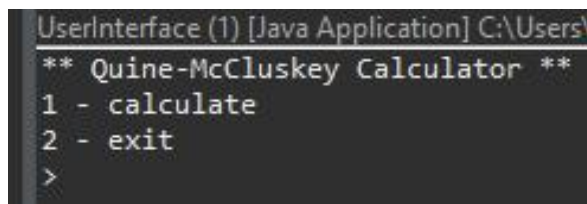


About the Program

This program is a boolean expression simplifier using the Quine–McCluskey method. It has a user interface, and it starts with a menu where you can choose to calculate or to exit the program. If you choose to calculate, it will ask you to input your variables and minterms, and the output is the simplified boolean expression. The program works by using many loops and conditionals in the code that makes the program user friendly so that it can do all the computations effectively from the appropriate inputs. This also means that it is able to handle errors or incorrect inputs by prompting you to input again. The programming language for this program is Java, and it is coded and ran in Eclipse which is an integrated development environment (IDE).

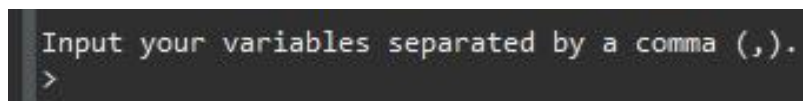
User's Guide

Firstly, run the program. The image below you is what you'll see first:

A screenshot of a Java application window titled "UserInterface (1) [Java Application] C:\Users\...". The window displays a menu for the "Quine-McCluskey Calculator". The menu options are "1 - calculate" and "2 - exit". A prompt character ">" is visible at the bottom of the menu.

```
UserInterface (1) [Java Application] C:\Users\...
** Quine-McCluskey Calculator **
1 - calculate
2 - exit
>
```

Type a number from 1 to 2. The ">" symbol will indicate the input marker for this program. Inputting anything else other than 1 or 2, the program will prompt you to input again. If you input "2", the program will be terminated. If you input "1", it will bring you here:

A screenshot of the input prompt for variables. It shows the text "Input your variables separated by a comma (,)." followed by a prompt character ">".

```
Input your variables separated by a comma (,).
>
```

You can input anything you want separated by a comma. However, the program will only take the first character of each group separated by a comma. For example, if you typed "apple, boat, cat, Zulu", the program will only get "a,b,c,Z". You can input the same first character (such as "a,a,ant,b,bubble"), but this is highly discouraged so that there's no confusion. Putting at least two commas beside each other will prompt you to input again as shown below:

```

Input your variables separated by a comma (,).
>a,b,,c,,,d,,,,,,,,,,,,,,,,,,,,,,,,,,,,,e

** Please don't put the commas beside each other. **

Input your variables separated by a comma (,).
>

```

After you input your variables correctly, you will see this next:

```

Input your variables separated by a comma (,).
>a,b,c,d
Input minterms that evaluate to 1 separated by a comma.
>

```

Type down the integers from 0 to $2^n - 1$ where n is the number of variables. These integers will be your minterms that evaluate to 1. The program will only get unique values (e.g. "1,2,2,2,3,3" → "1,2,3"), and it will take the absolute value of them (e.g. "1,-2,-3" → "1,2,3"). If you input anything incorrectly, it will prompt you to input again. Here's an example of an error handling:

```

Input your variables separated by a comma (,).
>a,b,c,d
Input minterms that evaluate to 1 separated by a comma.
>0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,100

** Invalid input. Minterm count and at least one minterm is greater than 16 and 15, respectively. **

Input minterms that evaluate to 1 separated by a comma.
>|

```

After inputting your minterms correctly, the program will display your inputted variables and minterms, the simplified expression, and the menu from the start accordingly as shown below:

```

Your inputted variables: [a, b, c, d]
Your inputted minterms: [1, 4, 6, 7, 8, 9, 10, 11, 15]

Simplified Expression:
F(a,b,c,d) = b'c'd + a'bd' + bcd + ab'

** Quine-McCluskey Calculator **
1 - calculate
2 - exit
>

```

Since the menu is back again, you may do another calculation or you may exit.