

# Concurrent Systems II

## Practical 4 SPIN — Promela

February 21, 2014

This practical is worth 2% of your year-end result. Have your program ready at the usual time in the week after reading week. Have a printout also.

Write a Promela program to situation depicted in the following slide. Use SPIN to show that the Promela program works. Figure out how to use SPIN to *prove* that a scenario exists where  $n$  is 2 when the program has completed.

### Concurrent Counting Algorithm

Example: Concurrent Counting Algorithm	
integer n $\leftarrow$ 0;	
p	q
integer temp	integer temp
p1: do 10 times	q1: do 10 times
p2: temp $\leftarrow$ n	q2: temp $\leftarrow$ n
p3: n $\leftarrow$ temp + 1	q3: n $\leftarrow$ temp + 1

- Increments a global variable  $n$  20 times, thus  $n$  should be 20 after execution.
- But, the program is faulty.
  - Proof: construct a scenario where  $n$  is 2 afterwards.
- Wouldn't it be nice to get a program to do this?



Figure 1: From the Overheads

(<http://www.scss.tcd.ie/CourseModules/CS3015/Assets/Practicals/p4/practical.pdf>)