COMS W4115: Programming Assignment 1

Setting up Clang/LLVM Environment

Logistics

1. **Announcement Date:** September 4^{th}, 2019
2. **Due Date:** September 16^{th}, 2019 by 5:00pm. No extension!!
3. **Total Points:** 20

Build Clang and LLVM

1. Create Ubuntu 18.04.3 Virtual Machine

   You can use either Vmware Workstation 15 Player or Virtualbox to install Ubuntu 18.04.3. At least 8GB memory is required for the virtual machine, 12GB memory is recommended. 120GB hard disk is required.

2. Install necessary packages

   ```
   sudo apt update
   sudo apt upgrade
   sudo apt install build-essential subversion cmake python3-dev
   sudo apt install libncurses5-dev libxml2-dev libedit-dev swig
   sudo apt install doxygen graphviz xz-utils git
   ```

3. Build clang and llvm by following the instructions in the following website:
   http://clang.llvm.org/get_started.html.

   You need to build Clang and LLVM from source in debug mode. It will take hours for building to finish.

   note:
   1. Before building Clang and LLVM, add 8G swap space in Ubuntu because building Clang and LLVM will take all the memory. The following website shows how to add swap space. Run "sudo swapoff -a" to disable swap first before creating swapfile. https://linuxize.com/post/how-to-add-swap-space-on-ubuntu-18-04/
   2. In case of out of memory issue during linking, add the following parameter in cmake "-DLLVM_USE_LINKER=gold" to use gold linker. Gold linker is faster and uses less memory.
   3. If there is any error during building Clang and LLVM, you can just run "make" again to do incremental build.
   4. Use "make -j 4" to take advantage of multiple cores of CPU, but it may take more memory.

4. Try the examples in section "Examples of using Clang" in
   http://clang.llvm.org/get_started.html.

Submission Guide

You can either work in pair or work by yourself.

Please submit the followings:

1. After building Clang and LLVM, you need to run "**make**" again, redirect the output to **{UNI}.txt** and submit **{UNI}.txt**. {UNI} means your UNI number.
2. For all assignments, submit an extra file **contribution.txt** describing each of your contribution.