

Exercise 12

Problem 1.

In this problem, we consider a system of n processes.

An (m, n) -assignment object, where $n \geq m > 1$, has n fields (for instance, an n -element array) and two operations: `assign()` and `read()`. The `assign()` operation takes as arguments m values $v_1, \dots, v_m$ and m indices $i_1, \dots, i_m$ and atomically assigns value v_j to array element i_j , for $j = 1, \dots, m$. Note: the entire sequence of m assignments is atomic. The `read()` operation takes an index argument i and returns the i^{th} array element.

Your task is to prove that atomic $(n, \frac{n(n+1)}{2})$ -assignment objects, where $n > 1$, have consensus number at least n .