

```
In [3]: import pandas as pd
data1 = {'ID': [1, 2, 3, 4], 'Name': ['Alice', 'Bob', 'Charlie', 'David']}
data2 = {'ID': [3, 4, 5, 6], 'Age': [23, 34, 25, 29]}
df1 = pd.DataFrame(data1)
df2 = pd.DataFrame(data2)
result = pd.merge(df1, df2, on='ID', how='inner')
print(result)
```

	ID	Name	Age
0	3	Charlie	23
1	4	David	34

```
In [1]: import pandas as pd
data1 = {
    'ID': [1, 2, 3, 4],
    'Name': ['Alice', 'Bob', 'Charlie', 'David'],
    'City': ['New York', 'Los Angeles', 'Chicago', 'Houston']
}
data2 = {
    'ID': [3, 4, 5, 6],
    'Name': ['Charlie', 'David', 'Eve', 'Frank'],
    'City': ['Chicago', 'Houston', 'Seattle', 'Boston'],
    'Age': [23, 34, 25, 29]
}
df1 = pd.DataFrame(data1)
display(df1)
df2 = pd.DataFrame(data2)
display(df2)
result = pd.merge(df1, df2, on=['ID', 'Name', 'City'], how='inner')
display(result)
```

	ID	Name	City
0	1	Alice	New York
1	2	Bob	Los Angeles
2	3	Charlie	Chicago
3	4	David	Houston

	ID	Name	City	Age
0	3	Charlie	Chicago	23
1	4	David	Houston	34
2	5	Eve	Seattle	25
3	6	Frank	Boston	29

	ID	Name	City	Age
0	3	Charlie	Chicago	23
1	4	David	Houston	34

```
In [67]: import pandas as pd
```

```
frame1=pd.DataFrame({'id':['ball','pencil','pen','mug','ashtry'],
                      'color':['white','red','red','black','green'],
                      'brand':['OMG','ABC','ABC','POD','POD']})
frame2=pd.DataFrame({'id':['pencil','pencil','ball','pen'],
                      'brand':['OMG','POD','ABC','POD']})

display(frame1)
display(frame2)
df=pd.merge(frame1,frame2)
print(df)
df1=pd.merge(frame1,frame2,on=['id','brand'],how='inner')
display(df1)
```

	id	color	brand
0	ball	white	OMG
1	pencil	red	ABC
2	pen	red	ABC
3	mug	black	POD
4	ashtry	green	POD

	id	brand
0	pencil	OMG
1	pencil	POD
2	ball	ABC
3	pen	POD

Empty DataFrame  
Columns: [id, color, brand]  
Index: []

	id	color	brand
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```
In [75]: import pandas as pd
data = {
    'ID': [1, 2, 3, 4],
    'Name': ['Alice', 'Bob', 'Charlie', 'David'],
    'City': ['New York', 'Los Angeles', 'Chicago', 'Houston']
}
print("original data set")
labels=['a','b','c','d']
df = pd.DataFrame(data,index=labels)
display(df)
df['Name']=df['Name'].replace('Charlie','ANANYA')
df
```

original data set

	ID	Name	City
<b>a</b>	1	Alice	New York
<b>b</b>	2	Bob	Los Angeles
<b>c</b>	3	Charlie	Chicago
<b>d</b>	4	David	Houston

Out[75]:

	ID	Name	City
<b>a</b>	1	Alice	New York
<b>b</b>	2	Bob	Los Angeles
<b>c</b>	3	ANANYA	Chicago
<b>d</b>	4	David	Houston

