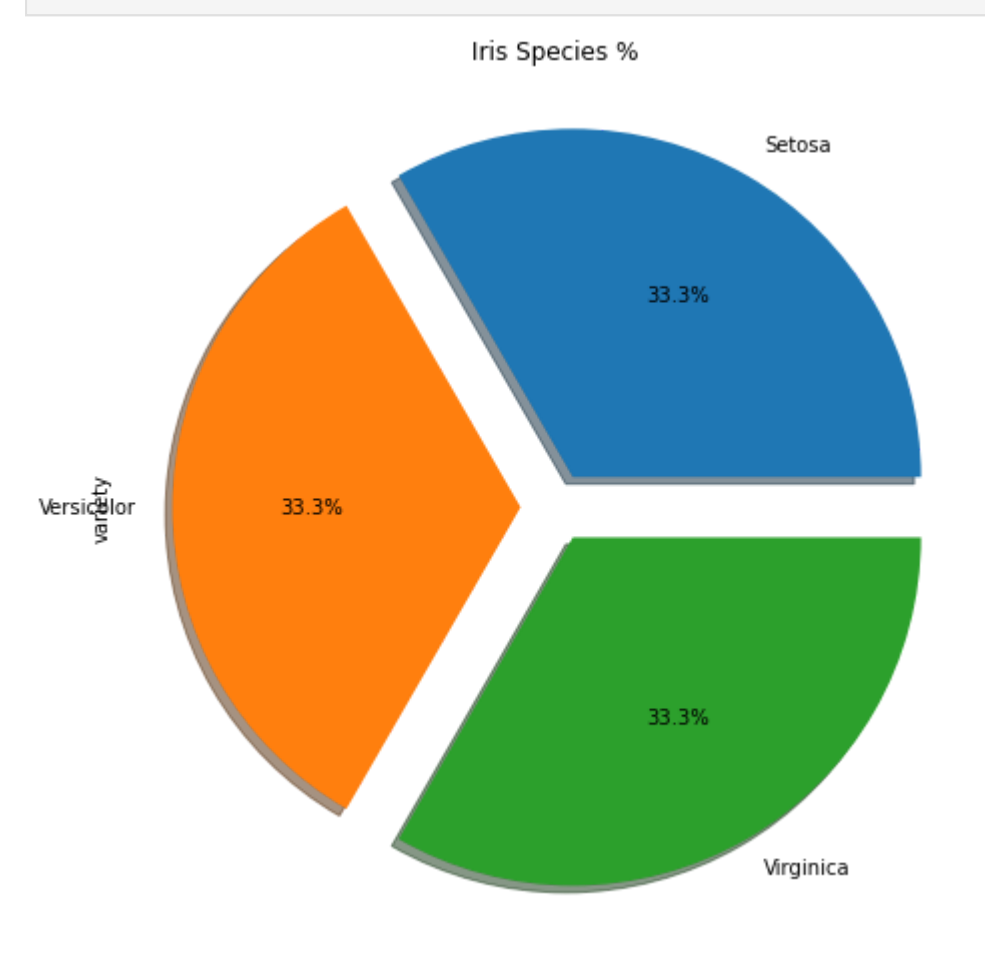
Bar Plot



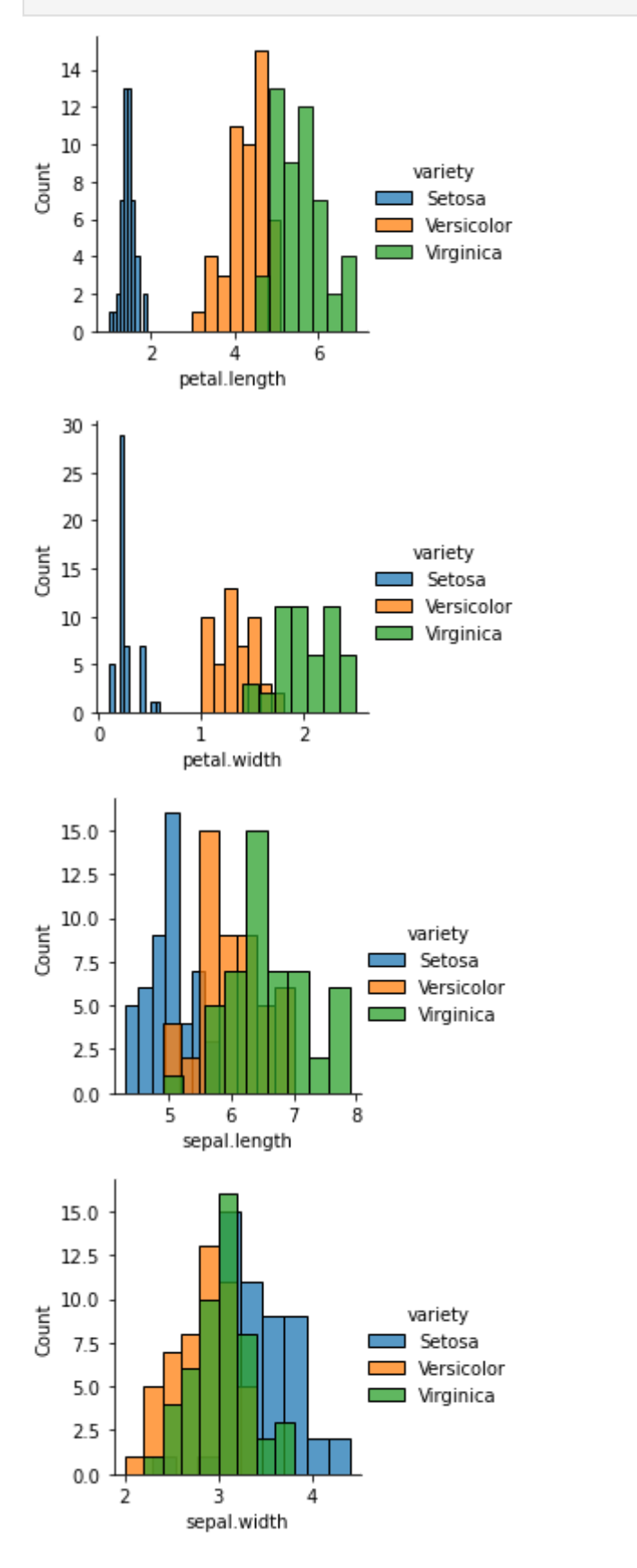
In [14]:
```
#Q4. Data.csv
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
data=pd.read_csv("C:\\iris.csv")
sns.countplot(x='variety',data = data)
plt.title("Iris Species Count")
plt.show()
```



In [15]:
```
#Q5.
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
data=pd.read_csv("C:\\iris.csv")
ax=plt.subplots(1,1,figsize=(10,8))
data['variety'].value_counts().plot.pie(explode=[0.1,0.1,0.1],
                                        autopct='%1.1f%%',shadow=True,figsize=(10,8))
plt.title("Iris Species %")
plt.show()
```

