CS203 Fall 2016
Lab 3
Documentation how to compile and run my code

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Cachesim is a performance simulator which collects cache miss and cache hit rates.
I have implemented from scratch a Java based Cache simulator (Cachesim). The Cache that I implemented will support direct mapping, set associative mapping and fully associative mapping. To test the designed Cache simulator, 2 set of traces (gcc-10K.memtrace and gcc-1M.memtrace) are used.

Extra credit: Also added support in the simulator to calculate the cold, capacity, and conflict misses.

Memory address taken from the trace file is truncated to 32 bits. Cachesim implements Least Recently Used (LRU) cache replacement policy.

Cachesim takes 4 following values as command line arguments.
1. Input trace file name (For eg: gcc-10K.memtrace or gcc-8M.memtrace)
2. Total cache size in bytes
3. Cache block size in bytes
4. Number of ways

For e.g 1:
If 512 KB is the size of the cache with 16B block size and the Cache is 4-way set associative:
filename- gcc-10K.memtrace
m- 524288
n- 16
setAssoc- 4
To compile: lalitha@lalitha-ubuntu:~/Java/Cachesim/src$ javac Cachesim/Cachesim.java
To run: lalitha@lalitha-ubuntu:~/Java/Cachesim/src$ java Cachesim.Cachesim gcc-10K.memtrace 524288 16 4

For e.g 2:
If 256 KB is the size of the cache with 16B block size and the Cache is 2-way set associative:
filename- gcc-1M.memtrace
m- 262144
n- 16
setAssoc- 2
To compile: lalitha@lalitha-ubuntu:~/Java/Cachesim/src$ javac Cachesim/Cachesim.java
To run: lalitha@lalitha-ubuntu:~/Java/Cachesim/src$ java Cachesim.Cachesim gcc-1M.memtrace 262144 16 2

The Cache simulator takes the above values as command line arguments and prints the cache miss and hit rates as well as the number of sets, ways, and number of address bits for the tag, index, and offset and number of cold, conflict and capacity misses.

Compile and Run my project:
1.Go to command prompt.
2. **Compilation** :
Go to Cachesim/src in the “Cachesim” folder submitted.
/Cachesim/src$ javac Cachesim/Cachesim.java
3. **Run** :
/Cachesim/src$ java Cachesim.Cachesim gcc-1M.memtrace 262144 16 2

The Cache simulator takes the above values as command line
arguments and prints the

1. Cache hit rate
2. Cache miss rate
3. Number of sets
4. Number of ways
5. Number of address bits for tag
6. Number of address bits for index
7. Number of address bits for offset
8. Number of cold misses
9. Number of Conflict misses
10. Number of Capacity misses