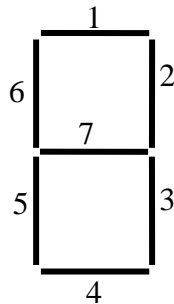


Dept. of Computer Science and Engineering
CSE3201 – Digital Logic Design
Lab 2

This lab is to get you acquainted with the design of a simple combinational circuit.

Design a circuit that display on one of the seven segments displays the binary value represented by the switches SW0 to SW2, for example if SW2 SW1 SW0 are 100, the display should display the number 4.



The seven segment display consists of 7 LEDs as shown in the above figure, the different LEDs are switched on and off to represent a certain number, so for example to represent the number 4, LEDs number 2,3,6 and 7 are ON the rest are off.

Construct a truth table to show the relation between the switches and the LEDs here is a partial table

SW2	SW1	SW0	LED1	LED2	LED3	LED4	LED5	LED6	LED7
0	0	0							
0	0	1							
0	1	0							
0	1	1							
1	0	0	0	1	1	0	0	1	1
1	0	1							
1	1	0							
1	1	1							

4
↘

Complete the table and using sum of product (or any technique you prefer) find the relation between the LEDs and the switches as a Boolean expression.

LED1 = function(SW2, SW1, SW0)

Note that a segment is illuminated by driving it to logic 0

Implement these expressions and download them on your board.

Take a look at the DE2 User Manual in the lab section of the course web page to see what pins the 7-segment displays are connected o

Pre-Lab Work

Complete your design using Verilog, show the program to the TA before starting

Lab report

See the guidelines for the lab report on the Lab section of the course web page