

Switch-Show

Due: Feb. 28, 2007

1 Objective

In this assignment, you will be exposed for the first time to the MC6820 PIA chip, with which you will become intimately familiar over the course of the term. As was mentioned in lecture, it is through these that you will be controlling the pinball machine's solenoids and lamps, and receiving input from the switches.

2 Task

You are to write a program that detects switch-presses from the pinball machine (which, for the moment, means the emulator). Whenever a switch is pressed, your program should output a message to the console. Be sure to handle switches that stay on (e.g. only print a message when the switch is initially pressed). If the new-ball switch is pressed, your program should activate solenoid 1 (the ball release). This will let you see which switches are pressed as you play with a real ball in the pinball game. Ensure that you sample the switches fast enough to detect short presses as the ball rolls over them. You should compute this time based on the estimated maximum ball speed. Generate output when switches turn on and off.

Note: we'd recommend that you continue to use the same language that you used in Showtime for this and future assignments.

3 Background Information

This seems like a relatively simple task, however, in order to accomplish it, you'll need to be able to communicate with the switch and solenoid PIAs. We've provided you with the necessary diagrams and references on the information section of the website. Please familiarize yourself with these, and if you still have further questions, feel free to send an email to the tas or come to hours.

4 Handing In

You should hand in:

1. The source code for your program.
2. A working binary version of the system (or a jar file if you are using java).

To hand these in, you should copy everything involved in this assignment into a single directory, and run:

```
$ /course/cs160/bin/cs160handin switchshow
```

Try to avoid handing in irrelevant files by cleaning up the directory before running the script.