User Scenario 2: Novice Python User

Contents

Introduction to Matplotlib.....3
Matplotlib Overview.....3

Creating a Bar Chart.....3
Install Matplotlib.....3
Create a Bar Chart.....3

Verification Commands.....4
Python Verification Command.....4

Introduction to Matplotlib

Matplotlib Overview

Matplotlib is a Python library widely used for creating data visualizations, such as line charts, bar charts, and scatter plots. This overview introduces Matplotlib and describes the requirements for installing and verifying it on your system.

Prerequisites

Before installing Matplotlib, ensure that Python and pip, Python's package installer, are installed on your computer. These are necessary for managing and installing Python libraries like Matplotlib.

Installation

Matplotlib can be installed using pip, which simplifies the process of adding libraries to your Python environment. Running the appropriate installation command in your terminal will complete the setup.

Verification

To verify that Matplotlib has been installed correctly, you can check the library's version from your Python IDE. Displaying the version helps confirm the installation and the library's compatibility with your Python environment.

Creating a Bar Chart

Install Matplotlib

Install the matplotlib library in Python, which is necessary for creating data visualizations.

1. Verify Dependencies: Before installing `matplotlib`, ensure that Python and `pip` are installed on your system. Run `python3 --version` to check Python and `pip --version` to check if pip is installed.
2. If either Python or pip is missing, follow these steps to install them: Run `python3 -m ensurepip` to install pip and download Python from the official website if necessary.
3. Once Python and pip are installed, install Matplotlib with the following command: `pip install matplotlib`.
4. After installation, verify that Matplotlib is installed correctly by running the following Python code in your Python IDE: `import matplotlib.pyplot as plt` followed by `print(matplotlib.__version__)`.

Create a Bar Chart

This task demonstrates how to create a bar chart using Python and Matplotlib.

1. Import matplotlib.pyplot into Python

   This command imports the necessary library for creating plots in Python.
2. Define Your Data: categories = ['A', 'B', 'C', 'D', 'E']; values = [10, 20, 15, 25, 30]

   This step defines the categories and values for the bar chart.
3. Create the Bar Plot using the `plt.bar()` function.
   The bar chart is now created using the categories and values defined earlier.
4. Add a Title to the Plot using the `plt.title()` function.

A title is added to the bar chart.

5. Add Axis Labels using the `plt.xlabel()` and `plt.ylabel()` functions.
   Labels for the X and Y axes are added to the chart.
6. Customize the bar color to Blue, using `plt.bar()` and `color`.
   The color of the bars in the chart is changed to blue.
7. Display the Plot using `plt.show()` again.
   The final chart with the blue bars is displayed again.
8. Final Bar Chart
   The final version of the bar chart is displayed below.

Verification Commands

Python Verification Command

Verification Commands for Python, pip, and Matplotlib

The following table lists common verification commands for checking the installation of Python, pip, and Matplotlib on your system. These commands ensure that required components are properly installed and available.

Component	Command	Description
Python	`python3 --version`	Checks if Python is installed and displays the installed version. If Python is not installed, an error message will appear.
pip	`pip --version`	Verifies that the pip package manager is installed and displays its version. If pip is not installed, an error message will appear.
Matplotlib	`import matplotlibprint(matplotlib.__version__)`	Imports Matplotlib and displays the installed version of the library. If Matplotlib is not installed, an import error will be raised.