

```
In [1]: import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns
```

```
In [42]: x = np.linspace(11,22,11)
y = np.linspace(23, 34, 11)
```

```
In [43]: x
```

```
Out[43]: array([11. , 12.1, 13.2, 14.3, 15.4, 16.5, 17.6, 18.7, 19.8, 20.9, 22. ])
```

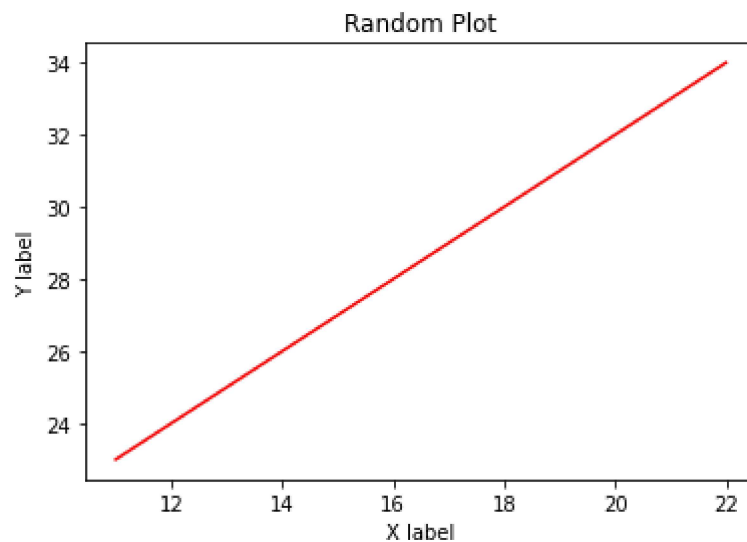
```
In [44]: y
```

```
Out[44]: array([23. , 24.1, 25.2, 26.3, 27.4, 28.5, 29.6, 30.7, 31.8, 32.9, 34. ])
```

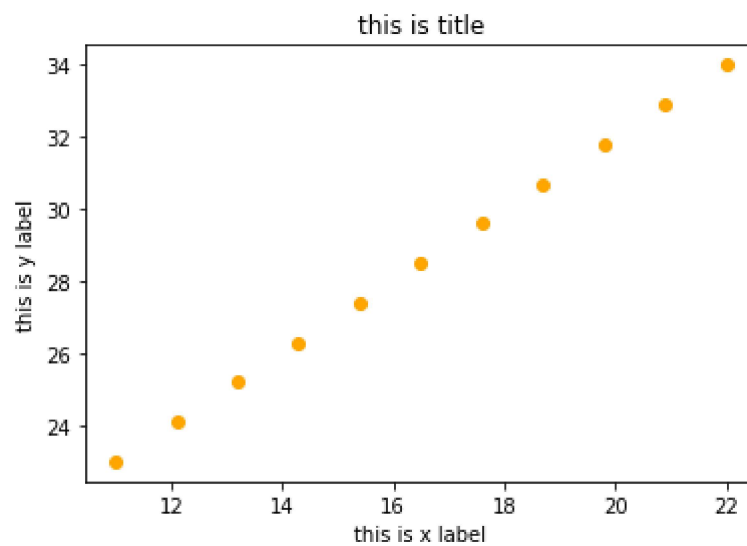
```
In [77]: #usage of xlim and ylim
```

```
plt.plot(x, y, color = 'r')
plt.title("Random Plot")
plt.xlabel('X label')
plt.ylabel('Y label')
```

```
Out[77]: Text(0, 0.5, 'Y label')
```

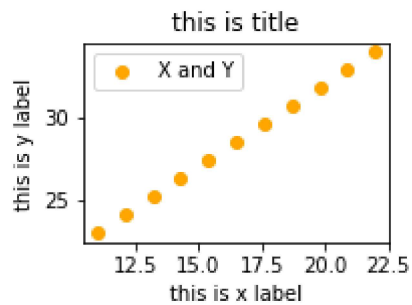


```
In [46]: plt.scatter(x,y,color = "orange")  
plt.xlabel("this is x label")  
plt.ylabel("this is y label")  
plt.title("this is title")  
plt.show()
```

