

## CS570 “Advanced Computer Architecture” Homework 2

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### ***Submission:***

***Due by 3pm 02/18/2020***

***This is an **individual** assignment!***

***Total points 100 - Late penalty: 10% penalty for each day late***

***Please upload your assignment on Blackboard with the following name:***

***CS570\_SectionNumber\_LastName\_FirstName\_HW2.zip.***

***Please do NOT email your assignment to the instructor and/or TA!***

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In this assignment, there are two parts which you need to do. One is that you need to install the newest version of gem5 in your computer. Another is that you need to run gem5 with a benchmark successfully. This homework is based on the gem5 lecture. In that lecture, you can find more details about how to do this homework.

### **1. Background**

Gem5 is a modular discrete event driven computer system simulator platform, encompassing system-level architecture as well as processor microarchitecture.

### **2. Details**

You need to install the gem5 in its supported platform, which is a 64bit machine with Linux, MacOS X, or Solaris Operating System. If your own computer's system is not any of these three operating systems, a virtual machine with any of these three operating systems is suggested to be installed in your own computer.

- You should install the external tools and dependencies before installing gem5.
- You can build the gem5 into any CPU architectures supported by gem5 such as X86, ARM, etc. But if your computer's CPU architecture is not the same as your built gem5's CPU architecture, you need to download the related cross-compiling chain to compile your benchmark.
- You should run the gem5 with **O3** CPU model and **Syscall Emulation (SE)** system mode, also with a **benchmark**. (Be careful about the benchmark, you can use a very easy benchmark like **HelloWorld** to run, because the gem5 running time will be very long or may be hours, if your running benchmark is very complicated.)

### **3. What to turn in**

Your homework should be submitted as a zip file and should include:

- A written report of the assignment in either plain text(Doc) or PDF format. This is your chance to explain your steps of installing gem5, the screenshots of running the gem5 successfully, the commands used to install and run gem5, any insights gained, problems encountered, etc.
- The statistic output file which the gem5 generates after running the gem5.