MPCA Lab
Week 8

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Section : L

Sem : 4

Roll : 42

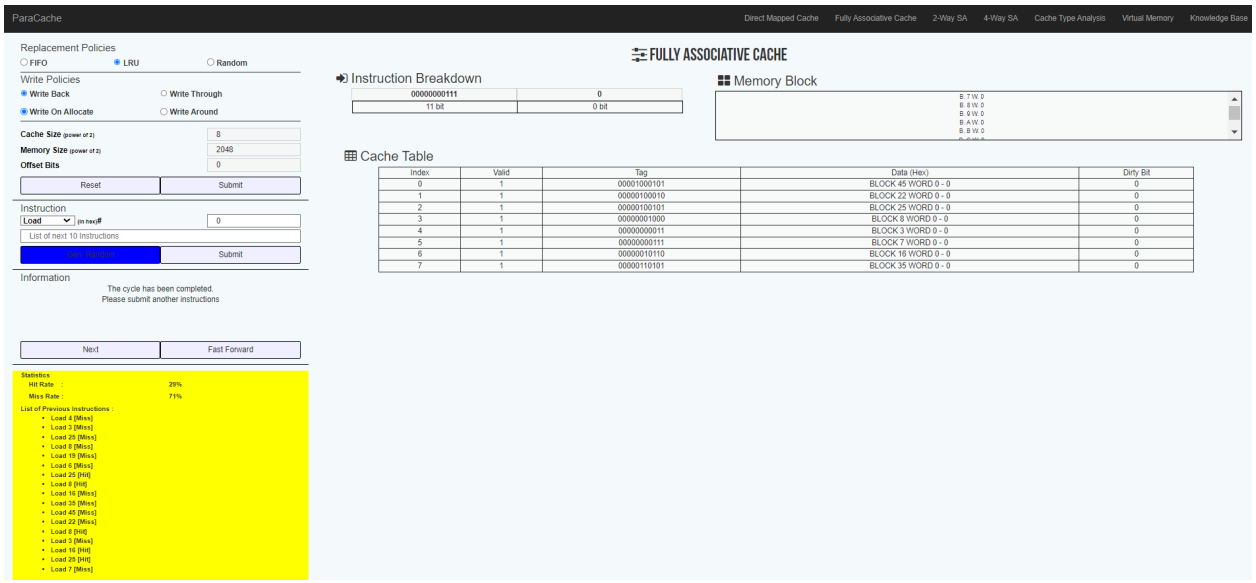
1. Consider a fully associative cache with 8 cache blocks (0-7). The memory block requests are in the order-

4, 3, 25, 8, 19, 6, 25, 8, 16, 35, 45, 22, 8, 3, 16, 25, 7

If LRU replacement policy is used, which cache block will have memory block 16?

Also, calculate the hit ratio and miss ratio.

Output :



Hit ratio : 29%

Miss ratio : 71%

Memory Block 16 is placed in cache block 6.

2. Consider the cache has 4 blocks. For the memory references-

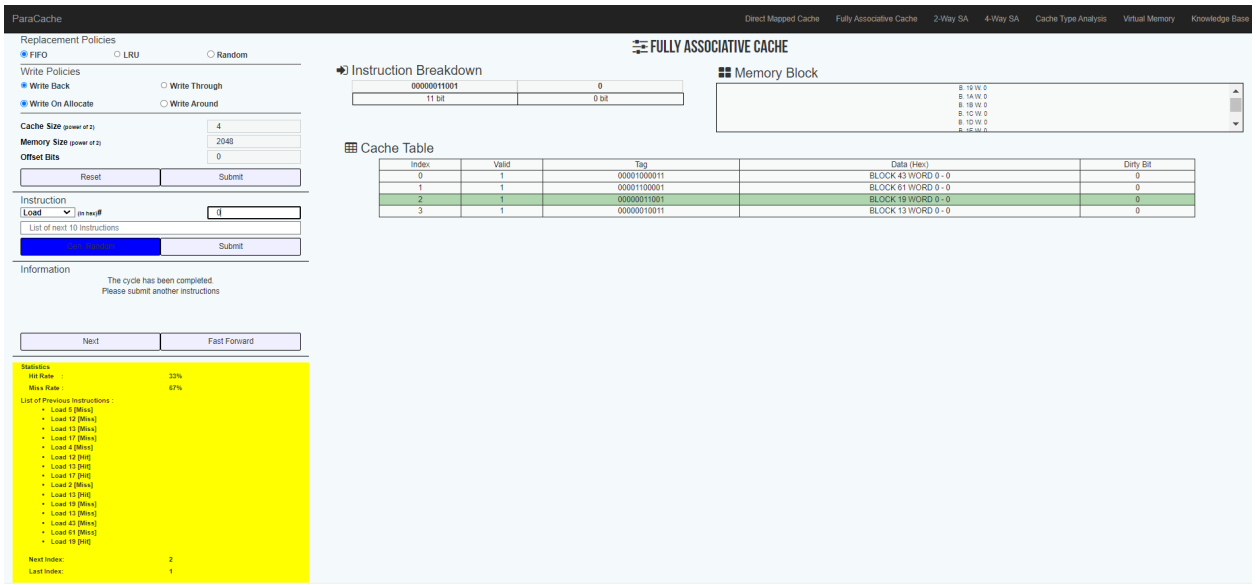
5,12, 13, 17, 4, 12, 13, 17, 2, 13, 19, 13, 43, 61, 19

