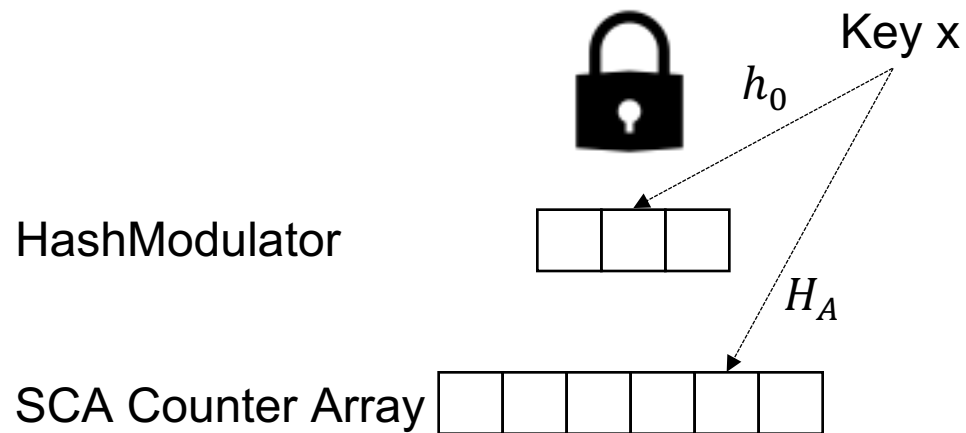
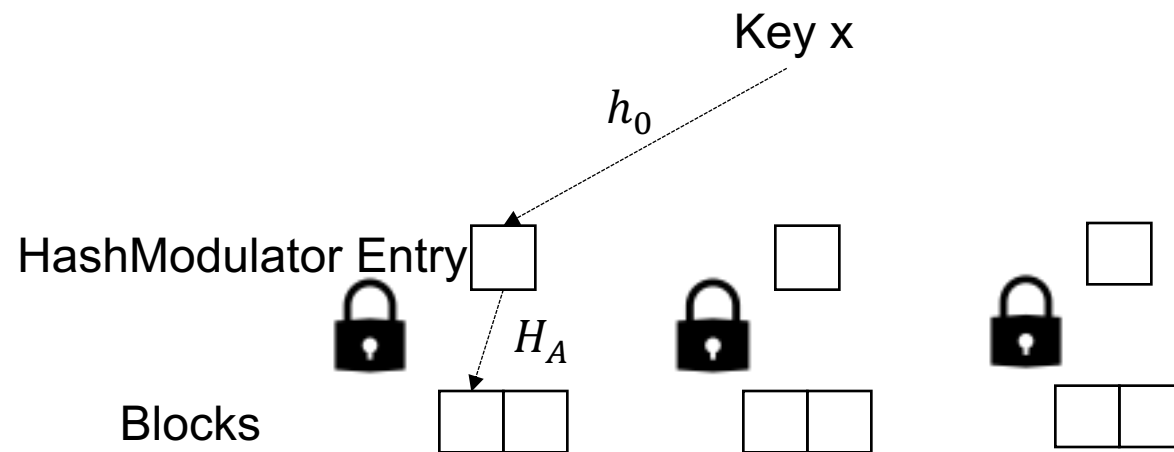


(1) Global lock



The first method is to add a global lock to ensure thread-safety such that only one thread can access the filter at one time.

(2) Block-based lock



The second method is partition HashModulator and SCA counter array into small blocks, each of which will have one lock for thread-safety. A given key will first be mapped to a HashModulator entry and then be mapped to k SCA counters in the same mapped block instead of the global SCA counter array.