#include<iostream>
using namespace std;

//solution using general semaphore
SEMAPHORE MAXREAD; //set the value to k (general solution)
void reader()
{
    MAXREAD.p;
    //critical section
    Read();
    //.....
    //end critical section
    MAXREAD.v;
}

//Solution using Binary Semaphores

int count = k; // value set to k <= n
Semaphore guard; // to guard the count value set to 1
Semaphore mutex; // for making sure only k readers are reading
              // initialized to 0
void reader()
{
    guard.p;
    count--;
    if (count <= -1) {
        guard.v;
        mutex.p; // initial value is 0
    }
    else
        guard.v; // we have not reached k readers

    //critical section
    Read();
    //.....
    //end critical section
    guard.p;
    count++;
    if (count <= 0)
        mutex.v;
    guard.v;
41: } // void reader()