# Sales analyis

```
import pandas as pd
import os

df=pd.read_csv("./Sales_Data/Sales_April_2019.csv")

df.head()
```

```
  Order ID                     Product Quantity Ordered Price Each  \
0   176558        USB-C Charging Cable                2      11.95
1      NaN                         NaN              NaN        NaN
2   176559  Bose SoundSport Headphones                1      99.99
3   176560                Google Phone                1        600
4   176560            Wired Headphones                1      11.99

       Order Date                        Purchase Address
0  04/19/19 08:46          917 1st St, Dallas, TX 75001
1             NaN                                   NaN
2  04/07/19 22:30     682 Chestnut St, Boston, MA 02215
3  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001
4  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001
```

```
path = "./Sales_Data"
files = [file for file in os.listdir(path) if not
file.startswith('.')] # Ignore hidden files

all_months_data = pd.DataFrame()

for file in files:
    current_data = pd.read_csv(path+"/"+file)
    all_months_data = pd.concat([all_months_data, current_data])

all_months_data.to_csv("all_data.csv", index=False)


all_data = pd.read_csv("all_data.csv")
all_data.head()
```

```
  Order ID                     Product Quantity Ordered Price Each  \
0   176558        USB-C Charging Cable                2      11.95
1      NaN                         NaN              NaN        NaN
2   176559  Bose SoundSport Headphones                1      99.99
3   176560                Google Phone                1        600
4   176560            Wired Headphones                1      11.99

       Order Date                        Purchase Address
0  04/19/19 08:46          917 1st St, Dallas, TX 75001
1             NaN                                   NaN
```

```
2  04/07/19 22:30     682 Chestnut St, Boston, MA 02215
3  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001
4  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001
```

## Clean up the data

```
# Find NAN
nan_df = all_data[all_data.isna().any(axis=1)]
display(nan_df.head())

all_data = all_data.dropna(how='all')
all_data.head()
```

```
     Order ID Product Quantity Ordered Price Each Order Date Purchase
Address
1         NaN     NaN              NaN        NaN        NaN
NaN
356       NaN     NaN              NaN        NaN        NaN
NaN
735       NaN     NaN              NaN        NaN        NaN
NaN
1433      NaN     NaN              NaN        NaN        NaN
NaN
1553      NaN     NaN              NaN        NaN        NaN
NaN

  Order ID                     Product Quantity Ordered Price Each  \
0   176558        USB-C Charging Cable                2      11.95
2   176559  Bose SoundSport Headphones                1      99.99
3   176560                Google Phone                1        600
4   176560            Wired Headphones                1      11.99
5   176561            Wired Headphones                1      11.99

       Order Date                      Purchase Address
0  04/19/19 08:46          917 1st St, Dallas, TX 75001
2  04/07/19 22:30     682 Chestnut St, Boston, MA 02215
3  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001
4  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001
5  04/30/19 09:27     333 8th St, Los Angeles, CA 90001
```

```
all_data = all_data[all_data['Order Date'].str[0:2]!='Or']

all_data['Quantity Ordered'] = pd.to_numeric(all_data['Quantity
Ordered'])
all_data['Price Each'] = pd.to_numeric(all_data['Price Each'])
```

## Augment data with additional columns

```
all_data['Month'] = all_data['Order Date'].str[0:2]
all_data['Month'] = all_data['Month'].astype('int32')
all_data.head()
```

```
  Order ID                     Product  Quantity Ordered  Price
Each  \
0   176558        USB-C Charging Cable                 2       11.95

2   176559  Bose SoundSport Headphones                 1       99.99

3   176560                Google Phone                 1      600.00

4   176560            Wired Headphones                 1       11.99

5   176561            Wired Headphones                 1       11.99


       Order Date                       Purchase Address  Month
0  04/19/19 08:46          917 1st St, Dallas, TX 75001      4
2  04/07/19 22:30     682 Chestnut St, Boston, MA 02215      4
3  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001      4
4  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001      4
5  04/30/19 09:27     333 8th St, Los Angeles, CA 90001      4
```

```
all_data['Sales'] = all_data['Quantity Ordered'].astype('int') *
all_data['Price Each'].astype('float')
all_data.head()
```

```
  Order ID                     Product  Quantity Ordered  Price
Each  \
0   176558        USB-C Charging Cable                 2       11.95

2   176559  Bose SoundSport Headphones                 1       99.99

3   176560                Google Phone                 1      600.00

4   176560            Wired Headphones                 1       11.99

5   176561            Wired Headphones                 1       11.99


       Order Date                       Purchase Address  Month   Sales

0  04/19/19 08:46          917 1st St, Dallas, TX 75001      4   23.90

2  04/07/19 22:30     682 Chestnut St, Boston, MA 02215      4   99.99

3  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001      4  600.00

4  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001      4   11.99
```

```
5  04/30/19 09:27     333 8th St, Los Angeles, CA 90001      4   11.99
```

Add city column

```
def get_city(address):
    return address.split(",")[1].strip(" ")

def get_state(address):
    return address.split(",")[2].split(" ")[1]

all_data['City'] = all_data['Purchase Address'].apply(lambda x:
f"{get_city(x)}  ({get_state(x)})")
all_data.head()
```

```
  Order ID                     Product  Quantity Ordered  Price
Each  \
0   176558        USB-C Charging Cable                 2       11.95

2   176559  Bose SoundSport Headphones                 1       99.99

3   176560                Google Phone                 1      600.00

4   176560            Wired Headphones                 1       11.99

5   176561            Wired Headphones                 1       11.99


       Order Date                      Purchase Address  Month   Sales
\
0  04/19/19 08:46          917 1st St, Dallas, TX 75001      4   23.90

2  04/07/19 22:30     682 Chestnut St, Boston, MA 02215      4   99.99

3  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001      4  600.00

4  04/12/19 14:38  669 Spruce St, Los Angeles, CA 90001      4   11.99

5  04/30/19 09:27     333 8th St, Los Angeles, CA 90001      4   11.99


                City
0       Dallas  (TX)
2       Boston  (MA)
3  Los Angeles  (CA)
4  Los Angeles  (CA)
5  Los Angeles  (CA)
```

# Data Exploration

Question 1: What was the best month for sales? How much was earned that month?

```
all_data.groupby('Month').sum()
```

```
                                                    Order ID  \
Month
1      297150297817297817297969298344299049299125300 3...
2      150502150503150504150505150506150507150508150 5...
3      150533150541150812151749152036153284153544153 8...
4      176558176559176560176560176561176562176563176 5...
5      176978177551177778177778179076179076179134180 0...
6      209921209922209923209924209925209926209927209 9...
7      222910222911222912222913222914222915222916222 9...
8      236670236671236672236673236674236675236676236 6...
9      238834239285240636241054242343242865243667244 9...
10     259358259359259360259361259362259363259364259 3...
11     278797278798278799278800278801278802278803278 8...
12     295665295666295667295668295669295670295671295 6...

                                                     Product  Quantity
Ordered  \
Month

1      Lightning Charging CableiPhoneLightning Chargi...
10903
2      iPhoneAA Batteries (4-pack)27in 4K Gaming Moni...
13449
3      AAA Batteries (4-pack)AAA Batteries (4-pack)Wi...
17005
4      USB-C Charging CableBose SoundSport Headphones...
20558
5      Apple Airpods Headphones27in FHD MonitoriPhone...
18667
6      USB-C Charging CableMacbook Pro LaptopThinkPad...
15253
7      Apple Airpods HeadphonesFlatscreen TVAA Batter...
16072
8      Wired HeadphonesBose SoundSport HeadphonesiPho...
13448
9      Apple Airpods Headphones34in Ultrawide Monitor...
13109
10     34in Ultrawide Monitor27in 4K Gaming MonitorAA...
22703
11     Wired HeadphonesUSB-C Charging CableApple Airp...
19798
12     Macbook Pro LaptopLG Washing MachineUSB-C Char...
28114
```

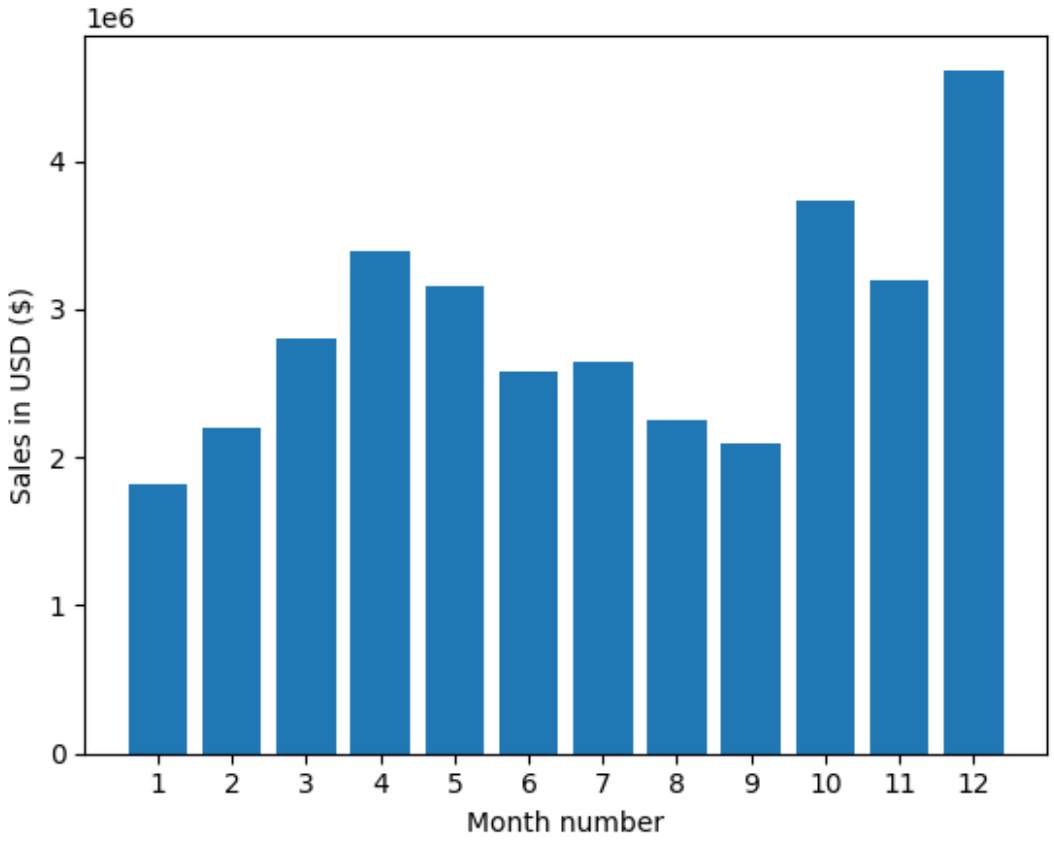
```
       Price Each                                                Order
Date  \
Month

1      1811768.38  01/01/20 00:3801/01/20 00:2201/01/20 00:2201/0...

