	Marwadi University **Faculty of Engineering & Technology** **Department of Information and Communication Technology**	
Subject: Programming With Python (01CT1309)	**Aim:** Practical based on Data Visualization with Plotly	
Experiment No: 24	**Date:**	**Enrollment No: 92400133181**

Aim: Practical based on Data Visualization with Plotly

IDE:

Installation

```
pip install plotly pandas
```

Creating a Sample Dataset

```
import pandas as pd
import plotly.express as px
```

Creating a Sample Dataset

```
# Sample data
data = {
    'Product': ['A', 'B', 'C', 'D', 'E'],
    'Sales': [100, 200, 150, 300, 250],
    'Profit': [30, 70, 50, 120, 90]
}
df = pd.DataFrame(data)
```

Creating Basic Visualizations

Bar Chart

```
# Bar chart for Sales
```

A bar chart is great for comparing quantities across categories.

```
fig = px.bar(df, x='Product', y='Sales', title='Sales by Product')
fig.show()
```

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Line Chart

A line chart can help visualize trends over time or categories.

```
# Line chart for Profit
fig = px.line(df, x='Product', y='Profit', title='Profit by Product')
fig.show()
```

Scatter Plot

A scatter plot is useful for examining the relationship between two numerical variables.

```
# Scatter plot for Sales vs. Profit
fig = px.scatter(df, x='Sales', y='Profit', color='Product', title='Sales vs. Profit')
fig.show()
```

Customizing Visualizations

Plotly allows for extensive customization. Let’s enhance our bar chart with more features.

```
# Enhanced Bar chart
fig = px.bar(df, x='Product', y='Sales',
             title='Sales by Product',
             color='Profit',  # Color by Profit
             text='Sales')    # Show sales value on bars

# Customize layout
fig.update_layout(xaxis_title='Product',
                  yaxis_title='Sales',
                  legend_title='Profit',
                  template='plotly_dark')  # Change template
```

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fig.show()

Exporting Visualizations

Plotly figures as static images or HTML files.

Save the figure as an HTML file

fig.write_html('sales_by_product.html')

Save the figure as a PNG file (you may need to install kaleido)

fig.write_image('sales_by_product.png')

Code:

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```python
import pandas as pd
import plotly.express as px
# Sample data
data = {
    'Product': ['A', 'B', 'C', 'D', 'E'],
    'Sales': [100, 200, 150, 300, 250],
    'Profit': [30, 70, 50, 120, 90]
}
df = pd.DataFrame(data)
# Bar chart for Sales
fig = px.bar(df, x='Product', y='Sales', title='Sales by Product')
fig.show()

fig = px.scatter(df, x='Sales', y='Profit', color='Product', title='Sales vs. Profit')
fig.show()

# Enhanced Bar chart
fig = px.bar(df, x='Product', y='Sales',
             title='Sales by Product',
             color='Profit',  # Color by Profit
             text='Sales')    # Show sales value on bars

# Customize layout
fig.update_layout(xaxis_title='Product',
                  yaxis_title='Sales',
                  legend_title='Profit',
                  template='plotly_dark')  # Change template
fig.show()

