



Lab-04

Active High & Low for Driving

Chia-Chun Tsai

Objectives



- Understand **high power devices**, Lamp and SSR.
- Implement how do the output “1” or “0” drive **the power devices**.
- Understand **two types of 7-segment display**, CA and CC.
- Implement **how to drive a 7-segment display**.

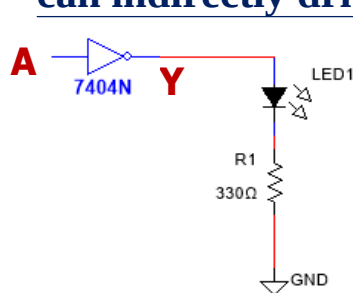
Chia-Chun Tsai

2

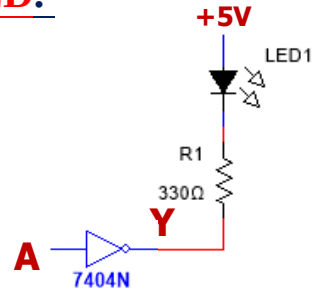
High(1) / Low(0) Active a LED



- Output Y = Logic "1" (5V) or Logic "0" (0V) can indirectly drive a LED.



A	Y	LED1
0V	1	ON
5V	0	OFF

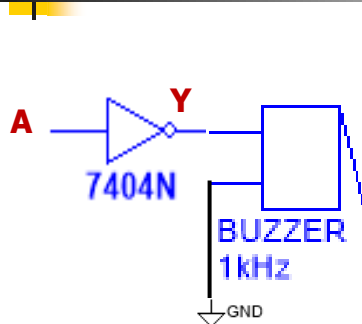


A	Y	LED1
0V	1	OFF
5V	0	ON

