Lab 1

1 Introduction

1.1 Target

- Know how to read datasheet.
- Design simple circuit with 74 familly.
- Optimize boolean expression by using bolean algebra and K-map.
- Know how to use VOM.

1.2 Contents

- Investigate some IC in 74 familly.
- Optimize boolean expression and implement it by using 74s IC.

2 Exercices

Note: Take pictures for every circuits that are implemented and attach its into your report.
Ex 1: Investigate the function of 2 in 6 IC that was mentioned. Sources of inputs are switch, destinations of outputs are LEDs. Draw your circuit and fill the two truth tables below.

Input 1	Input 2	Output
1	1	
1	0	
0	1	
0	0	

Input 1	Input 2	Output
1	1	
1	0	
0	1	
0	0	

Ex 2: Optimize these expressions below by using bolean algebra for x, K-map for z. Present each step which you do in the report. Draw the circuit and implement your design.

- $x = \overline{A}BCD + A\overline{BCD} + A\overline{B}(\overline{\overline{C} + D}) + A(\overline{B + C})D + A(\overline{B + \overline{C} + \overline{D}} + B\overline{C}) + ABC$
- $z = (M + N)(\overline{M} + P)(\overline{N} + \overline{P})$

Ex 3: Use 7404s, 7408s, 7432s to implement these boolean expressions below. Draw your circuit and fill the truth table below.

- $x = AB + \overline{C}$
- $y = (A + B)\overline{C}$

A	**B**	**C**	**x**	**y**	**z**
1	1	1			
1	1	0			
1	0	1			
1	0	0			
0	1	1			
0	1	0			
0	0	1			
0	0	0			