CS 271 Lecture #34

Final Exam Review

Final Exam

- Format:
  - 80 – 90% definitions, calculations, short answer, multiple choice, and MASM code tracing
  - 10 - 20% Writing MASM code
- Covers:
  - Lectures #16, 18 - 33
    - Self-check exercises
  - General coverage of earlier topics
  - All reading assignments
  - MASM programming
    - Programs #5, 6
  - Quizzes #3, 4
- Calculator and one 8.5 x 11 notepage permitted

Final Exam Topics

- **Architecture**
  - Gates, circuits, digital logic
  - Boolean functions, Boolean identities, truth tables
  - Memory (structure, addressing)
  - Buses
  - Parallelism
    - Instruction-level
      - Pipelining / Caching
    - Processor-level
      - Multi-processor / multi-computer
    - Factors affecting parallelism and speed
    - Amdahl's law

Final Exam Topics

- **Expression evaluation**
  - RPN
    - evaluation
    - conversion infix↔postfix
  - Using 0-address instructions
    - IA-32 Floating-Point Unit instructions

Final Exam Topics

- **MASM**
  - Procedures (create, document, call, etc.)
    - Structure
    - Return address, etc.
    - call, ret, system stack
      - stack frame (activation record)
    - Passing parameters
      - in registers (value, address)
      - on the system stack (value, address)
    - Recursion

Final Exam Topics

- **MASM**
  - Arrays
    - addressing modes
    - OFFSET, TYPE, PTR, LENGTHOF, SIZEOF
    - address calculations
    - passing as parameters
  - Stack management
  - Macros
  - String processing
    - Low-level I/O

"General coverage" topics

- Hardware components of CISC computers
- Assembly to execution phases
  - assembly process
  - linking / loading
  - execution
- Instruction execution cycle
- “Random” numbers

Study Recommendations

- Questions come from lectures, exercises, quizzes, and programming projects
  - Review these materials
  - Use textbook to look up details
  - Make a notepage

- If you have questions about the topics covered on the exam:
  - Engage your classmates
    - Post questions on the discussion board
    - Your questions might be helpful to other students
    - Many students understand concepts best when they explain to somebody else
  - Contact the TAs and/or the instructor