

Quine-McCluskey Algorithm App

User Manual

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Welcome to the user manual for the Quine-McCluskey Algorithm App! This application provides a graphical user interface (GUI) for utilizing the Quine-McCluskey algorithm to solve and output the corresponding boolean expression given minterms and don't cares. This user manual will provide an overview of the functionalities and usage of the app.

Contents

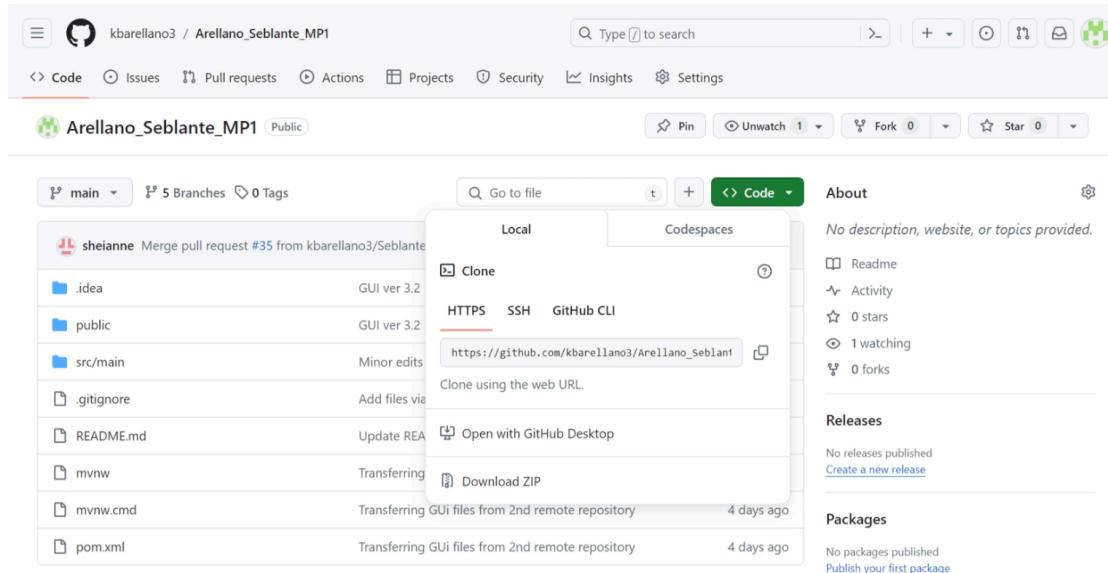
Introduction	2
Chapter 1: Installation	4
Chapter 2: Getting Started	
Install Fonts	5
Launch the Application	7
Interface Overview	8
Chapter 3: Using the App	
Input Fields	9
Solve	9
Error Handling	10
Labels	11
Chapter 4: Tips for Effective Usage	12
Conclusion	1

Chapter 1: Installation

Installation

The Quine-McCluskey Algorithm App is a Java application built using JavaFX. To install the Quine-McCluskey Algorithm App, follow these steps:

1. Download the source code from this [link](#).



2. Open the downloaded source code in a Java IDE, such as IntelliJ IDEA or Eclipse.

Tip: Before running the application in your IDE, ensure that your IDE is configured to use a compatible Java Development Kit (JDK). Most IDEs come bundled with a JDK or provide an option to download and configure one during installation.

