

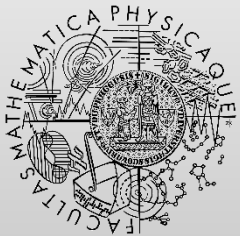
Realistic Verification Scenarios

<http://d3s.mff.cuni.cz>

Department of
Distributed and
Dependable
Systems



Pavel Parízek



FACULTY
OF MATHEMATICS
AND PHYSICS
Charles University

Concurrent HashMap (Java)

- Where to get it
 - `<JDK DIR>/src.zip:java/util/concurrent`
- Task 1: identify relevant correctness properties
- Task 2: determine suitable verification approach
- Task 3: maybe actually use tools that you know

GNU core utilities

- Where to get the source code
 - <http://ftp.gnu.org/gnu/coreutils/coreutils-8.12.tar.gz>
- Selected target programs: cp, su
- Task 1: identify relevant correctness properties
- Task 2: determine suitable verification approach
- Task 3: maybe actually use tools that you know

- Source code
 - <http://www.helenos.org/releases/HelenOS-0.5.0.tar.bz2>
- Task 1: identify relevant correctness properties
- Task 2: determine suitable verification approach
- Task 3: how would you proceed with analysis of such large program

Interesting paper

- D. Engler, et al. **A few billion lines of code later: using static analysis to find bugs in the real world**, Communications of the ACM, 53(2), February 2010
 - <http://web.stanford.edu/~engler/BLOC-coverity.pdf>
 - <http://www.coverity.com/> (<https://www.synopsys.com/>)
- Key challenges
 - Parsing the real code (different standards of C/C++/Java)
 - Integration with the internally used build system
 - “Make” variants, not everybody uses Make, some GUI tools (IDE)
 - Bug reports: false positives, developers not understand
 - Social: convince managers that they want to fix bugs

- Competition on Software Verification
- <http://sv-comp.sosy-lab.org/>
- <http://sv-comp.sosy-lab.org/2022/>