**Daniel Christiansen**

**ECE 373**

**HW #3 - PCI Driver**

**Part 1**

1) Atomic Motherboards

a) What is the audio device?

The ALC892 (Realtek Audio Codec).

b) What device is the GPIO connected to?

It’s connected to the W83627DHG-P (Super I/O Winbond).

c) How many network (LAN) devices are on the motherboard and what are they?

There are two LAN devices, the GbE LAN1: Intel 82567V and the GbE LAN2: Intel 82583V.

d) How many total serial ports does the box support, inside and out?

Six

2) Network Noodling

a) What pins control the LEDs?

Lead 31 controls LED0, Lead 30 controls LED1, and Lead 33 controls LED2.

b) What address offset is the Device Control Register?

0x00000 / 0x00004

c) What bit in the Device Control Register will force a reset of the network chip?

Bit 31

3) Winken, Blinken, and Nod

a) What register (name and address) controls the LEDs?

LED Control, at offset 0x00E00.

b) What bit pattern should you use to turn off LED1?

The pattern 1111 on bits 11:8.

c) What bit pattern should you use to make LED2 blink?

A 1 on bit 23.

4) EIEIO

a) What company makes the Super I/O chip in this box?

The chip was made by Winbond Electronics Corp. Now it is made by nuvoTon Technology Corporation, which was spun off from Winbond.

b) Can you find the datasheet on the web?

Yes (http://www.nuvoton.com/resource-files/DA00-WW83627DHG-P.pdf)

c) Where/how can you find this chip’s datasheet if you aren’t able to find it with a standard web search?

**Typescript output:**

Script started on Fri 28 Apr 2017 11:43:43 PM PDT

^[]0;root@ece373: /home/linux/Daniel^Groot@ece373:/home/linux/Daniel# echo 0000:03:00/.^H^[[K^H^[[K.0 > /sys/module/e1000e/drivers/pci:e1000e ^M/unbind^M

^[]0;root@ece373: /home/linux/Daniel^Groot@ece373:/home/linux/Daniel# insmod pcimodule.ko^M

^[]0;root@ece373: /home/linux/Daniel^Groot@ece373:/home/linux/Daniel# t^H^[[K./test^M

LED register contents is: 0x78406.^M

Attempting to write 0x6834e to the driver.^M

LED register contents is: 0x6834e.^M

Attempting to write 0x6830f to the driver.^M

^[]0;root@ece373: /home/linux/Daniel^Groot@ece373:/home/linux/Daniel# rmmod pcimodule^M

^[]0;root@ece373: /home/linux/Daniel^Groot@ece373:/home/linux/Daniel# rm /dev/pci\_driver^M

^[]0;root@ece373: /home/linux/Daniel^Groot@ece373:/home/linux/Daniel# echo 0000:03:00.0 > /sys/mos^H^[[Kdule/e1000e/drivers/pci:e1000e ^M/bind^M

^[]0;root@ece373: /home/linux/Daniel^Groot@ece373:/home/linux/Daniel# exit^M

Script done on Fri 28 Apr 2017 11:45:37 PM PDT

**Cleaned up typescript output:**

Script started on Fri 28 Apr 2017 11:43:43 PM PDT

/unbinde373:/home/linux/Daniel# echo 0000:03:00.0 > /sys/module/e1000e/drivers/pci:e1000e

root@ece373:/home/linux/Daniel# insmod pcimodule.ko

root@ece373:/home/linux/Daniel# ./test

LED register contents is: 0x78406.

Attempting to write 0x6834e to the driver.

LED register contents is: 0x6834e.

Attempting to write 0x6830f to the driver.

root@ece373:/home/linux/Daniel# rmmod pcimodule

root@ece373:/home/linux/Daniel# rm /dev/pci\_driver

/bindece373:/home/linux/Daniel# echo 0000:03:00.0 > /sys/module/e1000e/drivers/pci:e1000e

root@ece373:/home/linux/Daniel# exit

Script done on Fri 28 Apr 2017 11:45:37 PM PDT