Overview

- The exam covers all lectures (Chapter 1 – 7)
- The book sections are listed in the lecture notes
- You can bring manual of the instruction and the manual of ports and registers with you in the exam

Chapters 1-5 (Lectures 1-12)

- Refer to the review slides of Midterms 1 & 2

Chapter 6/ Lecture13-Part1

- Busses
  - bus organization
  - interfacing to & controlling memory chip(s)
  - Data transmission behaviors over busses
- Memory
  - Definitions/classifications
  - Multi-chip organization
Chapter 6/ Lecture 13-Part2

- I/O Organization
  - Memory mapped I/O
- Ports
  - Multiple registers (control, status, data)
- HC11 Ports B and C
  - How to configure
  - Command/status registers?
  - Bit Manipulation Instructions

Chapter 6/Lecture 13-Part2

- I/O Synchronization
  - Polled vs. Interrupt Based
    - Pros and Cons
  - How each is implemented (or not!) on the HC11
  - Enabling interrupts
    - The global and the specific enables
  - Interrupt vectors
    - What they do
    - What’s the alternative?
- Hardware Response to an Interrupt
  - Pushing entire state onto stack

Chapter 7/Lecture 14-PartIA

- 4 Main HC Timer Functions
  - Real-Time Interrupt
  - Free-Running Counter
  - Input Capture (time stamping)
  - Output Compare (scheduling)
- RTI, time stamping, and scheduling implementation
  - How to use TCNT
  - Interrupt enabling & interrupt vectors
  - Configurations of relevant control registers

Chapter 7/Lecture 14- PartII

- Serial communication basics
  - Difference between serial and parallel
    - E.g., timing, data width, signaling, data format
  - Parity, Errors
- HC11 Serial Communication
  - SCI operation, configuration
  - What registers are involved?
    - Data/buffer ($102F), shift, control, status registers
    - Interrupt enabling
Chapter 7/Lecture 14-PartIII

- HC11 A/D converter
  - Setup, use
    - Building components
    - Up counter vs. Successive approximation
    - Time: No interrupt
  - Registers involved
    - Configurations

Format

- Probably an even mix of multiple choice, short answer and problem solving.
- Focus on small programming and general concepts rather than nitty-gritty details.
- Even distribution of the semester, no focus on material since last exam.
- I will try to make it take around 1-1.5 hours.

A Few Last Details

- Exam is 8:00 AM on Monday (Dec. 15th), in Fisher 138
- The exam distribution will start as early as 7:55 AM, so we can start at 8:00 AM.
- I will get things graded as quickly as possible.
- Start looking for grades around Friday.