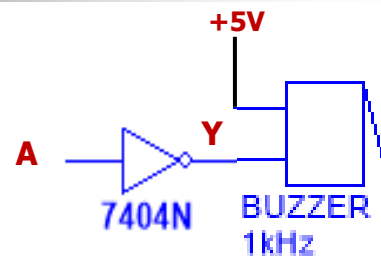
Chia-Chun Tsai

3

High/Low Active for Driving a Buzzer



A	Y	Buzzer
0V	1	ON
5V	0	OFF

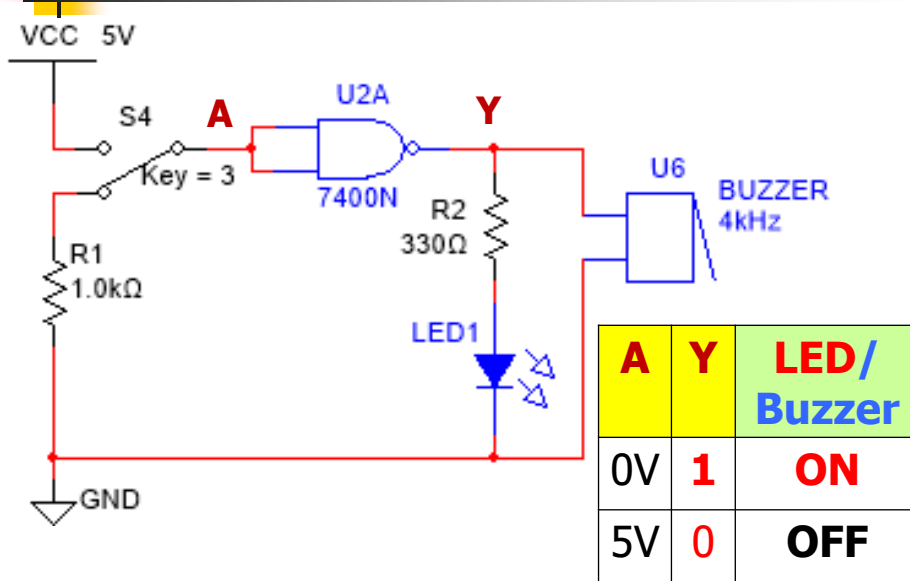


A	Y	Buzzer
0V	1	OFF
5V	0	ON

Chia-Chun Tsai

4

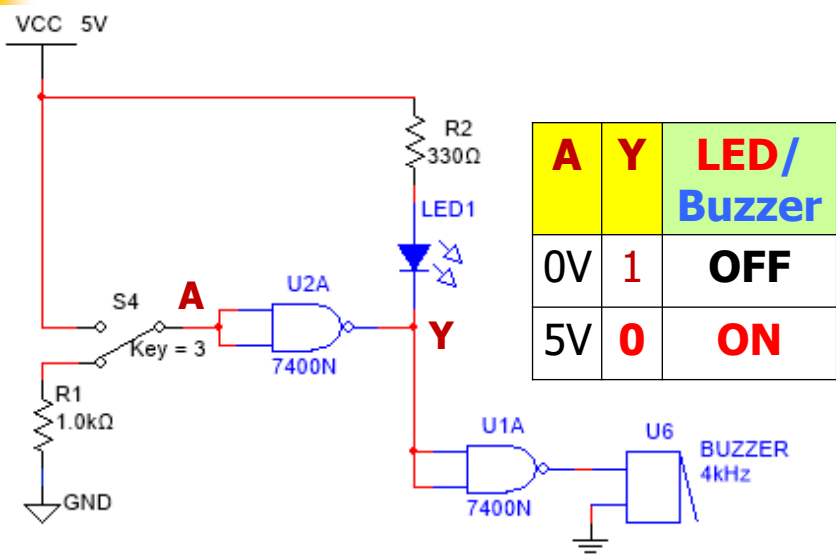
High Active for Driving Buzzer



Chia-Chun Tsai

5

Low Active for Driving Buzzer



Chia-Chun Tsai

6

High/Low Drives High Power

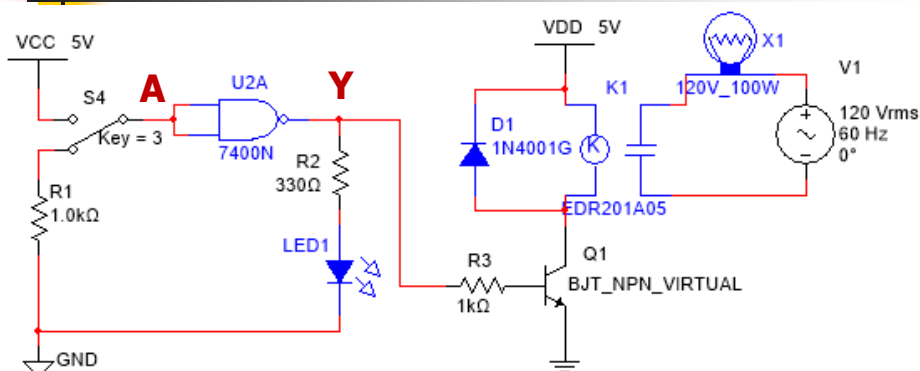


- Logic “1” (5V) or Logic “0” (0V) can indirectly drive any high-power devices, e.g. 120ACV Lamp and 220ACV 1hp-Motor, via a power driving circuit such as solid-state relay (SSR).