3. Compile the code and run the application.

Chapter 2: Getting Started

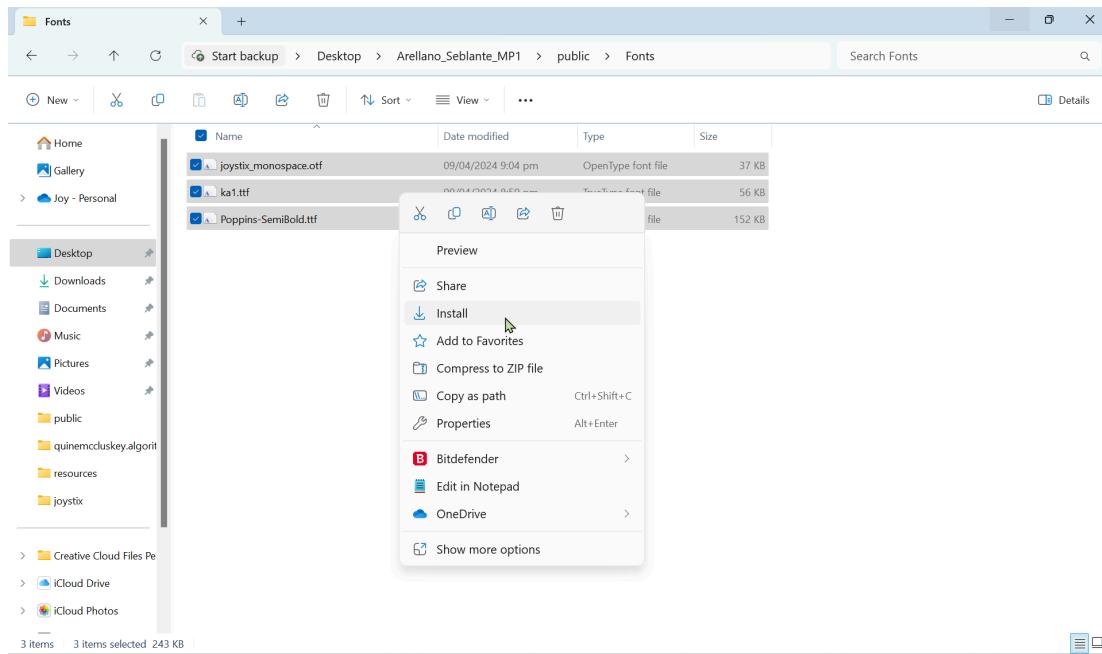
Once you have installed or downloaded the application, follow these steps to get started:

Install Fonts

Users need to install the font files found in the `public/Fonts` folder of the project. Below are the steps on how to do this on Windows and Mac:

Windows

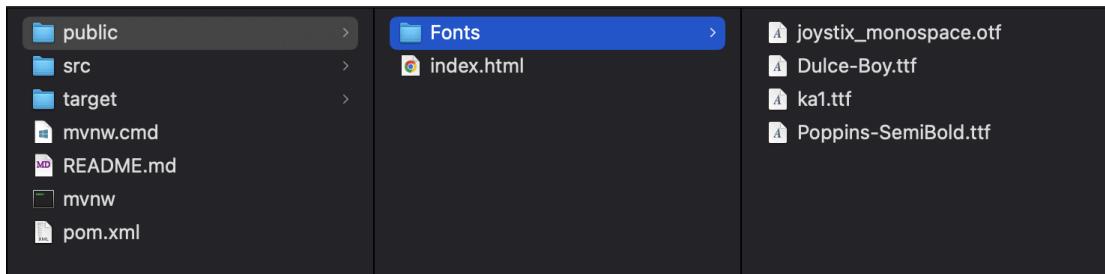
1. Open File Explorer and navigate to the `public/Fonts` folder of the project.
2. Select all the font files in the folder (e.g., `.ttf`, `.otf`).
3. Right-click on one of the selected font files and choose "Install" from the context menu.



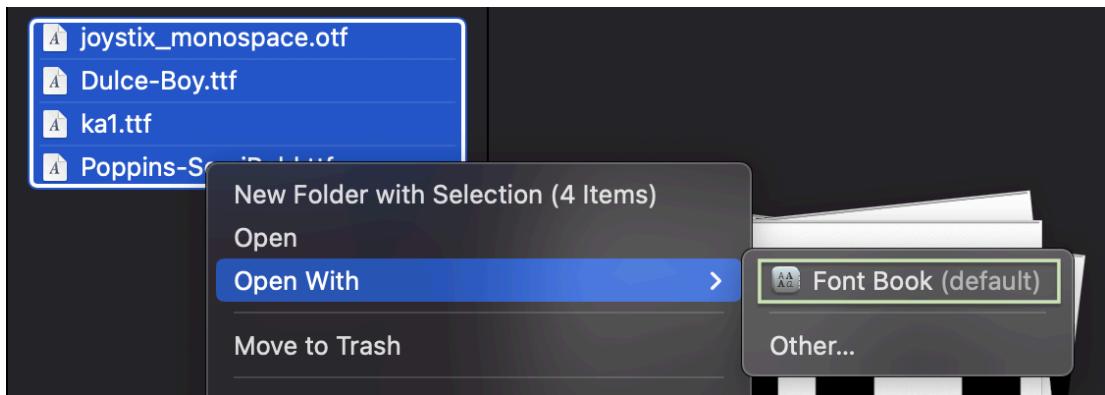
4. Windows will install the font files, and they will be available for use in other applications.

