Visualizing Data With Matplotlib

In [28]:
```
import warnings
warnings.filterwarnings('ignore')
```

In [29]:
```
import pandas as pd
```

In [30]:
```
data = {
    "Month": ['Jan','Feb','Mar','Apr','May','Jun'],
    "Sales" : [10000,12000,15000,13000,17000,16000],
    "Profit" : [2000,3000,4000,2500,3500,3000]
}
```

In [31]:
```
df = pd.DataFrame(data)
```

In [32]:
```
df
```

Out[32]:

	Month	Sales	Profit
0	Jan	10000	2000
1	Feb	12000	3000
2	Mar	15000	4000
3	Apr	13000	2500
4	May	17000	3500
5	Jun	16000	3000

In [33]:
```
df[['Month','Sales']]
```

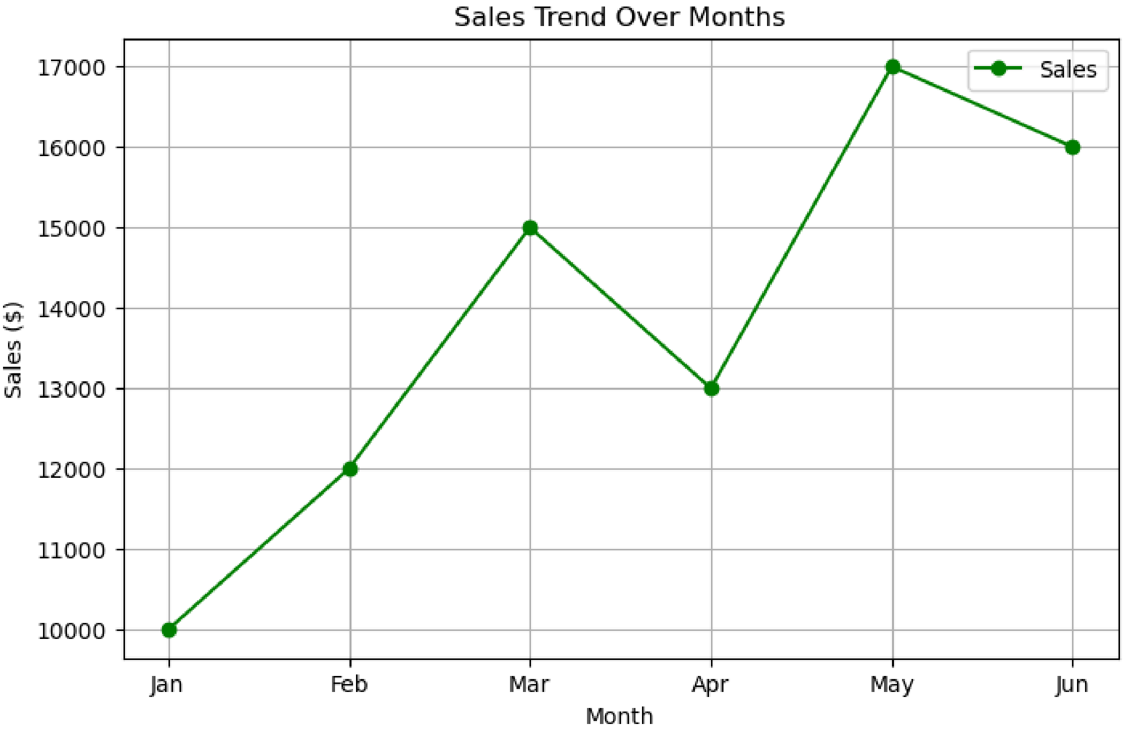
Out[33]:

	Month	Sales
0	Jan	10000
1	Feb	12000
2	Mar	15000
3	Apr	13000
4	May	17000
5	Jun	16000

