

## Exercise 10

**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  $i^{\text{th}}$  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  $n$ .