

CS 271

Computer Architecture & Assembly Language

Lecture 10
2/3/22, Thursday
Midterm Review



Oregon State
University

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