

# Logic System Assignment 1

## A simple CAD tool based on Quine-McCluskey method

Due date: 2017/04/26

### 1. Description

In this homework, you will write a program to implement a (2~ 4-Variable) Quine-McCluskey method.

### 2. Requirement

- i. Read the input file  
Your program will read the input file for the minterm information:  
e.g.  $F(A,B,C,D) = \sum m(0,1,5,11,15) + \sum d(4,6,10,14)$   
The format of the information are followed by **input/output specification**.
- ii. Devide the minterm into groups and compare adjacent groups  
You can use arrays to store the different groups of minterm and allocate new arrays to store the result of previous comparison.
- iii. Write the output file  
You should show the **process of comparison** and the **prime implicant chart** in the output file.

### 3. Input/Output Specification

- i. Programming language  
You can finish your program in C, C++ or Java.  
Your program should be able to read the input file following the specific format.
- ii. Input/Output filename  
Input: input.txt

Output: output.txt

iii. The following is the input/output format example:

```
input.txt - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明(H)
4
1,5,11,15
```

Variable number:  
2~4

Variable value:  
0~15

```
output.txt - 記事本
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明(H)
First round
=====
(1 )0001
-----
(5 )0101
-----
(11)1011
-----
(15)1111
-----
Second round
=====
(1 ,5 )0-01
-----
(11,15)1-11
-----
Result
=====
          |1 5 11 15
-----|-----
a'c'd   |x  x
a c d'  |   x  x
-----|-----
F(A,B,C,D)=a'c'd+acd'
```

The file names are fixed.  
**DO NOT** change them.

This is the **optional**  
output information.

Your output **must**  
contain this information.

#### 4. Hint

You can use this flow chart to design your program. It **isn't necessary** to follow this chart step by step.

