
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

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What You Can Expect from Me

- I will begin and end lectures and labs on time
- I will post all class notes, assignments and labs online
- I will try to follow the course outline as closely as possible
- I will be available to help you, but you must let me know that you need help

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What You Can Expect from Me

- I will be available during the scheduled office hours
- I will answer emails promptly
- I will grade fairly and responsibly, returning your assignments to you in a timely manner. I do not grade on a curve, and will grade each assignment on its own merit
- I will do my best to help you, but I cannot learn the material for you

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What I Expect from You

- You have read the syllabus, are aware of what will be covered and the workload required
- You will attend class and lab regularly and on time
- You will be responsible for all material that we cover in class
- You will turn off any noisy devices (cell phones, watch alarms) during class

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What I Expect from You

- You will turn in your assignments on time
- You will take every exam with the rest of the class unless you have a doctor's note and notify me in advance
- You will participate fully in class (take notes, ask questions, respond to questions)
- You will ignore the computers during class unless I specifically tell you to use them

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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

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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
- Attack the computer, you can't hurt a thing!

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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

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High Thoughts Must Have a
High Language

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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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History

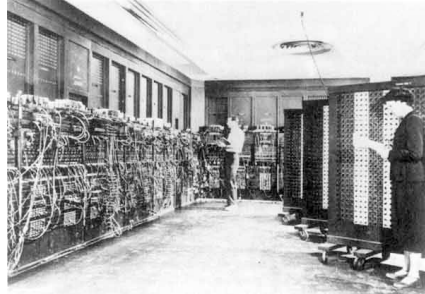
- First electronic digital computer
 - Late 1930's at Iowa State
 - Dr. John Atanasoff and Clifford Berry
 - Mathematical computations for nuclear physics
- First large-scale, general purpose computer
 - ENIAC in 1946 at U. Penn. for US Army
 - J. Presper Eckert and John Mauchley
 - Weighed 30 tons and occupied 1500 sq. ft.
 - Cost \$500,000 to develop and build
 - Used for calculating ballistics tables, predicting weather and making atomic energy calculations

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Picture of ENIAC



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Von Neumann Architecture

- Dr. John von Neumann proposed the concept of a stored-program computer
- In ENIAC data is stored in memory, so why not a program
- The von Neumann architecture is the basis of the digital computers we know today

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Today

- Most of us use microcomputers
 - First developed in 70's
 - Small processor
 - Mac's and PC's are examples

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Hardware

- Main Memory
- Secondary Storage
- CPU (central processing unit)
- Input Devices
- Output Devices
- ALU (arithmetic and logic unit)

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Memory

Address	Contents	
0	-27.2	-Memory is a sequence of storage cells
1	354	-Each memory cell has unique address
2	0.05	
3	-26	-Contents can be data or instruction
4	H	
5	400	-Memory cell composed of bytes
6	RTV 001	-Bytes are groups of bits (8 usually)
7	ADD 003	
8	STO 005	-Bits are 0 or 1
9	X	
10	1005	-Everything stored as strings of 0s & 1s

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Memory

- Main Memory
 - RAM
 - ROM
- Secondary Storage
 - Hard disks
 - Floppy disks
 - CD ROMs

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CPU and ALU

- CPU
 - Its job is to coordinate all operations
- ALU
 - Performs arithmetic operations
- Today, CPU's are integrated circuits

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Software

- Operating System
- Application Software
- Programming Language Compiler

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Question

- Can computers think?
- No
- Computers are dumb
- Computers need a list of instructions to perform operations
- These instructions are *programs*

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Programming Language

- Machine language
 - Zeroes and ones
 - Machine independent
- Assembly language
 - English-like abbreviations to represent computer instructions
- High level language
 - Instructions look like everyday English
 - Each instruction can perform many machine language instructions

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C++

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

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Summary

- Today we have looked at:
 - The history of computers
 - The hardware of computers
 - The software of computers
- Next time we will:
 - Start coding
- Completed sections 1.1 - 1.19 from the book