1. The subproblem of this algorithm is creating and modifiying a linked list.

2. Time complexity is O(max(m, n)) because the body of all loops are O(1) operations and all the loops runs m or n t imes, hence the complexity is maximum of these 2 values.

3. Here is the output for element_number = capacity + 2
cache miss
element 0 is added into the cache
Cache: 1, 0, 0, 0, 0, 0
cache miss
element 1 is added into the cache
Cache: 1, 1, 0, 0, 0, 0
cache miss
element 2 is added into the cache
Cache: 1, 1, 1, 0, 0, 0
cache miss
element 3 is added into the cache
Cache: 1, 1, 1, 1, 0, 0
cache miss
cache is full, element 5 is evicted
element 4 is added into the cache
Cache: 1, 1, 1, 1, 1, 0

Element 5 was not in the cache but the algorithm thinks that it is farthest in the future. So the cache has 5 elements w hich is bigger than the capacity.