PRTest: A plain random tester

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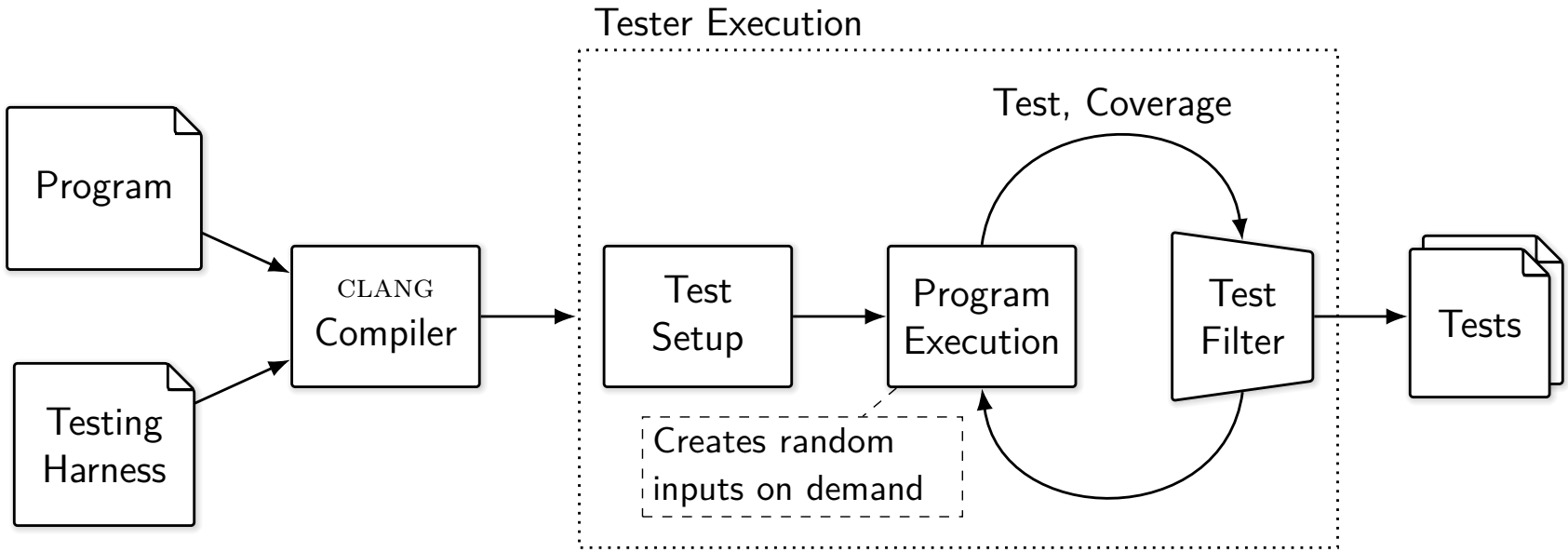
PRtest

- Evaluation of new testing techniques:
  - Comparison to pre-decessors
  - Comparison to tools with different strengths/weaknesses
  - No comparison to naive/worst-case approach

$\Rightarrow$ Create such a naive tool for Test-Comp!

Architecture



- Instrument program with custom input-method
- Execute instrumented program indefinitely
- Monitor branch coverage to decide which tests to keep

Weaknesses of PRTEST

```
if (input() == 1) {
  // interesting code
}
```

- Probability to create fitting test: $\frac{1}{2^{32}} = 0.000000002\%$
- Speed of PRTEST strongly depends on execution speed of program under test

Strengths of PRtest

- Very fast to create initial test suite
- Supports all language constructs and features of C
- Very simple ⇒ good **base**line

Test-Comp'19

Categories in which PRTEST was not last place:

- Coverage-Error:
  - Arrays (7th/9)
  - Floats (3rd/9)
  - Heap (7th/9)
- Coverage-Branches:
  - Floats (4th/7)

Repository

- https://github.com/sosy-lab/tbf/tree/master/tbf/tools/random