

PYTHHON PROGRAMMING

Lab-24 Answers

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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])

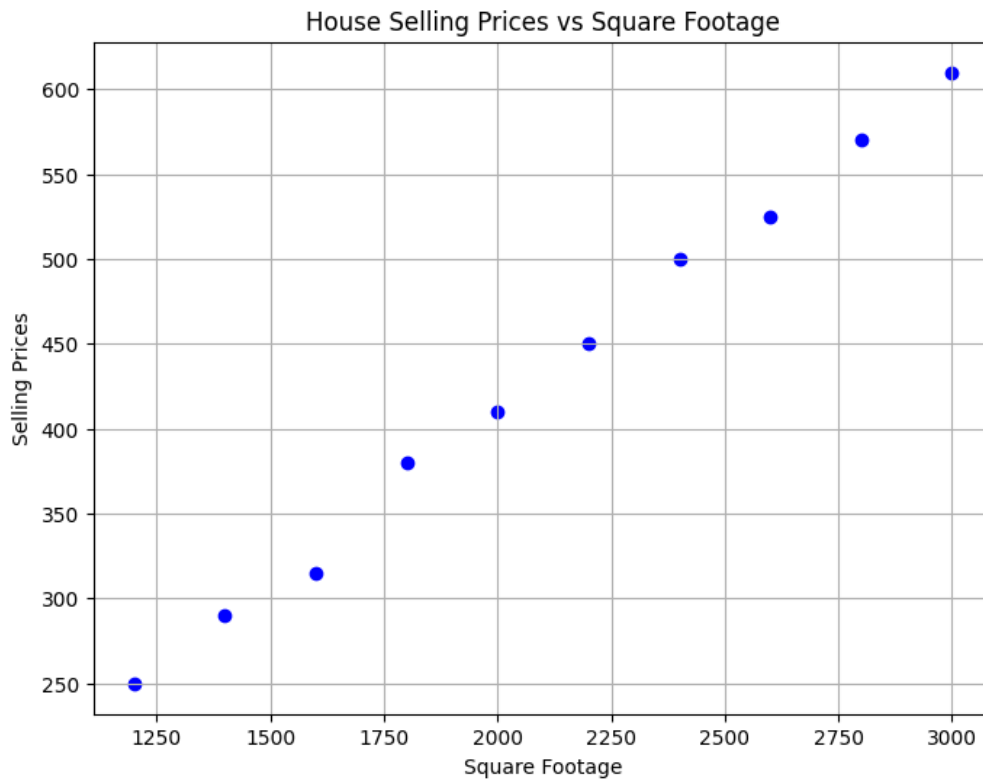
Code:

```
import numpy as np #importing numpy as np.
import matplotlib.pyplot as plt #importing matplotlib as plt.

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

# Create scatter plot.
plt.figure(figsize=(8, 6))
plt.scatter(square_footage, selling_prices, color='blue') # taking the Two columns as square_footage, selling_prices.
plt.title('House Selling Prices vs Square Footage') # giving the title of the graph.
plt.xlabel('Square Footage') # taking the x-axis as Square Footage.
plt.ylabel('Selling Prices') # taking y-axis as Selling prices.
plt.grid(True)
plt.show()
```

Output:



2. 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]

