COMP 3350

Computer Organization & Assembly Language Programming

AUBURN
UNIVERSITY

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• Activity 1 •

Machine Lang vs. Asm

▸ *Machine language/machine code*

  ▸ A microprocessor reads bytes from memory and interprets them

  ▸ The byte sequences understood by the microprocessor define its machine language

  ▸ Different microprocessors have different machine languages

▸ *Assembly language*

  ▸ Represents machine language instructions using mnemonics

  ▸ Each statement corresponds to one machine lang instruction

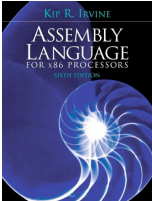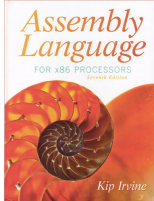 ▸ Since assembly language corresponds with machine language, different processors have different assembly languages

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Language Translation

▸ *Assemblers* and *disassemblers*:

$$\text{Assembly Language} \underset{\text{Disassembler}}{\overset{\text{Assembler}}{\rightleftharpoons}} \text{Machine Language}$$

▸ *Compilers* typically translate high-level languages into low-level languages

  ▸ C, C++, and Fortran compilers translate source code into machine language
  (most can output assembly language instead)

  ▸ Java and C# compilers translate source code into *virtual machine* bytecodes, not native machine code

    ▸ Although virtual machines use "just-in-time" (JIT) compilation: translate VM bytecodes into machine language at runtime

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This Course

▸ **Language:** Intel x86 assembly language (32-bit)

▸ **Assembler:** Microsoft Macro Assembler 10.0

▸ **Dev Environment:** Microsoft Visual Studio 2010

KIP R. IRVINE
ASSEMBLY LANGUAGE
FOR x86 PROCESSORS
SIXTH EDITION

or

Assembly Language
FOR x86 PROCESSORS
Seventh Edition
Kip Irvine

Topics Covered in Monologue/Syllabus

Handout: Syllabus

▸ Course Objectives

▸ Textbook

▸ Lab Facilities

▸ Point Distribution

▸ Grading Scale

▸ Coverage

▸ Expectations

▸ Policies

Homework

- Read Section 1.1 (pp. 1–6)
- Be prepared to verbally answer review questions 3, 4, 5, 7, and 11 from Section 1.1.3

- Chapters 1 & 2 of the textbook (6th edition) are available as PDFs
  - Posted in Files section of Canvas under "Readings:" chapt_1.pdf, chapt_2.pdf
  - Or download them from http://kipirvine.com/asm/videos.htm