In [34]:
```
import matplotlib.pyplot as plt
```

Line plot sales over time

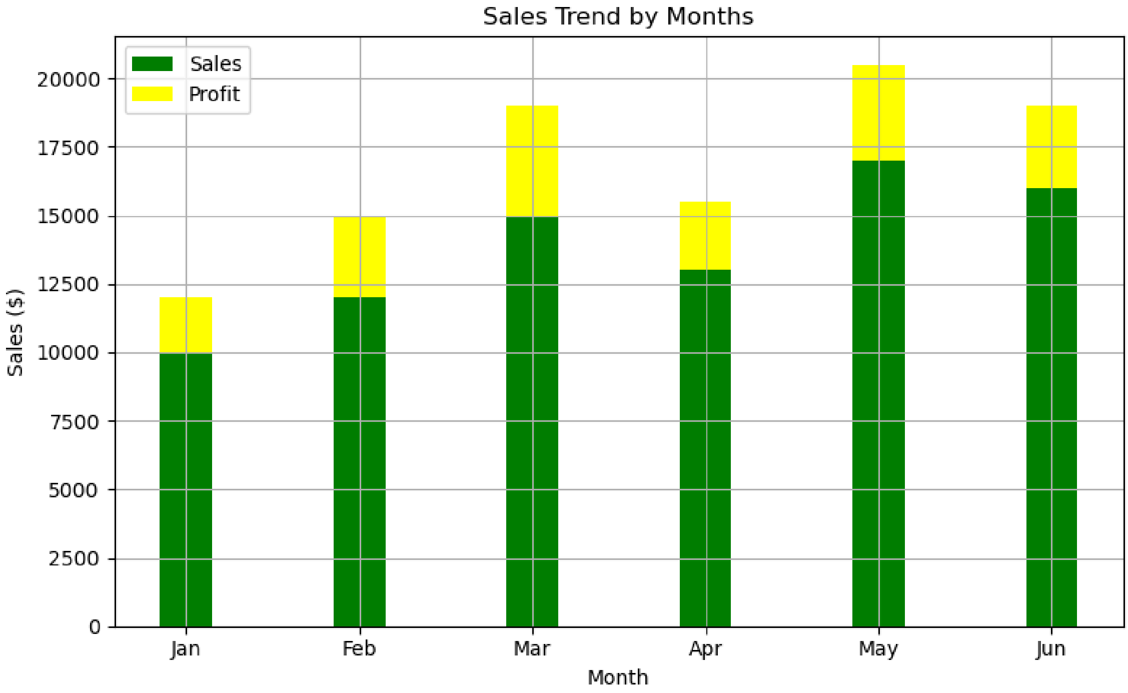
In [40]:
```
plt.figure(figsize=(8,5))
plt.plot(df['Month'],df['Sales'],color ="Green", marker='o',linestyle='-',l
plt.title('Sales Trend Over Months')
plt.xlabel('Month')
plt.ylabel("Sales ($)")
plt.grid(True)
plt.legend()
plt.show()
```



