Midterm Preparation

Questions?

Information Sources

- In-class exercises – ie Top Hat
- Zyante book
- Pencasts
- Linked web pages
- Lecture notes
- Prior exams
  - Available in the “previous classes” section of my home page

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
- Switches

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

Timer/Counters

- Prescalers
- Counters (hardware)
  - Timer 0, 2: 8-bit
  - Timer 1, 3, 4, 5: 16-bit

- Computing timerX count frequencies/periods
- Computing durations for counting Y tocks

Coding

Possible:

- What does this program do?
- This program is supposed to do X – where are the bugs?

Not on the exam:

- Given a problem, write code to solve it

Not on this exam…

- Serial communication
- Finite state machines