Which of the memory blocks will be present in the cache at the end of the sequence and What

is the hit ratio and miss ratio for the following cache replacement algorithms -

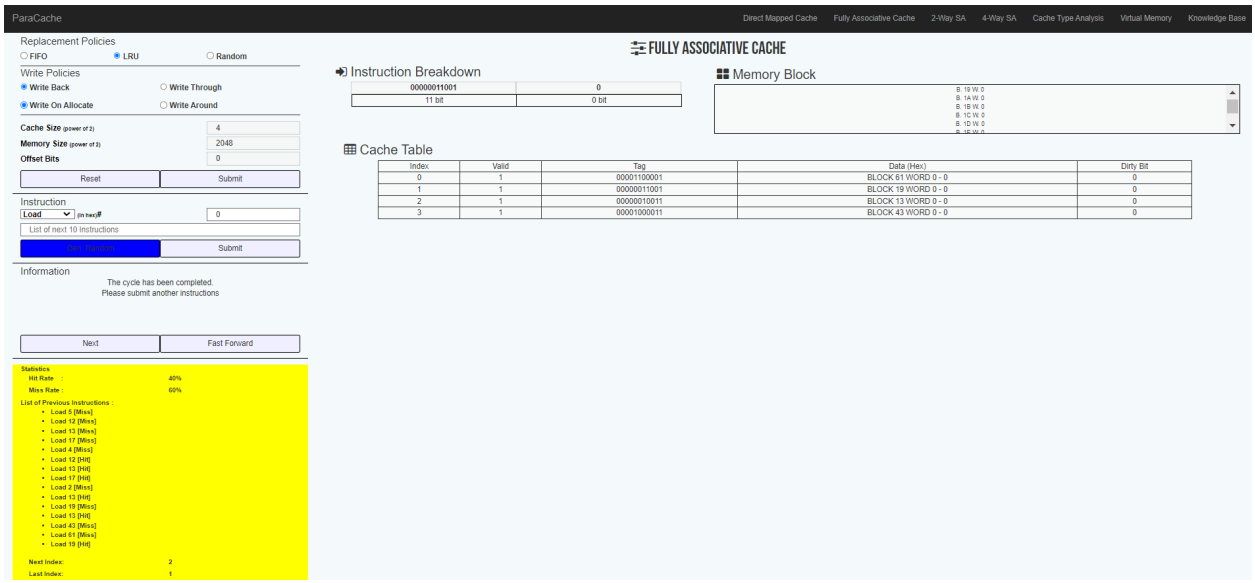
a. Fully Associative FIFO
b. Fully Associative LRU
c. 2-way set associative mapping using LRU

a. Output :



The memory blocks that are not present in the cache are 5, 12, 17, 4 and 2.
Hit rate : 33%
Miss rate : 67%

b. Output :

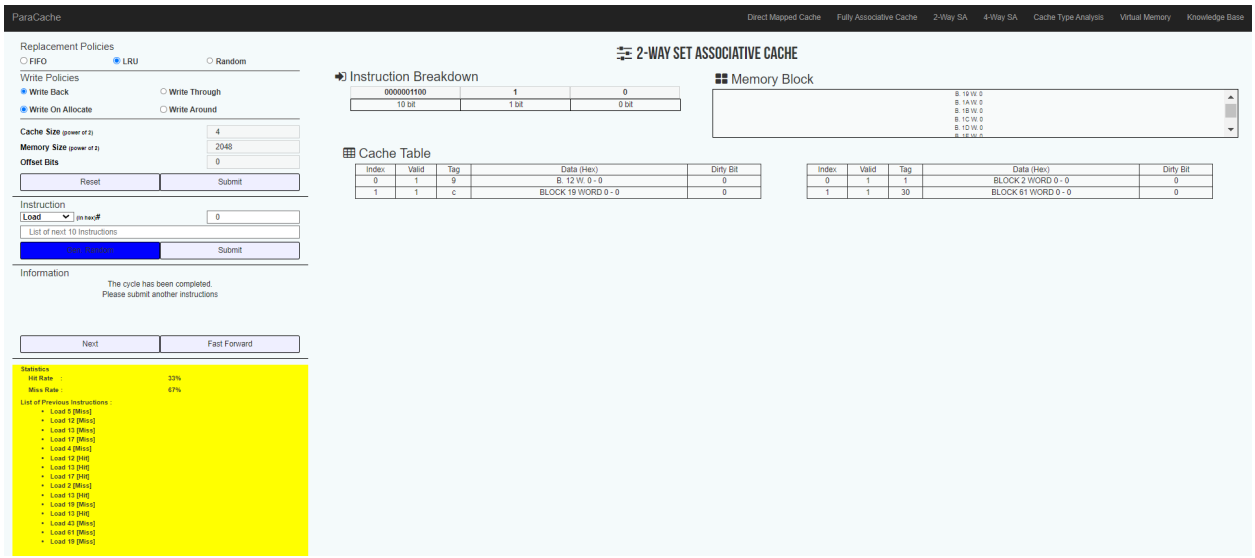


The memory blocks that are not present in the cache are 5, 12, 17, 4 and 2.

Hit rate : 40%

Miss rate : 60%

c. Output :



The memory blocks that are not present in the cache are 5, 17, 13, 4 and 43.

Hit ratio : 33%

Miss ratio : 67%