Project #1: Datalab

Assigned October 24, 2017; due Friday, November 3, 2017@ 6:00 PM

Professor Hugh C. Lauer
CS-2011, Machine Organization and Assembly Language

Introduction – Datalab

- **Objective — to become more familiar with bit-level representations of integer and floating point numbers**

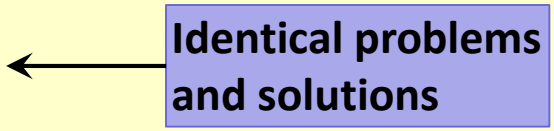
- **Approach — solve a series of "programming puzzles"**
  - Each forces you to manipulate the bits of an integer or floating point number
  - Limited as to which operations you can use
  - Graded on correctness, performance, and style!

Background

- Chapter 2 of CS:APP (Bryant and O'Hallaron)
- Each puzzle refers to some aspect of this chapter
- Lectures thru end of next week
- Two Recitation sessions

On-line handout

- **In *Canvas*, select *Assignments***
- **Read project description in**
  - Datalab.docx or Datalab.pdf
- **Select and download**
  - datalab-CCC-handout.tar
  - datalab-b17-handout.tar



Why two different versions?

- **CCC version needed for Recitation sessions *tomorrow***
  - Insufficient time to set up course virtual machine on your own system
- **However, CCC version does not talk with course server**
  - cs2011.cs.wpi.edu
  - Needed for “Beat the Prof” contest (see below)
- **Ubuntu version for use on your virtual machine**
  - Does talk with server
  - Convenient to use on own computer

Virtual Machine

- **Use virtual machine from CS-2301 or CS-2303**

  OR

  - Go to this course on *Canvas*,
    select *Files* (in left column)
    Download document "Setting Up Your Virtual Machine"
- **Install on Windows, Mac, or Linux**
  - Import into *Virtual Box, VMware Player, VMware Fusion*
    - *30+ minutes to extract and import*

- **See Projects subdirectory of course web-page for guidance and information about installation.**

Instructions for Datalab

- **Expand using**

```
tar xvf datalab-CCC-handout_CCC.tar
tar xvf datalab-b17-handout.tar
```

- **Edit file `bits.c`** ← **Only file you need to edit!**
  - Contains 15 puzzles
  - See project document, **`README`**, & comments in code
- **Use `./btest` to test your solutions**
  - Run **`make`** to rebuild **`bits.c`** and **`btest`**
- **Use `dlc` to autograde your solution** ← **Binary file included with tar file**
  - Your solution *must* pass **`dlc`** for all tests
  - TAs *use* **`dlc`** to grade all submissions
    - If **`dlc`** does not run, you get zero points for project!

Instructions (continued)

- **See written handout for additional tools and information**
  - E.g., **`fshow.c`**, **`ishow.c`**
- **Submission via Canvas**
  - *Must name your file* **`userName-bits.c`**
    - *E.g.,* **`lauer-bits.c`**
- **"Beat the Prof" contest**
  - Server should be running now
  - Use ./**`driver.pl -u "nickname"`** to submit your solution

Note: I am *very, very picky* about the correct naming of files and including your name on *every* file!

Yesterday's Recitation

- Worked thru one or more problems …
- … interactively

Questions?