Bar Plot: Sales vs Profit by Month

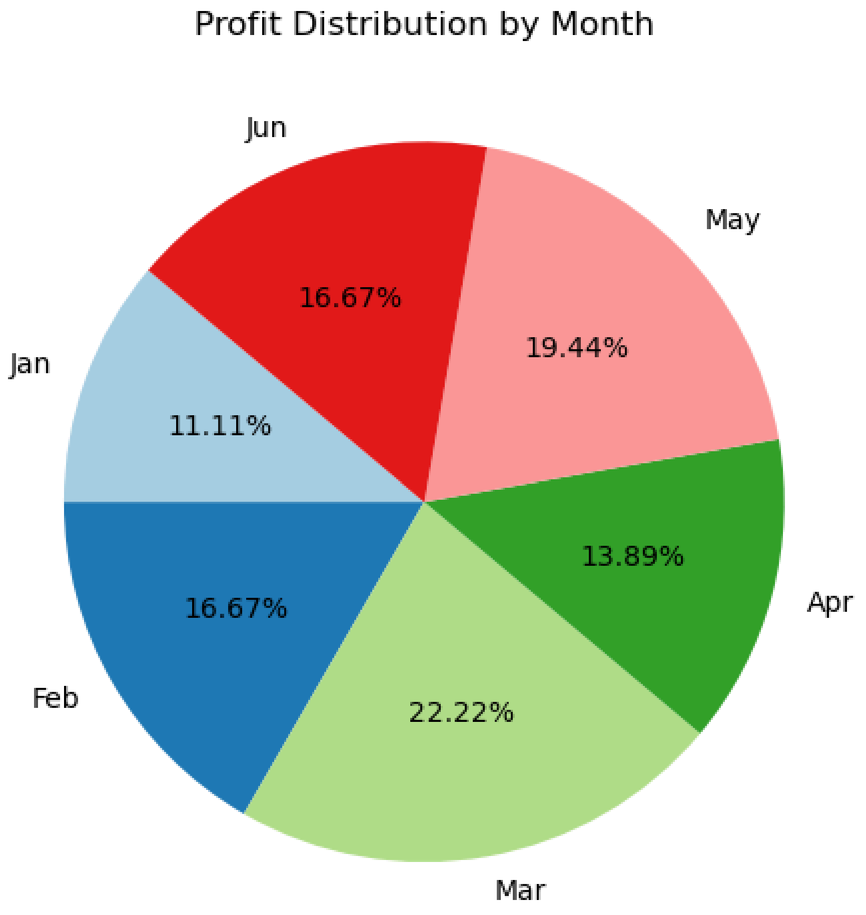
In [42]:

```
plt.figure(figsize=(8,5))
width = 0.3
plt.bar(df['Month'],df['Sales'],width=width, color='Green',label='Sales')
plt.bar(df['Month'],df['Profit'],width=width, color='Yellow',label='Profit'
plt.title('Sales Trend by Months')
plt.xlabel('Month')
plt.ylabel("Sales ($)")
plt.grid(True)
plt.legend()
plt.tight_layout()
plt.show()
```



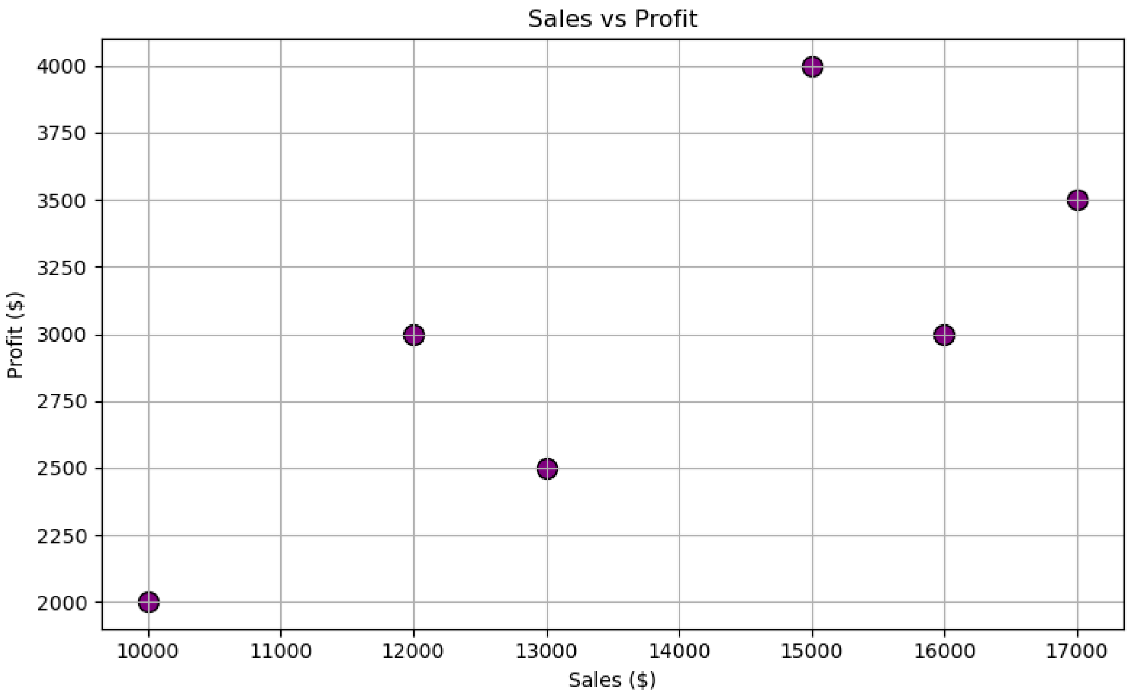
Pie Chart: Profit Distribution by Month

In [44]:
```
plt.figure(figsize=(8, 5))
plt.pie(df['Profit'], labels=df['Month'], autopct='%1.2f%%', startangle=140
plt.title('Profit Distribution by Month')
plt.tight_layout()
plt.show()
```