2      2188884.72  02/18/19 01:3502/13/19 07:2402/18/19 09:4602/0...

3      2791207.83  03/01/19 03:0603/01/19 01:0303/01/19 02:1803/0...

4      3367671.02  04/19/19 08:4604/07/19 22:3004/12/19 14:3804/1...

5      3135125.13  05/01/19 03:2905/01/19 00:1305/01/19 00:4805/0...

6      2562025.61  06/23/19 19:3406/30/19 10:0506/24/19 20:1806/0...

7      2632539.56  07/26/19 16:5107/05/19 08:5507/29/19 12:4107/2...

8      2230345.42  08/31/19 22:2108/15/19 15:1108/06/19 14:4008/2...

9      2084992.09  09/01/19 04:1309/01/19 01:0909/01/19 02:0709/0...

10     3715554.83  10/28/19 10:5610/28/19 17:2610/24/19 17:2010/1...

11     3180600.68  11/21/19 09:5411/17/19 10:0311/19/19 14:5611/2...

12     4588415.41  12/30/19 00:0112/29/19 07:0312/12/19 18:2112/2...


                                          Purchase Address
Sales  \
Month

1      427 Wilson St, Dallas, TX 75001519 13th St, Ne...  1822256.73

2      866 Spruce St, Portland, ME 0410118 13th St, S...  2202022.42

3      270 Dogwood St, San Francisco, CA 94016683 Ada...  2807100.38

4      917 1st St, Dallas, TX 75001682 Chestnut St, B...  3390670.24

5      589 Lake St, Portland, OR 97035615 Lincoln St,...  3152606.75

6      950 Walnut St, Portland, ME 0410180 4th St, Sa...  2577802.26

7      389 South St, Atlanta, GA 30301590 4th St, Sea...  2647775.76

8      359 Spruce St, Seattle, WA 98101492 Ridge St, ...  2244467.88

9      761 Forest St, San Francisco, CA 94016373 1st ...  2097560.13
```

```
10     609 Cherry St, Dallas, TX 75001225 5th St, Los...  3736726.88

11     46 Park St, New York City, NY 10001962 Hickory...  3199603.20

12     136 Church St, New York City, NY 10001562 2nd ...  4613443.34
```

```
                                                    City
Month
1      Dallas  (TX)New York City  (NY)New York City  ...
2      Portland  (ME)San Francisco  (CA)New York City...
3      San Francisco  (CA)Portland  (OR)San Francisco...
4      Dallas  (TX)Boston  (MA)Los Angeles  (CA)Los A...
5      Portland  (OR)San Francisco  (CA)Boston  (MA)B...
6      Portland  (ME)San Francisco  (CA)Los Angeles  ...
7      Atlanta  (GA)Seattle  (WA)Atlanta  (GA)Atlanta...
8      Seattle  (WA)Dallas  (TX)Portland  (OR)Los Ang...
9      San Francisco  (CA)San Francisco  (CA)Seattle ...
10     Dallas  (TX)Los Angeles  (CA)New York City  (N...
11     New York City  (NY)Austin  (TX)Los Angeles  (C...
12     New York City  (NY)New York City  (NY)New York...
```

```
import matplotlib.pyplot as plt

months = range(1,13)
print(months)

plt.bar(months,all_data.groupby(['Month']).sum()['Sales'])
plt.xticks(months)
plt.ylabel('Sales in USD ($)')
plt.xlabel('Month number')
plt.show()
```

```
range(1, 13)
```




Question 2: What city sold the most product?

```
all_data.groupby(['City']).sum()
```

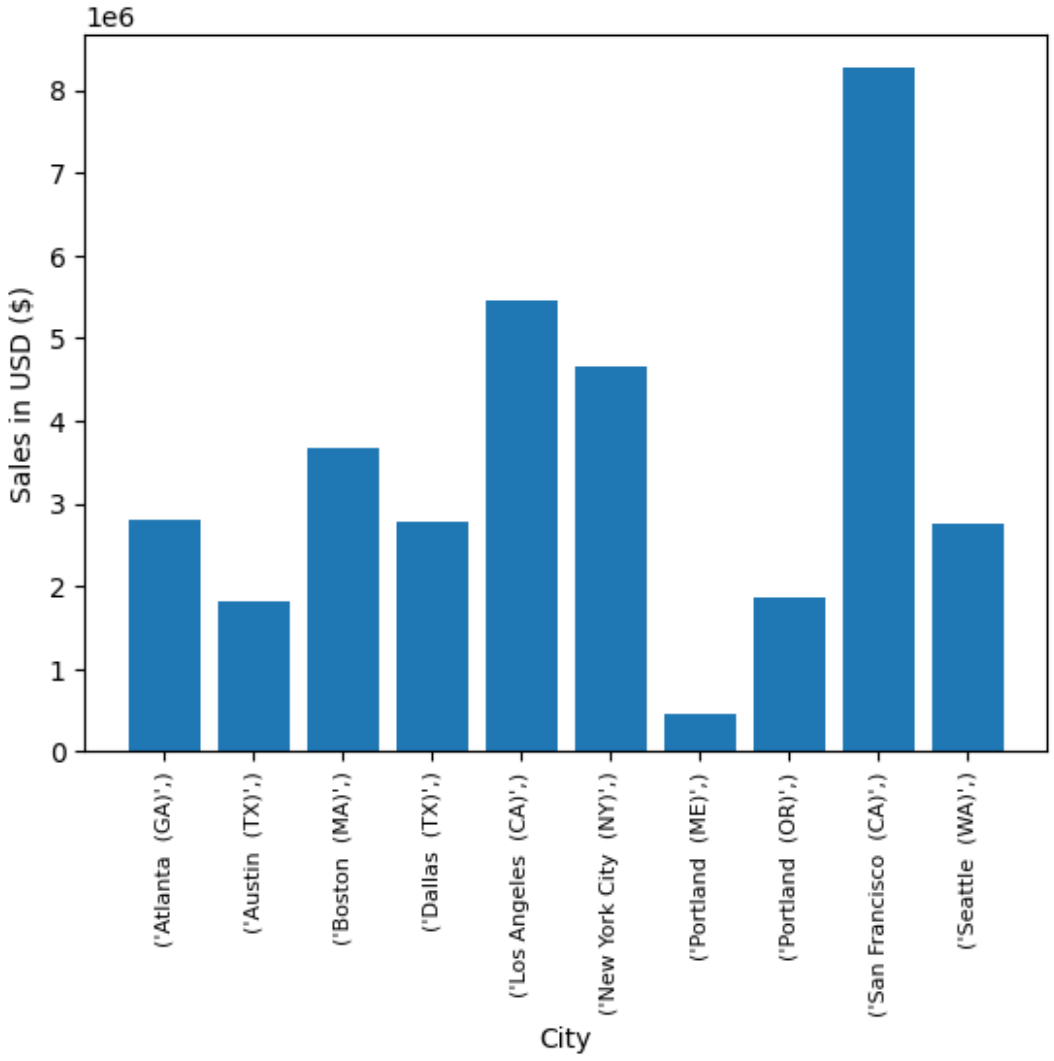
```
                                                    Order ID
\
City
Atlanta  (GA)         176564176571176582176589176623176627176634176...
Austin  (TX)          176591176609176674176677176686176701176705176...
Boston  (MA)          176559176566176578176581176585176585176600176...
Dallas  (TX)          176558176569176570176577176596176602176610176...
Los Angeles  (CA)     176560176560176561176567176574176574176576176...
New York City  (NY)   176572176575176579176590176599176613176637176...
Portland  (ME)        176773176879176909177072177230177233177299177...
Portland  (OR)        176583176593176617176642176646176648176662176...
San Francisco  (CA)   176562176565176573176584176586176586176594176...
```

```
Seattle  (WA)         176563176568176588176612176624176654176663176 6...


                                                                  Product
\
City

Atlanta  (GA)         USB-C Charging CableLightning Charging CableBo...

Austin  (TX)          Apple Airpods HeadphonesApple Airpods Headphon...

Boston  (MA)          Bose SoundSport HeadphonesWired HeadphonesAppl...

Dallas  (TX)          USB-C Charging Cable27in 4K Gaming MonitorAA B...

Los Angeles  (CA)     Google PhoneWired HeadphonesWired HeadphonesGo...

New York City  (NY)   Apple Airpods HeadphonesAAA Batteries (4-pack)...

Portland  (ME)        AAA Batteries (4-pack)Flatscreen TVWired Headp...

Portland  (OR)        AAA Batteries (4-pack)Lightning Charging Cable...

San Francisco  (CA)   USB-C Charging CableMacbook Pro LaptopUSB-C Ch...

Seattle  (WA)         Bose SoundSport HeadphonesLightning Charging C...


