Logic System Assignment 2
A simple CAD tool based on Quine-McCluskey method
Due date:2021/05/11 11:59:59pm

1. Description
In this homework you will write a program to implement a 8~10-variable by Quine-McCluskey method.
Finally, your program should show **the prime implicant chart** and the **final result in minimum SOP** (Sum of Product).

2. Requirement

[1] Read the input file
Your program will read the input file for the ***minterm*** information and ***don't care term*** information:
Eg. $F(X_0, X_1, ..., X_n) = \Sigma m(0,1,3,8,14,53,103,201,499.....)$
$+\Sigma d(4,6,10,77,99,226,.....)$
The format of the information are followed by File Specification.

[2] Divide the minterms into groups and compare adjacent groups
You can use arrays to store the different groups of minterms and allocate new arrays to store the result of previous comparison.

[3] Write the output file
You should show the process of comparison and the prime implicant chart in the output file.

3. Input/Output Specification

[1] Programming language
You can finish your program in C, C++, Java.
Your program should be compiled as an executable file. (Need to tell TA what OS you use.)

Your program should ***read input file***.
After program execution, ***output file should be created*** to dump the information for the simplification results.

## [2] File Specification

The following is the input/output format example:

(Change the format of input/output is not allowed)

- ### *Input filename: input.txt*

  Three lines in the input file

  1. *<number>* :Variable number, Range: 8~10

  2. *{index, index...}*:Minterm value index, Range: $0\sim2^N$, N = Variable number,
     (The existed index stands for value 1)

  3. *(index,index...)*: Don't care index, Range: $0\sim2^N$,
     N = Variable number.
     (The existed index stands for value X)
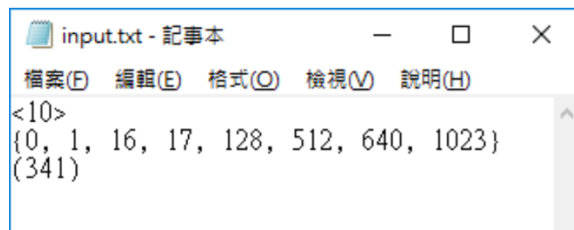
- ### *Output filename: output.txt*

  Your program should create the file like this.

● Hand in Specification

- ● You can finish your program in *C, C++, Java*.
- ● *Your program should:*
  - ■ Read an input file (file name: "input.txt")
  - ■ Write an output file (file name: "output.txt")
  - ■ Both under the same directory of the program
- ● *What you need to upload:*
  1. A source code (file name: "simulator. ")
  2. A execution file (the file compiled from source code, file name: "simulator. ")
  3. A readme.txt (Tell TA what OS you use and the bonus)
  4. A document report with some explanations (code, experience…) (file name: "report.pdf")

  All of the put in the directory name "StudentID_version" and compress into .tar or .zip (Example: "E24071234_1.zip")

5. Hint

You can reference the flow chart below to design your program.

- ● *Upload path (using FTP):*

  - ● Host: 140.116.164.225
  - ● User name: logic_lab
  - ● Password: logic2021
  - ● Path: Assignment2-QuineMcCluskey/