

CS150 Intro to CS I

Fall 2017

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]

Chadd Williams

- Web Page: <http://zeus.cs.pacificu.edu/chadd/>
- Email: chadd@pacificu.edu
- Office: Strain 202
- Office Hours:
 - MW 1030-1130am
 - Th 1-2pm

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!

How to succeed in CS150

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How to succeed in CS150

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How to send an effective email

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

Hello Chadd,

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++ HelloWorld 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

```
cin >> hoursWorked;
cin >> payRate;
```
- Processing

```
pay = hoursWorked * payRate;
```
- Output

```
cout << pay;
```