

SUMANTH S
AF0363570

LAB MATPLOTLIB BAR PLOT AND HISTOGRAM

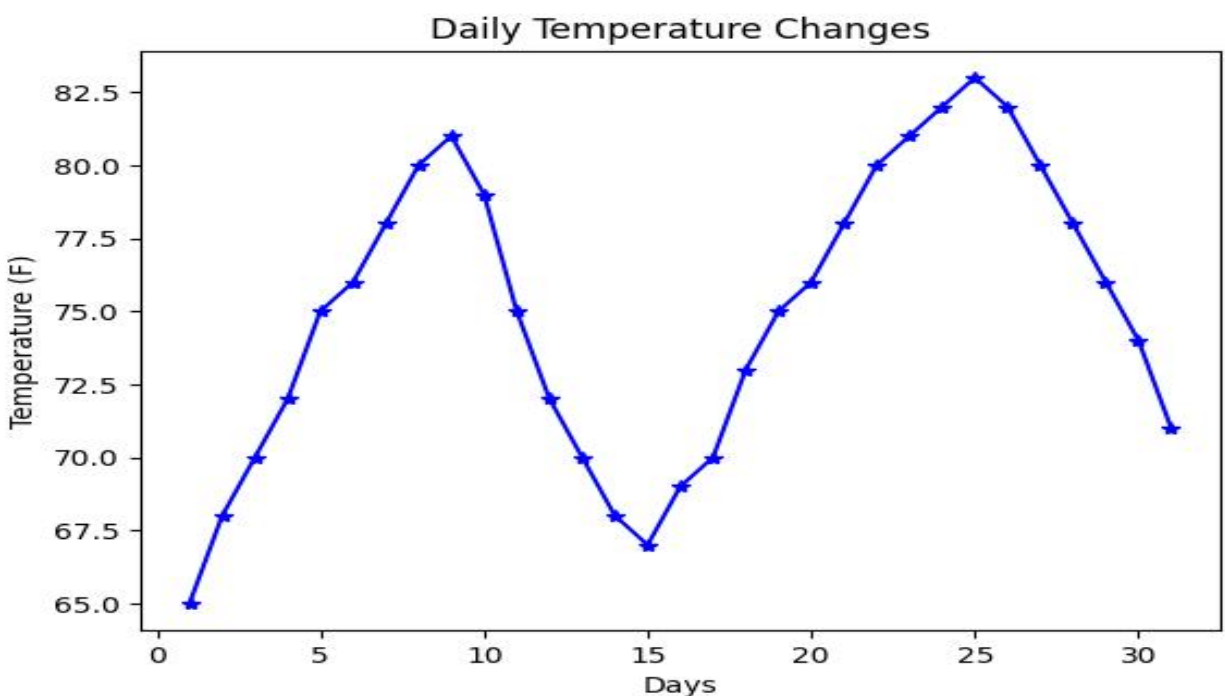
Lab1: Visualize the daily temperature changes over time in a city and give your conclusion

Input: days = list(range(1, 32)) # Daily temperature data temperature = [65, 68, 70, 72, 75, 76, 78, 80, 81, 79, 75, 72, 70, 68, 67, 69, 70, 73, 75, 76, 78, 80, 81, 82, 83, 82, 80, 78, 76, 74, 71]

```
#import the necessary library
# matplotlib is used for data visualization
import matplotlib.pyplot as plt

# taking dataset
days = list(range(1, 32))
temperature_per_day = [65, 68, 70, 72, 75, 76, 78, 80, 81, 79, 75, 72, 70, 68, 67, 69, 70, 73, 75, 76, 78, 80, 81, 82, 83, 82, 80, 78, 76, 74, 71]

#plot the line graph
plt.plot(days, temperature_per_day, color="blue", marker="*")
plt.xlabel('Days') # declaring xlabel
plt.ylabel('Temperature (F)') # declaring ylabel
plt.title('Daily Temperature Changes') # declaring title
plt.show()
```



Conclusion:

From the graph, we can observe that the temperature starts at around 65°F, gradually increases, and then peaks around day 24 at around 83°F. After the peak, the temperature starts to decrease again. There is a slight dip in temperature around day 15, but it quickly recovers. Overall, the temperature shows a general trend of increasing and then decreasing over the course of the month.

Lab2: Create a line plot to visualize the daily closing prices of a stock over a year and give your conclusion.

Input: `days = list(range(1, 78))`

Daily closing prices of a stock (replace with your own data) `stock_prices = [100, 105, 110, 115, 112, 120, 118, 125, 128, 130, 132, 135, 138, 140, 142, 144, 145, 148, 150, 155, 160, 158, 162, 165, 170, 172, 175, 178, 180, 182, 185, 188, 190, 192, 195, 198, 200, 198, 195, 193, 190, 188, 185, 182, 180, 178, 175, 172, 170, 168, 165, 162, 160, 158, 155, 152, 150, 148, 145, 143, 140, 138, 135, 132, 130, 128, 125, 123, 120, 118, 115, 112, 110, 108, 105, 103, 100]`

```
#import the necessary library
# matplotlib is used for data visualization
import matplotlib.pyplot as plt

# taking dataset
days = list(range(1, 78))
stock_prices = [100, 105, 110, 115, 112, 120, 118, 125, 128, 130, 132, 135, 138, 140, 142, 144, 145, 148, 150, 155, 160, 158, 162, 165, 170, 172, 175, 178, 180, 182, 185, 188, 190, 192, 195, 198, 200, 198, 195, 193, 190, 188, 185, 182, 180, 178, 175, 172, 170, 168, 165, 162, 160, 158, 155, 152, 150, 148, 145, 143, 140, 138, 135, 132, 130, 128, 125, 123, 120, 118, 115, 112, 110, 108, 105, 103, 100]

#plot the line graph
plt.plot(days, stock_prices,color="orange", marker="*")
plt.xlabel('Days') # declaring xlabel
plt.ylabel('Closing Price') # declaring ylabel
plt.title('Daily Closing Prices of a Stock') # declaring title
plt.show()
```



Conclusion:

From the graph, we can observe that the closing prices of the stock start at around 100 and fluctuate over the year, reaching a peak around day 35 at around 200. After the peak, the closing prices gradually decline, with some fluctuations along the way. Overall, the closing prices of the stock show a general trend of increasing, reaching a peak, and then gradually declining over the course of the year.

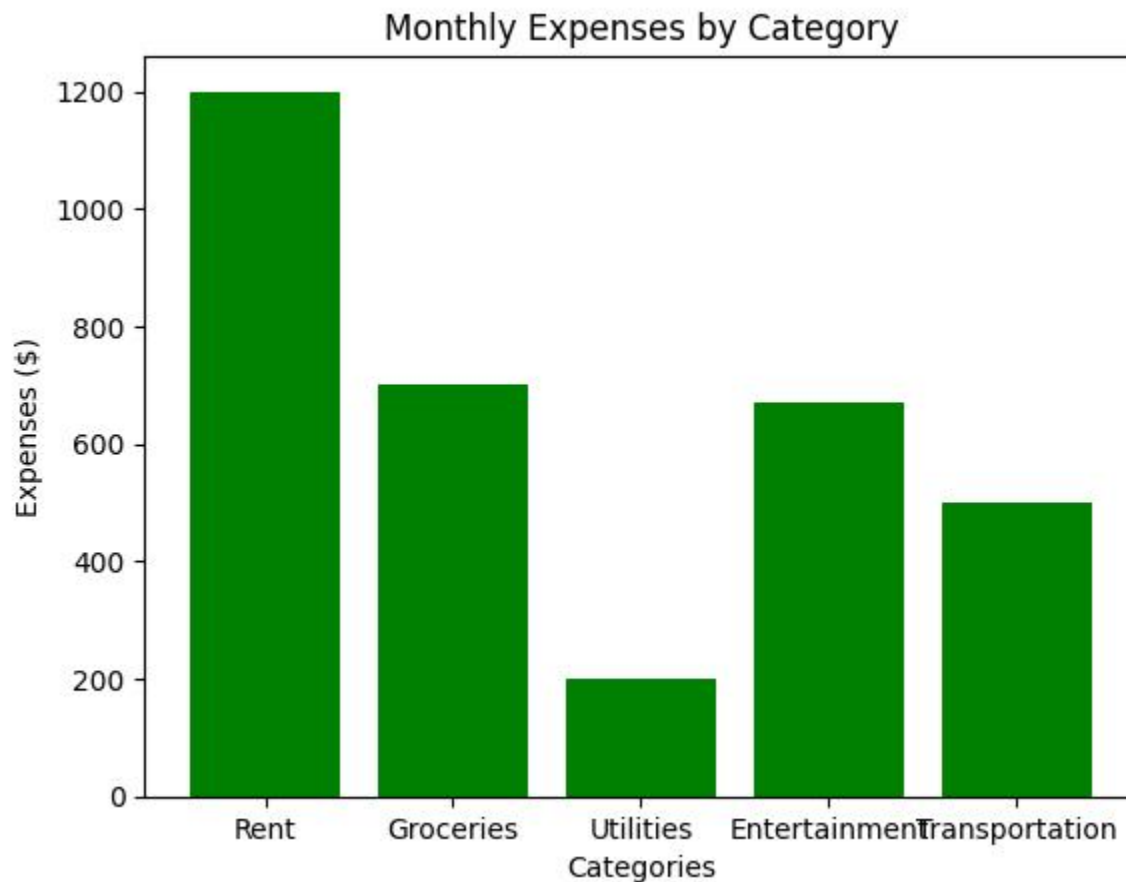
Lab3: Create a bar chart to represent monthly expenses in different spending categories and give your conclusion.

Input: categories = ['Rent', 'Groceries', 'Utilities', 'Entertainment', 'Transportation'] #
Monthly expenses in dollars (replace with your own data) expenses = [1200, 700, 200, 670, 500]

```
#import the necessary library
# matplotlib is used for data visualization
import matplotlib.pyplot as plt

# taking dataset
categories = ['Rent', 'Groceries', 'Utilities', 'Entertainment', 'Transportation']
expenses = [1200, 700, 200, 670, 500]
```

```
#plotting the bar chart
plt.bar(categories, expenses, color="green")
plt.xlabel('Categories') #declaring xlabel
plt.ylabel('Expenses ($)') #declaring ylabel
plt.title('Monthly Expenses by Category') # declaring title
plt.show()
```



Conclusion:

From the bar chart, we can observe the distribution of monthly expenses across different spending categories. Rent is the highest expense category, followed by Groceries, Entertainment, Transportation, and Utilities. This indicates that a significant portion of the monthly budget is allocated to housing costs. Groceries and Entertainment also represent significant expenses. On the other hand, Transportation and Utilities expenses are relatively lower compared to the other categories. This visualization helps in understanding and analyzing the distribution of expenses in different categories, which can be useful for budgeting and financial planning purposes.

Lab4: Create a histogram to represent the distribution of product prices in a retail store and give your conclusion.

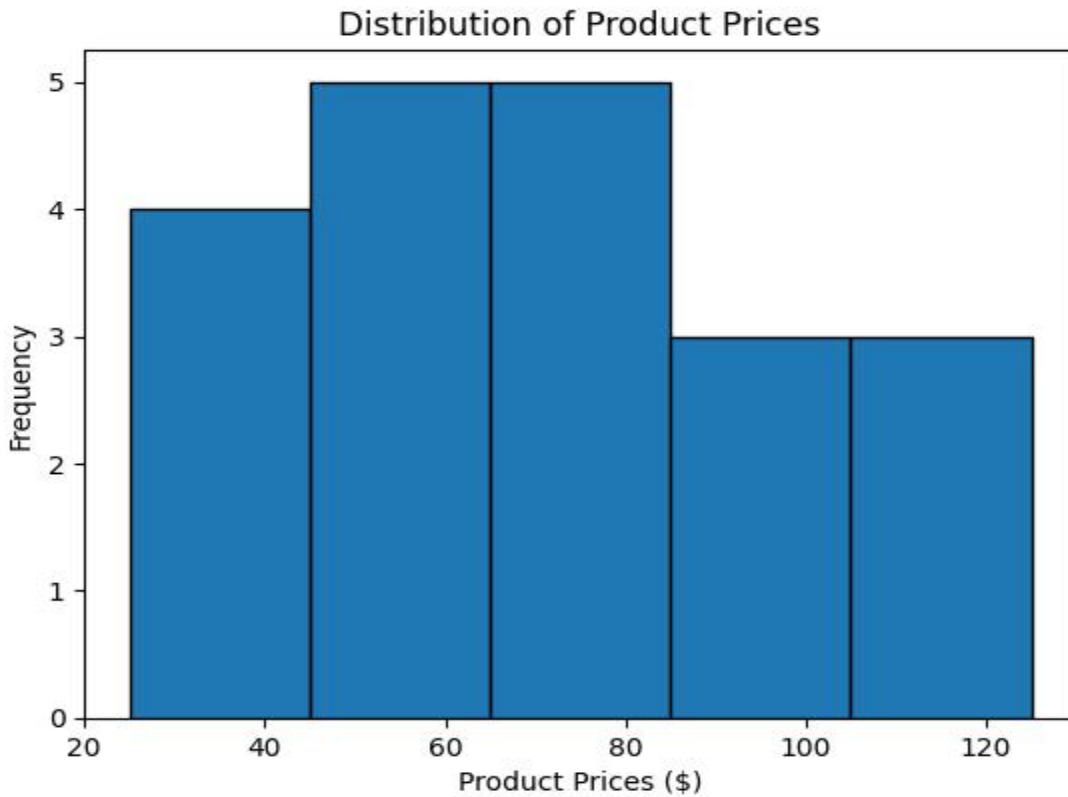
Input: product_prices = [24.99, 34.99, 49.99, 64.99, 39.99, 54.99, 79.99, 99.99, 29.99, 44.99, 59.99, 69.99, 84.99, 109.99, 119.99, 89.99, 74.99, 124.99, 69.99, 54.99]

```
#import the necessary library
# matplotlib is used for data visualisation
import matplotlib.pyplot as plt

#taking data
product_prices = [24.99, 34.99, 49.99, 64.99, 39.99, 54.99, 79.99, 99.99, 29.99, 44.99, 59.99, 69.99, 84.99, 109.99, 119.99, 89.99, 74.99, 124.99, 69.99, 54.99]

#plotting the histogram chart
plt.hist(product_prices, bins=5, edgecolor='black')
plt.xlabel('Product Prices ($)') #declaring xlabel
plt.ylabel('Frequency') # declaring ylabel
plt.title('Distribution of Product Prices') # declaring title

plt.show()
```



Conclusion:

From the histogram, we can observe the distribution of product prices in the retail store. The majority of products seem to fall in the price range of approximately \$25 to \$50, with a peak around \$30 and \$40. There is also a noticeable number of products in the range of \$50 to \$75 and \$75 to \$100, though the frequency decreases as the prices increase. Finally, there are relatively fewer products in the higher price ranges of \$100 to \$125 and above. This information can be useful for understanding the price distribution in the retail store and analyzing the popularity of products within different price ranges.