Code Coverage

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Lecture #15 out of 24
80 minutes

Example, Part I

Live Code:

```
1  int fibonacci(int n) {
2    if (n <= 0) {
3      return 0;
4    }
5    if (n <= 2) {
6      return 1;
7    }
8    return fibonacci(n-1)
9      + fibonacci(n-2);
10 }
```

Test Code:

```
1  assert fibonacci(1) == 1;
2  assert fibonacci(2) == 1;
```

$$C = 3/10 = 30\%$$

Example, Part I

Live Code:

```
1  int fibonacci(int n) {
2    if (n <= 0) {
3      return 0;
4    }
5    if (n <= 2) {
6      return 1;
7    }
8    return fibonacci(n-1)
9      + fibonacci(n-2);
10 }
```

Test Code:

```
1  assert fibonacci(1) == 1;
2  assert fibonacci(2) == 1;
3
4  assert fibonacci(9) == 34;
5  assert fibonacci(10) == 55;
```

$$C = 5/10 = 50\%$$

+2pt

"Coverage numbers (like many numbers) are dangerous because they're objective but incomplete. They too often distort sensible action. Using them in isolation is as foolish as hiring based only on GPA."
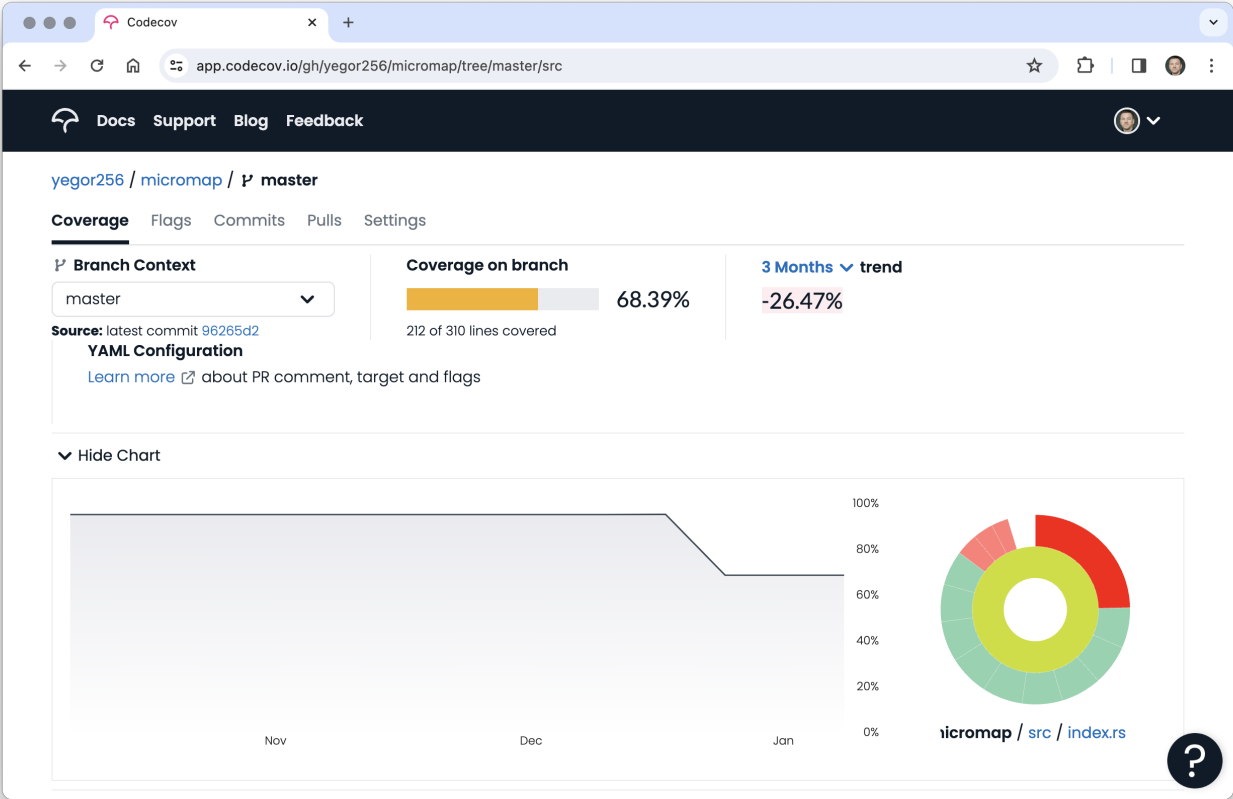
— Brian Marick, *How to Misuse Code Coverage*, 1997

+2pt

"I would be suspicious of anything like 100% — it would smell of someone writing tests to make the coverage <u>numbers happy</u>, but not thinking about what they are doing."

— Martin Fowler, *Test Coverage*, 1997

Codecov.io

Line Coverage

Tarpaulin for Rust

Code | Blame | 23 lines (23 loc) · 551 Bytes | Raw

```yaml
1   ---
2   name: tarpaulin
3   on:
4     push:
5       branches:
6         - master
7   jobs:
8     tarpaulin:
9       runs-on: ubuntu-22.04
10      steps:
11        - uses: actions/checkout@v4
12        - uses: actions-rs/toolchain@v1
13          with:
14            toolchain: stable
15            override: true
16        - uses: actions-rs/tarpaulin@v0.1
17          with:
18            version: '0.22.0'
19            args: '--all-features --exclude-files src/lib.rs -- --test-threads 1'
20        - uses: codecov/codecov-action@v3
21          with:
22            token: ${{ secrets.CODECOV_TOKEN }}
23            fail_ci_if_error: true
```

Code Coverage can be calculated by a few tools:

- JaCoCo for Java

- Istanbul for Javascript

- Gcov for C/C++

- Coverage.py for Python

- Simplecov for Ruby

- Tarpaulin for Rust

Read this:

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