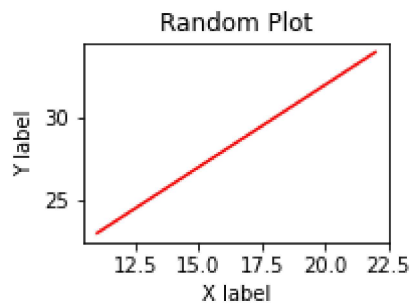


```
In [47]: plt.subplot(2, 2, 3)
plt.scatter(x,y,color = "orange", label = "X and Y")
plt.xlabel("this is x label")
plt.ylabel("this is y label")
plt.title("this is title")
plt.legend()
plt.show()

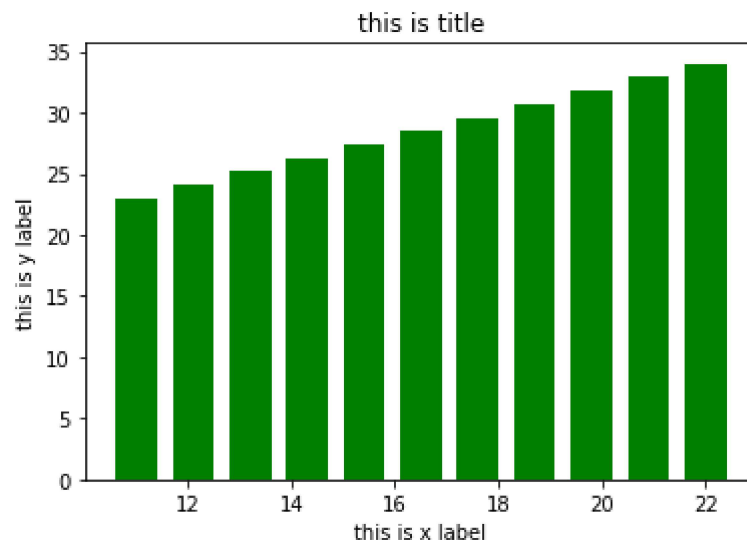
plt.subplot(2, 2, 4)
plt.plot(x, y, color = 'r')
plt.title("Random Plot")
plt.xlabel('X label')
plt.ylabel('Y label')
```



```
Out[47]: Text(0, 0.5, 'Y label')
```

