Effective Programming Practices for Economists

Software engineering

What to test? How to test it?

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Test for passing invalid data

```python
def test_clean_agreement_scale_invalid_data():
    with pytest.raises(ValueError):
        _clean_agreement_scale(pd.Series([-77, "typo"]))
```

- Passing two codes that should not work
- We expect a `` `ValueError` `` to be raised
- Test will fail if
  - no error is being raised
  - a different error is being raised

Always perform the countercheck

```python
def test_clean_agreement_scale_invalid_data():
    with pytest.raises(ValueError):
        _clean_agreement_scale(pd.Series(["-77", "typo"]))
```

- `` `"-77"` `` is perfectly valid data.
- Still, `` `ValueError` `` is raised as soon as one element in the series is invalid. Test passes.
- Tests may pass for other reasons than what you have in mind!

What to test?

- Only interfaces!
- Typical input
- Corner cases
- "All" exceptions
- Any bugs that you have encountered. Workflow:

  1. Pin down by finding minimal testcase
  2. Make it part of the test suite
  3. Fix the bug

  Any bug that came up once is likely to come back!

How to test?

- Granular tests
  - one assert statement per function
  - careful with anything that is not a scalar (make sure test uses "and" conditions, not "or")
- Always perform the countercheck!