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

Introduction

In this lab, you are required to display number digits on a 7-segment LED using an AVR ATmega328P microcontroller. The digits to be displayed are from 0 through 9. Each digit is displayed for a short period of time. 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
- A 7-segment display
- Resistors

Procedure

Use Port B as the output to the 7-segment display. Connect the pins of Port B to a 7-segment display as shown in Fig. 1. 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 9 indefinitely.

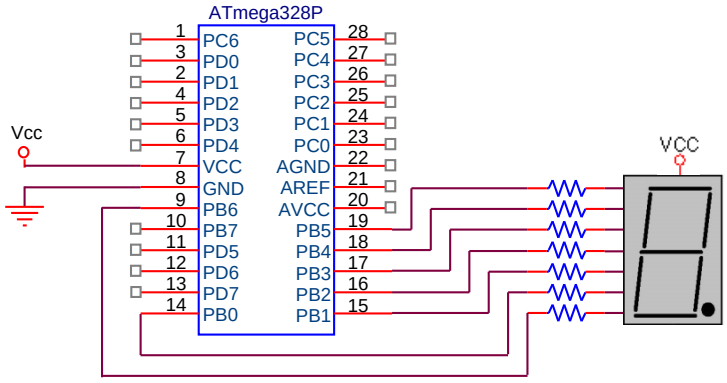

Figure 1: Circuit of an ATmega328P and a 7-segment display

Deliverables

Demo the result to the TAs, or record it in a video. Provide the assembly program and a photo of your physical circuit as the appendix in your lab report. Upload your lab report to ceiba.