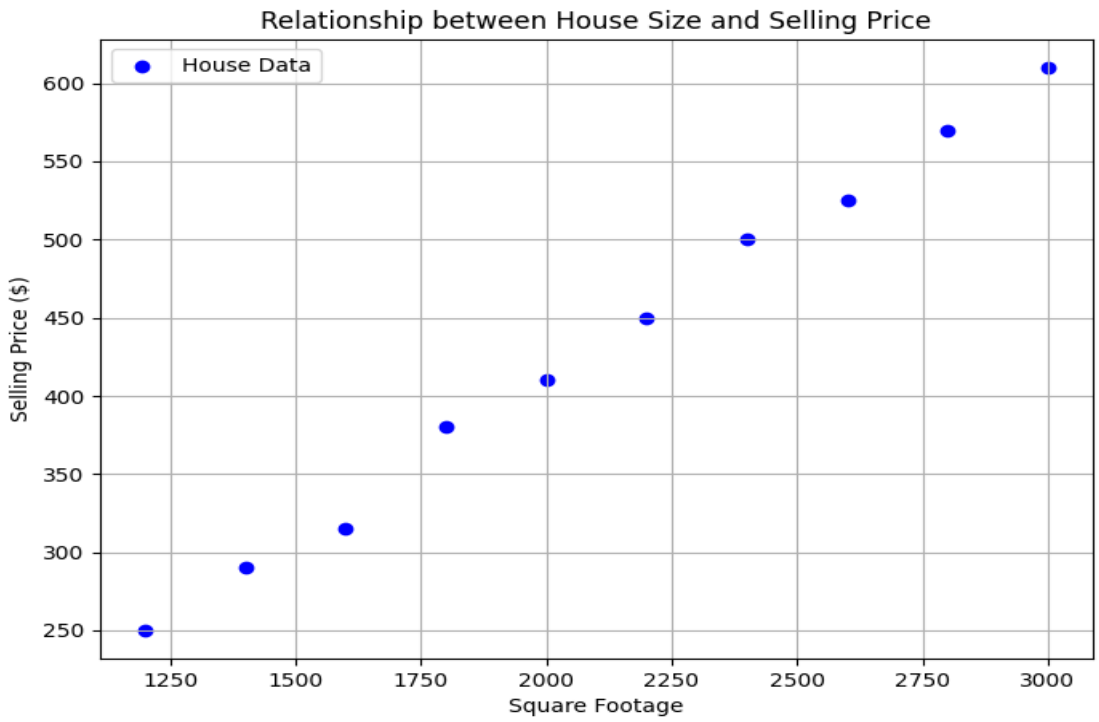
Lab 1: Analyze the relationship between the size of houses (measured in square footage) and their selling prices in a particular neighborhood. You have collected data on various houses in that neighborhood.Create a scatter plot using the below data and share your conclusion/analysis.

Input:

square_footage = np.array([1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000])
selling_prices = np.array([250, 290, 315, 380, 410, 450, 500, 525, 570, 610])

```
import numpy as np

import matplotlib.pyplot as plt

# Input data

square_footage = np.array([1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000])

selling_prices = np.array([250, 290, 315, 380, 410, 450, 500, 525, 570, 610])

# Create scatter plot

plt.figure(figsize=(8, 6))
plt.scatter(square_footage, selling_prices, color='blue', label='House Data')
plt.title('Relationship between House Size and Selling Price')
plt.xlabel('Square Footage')
plt.ylabel('Selling Price ($)')
plt.grid(True)
plt.legend()
plt.show()
```



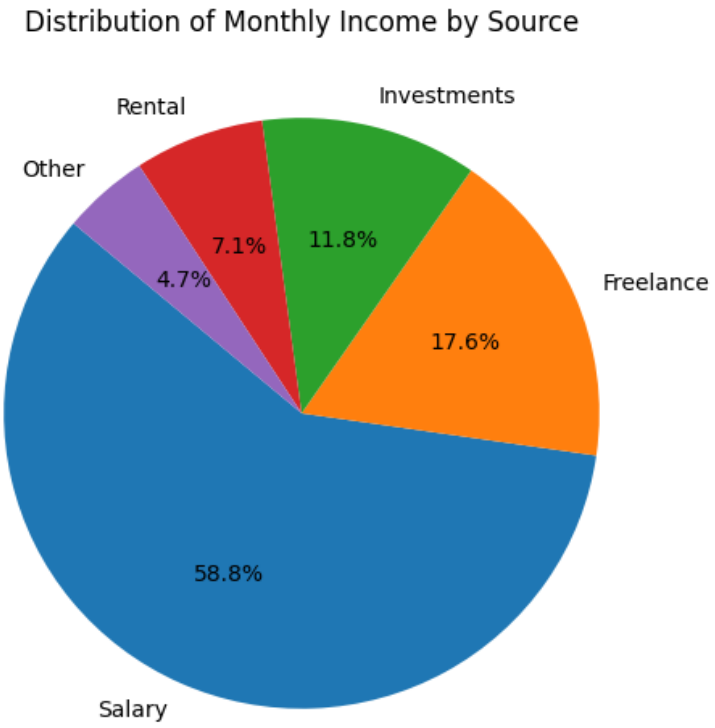
Lab2: Create a pie chart to visualize the distribution of your monthly income by source. You have collected data on the various sources of your income, such as salary, freelance work, investments, and rental income. Share your conclusion/analysis.

Input:

income_sources = ['Salary', 'Freelance', 'Investments', 'Rental', 'Other']

monthly_income = [5000, 1500, 1000, 600, 400]

```
income_sources = ['Salary', 'Freelance', 'Investments', 'Rental', 'Other']
monthly_income = [5000, 1500, 1000, 600, 400]
# Create pie chart
plt.figure(figsize=(8, 6))
plt.pie(monthly_income, labels=income_sources, autopct='%1.1f%%', startangle=140)
plt.title('Distribution of Monthly Income by Source')
#plt.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle.
plt.show()
```

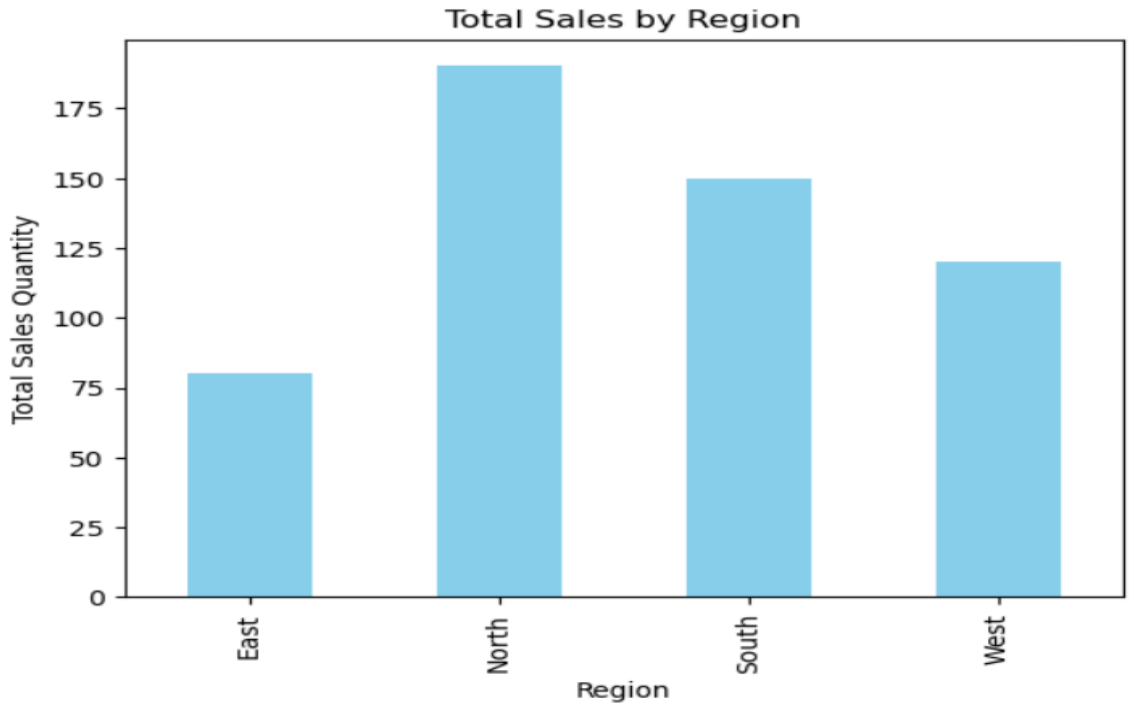


Scenario:Analyzing Sales Data Suppose you work for a retail company, and you have dummy data containing sales data for the past year. The data includes information such as SalesDate,product names,regions, sales quantities, prices, and dates. You have to generate a bar chart ,pie plot on region and prices and line chart on SalesDate and prices columns. Further, you need to get some inference out of the chart.

Create a ChatGPT prompt to generate the code for this scenario. Based on the code generated, ask ChatGPT to give the conclusion/inference.

Note. You can provide the data to ChatGPT or ask it to use sample data.

```
import pandas as pd

import matplotlib.pyplot as plt

# Sample sales data

sales_data = {
    'SalesDate': ['2023-01-01', '2023-01-02', '2023-01-03', '2023-01-04', '2023-01-05'],
    'Product': ['Product A', 'Product B', 'Product C', 'Product D', 'Product E'],
    'Region': ['North', 'South', 'East', 'West', 'North'],
    'SalesQuantity': [100, 150, 80, 120, 90],
    'Price': [10, 15, 8, 12, 9]
}


# Create DataFrame

df = pd.DataFrame(sales_data)


# Convert SalesDate to datetime

df['SalesDate'] = pd.to_datetime(df['SalesDate'])


# Bar chart on region

region_sales = df.groupby('Region')['SalesQuantity'].sum()

region_sales.plot(kind='bar', color='skyblue')

plt.title('Total Sales by Region')

plt.xlabel('Region')

plt.ylabel('Total Sales Quantity')

plt.show()
```




```
# Pie plot on prices
plt.figure(figsize=(8, 8))
price_labels = df['Region'].unique()
price_sales = df.groupby('Region')['Price'].sum()
plt.pie(price_sales, labels=price_labels, autopct='%1.1f%%', startangle=140)
plt.title('Total Sales Price by Region')
plt.show()
```