PRINCIPLES AND APPLICATION OF MICROCONTROLLERS
AVR Assembly Lab9: Number Digits Display

Introduction

In this lab, you are required to display number digits on two 7-segment LED using an AVR ATmega328P microcontroller. The digits to be displayed are from 0 through 99. Each digit is displayed for a short period of time (e.g., 0.2 sec). The digits are displayed indefinitely using a loop. After completing this lab, you should be able to:

- Master in AVR I/O programming (assembly)
- Use 7-segmenet displays

Parts List

- A breadboard
- An AVR ATmega328P microcontroller
- Two 7-segment display
- Resistors

Procedure

Connect appropriate pins of the ATmega328P to the 7-segment displays. Remember that 7-segment display is composed of 7 LEDs. Place appropriate resistors when wiring the display to the microcontroller to prevent burnout. For details of the 7-segment display, please refer to its data sheet. Write an assembly program that shows the number digits 0 through 99 indefinitely.

Deliverables

Basic + advanced points (100%):

Demo the result to the TAs, or record it in a video. Upload the followings to ceiba: 1) your C program source code, 2) a photo of your physical circuit, and 3) contributions from each teammate to the lab. The contributions must include the information of the tasks each teammate has done and the contributions in percentage. The total percentage should be 100%. All the teammates have to agree with the contributions before they are uploaded.

Bonus

You will obtain a 20% bonus if you use a multiplexed 7-segment LED to display numbers from 0 through 99.