

# BREAKING COVERAGE



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# CODE COVERAGE

- Code coverage provides very useful information about the adequacy of the test cases.

but ...

# OPTIMISTIC COVERAGE

- If coverage = 100% and Failures = Errors = 0
  - Can we assume the program is bug free?
  - E.g.: division by zero.

# PESSIMISTIC COVERAGE

- If coverage = 100% and Failures = Errors > 0
  - Can we assume the program is not bug free?
  - E.g.: filtering out 0 as input of division.

# IMPOSSIBLE COVERAGE

- If coverage  $< 100\%$ 
  - Can we assume we can reach 100%?
  - E.g.: dead code.

# SUMMARY OF COVERAGE LIMITATIONS

|             | Coverage  | Failures | Bugs  |
|-------------|-----------|----------|-------|
| Pessimistic | 100%      | $> 0$    | 0     |
| Optimistic  | 100%      | 0        | $> 0$ |
| Impossible  | $< 100\%$ | -        | -     |