SMV continued (Lecture 6)

Analysis of Software Artifacts

Agenda

- overview of other model checkers
- look at other model checkers on the formal methods home page
- today we will briefly discuss `SPIN` and `Verisoft`
- we will not cover this material in tests or homeworks

SPIN

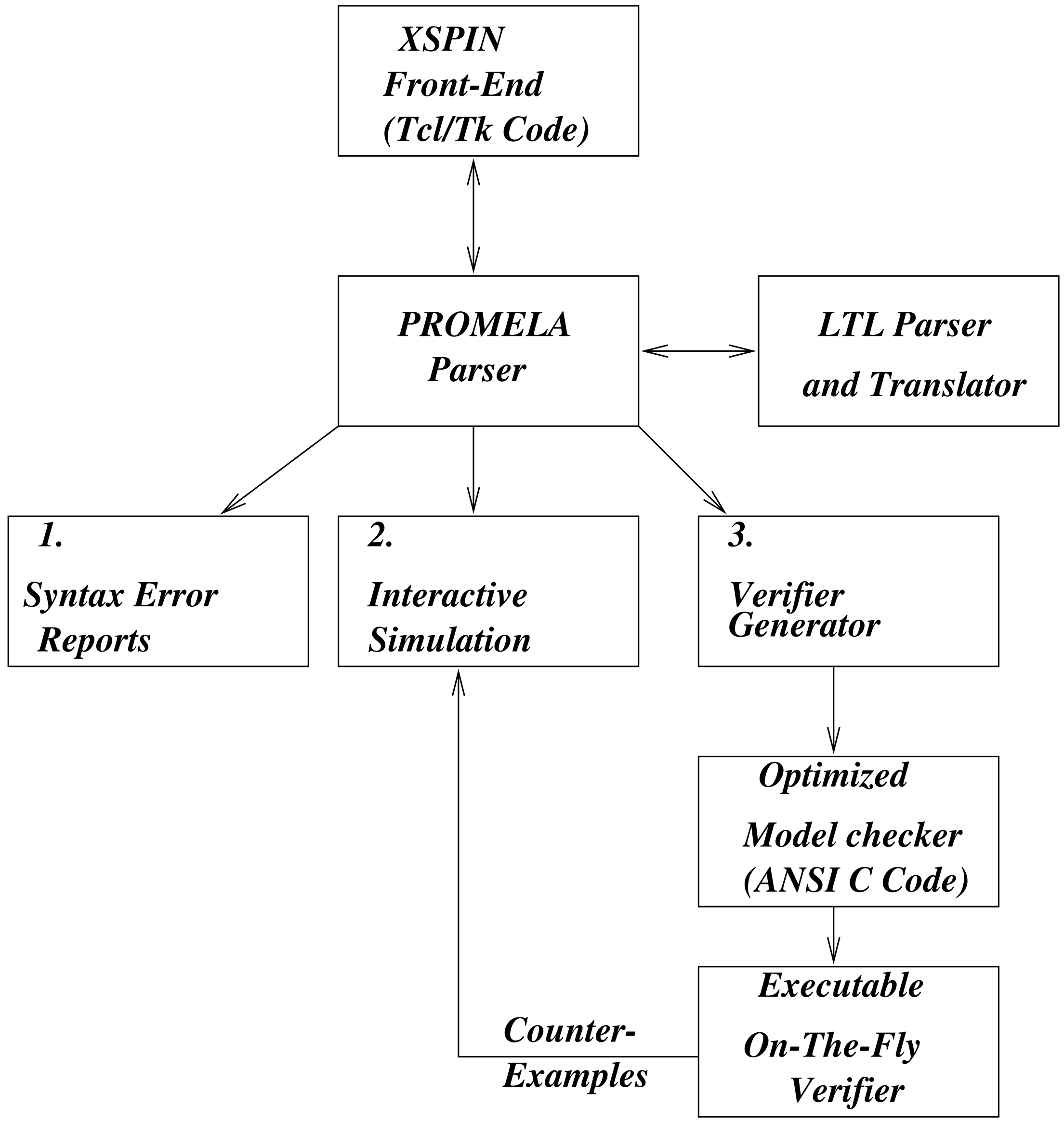
- developed at Bell labs by *Gerard Holzmann*
- G.J. Holzmann, *The Model Checker SPIN*, IEEE Transactions on Software Engineering, Vol 23, No 5, pages 279-295, May 1997
- please get a copy of the paper cited above

SPIN (Modeling language)

- called PROMELA (a Process Meta Language)
- based on CSP, but much more *user friendly*
- asynchronous composition of processes
- communication between processes
  - through message passing on buffered channels
  - shared variables
  - any combination of these

SPIN (Specification language)

- *Linear Time Temporal* logic or LTL.
- - Use `[]` for **G**
  - Use `<>` for **F**
  - use `U` for **U**
- what does the following formulas say?
  - `![](sr -> <> rr)`
  - `(!rr U rb)`


XSPIN
Front-End
(Tcl/Tk Code)
PROMELA
Parser
LTL Parser
and Translator
1.
Syntax Error
Reports
2.
Interactive
Simulation
3.
Verifier
Generator
Optimized
Model checker
(ANSI C Code)
Executable
On-The-Fly
Verifier
Counter-
Examples

Advantages over SMV

- nice GUI
- modeling language more natural for certain systems
  - message passing
- counterexample animation

Advantages of SMV

- in general, can handle larger systems
- pretty big user community
- constantly being improved