Chia-Chun Tsai

7

High Active for Driving Lamp

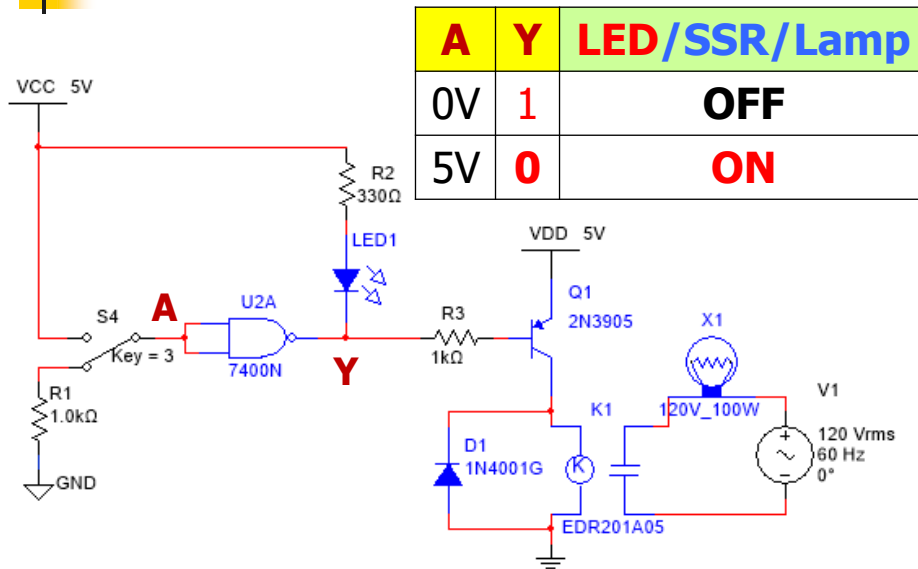


A	Y	LED/SSR/Lamp
0V	1	ON
5V	0	OFF

Chia-Chun Tsai

8

Low Active for Driving Lamp



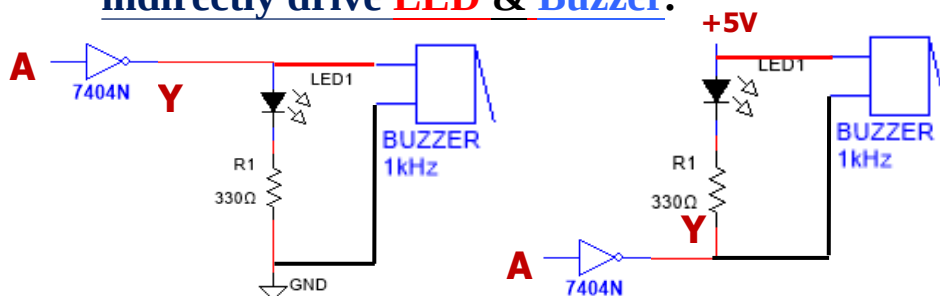
Chia-Chun Tsai

9

High(1) / Low(0) Active a LED



- Logic "1" (5V) or Logic "0" (0V) can indirectly drive LED & Buzzer.



A	Y	LED1	Buzzer
0V	1	ON	ON
5V	0	OFF	OFF

A	Y	LED1	Buzzer
0V	1	OFF	OFF
5V	0	ON	ON

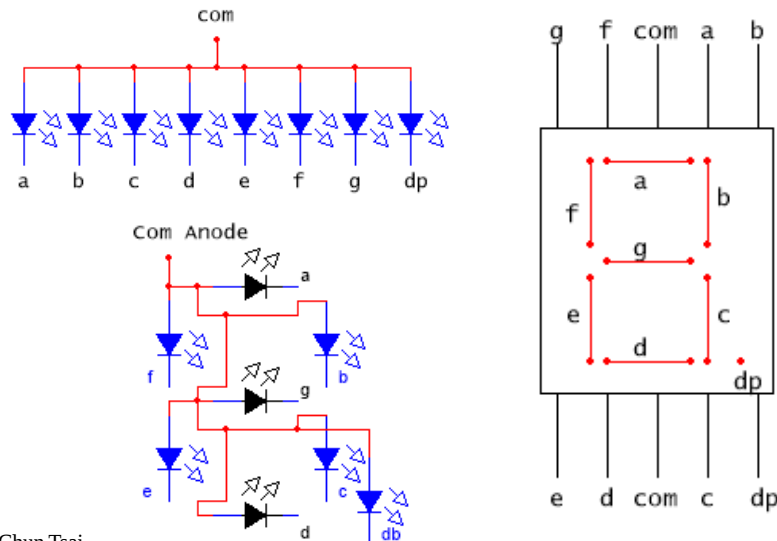
Chia-Chun Tsai

10

7-segment Display



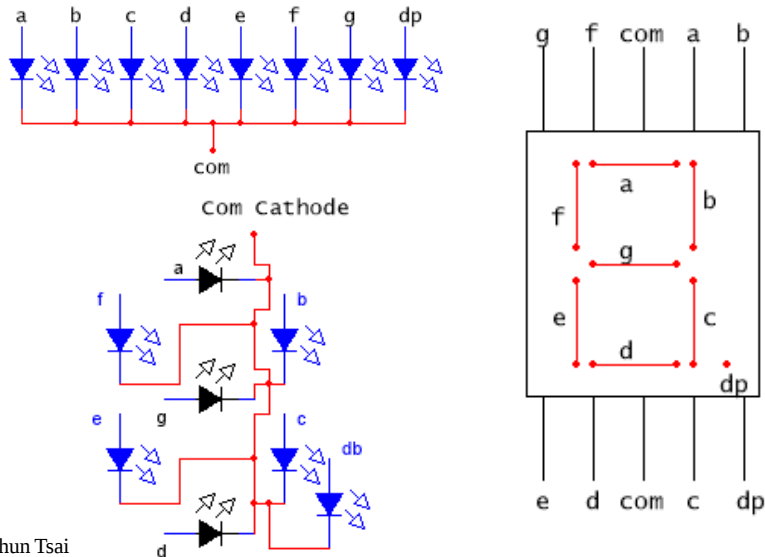
Common Anode (CA) 7-segment display LT502



