Software Security

Enforcing defensive programming through software model checking

David Wagner and Hao Chen

U.C. Berkeley

Introduction

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  - It's too easy to unintentionally violate implicit usage rules of OS API's
- An approach: enforce defensive coding
  - Enumerate rules of prudent security coding
  - Use tools to automatically verify that software follows these rules

Examples of Coding Rules

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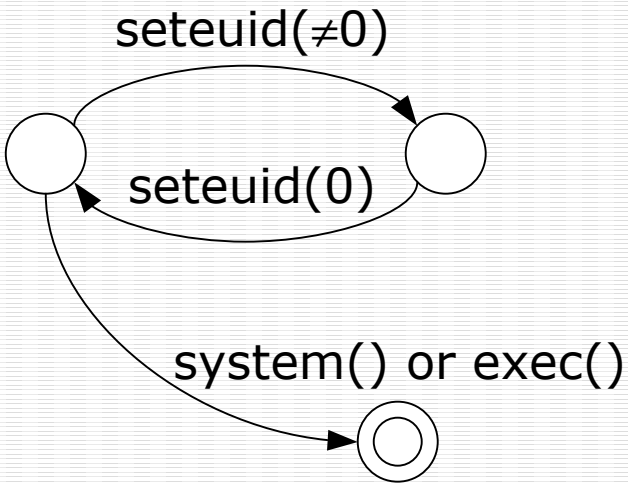

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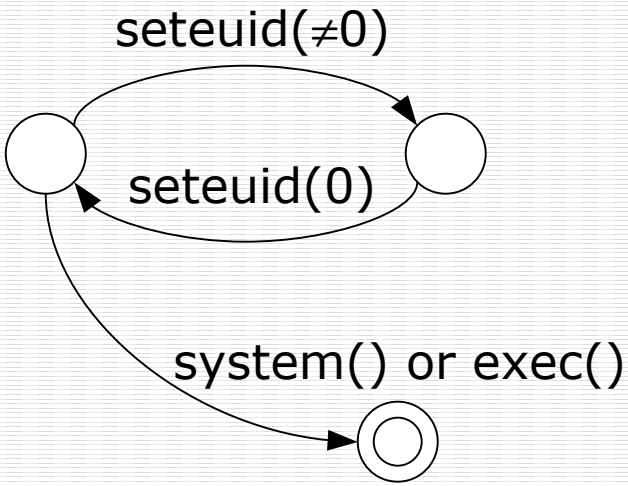

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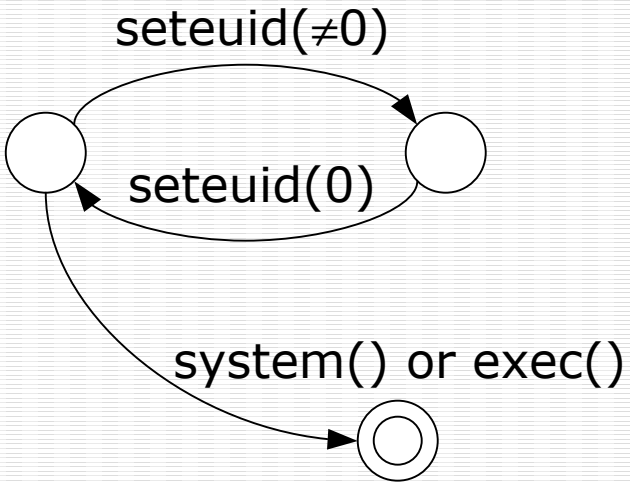

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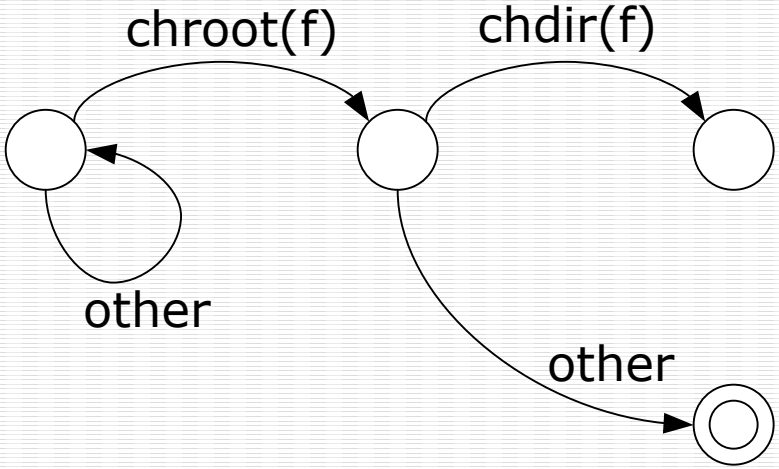

Automated Code Analysis

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- We check whether code obeys these rules
  - Let Σ = set of security-relevant events,
    B = set of "bad" traces that violate a rule,
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- Framework: software model checking
  - B: finite-state automaton (regular language)
  - T: pushdown automaton (context-free lang.)

Come and Get It!

- Our tool, MOPS, is available for download
  - Comes with modelchecker
  - No database of rules yet (research in progress)

http://www.cs.berkeley.edu/~daw/mops/

Conclusion

- Security requires disciplined coding
- And tools can help