

# A New Relational Solver for the Alloy Analyzer

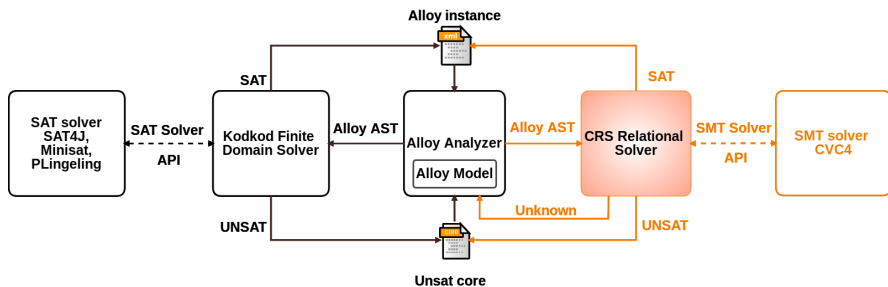
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# What is Alloy?

- A formal language for software specification based on predicate calculus and relational calculus
- Supports set operations like **union**, & **intersection**, and relational operations like **product**, & **join**
- The Alloy Analyzer is a static tool that analyzes **Alloy models**



# Main Features of New Relational Solver

- Based on an SMT theory of finite relations
- Can prove properties in **unbounded domains**
- Supports **unbounded integers**  
(Alloy's solver supports fixed-bitwidth integers)
- Implements a new semantics for integer signatures (or sets)  
(Interprets arithmetic operators as relational joins)

# References



Andrew Reynolds Mudathir Mohamed, Baoluo Meng and Cesare Tinelli.  
*A new relational solver for the Alloy Analyzer.*

URL:

<https://homepage.divms.uiowa.edu/~mahgoubyahia/pdf/crs.pdf>.



Github repository.

Cvc4 relational solver, 2019.

URL: <https://github.com/CVC4/org.alloytools.alloy/>.