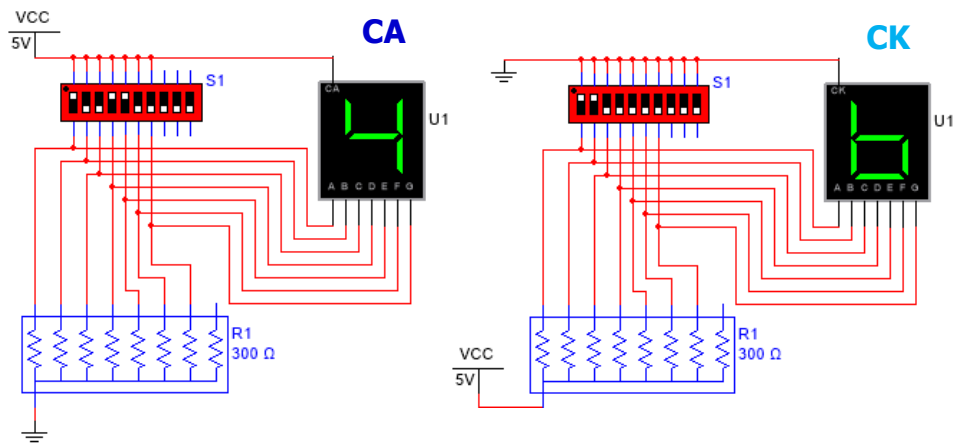
7-segment Display



Common Cathode (CK) 7-segment display LT503



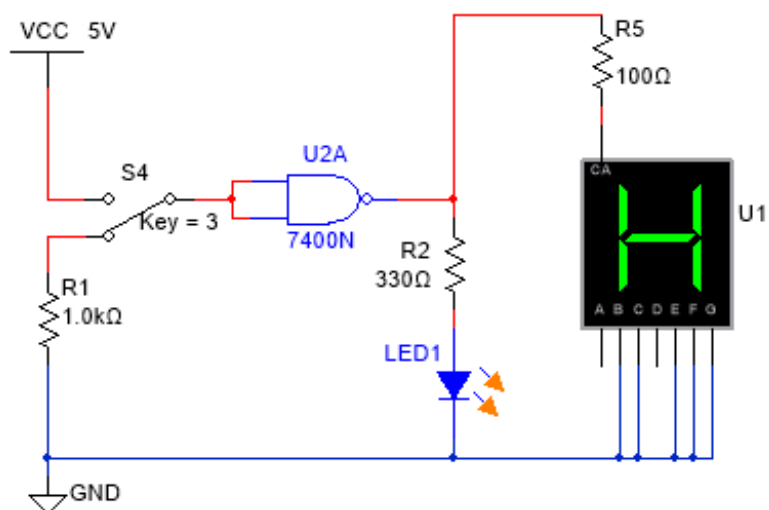
CA / CK 7-segment Display



Chia-Chun Tsai

13

High Active in Output

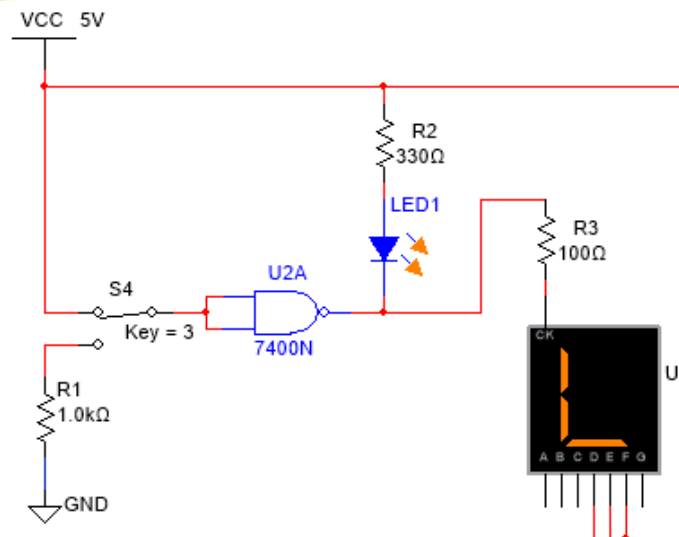


Chia-Chun Tsai

14



Low Active in Output