```
In [89]: import pandas as pd
data = {
    'ID': [1, 2, 3, 4],
    'Name': ['Alice', 'Bob', 'Charlie', 'David'],
    'City': ['New York', 'Los Angeles', 'Chicago', 'Houston'],
    'marks':[90,80,99,100]
}
df=pd.DataFrame(data)
display(df)
df.groupby('ID').agg({'marks':['mean','min','max']})
```

	ID	Name	City	marks
<b>0</b>	1	Alice	New York	90
<b>1</b>	2	Bob	Los Angeles	80
<b>2</b>	3	Charlie	Chicago	99
<b>3</b>	4	David	Houston	100

Out[89]:

	marks		
	mean	min	max
ID			
<b>1</b>	90.0	90	90
<b>2</b>	80.0	80	80
<b>3</b>	99.0	99	99
<b>4</b>	100.0	100	100

```
In [91]: import pandas as pd

data = {
    'ID': [1, 2, 3, 4],
```

```
'Name': ['Alice', 'Bob', 'Charlie', 'David'],
'City': ['New York', 'Los Angeles', 'Chicago', 'Houston'],
'marks': [[90, 80, 99, 100], [100, 76, 55, 34], [100, 34, 89, 90], [67, 88, 77, 99]]
}

df = pd.DataFrame(data)
display(df)

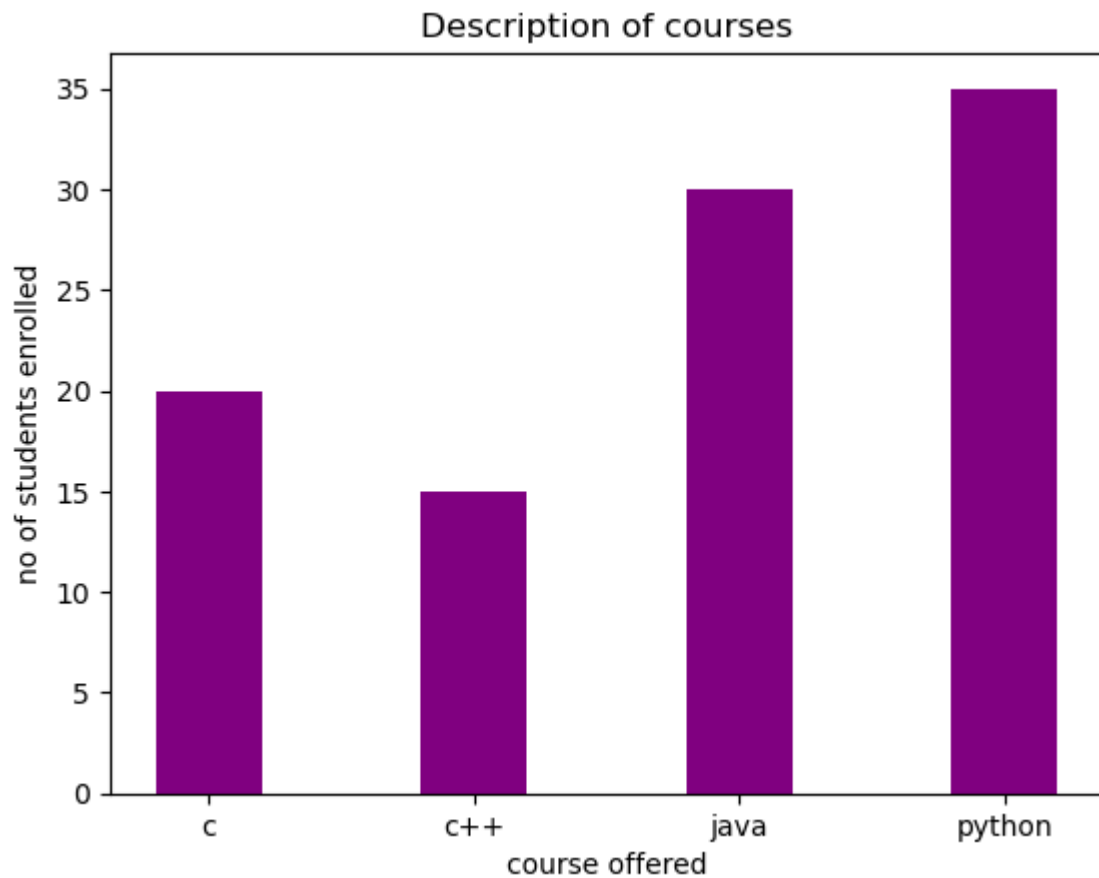
# Applying aggregation functions to the 'marks' column
aggregated_marks = df.groupby('ID').agg({
    'marks': lambda x: [pd.Series(mark).agg(['mean', 'min', 'max']) for mark in x]
})