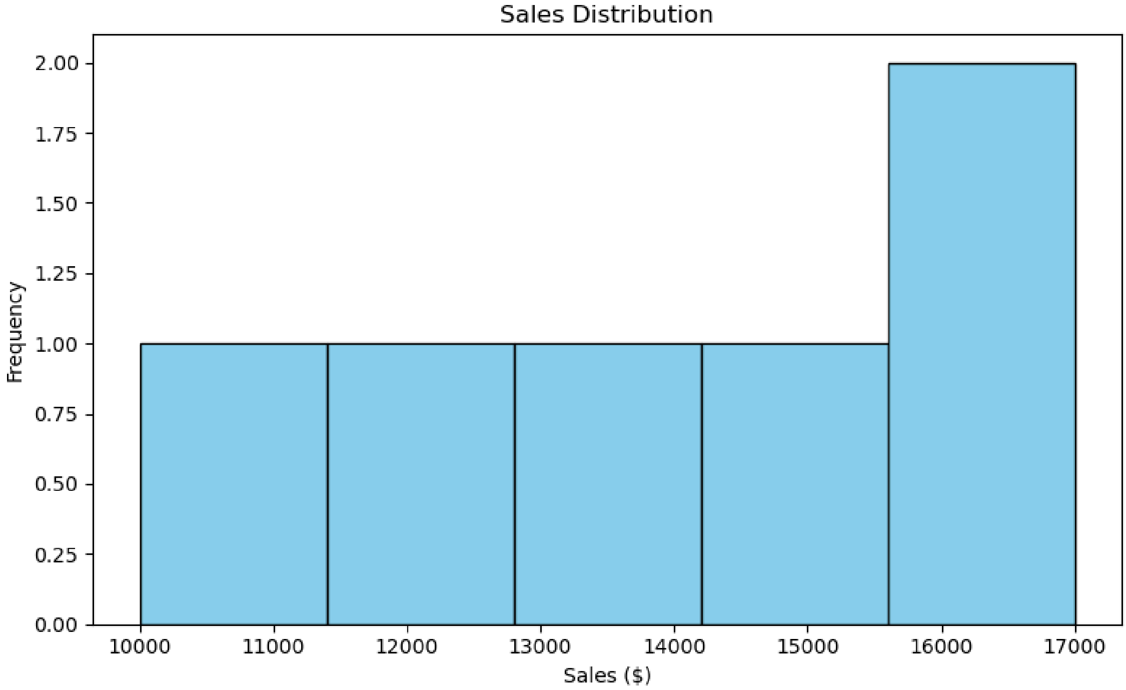
Scatter Plot: Sales vs Profit (Correlation)

```
In [45]: plt.figure(figsize=(8, 5))
         plt.scatter(df['Sales'], df['Profit'], color='purple', s=100, edgecolors='b
         plt.title('Sales vs Profit')
         plt.xlabel('Sales ($)')
         plt.ylabel('Profit ($)')
         plt.grid(True)
         plt.tight_layout()
         plt.show()
```