# Save the figure as an HTML file
fig.write_html('sales_by_product.html')

# Save the figure as a PNG file (you may need to install kaleido)
fig.write_image('sales_by_product.png')

```

Output:

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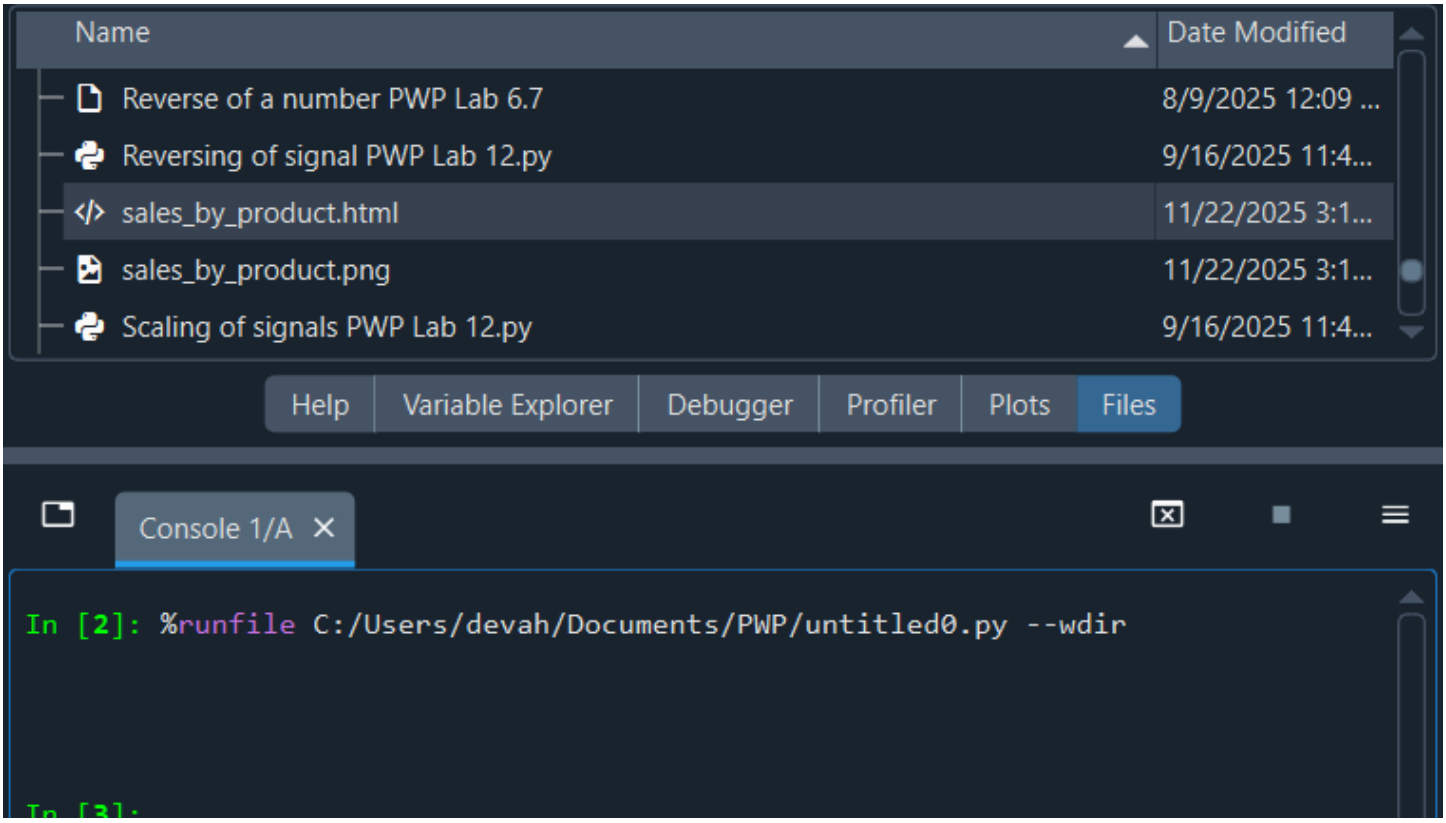

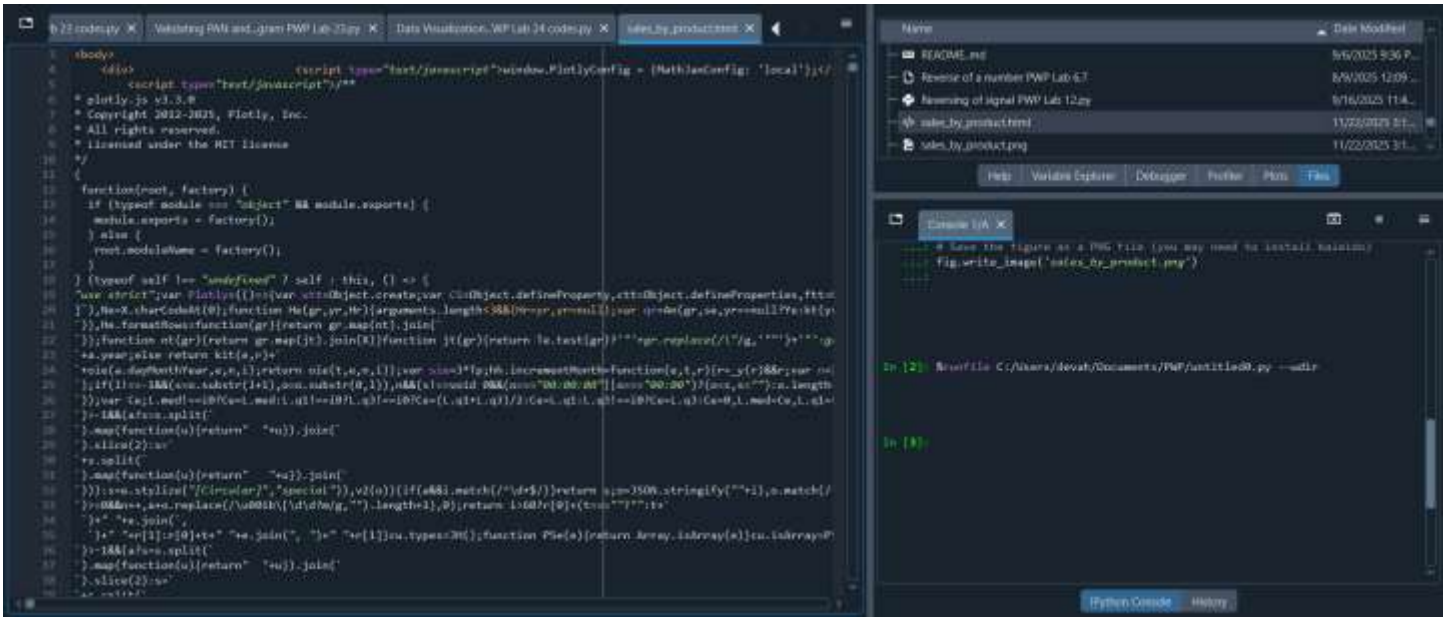

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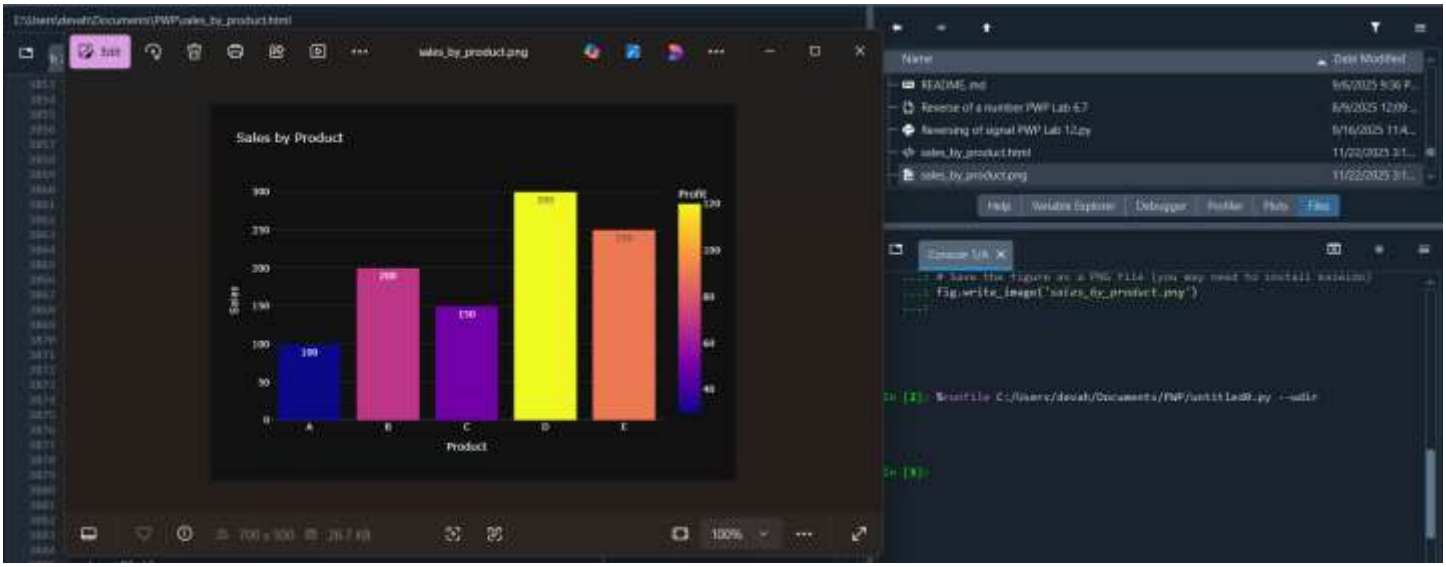

GitHub:

https://github.com/mallaadisrinivasu132035-code/python.git