CS5119: Advanced Computer Architecture Lab

Lab 6

Deadline:30th November 11:59 PM.

Problem 1: In this lab, you are asked to read and understand about memory systems available in Gem5 simulator. You are required to explore all the features of the cache memory systems and prepare a detailed report on the same. You may watch the following tutorial provided by Gem5 community on the same:
https://www.youtube.com/watch?v=ai2y4xj-fOs&t=1687s

Some other videos:

https://www.youtube.com/watch?v=eiliJz_YsG4&list=PL-J9GXT0E7ALwbi339_AsbGvKbdIw52Vf&index=3

https://www.youtube.com/watch?v=XTIrVBb86aM&list=PL-J9GXT0E7ALwbi339_AsbGvKbdIw52Vf&index=4

Tutorial to read:
https://www.gem5.org/documentation/learning_gem5/part2/memoryobject/

Problem 2: Based on your understanding select a memory intensive application from micro-benchmarks that you have used before and compare performance of an in-order and out-of-order CPU with only L1 data and L1 instruction cache with different size i.e 128 KB, 256 KB and 512 KB. You may use classic cache model for this exercise. Assume it's a set associative cache with associativity 4. Remaining parameters, you can keep it default.