LAPORAN TUGAS SESI 9

Unit Testing dengan PyTest - Sistem Transaksi Perbankan
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Mata Kuliah: Software Testing
Tanggal pengujian: 26 Oktober 2026
Repositoy: https://git-eng.ukwms.ac.id/5803024009/software-testing_09_PyTest_Melvyn

1. Tujuan dan Objek Pengujian

Pengujian dilakukan pada modul banking.py, khususnya kelas BankAccount dengan operasi deposit, withdraw, transfer, serta validasi pembuatan rekening. Tujuannya memeriksa hasil transaksi, penanganan input tidak valid, dan cakupan cabang kode.

2. Metode Pengujian

• PyTest: 17 kasus uji dijalankan secara lokal menggunakan Python 3.14.6 dan pytest 9.1.1.
• Parametrize dan Boundary Value Analysis (BVA): variasi nilai batas untuk deposit dan withdraw.
• pytest.raises: menguji ValueError pada nominal nol/negatif, saldo tidak cukup, transfer ke rekening sendiri, serta data rekening tidak valid.
• Fixture account menggunakan yield dan cleanup (saldo diatur menjadi nol setelah pengujian).
• Mock unittest.mock.patch menggantikan send_notification; diuji bahwa notifikasi dipanggil saat transfer berhasil dan tidak dipanggil saat saldo tidak cukup.

3. Hasil dan Analisis Coverage

Indikator	Hasil
Test	17 passed; 0 failed
Statement	32; missing 0 (100%)
Branch	16; partial 0 (100%)
Cabang belum tercakup	Tidak ada

Perintah: python -m pytest -v; python -m pytest --cov=banking --cov-branch --cov-report=term-missing --cov-report=html.

Seluruh 32 statement dan 16 branch tercakup. Tidak ditemukan baris yang terlewat maupun cabang yang hanya diuji sebagian. Coverage 100% menunjukkan seluruh jalur terukur telah dieksekusi, tetapi tidak menjamin program bebas dari semua bug.

4. Kesimpulan

Seluruh 17 pengujian berhasil. Persyaratan fixture, parametrize berbasis BVA, exception testing, mock, dan branch coverage telah dipenuhi.

Lampiran A — Bukti Eksekusi Lokal

```
PS D:\College\Semester 5\Software Testing\Week 10> py -m pytest -v
============================= test session starts =============================
platform win32 -- Python 3.14.6, pytest-9.1.1, pluggy-1.6.0 -- C:\Users\Melvyn Faith\AppData\Local\Python\pythoncore-3.14-64\python.exe
cachedir: .pytest_cache
rootdir: D:\College\Semester 5\Software Testing\Week 10
configfile: pytest.ini
testpaths: tests
plugins: anyio-4.14.2, cov-7.1.0
collected 17 items

tests/test_banking.py::test_deposit_bva[1-100001] PASSED                 [  5%]
tests/test_banking.py::test_deposit_bva[99999-199999] PASSED             [ 11%]
tests/test_banking.py::test_deposit_bva[100000-200000] PASSED            [ 17%]
tests/test_banking.py::test_deposit_bva[100001-200001] PASSED            [ 23%]
tests/test_banking.py::test_deposit_zero_raises PASSED                   [ 29%]
tests/test_banking.py::test_deposit_negative_raises PASSED               [ 35%]
tests/test_banking.py::test_withdraw_valid_boundaries[1-99999] PASSED    [ 41%]
tests/test_banking.py::test_withdraw_valid_boundaries[99999-1] PASSED    [ 47%]
tests/test_banking.py::test_withdraw_valid_boundaries[100000-0] PASSED   [ 52%]
tests/test_banking.py::test_withdraw_zero_raises PASSED                  [ 58%]
tests/test_banking.py::test_withdraw_over_balance_raises PASSED          [ 64%]
tests/test_banking.py::test_transfer_and_notification_mock PASSED        [ 70%]
tests/test_banking.py::test_transfer_insufficient_funds_does_not_notify PASSED [ 76%]
tests/test_banking.py::test_transfer_zero_raises PASSED                  [ 82%]
tests/test_banking.py::test_transfer_to_self_raises PASSED               [ 88%]
tests/test_banking.py::test_blank_owner_raises PASSED                    [ 94%]
tests/test_banking.py::test_negative_initial_balance_raises PASSED       [100%]

============================= 17 passed in 0.14s ==============================
```

