Midterm Preparation

Questions?

Administration

Project schedule has changed

- Launch project 6 after break

- Only have 6 – 9 left

  – A couple will be worth 2 programming credits

Information Sources

- In-class exercises
- Zyante book
- Pencasts
- Linked web pages
- Lecture notes
- Prior exams

Exam Parameters

- Closed notes, books, electronic devices
  - Exception: one page of personal notes
- Multiple choice
  - Can grade your exam as you leave
- Assigned seating

Number Representations

- Conversion between binary and:
  - Decimal
  - Hexadecimal
- Unsigned versus signed (2's complement) representations
  - Two conversion methods
- Bit-wise operations: &, |, ~, ^

Arithmetic

- Adding/subtracting binary numbers
- Taking the 2's complement of a number (taking its negative)
- Shifting left/right (multiplication/division by 2)

Atmel Digital Input/Output

How to use:

- DDRx

- PORTx

- PINx

Circuits

- Resistors

- Diodes

- Analog comparators

Moving Between Analog and Digital

Digital to Analog:

- Resistive network

Analog to Digital:

- Flash ADC (with analog comparators)
- Successive approximation

Motor Control

- H-bridges
- Pulse-width modulation

Not on this exam…

- Serial communication
- Timers/counters
- Finite state machines