
CS 150

Introduction to Computer Science 1

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What is CS150?

- CS150 is a programming course
- You will learn
 - The mechanics of writing programs in C++
 - How to solve complex problems using C++
 - How to break a large problem into smaller, more manageable problems
 - How to formulate algorithms to solve problems
- You do not need any previous programming or computer skills to take this course

Who Are We?

- Who am I?
- Who are you?

How to Succeed in CS150

- Don't miss class. It is very difficult to pick up any material that you miss
- Try and read ahead even if you don't understand much
- Start programming assignments early
- Do as much on your own as possible. The more help you get the less sure of yourself you will become

How to Succeed in CS150

- Read the assignments carefully and follow all directions
- See me as soon as possible about any in class information that you are unclear on
- Take notes! A lot of the examples we will go through will be written on the board, and will not be in the notes

Course Schedule

- The course schedule I have given you is tentative. I expect to follow this schedule, but I may have to adjust it from time to time
- The online schedule will be accurate and up to date. That is the schedule that you should refer to when studying or revising

Introduction to Computers and Programming

Chapter 1

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Topics

- What are computers?
- A little bit of history
- Computer basics
- Programming languages

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What is a Computer?

- What is your definition?
- The most important thing to remember is that a computer is a machine that follows directions. In the case of programming, the machine is following *your* directions exactly
- You need to be very specific about what you want the computer to do

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Computer Systems

- Hardware
- Software

Hardware

- Physical components of a computer
 - Central Processing Unit (CPU)
 - Main Memory (RAM)
 - Secondary Storage
 - Input Devices
 - Output Devices
- Let's look at each of these in detail

CPU

- A CPU
 - Fetches instructions
 - Follows instructions
 - Produces results
- A CPU consists of
 - Control unit: coordinates computer operations
 - ALU: performs arithmetic operations

Memory

Address	Contents
0	-27.2
1	354
2	0.05
3	-26
4	H
5	400
6	RTV 001
7	ADD 003
8	STO 005
9	X
10	1005

-Memory is a sequence of storage cells

-Memory cells are 1 byte in size

-Bytes are groups of bits (8 usually)

-Bits are 0 or 1

-Each memory cell has unique address

-Contents can be data or instruction

-Everything stored as strings of 0s & 1s

-RAM is volatile

Secondary Storage

- Not volatile
- Disk drives
 - Hard disks
 - Floppy disks
 - Zip disks
- Optical drives
 - CDs
 - DVDs

Input/Output Devices

- Input: sends information to the computer from outside
- Output: sends information from the computer to outside
- Examples?

Software

- Operating System
- Application Software

Question

- Can computers think?

- Computers need a list of instructions to perform operations
- These instructions are *programs*

Program

- Program
 - Set of instructions directing a computer to perform a task
- Programming language
 - A language used to write programs
 - Examples?

Programming Language

- Machine language
 - Zeroes and ones
 - Machine dependent
- High level language
 - Instructions look like everyday English
 - Each instruction can perform many machine language instructions

C++

- Based on the C programming language
- C++ is a high level programming language
- One of today's most popular programming languages
- Used extensively in industry

Summary

- Today we have looked at:
 - The history of computers
 - The hardware of computers
 - The software of computers
 - Concept of programming
- Next time we will:
 - Learn how to write our first C++ program
- Completed sections 1.1 - 1.3 from the book
 - Pages 1-12