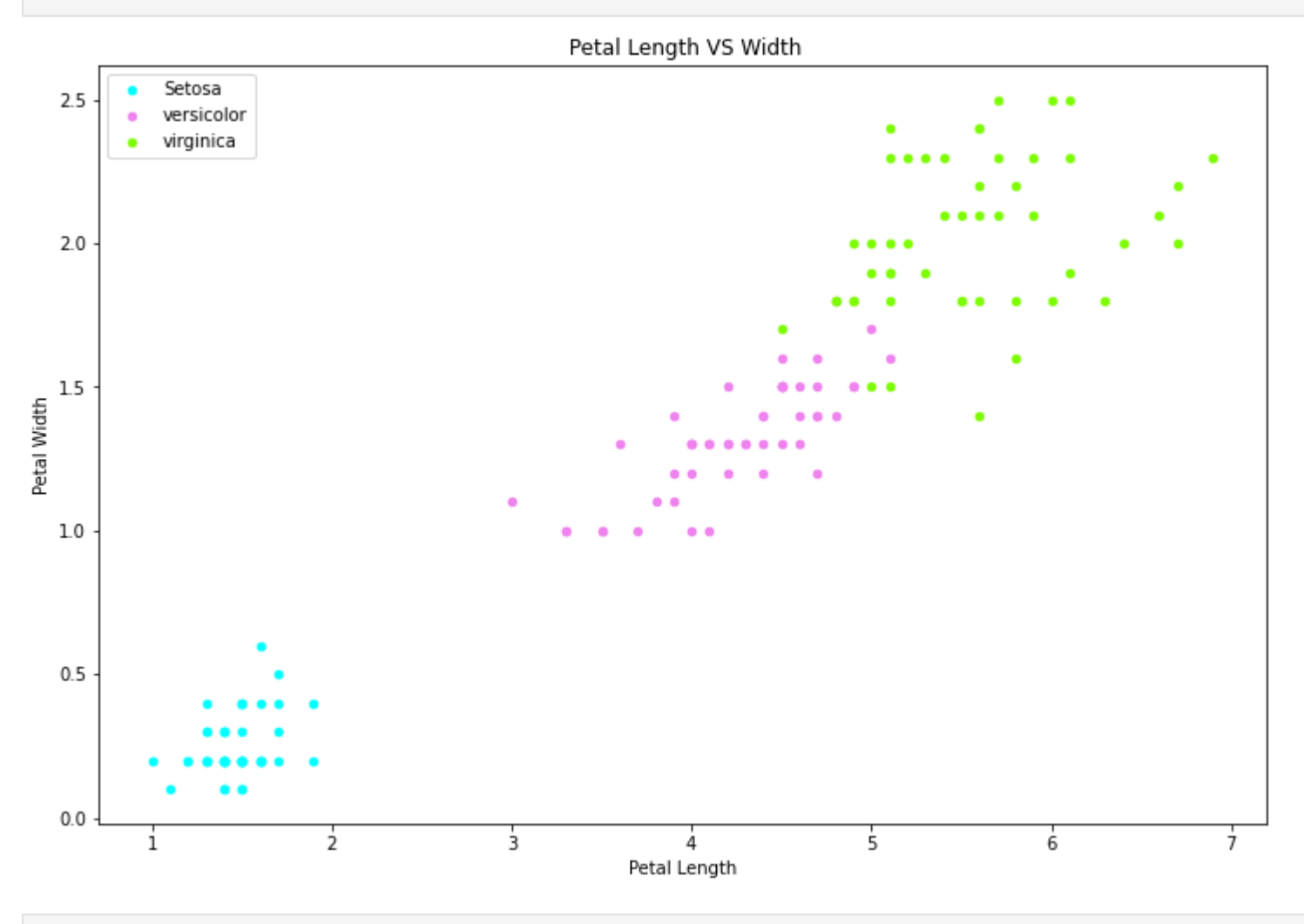


In [16]:
```
#Q6.
import seaborn as sns
iris_setosa=data.loc[data["variety"]=="Setosa"]
iris_virginica=data.loc[data["variety"]=="Virginica"]
iris_versicolor=data.loc[data["variety"]=="Versicolor"]
sns.FacetGrid(data,hue="variety").map(sns.histplot,"petal.length").add_legend()
sns.FacetGrid(data,hue="variety").map(sns.histplot,"petal.width").add_legend()
sns.FacetGrid(data,hue="variety").map(sns.histplot,"sepal.length").add_legend()
sns.FacetGrid(data,hue="variety").map(sns.histplot,"sepal.width").add_legend()
plt.show()
```

