# Project proposal

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April 16, 2019

## 1 Propositional dynamic logic solver

The idea of the project is to implement a solver for propositional dynamic logic (PDL). The input would be a formula in PDL and optionally a kripke structure for that formula. The output (result) is either *unsat*, *sat* or *unknown*. If a kripke structure is given as input, the result scope would be restricted to this kripke structure. Otherwise, the result scope would be all kripke structures.

## 2 Implementation

The project is primarily code and would use the SMT solver CVC4 as a back end and apply the relation theory to implement the semantics of PDL. The project would import CVC4 abstract syntax tree (AST) for relations from another project that I am working on (Alloy2SMT translator)[1] which also supports type checking and parsing SMT models. In this project I would write a translator from PDL to CVC4 AST and display back the SMT models returned from CVC4 as Kripke structre and dot files for graphvis.

## 3 Preferences for presentation day

I prefer April 30 for my presentation day.

[1] `https://github.com/CVC4/org.alloytools.alloy/tree/cvc4/alloy2smt`