Gambar 1. Eksekusi PyTest: 17 pengujian berhasil.

```
PS D:\College\Semester 5\Software Testing\Week 10> py -m pytest --cov=banking --cov-branch --cov-report=term-missing --cov-report=html
============================= test session starts =============================
platform win32 -- Python 3.14.6, pytest-9.1.1, pluggy-1.6.0 -- C:\Users\Melvyn Faith\AppData\Local\Python\pythoncore-3.14-64\python.exe
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rootdir: D:\College\Semester 5\Software Testing\Week 10
configfile: pytest.ini
testpaths: tests
plugins: anyio-4.14.2, cov-7.1.0
collected 17 items

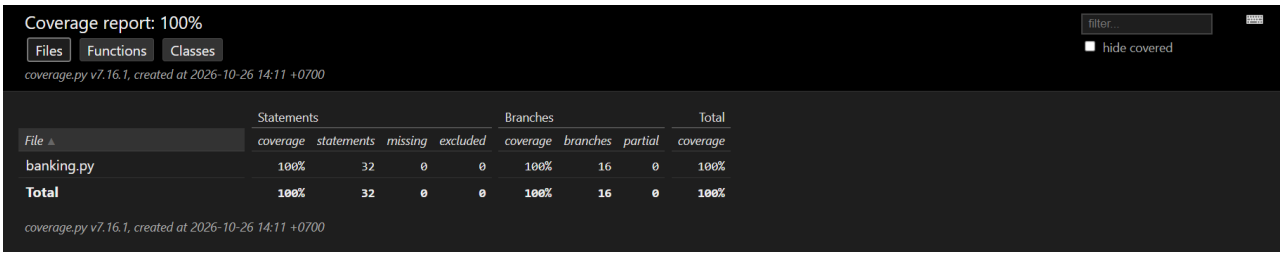
tests/test_banking.py::test_deposit_bva[1-100001] PASSED                 [  5%]
tests/test_banking.py::test_deposit_bva[99999-199999] PASSED             [ 11%]
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tests/test_banking.py::test_deposit_zero_raises PASSED                   [ 29%]
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tests/test_banking.py::test_withdraw_valid_boundaries[1-99999] PASSED    [ 41%]
tests/test_banking.py::test_withdraw_valid_boundaries[99999-1] PASSED    [ 47%]
tests/test_banking.py::test_withdraw_valid_boundaries[100000-0] PASSED   [ 52%]
tests/test_banking.py::test_withdraw_zero_raises PASSED                  [ 58%]
tests/test_banking.py::test_withdraw_over_balance_raises PASSED          [ 64%]
tests/test_banking.py::test_transfer_and_notification_mock PASSED        [ 70%]
tests/test_banking.py::test_transfer_insufficient_funds_does_not_notify PASSED [ 76%]
tests/test_banking.py::test_transfer_zero_raises PASSED                  [ 82%]
tests/test_banking.py::test_transfer_to_self_raises PASSED               [ 88%]
tests/test_banking.py::test_blank_owner_raises PASSED                    [ 94%]
tests/test_banking.py::test_negative_initial_balance_raises PASSED       [100%]

================================ tests coverage ================================
_____________________ coverage: platform win32, python 3.14.6-final-0 _____________________

Name         Stmts   Miss Branch BrPart  Cover   Missing
-----------------------------------------------------------
banking.py      32      0     16      0   100%
-----------------------------------------------------------
TOTAL           32      0     16      0   100%
Coverage HTML written to dir htmlcov
============================= 17 passed in 0.23s ==============================
```

Gambar 2. Hasil coverage terminal: 32 statement, 16 branch, total 100%.

Lampiran B — Bukti HTML Coverage



Coverage report: 100%

Files | Functions | Classes

filter...

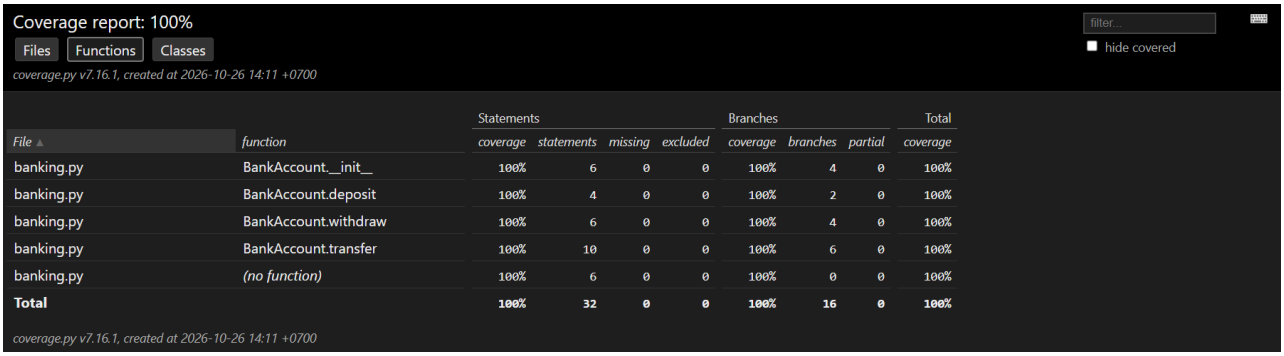
hide covered

coverage.py v7.16.1, created at 2026-10-26 14:11 +0700

File	Statements				Branches			Total
	coverage	statements	missing	excluded	coverage	branches	partial	coverage
banking.py	100%	32	0	0	100%	16	0	100%
Total	**100%**	**32**	**0**	**0**	**100%**	**16**	**0**	**100%**

coverage.py v7.16.1, created at 2026-10-26 14:11 +0700

Gambar 3. Ringkasan coverage modul banking.py.



Coverage report: 100%

Files | Functions | Classes

filter...

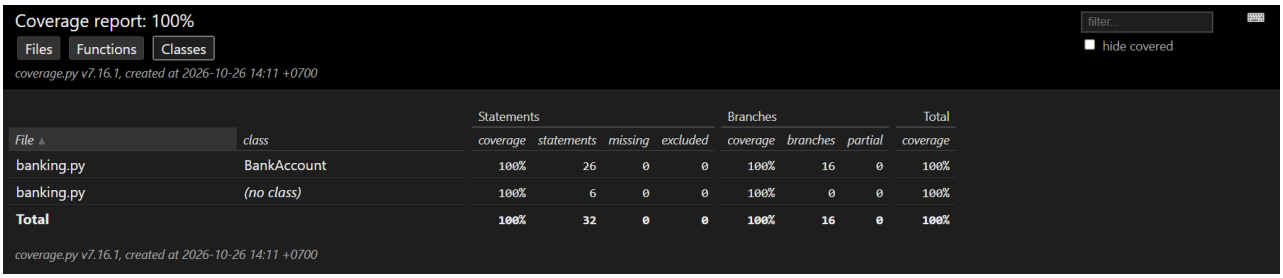
hide covered

coverage.py v7.16.1, created at 2026-10-26 14:11 +0700

File	function	Statements				Branches			Total
		coverage	statements	missing	excluded	coverage	branches	partial	coverage
banking.py	BankAccount.__init__	100%	6	0	0	100%	4	0	100%
banking.py	BankAccount.deposit	100%	4	0	0	100%	2	0	100%
banking.py	BankAccount.withdraw	100%	6	0	0	100%	4	0	100%
banking.py	BankAccount.transfer	100%	10	0	0	100%	6	0	100%
banking.py	*(no function)*	100%	6	0	0	100%	0	0	100%
Total		**100%**	**32**	**0**	**0**	**100%**	**16**	**0**	**100%**

coverage.py v7.16.1, created at 2026-10-26 14:11 +0700

Gambar 4. Coverage per fungsi.



Coverage report: 100%

Files | Functions | Classes

filter...

hide covered

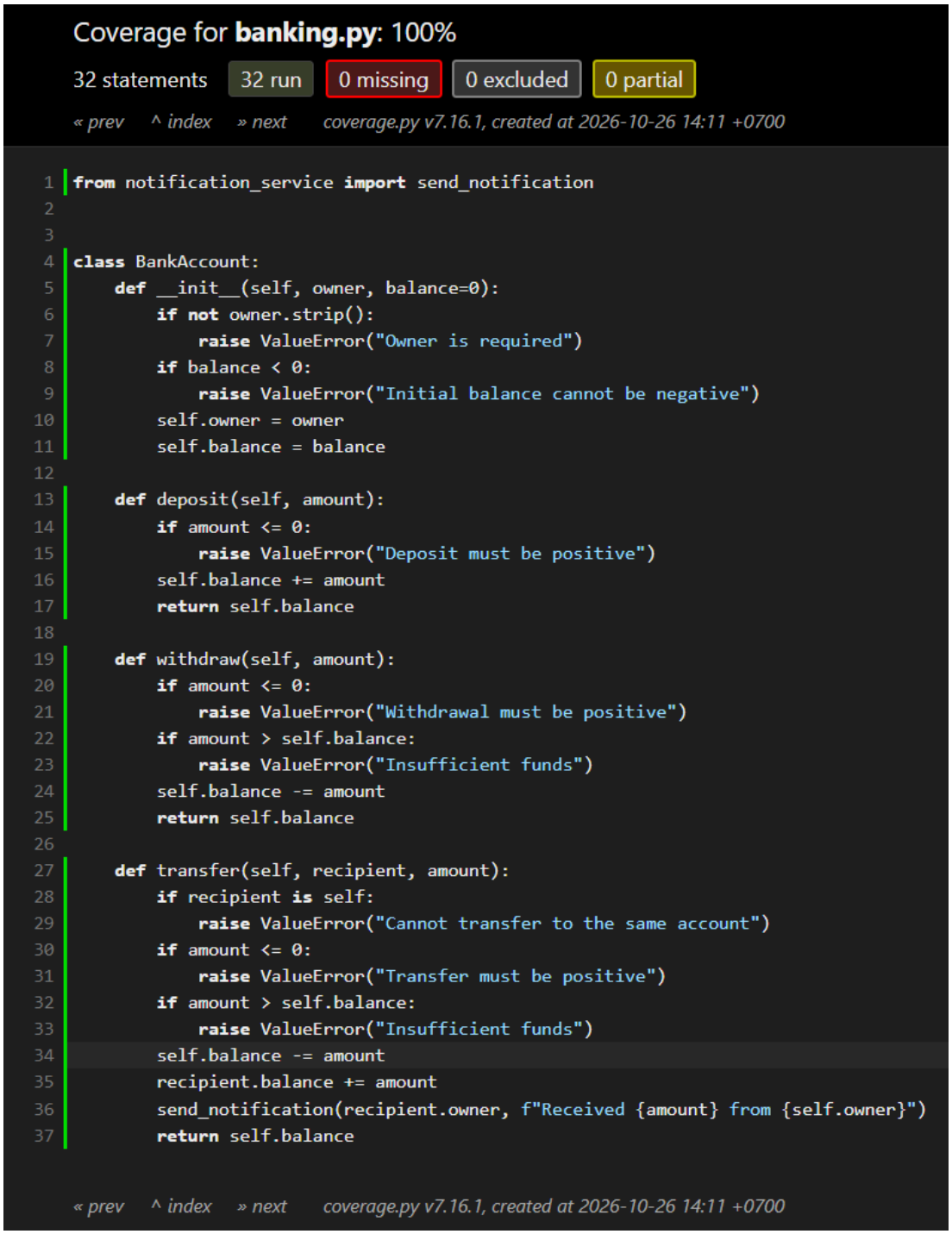
coverage.py v7.16.1, created at 2026-10-26 14:11 +0700

File	class	Statements				Branches			Total
		coverage	statements	missing	excluded	coverage	branches	partial	coverage
banking.py	BankAccount	100%	26	0	0	100%	16	0	100%
banking.py	*(no class)*	100%	6	0	0	100%	0	0	100%
Total		**100%**	**32**	**0**	**0**	**100%**	**16**	**0**	**100%**

coverage.py v7.16.1, created at 2026-10-26 14:11 +0700

Gambar 5. Coverage per kelas.

Lampiran C — Detail Kode yang Tercakup



Gambar 6. Seluruh baris terukur pada banking.py dieksekusi.