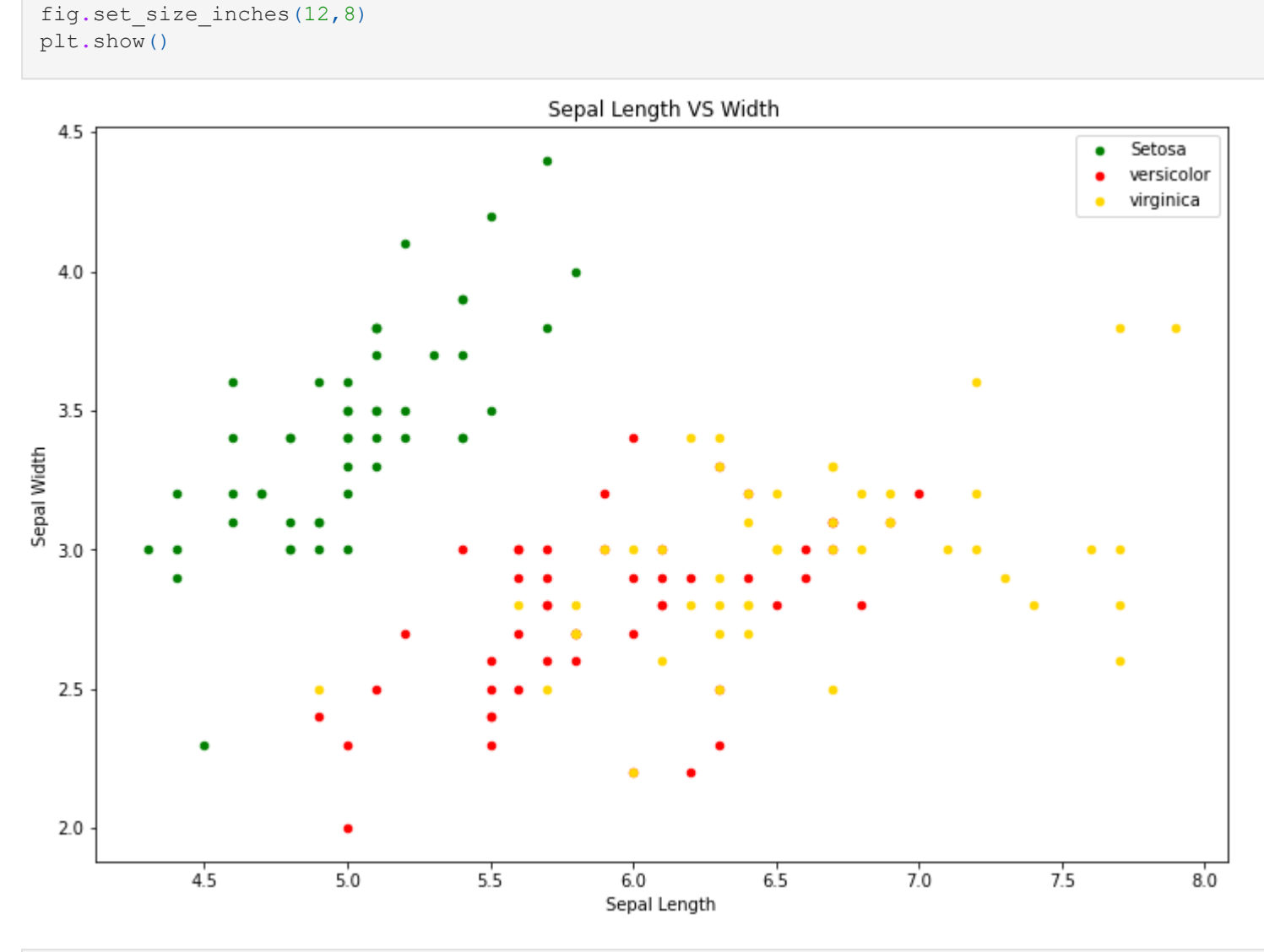


SET B

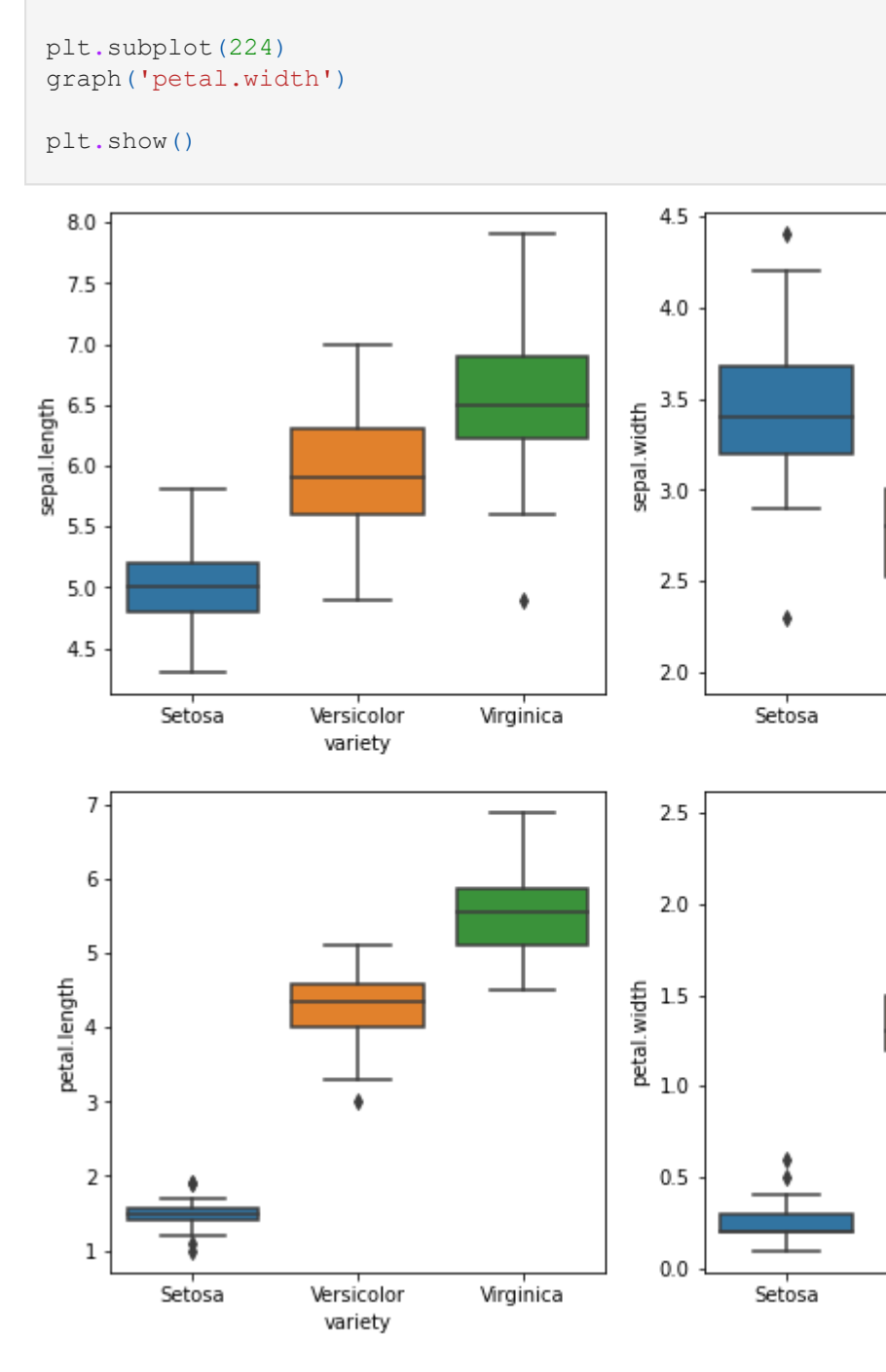
In [17]:
```
#Q1.
import pandas as pd
import matplotlib.pyplot as plt
data=pd.read_csv("C:\\iris.csv")
fig = data[data.variety=='Setosa'].plot.scatter(x='petal.length',y='petal.width',color='cyan', label='Setosa')
data[data.variety=='Versicolor'].plot.scatter(x='petal.length',y='petal.width',color='violet', label='versicolo
data[data.variety=='Virginica'].plot.scatter(x='petal.length',y='petal.width',color='lawngreen', label='virgini
fig.set_xlabel("Petal Length")
fig.set_ylabel("Petal Width")
fig.set_title(" Petal Length VS Width")
fig=plt.gcf()
fig.set_size_inches(12,8)
plt.show()
```



