Z3 101, via F#

Samin Ishtiaq

C∘mp∘se::Conference
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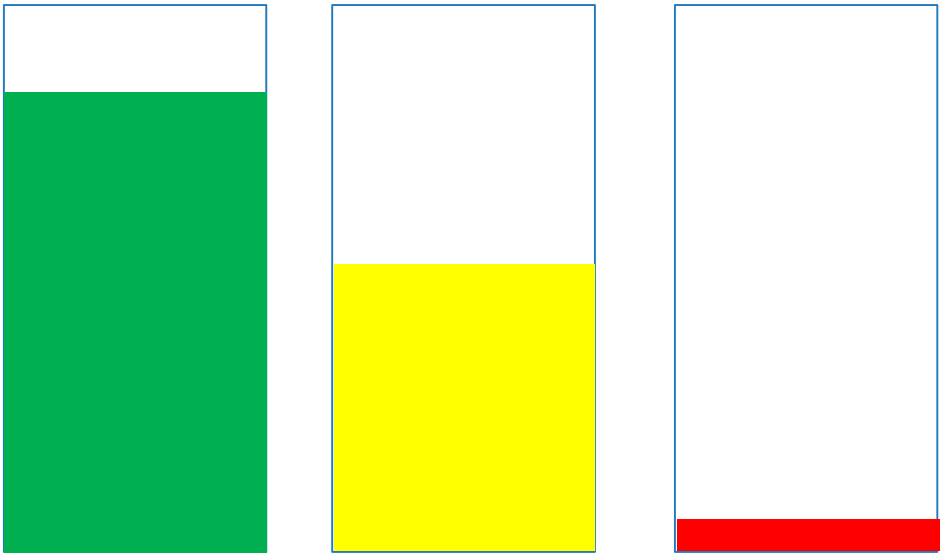

Ocaml/F#
Logic/math
Z3

http://z3.codeplex.com

https://github.com/sishtiaq/compose-z3-tutorial

Z3

- SMT Solver

- Many times winner of SMT-COMP

- http://z3.codeplex.com

Model Theory 101

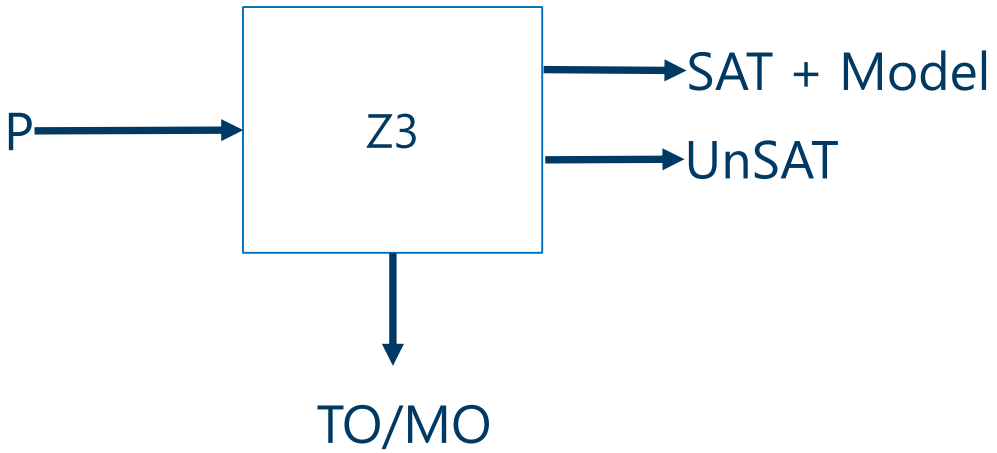
$$x + y < 10$$

$$x - y < 3$$

Model Theory 101

$$[x=4, y=4] \models x+y<10 \wedge x-y<3$$
$$M \models P$$

"P is true in a model M"
"M is a model that satisfies P"


P
Z3
SAT + Model
UnSAT
TO/MO

What can P be about?

- Arithmetic
- Bit Vectors
- Arrays
- Uninterpreted functions
- Quantified formulae

Get hacking

```
let ctx = new Context()
let solver = ctx.MkSolver()

let _ = solver.Add (p)

match solver.Check([||]) with
| Status.SATISFIABLE ->
      let m = solver.Model
```