CS 511 – Quiz 7: Model-Checking/Spin

4 December 2020

Names:
Pledge:
Section:

Exercise 1

Code Peterson's algorithm in Promela:

```
1  int last = 1;
2  boolean wantP = false;
3  boolean wantQ = false;
```

```
1  Thread.start  { // P
2    while (true) {
3     // non-critical section
4     wantP = true;
5     last = 1;
6     await !wantQ or last==2;
7     // CRITICAL SECTION
8     wantP = false;
9     // non-critical section
10   }
11 }
```

```
1  Thread.start  { // Q
2    while (true) {
3     // non-critical section
4     wantQ = true;
5     last = 2;
6     await !wantP or last==1;
7     // CRITICAL SECTION
8     wantQ = false;
9     // non-critical section
10   }
11 }
```


Exercise 2

Show that it enjoys mutex using assertions in spin.

Exercise 3

Show that if lines lines 4 and 5 are interchanged, then mutex does not hold. Show this using assertions in spin.

Submission instructions:

A file `q9.zip` file containing:

- Exercise 1: A file `pet.pml`
- Exercise 2: A file `pet2.pml` and `output2.txt` with a copy of the text in the upper tight pane from jSpin (indicating there are no errors).
- Exercise 3: A file `pet3.pml` and `output3.txt` with a of the offending trail (click on "Guided" to get it)