Course on Program Verification 2012/2013

URL: www.cs.uu.nl/docs/vakken/pv

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Course Goals

- *'verification'* , we will define it as assuring that a program P satisfies a given specification S.

- Introducing you to:
  - some verification techniques
  - and technologies

- In the end, the gained insight and experience can help you to *identify how to use those techniques* in your particular setup latter in practice

Course goals

- Emphasize is on automated techniques.
- Trade off: expressiveness.

- Check *all* possible executions.
- Check only some representative instances of executions (aka testing)

- Check vs a complete specification
- Check vs a partial/weaker specification

- *Check the real software*
- *Check a model*

Course Setup

- **Themes** :
  - Model checker
  - Hoare logic
  - Higher order theorem prover
  - Refinement based approach

- 2 **lab assignments** (not so big)
- 1 **project** (big), also a lot of room for your own idea

- For the lab assignments and project, you can work in pairs. Note that deliverable always include a report.

Software

- You may need to bring your own laptop. Needed software: Spin, HOL, and Z3. Install them ASAP!!

- Theorem prover HOL, also requires
  - Moscow ML (Mosml), ML is a functional language

- Model checker SPIN, also requires
  - C compiler + its standard libraries.
  - On Windows you probably also need Cygwin or Msys+Mingw to get the C compiler.
  - Tk/Tcl for its GUI
  - Dot for drawing state automata

- Links to HOL & Spin sites can be found in PV website. Consult their install instructions.

Grading, etc

- Grading:
  - 2 assignments, each is worth 15% of end grade
  - the project is 30%
  - Final exam, 40 %

- Website: www.cs.uu.nl/docs/vakken/pv

  Regularly check it out…