**User Manual for Density Check Program**

**Introduction**

The Density Check Program is a GUI application that allows users to perform density checks on different products. It calculates the density of a product based on its width, length, thickness, and weight, and compares it with the intended density. It also saves the results of the density checks to a file and displays the prior checks from the file.

The program is written in Python and uses the Tkinter module for creating the GUI. It requires Python 3.x and PIL (Python Imaging Library) to run.

**Installation**

To install the program, you need to download the source code file `GehrmannEddieFinalProject.py ` from the developer's GitHub repository. You also need to download the images `TFCO Image.jpg`, `caliper.jpeg`, and `measurement.jpeg` and save them in the same folder as the source code file.

To run the program, you need to have Python 3.x and PIL installed on your system. You can install Python from the official website: https://www.python.org/downloads/. You can install PIL using pip:

$ python -m pip install pillow

To launch the program, you need to open a terminal or a command prompt and navigate to the folder where you saved the source code and the images. Then, you need to run the following command:

$ python GehrmannEddieFinalProject.py

This will open the main window of the program.

You can also save a shortcut copy of the GehrmannEddieFinalProject.py to your desktop and proceed to launch by double clicking the desktop icon.

## **Usage**

The main window of the program has three buttons: Check Density, Review Prior Checks, and Quit.

* The Check Density button opens a new window where you can enter the information for the density check, such as the lot number, the product type, the intended density, the width, the length, the thickness, and the weight. You can also click the Date button to get the current date and time. The window also shows two images that illustrate how to measure the product using a caliper. To calculate the density, you need to click the Calculate Density button. The result will be displayed in the Calculated density entry. You can also save the result to a file by clicking the Save button.
* To clear the entries, you can click the Clear button.
* The Review Prior Checks button opens a new window where you can see the contents of the file that stores the prior density checks. The file name is density\_checks.txt and it is in the same folder as the source code and the images. The window has a text widget and a scrollbar that allows you to scroll through the file contents.
* The Quit button closes the program.

The main window also shows the logo of the company that the developer works for.

## Troubleshooting

If you encounter any problems or errors while using the program, you can try the following solutions:

* Make sure you have Python 3.x and PIL installed on your system and that they are compatible with your operating system.
* Make sure you have downloaded the source code and the images from the correct source and that they are not corrupted or modified.
* Make sure you have saved the source code and the images in the same folder and that you have permission to access them.
* Make sure you have entered valid and positive values for the width, length, thickness, and weight of the product. If you enter invalid or negative values, the program will display an error message box.
* Make sure you have filled out all entry places leaving non of them blank, or an error message box will be displayed.
* Make sure you have enough disk space to save the results of the density checks to the file. If you run out of disk space, the program will not be able to write to the file.

## FAQ

Here are some frequently asked questions about the program:

* Q: How do I update the program?
* A: To update the program, you need to download the latest version of the source code and the images from the developer’s website or GitHub repository and replace the old files with the new ones.
* Q: How do I report bugs or request features?
* A: To report bugs or request features, you can contact the developer or the support team using the contact information provided in the next section.
* Q: How do I uninstall the program?
* A: To uninstall the program, you need to delete the source code file, the images, and the file that stores the prior density checks from your system.

## Contact:

If you have any questions, comments, or feedback about the program, you can contact the developer using the following information:

* Developer: Eddie Gehrmann
* Email: eddiegehrmann@gmail.com
* GitHub: [Edgehrmann/Density-Check-GUI-Application: GUI That can be used to check density and store checks inside of text file for user. (github.com)](https://github.com/Edgehrmann/Density-Check-GUI-Application)