Mac

1. Open Finder and navigate to the `public/Fonts` folder of the project.



2. Select all the font files in the folder (e.g., `.ttf`, `.otf`).
3. Right-click on one of the selected font files and choose "Open With" > "Font Book" from the context menu.



4. Font Book will open with a preview of each font file. Click "Install Font" for each file to install them on your Mac.

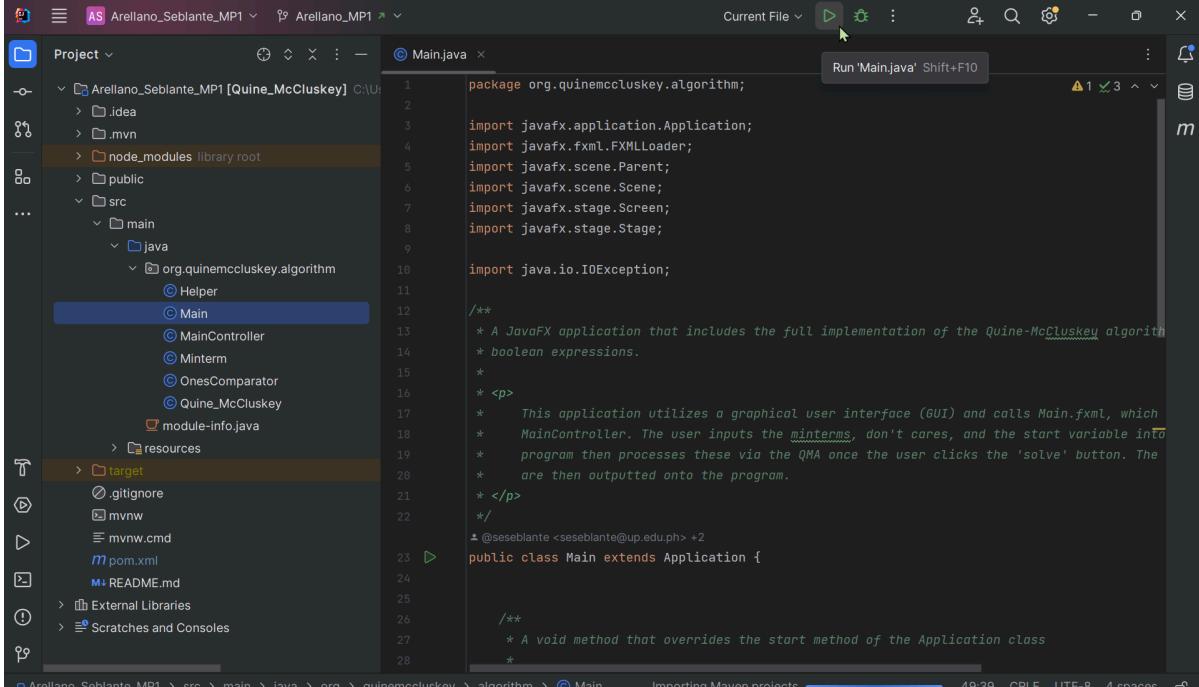


5. The font files will be installed and available for use in other applications.

Make sure to follow these additional steps to install the font files so that they can be properly utilized by the Quine-McCluskey Algorithm App.

Launch the Application

Run the application by running the main class from your IDE.



