

# CPSC-240 Computer Organization and Assembly Language

## Chapter 1 Introduction

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# Outline

- Prerequisites
- What is Assembly
- Why Learn Assembly Language
- Additional References

# Prerequisites

## Prerequisites

- The text is generally geared toward a compiled, C-based high level language such as C, C++, or Java.
- Many of the explanations and examples assume the reader is already familiar with programming concepts.
- Additionally, the reader should be comfortable using a Linux-based operating system including using the command line.

# What is Assembly Language

# What is Assembly Language

- Assembly language is machine specific. For example, code written for an x86-64 processor will not run on a different processor.
- Assembly language is a “low-level” language and provides the basic instructional interface to the computer processor.
- Assembly language gives you direct control of the system's resources.



# Translating Languages

English: Display the sum of A times B plus C.

C++: `cout << (A * B + C);`

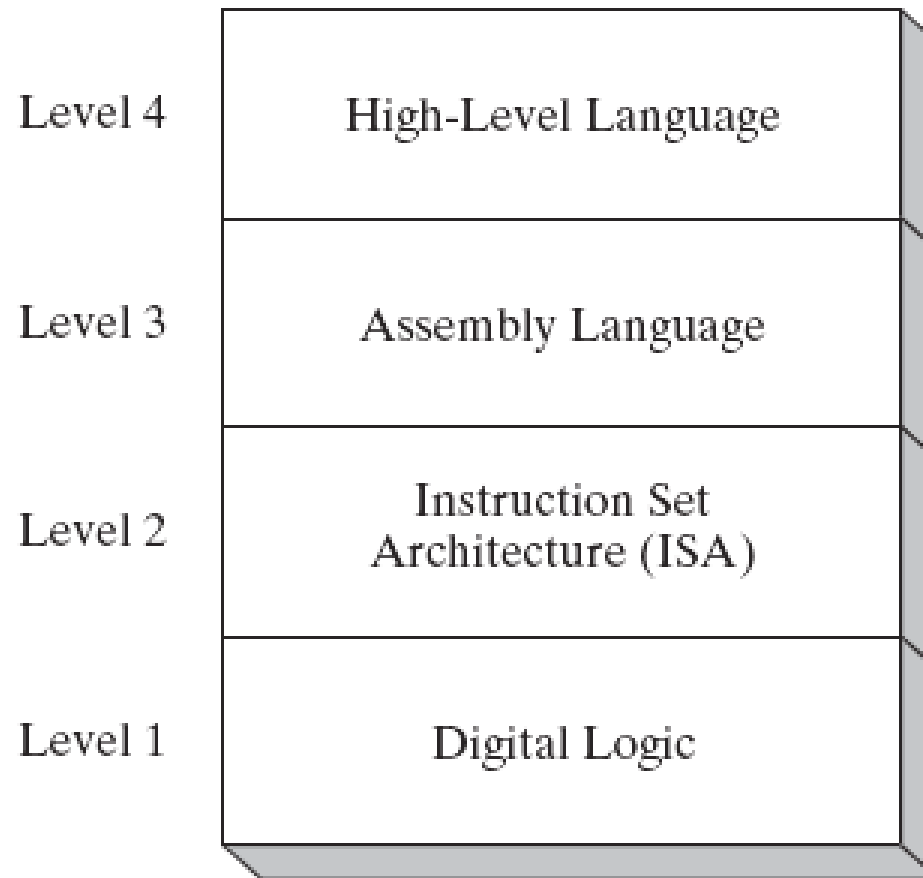
Assembly Language:

```
mov eax,A  
mul B  
add eax,C  
call WriteInt
```

Intel Machine Language:

```
A1 00000000  
F7 25 00000004  
03 05 00000008  
E8 00500000
```

# Specific Machine Levels





# Why Learn Assembly Language

# Why Learn Assembly Language

- Gain a Better Understanding of Architecture Issues
- Understanding the Tool Chain
- Improve Algorithm Development Skills
- Improve Understanding of Functions/Procedures
- Gain an Understanding of I/O Buffering
- Understand Compiler Scope
- Introduction Multi-processing Concepts
- Introduction Interrupt Processing Concepts

# **Additional References**

## Ubuntu References

There is significant documentation available for the Ubuntu OS. The principal user guide is as follows:

- [Ubuntu Community Wiki](#)
- [Getting Started with Ubuntu 16.04](#)

In addition, there are many other sites dedicated to providing help using Ubuntu (or other Linux-based OS's).

# Thanks