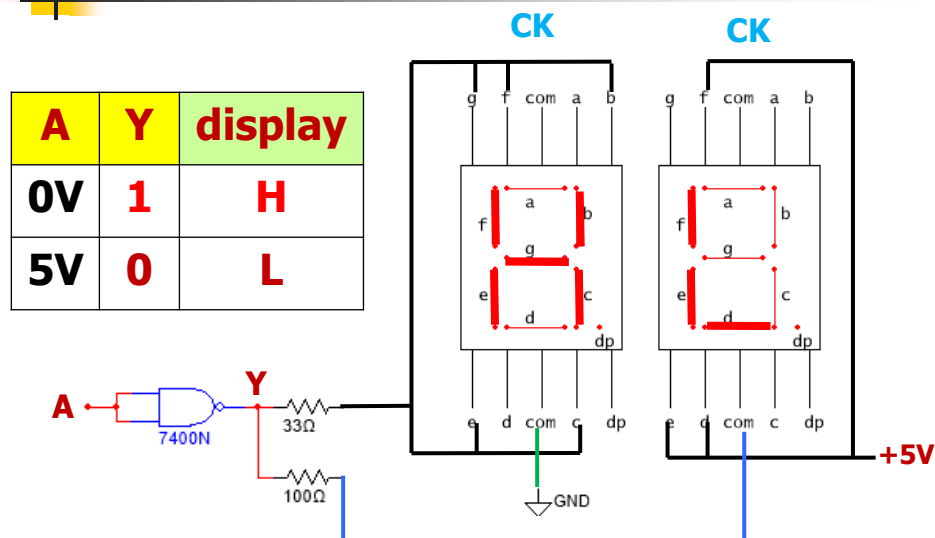


Chia-Chun Tsai

15



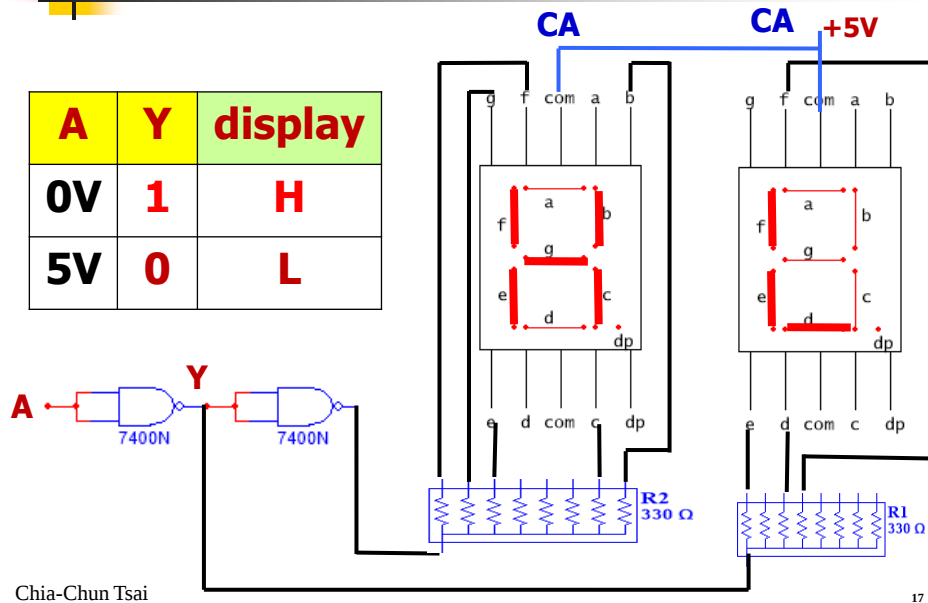
Low/High Active in Display



Chia-Chun Tsai

16

Low/High Active in Display

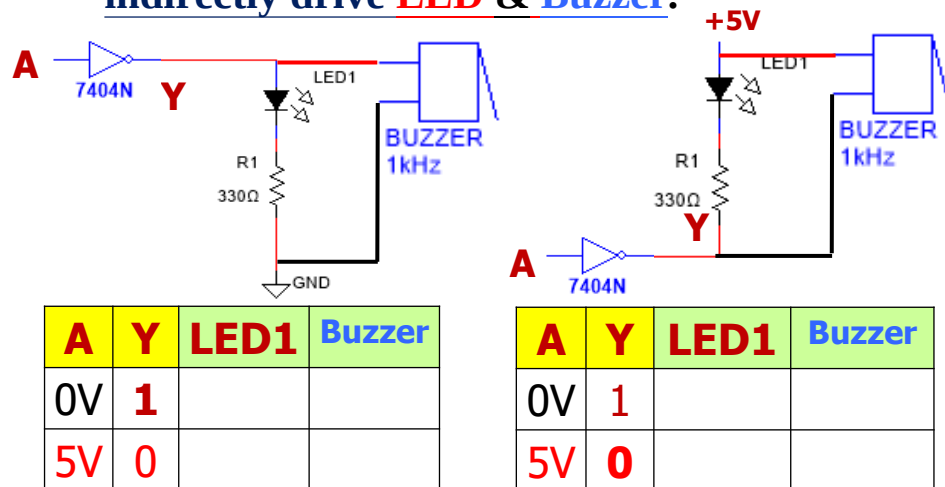


17

Experiment-1

High(1) / Low(0) Active a LED / Buzzer

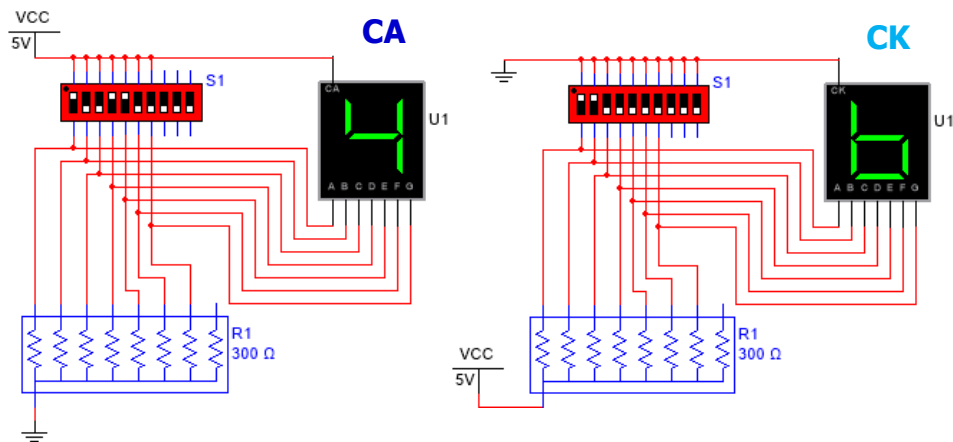