Histogram: Distribution of Sales

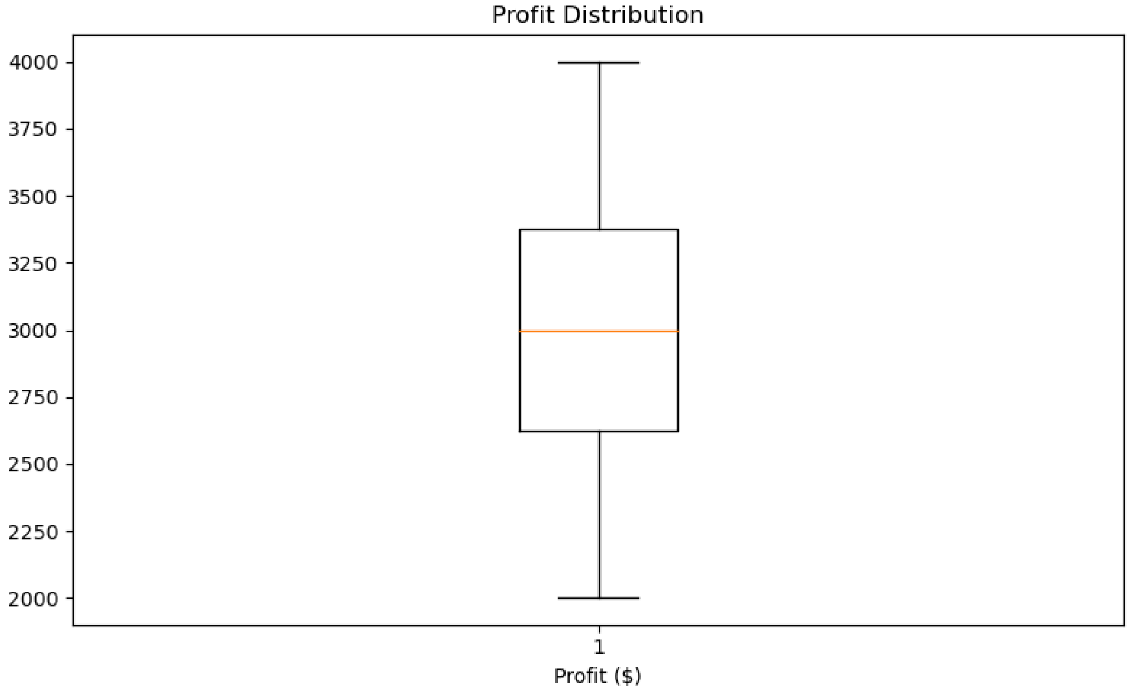
```
In [49]: plt.figure(figsize=(8, 5))
         plt.hist(df['Sales'], bins=5, color='skyblue', edgecolor='black')
         plt.title('Sales Distribution')
         plt.xlabel('Sales ($)')
         plt.ylabel('Frequency')
         plt.tight_layout()
         plt.show()
```



Box Plot: Profit Distribution

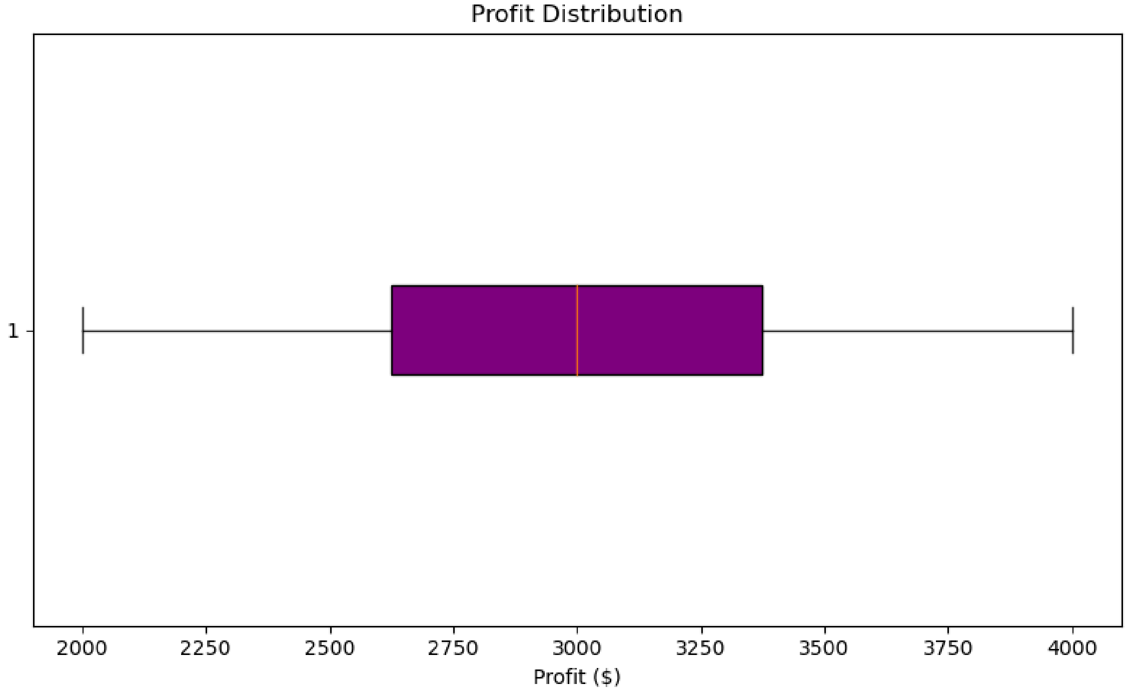
In [52]:

```
plt.figure(figsize=(8, 5))
plt.boxplot(df['Profit'])
plt.title('Profit Distribution')
plt.xlabel('Profit ($)')
plt.tight_layout()
plt.show()
```



