

Summary Report of Polars

main.py:

This script defines four key functions for statistical analysis and plotting:

1. `get_mean(df, column_name)`: Calculates the mean of a list or polars data by summing all elements and dividing by the count.
2. `get_median(df, column_name)`: Sorts the input and returns the middle element (or average of two middle values for an even-length list).
3. `get_std(df, column_name)`: Computes the standard deviation by finding the squared differences from the mean, calculating variance, and returning the square root of the variance.
4. `get_plot(df, column_name)`: Plots the input data using matplotlib, setting titles and axis labels.

test_main.py:

This script tests the functions in main.py:

1. Loads data from an Excel file into a polars DataFrame.
2. Extracts the 'Progress' column to test (different from last assignment).
3. Defines functions to check if the DataFrame is loaded and verifies the accuracy of the `get_mean(df, column_name)`, `get_median(df, column_name)`, and `get_std(df, column_name)` functions by comparing them to polars' built-in methods.
4. Runs these tests and plots the data using `get_plot(df, column_name)`.

Results:

1. All assertions pass.
2. The statistics description is below:

count	46.0
null_count	0.0
mean	0.368913
std	0.415148
min	0.0
25%	0.0
50%	0.2
75%	0.78
max	1.0

Name: Progress, dtype: f64

3. The plot is below:

