**Tasks Related to Matplotlib Pie Charts:**

1. **Task 1: Create a Pie Chart of Expense Categories**
   * You are given data on monthly expenses in different categories: Rent, Groceries, Utilities, and Entertainment. Create a pie chart to visualize the percentage of total expenses in each category. Add labels, colors, and a percentage display on the chart.

expenses = [1000, 400, 150, 200]

labels = ['Rent', 'Groceries', 'Utilities', 'Entertainment']

 **Task 2: Pie Chart with Exploded Slice**

* Using the same expense data as Task 1, create a pie chart with the "Rent" category exploded to emphasize its significance. Also, add a shadow effect and ensure the slices are labeled with their percentages.

 **Task 3: Visualize Market Share**

* A company has a market share of 25%, while competitors have market shares of 15%, 30%, 10%, and 20%, respectively. Create a pie chart with appropriate labels and highlight the company’s slice with a different color to indicate its dominance in the market.

market\_share = [25, 15, 30, 10, 20]

labels = ['Company', 'Competitor A', 'Competitor B', 'Competitor C', 'Competitor D']

**Task 4: Pie Chart with Custom Start Angle and Wedge Colors**

* Use the market share data from Task 3 and create a pie chart with a custom start angle so that the company’s slice appears at the top of the chart. Choose distinct colors for each competitor's slice and add a legend.

**Tasks Related to Matplotlib Subplots:**

1. **Task 1: Compare Monthly Sales for Two Years in Subplots**
   * Given sales data for two years, create a 1x2 subplot grid where each subplot shows the sales trend for a different year. Label the axes and add titles to each subplot.

months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

sales\_2022 = [500, 600, 550, 620, 700, 680, 750, 800, 850, 900, 950, 1000]

sales\_2023 = [520, 610, 570, 640, 710, 690, 770, 820, 870, 920, 970, 1020]

**Task 2: Subplots for Temperature Trends**

* You are provided with daily temperature data for three cities over a week. Create a 1x3 subplot grid, with each subplot showing the temperature trend of a city. Ensure the subplots share the same y-axis limits for easy comparison.

days = ['Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat', 'Sun']

city\_1 = [30, 32, 31, 29, 28, 30, 31]

city\_2 = [22, 23, 21, 24, 22, 20, 21]

city\_3 = [15, 17, 16, 18, 19, 15, 17]

**Task 3: Stacked Bar Chart Comparison Using Subplots**

* Create a 2x1 grid of subplots. In the first subplot, display the stacked bar chart of total sales in two regions (North and South) by month. In the second subplot, create a stacked bar chart of the number of customers in each region by month. Ensure that the subplots have appropriate titles and labels.  
  months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun']
* sales\_north = [300, 350, 400, 380, 420, 450]
* sales\_south = [200, 250, 300, 280, 320, 370]
* customers\_north = [30, 35, 40, 38, 42, 45]
* customers\_south = [20, 25, 30, 28, 32, 37]

**Task 4: Create a 2x2 Subplot Grid with Different Plot Types**

* Create a 2x2 subplot grid. Use the following plots:
  + Top-left: Line plot showing a stock’s price over time.
  + Top-right: Bar chart showing quarterly revenue.
  + Bottom-left: Pie chart showing product sales distribution.
  + Bottom-right: Scatter plot showing the correlation between marketing budget and sales.

time = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

stock\_price = [100, 105, 102, 108, 112, 115, 118, 120, 125, 130]

quarters = ['Q1', 'Q2', 'Q3', 'Q4']

revenue = [1000, 1200, 1100, 1300]

product\_sales = [400, 300, 200, 100]

product\_labels = ['Product A', 'Product B', 'Product C', 'Product D']

marketing\_budget = [100, 200, 300, 400, 500]

sales = [120, 180, 220, 300, 400]