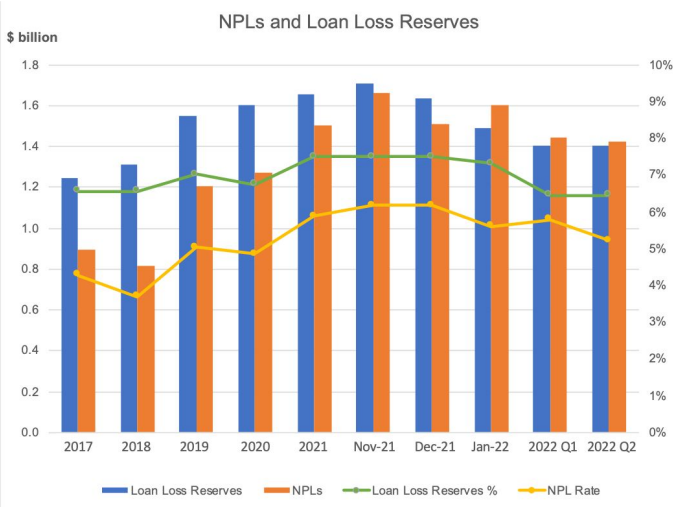
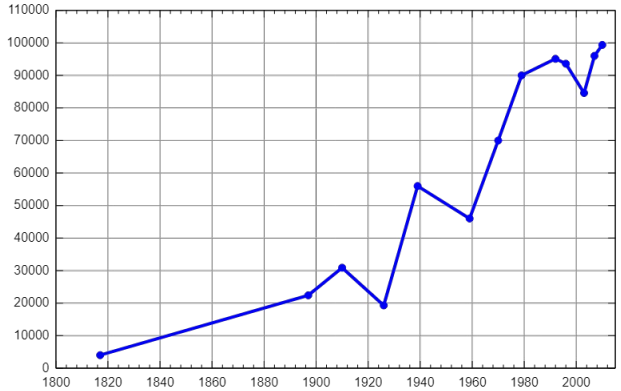
Introduction to Data Visualization

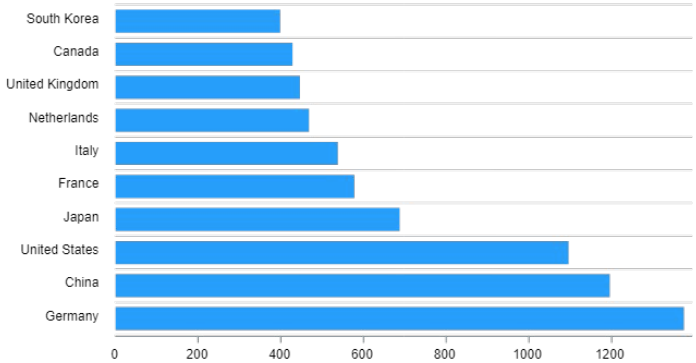
Data Visualization Basics

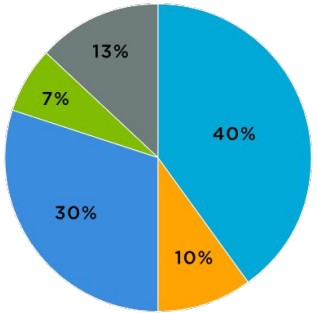
- Helps to understand data easily
- Common types: Bar, Line, Pie charts
- Visualize trends, comparisons, and proportions



Bar, Line, Pie (-Charts)

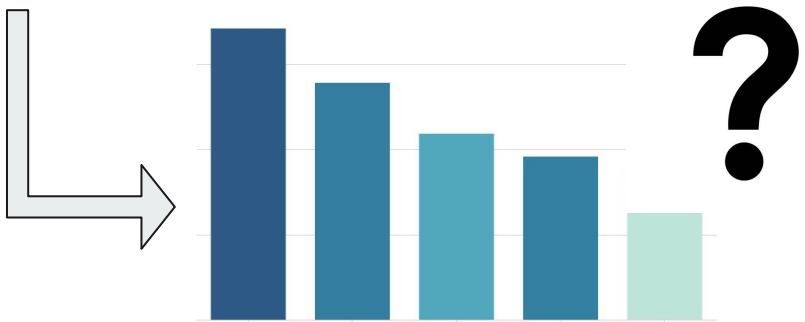






Example

Month	Sales ($)
January	500
February	700
March	600
April	800
May	750



Data Visualization Basics

1. Enter the data in Excel
2. Select the data range
3. Go to the Insert tab
4. Choose a chart type: Bar, Line, or Pie chart.

Right click on Chart Element → Customize Appearance

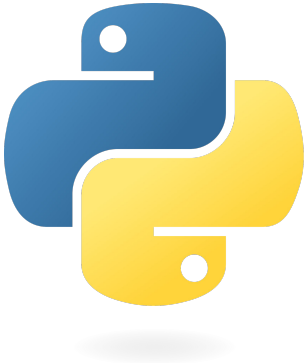
Task

Your individual **Screen-Time** as Bar-Chart per Weekday (in h)

Make it as green as possible

Part 2:
Data Visualization in PYTHON

Basics



- **Why Python for Data Visualization?**
  - Easy to use and popular for data science.
  - Many powerful libraries like **Matplotlib** or **Seaborn**.
  - Perfect for creating quick and interactive charts.

