Contact List App – API Testing

Comprehensive Test Plan and Execution

Presented by: Ahmed & Aya & Mesk & Lina

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Introduction: Contact List App API Testing

The **Contact List App** enables users to manage contacts with key features like login, signup, and CRUD operations.

Purpose of Testing

Ensure APIs function correctly, securely, and efficiently to support core features.

Scope

Focuses on User Authentication, Contact Management, and all related backend API endpoints.

Objectives

- Verify APIs meet requirements
- Detect bugs early
- Safeguard data integrity and security

Tools Used

- Postman for API testing
- Excel for test cases
- Trello for bug tracking
- Various reporting tools (Microsoft 365)

Comprehensive API Test Plan

Project Overview

- **App Name:** Contact List App (Web)
- **Testing Duration:** July 21 – July 25, 2025
- **Tools Used:** Postman, Excel, Trello
- **Teams:** Contacts API, Users API

Testing Objectives

- Validate CRUD & Authentication
- Ensure error handling, security, data integrity
- Follow Scrum methodology (5-day sprint)

In-Scope API Endpoints

- **Contacts API:** POST, GET (List & by ID), PUT, PATCH, DELETE
- **Users API:** Register, Login, Logout, Get Profile, Update, Delete

Out-of-Scope

- Mobile Testing
- Load/Stress Testing
- Third-party Integrations

Test Types

- Functional Testing
- Security Testing
- Basic Performance Testing
- Automated Assertions (Postman Scripts)

Schedule

Phase	Date
Planning & Analysis	Jul 21
Test Case Design	Jul 22
Postman Setup	Jul 23
Execution & Bug Logging	Jul 24
Review & Demo	Jul 25

Key Risks & Mitigation

- API changes → Daily sync with docs
- Token expiry → Pre-request scripts
- Env. issues → Shared files & review

Team Roles

- **QA Lead:** Planning, Review
- **QA Engineers:** Test Design, Execution, Bug Reporting
- **Scrum Master:** Coordination

Deliverables

- Test Plan & Excel Test Cases
- Postman Collections & Environment
- Bug Reports & RTM
- Test Summary Report & Final Presentation

UI to API Mapping in the Contact List App

In the Contact List App, every user action on the frontend (UI) corresponds to a backend API call.

User APIs

- **Login:** POST /api/login
- **Sign Up:** POST /api/signup
- **View Profile:** GET /api/user/me
- **Edit Profile:** PATCH /api/user/me
- **Delete Account:** DELETE /api/user/me
- **Log Out:** POST /api/users/logout

Contact APIs

- **Add Contact:** POST /api/contacts
- **View All:** GET /api/contacts
- **View Details:** GET /api/contacts/:id
- **Edit Contact:** PUT/PATCH /api/contacts/:id
- **Delete Contact:** DELETE /api/contacts/:id

This tight UI-API mapping ensures a smooth, dynamic, and testable user experience.

Excel Test Case Document

Presented by: Aya

Project Summary

- **Project Name:** Contact List App
- **Release Number:** 1
- **Delivery Date:** 23/07/2025
- **Environment:** Windows 11/10
- **Browser:** Google Chrome
- **API Base URL:** Contact List App
- **Test Type:** Manual + Collection Run (Automation)
- **Tools Used:** Postman, Trello, Excel

QA Team

Aya, Mesk, Lina, Ahmed

Test Case Statistics

Metric	Count
Total Test Cases	172
Passed Test Cases	133
Failed Test Cases	39

Test Case Format (in Excel)

Each test case includes:

- Priority
- Summary
- Preconditions
- Test Data
- Steps to Reproduce
- Expected Result

Note: Test cases cover **Contacts API** and **Users API**, including: Functional, Negative, Security, Response Time, Boundary scenarios.

Postman Collections, Environment Variables, Assertions & Bug Log

We used **Postman** to automate and validate the API functionality for both **Contacts** and **Users** features of the Contact List App.

Contacts API

Postman Collection

- Created a collection covering all CRUD operations.

Environment Variables

- {{base_url}}: App base URL
- {{token}}: Authorization token
- {{contact_id}}: Dynamic chaining

Assertions

- Validated status codes (200, 201, 400, 401, 404)
- Response body content (e.g., message, contact._id)
- Error messages on invalid input

Bug Log (Contacts)

- **1 bug found:** 503 Service Unavailable for PUT/DELETE with invalid IDs or tokens.