display(aggregated_marks)
```

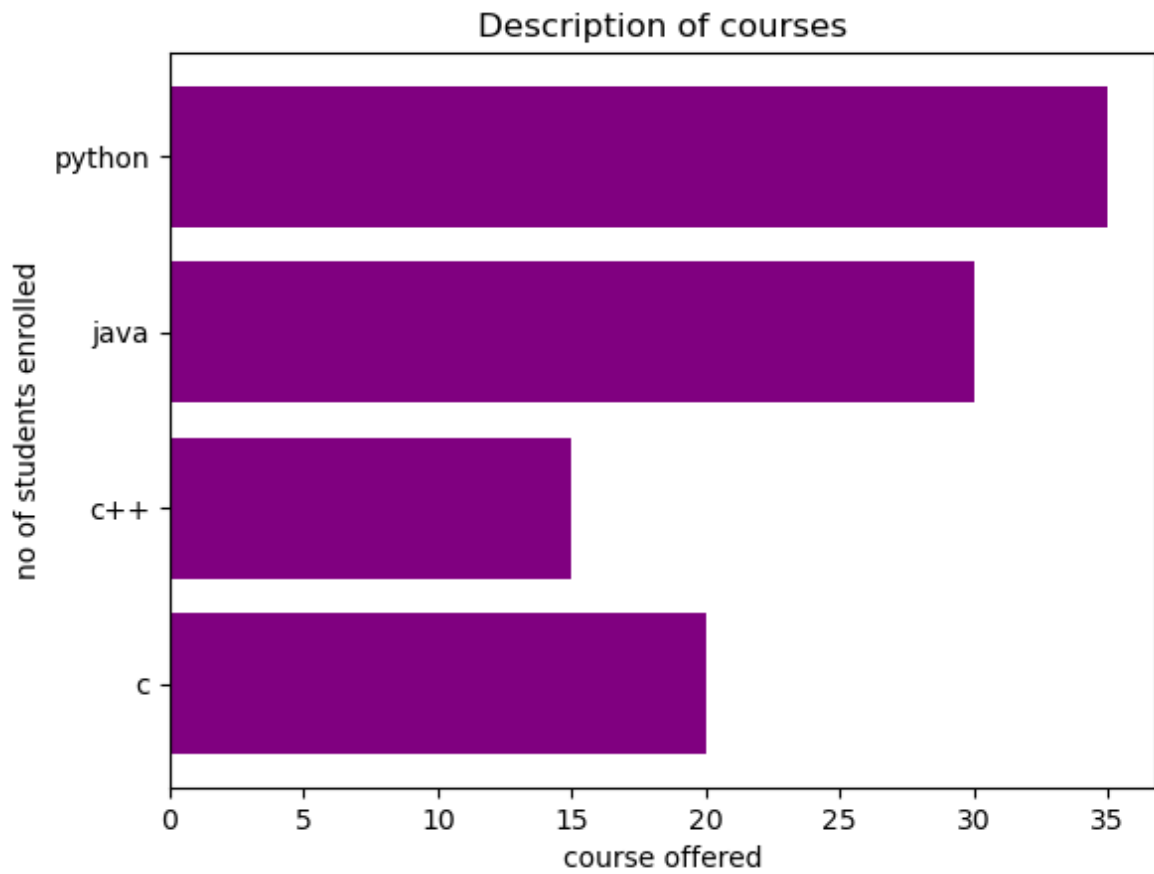
	ID	Name	City	marks
0	1	Alice	New York	[90, 80, 99, 100]
1	2	Bob	Los Angeles	[100, 76, 55, 34]
2	3	Charlie	Chicago	[100, 34, 89, 90]
3	4	David	Houston	[67, 88, 77, 99]

	marks
ID	
1	[[92.25, 80.0, 100.0]]
2	[[66.25, 34.0, 100.0]]
3	[[78.25, 34.0, 100.0]]
4	[[82.75, 67.0, 99.0]]

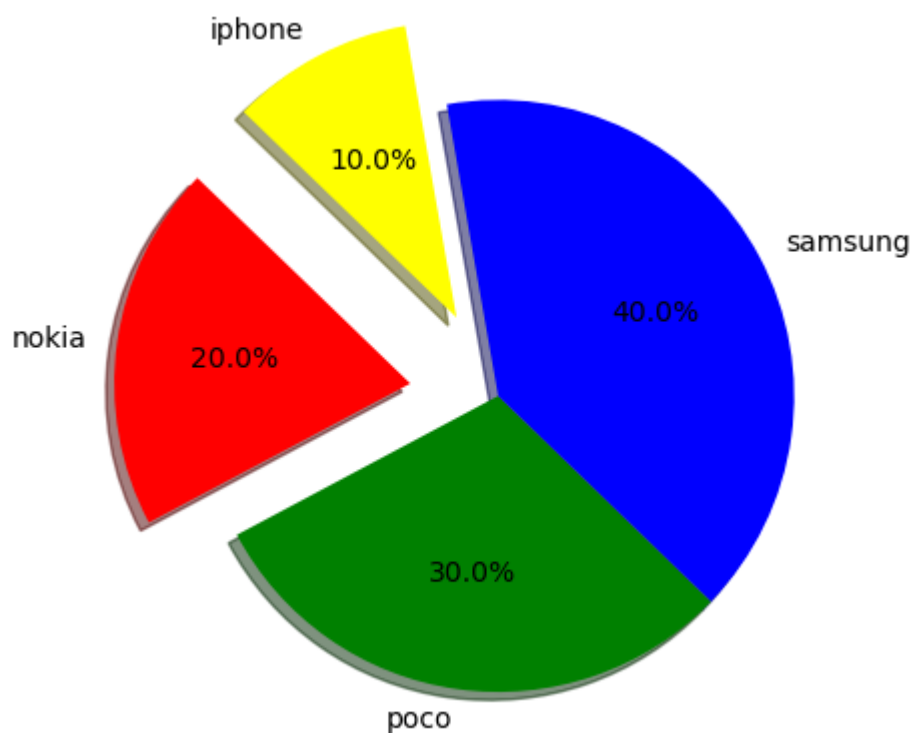
```
In [93]: import matplotlib.pyplot as plt
data={'c':20,'c++':15,'java':30,'python':35}
courses=list(data.keys())
values=list(data.values())
plt.bar(courses,values,color='purple',width=0.4)
plt.xlabel("course offered")
plt.ylabel("no of students enrolled")
plt.title("Description of courses")
plt.show()
```



```
In [97]: import matplotlib.pyplot as plt
data={'c':20,'c++':15,'java':30,'python':35}
courses=list(data.keys())
values=list(data.values())
plt.barh(courses,values,color='purple')
plt.xlabel("course offered")
plt.ylabel("no of students enrolled")
plt.title("Description of courses")
plt.show()
```

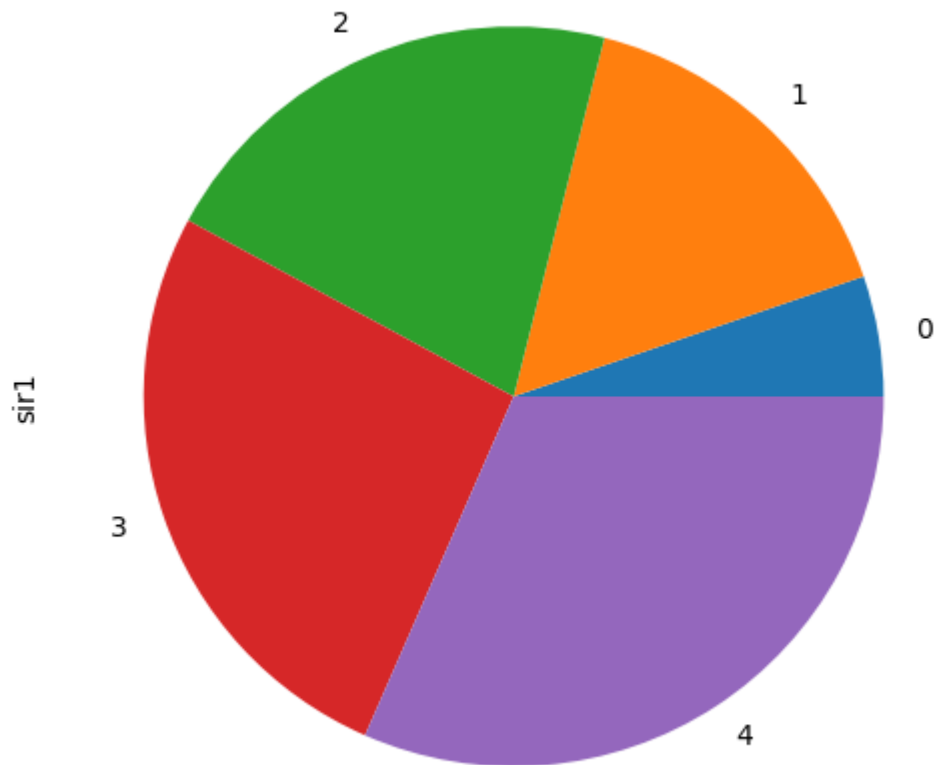


```
In [111... import matplotlib.pyplot as plt
labels=['iphone','nokia','poco','samsung']
values=[10,20,30,40]
colors=['yellow','red','green','blue']
explode=[0.3,0.3,0,0]
plt.pie(values,labels=labels,colors=colors,explode=explode,startangle=100)
plt.show()
```



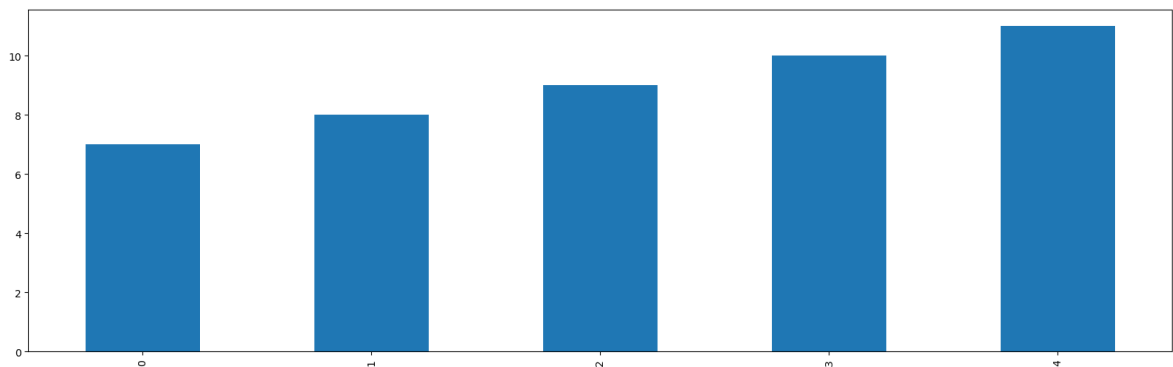
```
In [131... import pandas as pd
import matplotlib.pyplot as plt
data={'sir1':[1,3,4,5,6],
      'sir2':[7,8,9,10,11],
      'sir3':[2,2,3,1,4]}
df=pd.DataFrame(data)
df['sir1'].plot(kind='pie',figsize=(6,6))
```

Out[131... <Axes: ylabel='sir1'>



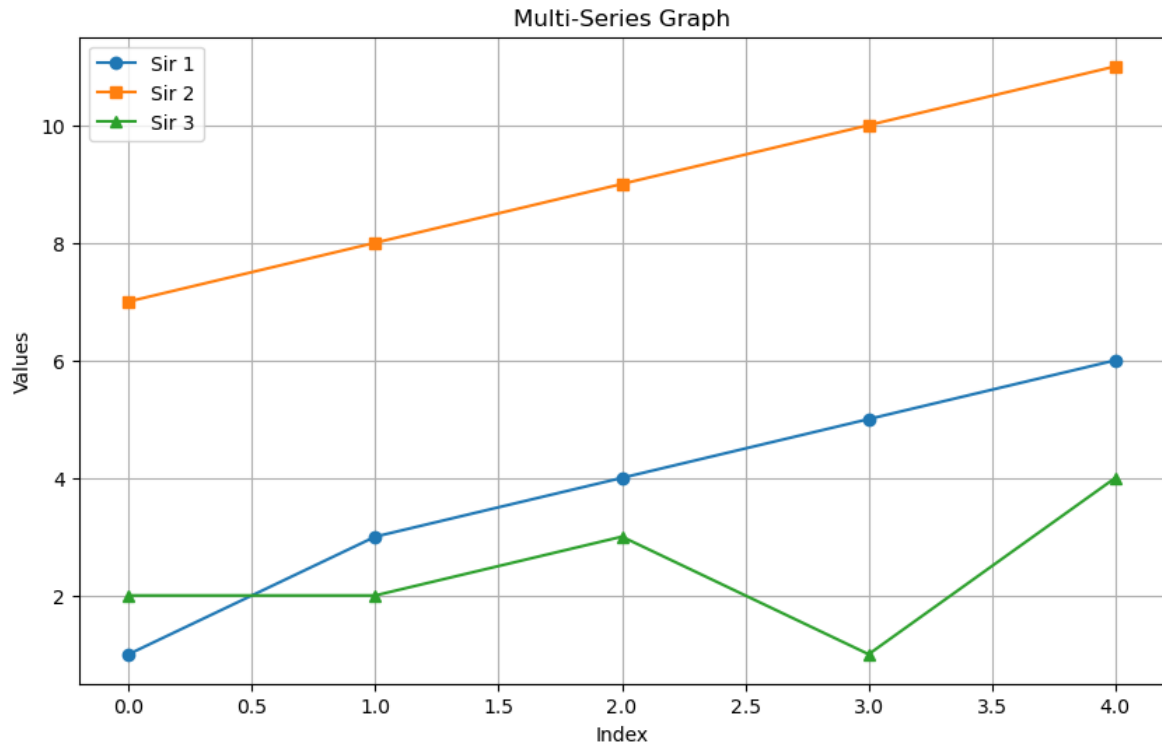
```
In [135... df['sir2'].plot(kind='bar',figsize=(20,6))
```

Out[135... <Axes: >



```
In [8]: import matplotlib.pyplot as plt
data = {
    'sir1': [1, 3, 4, 5, 6],
    'sir2': [7, 8, 9, 10, 11],
    'sir3': [2, 2, 3, 1, 4]}
```

```
}  
plt.figure(figsize=(10, 6))  
plt.plot(data['sir1'], label='Sir 1', marker='o')  
plt.plot(data['sir2'], label='Sir 2', marker='s')  
plt.plot(data['sir3'], label='Sir 3', marker='^')  
plt.title('Multi-Series Graph')  
plt.xlabel('Index')  
plt.ylabel('Values')  
plt.legend()  
plt.grid()  
plt.show()
```



```
In [7]: import seaborn as sns  
iris=sns.load_dataset("iris")  
print(iris)  
  
tips=sns.load_dataset("tips")  
print(tips)
```



	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

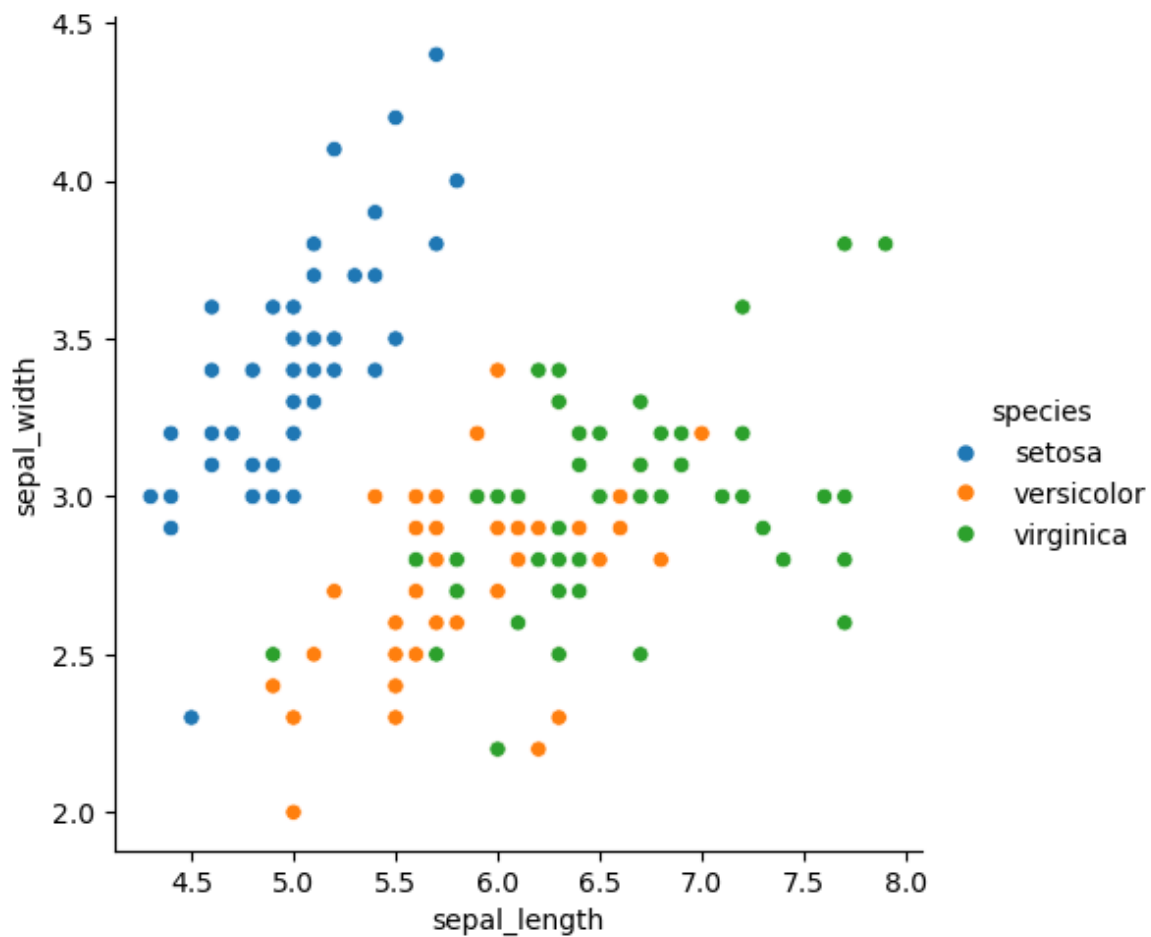
[150 rows x 5 columns]

	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 x 5 columns]

```
In [12]: sns.relplot(x="sepal_length", y="sepal_width", data=iris, hue="species")
```

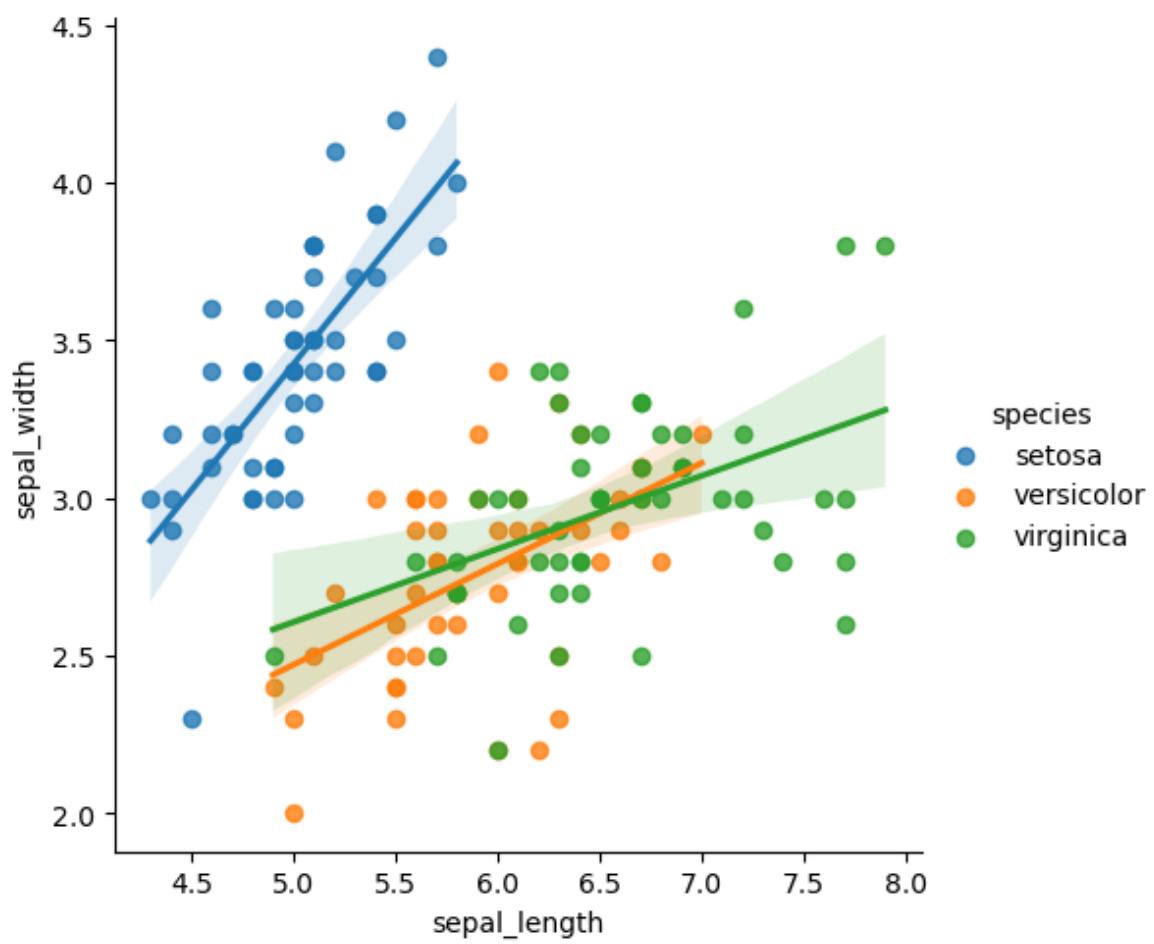
```
Out[12]: <seaborn.axisgrid.FacetGrid at 0x70d078fe19a0>
```



In [ ]:

In [14]: `sns.lmplot(x="sepal_length", y="sepal_width", data=iris, hue="species")`

Out[14]: `<seaborn.axisgrid.FacetGrid at 0x70d078ab0f80>`



In [ ]:

In [ ]: