

Step 0: Importing the Libraries

```
In [1]: 1 import pandas as pd
        2 import glob
        3 import matplotlib.pyplot as plt
```

Step 1: Importing the 'csv' Files and merging them into single 'csv'.

```
In [2]: 1 # Get a list of all CSV files in a directory
        2 files=glob.glob(r'C:\Users\HP\Pandas-Data-Science-Tasks-master\SalesAnalysis\Sales_Data\*.csv')
        3
        4 # Create an empty list to create a DataFrame
        5 dfs=[]
        6
        7 # Read each CSV file and append it in a List
        8 for file in files:
        9     df=pd.read_csv(file)
       10     dfs.append(df)
       11
       12 # Concatenate all the DataFrame into single DataFrame
       13
       14 yearly_sales=pd.concat(dfs)
       15
       16
       17 # Saving the Combined CSV File :
       18
       19 yearly_sales.to_excel("Yearly_Sales_2019.xlsx",index=False)
       20
```

Step 2: Read the DataFrame

```
In [3]: 1 yearly_sales.head()
```

Out[3]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address
0	176558	USB-C Charging Cable	2	11.95	04/19/19 08:46	917 1st St, Dallas, TX 75001
1	NaN	NaN	NaN	NaN	NaN	NaN
2	176559	Bose SoundSport Headphones	1	99.99	04/07/19 22:30	682 Chestnut St, Boston, MA 02215
3	176560	Google Phone	1	600	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001
4	176560	Wired Headphones	1	11.99	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001

Step 3: Data Cleaning

```
In [4]: 1 # Checking for Null Values in Dataset:
        2 yearly_sales.isna().sum()
```

Out[4]: Order ID 545
Product 545
Quantity Ordered 545
Price Each 545
Order Date 545
Purchase Address 545
dtype: int64

```
In [5]: 1 # Drop the Null Values in Dataset:
        2 yearly_sales.dropna(inplace=True)
```

```
In [6]: 1 # Recheck for the Null Values whether its dropped in Dataset:
        2 yearly_sales.isna().sum()
```

Out[6]: Order ID 0
Product 0
Quantity Ordered 0
Price Each 0
Order Date 0
Purchase Address 0
dtype: int64

Step 4: Business Questions

Q1) What was the best month for sales ? How much was earned that month?

Add Month Column

```
In [7]: 1 # Adding the Month column:
        2 yearly_sales["Month"] = yearly_sales['Order Date'].str[0:2]
```

```
In [8]: 1 # Checking that there are all unique months or not :
        2 yearly_sales.Month.value_counts()
```

Out[8]: 12 24984
10 20282
04 18279
11 17573
05 16566
03 15153
07 14293
06 13554
02 11975
08 11961
09 11621
01 9709
Or 355
Name: Month, dtype: int64

In [9]:

```
1 # Displaying the "Or" Columns:
2
3 yearly_sales[yearly_sales.Month=="Or"].head(2)
4
```

Out[9]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month
519	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Or
1149	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Or

In [10]:

```
1 # Displaying rows where the 'Month' column is not equal to 'Or'
2 yearly_sales = yearly_sales[yearly_sales['Month'] != 'Or']
3
```

In [11]:

```
1 # Checking whether the 'Or' values are dropped:
2 yearly_sales.Month.value_counts()
```

Out[11]:

12	24984
10	20282
04	18279
11	17573
05	16566
03	15153
07	14293
06	13554
02	11975
08	11961
09	11621
01	9709

Name: Month, dtype: int64

In [12]:

```
1 # Converting the Month column into integer type:
2 yearly_sales.Month=yearly_sales.Month.astype('int32')
3
4 yearly_sales.head()
```

Out[12]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month
0	176558	USB-C Charging Cable	2	11.95	04/19/19 08:46	917 1st St, Dallas, TX 75001	4
2	176559	Bose SoundSport Headphones	1	99.99	04/07/19 22:30	682 Chestnut St, Boston, MA 02215	4
3	176560	Google Phone	1	600	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001	4
4	176560	Wired Headphones	1	11.99	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001	4
5	176561	Wired Headphones	1	11.99	04/30/19 09:27	333 8th St, Los Angeles, CA 90001	4

Add Sales Column :

In [13]:

```
1 # Reading the Dataframe:
2 yearly_sales.head(2)
```

Out[13]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month
0	176558	USB-C Charging Cable	2	11.95	04/19/19 08:46	917 1st St, Dallas, TX 75001	4
2	176559	Bose SoundSport Headphones	1	99.99	04/07/19 22:30	682 Chestnut St, Boston, MA 02215	4

In [14]:

1

#Checking the datatypes of the Dataframe:

2

yearly_sales.dtypes

Out[14]:

Order ID	object
Product	object
Quantity Ordered	object
Price Each	object
Order Date	object
Purchase Address	object
Month	int32
dtype:	object

In [15]:

1

Now converting the ['Quantity Ordered'] and ['Price Each'] column into Numeric Value:

2

yearly_sales['Quantity Ordered']=pd.to_numeric(yearly_sales['Quantity Ordered'])

3

yearly_sales['Price Each']=pd.to_numeric(yearly_sales['Price Each'])

In [16]:

1

Now Adding the Sales Column:(We will multiply Quantity Ordered with Price Each to get the Sales.)

2

yearly_sales['Sales']=yearly_sales['Quantity Ordered']*yearly_sales['Price Each']

In [17]:

1

Reading the Daaframe to check if the Sales column is added:

2

yearly_sales.head()

Out[17]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales
0	176558	USB-C Charging Cable	2	11.95	04/19/19 08:46	917 1st St, Dallas, TX 75001	4	23.90
2	176559	Bose SoundSport Headphones	1	99.99	04/07/19 22:30	682 Chestnut St, Boston, MA 02215	4	99.99
3	176560	Google Phone	1	600.00	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001	4	600.00
4	176560	Wired Headphones	1	11.99	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001	4	11.99
5	176561	Wired Headphones	1	11.99	04/30/19 09:27	333 8th St, Los Angeles, CA 90001	4	11.99

Stats Operations:

In [41]:

```
1 # Using the Groupby Function on Month Column to get Montly Sales and Sort in desc Order.
2 results=yearly_sales.groupby("Month").sum()
3 results
```

C:\Users\HP\AppData\Local\Temp\ipykernel_5376\2349386307.py:2: FutureWarning: The default value of numeric_only in DataFrameGroupBy.sum is deprecated. In a future version, numeric_only will default to False. Either specify numeric_only or select only columns which should be valid for the function.
results=yearly_sales.groupby("Month").sum()

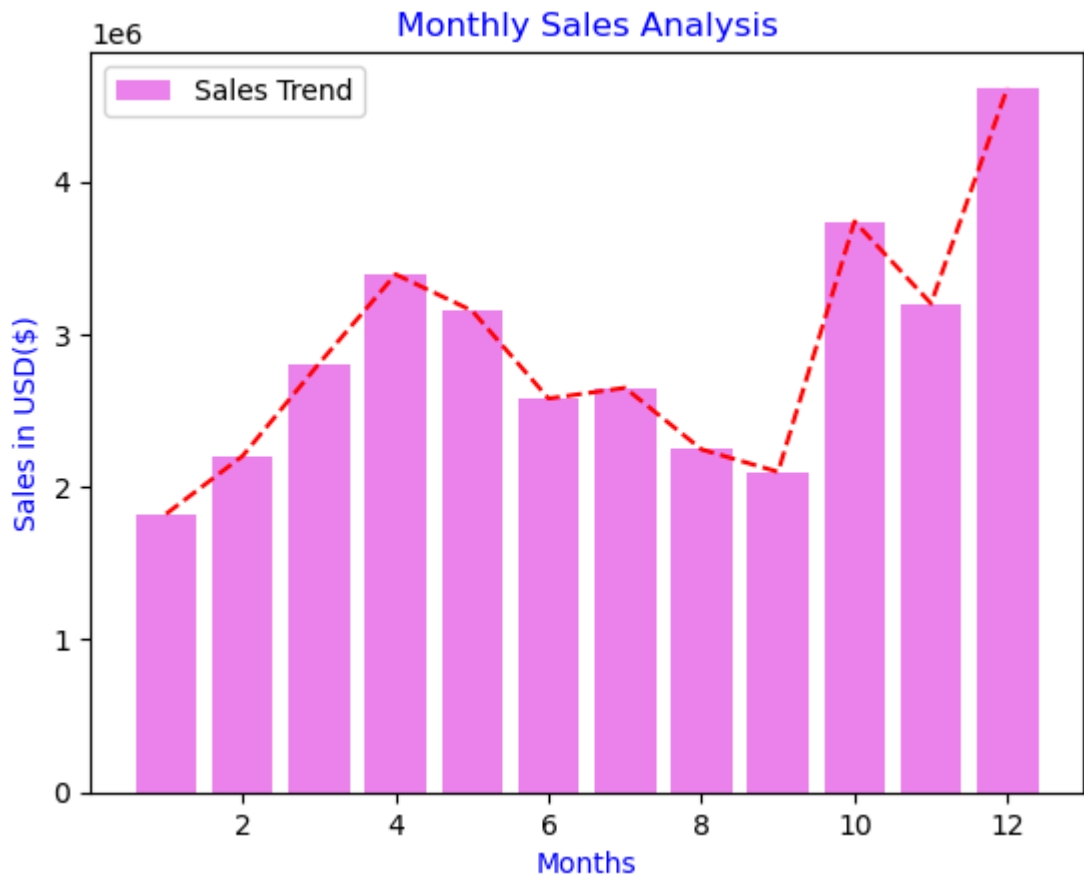
Out[41]:

	Quantity Ordered	Price Each	Sales	Hour	Minute
Month					
1	10903	1811768.38	1822256.73	139485	282440
2	13449	2188884.72	2202022.42	172669	354885
3	17005	2791207.83	2807100.38	218969	447559
4	20558	3367671.02	3390670.24	262259	544186
5	18667	3135125.13	3152606.75	238780	487899
6	15253	2562025.61	2577802.26	195528	402436
7	16072	2632539.56	2647775.76	206169	417349
8	13448	2230345.42	2244467.88	172289	353857
9	13109	2084992.09	2097560.13	168513	341698
10	22703	3715554.83	3736726.88	290650	598437
11	19798	3180600.68	3199603.20	254865	518231
12	28114	4588415.41	4613443.34	359978	733082

Plotting the Graph :

- 1. What was the best month for sales ? How much was earned that month?

```
In [42]: 1 # Plotting the Bar Graph:
2
3 months=range(1,13)
4
5 plt.bar(months,results['Sales'],label="Sales Trend",color='violet')
6
7 plt.plot(months,results['Sales'],color='red',linestyle='--')
8
9 plt.title("Monthly Sales Analysis",color='blue')
10 plt.xlabel("Months",color='blue')
11 plt.ylabel("Sales in USD($)",color='blue')
12
13 plt.legend()
14
15 plt.show()
16
17
```



Visual Insights :

We conclude that December was the highest month of Sales , which contributed of \$4613443.34 USD

```
In [ ]: 1
```

Q2) Which City had the highest number of Sales?

In [20]:

```
1 # Read The Dataframe :
2 yearly_sales.head()
```

Out[20]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales
0	176558	USB-C Charging Cable	2	11.95	04/19/19 08:46	917 1st St, Dallas, TX 75001	4	23.90
2	176559	Bose SoundSport Headphones	1	99.99	04/07/19 22:30	682 Chestnut St, Boston, MA 02215	4	99.99
3	176560	Google Phone	1	600.00	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001	4	600.00
4	176560	Wired Headphones	1	11.99	04/12/19 14:38	669 Spruce St, Los Angeles, CA 90001	4	11.99
5	176561	Wired Headphones	1	11.99	04/30/19 09:27	333 8th St, Los Angeles, CA 90001	4	11.99

Add City Column:

In [21]:

```
1 # Using .apply method Lambda function:
2
3 yearly_sales['City']=yearly_sales['Purchase Address'].apply(lambda x:x.split(',')[1] + '(' + x.split(',')[2].split(' ')[1]+")")
4
5 yearly_sales.head(2)
6
7 # This add the City name followed by Country Code into brackets:
```

Out[21]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales	City
0	176558	USB-C Charging Cable	2	11.95	04/19/19 08:46	917 1st St, Dallas, TX 75001	4	23.90	Dallas(TX)
2	176559	Bose SoundSport Headphones	1	99.99	04/07/19 22:30	682 Chestnut St, Boston, MA 02215	4	99.99	Boston(MA)

Stats Operation:

In [22]:

```
1 # Using Groupby function to get the sum of Sales City wise :
2 results2=yearly_sales.groupby('City')['Sales'].sum()
3 results2
```

Out[22]:

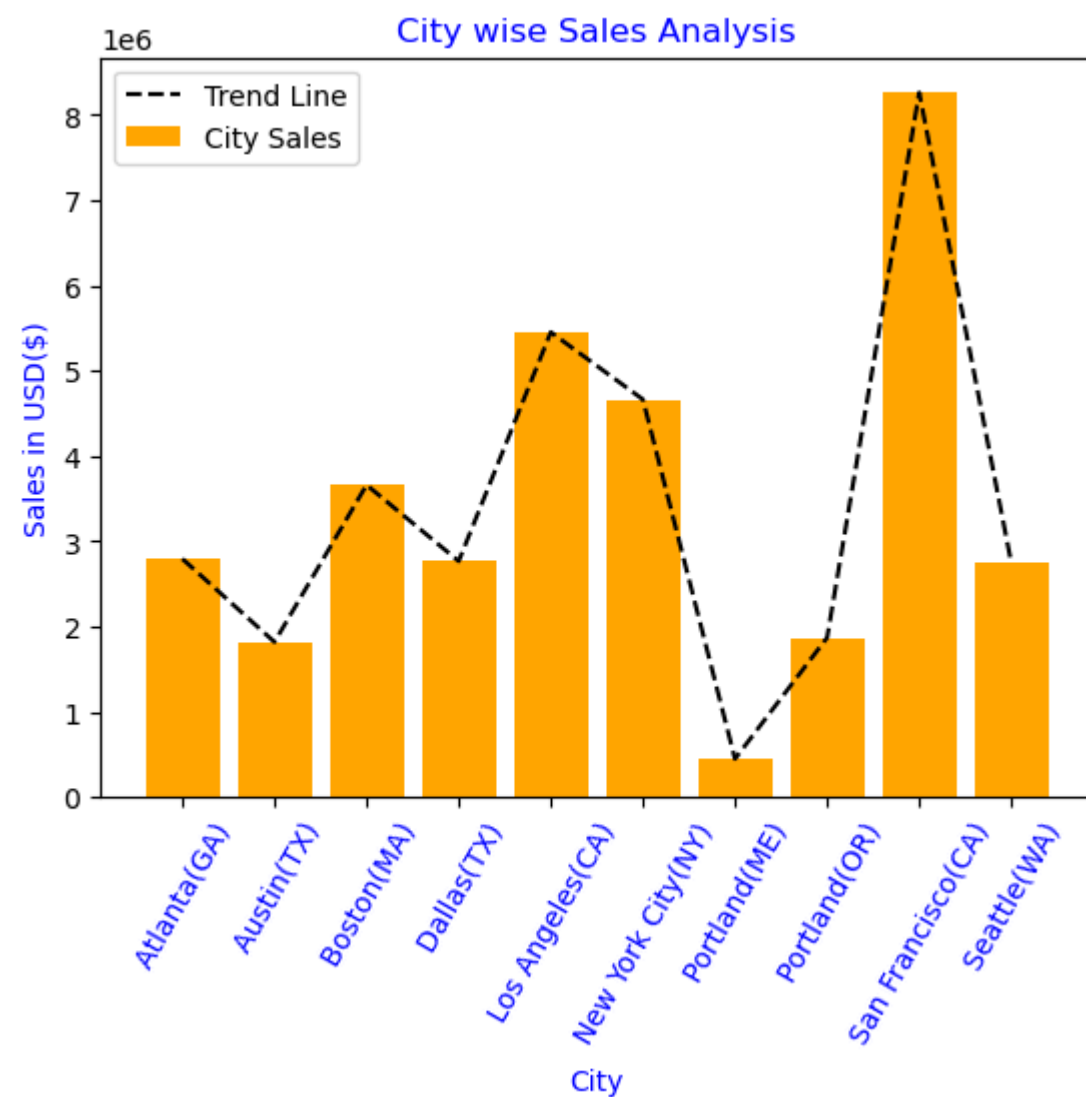
City	
Atlanta(GA)	2795498.58
Austin(TX)	1819581.75
Boston(MA)	3661642.01
Dallas(TX)	2767975.40
Los Angeles(CA)	5452570.80
New York City(NY)	4664317.43
Portland(ME)	449758.27
Portland(OR)	1870732.34
San Francisco(CA)	8262203.91
Seattle(WA)	2747755.48
Name: Sales, dtype: float64	

Plotting the Graph

2. Which City had the highest number of Sales?

```
In [23]: 1 # Plotting the Graph:
2 cities=[city for city,df in yearly_sales.groupby(['City'])] # Use this for loop to get the proper city wise trend.
3
4 plt.bar(cities,results2,label='City Sales',color='orange')
5 plt.plot(cities,results2,color='black',linestyle='--',label="Trend Line")
6
7 plt.title("City wise Sales Analysis",color='blue')
8 plt.xlabel("City",color='blue')
9 plt.xticks(cities,rotation=-300,size=10,color='blue')
10 plt.ylabel("Sales in USD($)",color='blue')
11
12
13 plt.legend()
14 plt.show()
15
```

C:\Users\HP\AppData\Local\Temp\ipykernel_5376\1138299176.py:2: FutureWarning: In a future version of pandas, a length 1 tuple will be returned when iterating over a groupby with a grouper equal to a list of length 1. Don't supply a list with a single grouper to avoid this warning.
 cities=[city for city,df in yearly_sales.groupby(['City'])] # Use this for loop to get the proper city wise trend.



Visual Insights:

From the above we can conclude that San Francisco(CA) city ranks the highest number of Sales

In []:

1

Q3) What time should we display advertisments to maximize the customers to buy products ?

In [24]:

1 # Read Dataframe:
2
3 yearly_sales.head(2)

Out[24]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales	City
0	176558	USB-C Charging Cable	2	11.95	04/19/19 08:46	917 1st St, Dallas, TX 75001	4	23.90	Dallas(TX)
2	176559	Bose SoundSport Headphones	1	99.99	04/07/19 22:30	682 Chestnut St, Boston, MA 02215	4	99.99	Boston(MA)

In [25]:

1 # Covert the "Order Date" column into DateTime format:
2 yearly_sales['Order Date']=pd.to_datetime(yearly_sales['Order Date'])

Adding Hour and Minutes Column:

In [26]:

1 # Adding the Hour and Minutes Column and converting into Hr and Minutes format:
2 yearly_sales['Hour']=yearly_sales['Order Date'].dt.hour
3 yearly_sales['Minute']=yearly_sales['Order Date'].dt.minute
4
5 yearly_sales.head(2)

Out[26]:

