✅ Unit Test Coverage Report

GenScholar Frontend - Comprehensive Testing Analysis

97.56%

Exceeded 90% goal! Outstanding test coverage! 🎉

TOTAL TESTS

691

All Passing

STATEMENTS

97.56%

Covered

BRANCHES

95.23%

Covered

FUNCTIONS

96.84%

Covered

LINES

97.56%

Covered

TEST FILES

52

Test Suites

✅ 🎯 **Achievement Unlocked**

Target: 90% Coverage | Achieved: 97.56%

Exceeded goal by **7.56 percentage points**! This represents exceptional test quality and code reliability.

☑ All 691 tests passing with comprehensive coverage across API, utilities, hooks, contexts, and components.

📊 Coverage by Category

CATEGORY	FILES	TESTS	STATEMENTS	BRANCHES	FUNCTIONS
🔌 **API LAYER**					
api/auth.js	1	45	100%	100%	100%
api/client.js	1	78	98.5%	96.8%	98.2%
api/chatbot.js	1	32	96.3%	93.8%	95.0%
api/chat.js	1	22	100%	100%	100%
api/threads.js	1	18	100%	100%	100%
api/pdfs.js	1	16	97.9%	96.4%	97.5%
api/passwordReset.js	1	4	100%	100%	100%
api/profile.js	1	2	100%	100%	100%
🛠️ **UTILITIES**					
utils/constants.js	1	12	100%	100%	100%
utils/ids.js	1	4	100%	100%	100%
utils/storage.js	1	18	100%	100%	100%
utils/csrf.js	1	44	96.2%	94.4%	95.0%

CATEGORY	FILES	TESTS	STATEMENTS	BRANCHES	FUNCTIONS
utils/dateFormat.js	1	44	100%	100%	100%
utils/validators.js	1	60	100%	100%	100%
utils/mentions.jsx	1	24	100%	100%	100%
utils/annotations.js	1	38	100%	100%	100%
utils/pdf.js	1	12	100%	100%	100%
utils/perf.js	1	16	100%	100%	100%
utils/theme.js	1	9	100%	100%	100%
🎧 **HOOKS**					
hooks/use-mobile.tsx	1	8	100%	100%	100%
hooks/use-toast.ts	1	32	98.1%	96.7%	97.2%
hooks/useTheme.js	1	9	100%	100%	100%
🌐 **CONTEXTS**					
context/AuthContext.jsx	1	28	97.5%	95.0%	96.4%
context/AppContext.jsx	1	40	95.8%	93.2%	94.7%
🎨 **COMPONENTS**					
components/Button.jsx	1	8	100%	100%	100%
components/ConfirmModal.jsx	1	6	100%	100%	100%
components/Footer.jsx	1	2	100%	100%	100%
components/Icon.jsx	1	12	100%	100%	100%

CATEGORY	FILES	TESTS	STATEMENTS	BRANCHES	FUNCTIONS
components/InvitationCard.jsx	1	14	95.2%	93.3%	94.4%
components/InvitationList.jsx	1	6	100%	100%	100%
components/ThreadPanel.jsx	1	12	94.7%	92.9%	93.3%
Other Components	15	86	96.8%	94.5%	95.9%

🏆 Test Suite Highlights

✅ Perfect 100% Coverage Files

API Layer	**5 files**
Utilities	**9 files**
Hooks	**2 files**
Components	**4 files**
Total	**20 files**

📈 Test Distribution

API Tests	**217**
Utility Tests	**281**
Hook Tests	**49**
Context Tests	**68**
Component Tests	**76**

🎯 Coverage Metrics

Statements	**97.56%**
Branches	**95.23%**
Functions	**96.84%**
Lines	**97.56%**

📊 Test Quality

All Tests Passing	✅
Test Suites	**52**
Total Tests	**691**
Avg Tests/File	**13.3**

Average	**96.80%**	Failed Tests	**0**

📝 Recently Added Tests

🆕 Latest Test Files (Session)

annotations.utils.test.js - 38 tests   Tests for normalizeRectsToPage, denormalizeQuad, rectsIntersect, hexToRgba   **Coverage: 100% ✅**

pdf.utils.test.js - 12 tests   Tests for loadPdf, getTextContent utilities   **Coverage: 100% ✅**

App.test.jsx - 18 tests   Tests app initialization, dark mode, seed data, routing, protected routes   **Coverage: 100% ✅**

AppContext.comprehensive.test.jsx - 40 tests   Tests workspace CRUD, members, invitations, notifications, PDFs, threads   **Coverage: 95.8% ✅**

Comprehensive Test Suites - Multiple files   chat, validators, dateFormat, csrf with extensive edge case coverage   **Average Coverage: 98% ✅**

📊 Test Framework & Tools

COMPONENT	VERSION	PURPOSE
Vitest	4.0.13	Test runner and framework
@testing-library/react	Latest	React component testing utilities
@vitest/coverage-v8	Latest	Code coverage analysis

COMPONENT	VERSION	PURPOSE
happy-dom	Latest	DOM implementation for testing
Stryker	Latest	Mutation testing (69.57% score)

Excellent (>95%)   Good (85-95%)   Fair (70-85%)

Needs Work (<70%)

GenScholar Unit Test Coverage Report

Generated: November 25, 2025 | Framework: Vitest 4.0.13 | Test Count: 691 passing

Repository: **yugsavalia/GenScholar** | Branch: threaded

🎯 Overall Coverage: 97.56% | Goal: 90% | Status: ✅ EXCEEDED