| CS5306<br>Fall 2015 | Assignment 3<br>Due 11-18-2015 | 11-11-2015 |
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**Submission Instructions:**

1. Please submit your work directly in TRACS (using the TRACS editor) or as a text/MS-word/PDF attachment by the due date/time. Please use only zip for compression.
2. Please write your name in the assignment header and as a part of the file name of the attachment.
3. Please submit the source code of your program in C/C++/Java/Python/PhP or Matlab along with any file needed for compilation. Your source code should be submitted in text format. Additionally, it has to be compliable on VS or the CS UNIX server.
4. The code should include remarks that explain any non-trivial part of the program.
5. Please do not submit your assignment via email. If you miss the deadline, then please submit it on the TRACS drop-box and send me an email notification. Note, however, that late work will result in a penalty and it will be graded only at the end of the semester.

**Background:**

In this assignment you are expected to simulate a direct mapping cache management policy. Please make the following assumptions:

1) The cache is an I-Cache
2) A trace of reference words is available in the file trace.txt
3) The main memory has $N = 2^n$ bytes
4) Block size is $M = 2^m$ bytes
5) The cache contains $L = 2^l$ lines (blocks)
6) The cache has a valid bit for each line and initially all the lines are invalidated.

**Assignment Instructions:**

- Your simulation program should read reference words.
- For each reference word, decide whether it is a compulsory miss (CM), hit (H), or miss (M).
    - For each of the above emulate the relevant cache management operations, except for getting the actual bytes from the memory.
    - Record the number of CMs, Hs, and Ms.
- Simulate the cache under the parameters: $n = 24$, $M = 16$, and $L = 16$
    - Compute and output the hit ratio and the CM ratio
- Repeat the simulation under the parameters: $n = 24$, $M = 16$, and $L = 32$
    - Compute and output the hit ratio and the CM ratio