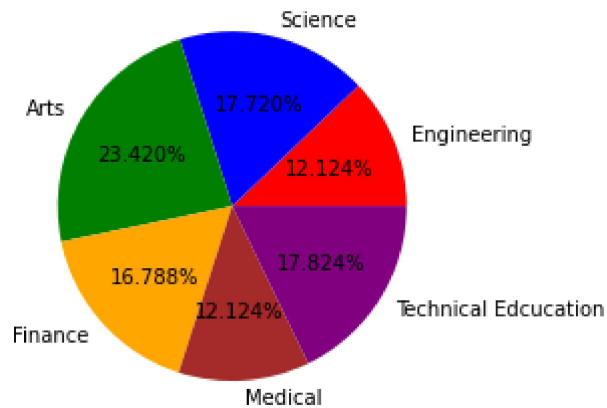


```
In [48]: plt.bar(x, y, color = 'green')
plt.xlabel("this is x label")
plt.ylabel("this is y label")
plt.title("this is title")
plt.show()
```



```
In [67]: courses = ["Engineering", 'Science', 'Arts', 'Finance', 'Medical', 'Technical Education']
students = [234, 342, 452, 324, 234, 344]
```

```
In [75]: plt.pie(students, labels = courses, autopct= '%0.3f%', colors = ["red", "blue", "green", "yellow", "brown", "purple"])
plt.show()
```



```

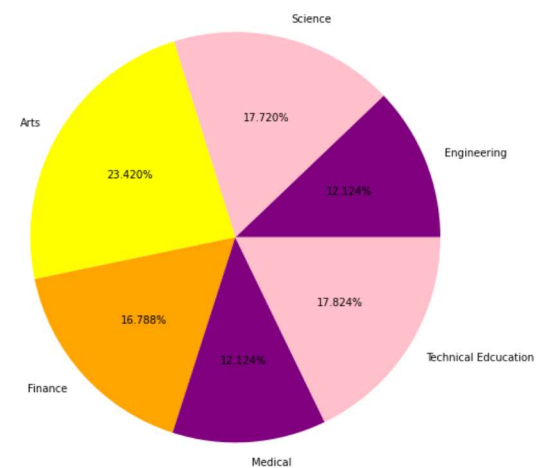
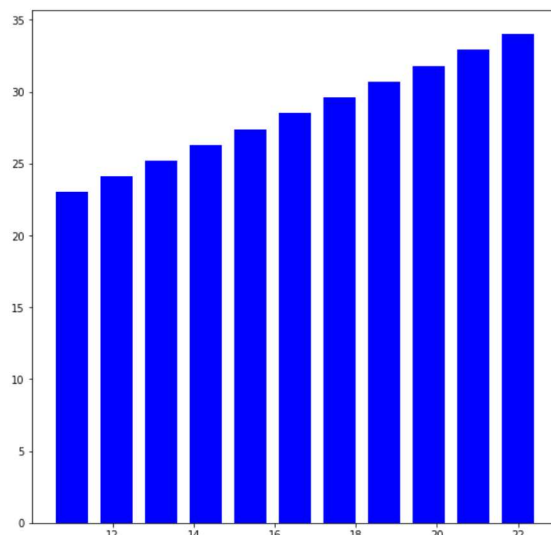
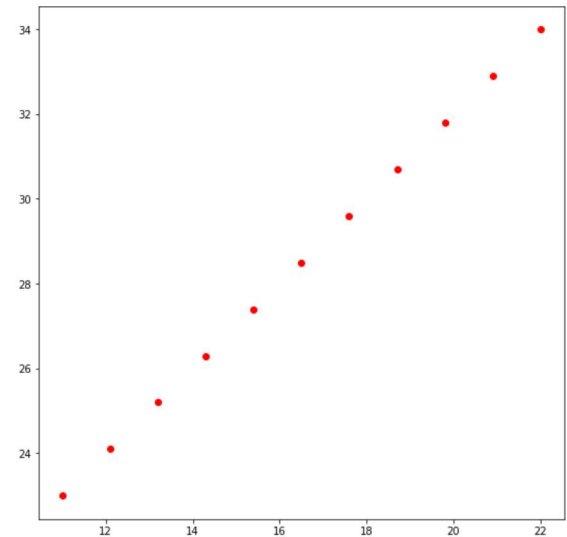
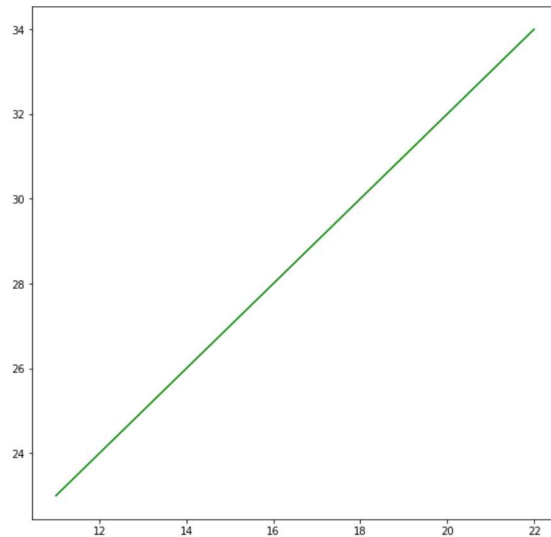
In [83]: fig = plt.figure(figsize = (20,20))
ax1 = fig.add_subplot(2,2,1)
ax2 = fig.add_subplot(2,2,2)
ax3 = fig.add_subplot(2,2,3)
ax4 = fig.add_subplot(2,2,4)
ax1.plot(x,y,color = "green")
ax2.scatter(x,y,color = "red")
ax3.bar(x,y,color = "blue")
ax4.pie(students,labels = courses, autopct= '%0.3f%%',colors = ["purple","pink",'
plt.show