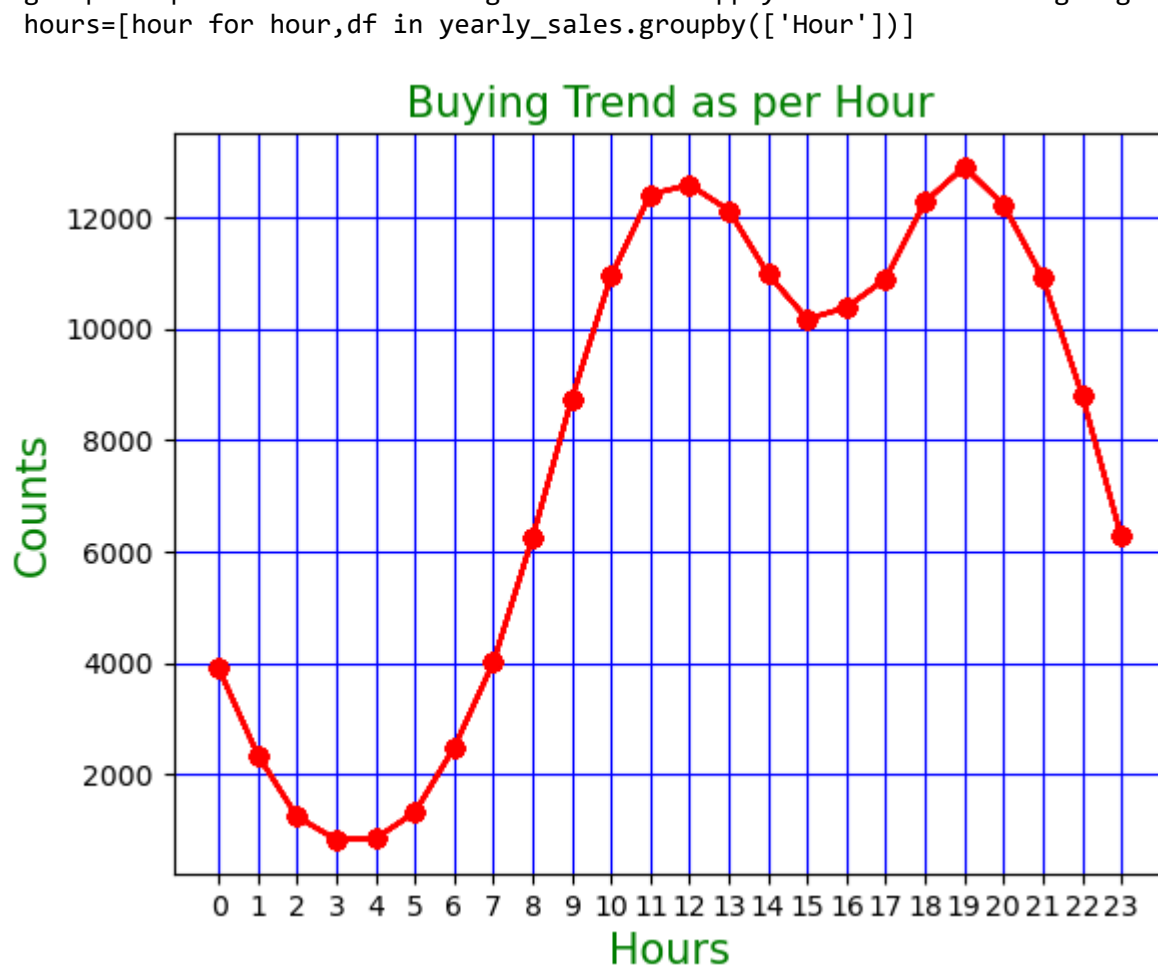
	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales	City	Hour	Minute
0	176558	USB-C Charging Cable	2	11.95	2019-04-19 08:46:00	917 1st St, Dallas, TX 75001	4	23.90	Dallas(TX)	8	46
2	176559	Bose SoundSport Headphones	1	99.99	2019-04-07 22:30:00	682 Chestnut St, Boston, MA 02215	4	99.99	Boston(MA)	22	30

Plotting the Graph:

3. What time should we display advertisments to maximize the customers to buy products ?

```
In [27]: 1 # Plotting the Graph:
2
3 hours=[hour for hour,df in yearly_sales.groupby(['Hour'])]
4
5 plt.plot(hours,yearly_sales.groupby(['Hour']).count(),marker='o',color='red')
6 plt.grid(color='blue')
7 plt.xticks(hours)
8 plt.xlabel("Hours",color='green',size=15)
9 plt.title("Buying Trend as per Hour",color='green',size=15)
10 plt.ylabel("Counts",color='green',size=15)
11 plt.show()
12
13
```

C:\Users\HP\AppData\Local\Temp\ipykernel_5376\493983644.py:3: FutureWarning: In a future version of pandas, a length 1 tuple will be returned when iterating over a groupby with a grouper equal to a list of length 1. Don't supply a list with a single grouper to avoid this warning.



Visual Insights :

From the above Line Graph , we can conclude that Peak Orders are been placed between,

- (10am-11am) in Morning
- (6pm-7pm) in the Evening

So we can do advertisements between this these 2 hrs.

In []:

1

Q4) What products are most often sold together ?

In [28]:

1

Read the Dataframe:

2

yearly_sales.head(2)

Out[28]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales	City	Hour	Minute
0	176558	USB-C Charging Cable	2	11.95	2019-04-19 08:46:00	917 1st St, Dallas, TX 75001	4	23.90	Dallas(TX)	8	46
2	176559	Bose SoundSport Headphones	1	99.99	2019-04-07 22:30:00	682 Chestnut St, Boston, MA 02215	4	99.99	Boston(MA)	22	30

In [29]:

1

Creating a New Dataframe and displaying the duplicated Order ID cols:

2

new_df=yearly_sales[yearly_sales['Order ID'].duplicated(keep=False)]

Adding Grouped Column for list of Products:

In [30]:

1

Creating a New Column for Items brought together:

2

3

new_df['Grouped'] = new_df.groupby('Order ID')['Product'].transform(lambda x: ",".join(x))

4

5

The above code , helps to tranform the Product column into Grouped Column, and joins it into single List wrt Order ID.

