Randomness in Testing

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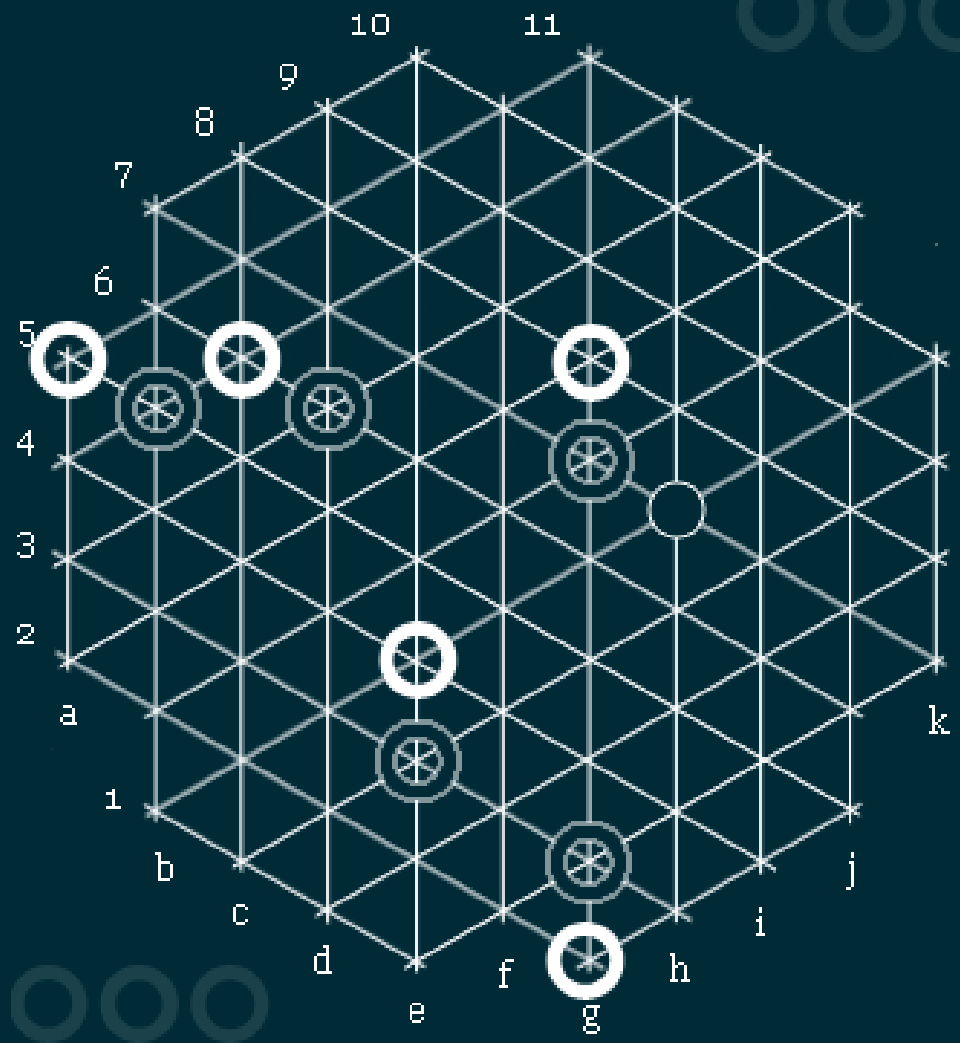
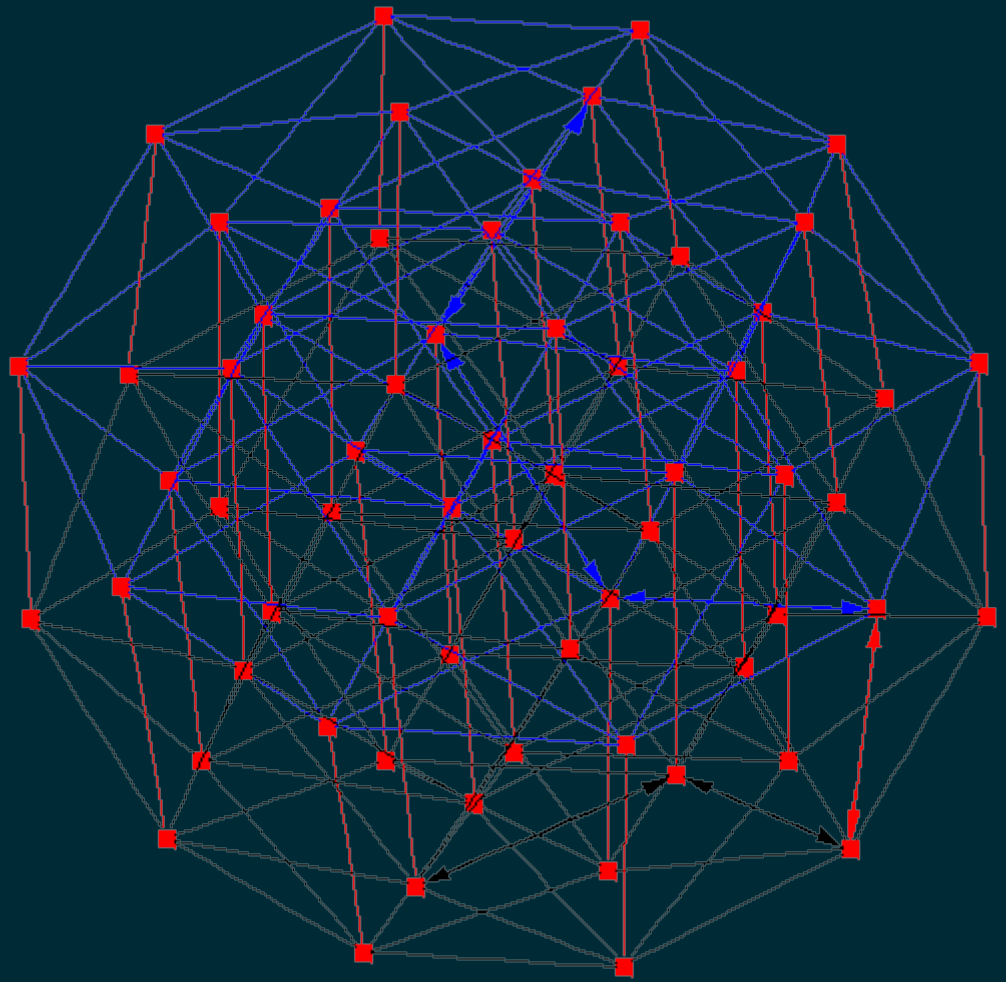
Normal testing: try edge cases

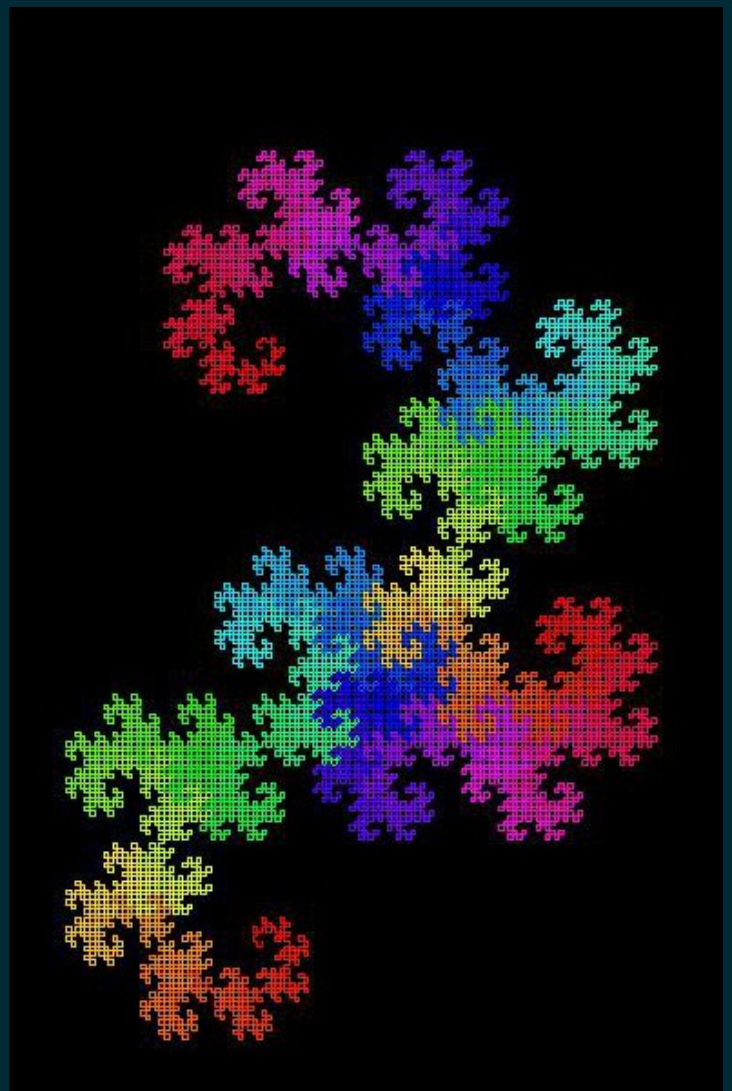
- Easy when you have a geometric picture:



“Fuzz testing” for difficult edges

- What are the “edge cases” here?





Fuzz testing kata example

Note: fuzz tests generally more simple-minded

Things to Fuzz test for:

- exceptions or other bad behavior
- outputs consistent with inputs
- exact answer for a simplified domain (hard!)

Fuzz Testing: NOT part of RSpec

- Just use `rand` in your tests.

Test order dependence

- Ideal: tests are independent
  - DO NOT use objects created out of the context
  - DO NOT break when other objects exist

Test order kata example

When a test fails...

- Write a test that always fails, or fix the tests
- Re-use the seed to debug

```
rspec --seed 1234
```

Using RSpec seed with `rand`

```
srand RSpec.configuration.seed + 1
```

Putting it together

- Automatically re-use the seed

Other random examples

- Code mutation
- Unavoidable randomness (network, threads)
- Testing random code