Logic "1" (5V) or Logic "0" (0V) can indirectly drive LED & Buzzer.



18

Experiment-2

CA / CK 7-segment Display



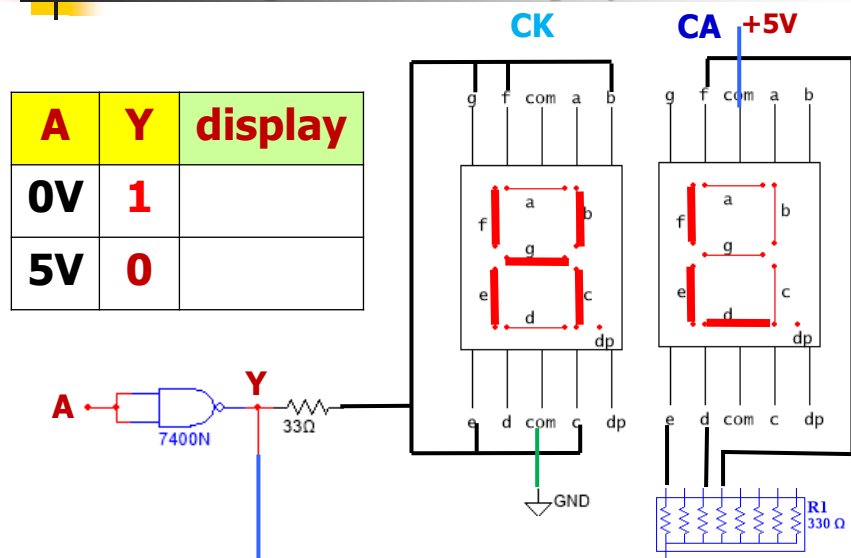
**Set S1 with different dip-switches,
display its corresponding number.**

Chia-Chun Tsai

19

Experiment-3

Low/High Active in Display



Chia-Chun Tsai

20