

Test Inventory

Bilko — Test Inventory

Status: NO TESTS EXIST YET — This document tracks planned tests and implementation status.

This inventory catalogs all tests planned for Bilko, organized by category and priority.

Test Coverage Summary

Category	Total Planned	Implemented	Coverage Target
Unit Tests	45	0	>80%
Integration Tests	35	0	>80%
E2E Tests	12	0	Critical flows
TOTAL	92	0	—

```
graph TD
  subgraph COVERAGE["Test Coverage Matrix – 92 Tests Planned"]
    subgraph UNIT["Unit Tests – 45"]
      FIN["Financial Calculations<br/>12 tests – P0<br/>VAT, invoice totals, precision"]
      DE["Double-Entry Validation<br/>6 tests – P0<br/>debit=credit enforcement"]
      CUR["Currency Conversion<br/>8 tests – P0<br/>exchange rate locking"]
      DATE["Date Utilities<br/>6 tests – P1<br/>due dates, fiscal year"]
      FMT["Number Formatting<br/>5 tests – P1<br/>RSD, EUR, BAM display"]
      AUTH_U["Authentication Utils<br/>8 tests – P0<br/>bcrypt, JWT, tokens"]
    end

    subgraph INTEG["Integration Tests – 35"]
      AUTH_API["Auth API<br/>10 tests – P0<br/>register/login/refresh/logout"]
      INV_API["Invoices API<br/>10 tests – P0<br/>CRUD + status + org-scope"]
      EXP_API["Expenses API<br/>8 tests – P1<br/>CRUD + approve/pay"]
      REP_API["Reports API<br/>7 tests – P1<br/>P&L / BS / VAT reports"]
    end
  end
```

```
subgraph E2E_["E2E Tests – 12"]
  INV_E2E["Invoice Flow<br/>4 tests – P0<br/>Create → Send → Paid"]
  EXP_E2E["Expense Flow<br/>3 tests – P1<br/>Add → Approve → Pay"]
  REP_E2E["Report Flow<br/>2 tests – P1<br/>Generate → Export PDF"]
  SET_E2E["Settings Flow<br/>2 tests – P2<br/>Org settings + Invite user"]
  AUTH_E2E["Auth Flow<br/>1 test – P1<br/>Register → Login → 2FA → Logout"]
end

end

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style DE fill:#dc3545,color:#fff
style CUR fill:#dc3545,color:#fff
style AUTH_U fill:#dc3545,color:#fff
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```

Priority Legend

- **P0** — Critical (MVP blocker, financial logic)
- **P1** — High (core features, security)
- **P2** — Medium (nice-to-have, edge cases)
- **P3** — Low (future enhancements)

Unit Tests (45 total)

Financial Calculations (12 tests)

Test File	Test Name	What It Tests	Priority	Status
vat.test.ts	calculateVAT - Serbia 20%	VAT calculation for Serbia	P0	<input type="checkbox"/> Not implemented
vat.test.ts	calculateVAT - BiH 17%	VAT calculation for BiH	P0	<input type="checkbox"/> Not implemented
vat.test.ts	calculateVAT - Croatia 25%	VAT calculation for Croatia	P0	<input type="checkbox"/> Not implemented
vat.test.ts	calculateVAT - zero rate	VAT at 0% (exports)	P0	<input type="checkbox"/> Not implemented
vat.test.ts	calculateVAT - decimal amounts	VAT on €123.45	P0	<input type="checkbox"/> Not implemented
vat.test.ts	calculateVAT - rounding	Rounds to 2 decimal places	P0	<input type="checkbox"/> Not implemented
invoice-calc.test.ts	calculateInvoiceTotal - subtotal	Sum of line items	P0	<input type="checkbox"/> Not implemented
invoice-calc.test.ts	calculateInvoiceTotal - tax	Sum of tax amounts	P0	<input type="checkbox"/> Not implemented
invoice-calc.test.ts	calculateInvoiceTotal - discount	Subtract discount from subtotal	P0	<input type="checkbox"/> Not implemented
invoice-calc.test.ts	calculateInvoiceTotal - total	Subtotal + tax - discount	P0	<input type="checkbox"/> Not implemented
invoice-calc.test.ts	calculateInvoiceTotal - multi-item	Multiple line items with different tax rates	P0	<input type="checkbox"/> Not implemented
invoice-calc.test.ts	calculateInvoiceTotal - precision	NUMERIC(19,4) precision maintained	P0	<input type="checkbox"/> Not implemented

Double-Entry Validation (6 tests)

Test File	Test Name	What It Tests	Priority	Status
double-entry.test.ts	validateTransaction - debit equals credit	Debit amount = Credit amount	P0	<input type="checkbox"/> Not implemented
double-entry.test.ts	validateTransaction - rejects unbalanced	Throws error if debit \neq credit	P0	<input type="checkbox"/> Not implemented
double-entry.test.ts	validateTransaction - requires both accounts	Throws if missing debit or credit account	P0	<input type="checkbox"/> Not implemented
double-entry.test.ts	validateTransaction - multi-currency	Validates amounts in base currency	P0	<input type="checkbox"/> Not implemented
double-entry.test.ts	validateTransaction - precision	NUMERIC precision preserved	P0	<input type="checkbox"/> Not implemented

Test File	Test Name	What It Tests	Priority	Status
double-entry.test.ts	validateTransaction - zero amount	Rejects zero-amount transactions	P1	<input type="checkbox"/> Not implemented

Currency Conversion (8 tests)

Test File	Test Name	What It Tests	Priority	Status
currency.test.ts	convertCurrency - EUR to RSD	Convert at locked exchange rate	P0	<input type="checkbox"/> Not implemented
currency.test.ts	convertCurrency - RSD to EUR	Reverse conversion	P0	<input type="checkbox"/> Not implemented
currency.test.ts	convertCurrency - same currency	Rate = 1.0 when currency matches	P0	<input type="checkbox"/> Not implemented
currency.test.ts	convertCurrency - precision	NUMERIC(19,4) preserved	P0	<input type="checkbox"/> Not implemented
currency.test.ts	convertCurrency - large amounts	€999,999,999.9999	P0	<input type="checkbox"/> Not implemented
currency.test.ts	convertCurrency - rounding	Rounds to 4 decimal places	P1	<input type="checkbox"/> Not implemented
currency.test.ts	lockExchangeRate - historical rate	Uses rate from transaction date, not today	P0	<input type="checkbox"/> Not implemented
currency.test.ts	lockExchangeRate - missing rate	Throws if no rate available for date	P1	<input type="checkbox"/> Not implemented

Date Utilities (6 tests)

Test File	Test Name	What It Tests	Priority	Status
date.test.ts	calculateDueDate - 30 days	Invoice date + 30 days	P1	<input type="checkbox"/> Not implemented
date.test.ts	calculateDueDate - custom terms	Invoice date + custom days	P1	<input type="checkbox"/> Not implemented
date.test.ts	isOverdue - past due date	Returns true if today > due date	P1	<input type="checkbox"/> Not implemented
date.test.ts	isOverdue - not overdue	Returns false if today <= due date	P1	<input type="checkbox"/> Not implemented
date.test.ts	getFiscalYear - starts Jan 1	Fiscal year 2026 = Jan 1 - Dec 31	P2	<input type="checkbox"/> Not implemented

Test File	Test Name	What It Tests	Priority	Status
date.test.ts	getFiscalYear - custom start	Fiscal year starts on custom date	P2	<input type="checkbox"/> Not implemented

Number Formatting (5 tests)

Test File	Test Name	What It Tests	Priority	Status
format.test.ts	formatCurrency - RSD	"50,000.00 RSD" format	P1	<input type="checkbox"/> Not implemented
format.test.ts	formatCurrency - EUR	"€50,000.00" format	P1	<input type="checkbox"/> Not implemented
format.test.ts	formatCurrency - BAM	"50,000.00 BAM" format	P1	<input type="checkbox"/> Not implemented
format.test.ts	formatCurrency - decimal places	Respects currency decimal places (0-4)	P1	<input type="checkbox"/> Not implemented
format.test.ts	formatCurrency - null	Returns "-" for null/undefined	P2	<input type="checkbox"/> Not implemented

Authentication (8 tests)

Test File	Test Name	What It Tests	Priority	Status
auth.test.ts	hashPassword - bcrypt 12 rounds	Password hashed with bcrypt	P0	<input type="checkbox"/> Not implemented
auth.test.ts	hashPassword - unique salt	Each hash is different	P0	<input type="checkbox"/> Not implemented
auth.test.ts	verifyPassword - correct password	Returns true for correct password	P0	<input type="checkbox"/> Not implemented
auth.test.ts	verifyPassword - incorrect password	Returns false for wrong password	P0	<input type="checkbox"/> Not implemented
auth.test.ts	generateJWT - valid payload	JWT contains user ID, org ID, role	P0	<input type="checkbox"/> Not implemented
auth.test.ts	generateJWT - expiry 15 min	Access token expires in 15 min	P0	<input type="checkbox"/> Not implemented
auth.test.ts	generateRefreshToken - expiry 7 days	Refresh token expires in 7 days	P0	<input type="checkbox"/> Not implemented
auth.test.ts	verifyJWT - expired token	Throws error if token expired	P1	<input type="checkbox"/> Not implemented

Integration Tests (35 total)

Auth API (10 tests)

Test File	Test Name	What It Tests	Priority	Status
auth-api.test.ts	POST /auth/register - success	Creates user, returns 201	P0	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/register - duplicate email	Returns 400 if email exists	P0	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/register - weak password	Returns 400 if password < 8 chars	P0	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/login - success	Returns access + refresh tokens	P0	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/login - wrong password	Returns 401	P0	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/login - non-existent user	Returns 401	P0	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/refresh - success	Returns new access token	P0	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/refresh - expired token	Returns 401	P1	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/logout - success	Deletes refresh token from DB	P1	<input type="checkbox"/> Not implemented
auth-api.test.ts	POST /auth/logout - already logged out	Returns 204 (idempotent)	P2	<input type="checkbox"/> Not implemented

Invoices API (10 tests)

Test File	Test Name	What It Tests	Priority	Status
invoices-api.test.ts	POST /invoices - success	Creates invoice, returns 201	P0	<input type="checkbox"/> Not implemented
invoices-api.test.ts	POST /invoices - validates required fields	Returns 400 if missing customer	P0	<input type="checkbox"/> Not implemented
invoices-api.test.ts	POST /invoices - validates currency	Returns 400 if invalid currency code	P0	<input type="checkbox"/> Not implemented
invoices-api.test.ts	POST /invoices - org scoping	Returns 403 if customer in different org	P0	<input type="checkbox"/> Not implemented

Test File	Test Name	What It Tests	Priority	Status
invoices-api.test.ts	GET /invoices - list	Returns paginated invoices	P0	<input type="checkbox"/> Not implemented
invoices-api.test.ts	GET /invoices - filter by status	Returns only "paid" invoices	P1	<input type="checkbox"/> Not implemented
invoices-api.test.ts	GET /invoices/:id - success	Returns invoice by ID	P0	<input type="checkbox"/> Not implemented
invoices-api.test.ts	GET /invoices/:id - not found	Returns 404 if ID doesn't exist	P1	<input type="checkbox"/> Not implemented
invoices-api.test.ts	PATCH /invoices/:id - update status	Changes status to "sent"	P0	<input type="checkbox"/> Not implemented
invoices-api.test.ts	DELETE /invoices/:id - soft delete	Marks as deleted (not hard delete)	P1	<input type="checkbox"/> Not implemented

Expenses API (8 tests)

Test File	Test Name	What It Tests	Priority	Status
expenses-api.test.ts	POST /expenses - success	Creates expense, returns 201	P0	<input type="checkbox"/> Not implemented
expenses-api.test.ts	POST /expenses - validates required fields	Returns 400 if missing amount	P0	<input type="checkbox"/> Not implemented
expenses-api.test.ts	POST /expenses - org scoping	Returns 403 if vendor in different org	P0	<input type="checkbox"/> Not implemented
expenses-api.test.ts	GET /expenses - list	Returns paginated expenses	P0	<input type="checkbox"/> Not implemented
expenses-api.test.ts	PATCH /expenses/:id/approve - success	Changes status to "approved"	P1	<input type="checkbox"/> Not implemented
expenses-api.test.ts	PATCH /expenses/:id/approve - requires admin	Returns 403 if user is viewer	P1	<input type="checkbox"/> Not implemented
expenses-api.test.ts	PATCH /expenses/:id/reject - success	Changes status to "rejected"	P1	<input type="checkbox"/> Not implemented
expenses-api.test.ts	DELETE /expenses/:id - soft delete	Marks as deleted	P1	<input type="checkbox"/> Not implemented

Reports API (7 tests)

Test File	Test Name	What It Tests	Priority	Status
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reports-api.test.ts	GET /reports/profit-loss - success	Returns P&L with revenue, expenses, net	P1	<input type="checkbox"/> Not implemented
reports-api.test.ts	GET /reports/profit-loss - date range	Filters by start/end date	P1	<input type="checkbox"/> Not implemented
reports-api.test.ts	GET /reports/balance-sheet - success	Returns assets, liabilities, equity	P1	<input type="checkbox"/> Not implemented
reports-api.test.ts	GET /reports/cash-flow - success	Returns operating, investing, financing	P1	<input type="checkbox"/> Not implemented
reports-api.test.ts	GET /reports/vat - success	Returns sales VAT, purchase VAT, net VAT	P1	<input type="checkbox"/> Not implemented
reports-api.test.ts	GET /reports/vat - Serbia 20%	Calculates Serbian VAT correctly	P1	<input type="checkbox"/> Not implemented
reports-api.test.ts	GET /reports/vat - export PDF	Returns PDF file	P2	<input type="checkbox"/> Not implemented

E2E Tests (12 total)

Invoice Flow (4 tests)

Test File	Test Name	What It Tests	Priority	Status
invoice-flow.spec.ts	Create invoice via 6-step wizard	Full invoice creation flow	P0	<input type="checkbox"/> Not implemented
invoice-flow.spec.ts	Preview invoice before sending	Preview modal shows correct totals	P0	<input type="checkbox"/> Not implemented
invoice-flow.spec.ts	Send invoice to customer	Email sent, status changed to "sent"	P0	<input type="checkbox"/> Not implemented
invoice-flow.spec.ts	Mark invoice as paid	Status changed to "paid", paidAt timestamp	P0	<input type="checkbox"/> Not implemented

Expense Flow (3 tests)

Test File	Test Name	What It Tests	Priority	Status
expense-flow.spec.ts	Add expense with receipt upload	Create expense, upload JPG	P1	<input type="checkbox"/> Not implemented

Test File	Test Name	What It Tests	Priority	Status
expense-flow.spec.ts	Approve expense	Admin approves, status changed	P1	<input type="checkbox"/> Not implemented
expense-flow.spec.ts	Mark expense as paid	Status changed to "paid"	P1	<input type="checkbox"/> Not implemented

Report Flow (2 tests)

Test File	Test Name	What It Tests	Priority	Status
report-flow.spec.ts	Generate P&L report	Select date range, view report	P1	<input type="checkbox"/> Not implemented
report-flow.spec.ts	Export P&L to PDF	Download PDF file	P1	<input type="checkbox"/> Not implemented

Settings Flow (2 tests)

Test File	Test Name	What It Tests	Priority	Status
settings-flow.spec.ts	Update organization settings	Change org name, tax settings	P2	<input type="checkbox"/> Not implemented
settings-flow.spec.ts	Invite user to organization	Send invite email, user accepts	P2	<input type="checkbox"/> Not implemented

Auth Flow (1 test)

Test File	Test Name	What It Tests	Priority	Status
auth-flow.spec.ts	Register → Login → 2FA → Logout	Full auth flow with 2FA	P1	<input type="checkbox"/> Not implemented

Critical Path Testing Flow

flowchart TD

START(["Start: No Tests"]) --> P1

subgraph P1["Phase 1 – MVP Critical (25 tests)"]

```

P1_FIN["Financial Calculations<br/>12 unit tests<br/>VAT RS/BA/HR, invoice totals"]
P1_DE["Double-Entry Validation<br/>6 unit tests<br/>debit=credit, balanced=true"]
P1_AUTH["Auth API<br/>7 integration tests<br/>register, login, refresh"]
P1_FIN --> P1_DE --> P1_AUTH
end

P1 --> P1_GATE{"Coverage<br/>=>50%?"}
P1_GATE -->|Yes| P2
P1_GATE -->|No| P1

subgraph P2["Phase 2 – Core Features (35 tests)"]
  P2_CUR["Currency Conversion<br/>8 unit tests"]
  P2_INV["Invoices API<br/>10 integration tests"]
  P2_E2E["Invoice + Auth + Expense E2E<br/>8 E2E tests"]
  P2_REP["Reports API<br/>7 integration tests"]
  P2_CUR --> P2_INV --> P2_E2E --> P2_REP
end

P2 --> P2_GATE{"Coverage<br/>=>70%?"}
P2_GATE -->|Yes| P3
P2_GATE -->|No| P2

subgraph P3["Phase 3 – Polish (32 tests)"]
  P3_DATE["Date + Formatting<br/>11 unit tests"]
  P3_EXP["Expenses API<br/>8 integration tests"]
  P3_EDGE["Edge cases<br/>8 tests"]
  P3_SET["Settings flow<br/>5 tests"]
  P3_DATE --> P3_EXP --> P3_EDGE --> P3_SET
end

P3 --> DONE(["Production Ready<br/>=>80% coverage<br/>All critical paths tested"])

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style DONE fill:#198754,color:#fff
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style P2_GATE fill:#ffc107,stroke:#e0a800

```

Test Implementation Roadmap

Phase 1 (MVP Critical) — 25 tests

- **Financial calculations** (12 unit tests)
- **Double-entry validation** (6 unit tests)
- **Auth API** (7 integration tests: register, login, refresh)

Target: Before backend MVP launch

Phase 2 (Core Features) — 35 tests

- **Currency conversion** (8 unit tests)
- **Invoices API** (10 integration tests)
- **Invoice E2E flow** (4 E2E tests)
- **Auth E2E flow** (1 E2E test)
- **Expense flow** (3 E2E tests)
- **Reports API** (7 integration tests)
- **Report E2E flow** (2 E2E tests)

Target: 1 month after MVP launch

Phase 3 (Polish) — 32 tests

- **Date utilities** (6 unit tests)
- **Number formatting** (5 unit tests)
- **Expenses API** (8 integration tests)
- **Settings flow** (2 E2E tests)
- **Remaining auth tests** (3 integration tests)
- **Edge cases** (8 tests across categories)

Target: 3 months after MVP launch

Test Execution Commands

Run All Tests

```
npm run test          # All tests (unit + integration + E2E)
```

Run by Category

```
npm run test:unit          # Unit tests only
npm run test:integration   # Integration tests only
npm run test:e2e          # E2E tests only
```

Run Specific Test File

```
npm run test:unit -- vat.test.ts
npm run test:integration -- invoices-api.test.ts
npm run test:e2e -- invoice-flow.spec.ts
```

Run with Coverage

```
npm run test:unit -- --coverage
```

Watch Mode

```
npm run test:unit -- --watch
```

Coverage Tracking

Current Coverage (as of 2026-02-20)

Category	Coverage	Target	Status
Financial Logic	0%	>95%	<input type="checkbox"/> Not started
API Endpoints	0%	>80%	<input type="checkbox"/> Not started
Utilities	0%	>90%	<input type="checkbox"/> Not started
Overall	0%	>80%	<input type="checkbox"/> Not started

Next Milestone: 50% coverage (25 critical tests)

Related Documents

- Testing Guide: [TESTING-GUIDE.md](#)
 - CI/CD Pipeline: [../infrastructure/CI-CD.md](#)
 - Security Testing: [../security/SECURITY-ARCHITECTURE.md](#)
-

Last Updated: 2026-02-20 **Status:** NO TESTS IMPLEMENTED YET **Total Tests Planned:** 92 (45 unit + 35 integration + 12 E2E) **Next Action:** Implement Phase 1 financial calculation tests (12 tests)

Revision #4

Created 2026-02-23 10:48:10 UTC by John

Updated 2026-05-31 20:02:45 UTC by John