```

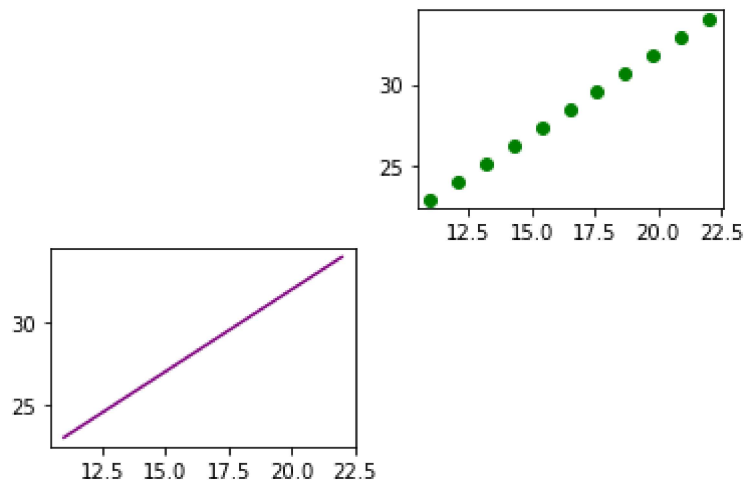
```

Out[83]: <function matplotlib.pyplot.show(*args, **kw)>

```



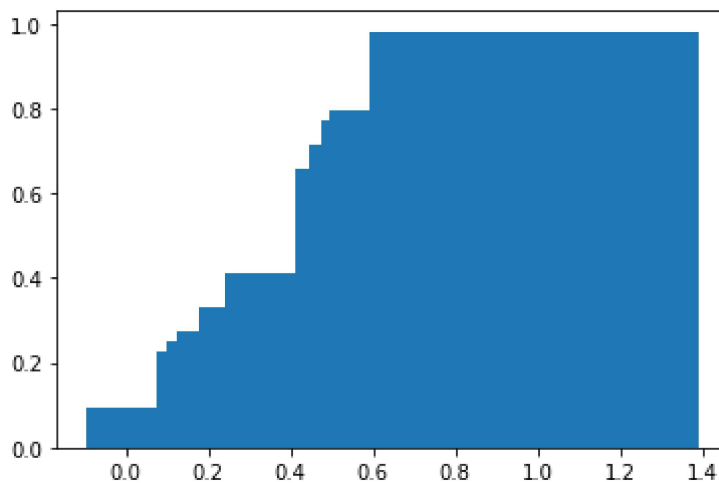
```
In [80]: plt.subplot(2,2,2)
plt.scatter(x,y,color = "green")
plt.subplot(2,2,3)
plt.plot(x,y,color = "purple")
plt.show()
```



```
In [81]: x1 = np.random.rand(11)
y1 = x1**2
```

```
In [82]: plt.bar(x1, y1)
```

```
Out[82]: <BarContainer object of 11 artists>
```