                      Quantity Ordered  Price Each  \
City
Atlanta  (GA)                    16602  2779908.20
Austin  (TX)                     11153  1809873.61
Boston  (MA)                     22528  3637409.77
Dallas  (TX)                     16730  2752627.82
Los Angeles  (CA)                33289  5421435.23
New York City  (NY)              27932  4635370.83
Portland  (ME)                    2750   447189.25
Portland  (OR)                   11303  1860558.22
San Francisco  (CA)              50239  8211461.74
Seattle  (WA)                    16553  2733296.01

                                                              Order Date
\
City

Atlanta  (GA)         04/12/19 10:5804/19/19 14:2904/27/19 12:2004/0...

Austin  (TX)          04/21/19 07:2104/11/19 16:5904/20/19 20:5304/0...

Boston  (MA)          04/07/19 22:3004/08/19 14:0504/09/19 23:3504/0...
```

```
Dallas  (TX)          04/19/19 08:4604/16/19 19:2304/22/19 15:0904/0...
Los Angeles  (CA)     04/12/19 14:3804/12/19 14:3804/30/19 09:2704/1...
New York City  (NY)   04/04/19 20:3004/27/19 00:3004/11/19 10:2304/1...
Portland  (ME)        04/25/19 20:0704/13/19 14:1504/22/19 09:5304/0...
Portland  (OR)        04/20/19 12:0004/15/19 13:4504/25/19 08:0304/1...
San Francisco  (CA)   04/29/19 13:0304/24/19 10:3804/27/19 18:4104/2...
Seattle  (WA)         04/02/19 07:4604/15/19 12:1804/02/19 04:0004/0...

                                                      Purchase Address
\
City
Atlanta  (GA)         790 Ridge St, Atlanta, GA 30301253 Johnson St,...
Austin  (TX)          600 Maple St, Austin, TX 73301267 11th St, Aus...
Boston  (MA)          682 Chestnut St, Boston, MA 0221583 7th St, Bo...
Dallas  (TX)          917 1st St, Dallas, TX 75001657 Hill St, Dalla...
Los Angeles  (CA)     669 Spruce St, Los Angeles, CA 90001669 Spruce...
New York City  (NY)   149 Dogwood St, New York City, NY 10001433 Hil...
Portland  (ME)        30 9th St, Portland, ME 04101370 Sunset St, Po...
Portland  (OR)        146 Jackson St, Portland, OR 97035906 7th St, ...
San Francisco  (CA)   381 Wilson St, San Francisco, CA 94016915 Will...
Seattle  (WA)         668 Center St, Seattle, WA 98101438 Elm St, Se...

                       Month       Sales
City
Atlanta  (GA)         104794  2795498.58
Austin  (TX)           69829  1819581.75
Boston  (MA)          141112  3661642.01
Dallas  (TX)          104620  2767975.40
Los Angeles  (CA)     208325  5452570.80
New York City  (NY)   175741  4664317.43
Portland  (ME)         17144   449758.27
Portland  (OR)         70621  1870732.34
```

```
San Francisco  (CA)  315520  8262203.91
Seattle  (WA)        104941  2747755.48
```

```
import matplotlib.pyplot as plt

# Assuming 'City' is a column in your DataFrame
keys = [str(city) for city, df in all_data.groupby(['City'])]

plt.bar(keys, all_data.groupby(['City']).sum()['Sales'])
plt.ylabel('Sales in USD ($)')
plt.xlabel('City')
plt.xticks(keys, rotation='vertical', size=8)
plt.show()
```



Question 3: What time should we display advertisements to maximize likelihood of customer's buying product?

```
all_data['Order Date']=pd.to_datetime(all_data['Order Date'])

all_data.head()
```

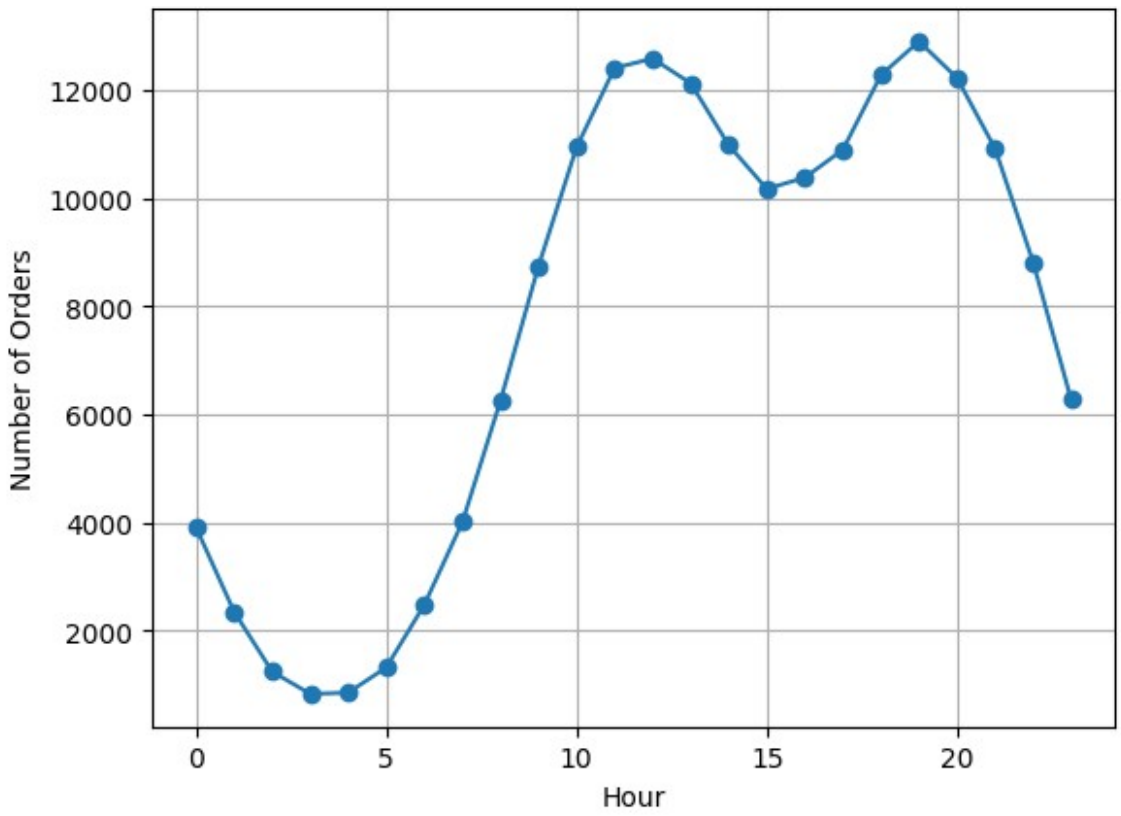
```
  Order ID                     Product  Quantity Ordered  Price
Each  \
0   176558        USB-C Charging Cable                 2       11.95

2   176559  Bose SoundSport Headphones                 1       99.99

3   176560                Google Phone                 1      600.00

4   176560            Wired Headphones                 1       11.99

5   176561            Wired Headphones                 1       11.99


           Order Date                      Purchase Address  Month
Sales  \
0 2019-04-19 08:46:00          917 1st St, Dallas, TX 75001      4
23.90
2 2019-04-07 22:30:00     682 Chestnut St, Boston, MA 02215      4
99.99
3 2019-04-12 14:38:00  669 Spruce St, Los Angeles, CA 90001      4
600.00
4 2019-04-12 14:38:00  669 Spruce St, Los Angeles, CA 90001      4
11.99
5 2019-04-30 09:27:00     333 8th St, Los Angeles, CA 90001      4
11.99

                City
0       Dallas  (TX)
2       Boston  (MA)
3  Los Angeles  (CA)
4  Los Angeles  (CA)
5  Los Angeles  (CA)
```

```
all_data['Hour'] = pd.to_datetime(all_data['Order Date']).dt.hour
all_data['Minute'] = pd.to_datetime(all_data['Order Date']).dt.minute
all_data['Count'] = 1
all_data.head()
```

```
  Order ID                     Product  Quantity Ordered  Price
Each  \
0   176558        USB-C Charging Cable                 2       11.95

2   176559  Bose SoundSport Headphones                 1       99.99

3   176560                Google Phone                 1      600.00
```

```
4   176560            Wired Headphones                  1       11.99

5   176561            Wired Headphones                  1       11.99


           Order Date                       Purchase Address  Month
Sales  \
0 2019-04-19 08:46:00          917 1st St, Dallas, TX 75001      4
23.90
2 2019-04-07 22:30:00     682 Chestnut St, Boston, MA 02215      4
99.99
3 2019-04-12 14:38:00  669 Spruce St, Los Angeles, CA 90001      4
600.00
4 2019-04-12 14:38:00  669 Spruce St, Los Angeles, CA 90001      4
11.99
5 2019-04-30 09:27:00     333 8th St, Los Angeles, CA 90001      4
11.99

                 City  Hour  Minute  Count
0       Dallas  (TX)     8      46      1
2       Boston  (MA)    22      30      1
3  Los Angeles  (CA)    14      38      1
4  Los Angeles  (CA)    14      38      1
5  Los Angeles  (CA)     9      27      1
```

```
keys = [hour for hour, df in all_data.groupby(['Hour'])]
order_counts = all_data.groupby(['Hour']).count()['Count']

plt.plot(keys, order_counts, marker='o')
plt.xlabel('Hour')
plt.ylabel('Number of Orders')

plt.grid(True)
plt.show()
```




Question 4: What products are most often sold together?

```
df = all_data[all_data['Order ID'].duplicated(keep=False)]


df['Grouped'] = df.groupby('Order ID')['Product'].transform(lambda x:
','.join(x))
df2 = df[['Order ID', 'Grouped']].drop_duplicates()
df.head(100)

C:\Users\Admin\AppData\Local\Temp\ipykernel_1816\3338499488.py:4:
SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation:
https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#
returning-a-view-versus-a-copy
  df['Grouped'] = df.groupby('Order ID')['Product'].transform(lambda
x: ','.join(x))

     Order ID                     Product  Quantity Ordered  Price
Each  \
3      176560                  Google Phone                 1
600.00
4      176560             Wired Headphones                 1
```

```
11.99
18     176574                Google Phone                   1
600.00
19     176574        USB-C Charging Cable                   1
11.95
30     176585  Bose SoundSport Headphones                   1
99.99
...       ...                         ...                ...          ..
.
1077   177582  Bose SoundSport Headphones                   1
99.99
1078   177582            Wired Headphones                   1
11.99
1088   177592                      iPhone                   1
700.00
1089   177592    Lightning Charging Cable                   2
14.95
1135   177638    Apple Airpods Headphones                   1
150.00

              Order Date                       Purchase Address  Month
\
3    2019-04-12 14:38:00   669 Spruce St, Los Angeles, CA 90001      4

4    2019-04-12 14:38:00   669 Spruce St, Los Angeles, CA 90001      4

18   2019-04-03 19:42:00      20 Hill St, Los Angeles, CA 90001      4

19   2019-04-03 19:42:00      20 Hill St, Los Angeles, CA 90001      4

30   2019-04-07 11:31:00      823 Highland St, Boston, MA 02215      4

...                  ...                                     ...    ...

1077 2019-04-16 17:19:00           707 9th St, Dallas, TX 75001      4

1078 2019-04-16 17:19:00           707 9th St, Dallas, TX 75001      4

1088 2019-04-19 11:10:00  448 Maple St, San Francisco, CA 94016      4

1089 2019-04-19 11:10:00  448 Maple St, San Francisco, CA 94016      4

1135 2019-04-04 12:44:00      261 Center St, Portland, OR 97035      4


       Sales                 City  Hour  Minute  Count  \
3     600.00    Los Angeles  (CA)    14      38      1
4      11.99    Los Angeles  (CA)    14      38      1
18    600.00    Los Angeles  (CA)    19      42      1
19     11.95    Los Angeles  (CA)    19      42      1
```

```
30     99.99         Boston  (MA)    11      31      1
...      ...            ...   ...     ...     ...    ...
1077   99.99         Dallas  (TX)    17      19      1
1078   11.99         Dallas  (TX)    17      19      1
1088  700.00  San Francisco  (CA)    11      10      1
1089   29.90  San Francisco  (CA)    11      10      1
1135  150.00       Portland  (OR)    12      44      1

                                                 Grouped
3                         Google Phone,Wired Headphones
4                         Google Phone,Wired Headphones
18                     Google Phone,USB-C Charging Cable
19                     Google Phone,USB-C Charging Cable
30    Bose SoundSport Headphones,Bose SoundSport Hea...
...                                                  ...
1077        Bose SoundSport Headphones,Wired Headphones
1078        Bose SoundSport Headphones,Wired Headphones
1088                     iPhone,Lightning Charging Cable
1089                     iPhone,Lightning Charging Cable
1135               Apple Airpods Headphones,Google Phone

[100 rows x 13 columns]
```

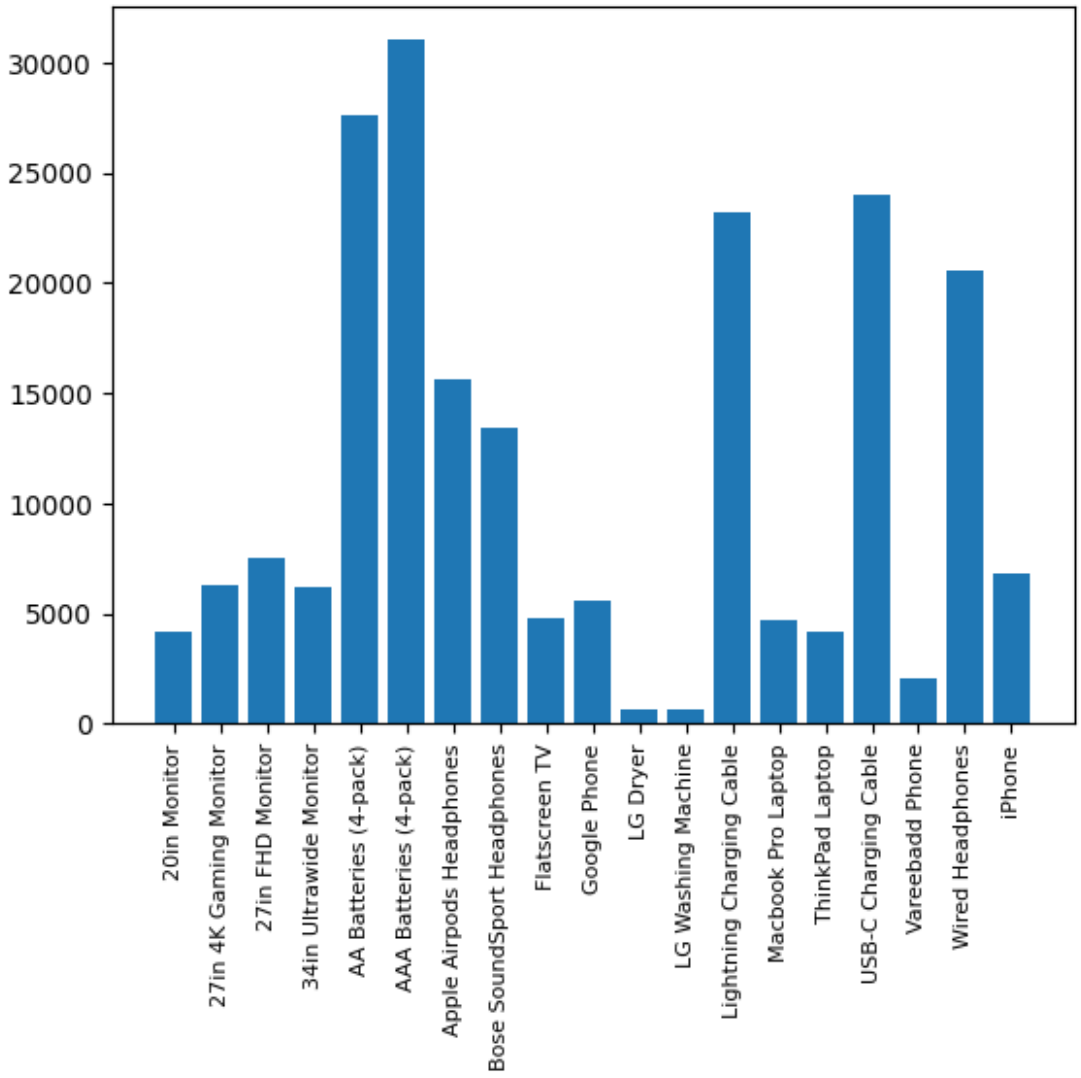
```
from itertools import combinations
from collections import Counter

count = Counter()

for row in df2['Grouped']:
    row_list = row.split(',')
    count.update(Counter(combinations(row_list, 2)))

for key,value in count.most_common(10):
    print(key, value)
```

```
('iPhone', 'Lightning Charging Cable') 1005
('Google Phone', 'USB-C Charging Cable') 987
('iPhone', 'Wired Headphones') 447
('Google Phone', 'Wired Headphones') 414
('Vareebadd Phone', 'USB-C Charging Cable') 361
('iPhone', 'Apple Airpods Headphones') 360
('Google Phone', 'Bose SoundSport Headphones') 220
('USB-C Charging Cable', 'Wired Headphones') 160
('Vareebadd Phone', 'Wired Headphones') 143
('Lightning Charging Cable', 'Wired Headphones') 92
```

What product sold the most? Why do you think it sold the most?

```
all_data.head()
```

```
  Order ID                     Product  Quantity Ordered  Price
Each  \
0   176558        USB-C Charging Cable                 2       11.95

2   176559  Bose SoundSport Headphones                 1       99.99

3   176560                Google Phone                 1      600.00

4   176560            Wired Headphones                 1       11.99

5   176561            Wired Headphones                 1       11.99


           Order Date                       Purchase Address  Month
Sales  \
0 2019-04-19 08:46:00          917 1st St, Dallas, TX 75001      4
23.90
2 2019-04-07 22:30:00     682 Chestnut St, Boston, MA 02215      4
99.99
3 2019-04-12 14:38:00  669 Spruce St, Los Angeles, CA 90001      4
600.00
4 2019-04-12 14:38:00  669 Spruce St, Los Angeles, CA 90001      4
11.99
5 2019-04-30 09:27:00     333 8th St, Los Angeles, CA 90001      4
11.99

                 City  Hour  Minute  Count
0       Dallas  (TX)     8      46      1
2       Boston  (MA)    22      30      1
3  Los Angeles  (CA)    14      38      1
4  Los Angeles  (CA)    14      38      1
5  Los Angeles  (CA)     9      27      1


all_data['Quantity Ordered'] = pd.to_numeric(all_data['Quantity
Ordered'], errors='coerce')

product_group = all_data.groupby('Product')
quantity_ordered = product_group['Quantity Ordered'].sum()

keys = [pair for pair, df in product_group]
plt.bar(keys, quantity_ordered)
plt.xticks(keys, rotation=90, size=8)
plt.show()
```


30000
25000
20000
15000
10000
5000
0
20in Monitor
27in 4K Gaming Monitor
27in FHD Monitor
34in Ultrawide Monitor
AA Batteries (4-pack)
AAA Batteries (4-pack)
Apple Airpods Headphones
Bose SoundSport Headphones
Flatscreen TV
Google Phone
LG Dryer
LG Washing Machine
Lightning Charging Cable
Macbook Pro Laptop
ThinkPad Laptop
USB-C Charging Cable
Vareebadd Phone
Wired Headphones
iPhone