

Special case of most frequent item in a stream

Suppose to have a stream of n items, so that one of them occurs $> n/2$ times in the stream. Also, the main memory is limited to keeping just two items and their counters, plus the knowledge of the value of n beforehand. Show how to find deterministically the most frequent item in this scenario. [Hint: since the problem cannot be solved deterministically if the most frequent item occurs $\leq n/2$ times, the fact that the frequency is $> n/2$ should be exploited.]