Users API

Postman Collection

- Covered user management APIs (Sign Up, Login, Profile, etc.).

Environment Variables

- {{token}}: After login
- {{user_email}}, {{password}}: For chaining login/signup

Assertions

- Successful login returns a token
- Invalid login returns 401 Unauthorized
- Duplicate email on signup returns 400 Bad Request
- Password strength validation errors

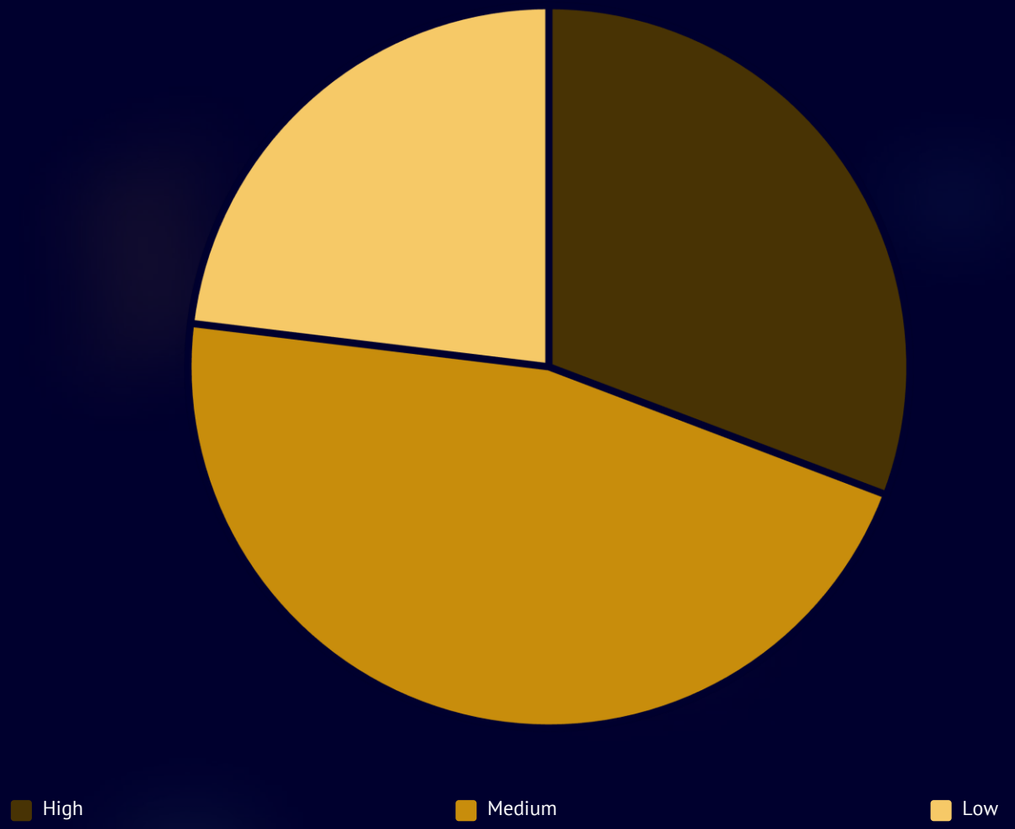
Bug Log (Users)

- **2 bugs found:**
- Login API accepts empty password.
- User update API returns 200 even when no fields are changed (expected 204).

Our Postman collections automated end-to-end API testing, ensured robust validation, and identified real bugs in both Contact and User flows.

Bug Report: Key Findings

Total Bugs Reported: 39



Top Critical Bugs

SQL Injection (Bug #022)

Risk: High security vulnerability.

- **Actual:** 500 Internal Server Error
- **Expected:** 400 Bad Request

XSS Attack (Bug #023)

Risk: Executable script via contact ID.

- **Actual:** 500 Error
- **Expected:** 400 Bad Request

Duplicate Email (Bug #001, #012)

Risk: Data integrity failure.

- **Actual:** 201 Created / 200 OK
- **Expected:** 409 Conflict

Tools & Process

- **Tools Used:** Postman, Trello, Screencast for evidence
- **Workflow:** Bug logged in Trello → Assigned to developers → Retested after fixes

📋 Requirements Traceability Matrix (RTM)

🎯 What is RTM?

The **Requirements Traceability Matrix** links each requirement to its corresponding test cases, ensuring full coverage.