In [2]:
```
#Q2.
import pandas as pd
import matplotlib.pyplot as plt
data=pd.read_csv("C:\\Users\\farhe\\Downloads\\Datasets\\iris.csv")
fig = data[data.variety=='Setosa'].plot.scatter(x='sepal.length',y='sepal.width',color='g', label='Setosa')
data[data.variety=='Versicolor'].plot.scatter(x='sepal.length',y='sepal.width',color='r', label='versicolor',ax
data[data.variety=='Virginica'].plot.scatter(x='sepal.length',y='sepal.width',color='gold', label='virginica',
fig.set_xlabel("Sepal Length")
fig.set_ylabel("Sepal Width")
fig.set_title(" Sepal Length VS Width")
fig=plt.gcf()
fig.set_size_inches(12,8)
plt.show()
```

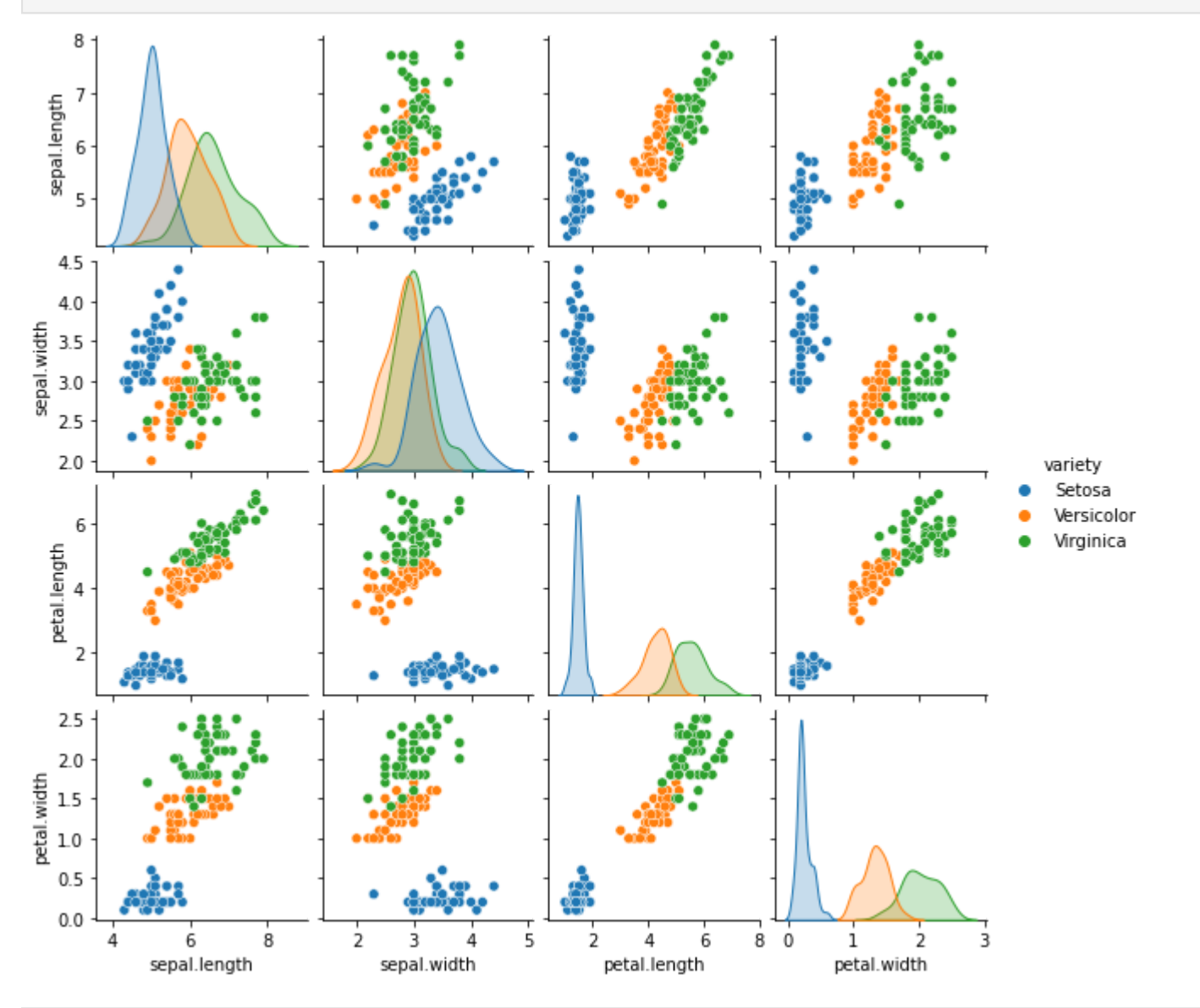


In [19]:
```
#Q3.
import seaborn as sns
import matplotlib.pyplot as plt

def graph(a):
    sns.boxplot(x="variety", y=a, data=data)

plt.figure(figsize=(10,10))
plt.subplot(221)
graph('sepal.length')

plt.subplot(222)
graph('sepal.width')

plt.subplot(223)
graph('petal.length')

plt.subplot(224)
graph('petal.width')

plt.show()
```

