

# **Quine-McCluskey Algorithm App User Manual**

**ARELLANO, Kristine Joy B.**

kbarellano3@up.edu.ph

**SEBLANTE, Sheianne Deeno E.**

seseblante@up.edu.ph

**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

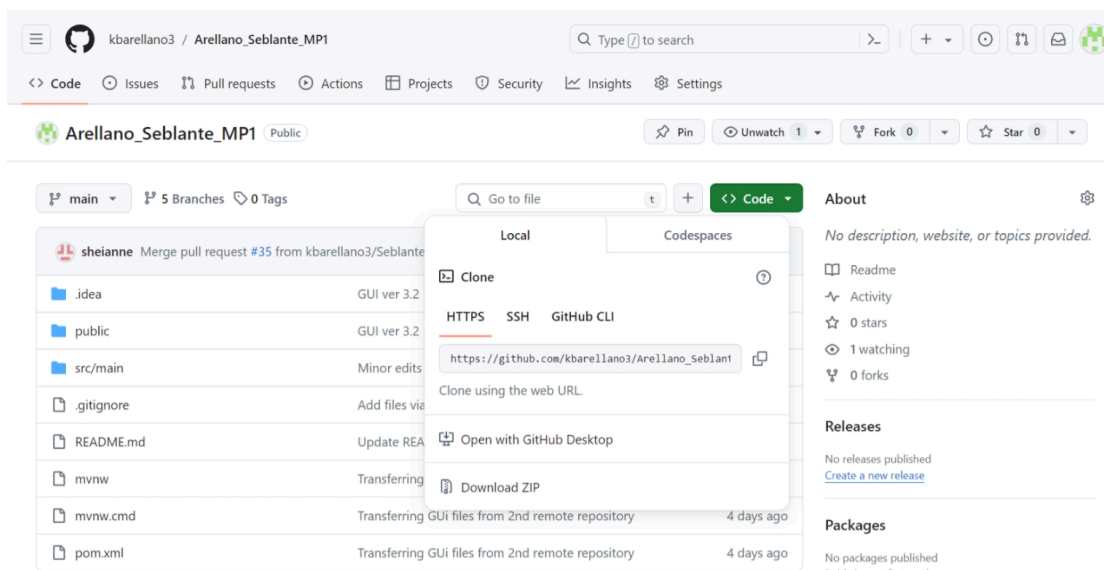
<b>Introduction</b> .....	2
<b>Chapter 1: Installation</b> .....	4
<b>Chapter 2: Getting Started</b>	
Launch the Application .....	5
Interface Overview .....	6
<b>Chapter 3: Using the App</b>	
Input Fields .....	7
Solve .....	7
Error Handling .....	8
Labels .....	9
<b>Chapter 4: Tips for Effective Usage.</b> .....	10
<b>Conclusion</b> .....	11