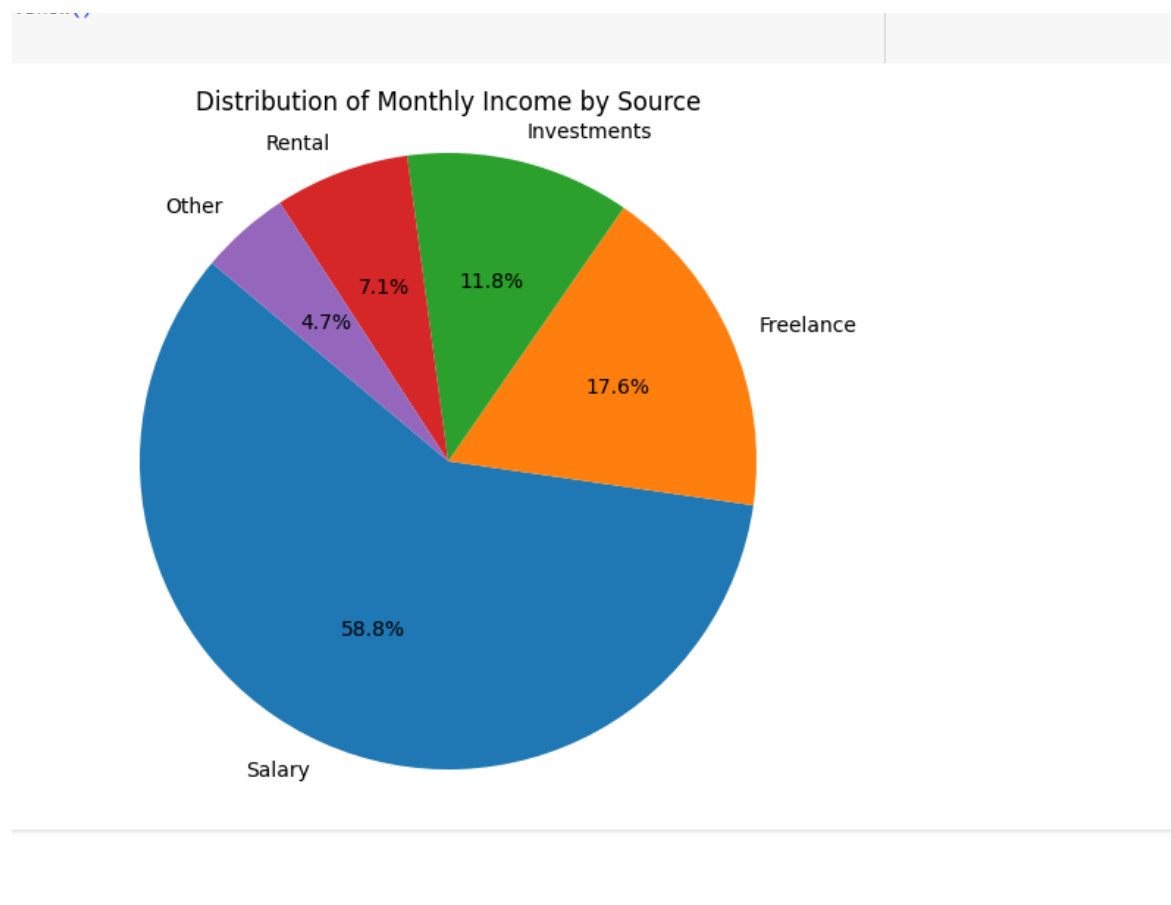
Code:

```
import matplotlib.pyplot as plt #importing matplotlib as plt.  
  
# Data  
income_sources = ['Salary', 'Freelance', 'Investments', 'Rental',  
'Other'] # inputing the income_sources.
```

```
monthly_income = [5000, 1500, 1000, 600, 400] # inputing the
monthly_income.

# 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') # giving the
graph title.
plt.axis('equal') # Equal aspect ratio ensures that pie is drawn as
a circle.
plt.show()
```

Output:



3. Create a pie chart to illustrate the distribution of a company's revenue across its various business segments. You have collected data on the revenue generated by each segment, such as Product A, Product B, Services, and Licensing. Share your conclusion/analysis.

Input: segments = ['Product A', 'Product B', 'Services', 'Licensing']
revenue_percentages = [45, 25, 15, 15]

Code:

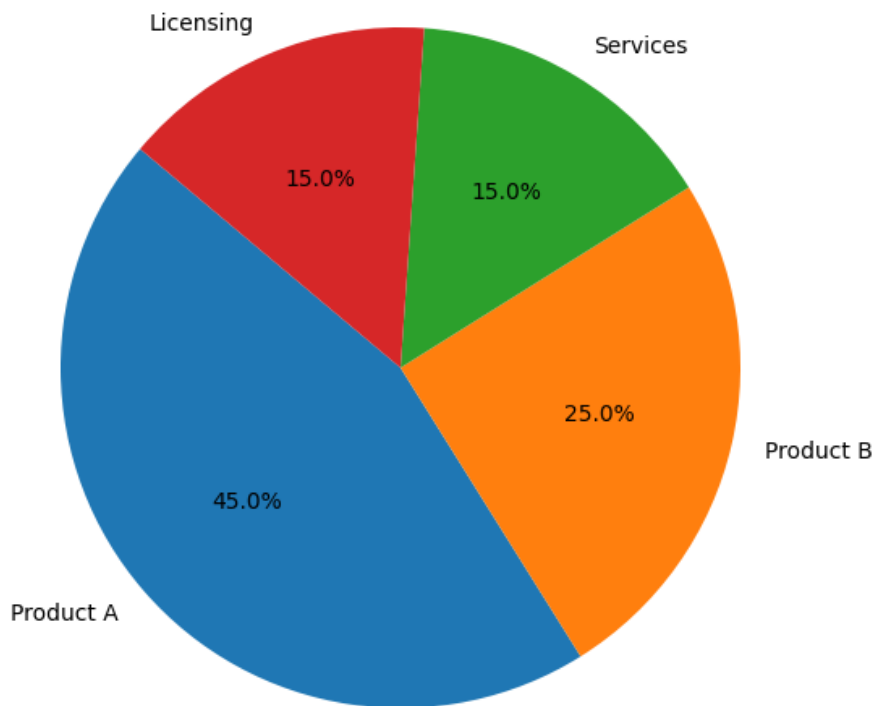
```
import matplotlib.pyplot as plt #importing matplotlib as plt.

# Data
segments = ['Product A', 'Product B', 'Services', 'Licensing']
#importing the segments.
revenue_percentages = [45, 25, 15, 15] #importing the
revenue_percentages.

# Create pie chart
plt.figure(figsize=(8, 6))
plt.pie(revenue_percentages, labels=segments, autopct='%1.1f%%',
startangle=140)
plt.title('Distribution of Company Revenue by Business Segment')
#giving the graph title.
plt.axis('equal') # Equal aspect ratio ensures that pie is drawn as
a circle.
plt.show()
```

Output:

Distribution of Company Revenue by Business Segment



4. Suppose you're a sales manager for an e-commerce company, and you want to create a figure with subplots to compare the sales performance of different product categories over time. You have sales data for four product categories: Electronics, Clothing, Home & Garden, and Sports & Outdoors. Share your conclusion/analysis.

```
Input: months = np.arange(1, 13) electronics_sales =  
np.array([25000, 28000, 31000, 27000, 30000, 32000, 35000,  
36000, 38000, 39000, 41000, 42000]) clothing_sales =  
np.array([15000, 16000, 17000, 18000, 19000, 20000, 21000, 22000,  
23000, 24000, 25000, 26000]) home_garden_sales =  
np.array([18000, 19000, 20000, 21000, 22000, 23000, 24000, 25000,  
26000, 27000, 28000, 29000]) sports_outdoors_sales =  
np.array([12000, 13000, 14000, 15000, 16000, 17000, 18000, 19000,  
20000, 21000, 22000, 23000])
```

Code:

```
import numpy as np #importing numpy as np.
import matplotlib.pyplot as plt #importing matplotlib as plt.

# Data
months = np.arange(1, 13)
electronics_sales = np.array([25000, 28000, 31000, 27000, 30000,
32000, 35000, 36000, 38000, 39000, 41000, 42000])
clothing_sales = np.array([15000, 16000, 17000, 18000, 19000,
20000, 21000, 22000, 23000, 24000, 25000, 26000])
home_garden_sales = np.array([18000, 19000, 20000, 21000,
22000, 23000, 24000, 25000, 26000, 27000, 28000, 29000])
sports_outdoors_sales = np.array([12000, 13000, 14000, 15000,
16000, 17000, 18000, 19000, 20000, 21000, 22000, 23000])

# Create subplots
fig, axs = plt.subplots(2, 2, figsize=(12, 8))

# Plot electronics sales
axs[0, 0].plot(months, electronics_sales, marker='o', color='blue')
axs[0, 0].set_title('Electronics Sales')
axs[0, 0].set_xlabel('Month')
axs[0, 0].set_ylabel('Sales')

# Plot clothing sales
axs[0, 1].plot(months, clothing_sales, marker='o', color='green')
axs[0, 1].set_title('Clothing Sales')
axs[0, 1].set_xlabel('Month')
axs[0, 1].set_ylabel('Sales')

# Plot home & garden sales
axs[1, 0].plot(months, home_garden_sales, marker='o', color='red')
```

```
axs[1, 0].set_title('Home & Garden Sales')
axs[1, 0].set_xlabel('Month')
axs[1, 0].set_ylabel('Sales')
```

Plot sports & outdoors sales

```
axs[1, 1].plot(months, sports_outdoors_sales, marker='o',
color='purple')
axs[1, 1].set_title('Sports & Outdoors Sales')
axs[1, 1].set_xlabel('Month')
axs[1, 1].set_ylabel('Sales')
```

Adjust layout

```
plt.tight_layout()
```

Show plot

```
plt.show();
```

Output:

