

NSWI101: SYSTEM BEHAVIOUR MODELS AND VERIFICATION

LAB 05 – MORE SPIN EXERCISES

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EXERCISE – DEKKER'S ALGORITHM FOR MUTUAL EXCLUSION

INITIALIZATION :

```
shared boolean flags[2];
shared int turn;
turn = 0;
flags[0] = FREE;
flags[1] = FREE;
```

EXIT PROTOCOL (for Process i):

```
/* pass the turn on, and release
the resource */
turn = 1 - i;
flags[i] = FREE;
```

ENTRY PROTOCOL (for Process i):

```
/* claim the resource */
flags[i] = BUSY;
/* wait if the other process is using the resource */
while (flags[1 - i] == BUSY) {
  /* if waiting for the resource, also wait our turn */
  if (turn != i) {
    /* but release the resource while waiting */
    flags[i] = FREE;
    while (turn != i) { }
    flags[i] = BUSY;
  }
}
```

Model MESI protocol in Promela

Assignment specification available at:

<https://d3s.mff.cuni.cz/files/teaching/nswi101/HW1.pdf>

Deadline: February 24, 2023