# 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.

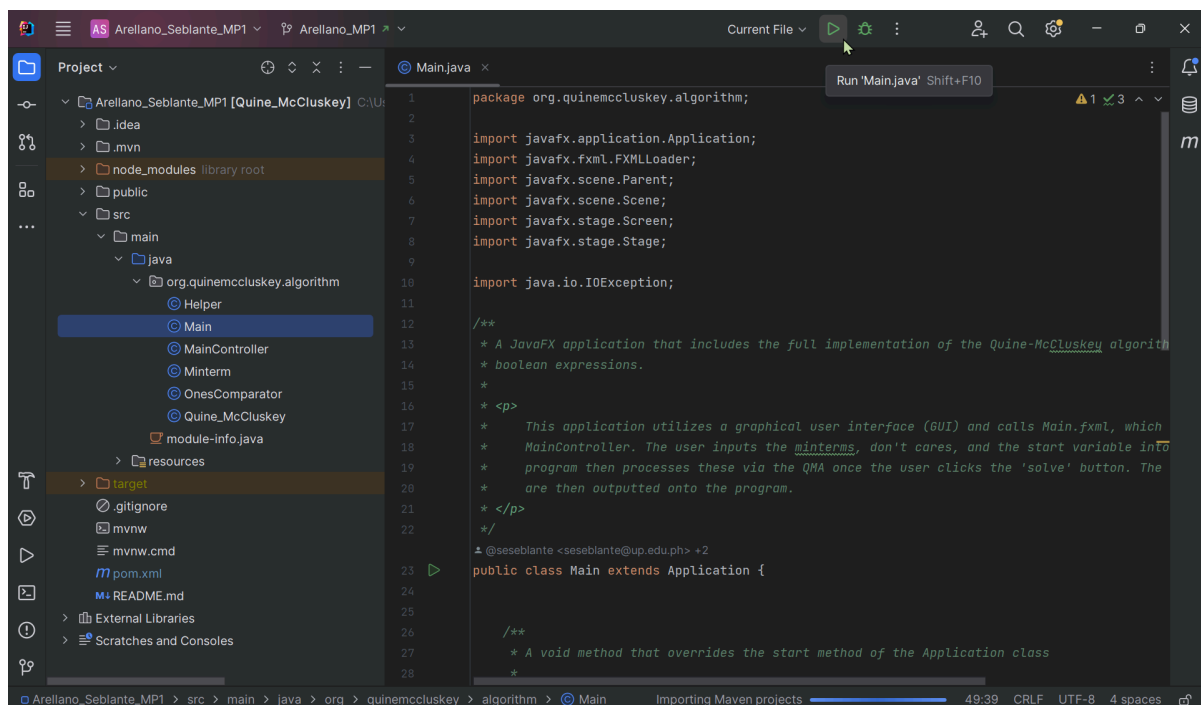
3. Compile the code and run the application.

# Chapter 2: Getting Started

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

## Launch the Application

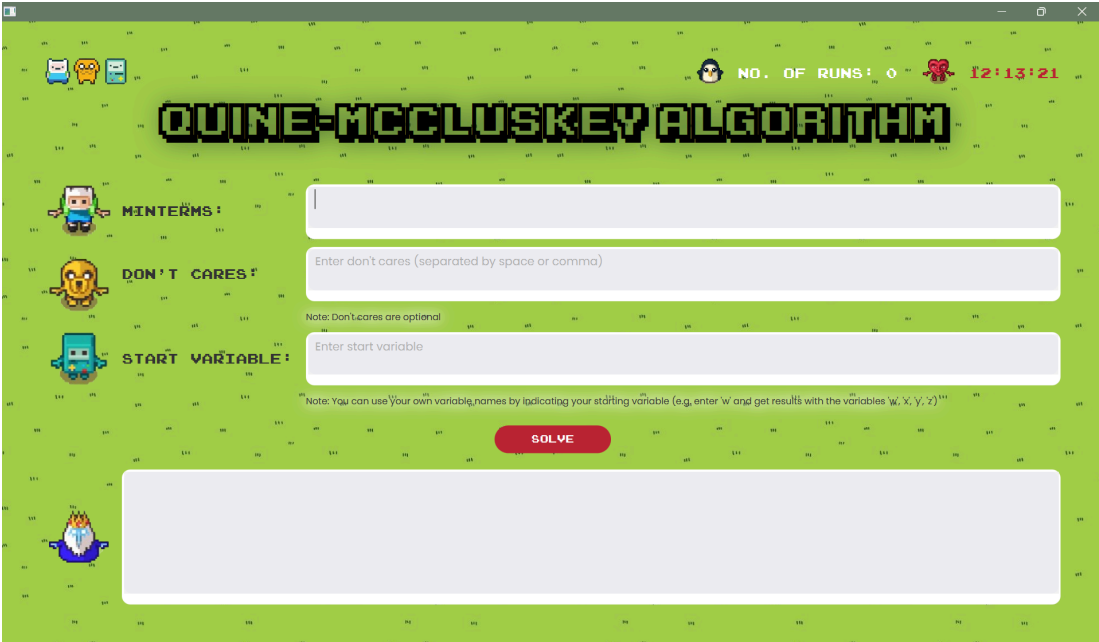
Run the application by running the main class from your IDE.



# 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.



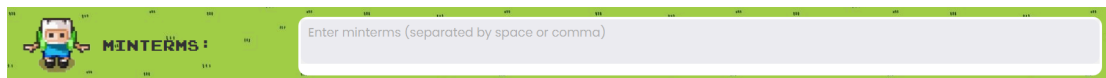
The screenshot shows a web-based interface for the Quine-McCluskey Algorithm. The background is green with a repeating pattern of small, faint text and icons. At the top, there are three small icons (a car, a robot, and a car) on the left, and a penguin icon, the text "NO. OF RUNS: 0", a red robot icon, and a digital clock showing "12:13:21" on the right. The title "QUINE-MCCLUSKEY ALGORITHM" is displayed in large, bold, black, pixelated letters. Below the title, there are three input sections, each with a character icon on the left and a text input field on the right. The first section is labeled "MINTERMS:" with a character icon. The second section is labeled "DON'T CARES:" with a character icon and a placeholder text "Enter don't cares (separated by space or comma)". The third section is labeled "START VARIABLE:" with a character icon and a placeholder text "Enter start variable". Below these sections, there is a note: "Note: Don't cares are optional" and "Note: You can use your own variable names by indicating your starting variable (e.g. enter 'w' and get results with the variables 'w, x, y, z')". A red "SOLVE" button is located below the notes. At the bottom, there is a large, empty white rectangular area for the output.

# Chapter 3: Using the App

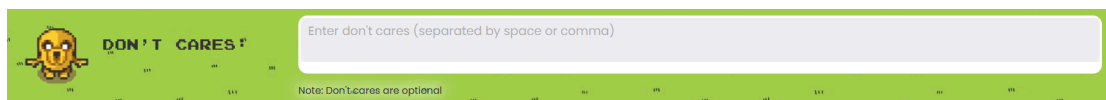
The Quine-McCluskey Algorithm App offers a simple and intuitive interface for users to interact with. Here are the main features and functionalities:

## Input Fields

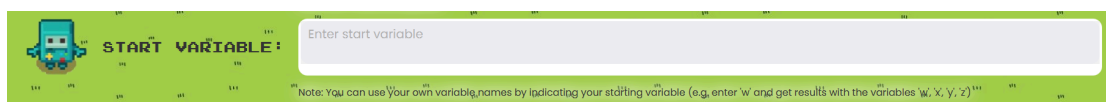
- **Minterms Text Area:** Enter the minterms separated by commas or spaces.



- **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.

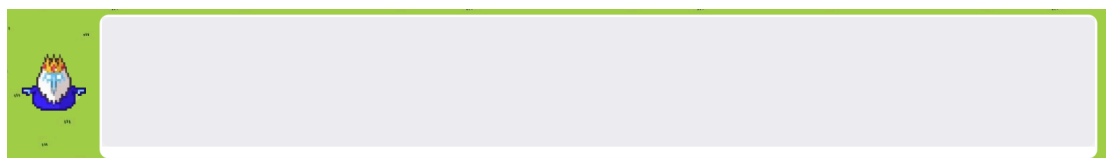


## Solve

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



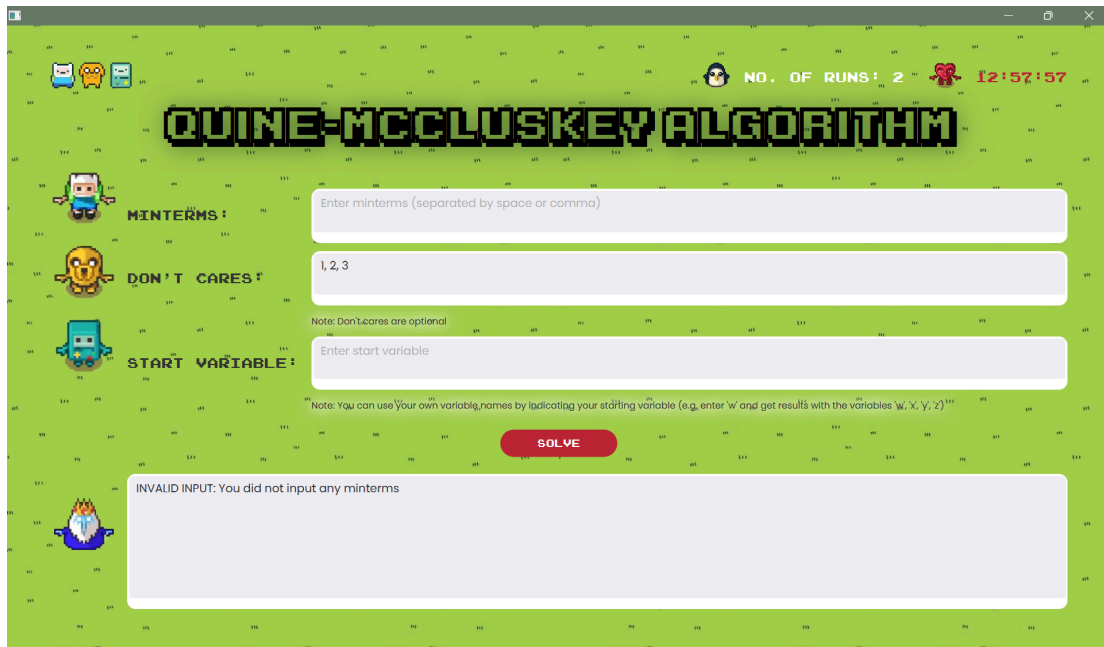
- The result of the calculations will be displayed in the **Output Text Area**.



# Error Handling

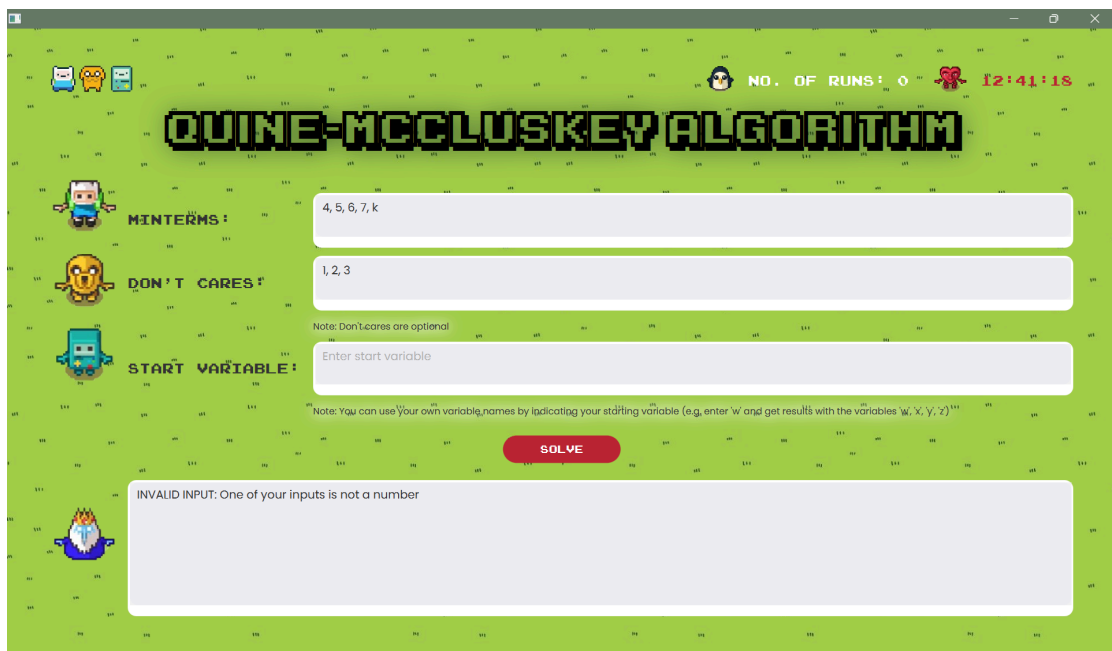
The app includes error handling to ensure valid inputs are provided:

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



The screenshot shows the 'QUINE-MCCLUSKEY ALGORITHM' app interface. At the top, it displays 'NO. OF RUNS: 2' and a timer '12:57:57'. The main title 'QUINE-MCCLUSKEY ALGORITHM' is in large, bold, black letters. Below the title, there are three input fields: 'MINTERMS:', 'DON'T CARES:', and 'START VARIABLE:'. The 'MINTERMS:' field is empty, and the 'DON'T CARES:' field contains '1,2,3'. A red 'SOLVE' button is located below the input fields. At the bottom, a large white box displays the error message: 'INVALID INPUT: You did not input any minterms'.

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



The screenshot shows the 'QUINE-MCCLUSKEY ALGORITHM' app interface. At the top, it displays 'NO. OF RUNS: 0' and a timer '12:41:18'. The main title 'QUINE-MCCLUSKEY ALGORITHM' is in large, bold, black letters. Below the title, there are three input fields: 'MINTERMS:', 'DON'T CARES:', and 'START VARIABLE:'. The 'MINTERMS:' field contains '4, 5, 6, 7, k', the 'DON'T CARES:' field contains '1,2,3', and the 'START VARIABLE:' field is empty. A red 'SOLVE' button is located below the input fields. At the bottom, a large white box displays the error message: 'INVALID INPUT: One of your inputs is not a number'.



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

NO. OF RUNS: 0 12:42:08

# QUINE-MCCLUSKEY ALGORITHM

MINTERMS: 4, 5, 6, 7, 8

DON'T CARES: 1, 2, 3, 8

START VARIABLE: Enter start variable

Note: Don't cares are optional

Note: You can use your own variable names by indicating your starting variable (e.g. enter 'w' and get results with the variables 'w, x, y, z')

SOLVE

INVALID INPUT: Your minterms and don't cares have one or more common terms

## 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.

The screenshot shows a web application titled "QUINE-MCCLUSKEY ALGORITHM" on a green background with a grid of small icons. The interface includes several input fields and a solve button. At the top right, it displays "NO. OF RUNS: 2" and a timer "12:56:43". The main input section has three fields: "MINTERMS:" with the value "0, 3, 5, 7, 10, 12, 14, 16, 18, 20", "DON'T CARES:" with the value "1, 2, 4, 6, 8, 9, 11, 13, 15, 17, 19, 21, 22, 23", and "START VARIABLE:" with the value "J". A note below the start variable field states: "Note: Don't cares are optional" and "Note: You can use your own variable names by indicating your starting variable (e.g. enter 'w' and get results with the variables 'w, x, y, z')". A blue "SOLVE" button is positioned below the input fields. At the bottom left, there is a "Solution I:" label and a text box containing the result "J' + K'".

NO. OF RUNS: 2 12:56:43

## QUINE-MCCLUSKEY ALGORITHM

MINTERMS: 0, 3, 5, 7, 10, 12, 14, 16, 18, 20

DON'T CARES: 1, 2, 4, 6, 8, 9, 11, 13, 15, 17, 19, 21, 22, 23

Note: Don't cares are optional

START VARIABLE: J

Note: You can use your own variable names by indicating your starting variable (e.g. enter 'w' and get results with the variables 'w, x, y, z')

SOLVE

Solution I:  
J' + K'

**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!**