The screenshot shows the IntelliJ IDEA interface with the following details:

- Project View:** Shows the project structure under "Arellano_Sebante_MP1". The "src" directory contains "main", which has "java" and "org.quinemccluskey.algorithm". Inside "org.quinemccluskey.algorithm" are "Helper", "Main", "MainController", "Minterm", "OnesComparator", and "Quine_McCluskey".
- Main.java Content:**

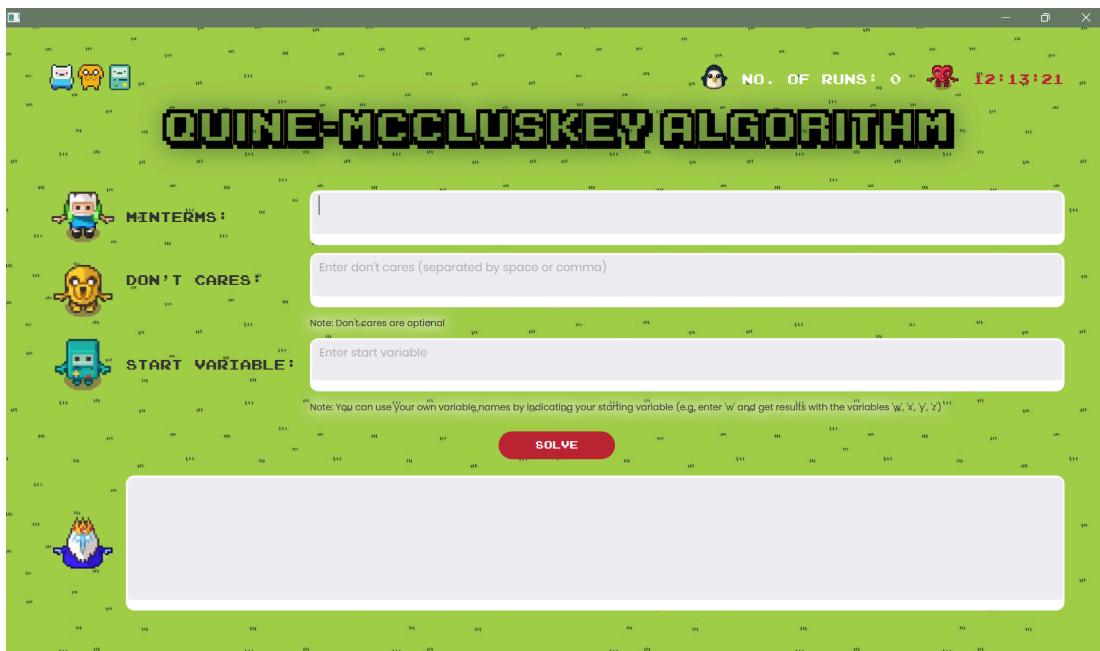
```

1 package org.quinemccluskey.algorithm;
2
3 import javafx.application.Application;
4 import javafx.fxml.FXMLLoader;
5 import javafx.scene.Parent;
6 import javafx.scene.Scene;
7 import javafx.stage.Screen;
8 import javafx.stage.Stage;
9
10 import java.io.IOException;
11
12 /**
13 * A JavaFX application that includes the full implementation of the Quine-McCluskey algorithm
14 * using boolean expressions.
15 *
16 * <p>
17 * This application utilizes a graphical user interface (GUI) and calls Main.fxml, which
18 * is controlled by MainController. The user inputs the minterms, don't cares, and the start variable into
19 * the program then processes these via the QMA once the user clicks the 'solve' button. The
20 * results are then outputted onto the program.
21 *
22 * </p>
23 */
24
25 @seseblante <seseblante@up.edu.ph> +2
26 public class Main extends Application {
27
28     /**
29      * A void method that overrides the start method of the Application class
30      *
31      */
32 }
```
- Toolbars and Status Bar:** The top bar shows "Current File" and a green play/run icon. The status bar at the bottom right shows "Importing Maven projects", "49:39", "CRLF", "UTF-8", "4 spaces", and a file icon.

Interface Overview

The main GUI consists of several elements:

- Text Areas: Input areas for entering minterms, don't cares, and the starting variable.
- Output Area: Displays the result of the boolean expression or error messages.
- Labels: Display information, such as the number of successful runs and current time.



Chapter 3: Using the App

The Quine-McCluskey Algorithm App offers a simple and intuitive interface for users to interact with. Here are the main features and functionalities:

Input Fields

- **Minterms Text Area:** Enter the minterms separated by commas or spaces.



- **Don't Cares Text Area:** Optionally, enter the don't cares separated by commas or spaces.



- **Starting Variable Text Area:** Optionally, enter the starting variable as a single letter.

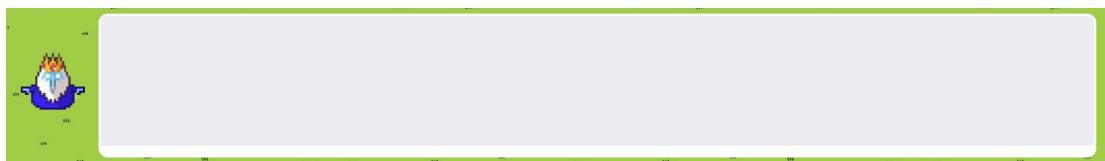


Solve

- Clicking on the **Solve** button triggers the algorithm to perform calculations based on the provided inputs.



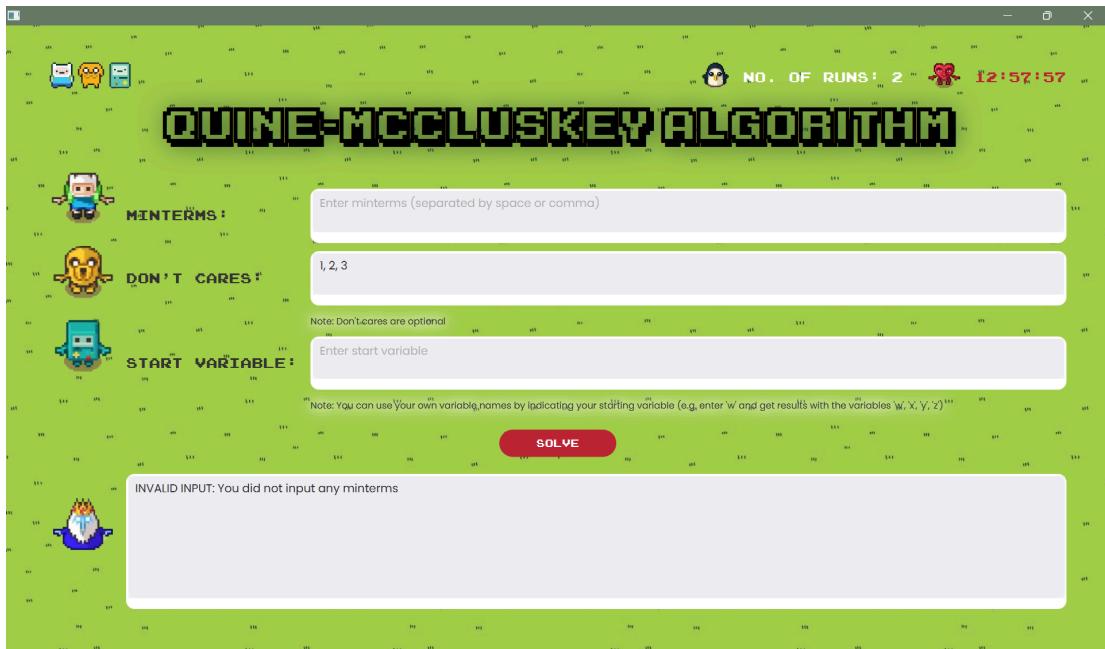
- The result of the calculations will be displayed in the **Output Text Area**.



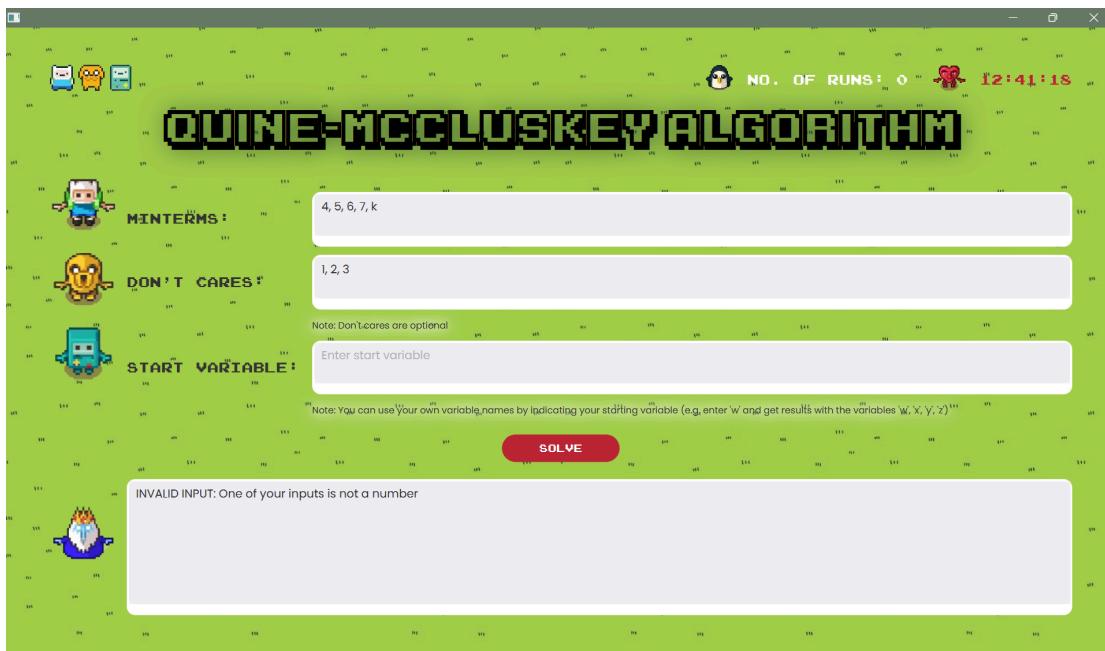
Error Handling

The app includes error handling to ensure valid inputs are provided:

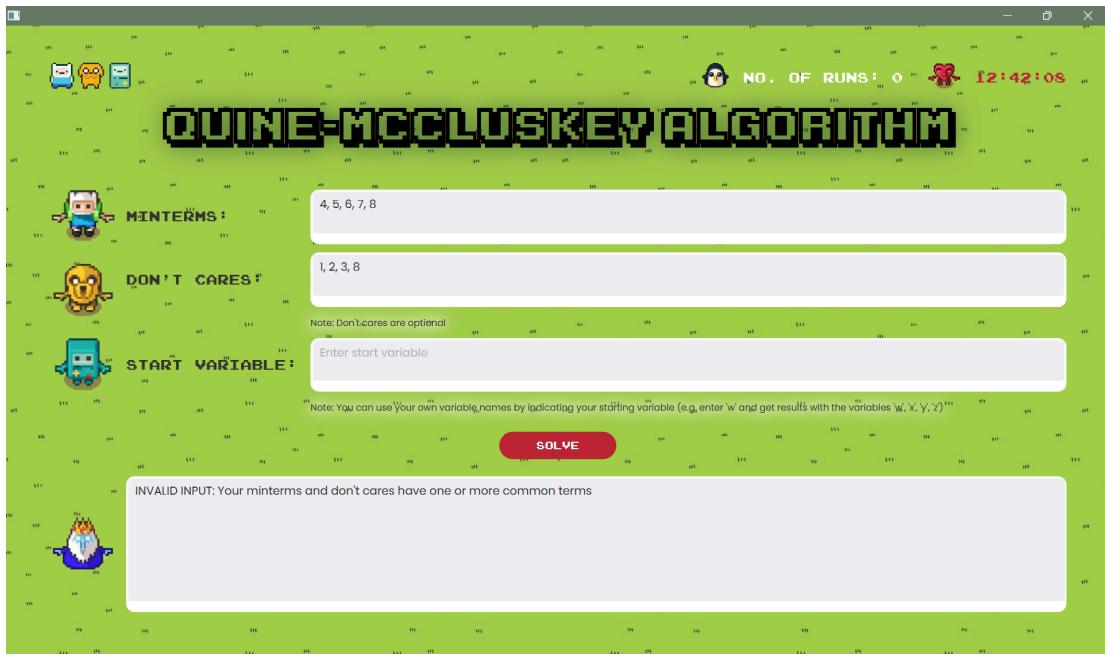
- If no minterms are entered, an error message will be displayed.



- If any input is not a number (minterms and don't cares), an error message will be displayed.



- If there are common terms between minterms and don't cares, an error message will be displayed.



Labels

- The **Num Successful Runs Label** displays the number of successful runs performed by the algorithm.



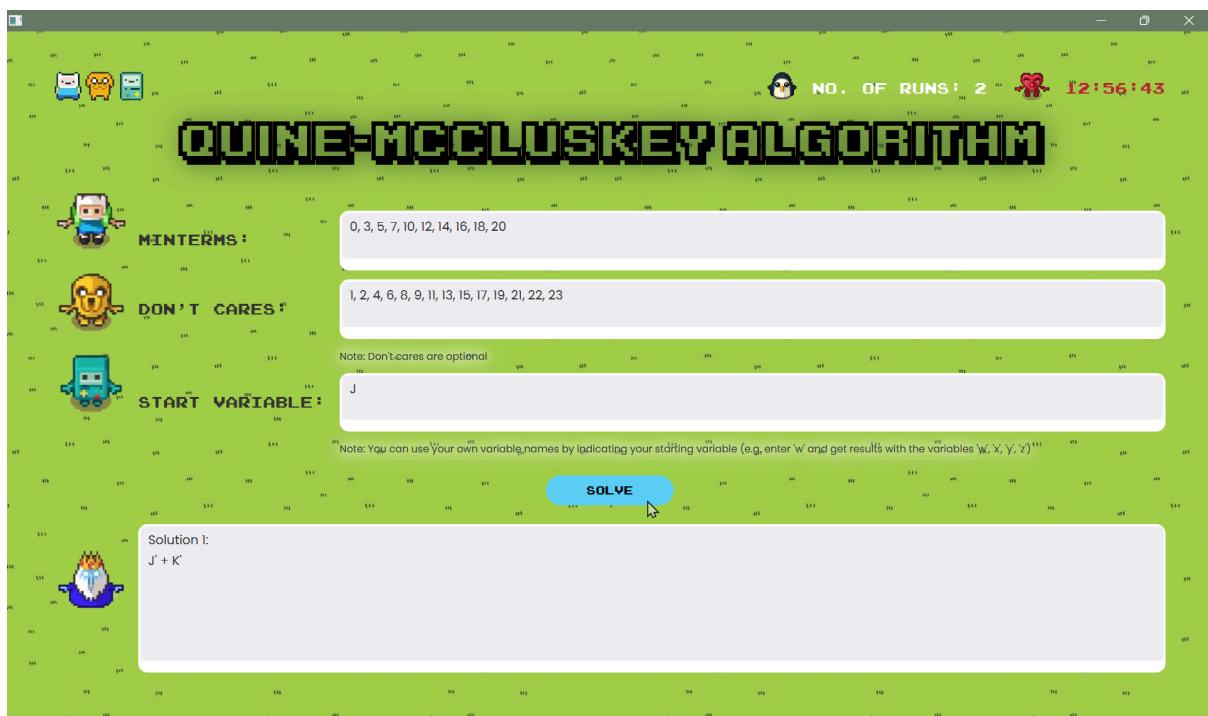
- The **Time Label** shows the current time and updates every second.



Chapter 4: Tips for Effective Usage

Here are some tips for the application to run properly:

- Ensure proper installation of the Quine-McCluskey Algorithm App.
- Pay attention to input fields and make sure to enter valid values.
- Be aware of error handling mechanisms in place. The app will display error messages in certain cases:
 - If no minterms are entered.
 - If any input for minterms and don't cares is not a number.
 - If there are common terms between minterms and don't cares.



Congratulations! You are now familiar with the Quine-McCluskey Algorithm App and its functionalities. Utilize this tool to simplify Boolean expressions efficiently. If you encounter any issues or have suggestions for improvement, feel free to provide feedback to the development team.

Thank you for using the Quine-McCluskey Algorithm App!