In [50]:

```
plt.figure(figsize=(8, 5))
plt.boxplot(df['Profit'], vert=False, patch_artist=True, boxprops=dict(face
plt.title('Profit Distribution')
plt.xlabel('Profit ($)')
plt.tight_layout()
plt.show()
```



In [54]:

```
pip install gradio
```

```
Collecting gradio
  Downloading gradio-5.36.2-py3-none-any.whl (59.6 MB)
                                              0.0/59.6 MB ? eta -:--:--
                                             0.0/59.6 MB 330.3 kB/s eta
0:03:01
                                             0.0/59.6 MB 262.6 kB/s eta
0:03:47
                                             0.0/59.6 MB 330.3 kB/s eta
0:03:01
                                             0.0/59.6 MB 330.3 kB/s eta
0:03:01
                                             0.0/59.6 MB 330.3 kB/s eta
0:03:01
                                             0.1/59.6 MB 347.8 kB/s eta
0:02:52
                                             0.1/59.6 MB 347.8 kB/s eta
0:02:52
                                             0.1/59.6 MB 347.8 kB/s eta
0:02:52
```

In [56]:

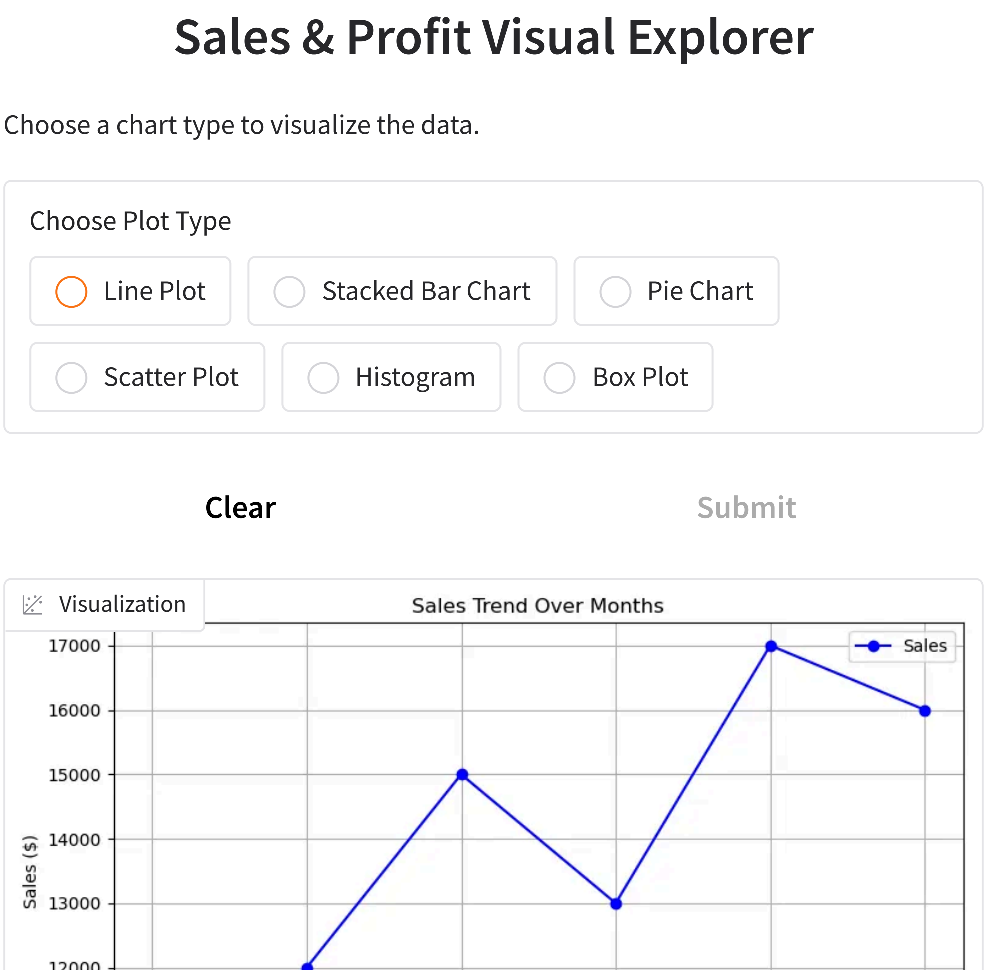
```python
import gradio as gr
import pandas as pd
import matplotlib.pyplot as plt
```

