Coverage.py Python code coverage

CONCEPTS

Two steps: run records execution into a .coverage data file, then report, html, xml, json or lcov read it. Reports never run your code again. Without --append each run overwrites the data.

coverage run your tests or script
↓ writes
.coverage SQLite data file
↓ read by
report / html / xml json, lcov, annotate
↓ for
Humans and CI --fail-under gate, upload

Settings live in .coveragerc, setup.cfg, tox.ini or pyproject.toml ([tool.coverage.run], [tool.coverage.report]). Command-line flags override them. With pytest-cov, pytest --cov=<pkg> does run and report in one go.

MEASURE

coverage run *<script.py>* **[args]**
Run a script under measurement

coverage run -m *<module>* **[args]**
Run a module, like python -m

coverage run -m pytest
Measure the test suite

coverage run --branch -m pytest
Count branches, not just lines

coverage run --source=*<dir-or-pkg>* **...**
Limit measuring to this code

coverage run --omit=*<pat>* **...**
Skip files matching a pattern

coverage run -a ...
Append to the existing data

coverage run -p ...
Separate data file per process

coverage run --concurrency=*<libs>* **...**
gevent, eventlet, greenlet, multiprocessing, thread

REPORT

coverage report
Text table of coverage per file

coverage report -m
Add the missing line numbers

coverage report --skip-covered
Hide files at 100%

coverage report --fail-under=*<n>*
Exit 2 if total is below n

coverage report --format=markdown
Markdown table (or text, total)

coverage report --format=total
Print only the total percentage

coverage report --include=*<pat>*
Filter files in this report

HTML AND OTHER FORMATS

coverage html
Write the HTML report to htmlcov/

coverage html -d *<dir>*
Choose the output folder

coverage xml -o *<file>*
Cobertura XML (default coverage.xml)

coverage json -o *<file>*
JSON report (default coverage.json)

coverage lcov -o *<file>*
LCOV tracefile (coverage.lcov)

DATA FILES

coverage combine
Merge .coverage.* files into .coverage

coverage combine --keep
Keep the files that were merged

coverage erase
Delete the collected data

coverage debug data
Summarise the data file contents

COVERAGE_FILE=*<path>* **coverage run ...**
Data file location by env var

EXCLUDING CODE

 # pragma: no cover
Exclude this line, or the block it opens

 # pragma: no branch
Don't count a missing branch here

exclude_also = [...]
Add regexes to the default exclusions

[run] omit = [...]
Config: files never measured

[report] fail_under = *<n>*
Config: default threshold

[run] branch = true
Config: always measure branches

[run] source = ["*<pkg>***"]**
Config: always limit to your code

PARALLEL AND CI

[run] parallel = true
Config: unique data file per process

RECIPES

Local loop

```
coverage erase
coverage run --branch -m pytest
coverage report -m --skip-covered
coverage html && xdg-open
htmlcov/index.html
```

CI gate with an XML upload

```
coverage run --branch --
source=<pkg> -m pytest
coverage report --fail-under=90
coverage xml
```

Parallel runs merged

```
# pyproject.toml:
[tool.coverage.run] parallel =
true
coverage run -m pytest tests/unit
coverage run -m pytest tests/
integration
coverage combine
coverage report -m
```

pyproject.toml basics

```
[tool.coverage.run]
branch = true
source = ["<pkg>"]

[tool.coverage.report]
show_missing = true
exclude_also = ["if
TYPE_CHECKING:"]
```