## Instructions to install and run sniper simulator: (only for linux environment)

Click the following link to download the sniper files
https://drive.google.com/drive/folders/0By-09HFQd6G0ZjVTQ2RyZHpyaHM?usp=sharing

Extract or unzip sniper from sniper-latest.tgz

Enter the sniper folder by typing cd sniper-5.3 and press enter

*** now you are in Sniper simulator folder

Type ls and press enter you can see the following folders inside sniper-5.3



Create "benchmarks" folder using the following command
type mkdir benchmarks and press enter.

**Before installation:**

Extract one of the pin kits (pin-2.14, pin-3.0, pin-3.2) given in the google drive into sniper folder and replace the folder name as pin_kit.

Set environment variables as follows:

type export GRAPHITE_ROOT=$(pwd) and press enter
type export BENCHMARKS_ROOT=$(pwd)/benchmarks and press enter

**Installation:**

type make and press enter

After installation is successful you have to install the benchmarks. Go to benchmarks folder by typing cd benchmarks in terminal and press enter.

Type make and press enter
Benchmarks will be downloaded from the Internet and installed.
Once the benchmarks are installed sniper simulator is ready.

**Before running sniper (important information):**

- config folder contains .cfg files which are used to give the processor configuration (cache size, associativity, replacement policy ...etc) as input to the simulator. Part of a .cfg file is given in the figure below.

```
[perf_model/tlb]
penalty = 30              # Page walk penalty in cycles

[perf_model/itlb]
size = 128                # Number of I-TLB entries
associativity = 4         # I-TLB associativity

[perf_model/dtlb]
size = 64                 # Number of D-TLB entries
associativity = 4         # D-TLB associativity

[perf_model/stlb]
size = 512                # Number of second-level TLB entries
associativity = 4         # S-TLB associativity

[perf_model/cache]
levels = 3

[perf_model/l1_icache]
perfect = false
cache_size = 32
associativity = 4
address_hash = mask
replacement_policy = lru
data_access_time = 4
tags_access_time = 1
perf_model_type = parallel
writethrough = 0
shared_cores = 1
```

- Benchmarks folder consists of all the benchmarks needed to run sniper simulator. Basically there are two benchmark suites parsec and splash2 each containing several programs.

- Output statistics are stored in the sim.out file in benchmarks folder once simulation is completed. Part of sim.out file is given in the figure below.

```
                          | Core 0          |
  Instructions            |   1359473516    |
  Cycles                  |    557808721    |
  IPC                     |          2.44   |
  Time (ns)               |    209702527    |
  Idle time (ns)          |     17718624    |
  Idle time (%)           |          8.4%   |
Branch predictor stats    |                 |
  num correct             |     91937018    |
  num incorrect           |       792542    |
  misprediction rate      |         0.85%   |
  mpki                    |         0.58    |
TLB Summary               |                 |
  I-TLB                   |                 |
    num accesses          |    141533520    |
    num misses            |           16    |
    miss rate             |         0.00%   |
    mpki                  |         0.00    |
  D-TLB                   |                 |
    num accesses          |    195283163    |
    num misses            |       934965    |
    miss rate             |         0.48%   |
    mpki                  |         0.69    |
```

**Running sniper simulator with a benchmark:**

Type ./run-sniper and press enter from benchmarks folder and you will see the basic options of sniper simulator.

Command syntax:
./run-sniper -p <program> -i <inputsize (test)> -n <ncores (1)> -m <machines (1)> -d <outputdir (.)> -c <config-file> -r <sniper-root-dir> -g <options>

Example to run a specific benchmark program:

type the following command press enter
./run-sniper -p splash2-barnes -i test -n 1 -c gainestown –cache-only

You will see the following data after successful run and output is stored in sim.out file in benchmarks folder.



For detailed explanation go through sniper_manual given in the link or go to the following website
http://snipersim.org

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