CO326: Industrial Networks
Lab 01 - Parallel Port I/O (Part I)

Introduction

In this lab, you are going to try parallel port communication, where a parallel port is used as the interface to communicate with a seven-segment display.

Modify the codes you have implemented in the pre-lab according to the given circuit at the lab.

Lab Exercises

Task 01: Display 0-9 numbers on a single 7-segment display

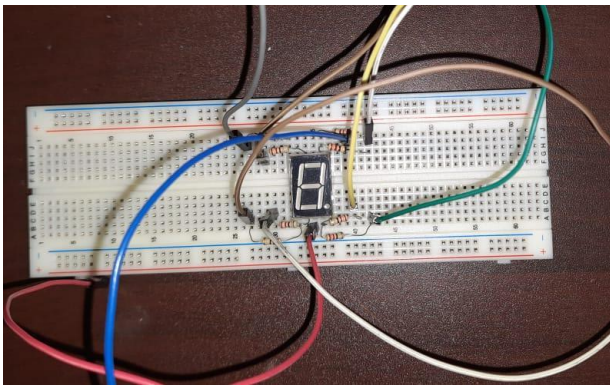

Figure 01: Circuit setup for Task 01

The circuit is created using a common anode seven-segment display. Seven segment display is connected to the parallel port pins as shown below in figure 02.

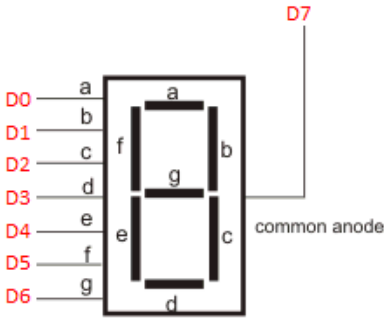

Figure 02: How seven segment display is connected to parallel port pins

Note that a separate resistor is connected in series to each segment of the seven-segment display.

Connect to the lab computer using the remote connection and modify the program written in the pre-lab to light up each segment of SSD one by one in the above circuit.

Task 02: Display 0-9 numbers on a single 7-segment display using 74LS47 IC

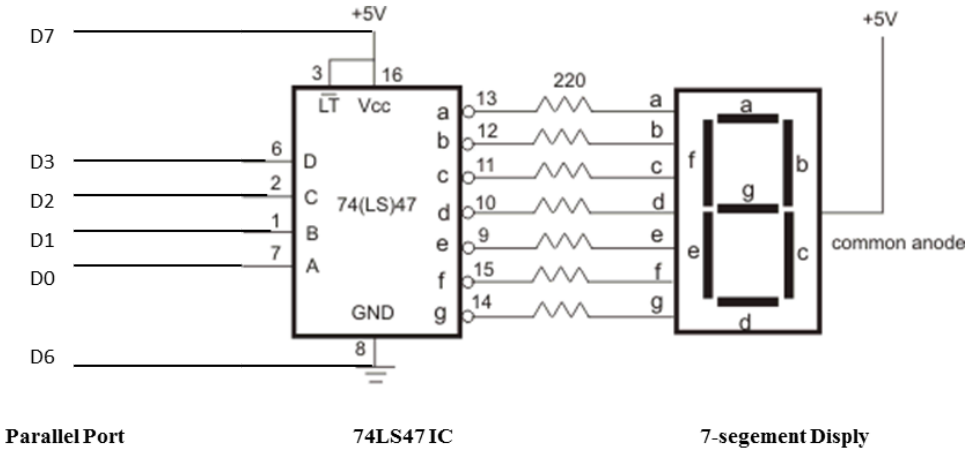

Figure 03: Connection Diagram

Connect to the lab computer using the remote connection and modify the program written in the pre-lab to display characters from 0-9 in an infinite loop with a delay of 1 second between each character using the 74S47 IC.

Task 03: Change the numbers displayed in the SSD with a push button

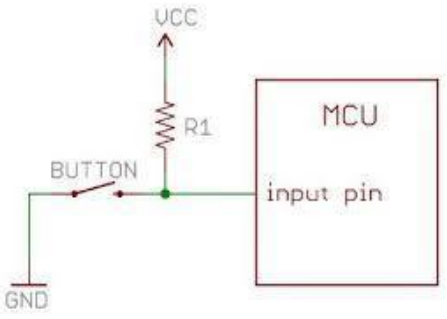

Figure 04: Pull-up Resistor

Modify the code written in the pre-lab, and use it to change the numbers displayed in the SSD when the push button is pressed. A pull-up Resistor is connected to the circuit as shown in Figure 04.

NOTE: Pull-up resistors are used to define the state of an otherwise "floating" input by pulling the voltage at the pin to a set voltage.