## Overview

The script is a data processing tool that reads a CSV file, performs various operations such as filtering, generating summary statistics, plotting, and saving the processed data. It is designed in an object-oriented manner with a DataProcessor class encapsulating the data processing functionalities.

## Dependencies

The script requires the following Python libraries:

* pandas
* sys
* matplotlib.pyplot
* os

## Class: DataProcessor

This class is initialized with a filename and reads the CSV file into a pandas DataFrame. It provides methods to fill NA values, filter data, get summary statistics, plot data, and save processed data.

## Methods

* \_\_init\_\_(self, filename): Initializes the DataProcessor with the given filename and reads the CSV file.
* read\_csv\_file(self): Reads the CSV file into a pandas DataFrame and fills NA values.
* fill\_na\_values(df): Fills NA values in the DataFrame. Integer and float columns are filled with 0, and object columns are filled with "-".
* filter\_data(self, columns): Filters the DataFrame by the given columns.
* get\_summary\_stats(self): Prints the summary statistics of the DataFrame.
* plot(self, attr): Plots the DataFrame with the given attributes. The attributes should be a list containing the kind of plot, title, xlabel, and ylabel.
* save\_processed\_data(self): Saves the processed DataFrame to a CSV file.

## Function: process\_data(filename)

This function creates a DataProcessor with the given filename and performs various data processing tasks based on user input. It prints the DataFrame, asks the user if they want to filter the data, gets summary statistics, and asks the user if they want to plot the data.

## Usage

The script can be run from the command line with the filename as an argument. If no filename is provided, it will prompt the user to enter a filename. After reading the CSV file, it will print the DataFrame and ask the user if they want to filter the data. If the user answers "yes", it will prompt the user to enter the columns to filter by. It will then print the filtered DataFrame and save it to a CSV file. It will print the summary statistics of the DataFrame and ask the user if they want to plot the data. If the user answers "yes", it will prompt the user to enter the plot attributes.

## Note

The script assumes that the input CSV file exists and is in the correct format. It also assumes that the user inputs are valid. For example, when filtering data, it assumes that the user enters valid column names. When plotting data, it assumes that the user enters valid plot attributes. If these assumptions are not met, the script may not work as expected. It is recommended to handle these potential issues to make the script more robust.