User Guide: Turbidity Data Analysis

Purpose
The purpose of this code is to analyze data collected from a plate reading assay used to test turbidity for a protein aggregation assay. The code reads data from an Excel file and plots the turbidity values over time for multiple samples on the same graph. The resulting plot provides insights into the turbidity changes over the specified time range.

Code Overview
The code uses the pandas and matplotlib libraries to load the data from an Excel file, extract the relevant columns (time and turbidity values), and plot the turbidity values against time.

How to Use the Code
Follow the instructions below to use the code:

1. **Data Preparation**: Before running the code, ensure that you have an Excel file containing the turbidity data in the specified format. Update the `file_name` variable with the name of your Excel file. Make sure the data is organized in columns, with the time values in one column and the turbidity values for each sample in separate columns.

2. **Specify Data Ranges**: Open the Excel file and identify the sheet name containing the data. Update the `sheet_name` variable with the appropriate sheet name. Additionally, specify the desired time range and sample range by updating the `time_range` and `sample_range` variables, respectively. These ranges define the portion of the data you want to analyze.

3. **Run the Code**: Execute the code, and it will load the data from the specified Excel file, extract the relevant columns, and plot the turbidity values against time. The resulting plot will show the turbidity trends for each sample.

4. **View and Customize the Plot**: Once the code is executed, a plot window will appear showing the turbidity values over time. Use the plot window's features to zoom in/out, pan, and save the plot as an image if desired. You can also customize the plot appearance by modifying the code (e.g., line styles, markers, labels, title, etc.) to suit your preferences.

Note: Ensure that you have the necessary dependencies (`pandas`, `matplotlib`) installed to run the code successfully.

That's it! You can use this user guide to understand the purpose of the code and how to use it effectively for analyzing turbidity data from a plate reading assay.