Writing an Effective curl Test

Daniel Fandrich
March 2019

Overview

- Testing motivations
- Knowing what to test
- Kinds of tests
- Test writing strategies

Motivations for Testing

Why write a test?

- Many different motivations
- Different motivations ⇨ different strategies

What to test?

Test to prove a known bug is fixed

- Prove the fix works

What to test?

Test to prove existence of a possible bug

- Can exonerate curl
- Can show curl’s current behaviour

What to test?

Look at the DISABLED tests

- Why is the test failing?
- Fix test or fix code

What to test?

Code coverage

- Find untested code
- Find untested conditions

What to test?

Test protocols with poor coverage

- Untested: `imaps pop3s ldap ldaps rtmp smbs smtps`
- Poorly tested: `dict, telnet, smb`

What to test?

Fuzzing

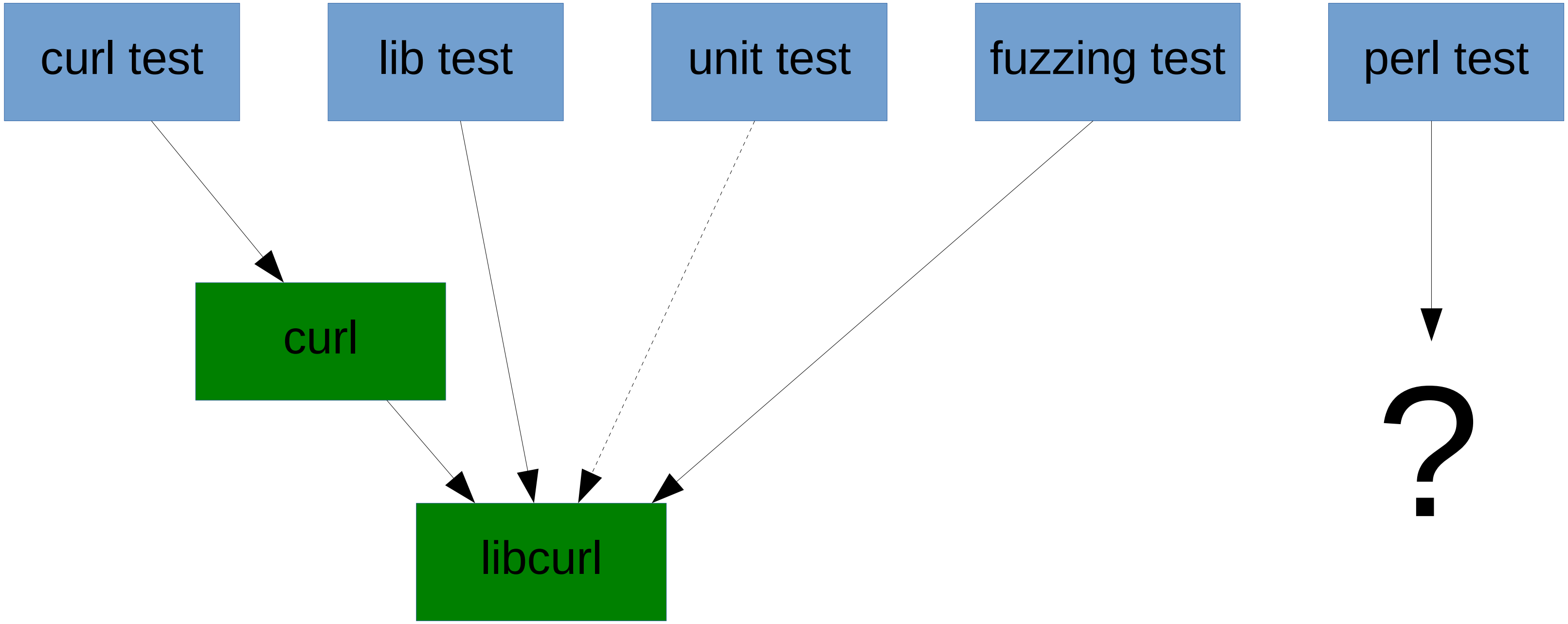
- Fuzzer “writes the test” for you

What to test?

Testing enables fearless refactoring

- Comprehensive tests reduce fear
- Result is cleaner, more maintainable code

Kinds of Tests



Kinds of Tests

curl test

- just runs the curl tool

Kinds of Tests

Lib test

- Linked to libcurl
- Limited only by libcurl API

Kinds of Tests

Unit test

- Not limited by libcurl API
- Can test internal libcurl code
- Internal interfaces can be tested

Kinds of Tests

Fuzzing test

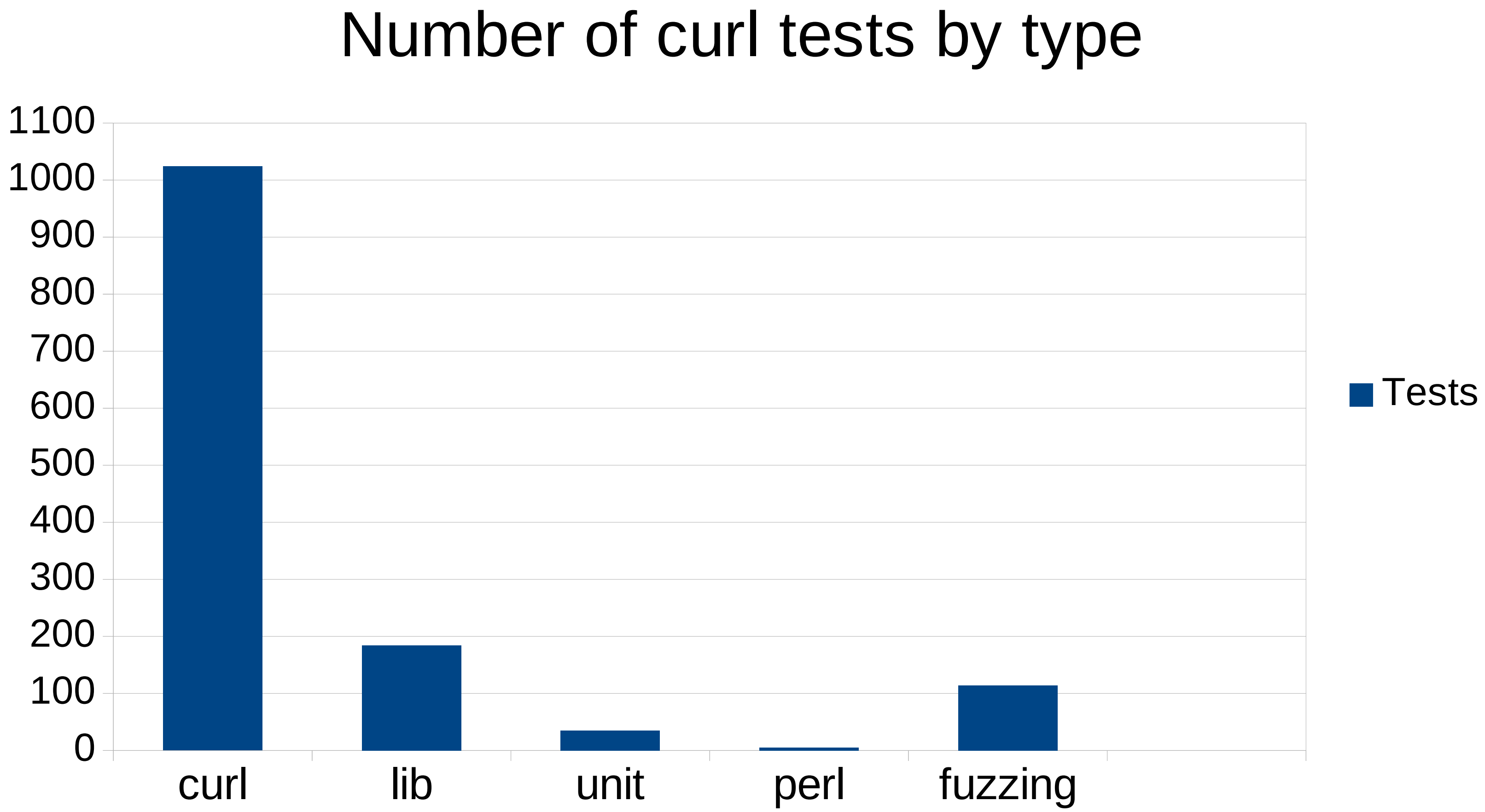
- Finds security issues
- Not about correct protocol operation

Kinds of Tests

perl test

- Not limited to libcurl API
- Mostly test source code, header files

Kinds of Tests



Testing Writing Strategies

- Copy an existing test
- Determine important parts to check
- Eliminate irrelevant parts before checking
- Generate large datasets dynamically
- Skip tests when they can’t be run

Questions?