AD HOC ANALYSIS

TABLES AND VISUALS

INTERCESSION

TABLE 1: COUNT OF EACH ITEM SOLD PER MONTH

	First Item	Second Item	Third Item	month
0	Exotic Extras,Beef Chicharon,(x4)	None	None	1
1	Exotic Extras,Beef Chicharon,(x3)	HealthyKid 3+,Nutrional Milk,(x4)	Candy City,Orange Beans,(x1)	1
2	HealthyKid 3+,Gummy Vitamins,(x3)	HealthyKid 3+,Yummy Vegetables,(x2)	None	1
3	HealthyKid 3+,Yummy Vegetables,(x1)	None	None	1
4	Candy City,Orange Beans,(x3)	Candy City,Gummy Worms,(x4)	HealthyKid 3+,Gummy Vitamins,(x1)	1
...	...	...	...	...
83031	Exotic Extras,Kimchi and Seaweed,(x2)	HealthyKid 3+,Nutrional Milk,(x1)	None	6
83032	HealthyKid 3+,Yummy Vegetables,(x1)	Exotic Extras,Kimchi and Seaweed,(x1)	Candy City,Orange Beans,(x4)	6
83033	Candy City,Orange Beans,(x4)	Candy City,Gummy Worms,(x4)	HealthyKid 3+,Yummy Vegetables,(x4)	6
83034	HealthyKid 3+,Nutrional Milk,(x2)	Candy City,Gummy Worms,(x2)	None	6
83035	HealthyKid 3+,Nutrional Milk,(x1)	Candy City,Gummy Worms,(x3)	Candy City,Orange Beans,(x1)	6

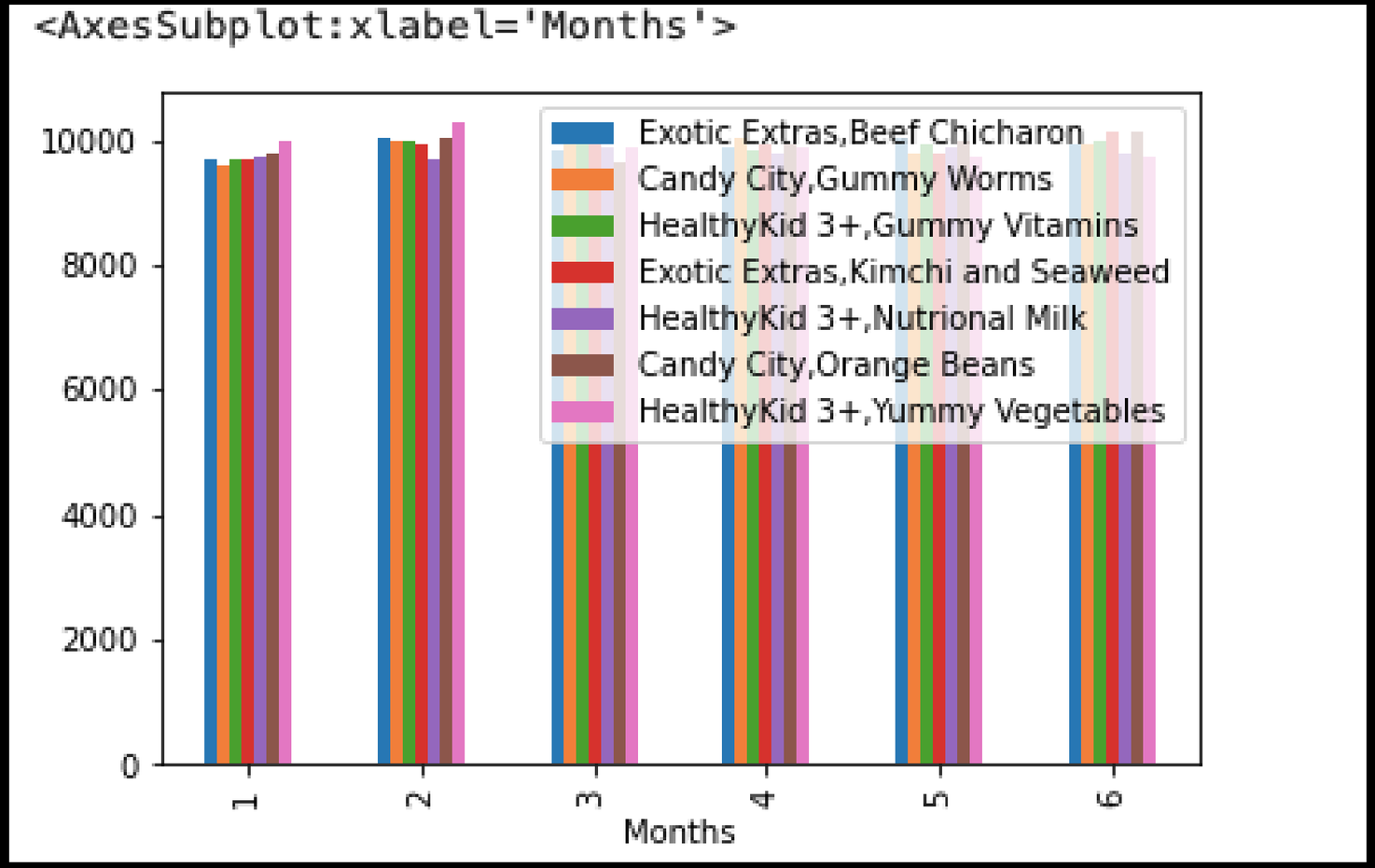
	month	First Transaction	Q1	Second Transaction	Q2	Third Transaction	Q3
0	1	Exotic Extras | Beef Chicharon	4	None	0	None	0
1	1	Exotic Extras | Beef Chicharon	3	HealthyKid 3+ | Nutrional Milk	4	Candy City | Orange Beans	1
2	1	HealthyKid 3+ | Gummy Vitamins	3	HealthyKid 3+ | Yummy Vegetables	2	None	0
3	1	HealthyKid 3+ | Yummy Vegetables	1	None	0	None	0
4	1	Candy City | Orange Beans	3	Candy City | Gummy Worms	4	HealthyKid 3+ | Gummy Vitamins	1
...	...	...	...	...	...	...	...
83031	6	Exotic Extras | Kimchi and Seaweed	2	HealthyKid 3+ | Nutrional Milk	1	None	0
83032	6	HealthyKid 3+ | Yummy Vegetables	1	Exotic Extras | Kimchi and Seaweed	1	Candy City | Orange Beans	4
83033	6	Candy City | Orange Beans	4	Candy City | Gummy Worms	4	HealthyKid 3+ | Yummy Vegetables	4
83034	6	HealthyKid 3+ | Nutrional Milk	2	Candy City | Gummy Worms	2	None	0
83035	6	HealthyKid 3+ | Nutrional Milk	1	Candy City | Gummy Worms	3	Candy City | Orange Beans	1

