In [2]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [113…
```
data=pd.read_excel('Walmart Sales.xlsx')
```

In [114…
```
data
```

Out[114…

	Invoice ID	Branch	City	Customer type	Gender	Product line	Unit price	Quantity	Date
0	750-67-8428	A	Yangon	Member	Female	Health and beauty	74.69	7	1/5/2019
1	226-31-3081	A	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	3/8/2019
2	631-41-3108	A	Yangon	Normal	Male	Home and lifestyle	46.33	7	3/3/2019
3	123-19-1176	B	Yangon	Member	Male	Health and beauty	58.22	8	1/27/2019
4	373-73-7910	C	Yangon	Normal	Male	Sports and travel	86.31	7	2/8/2019
...	...	...	...	...	...	...	...	...	..
995	233-67-5758	A	Naypyitaw	Normal	Male	Health and beauty	40.35	1	1/29/2019
996	303-96-2227	A	Mandalay	Normal	Female	Home and lifestyle	97.38	10	3/2/2019
997	727-02-1313	A	Yangon	Member	Male	Food and beverages	31.84	1	2/9/2019
998	347-56-2442	B	Yangon	Normal	Male	Home and lifestyle	65.82	1	2/22/2019
999	849-09-3807	C	Yangon	Member	Female	Fashion accessories	88.34	7	2/18/2019

1000 rows × 12 columns

In [ ]:
```
```

In [115…
```
data['sales']=data['Unit price'] * data['Quantity']
```

```
data
```

Out[115…

	Invoice ID	Branch	City	Customer type	Gender	Product line	Unit price	Quantity	Date
0	750-67-8428	A	Yangon	Member	Female	Health and beauty	74.69	7	1/5/2019
1	226-31-3081	A	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	3/8/2019
2	631-41-3108	A	Yangon	Normal	Male	Home and lifestyle	46.33	7	3/3/2019
3	123-19-1176	B	Yangon	Member	Male	Health and beauty	58.22	8	1/27/2019
4	373-73-7910	C	Yangon	Normal	Male	Sports and travel	86.31	7	2/8/2019
...	...	...	...	...	...	...	...	...	..
995	233-67-5758	A	Naypyitaw	Normal	Male	Health and beauty	40.35	1	1/29/2019
996	303-96-2227	A	Mandalay	Normal	Female	Home and lifestyle	97.38	10	3/2/2019
997	727-02-1313	A	Yangon	Member	Male	Food and beverages	31.84	1	2/9/2019
998	347-56-2442	B	Yangon	Normal	Male	Home and lifestyle	65.82	1	2/22/2019
999	849-09-3807	C	Yangon	Member	Female	Fashion accessories	88.34	7	2/18/2019

1000 rows × 13 columns

In [116…
```
data['Revenue']=data['sales']
```

In [117…
```
data
```

Out[117…

	Invoice ID	Branch	City	Customer type	Gender	Product line	Unit price	Quantity	Date
0	750-67-8428	A	Yangon	Member	Female	Health and beauty	74.69	7	1/5/2019
1	226-31-3081	A	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	3/8/2019
2	631-41-3108	A	Yangon	Normal	Male	Home and lifestyle	46.33	7	3/3/2019
3	123-19-1176	B	Yangon	Member	Male	Health and beauty	58.22	8	1/27/2019
4	373-73-7910	C	Yangon	Normal	Male	Sports and travel	86.31	7	2/8/2019
...	...	...	...	...	...	...	...	...	..
995	233-67-5758	A	Naypyitaw	Normal	Male	Health and beauty	40.35	1	1/29/2019
996	303-96-2227	A	Mandalay	Normal	Female	Home and lifestyle	97.38	10	3/2/2019
997	727-02-1313	A	Yangon	Member	Male	Food and beverages	31.84	1	2/9/2019
998	347-56-2442	B	Yangon	Normal	Male	Home and lifestyle	65.82	1	2/22/2019
999	849-09-3807	C	Yangon	Member	Female	Fashion accessories	88.34	7	2/18/2019

1000 rows × 14 columns

In [118…
```
data=data.drop('sales',axis=1)
```

In [61]:
```
data
```

Out[61]:

	Invoice ID	Branch	City	Customer type	Gender	Product line	Unit price	Quantity	Date
0	750-67-8428	A	Yangon	Member	Female	Health and beauty	74.69	7	1/5/2019
1	226-31-3081	A	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	3/8/2019
2	631-41-3108	A	Yangon	Normal	Male	Home and lifestyle	46.33	7	3/3/2019
3	123-19-1176	B	Yangon	Member	Male	Health and beauty	58.22	8	1/27/2019
4	373-73-7910	C	Yangon	Normal	Male	Sports and travel	86.31	7	2/8/2019
...	...	...	...	...	...	...	...	...	..
995	233-67-5758	A	Naypyitaw	Normal	Male	Health and beauty	40.35	1	1/29/2019
996	303-96-2227	A	Mandalay	Normal	Female	Home and lifestyle	97.38	10	3/2/2019
997	727-02-1313	A	Yangon	Member	Male	Food and beverages	31.84	1	2/9/2019
998	347-56-2442	B	Yangon	Normal	Male	Home and lifestyle	65.82	1	2/22/2019
999	849-09-3807	C	Yangon	Member	Female	Fashion accessories	88.34	7	2/18/2019

1000 rows × 13 columns

In [62]:
```
data=data.drop(['Invoice ID','Customer type','Gender','Date','Time','Payment
```

In [16]:
```
data
```

Out[16]:

	Branch	City	Product line	Unit price	Quantity	Revenue
0	A	Yangon	Health and beauty	74.69	7	522.83
1	A	Naypyitaw	Electronic accessories	15.28	5	76.40
2	A	Yangon	Home and lifestyle	46.33	7	324.31
3	B	Yangon	Health and beauty	58.22	8	465.76
4	C	Yangon	Sports and travel	86.31	7	604.17
...	...	...	...	...	...	...
995	A	Naypyitaw	Health and beauty	40.35	1	40.35
996	A	Mandalay	Home and lifestyle	97.38	10	973.80
997	A	Yangon	Food and beverages	31.84	1	31.84
998	B	Yangon	Home and lifestyle	65.82	1	65.82
999	C	Yangon	Fashion accessories	88.34	7	618.38

1000 rows × 6 columns

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:
```
# QUESTION - 1
```

In [ ]:
```
#   A)
```

In [ ]:

In [54]:
```
# PERFOMANCE OF SALES and Revenue IN CITIES and BRANCHES
```

In [ ]:

In [ ]:
```
#each branches Total revenue
```

In [45]:
```
s=data.groupby(['City','Branch'])['Revenue'].sum()
s
```

Out[45]:
```
City       Branch
Mandalay   A         34130.09
           B         37215.93
           C         29794.62
Naypyitaw  A         35985.64
           B         35157.75
           C         34160.14
Yangon     A         33647.27
           B         35193.51
           C         32302.43
Name: Revenue, dtype: float64
```

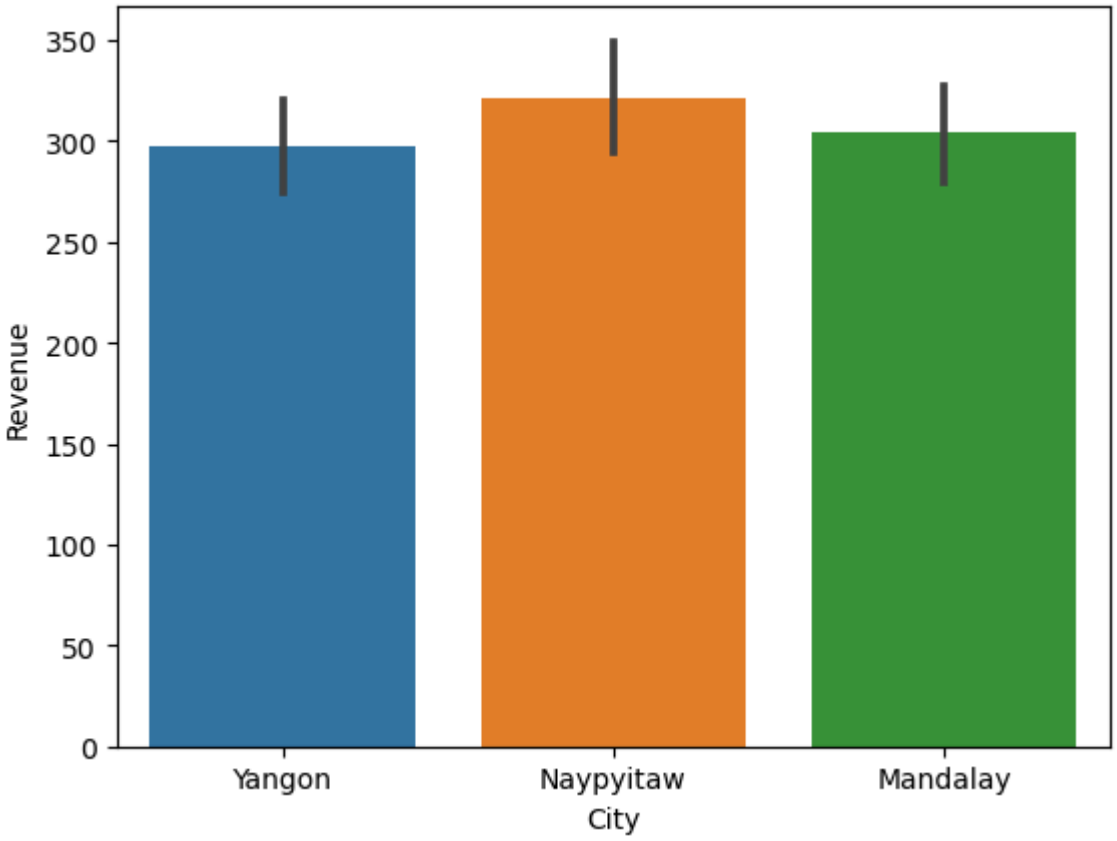
In [ ]:

In [ ]:

In [ ]:
```
#revenue of each cities
```

In [47]:
```
sns.barplot(data=data,x='City',y='Revenue')
```

Out[47]:
```
<Axes: xlabel='City', ylabel='Revenue'>
```

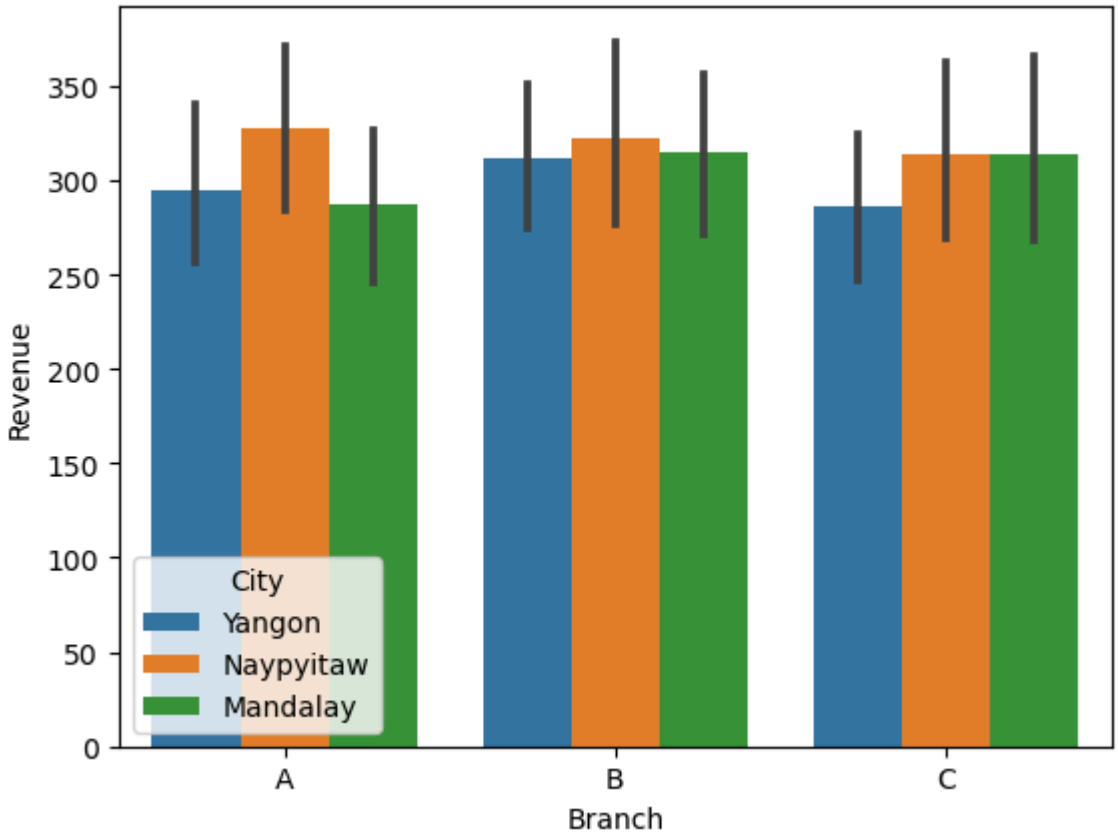


In [ ]:

In [ ]:
```
#revenue of each branch in cities
```

In [50]:
```
sns.barplot(data=data,x='Branch',y='Revenue',hue='City')
```

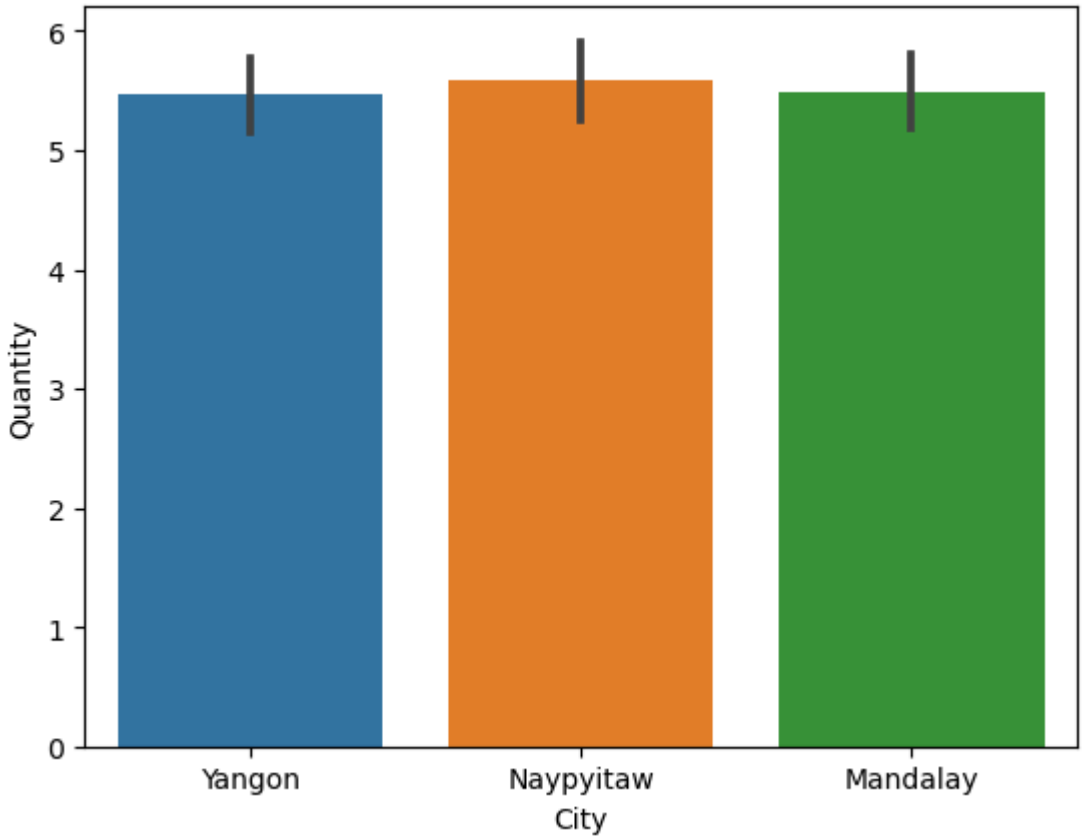
Out[50]: <Axes: xlabel='Branch', ylabel='Revenue'>



In [ ]:
```
# sales of each cities
```

In [51]:
```
sns.barplot(data=data,x='City',y='Quantity')
```

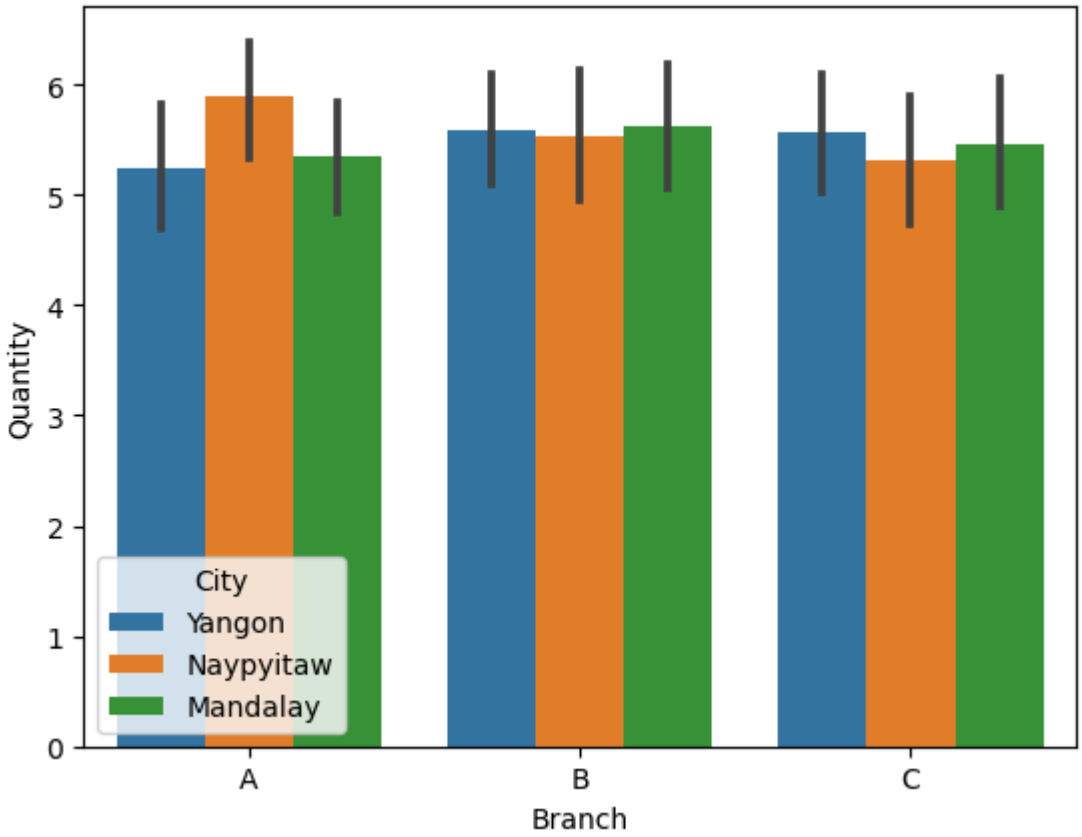
Out[51]: <Axes: xlabel='City', ylabel='Quantity'>



In [52]:
```
#sales of each branches in cities
```

In [53]:
```
sns.barplot(data=data,x='Branch',y='Quantity',hue='City')
```

Out[53]:
```
<Axes: xlabel='Branch', ylabel='Quantity'>
```



In [ ]:

In [ ]: `#   B)`

In [ ]:

In [63]: `data`

Out[63]:

	Branch	City	Product line	Unit price	Quantity	Revenue
0	A	Yangon	Health and beauty	74.69	7	522.83
1	A	Naypyitaw	Electronic accessories	15.28	5	76.40
2	A	Yangon	Home and lifestyle	46.33	7	324.31
3	B	Yangon	Health and beauty	58.22	8	465.76
4	C	Yangon	Sports and travel	86.31	7	604.17
...	...	...	...	...	...	...
995	A	Naypyitaw	Health and beauty	40.35	1	40.35
996	A	Mandalay	Home and lifestyle	97.38	10	973.80
997	A	Yangon	Food and beverages	31.84	1	31.84
998	B	Yangon	Home and lifestyle	65.82	1	65.82
999	C	Yangon	Fashion accessories	88.34	7	618.38

1000 rows × 6 columns

In [109…

```
a=data.groupby(['Branch','City','Product line'])['Unit price'].sum()
a
```

Out[109…

Branch	City	Product line	
A	Mandalay	Electronic accessories	846.99
		Fashion accessories	1427.80
		Food and beverages	930.37
		Health and beauty	819.97
		Home and lifestyle	1102.13
		Sports and travel	1221.85
	Naypyitaw	Electronic accessories	975.21
		Fashion accessories	1053.58
		Food and beverages	1408.69
		Health and beauty	1173.44
		Home and lifestyle	683.17
		Sports and travel	659.46
	Yangon	Electronic accessories	928.33
		Fashion accessories	683.38
		Food and beverages	1139.55
		Health and beauty	769.54
		Home and lifestyle	1322.32
		Sports and travel	1499.76
B	Mandalay	Electronic accessories	1223.45
		Fashion accessories	921.11
		Food and beverages	967.21
		Health and beauty	947.68
		Home and lifestyle	1064.06
		Sports and travel	1500.22
	Naypyitaw	Electronic accessories	1070.64
		Fashion accessories	1624.91
		Food and beverages	887.79
		Health and beauty	920.65
		Home and lifestyle	878.09
		Sports and travel	916.56
	Yangon	Electronic accessories	1391.33
		Fashion accessories	1119.85
		Food and beverages	852.29
		Health and beauty	610.57
		Home and lifestyle	1700.14
		Sports and travel	655.07
C	Mandalay	Electronic accessories	671.54
		Fashion accessories	1051.41
		Food and beverages	879.42
		Health and beauty	1316.19
		Home and lifestyle	609.51
		Sports and travel	977.97
	Naypyitaw	Electronic accessories	1023.67
		Fashion accessories	1204.35
		Food and beverages	1483.54
		Health and beauty	816.42
		Home and lifestyle	883.78
		Sports and travel	903.81
	Yangon	Electronic accessories	972.61
		Fashion accessories	1086.96
		Food and beverages	1196.68
		Health and beauty	963.42
		Home and lifestyle	607.51
		Sports and travel	1126.18

Name: Unit price, dtype: float64

In [110…

```
b=data.groupby(['Branch','City','Product line'])['Quantity'].sum()
b
```

Out[110…

Branch	City	Product line	
A	Mandalay	Electronic accessories	107
		Fashion accessories	124
		Food and beverages	104
		Health and beauty	83
		Home and lifestyle	118
		Sports and travel	101
	Naypyitaw	Electronic accessories	117
		Fashion accessories	113
		Food and beverages	153
		Health and beauty	118
		Home and lifestyle	79
		Sports and travel	68
	Yangon	Electronic accessories	92
		Fashion accessories	50
		Food and beverages	92
		Health and beauty	90
		Home and lifestyle	145
		Sports and travel	129
B	Mandalay	Electronic accessories	136
		Fashion accessories	74
		Food and beverages	98
		Health and beauty	113
		Home and lifestyle	102
		Sports and travel	141
	Naypyitaw	Electronic accessories	133
		Fashion accessories	132
		Food and beverages	73
		Health and beauty	94
		Home and lifestyle	83
		Sports and travel	89
	Yangon	Electronic accessories	145
		Fashion accessories	106
		Food and beverages	87
		Health and beauty	65
		Home and lifestyle	158
		Sports and travel	70
C	Mandalay	Electronic accessories	73
		Fashion accessories	99
		Food and beverages	68
		Health and beauty	124
		Home and lifestyle	75
		Sports and travel	80
	Naypyitaw	Electronic accessories	83
		Fashion accessories	97
		Food and beverages	143
		Health and beauty	65
		Home and lifestyle	83
		Sports and travel	108
	Yangon	Electronic accessories	85
		Fashion accessories	107
		Food and beverages	134
		Health and beauty	102
		Home and lifestyle	68
		Sports and travel	134

Name: Quantity, dtype: int64

In [111…

```
#AVERAGE PRICE OF AN ITEM SOLD AT EACH BRANCH OF CITY
c=a/b
c
```

Out[111…

Branch	City	Product line	
A	Mandalay	Electronic accessories	7.915794
		Fashion accessories	11.514516
		Food and beverages	8.945865
		Health and beauty	9.879157
		Home and lifestyle	9.340085
		Sports and travel	12.097525
	Naypyitaw	Electronic accessories	8.335128
		Fashion accessories	9.323717
		Food and beverages	9.207124
		Health and beauty	9.944407
		Home and lifestyle	8.647722
		Sports and travel	9.697941
	Yangon	Electronic accessories	10.090543
		Fashion accessories	13.667600
		Food and beverages	12.386413
		Health and beauty	8.550444
		Home and lifestyle	9.119448
		Sports and travel	11.626047
B	Mandalay	Electronic accessories	8.995956
		Fashion accessories	12.447432
		Food and beverages	9.869490
		Health and beauty	8.386549
		Home and lifestyle	10.431961
		Sports and travel	10.639858
	Naypyitaw	Electronic accessories	8.049925
		Fashion accessories	12.309924
		Food and beverages	12.161507
		Health and beauty	9.794149
		Home and lifestyle	10.579398
		Sports and travel	10.298427
	Yangon	Electronic accessories	9.595379
		Fashion accessories	10.564623
		Food and beverages	9.796437
		Health and beauty	9.393385
		Home and lifestyle	10.760380
		Sports and travel	9.358143
C	Mandalay	Electronic accessories	9.199178
		Fashion accessories	10.620303
		Food and beverages	12.932647
		Health and beauty	10.614435
		Home and lifestyle	8.126800
		Sports and travel	12.224625
	Naypyitaw	Electronic accessories	12.333373
		Fashion accessories	12.415979
		Food and beverages	10.374406
		Health and beauty	12.560308
		Home and lifestyle	10.647952
		Sports and travel	8.368611
	Yangon	Electronic accessories	11.442471
		Fashion accessories	10.158505
		Food and beverages	8.930448
		Health and beauty	9.445294
		Home and lifestyle	8.933971
		Sports and travel	8.404328

dtype: float64

In [ ]:

In [112…
```
#   c)
```

In [ ]:

In [119…
```
data
```

Out[119…

	Invoice ID	Branch	City	Customer type	Gender	Product line	Unit price	Quantity	Date
0	750-67-8428	A	Yangon	Member	Female	Health and beauty	74.69	7	1/5/2019
1	226-31-3081	A	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	3/8/2019
2	631-41-3108	A	Yangon	Normal	Male	Home and lifestyle	46.33	7	3/3/2019
3	123-19-1176	B	Yangon	Member	Male	Health and beauty	58.22	8	1/27/2019
4	373-73-7910	C	Yangon	Normal	Male	Sports and travel	86.31	7	2/8/2019
...	...	...	...	...	...	...	...	...	..
995	233-67-5758	A	Naypyitaw	Normal	Male	Health and beauty	40.35	1	1/29/2019
996	303-96-2227	A	Mandalay	Normal	Female	Home and lifestyle	97.38	10	3/2/2019
997	727-02-1313	A	Yangon	Member	Male	Food and beverages	31.84	1	2/9/2019
998	347-56-2442	B	Yangon	Normal	Male	Home and lifestyle	65.82	1	2/22/2019
999	849-09-3807	C	Yangon	Member	Female	Fashion accessories	88.34	7	2/18/2019

1000 rows × 13 columns

In [125…
```
data['Date'] = pd.to_datetime(data['Date'])

data['day'] = data['Date'].dt.day
data['Month'] = data['Date'].dt.month
```

```
data['Year'] = data['Date'].dt.year
data
```

Out[125…

	Invoice ID	Branch	City	Customer type	Gender	Product line	Unit price	Quantity	Date	
0	750-67-8428	A	Yangon	Member	Female	Health and beauty	74.69	7	2019-01-05	13
1	226-31-3081	A	Naypyitaw	Normal	Female	Electronic accessories	15.28	5	2019-03-08	10
2	631-41-3108	A	Yangon	Normal	Male	Home and lifestyle	46.33	7	2019-03-03	13
3	123-19-1176	B	Yangon	Member	Male	Health and beauty	58.22	8	2019-01-27	20
4	373-73-7910	C	Yangon	Normal	Male	Sports and travel	86.31	7	2019-02-08	10
...	...	...	...	...	...	...	...	...	...	
995	233-67-5758	A	Naypyitaw	Normal	Male	Health and beauty	40.35	1	2019-01-29	13
996	303-96-2227	A	Mandalay	Normal	Female	Home and lifestyle	97.38	10	2019-03-02	17
997	727-02-1313	A	Yangon	Member	Male	Food and beverages	31.84	1	2019-02-09	13
998	347-56-2442	B	Yangon	Normal	Male	Home and lifestyle	65.82	1	2019-02-22	15
999	849-09-3807	C	Yangon	Member	Female	Fashion accessories	88.34	7	2019-02-18	13

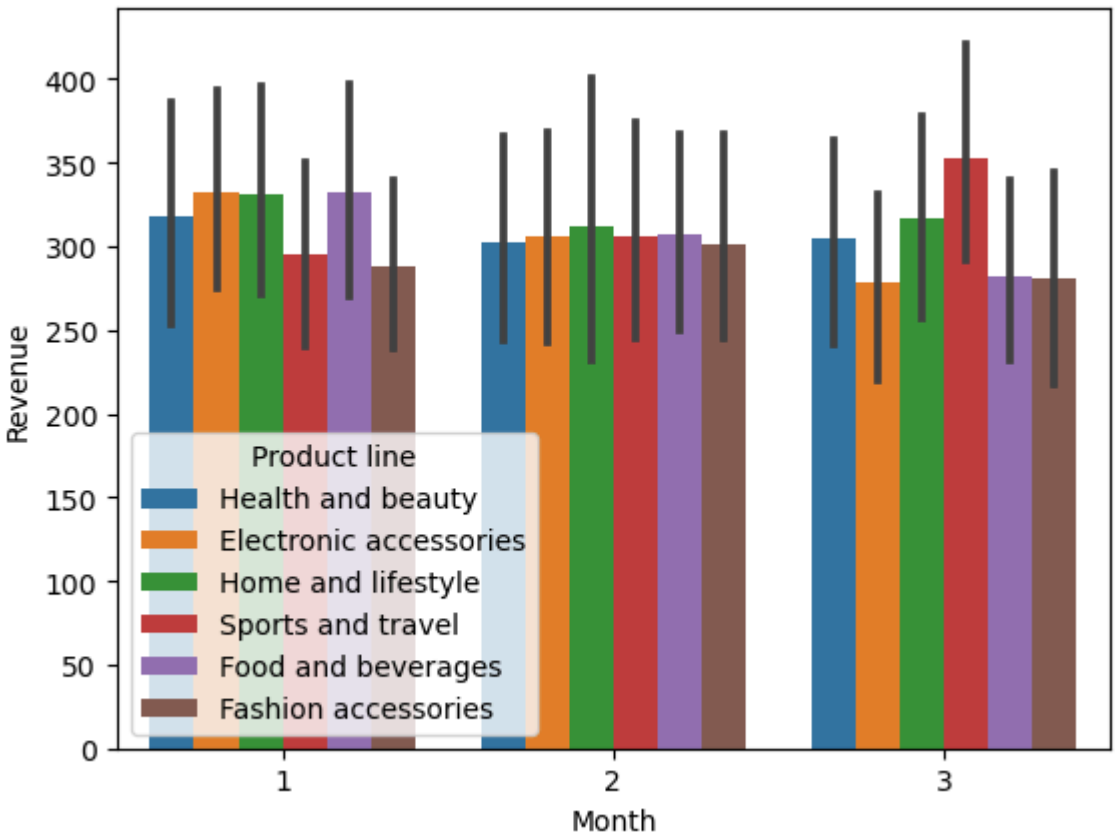
1000 rows × 16 columns

In [135…

```
# Revenue of each month
sns.barplot(data=data,x='Month',y='Revenue',hue='Product line')
```

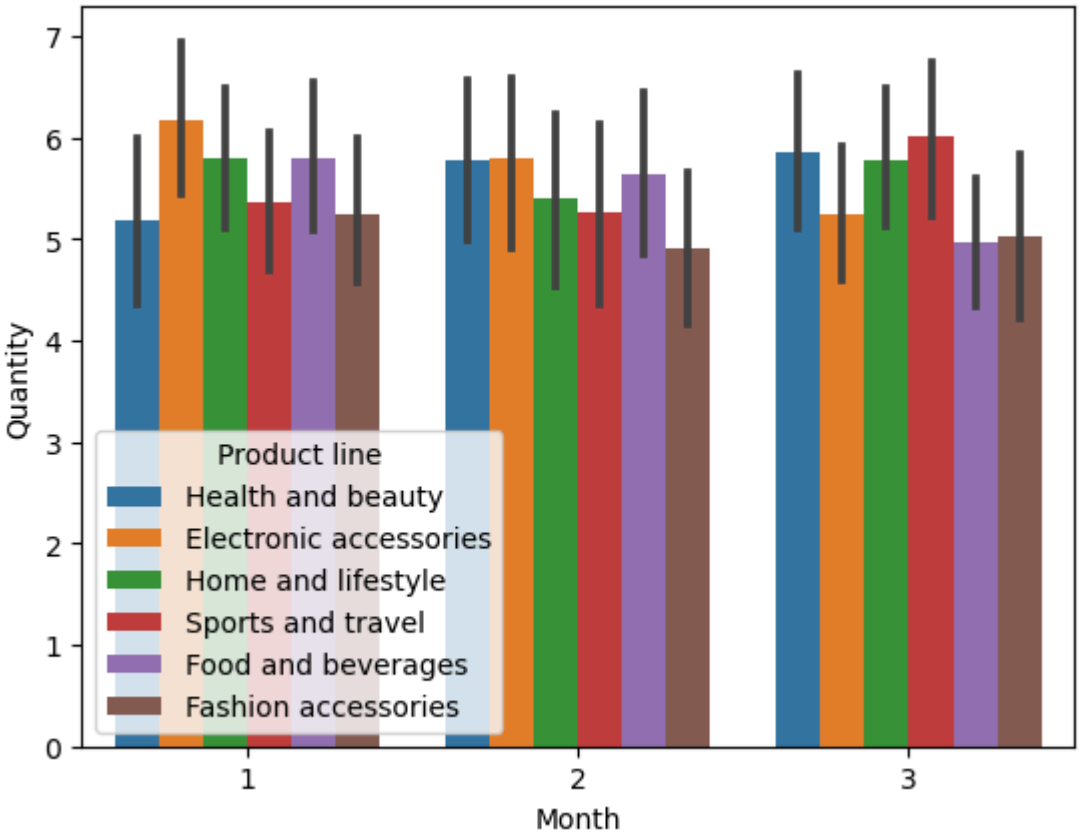
Out[135…

```
<Axes: xlabel='Month', ylabel='Revenue'>
```



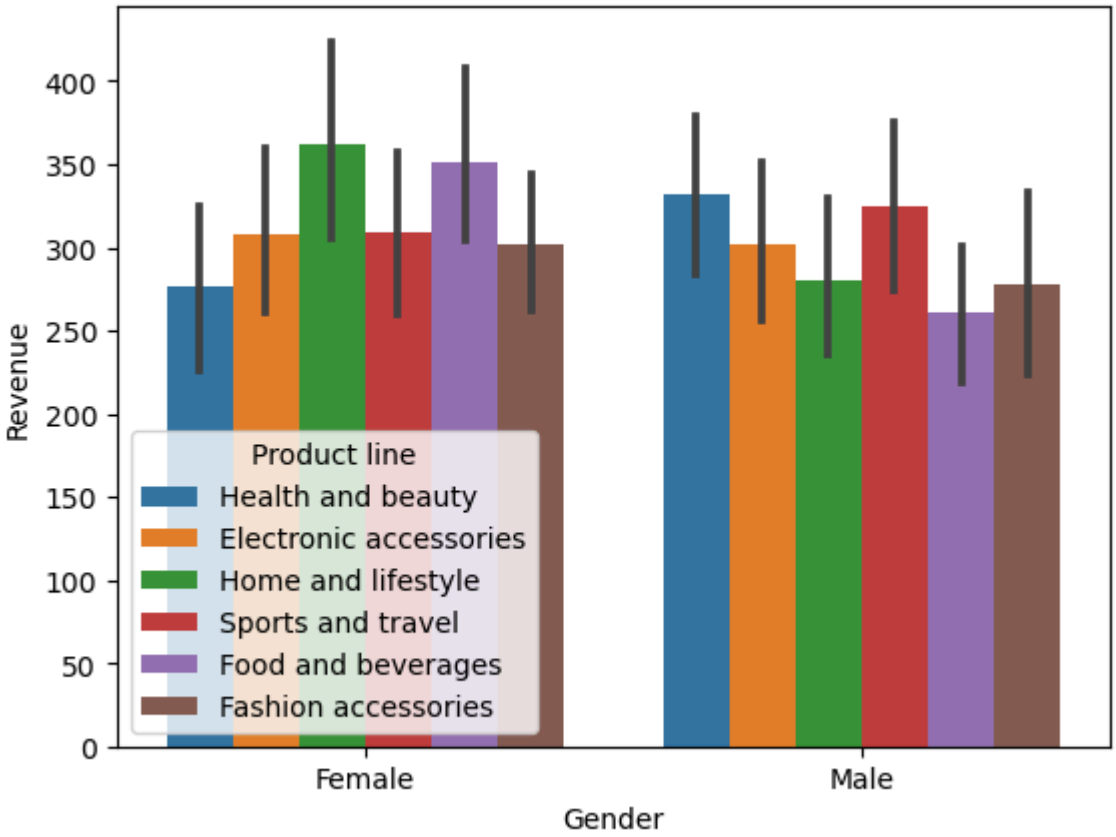
In [134…
```
#Sales of Each month
sns.barplot(data=data,x='Month',y='Quantity',hue='Product line')
```

Out[134… `<Axes: xlabel='Month', ylabel='Quantity'>`

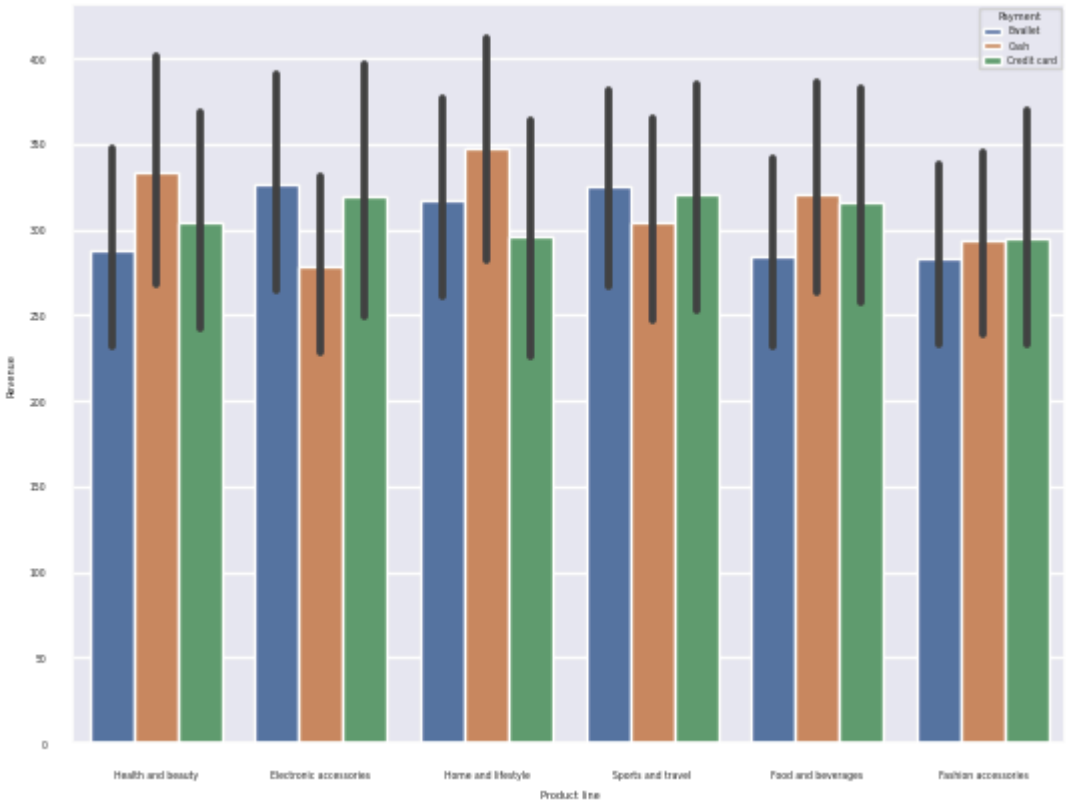


In [139…
```
sns.barplot(data=data,x='Gender',y='Revenue',hue='Product line')
```

Out[139…
```
<Axes: xlabel='Gender', ylabel='Revenue'>
```



In [171…
```
sns.barplot(data=data,x='Product line',y='Revenue',hue='Payment')
sns.set(font_scale=.3)
```



In [155…
```
# FOR APRIL 2019 " SPORTS AND TRAVEL " IS BEST TO FOCUS TO GET BETTER SALES.
```

In [ ]:
```

```

In [172…
```
# Question 2
```

In [ ]:
```
# 1) The interface : The interface is not good in my opinion it feels like a
#  2) diffiult to use : If anyone doesn't know about gold purachasing Online
```

In [ ]:
```

```

In [173…
```
# Question 3
```

In [ ]:
```
# I think change the position of spin the weel to in 2nd Column,and instead
```

In [ ]:
```

```