Seaborn Practice using IRIS Dataset

```
In [84]: iris = sns.load_dataset('iris')
```

```
In [88]: iris
```

```
Out[88]:
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
...
145	6.7	3.0	5.2	2.3	virginica
146	6.3	2.5	5.0	1.9	virginica
147	6.5	3.0	5.2	2.0	virginica
148	6.2	3.4	5.4	2.3	virginica
149	5.9	3.0	5.1	1.8	virginica

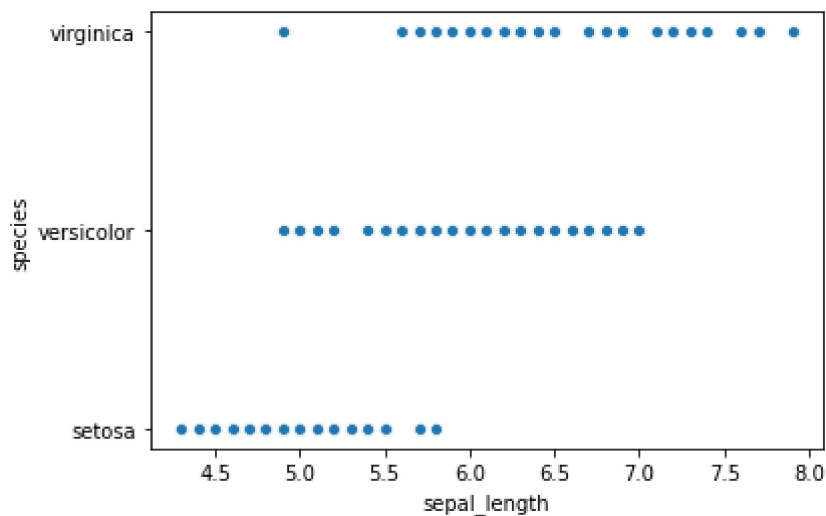
150 rows × 5 columns

```
In [86]: iris.isnull().sum()
```

```
Out[86]: sepal_length    0
sepal_width    0
petal_length    0
petal_width    0
species        0
dtype: int64
```

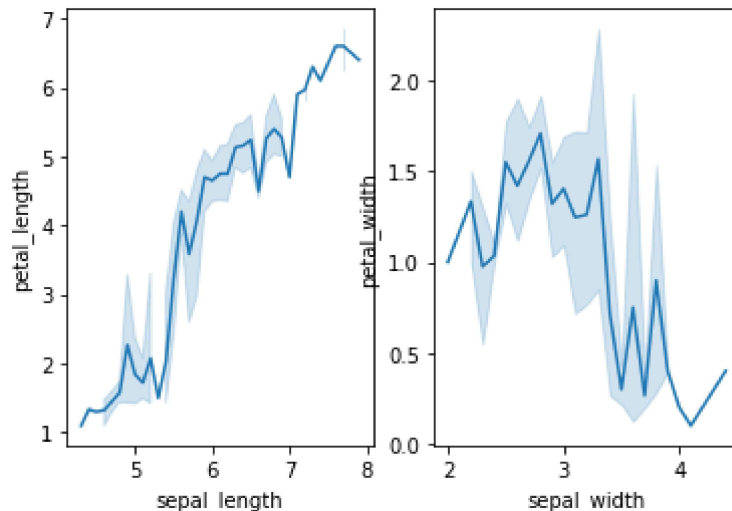
```
In [90]: sns.scatterplot(x = "sepal_length", y = "species", data = iris)
```

```
Out[90]: <matplotlib.axes._subplots.AxesSubplot at 0x18953427610>
```



```
In [103]: plt.subplot(1, 2, 1)
sns.lineplot(x = "sepal_length", y = "petal_length", data = iris)
plt.subplot(1, 2, 2)
sns.lineplot(x = "sepal_width", y = "petal_width", data = iris)
```

Out[103]: <matplotlib.axes._subplots.AxesSubplot at 0x18952fae5e0>



```
In [110]: #converting the species into numeric values for distplot
```

```
import pandas as pd

df = pd.DataFrame(iris)
```

```
In [109]: iris
```

Out[109]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
...
145	6.7	3.0	5.2	2.3	virginica
146	6.3	2.5	5.0	1.9	virginica
147	6.5	3.0	5.2	2.0	virginica
148	6.2	3.4	5.4	2.3	virginica
149	5.9	3.0	5.1	1.8	virginica

150 rows × 5 columns


```
In [112]: df["species"] = df["species"].map({  
    "setosa" : 1,  
    "versicolor" : 2,  
    "virginica" : 3}.get)
```

```
In [113]: df
```

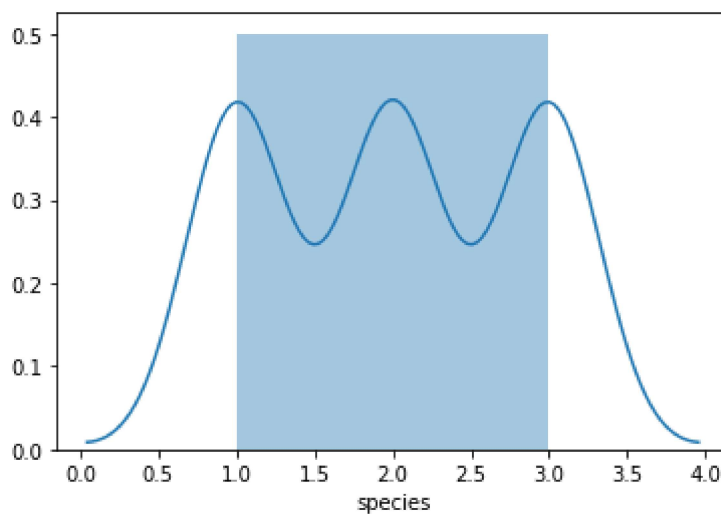
```
Out[113]:
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	1
1	4.9	3.0	1.4	0.2	1
2	4.7	3.2	1.3	0.2	1
3	4.6	3.1	1.5	0.2	1
4	5.0	3.6	1.4	0.2	1
...
145	6.7	3.0	5.2	2.3	3
146	6.3	2.5	5.0	1.9	3
147	6.5	3.0	5.2	2.0	3
148	6.2	3.4	5.4	2.3	3
149	5.9	3.0	5.1	1.8	3

150 rows × 5 columns

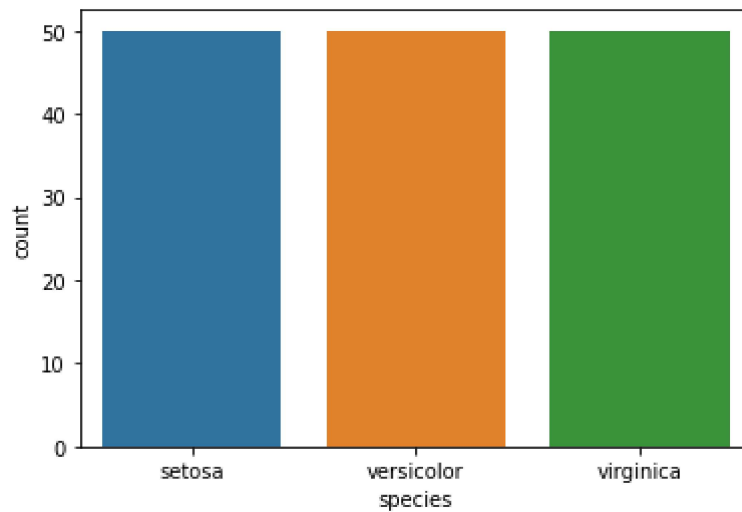
```
In [116]: sns.distplot(df["species"])
```

```
Out[116]: <matplotlib.axes._subplots.AxesSubplot at 0x189531457f0>
```



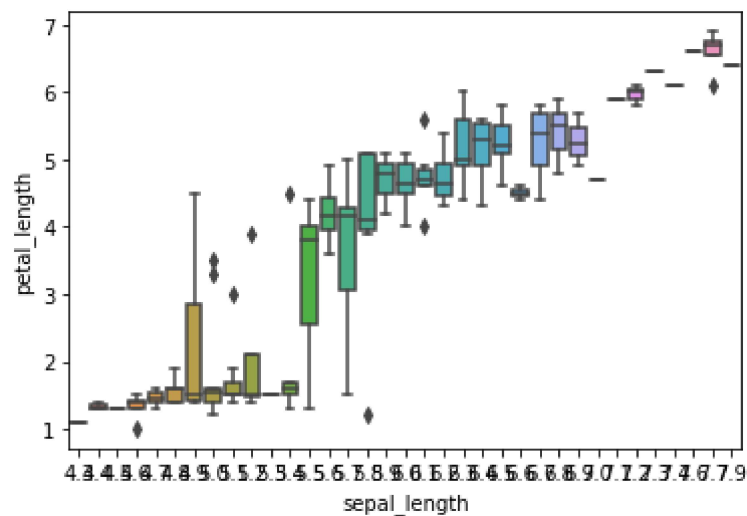
```
In [118]: sns.countplot(x = "species", data = iris)
```

```
Out[118]: <matplotlib.axes._subplots.AxesSubplot at 0x189533c4d60>
```



```
In [121]: sns.boxplot(x = "sepal_length", y = "petal_length", data = iris)
```

```
Out[121]: <matplotlib.axes._subplots.AxesSubplot at 0x18954a7d4c0>
```



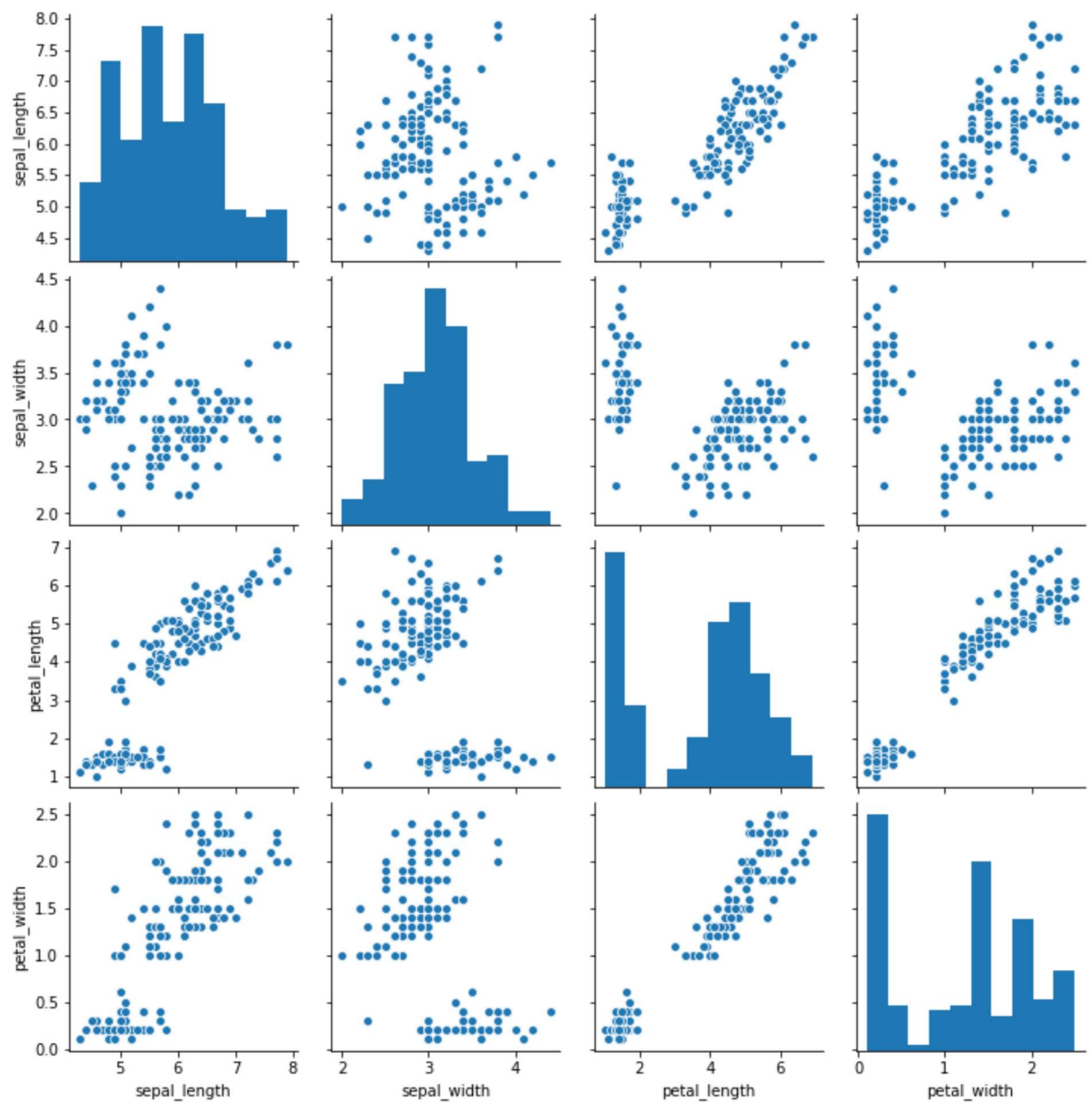
```
In [122]: iris.describe()
```

```
Out[122]:
```

	sepal_length	sepal_width	petal_length	petal_width	species
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333	2.000000
std	0.828066	0.435866	1.765298	0.762238	0.819232
min	4.300000	2.000000	1.000000	0.100000	1.000000
25%	5.100000	2.800000	1.600000	0.300000	1.000000
50%	5.800000	3.000000	4.350000	1.300000	2.000000
75%	6.400000	3.300000	5.100000	1.800000	3.000000
max	7.900000	4.400000	6.900000	2.500000	3.000000

```
In [125]: sns.pairplot(iris)
```

```
Out[125]: <seaborn.axisgrid.PairGrid at 0x18953145400>
```

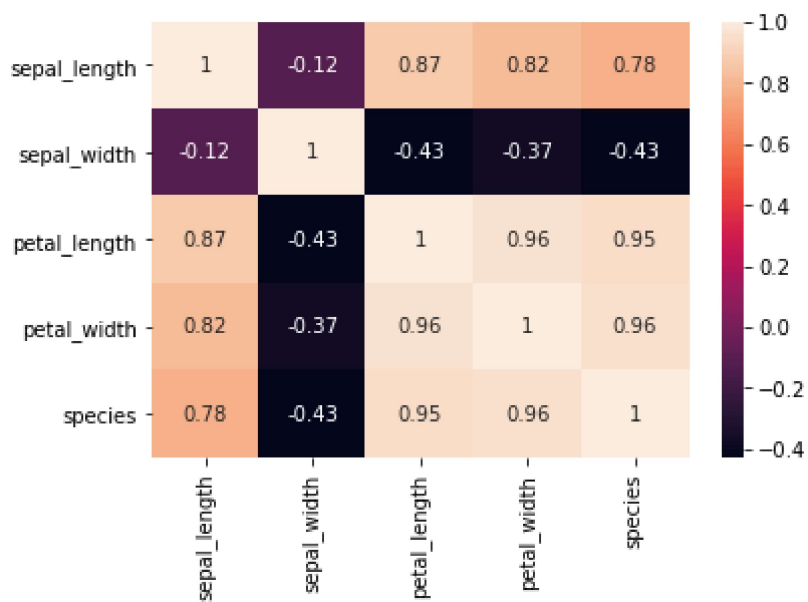


```
In [126]: iris.corr()
```

```
Out[126]:
```

	sepal_length	sepal_width	petal_length	petal_width	species
sepal_length	1.000000	-0.117570	0.871754	0.817941	0.782561
sepal_width	-0.117570	1.000000	-0.428440	-0.366126	-0.426658
petal_length	0.871754	-0.428440	1.000000	0.962865	0.949035
petal_width	0.817941	-0.366126	0.962865	1.000000	0.956547
species	0.782561	-0.426658	0.949035	0.956547	1.000000

```
In [130]: sns.heatmap(iris.corr(),annot= True)
plt.show()
```



Name : Kesavan Raman

College : Vellore Institute of Technology, Bhopal

Assignment : 03 (Matplotlib and Seaborn)

In []:

In []:

In []: