Chapter 1
Introduction to Computers and Programming

- Reading: Chapter 1 (1.1 to 1.5)
- Good Problems to Work: p. 13 [1.11, 1.17] p. 18 [1.18, 1.21, 1.22, 1.23]
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  - Mon 2:15 – 3:15pm
  - Tue 9:45 – 10:45am
  - Thu 2:00 – 3:00pm
What is CS 150

• CS 150 is a programming course
• You will learn
  – Syntax (Grammar)
    • The mechanics of writing a C++ program
  – Design
    • Logical reasoning
    • How do I solve this problem with a program?
    • How do I break this problem into smaller, solvable tasks?
• No previous skills required!
STUDENTS?
How to succeed in CS150
How to succeed in CS150

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To: shereen@pacificu.edu
From: hall4242@pacificu.edu
Subject: CS150: quadratic formula

Hello Prof. Khoja,

I’m working on the programming assignment and I’m not sure how to calculate a square root in C++. Any hints?

Thanks,
Lesley
First Homework Assignment

- Fill out the survey on the class web page
- Print it out
- Turn it in on Tuesday at the start of class time
Programs and Programming Languages

- What is a program?

- Programs are written in high-level languages
  - Instructions look like everyday English (sort of)
  - Each instruction can perform many machine language instructions

- Compilers
  - Translate programs into machine language which is
    - zeroes and ones
    - machine dependent
Programming

- Be very specific about what you want the computer to do
- The computer follows directions precisely
- You can't just make stuff up and expect the computer to understand
- On the other hand, sometimes you don't know exactly what you want to do ... try something ... anything ... you can't hurt the computer!!!!!! 😊
C++ Programming Language

- C++ is
  - based on the C programming language
  - a high-level programming language
  - one of today’s most popular programming languages
  - used extensively in industry
C++ Hello World Program
What is the output?

//***********************************************************
// File name: hello.cpp
// Author:    Sharon Smith
// Date:     08/25/2017
// Purpose:   This program displays a welcome message to
//             the user after the user enters their name
//***********************************************************
#include <iostream>
#include <string>
using namespace std;

int main()
{
    string name;

    cout << "Type your name, then press enter " << endl;
    cin >> name;
    cout << "Hello " << name << "! " << endl;

    return EXIT_SUCCESS;
}
Language Elements

- **Key Words**
  - Have special meaning in C++
  - `using namespace int`

- **Programmer-Defined Identifiers**
  - Names made up by the programmer
  - Example: `employer, name`

- **Operators**
  - Perform operations
  - `* =`

- **Punctuation**
  - Used to mark the beginning and end of the program `{ }`
  - Used to separate C++ statements `;`
Syntax (Grammar)

- Rules that must be followed when constructing a program
- Controls the use of key words, programmer-defined identifiers, operators, and punctuation
Variables and Variable Definitions

- **variable** - named storage location in the computer’s memory which holds a piece of information

- **variable definition** - statement used to define one or more variables

- Does the Hello World program have any variables?
Input, Processing, Output

- Input, processing, and output are three main activities performed by a program.
- Assume we have three variables hoursWorked, payRate, and pay.
- Input
  ```cpp
  cin >> hoursWorked;
  cin >> payRate;
  ```
- Processing
  ```cpp
  pay = hoursWorked * payRate;
  ```
- Output
  ```cpp
  cout << pay;
  ```