83036 rows × 7 columns

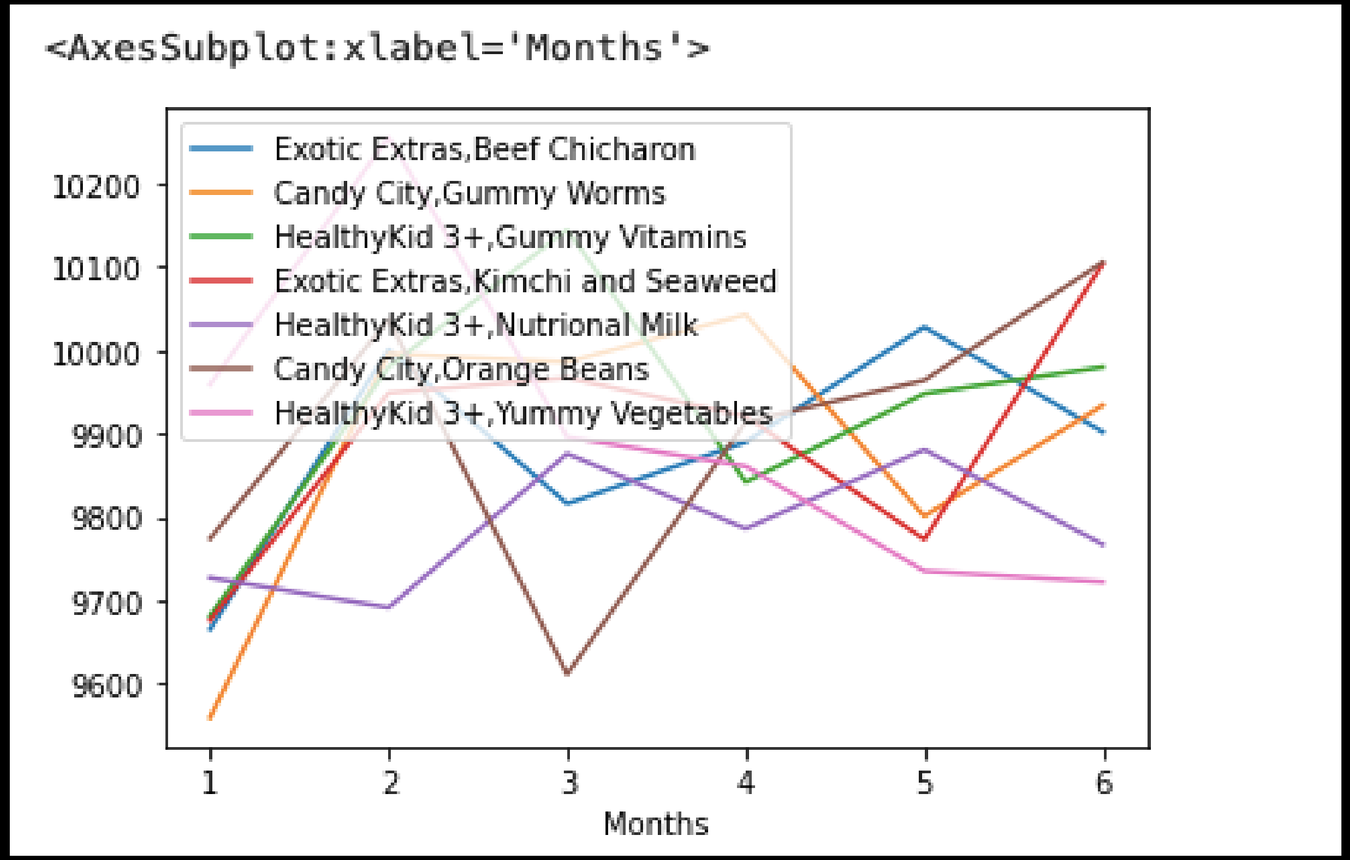
[29]:

	sum					
month	1	2	3	4	5	6
Candy City | Gummy Worms	9559.0	9996.0	9986.0	10043.0	9801.0	9934.0
Candy City | Orange Beans	9774.0	10037.0	9611.0	9914.0	9964.0	10106.0
Exotic Extras | Beef Chicharon	9665.0	10001.0	9816.0	9890.0	10028.0	9902.0
Exotic Extras | Kimchi and Seaweed	9676.0	9949.0	9967.0	9921.0	9773.0	10104.0
HealthyKid 3+ | Gummy Vitamins	9681.0	9980.0	10145.0	9842.0	9948.0	9980.0
HealthyKid 3+ | Nutrional Milk	9727.0	9691.0	9876.0	9786.0	9881.0	9767.0
HealthyKid 3+ | Yummy Vegetables	9959.0	10256.0	9896.0	9861.0	9735.0	9722.0

BAR GRAPH: COUNT OF EACH ITEM SOLD PER MONTH

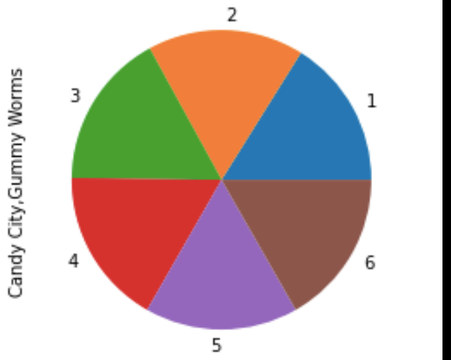


LINE GRAPH: COUNT OF EACH ITEM SOLD PER MONTH

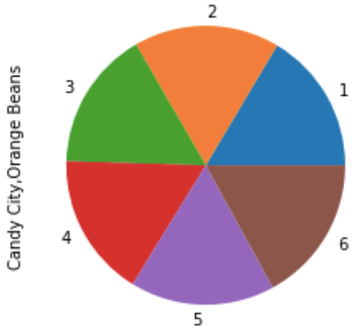


PIE CHARTS: COUNT OF EACH ITEM SOLD PER MONTH

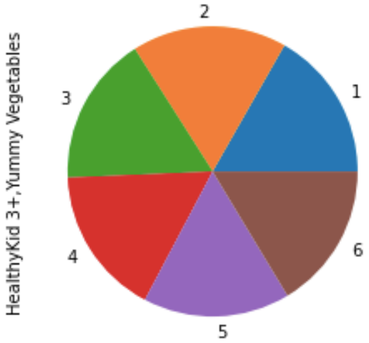
[69]: <AxesSubplot:ylabel='Candy City,(



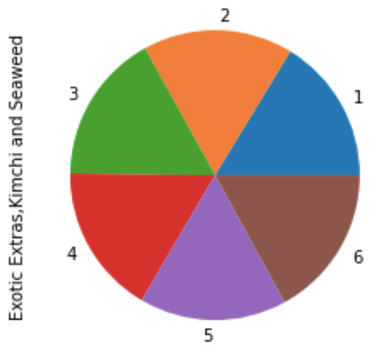
[73]: <AxesSubplot:ylabel='Candy City,Oran



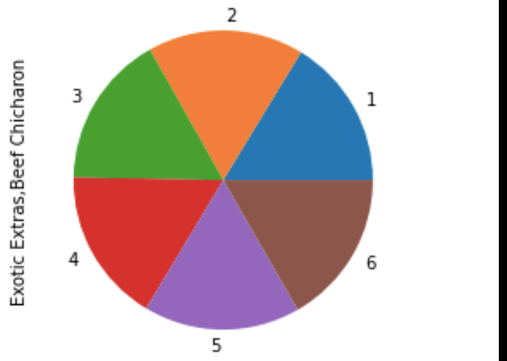
[74]: <AxesSubplot:ylabel='HealthyKid 3+



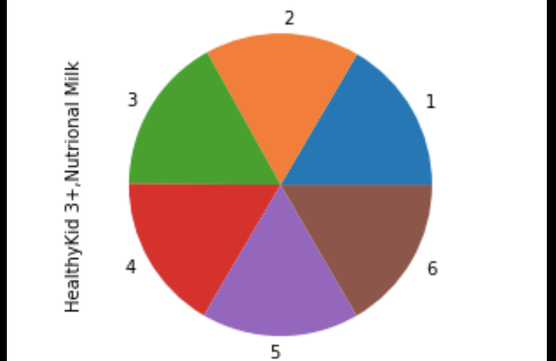
[71]: <AxesSubplot:ylabel='Exotic Extras



[68]: <AxesSubplot:ylabel='Exotic Extras,Be



2]: <AxesSubplot:ylabel='HealthyKid 3+,N



[70]: <AxesSubplot:ylabel='HealthyKid 3+

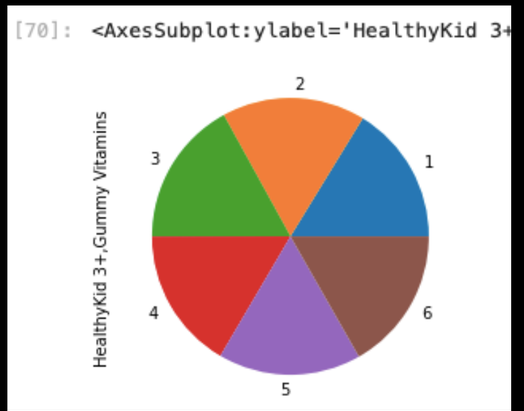


TABLE 2: TOTAL SALE VALUE PER ITEM PER MONTH

```
[36]: #Make Arrays for Computation
      #Treat them as system of equations
      #A: Beef Chicharon
      #B: Nutritional Milk
      #C: Orange Beans
      #D: Gummy Vitamins
      #E: Yummy Vegetables
      #F: Gummy Worms
      #G: Kimchi and Seaweed

      x=np.array([[4,0,0,0,0,0,0],
                  [3,4,1,0,0,0,0],
                  [0,0,0,3,2,0,0],
                  [0,0,0,0,1,0,0],
                  [0,0,3,1,0,4,0],
                  [0,1,0,0,2,0,0],
                  [0,0,0,0,0,0,4]])

[37]: print(x)

      [[4 0 0 0 0 0 0]
       [3 4 1 0 0 0 0]
       [0 0 0 3 2 0 0]
       [0 0 0 0 1 0 0]
       [0 0 3 1 0 4 0]
       [0 1 0 0 2 0 0]
       [0 0 0 0 0 0 4]]

[40]: y=np.array([5196,12056,5500,500,2697,2990,3196])

[41]: print(y)

      [ 5196 12056  5500   500  2697  2990  3196]
```

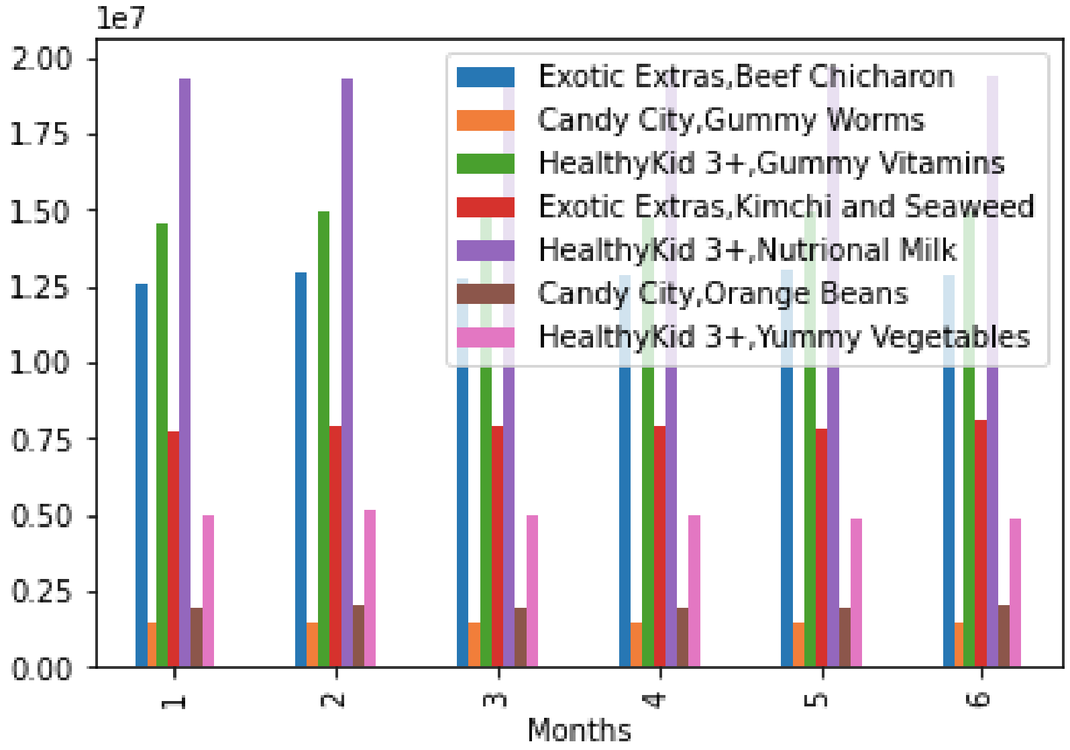
```
[41]: print(y)

      [ 5196 12056  5500   500  2697  2990  3196]

[42]: z=np.linalg.solve(x,y)

[43]: print(z)

      [1299. 1990.  199. 1500.  500.  150.  799.]
```

7]:

	sum					
month	1	2	3	4	5	6
Candy City | Gummy Worms	1433850.0	1499400.0	1497900.0	1506450.0	1470150.0	1490100.0
Candy City | Orange Beans	1945026.0	1997363.0	1912589.0	1972886.0	1982836.0	2011094.0
Exotic Extras | Beef Chicharon	12554835.0	12991299.0	12750984.0	12847110.0	13026372.0	12862698.0
Exotic Extras | Kimchi and Seaweed	7731124.0	7949251.0	7963633.0	7926879.0	7808627.0	8073096.0
HealthyKid 3+ | Gummy Vitamins	14521500.0	14970000.0	15217500.0	14763000.0	14922000.0	14970000.0
HealthyKid 3+ | Nutrional Milk	19356730.0	19285090.0	19653240.0	19474140.0	19663190.0	19436330.0
HealthyKid 3+ | Yummy Vegetables	4979500.0	5128000.0	4948000.0	4930500.0	4867500.0	4861000.0

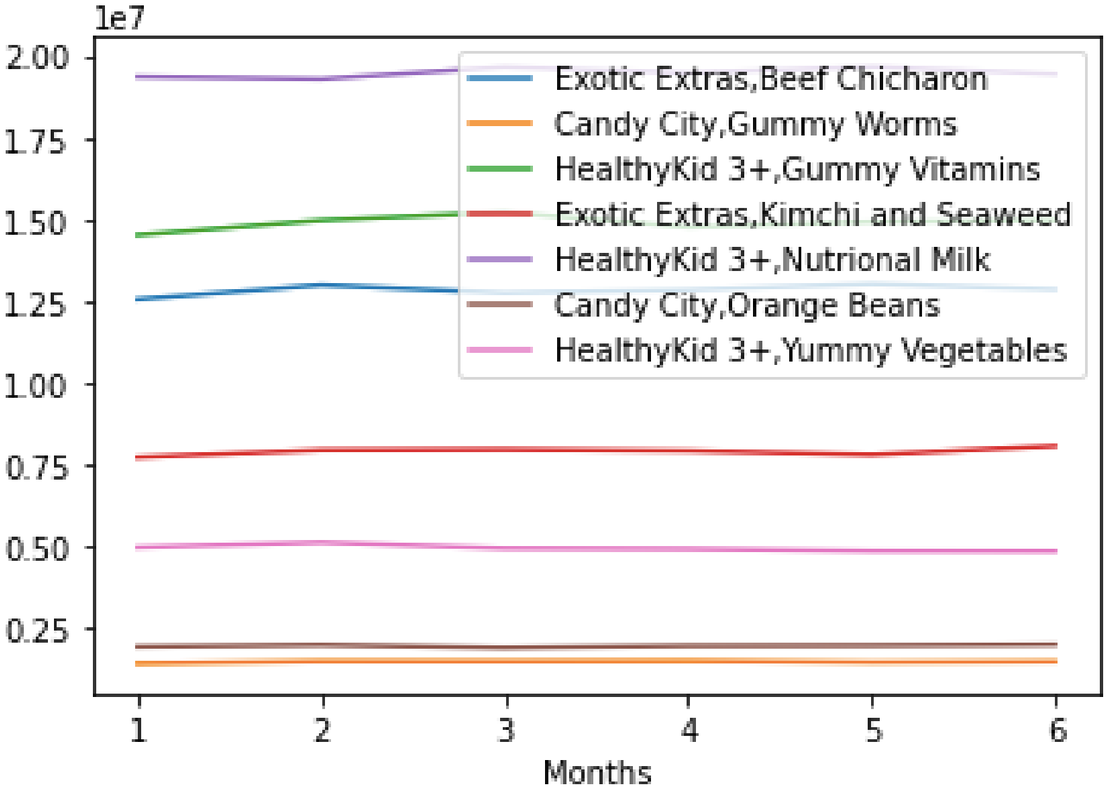
BAR GRAPH: TOTAL SALE VALUE PER ITEM PER MONTH

```
[44]: <AxesSubplot:xlabel='Months'>
```



LINE GRAPH: TOTAL SALE VALUE PER ITEM PER MONTH

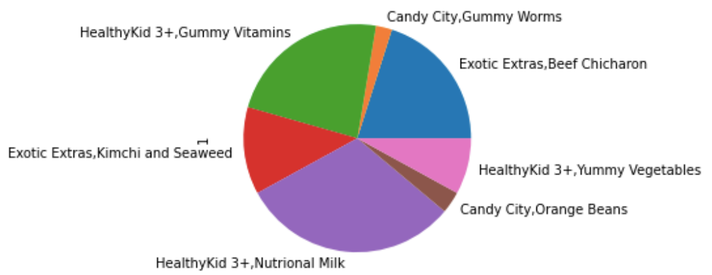
[45]: <AxesSubplot:xlabel='Months'>



PIE CHARTS: TOTAL SALE VALUE PER ITEM PER MONTH

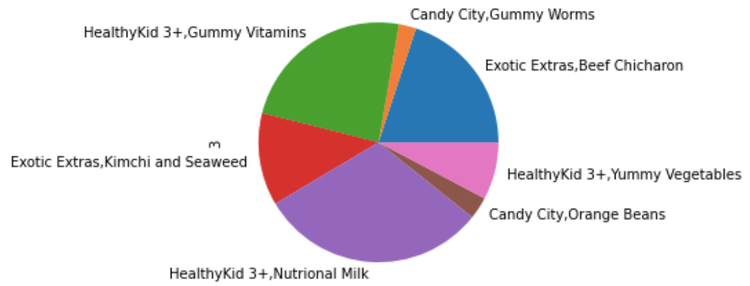
```
[57]: #Month 1
Final_Graph_df.iloc[0,:].plot(kind='pie')
```

```
[57]: <AxesSubplot:ylabel='1'>
```



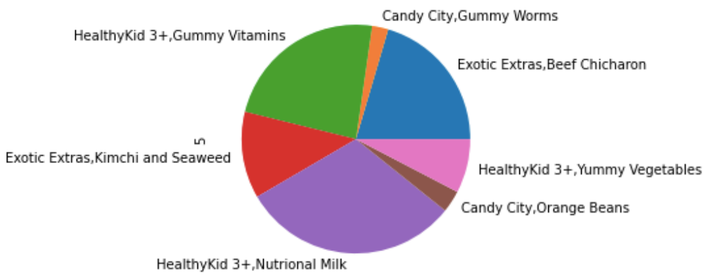

```
[48]: #Month 3
Final_Graph_df.iloc[2,:].plot(kind='pie')
```

```
[48]: <AxesSubplot:ylabel='3'>
```



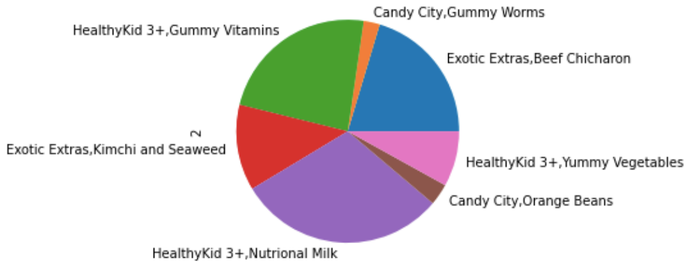

```
[50]: #Month 5
Final_Graph_df.iloc[4,:].plot(kind='pie')
```

```
[50]: <AxesSubplot:ylabel='5'>
```



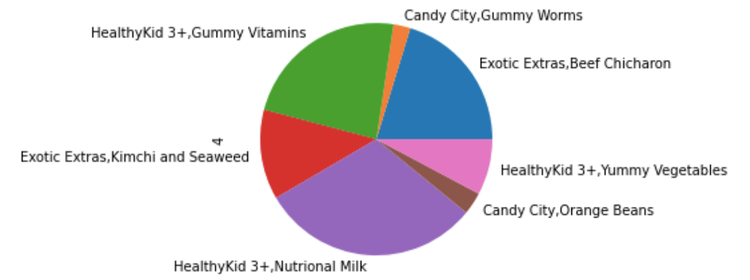

```
[47]: #Month 2
Final_Graph_df.iloc[1,:].plot(kind='pie')
```

```
[47]: <AxesSubplot:ylabel='2'>
```




```
[49]: #Month 4
Final_Graph_df.iloc[3,:].plot(kind='pie')
```

```
[49]: <AxesSubplot:ylabel='4'>
```




```
[51]: #Month 6
Final_Graph_df.iloc[5,:].plot(kind='pie')
```

```
[51]: <AxesSubplot:ylabel='6'>
```

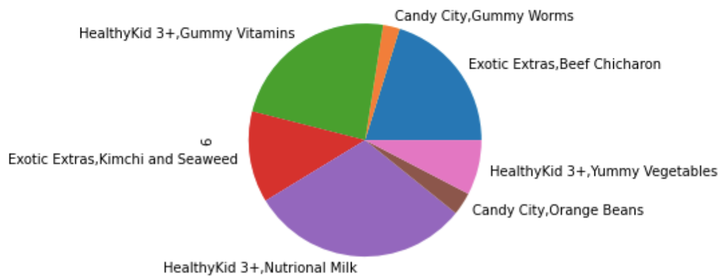


TABLE 3: REPEATER, INACTIVE, & ENGAGED

28]:

	name	transaction_date	month	First Month	Second Month	Third Month	Fourth Month	Fifth Month	Sixth Month
0	Jennifer Campbell	2022/01/12	1	True	False	False	False	False	False
1	Melissa Kim	2022/01/12	1	True	False	False	False	False	False
2	Melissa Kim	2022/01/08	1	True	False	False	False	False	False
3	Melissa Kim	2022/01/10	1	True	False	False	False	False	False
4	Kristen Cooper	2022/01/24	1	True	False	False	False	False	False
...	...	...	...	...	...	...	...	...	...
83031	Tammy Byrd	2022/06/05	6	False	False	False	False	False	True
83032	Donald Andersen	2022/06/12	6	False	False	False	False	False	True
83033	Donald Andersen	2022/06/15	6	False	False	False	False	False	True
83034	Donald Andersen	2022/06/09	6	False	False	False	False	False	True
83035	Stephanie Russell	2022/06/03	6	False	False	False	False	False	True

2]:

month	name	month 1	month 2	month 3	month 4	month 5	month 6
0	Aaron Beasley	0.0	0.0	0.0	2.0	2.0	1.0
1	Aaron Brewer	1.0	1.0	1.0	2.0	0.0	2.0
2	Aaron Brown	0.0	0.0	3.0	2.0	1.0	1.0
3	Aaron Coffey	1.0	2.0	2.0	2.0	2.0	0.0
4	Aaron Davis	1.0	1.0	0.0	3.0	3.0	2.0
...	...	...	...	...	...	...	...
8482	Zachary Valentine	1.0	1.0	1.0	1.0	2.0	3.0
8483	Zachary Ware	1.0	2.0	3.0	1.0	3.0	2.0
8484	Zachary Williams	4.0	4.0	4.0	4.0	0.0	0.0
8485	Zachary Wilson	0.0	0.0	0.0	1.0	2.0	2.0
8486	Zachary York	2.0	2.0	1.0	3.0	3.0	1.0

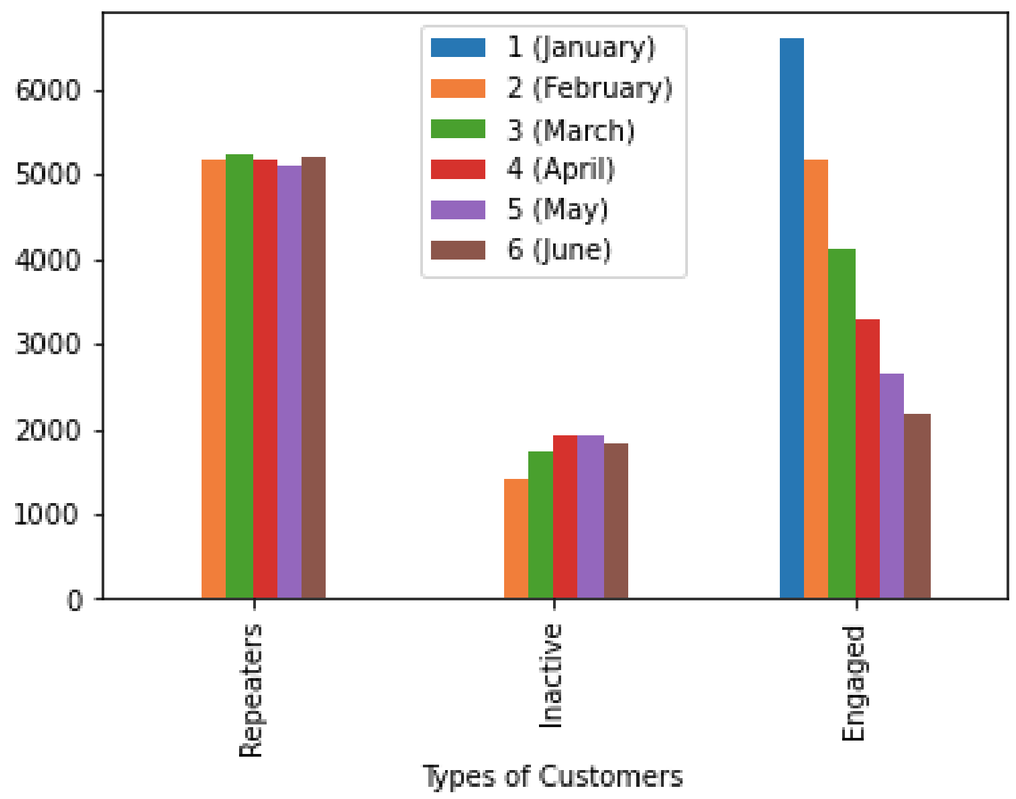
8487 rows × 7 columns

3]:

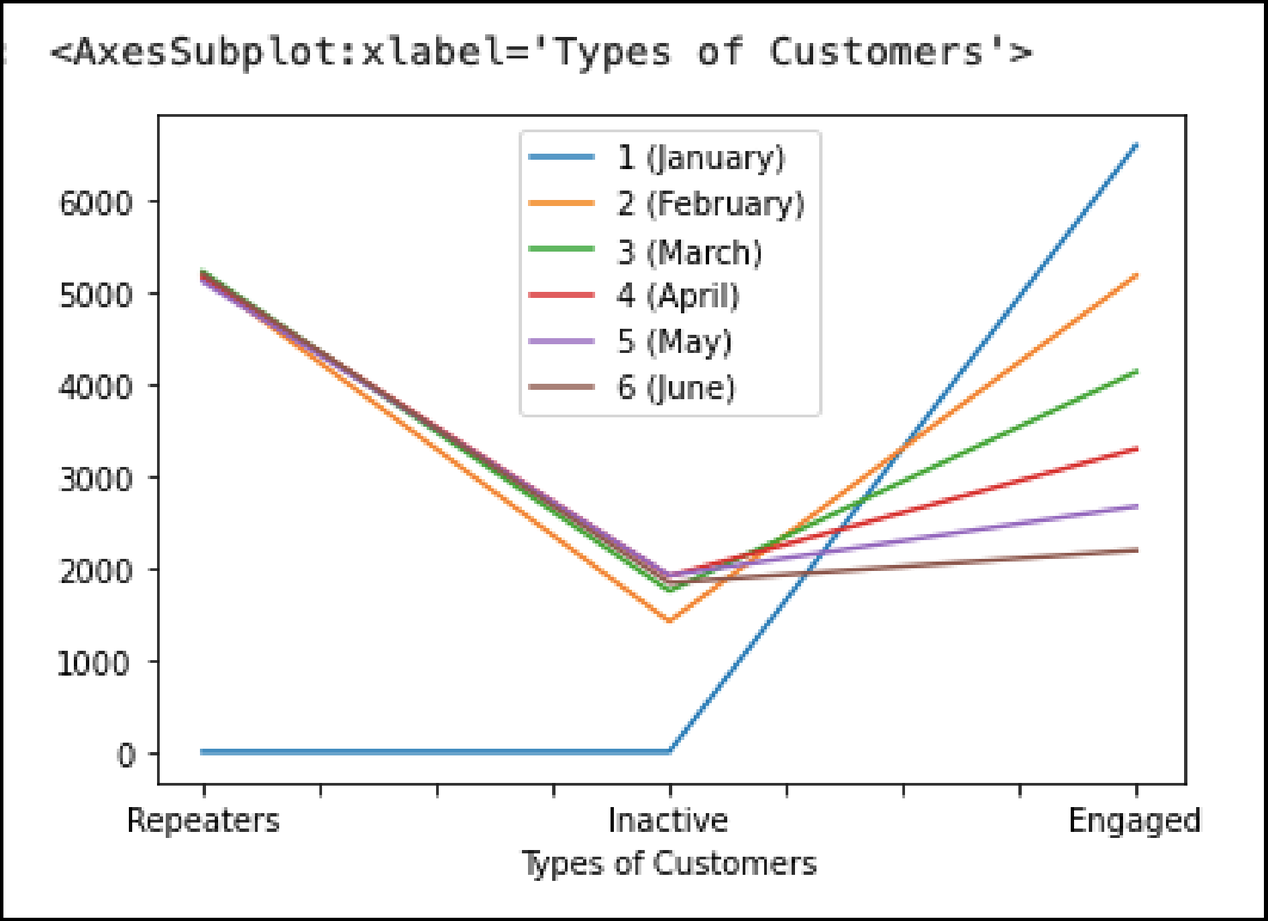
Types of Customers	1 (January)	2 (February)	3 (March)	4 (April)	5 (May)	6 (June)
Repeaters	0	5172	5216	5154	5110	5193
Inactive	0	1416	1747	1909	1917	1835
Engaged	6588	5172	4126	3289	2667	2190

Bar Graph: Repeater, Inactive, & Engaged

64]: <AxesSubplot:xlabel='Types of Customers'>



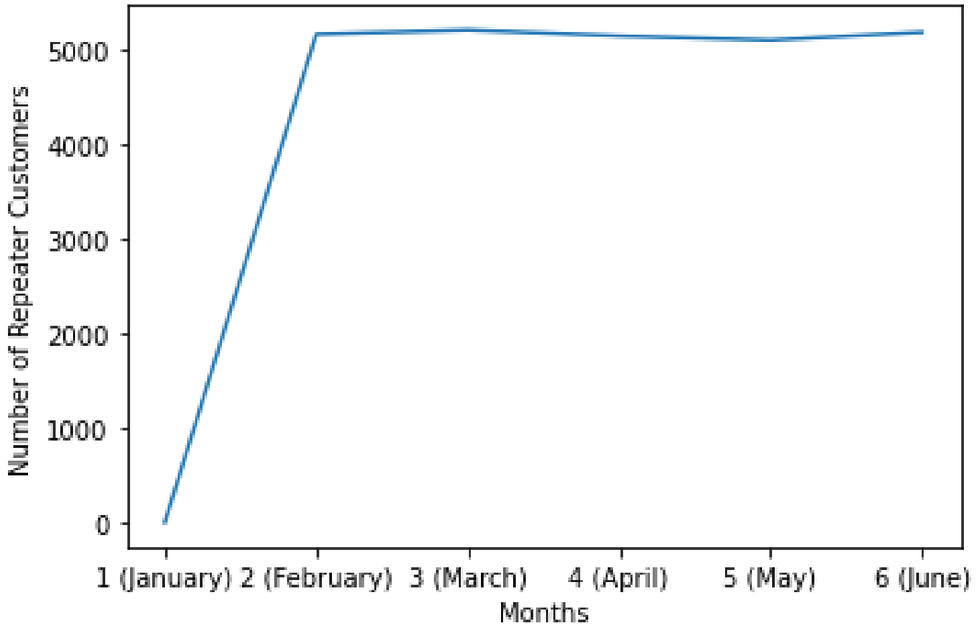
LINE GRAPH: REPEATER, INACTIVE, & ENGAGED



LINE GRAPH: REPEATERS PER MONTH

```
[89]: #Repeaters
      CustomerTypte_df.iloc[0,:].plot(kind='line',xlabel='Months',ylabel='Number of Repeater Customers')
```

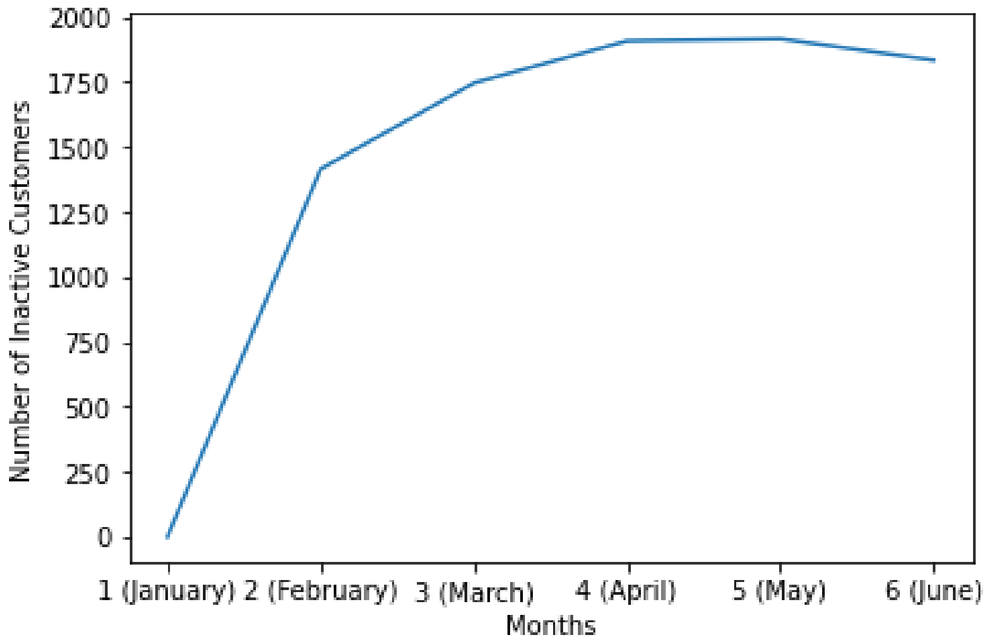
```
[89]: <AxesSubplot:xlabel='Months', ylabel='Number of Repeater Customers'>
```



LINE GRAPH: INACTIVE PER MONTH

```
[88]: #Inactive
      CustomerTypte_df.iloc[1,:].plot(kind='line',xlabel='Months',ylabel='Number of Inactive Customers')
```

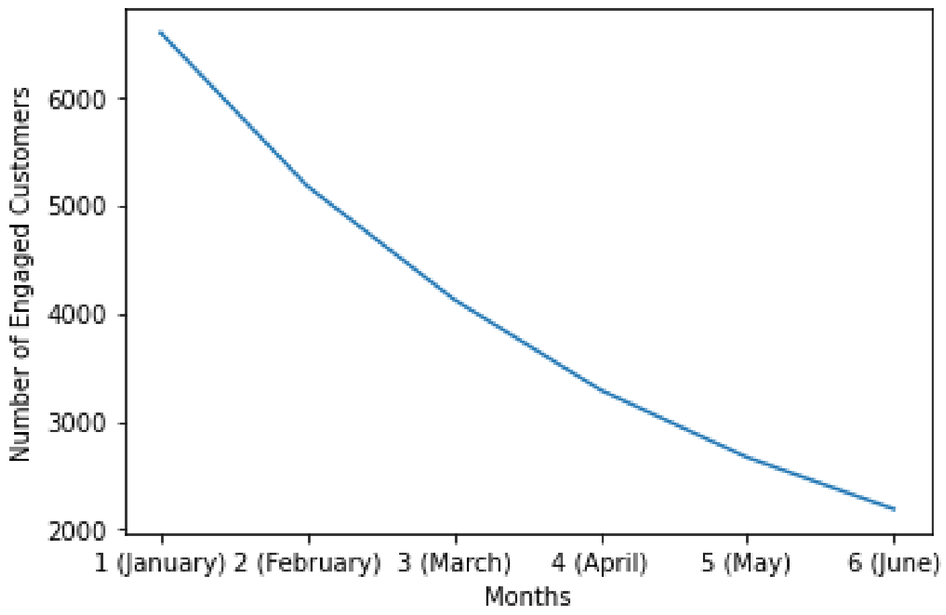
```
[88]: <AxesSubplot:xlabel='Months', ylabel='Number of Inactive Customers'>
```



LINE GRAPH: ENGAGED PER MONTH

```
[ ]: #Engaged
     CustomerTypte_df.iloc[2,:].plot(kind='line',xlabel='Months',ylabel='Number of Engaged Customers')
```

```
[ ]: <AxesSubplot:xlabel='Months', ylabel='Number of Engaged Customers'>
```



EXTRA TABLES: SEX, GENERATION, NUMBER OF TRANSACTIONS PER MONTH

6]:

Sex of Customers	Male	Female
Count	41863	41173

[52]:

Month	January	February	March	April	May	June
Count	13688	13972	13902	13779	13864	13831

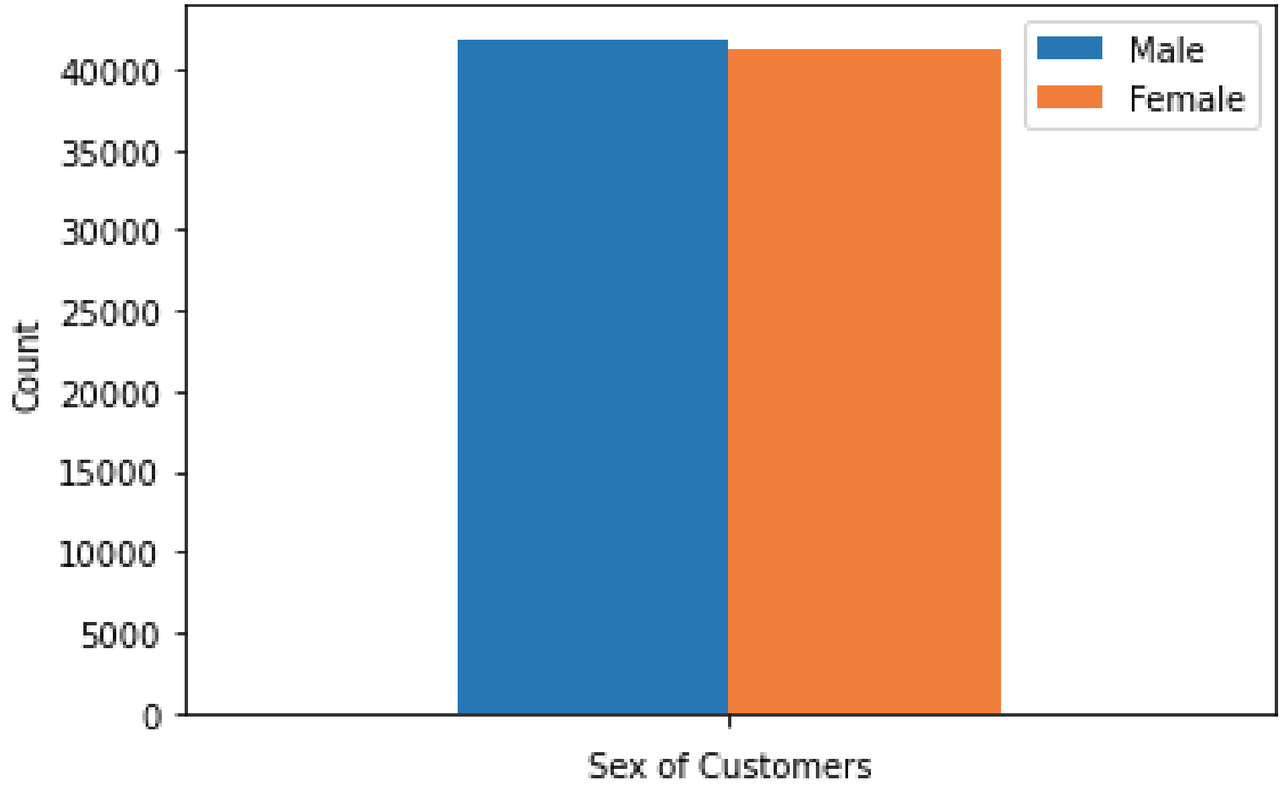
```
Generation_df
```

]:

Generation	Interbellum Generation	Boomer Generation	Generation X	Xennials	Millenials	Generation Z	Generation Alpha
Count	16175	12922	13142	11260	11062	11684	6791

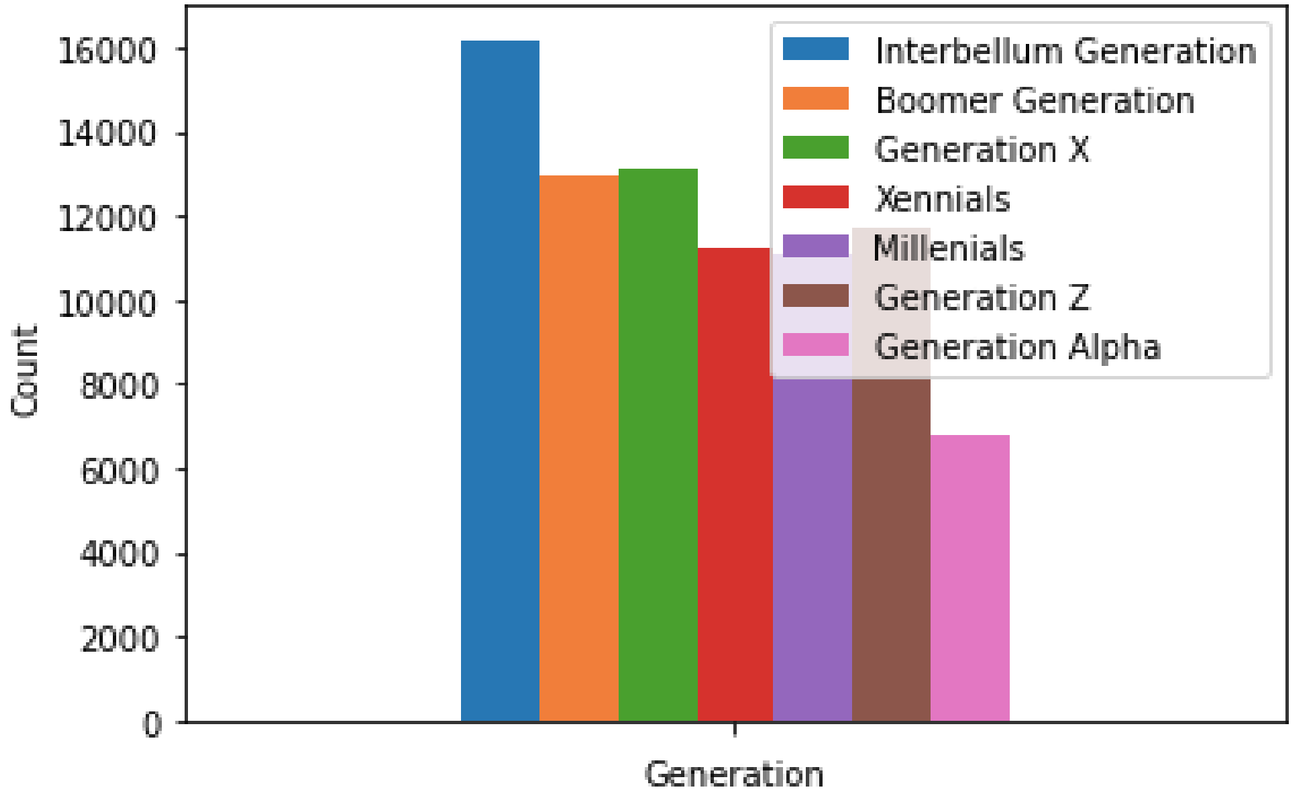
BAR GRAPH:
CUSTOMERS BASED ON SEX

```
[152]: <AxesSubplot:xlabel='Sex of Customers', ylabel='Count'>
```



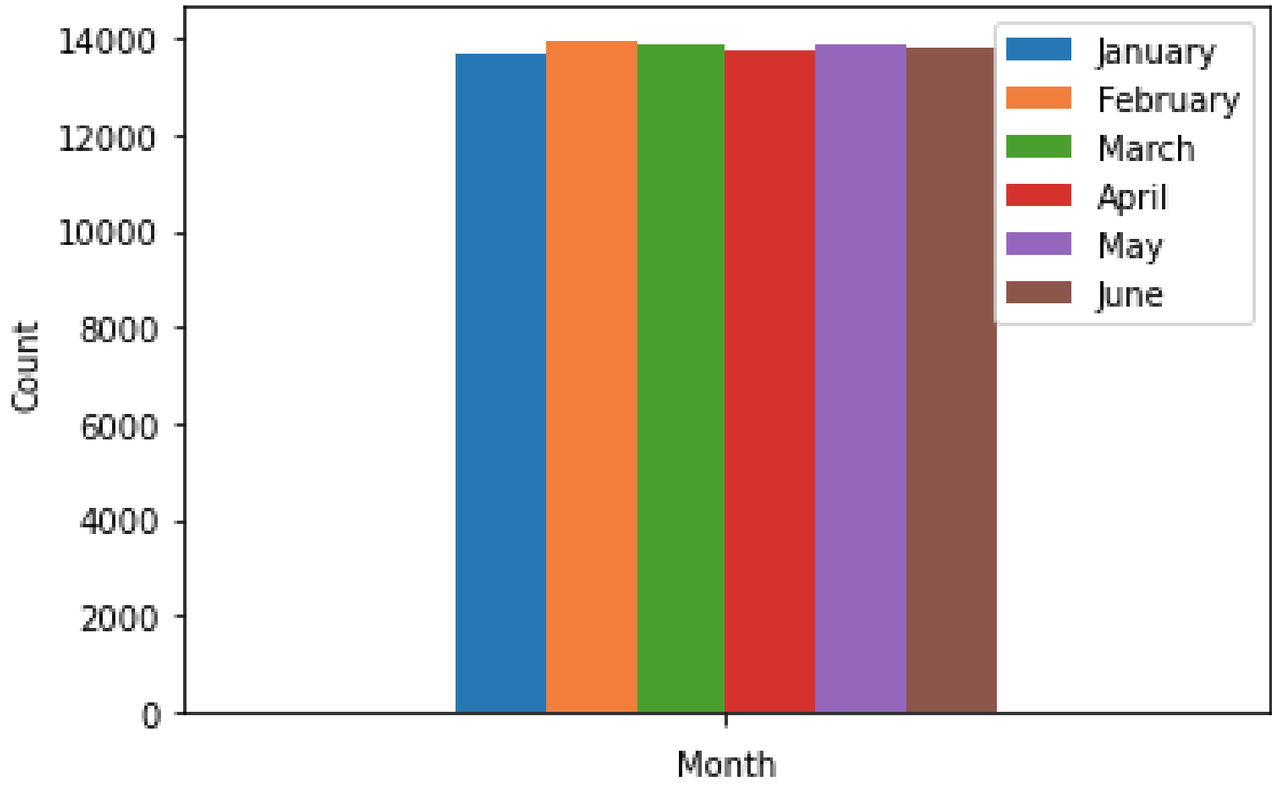
BAR GRAPH:
CUSTOMERS BASED ON GENERATION

```
[181]: <AxesSubplot:xlabel='Generation', ylabel='Count'>
```



BAR GRAPH: COUNT OF TRANSACTIONS (ORDERS) PER MONTH

```
[150]: <AxesSubplot:xlabel='Month', ylabel='Count'>
```



THANK YOU!