6

C:\Users\HP\AppData\Local\Temp\ipykernel_5376\714579622.py:3: 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 (https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy)

```
new_df['Grouped'] = new_df.groupby('Order ID')['Product'].transform(lambda x: ",".join(x))
```

In [31]:

1

Reading the New Dataframe now:

2

new_df.head()

Out[31]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales	City	Hour	Minute	Grouped
3	176560	Google Phone	1	600.00	2019-04-12 14:38:00	669 Spruce St, Los Angeles, CA 90001	4	600.00	Los Angeles(CA)	14	38	Google Phone,Wired Headphones
4	176560	Wired Headphones	1	11.99	2019-04-12 14:38:00	669 Spruce St, Los Angeles, CA 90001	4	11.99	Los Angeles(CA)	14	38	Google Phone,Wired Headphones
18	176574	Google Phone	1	600.00	2019-04-03 19:42:00	20 Hill St, Los Angeles, CA 90001	4	600.00	Los Angeles(CA)	19	42	Google Phone,USB-C Charging Cable
19	176574	USB-C Charging Cable	1	11.95	2019-04-03 19:42:00	20 Hill St, Los Angeles, CA 90001	4	11.95	Los Angeles(CA)	19	42	Google Phone,USB-C Charging Cable
30	176585	Bose SoundSport Headphones	1	99.99	2019-04-07 11:31:00	823 Highland St, Boston, MA 02215	4	99.99	Boston(MA)	11	31	Bose SoundSport Headphones,Bose SoundSport Hea...

In [32]:

```
1 # Here we can see there are Duplicates in "Order ID"and "Grouped" Column, so we have to drop duplicates in these 2 columns:
2
3 new_df=new_df[['Order ID','Grouped']].drop_duplicates()
4 new_df.head(10)
5
```

Out[32]:

	Order ID	Grouped
3	176560	Google Phone,Wired Headphones
18	176574	Google Phone,USB-C Charging Cable
30	176585	Bose SoundSport Headphones,Bose SoundSport Hea...
32	176586	AAA Batteries (4-pack),Google Phone
119	176672	Lightning Charging Cable,USB-C Charging Cable
129	176681	Apple Airpods Headphones,ThinkPad Laptop
138	176689	Bose SoundSport Headphones,AAA Batteries (4-pack)
189	176739	34in Ultrawide Monitor,Google Phone
225	176774	Lightning Charging Cable,USB-C Charging Cable
233	176781	iPhone,Lightning Charging Cable

In [33]:

```
1 # Now we want to count the Pairs that are there in Grouped :
2
3 # Here we will import Combinations and Counter Library:(New Concept )
4
5 from itertools import combinations
6 from collections import Counter
7
8 count=Counter()
9
10 for row in new_df['Grouped']:
11     row_list=row.split(',')
12     count.update(Counter(combinations(row_list,2)))
13
14 count.most_common(10)
```

Out[33]:

```
[(('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)]
```

```
In [34]: 1 # To read it into more properly :
        2
        3 for key,value in count.most_common(10):
        4     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
```

Visual Insights:

We can see from the above data that Iphone and Lightning cable is usually both ordered together, where the count is 1005.

```
In [ ]: 1
```

Q5) What product is sold the most ? Why do you think it is sold the most?

```
In [35]: 1 #Reading the Dataframe:
        2 yearly_sales.head(2)
```

Out[35]:

	Order ID	Product	Quantity Ordered	Price Each	Order Date	Purchase Address	Month	Sales	City	Hour	Minute
0	176558	USB-C Charging Cable	2	11.95	2019-04-19 08:46:00	917 1st St, Dallas, TX 75001	4	23.90	Dallas(TX)	8	46
2	176559	Bose SoundSport Headphones	1	99.99	2019-04-07 22:30:00	682 Chestnut St, Boston, MA 02215	4	99.99	Boston(MA)	22	30

Stats Operations:

```
In [36]: 1 product_group=yearly_sales.groupby('Product')
        2 quantity_ordered=product_group['Quantity Ordered'].sum()
        3 quantity_ordered.head()
```

Out[36]:

Product	
20in Monitor	4129
27in 4K Gaming Monitor	6244
27in FHD Monitor	7550
34in Ultrawide Monitor	6199
AA Batteries (4-pack)	27635

Name: Quantity Ordered, dtype: int64

In [37]:

1

#Sorting the Ordered Quantity into Descending Order:

2

quantity_ordered.sort_values(ascending=False)

Out[37]:

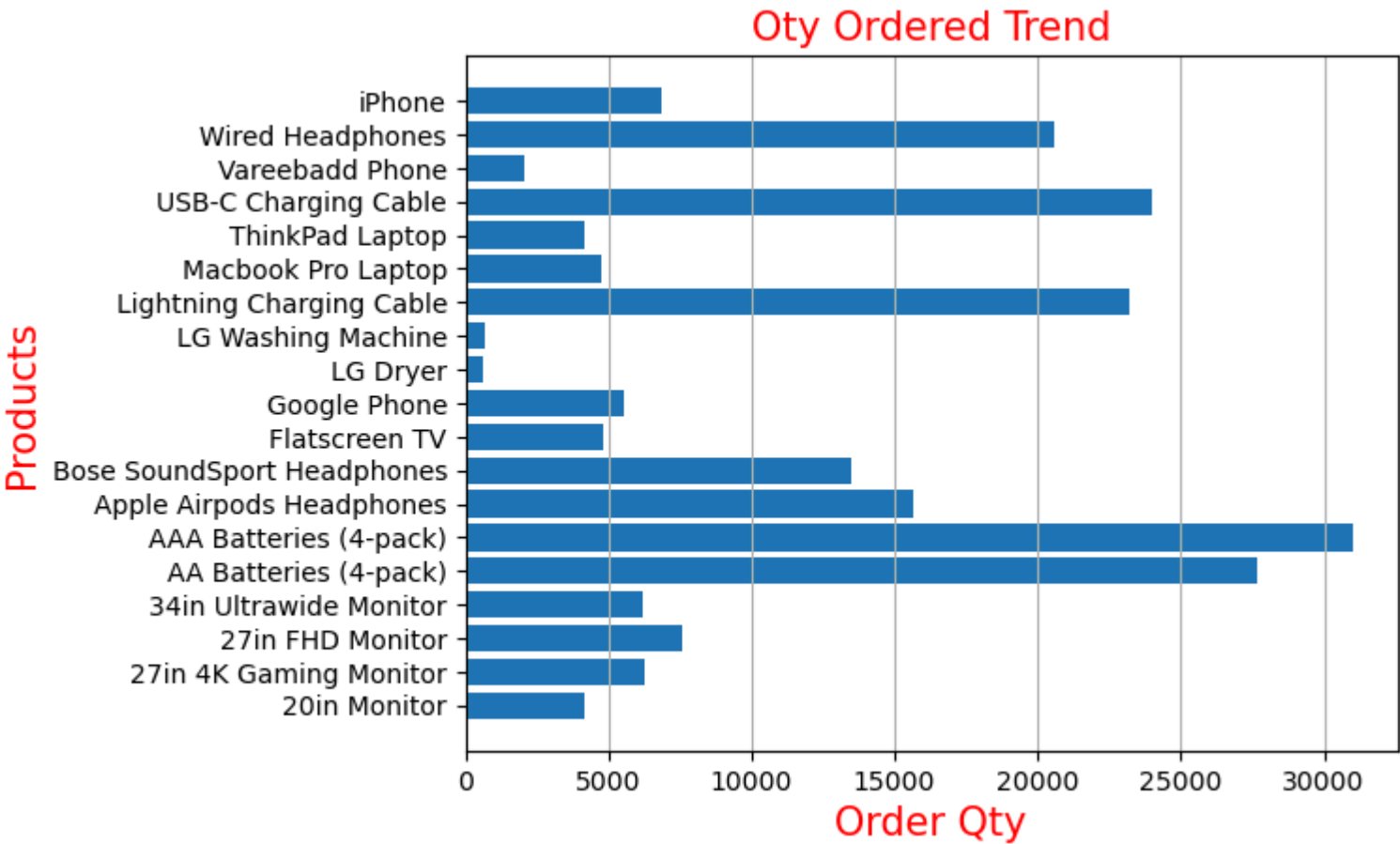
Product	
AAA Batteries (4-pack)	31017
AA Batteries (4-pack)	27635
USB-C Charging Cable	23975
Lightning Charging Cable	23217
Wired Headphones	20557
Apple Airpods Headphones	15661
Bose SoundSport Headphones	13457
27in FHD Monitor	7550
iPhone	6849
27in 4K Gaming Monitor	6244
34in Ultrawide Monitor	6199
Google Phone	5532
Flatscreen TV	4819
Macbook Pro Laptop	4728
ThinkPad Laptop	4130
20in Monitor	4129
Vareebadd Phone	2068
LG Washing Machine	666
LG Dryer	646

Name: Quantity Ordered, dtype: int64

Plotting the Graph:

5. What product is sold the most ?

```
In [38]: 1 # Plotting the Horizontal Bar Graph :
2
3 products=[product for product ,df in product_group]
4
5 plt.barh(products, quantity_ordered)
6 plt.ylabel('Products',color='red',size=15)
7 plt.xlabel('Order Qty',color='red',size=15)
8 plt.title("Qty Ordered Trend",color='red',size=15)
9 plt.grid(axis='x')
10 plt.show()
11
12
13
14
```



Visual Insights:

From above graph we can conclude that AAA Batteries and AA Batteries are sold the most.

In [39]:

```
1 # Reason for which it is sold the most and Getting the individual price of the Products
2
3 prices=yearly_sales.groupby('Product')['Price Each'].mean()
4 prices
```

Out[39]:

Product	
20in Monitor	109.99
27in 4K Gaming Monitor	389.99
27in FHD Monitor	149.99
34in Ultrawide Monitor	379.99
AA Batteries (4-pack)	3.84
AAA Batteries (4-pack)	2.99
Apple AirPods Headphones	150.00
Bose SoundSport Headphones	99.99
Flatscreen TV	300.00
Google Phone	600.00
LG Dryer	600.00
LG Washing Machine	600.00
Lightning Charging Cable	14.95
Macbook Pro Laptop	1700.00
ThinkPad Laptop	999.99
USB-C Charging Cable	11.95
Vareebadd Phone	400.00
Wired Headphones	11.99
iPhone	700.00

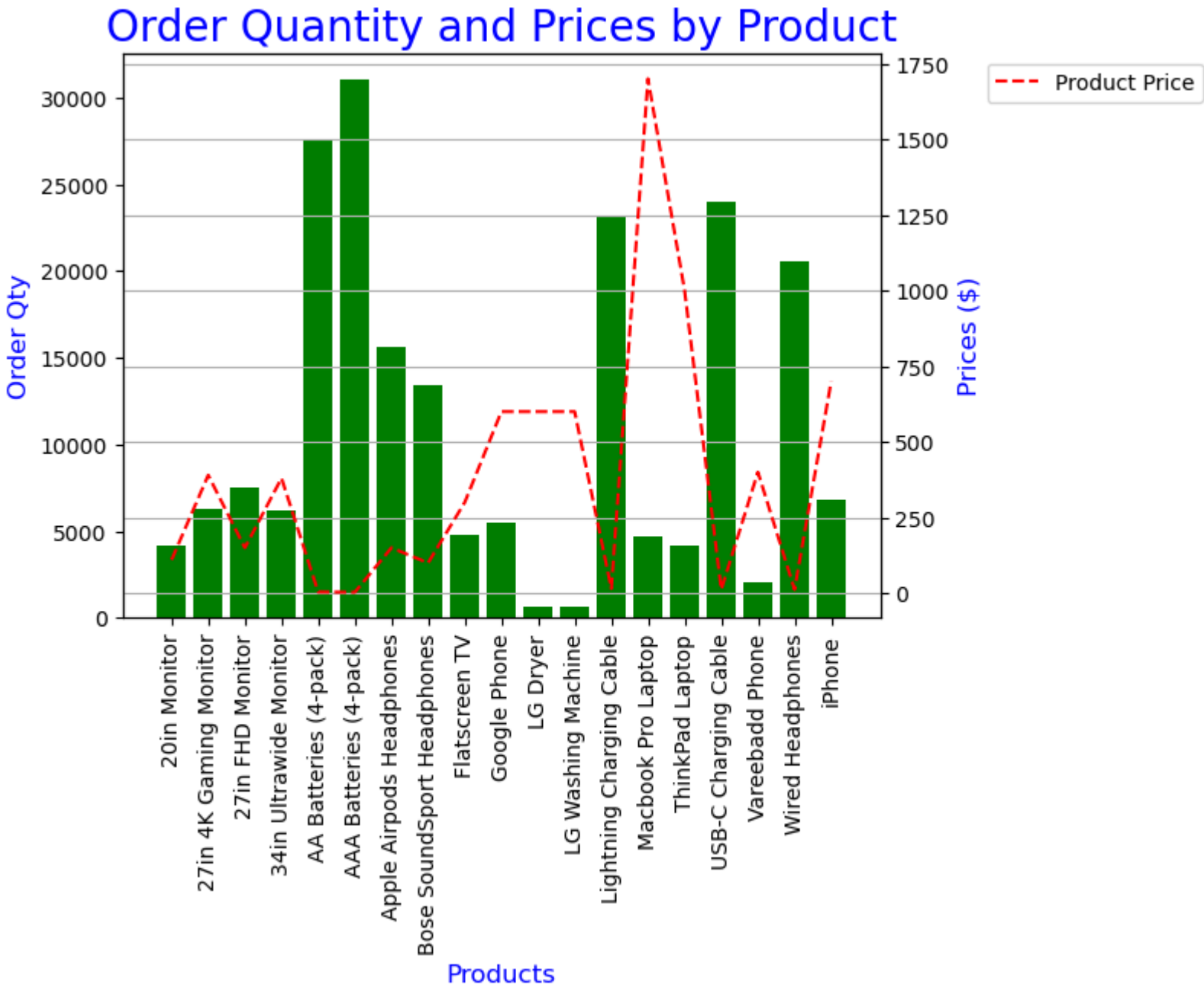
Name: Price Each, dtype: float64

Plotting the Graph:

Q5 Why do you think it is sold the most?(AA and AAA ,Batteries)


```
In [40]: 1 # Plotting the Product mean Data and order Qty on Bar Graph:
2
3 fig,ax1=plt.subplots()
4
5 ax2=ax1.twinx()
6
7 ax1.bar(products, quantity_ordered,color='green')
8 ax2.plot(products,prices,linestyle='--',color='red',label='Product Price')
9
10 ax1.set_xlabel("Products",size=12,color='b')
11 ax1.set_ylabel("Order Qty",size=12,color='b')
12 ax2.set_ylabel("Prices ($)",size=12,color='b')
13 ax1.set_xticklabels(products,rotation='vertical')
14 plt.title("Order Quantity and Prices by Product",size=20,color='b')
15 plt.grid()
16 plt.legend(bbox_to_anchor=(1.44,1))
17 plt.show()
18
19
20
```

C:\Users\HP\AppData\Local\Temp\ipykernel_5376\797308325.py:13: UserWarning: FixedFormatter should only be used together with FixedLocator
ax1.set_xticklabels(products,rotation='vertical')



Visual Insights :

From the above graphs we can see that the Higher the Product Price , lesser is the Ordering Quantity, So due to that reason AA and AAA Batteries are sold the most.