→ VERY **customizable**

Setup

- First, run: **`pip install matplotlib`**

```python
import matplotlib.pyplot as plt

# Example data
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May']
sales = [500, 700, 600, 800, 750]

# Create a simple line plot
plt.plot(months, sales)
plt.title("Monthly Sales")
plt.xlabel("Month")
plt.ylabel("Sales ($)")
plt.show()
```

Import

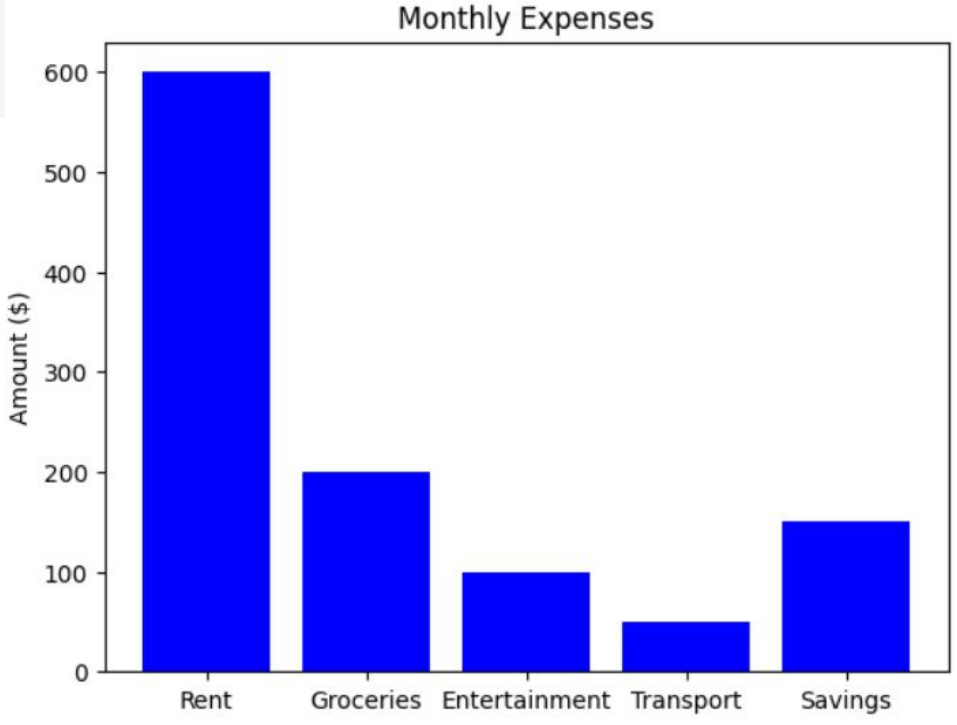
Data

Labels

Show actual plot

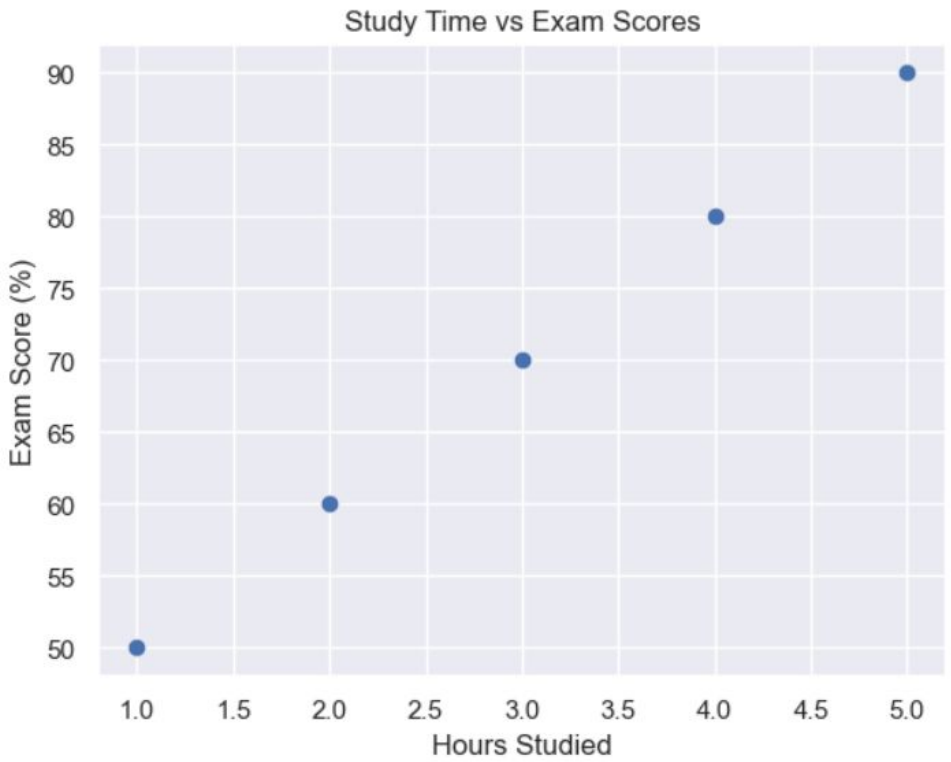
```
categories = ['Rent', 'Groceries', 'Entertainment', 'Transport', 'Savings']
expenses = [600, 200, 100, 50, 150]

# Create a bar chart
plt.bar(categories, expenses, color='blue')
plt.title("Monthly Expenses")
plt.ylabel("Amount ($)")
plt.show()
```



```python
hours_studied = [1, 2, 3, 4, 5]
exam_scores = [50, 60, 70, 80, 90]

# Scatter plot
plt.scatter(hours_studied, exam_scores)
plt.title("Study Time vs Exam Scores")
plt.xlabel("Hours Studied")
plt.ylabel("Exam Score (%)")
plt.show()
```



Homework

Task 1:

- Plot a **line chart** for the temperature data. Add a title, labels for both axes, and a grid.
- This is the data:

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

  temperatures = [20, 22, 19, 24, 25, 23, 21]

Homework

Task 2:

- Plot a **bar chart** for your screen Time (in h) for each day of the week
- Please use your own data or come up with one
- It could look like this **(just an example)**:

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

  Screen_time = [1, 3, 2, 3, 1, 2, 2]