In [58]:

```
# Sample data
data = {
    "Month": ["Jan", "Feb", "Mar", "Apr", "May", "Jun"],
    "Sales": [10000, 12000, 15000, 13000, 17000, 16000],
    "Profit": [2000, 3000, 4000, 2500, 3500, 3000]
}
df = pd.DataFrame(data)

# Function to return selected plot
def generate_plot(plot_type):
    fig = plt.figure(figsize=(8, 5))

    if plot_type == "Line Plot":
        plt.plot(df['Month'], df['Sales'], color='blue', marker='o', label=
        plt.title('Sales Trend Over Months')
        plt.xlabel('Month')
        plt.ylabel('Sales ($)')
        plt.grid(True)
        plt.legend()

    elif plot_type == "Stacked Bar Chart":
        fig.set_size_inches(8, 5)
        width = 0.3
        plt.bar(df['Month'], df['Sales'], width=width, label='Sales', color
        plt.bar(df['Month'], df['Profit'], width=width, label='Profit', col
        plt.title('Sales and Profit Comparison by Month')
        plt.xlabel('Month')
        plt.ylabel('Amount ($)')
        plt.legend()

    elif plot_type == "Pie Chart":
        fig.set_size_inches(8, 5)
        plt.pie(df['Profit'], labels=df['Month'], autopct='%1.1f%%', starta
        plt.title('Profit Distribution by Month')

    elif plot_type == "Scatter Plot":
        plt.scatter(df['Sales'], df['Profit'], color='green', s=100, edgeco
        plt.title('Sales vs Profit')
        plt.xlabel('Sales ($)')
        plt.ylabel('Profit ($)')
        plt.grid(True)

    elif plot_type == "Histogram":
        plt.hist(df['Sales'], bins=5, color='purple', edgecolor='black')
        plt.title('Sales Distribution')
        plt.xlabel('Sales ($)')
        plt.ylabel('Frequency')

    elif plot_type == "Box Plot":
        plt.boxplot(df['Profit'], vert=False, patch_artist=True, boxprops=d
        plt.title('Profit Distribution')
        plt.xlabel('Profit ($)')

    plt.tight_layout()
    return fig

# Gradio UI
demo = gr.Interface(
    fn=generate_plot,
    inputs=gr.Radio(
        ["Line Plot", "Stacked Bar Chart", "Pie Chart", "Scatter Plot", "Hi
```

```
            label="Choose Plot Type"
        ),
        outputs=gr.Plot(label="Visualization"),
        title="Sales & Profit Visual Explorer",
        description="Choose a chart type to visualize the data."
)

demo.launch()
```

```
* Running on local URL:  http://127.0.0.1:7861 (http://127.0.0.1:7861)
* To create a public link, set `share=True` in `launch()`.
```



Sales & Profit Visual Explorer

Choose a chart type to visualize the data.

Choose Plot Type

○ Line Plot ○ Stacked Bar Chart ○ Pie Chart

○ Scatter Plot ○ Histogram ○ Box Plot

Out[58]:

In [ ]: