Dept. of Computer Science and Engineering
CSE3201 – Digital Logic Design
Lab 8

The Longest Prefix Match LPM.

The longest prefix match is used in every Internet router in order to route packets to the appropriate destination. In this case, you will design a circuit to do the LPM.

Problem Statement.

We have a set of prefixes, for example 11*. 11* is a prefix that matches any sequence of bits that starts with 11, for example it matches 1100, 1110 and 1100101.
The problem is gives a set of prefixes, and an input sequence, find the longest matching prefix (for example consider two prefixes 11* and 1101*. An input sequence of 11010110 matches both of them. However the longest one is 1101. For this lab, consider the following 4 prefixes
1. 11*
2. 1101*
3. 1010*
4. 100*.

You can hardwire these in your design. Design a circuit for LPM. The input is taken from 8 switches SW0 to SW7. The matching prefix number, (1 to 4) is displayed on the 7-segment display.

Pre-Lab Work
Complete your design including a schematic diagram for the circuits and Verilog code; show the program and the circuit to the TA before starting

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

Extra Credit:
Can you enter the prefixes from the switches before you start the matching? You have one extra week to do this.