

## Cache Assignment

A cache of size  $S$  with  $CL$  as the number of cache lines and block size  $B$  is to be built.  $S$ ,  $CL$ , and  $B$  are in powers of 2. Write a program that allows loading into cache and searching cache using:

1. Direct mapping
2. Associative memory
3.  $n$ -way set associative memory where  $n$  is a power of 2.

Any programming language (of your choice) can be used.

**Bonus task - (Applicable only for Section B)**

Weightage - 12%

*[NOTE- This task is completely OPTIONAL.]*

Task - Build a 2 level cache. The size of the level 1 cache is  $S/2$  and the size of level 2 cache is  $S$ . All the other parameters are to be decided accordingly. This will also be a standalone cache without the intervention of the main memory.