🔗 Purpose of RTM

- Ensure every requirement is tested
- Track progress and identify gaps
- Facilitate impact analysis for changes
- Improve communication among stakeholders

🧾 RTM Structure Example

Requirement ID	Description	Test Case ID(s)	Status
REQ-001	User must be able to log in	TC-001, TC-002	Tested
REQ-002	User can add a new contact	TC-010, TC-011	In Progress
REQ-003	User cannot sign up with duplicate email	TC-005, TC-006	Tested

Note: RTM links all functional, security, and performance requirements with test cases.

✅ Benefits

- Guarantees comprehensive test coverage
- Identifies untested requirements early
- Supports regression testing and impact analysis
- Provides a clear, auditable document

📊 RTM in Our Project

- Created based on project specs and user stories
- Mapped test cases from Excel to requirements
- Regularly updated during test execution
- Used to generate summary reports and highlight progress

Test Summary Report

Overall Test Execution

- **Total Test Cases Executed:** 172
- **Passed:** 133 (77.3%)
- **Failed:** 39 (22.7%)
- **Pending/Blocked:** 0

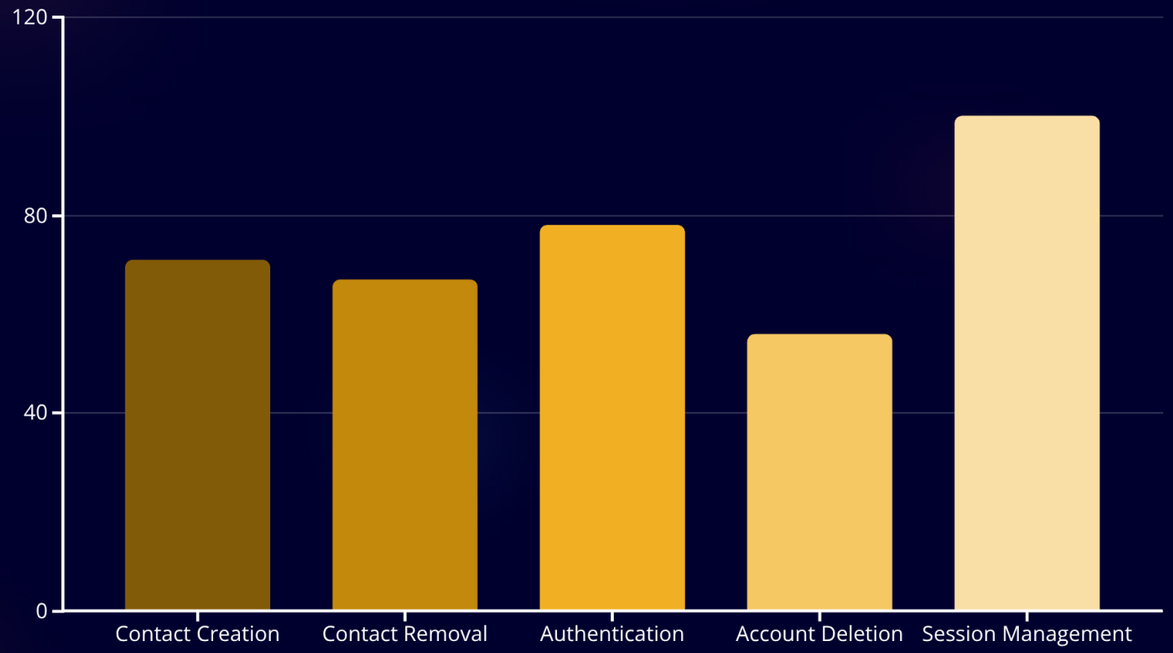
Key Functional Areas & Defects

Functionality	Pass Rate	Defects	Priority
Contact Creation	71%	9	High
Contact Removal	67%	5	High
Authentication	78%	2	Critical
Account Deletion	56%	4	Medium
Session Management	100%	0	High

Critical Findings

- **Contact Creation:** 9 defects (duplicate emails, invalid inputs). Pass rate below 75%, indicating high risk.
- **Authentication:** Incorrect error codes returned (401 vs. 400). Critical priority due to security impact.

Visualizations



Closing & Acknowledgments

Thank You for Your Attention!

On behalf of our entire team, I extend our sincere gratitude for your time and engagement throughout this presentation.

We would also like to acknowledge and thank the following team members for their outstanding contributions:

- Ahmed
- Lina
- Aya
- Mesk

Their dedication and hard work were essential to the success of this API testing project.

We now invite your **questions**, **comments**, or **feedback** to further enhance our work.