CS 271
Computer Architecture & Assembly Language

Lecture 10
2/3/22, Thursday
Midterm Review
Odds and Ends

• Due 2/6, Sunday, 11:59 pm on Canvas
  • Weekly Summary 5
  • Quiz 2
Lecture Topics:

• Review for Midterm Exam

• Recommendation: Complete Programming Assignment #4 Before taking the exam
Midterm Exam

• 2/8 Tuesday in class (10:00 – 11:50 am) @ COVL 216

• Format:
  • definitions, calculations, short answer, multiple choice, and MASM code tracing

• Covers:
  • Lectures #1-9
  • All reading assignments
  • MASM programming
  • Programs #1-4
  • Self-evaluations #1-9
  • Quizzes #1,2

• Calculator permitted

Bring your photo ID
Midterm Exam Topics

• How computers work
  • Simple CISC architecture
  • Memory, CPU, registers, ALU, buses, etc.
  • VonNeumann architecture, Instruction Execution Cycle, etc.

• Internal Representation
  • Numbers, characters, instructions, addresses, etc.
  • IEEE 754 representation of floating-point

• External Representation
  • Binary, decimal, hexadecimal

• IA-32 architecture
  • Register names, etc.
  • Byte-ordering (little-endian)
Midterm Exam Topics

• Assembly Language
  • Related to high-level languages
  • Related to machine languages
  • Related to architecture
  • Motivations for using assembly language

• Program development
  • Modularization
  • Incremental development/testing/debugging
Midterm Exam Topics

• MASM
  • Program structure, commenting
  • Assembly, linking, etc.
  • Segments, directives, etc.
  • Labels, identifiers, constants,
  • Data types, declarations
    • BYTE, WORD, DWORD, etc.
    • Strings
  • Addressing modes
    • Immediate (literals), register, direct (memory)
  • Instructions:
    • mov, push, pop
    • add, sub, mul, div, inc, dec
    • cmp, jmp, j<condition>, loop
    • call, ret
Midterm Exam Topics

• MASM
  • Control structures
    • Procedures, procedure calls
      • Return address, etc.
    • Decisions
    • Repetitions
    • Data validation
  • System stack
    • Procedure calls and returns
    • Fundamentals of push and pop
Midterm Exam Topics

• If you have questions about the topics covered on the exam
  • Engage your classmates
    • Post questions on Discord
    • 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