

01 Simple Examples - Check, Random

- ReversingDigits.pml
- DiscriminantOfQuadraticEquation.pml
- NumberDaysInMonth.pml
- MaximumNondeterminism.pml
 - “Branch 1” and “Branch 2”
- Maximum –second example-MaximumIfElse.pml
- GCD.pml
- IntegerDivison01.pml

02 Concurrency and interleaving semantics

- Promela processes execute concurrently.
 - Non-deterministic scheduling of the processes.
 - Processes are interleaved (statements of different processes do not occur at the same time).
 - exception: rendez-vous communication.
- All statements are atomic; each statement is executed without interleaving with other processes.
- Each process may have several different possible actions enabled at each point of execution - only one choice is made, non-deterministically.
- InterleavingStatements.pml
 - Check and Random
 - 6 possibilities of the execution
 - n1,p,n2,q;
 - n1,n2,p,q;
 - n1,n2,q,p;
 - n2,q,n1,p;
 - n2,n1,q,p;
 - n2,n1,p,q.
 - Interactive simulation – Interactive button
- InterferenceBetweenProcesses.pml
- InterferenceBetweenProcessesDeterministic.pml

03 Critical section

- CriticalSection_Incorrect.pml
 - both processes – in the critical section
- CriticalSection_MutualExclusion.pml – not satisfied
 - Mutual exclusion – at most one process is executing its critical section at any time.
- CriticalSection_With_Deadlock.pml
 - Blocking on an expression – user Interactive simulation
 - Absence of deadlock – it is impossible to reach a state in which some processes are trying to enter their critical sections, but no process is successful.
- CriticalSection_SolutionAtomic.pml
 - The atomic sequence may be blocked from executing, but once it starts executing, both statements are executed without interference from the other process.

04 LTL examples

- CriticalSection_MutualExclusionLTL.pml
 - LTL formula:
 - $[]\text{mutex}$
 - Translate and Verify
- CriticalSection_MutualExclusionLTL02.pml
 - LTL formula:
 - $[]\text{mutex}$
 - Translate and Verify
- CriticalSection_With_Starvation.pml
 - LTL formula:
 - $\langle\rangle\text{csp}$
 - Translate and Acceptance and Verify