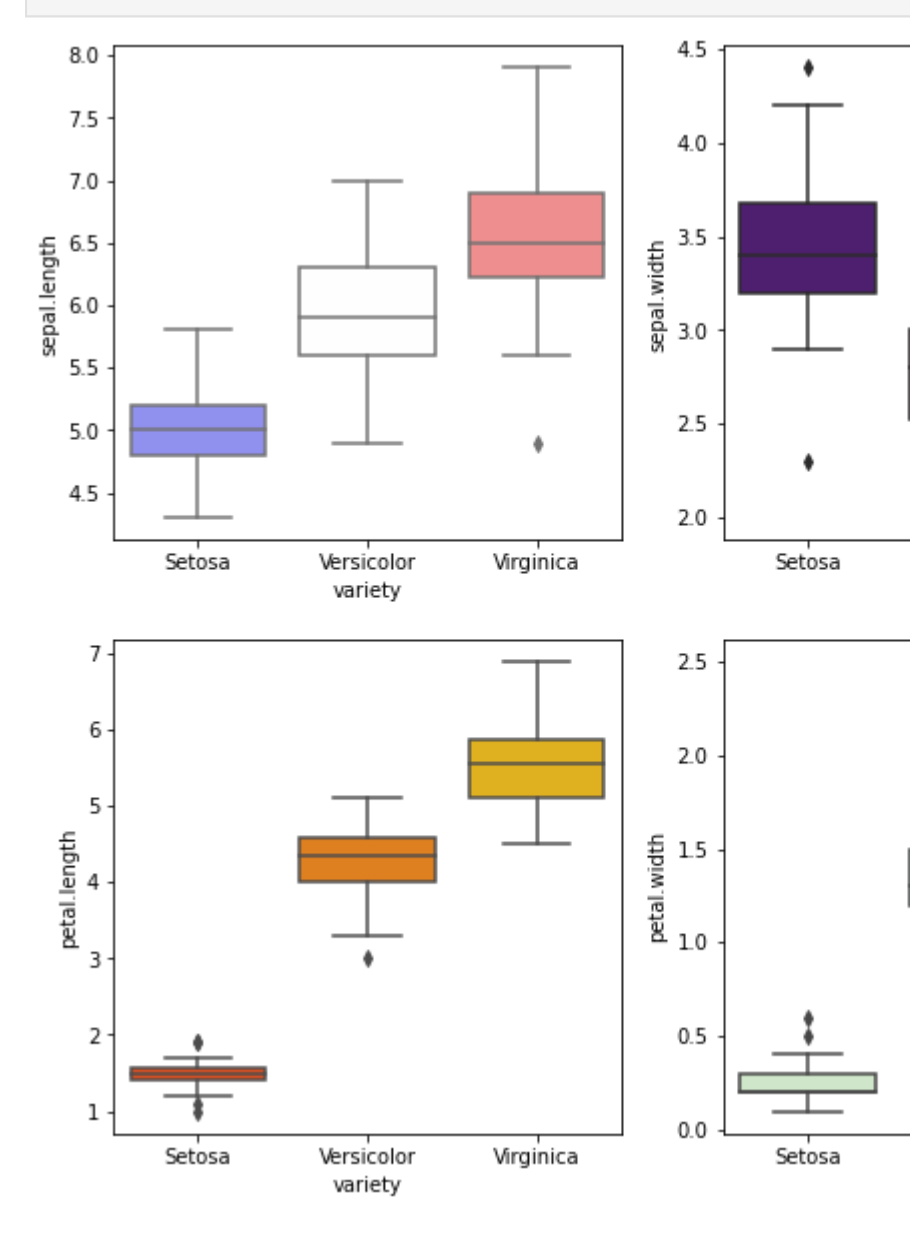


SET C

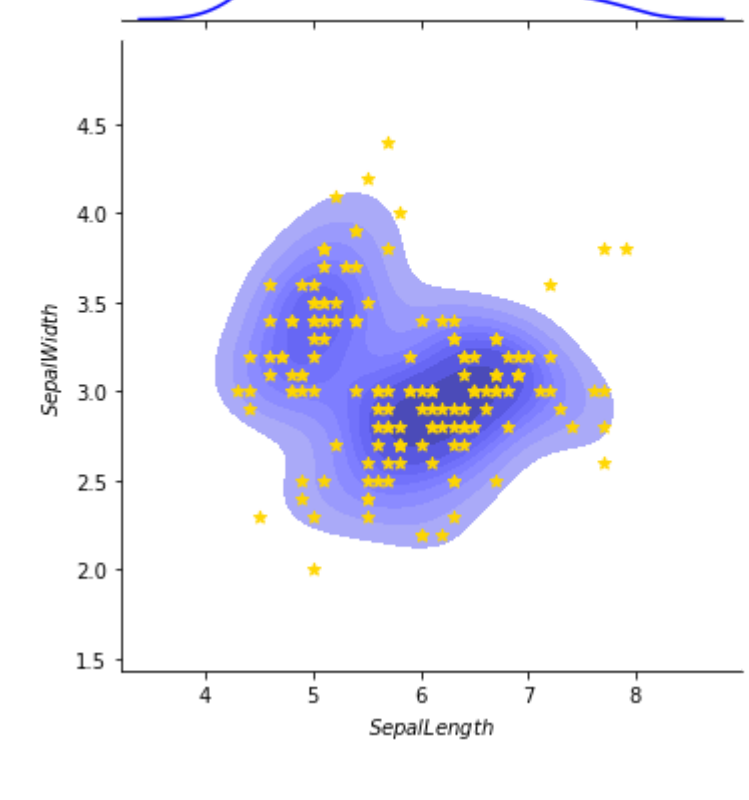
In [20]:
```
#Q1.
#Plot to compare all features of iris dataset
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
data=pd.read_csv("C:\\iris.csv")
sns.pairplot(data,hue='variety', height=2)
plt.show()
```



In [21]:
```
#Q2.
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

plt.figure(figsize=(10,10))
plt.subplot(221)
sns.boxplot(x="variety", y="sepal.length", data=data,palette="bwr");
plt.subplot(222)
sns.boxplot(x="variety", y="sepal.width", data=data,palette="magma")

plt.subplot(223)
sns.boxplot(x="variety", y="petal.length", data=data,palette="autumn")

plt.subplot(224)
sns.boxplot(x="variety", y="petal.width", data=data,palette="GnBu")
plt.show()
```



In [23]:
```
#Q3.
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
data=pd.read_csv("C:\\iris.csv")
g = sns.jointplot(x="sepal.length", y="sepal.width",shade=True, data=data, kind="kde", color="b")
g.plot_joint(plt.scatter, c="gold", s=40, linewidth=1, marker="*")
g.ax_joint.collections[0].set_alpha(0)
g.set_axis_labels("$SepalLength$", "$SepalWidth$")
plt.show()
```



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