



# PARABANK TEST CLOSURE REPORT

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THE SOLUTION

<https://parabank.parasoft.com/parabank>



Team member

Kerolos George  
QA AUTH

Abdelsabour Mohamed  
QA ACC

Nour Hussein  
QA TRX

Mohamed Wageeh  
QA SYS

Mahmoud Sameeh  
QA REG



# PROJECT OVERVIEW



## ParaSoft Demo Website

ParaBank is a demo site used for demonstrations of Parasoft software solutions.

All materials herein are used solely for simulating a realistic online banking website.

In other words: ParaBank is not a real bank!

For more information about Parasoft solutions please



**Protect Data**



**Enhance Reputation**



# Requirements

Registration Module

Authentication Module

Account Management Module  
&  
Transaction History

Profile Management Module &  
Loan Management Module &  
System Module



# OBJECTIVE

## Objective

### Test Objective – Test Closure Phase (ParaBank Project)

The objective of the Test Closure phase for the ParaBank project is to formally conclude all testing activities by verifying that each requirement across all modules (Registration, Authentication, Account Management, Transaction History, Profile Management, Loan Management, and System Functions) has been fully validated, all test deliverables are completed, and the application meets the defined quality benchmarks for release.



- › **Validate Completion of All Testing Activities**
- › **Assess Test Results and Defect Metrics**
- › **Validate Requirement Coverage**
- › **Confirm System Readiness for Release**
- › **Produce Final Test Documentation**



# Validate Completion of All Testing Activities

## 1. Validate Completion of All Testing Activities

Ensure that every requirement defined in the ParaBank system, including REG, AUTH, ACC, TRX, PROF, LN, and SYS modules—has been fully covered by corresponding test cases, executed, and documented.

This includes:

- Registration (REG-001 to REG-040)
- Field validations, form behavior, submission rules, and error handling.
- Authentication & Password Recovery (AUTH-001 to AUTH-010)
- Login rules, credential validation, session handling, and recovery workflows.
- Account Management (ACC-001 to ACC-018)
- Overview accuracy, account creation, security actions, switching accounts, and statement generation.
- Transaction History & Transfers (TRX-001 to TRX-017)
- Filtering, transaction ID lookup, transfer validations, and account balance updates.
- Profile Management (PROF-001 to PROF-003)
- Updating personal info with validation and OTP-based security.
- Loan Management (LN-001 to LN-003)
- Loan input validation, down payment checks, and source account validation.
- System Controls (SYS-001 to SYS-005)
- Session termination, navigation behavior, and language support.



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## Assess Test Results and Defect Metrics

- Confirm that all critical and high-severity defects are resolved.
- Ensure retesting and regression testing have been completed.
- Verify that no open defects block core flows:
  - oLogin
  - oRegistration
  - oAccount operations
  - oTransaction and balance updates

Confirm defect logs, screenshots, and evidence are properly documented.



# Validate Requirement Coverage and Acceptance Criteria

- Ensure traceability from requirements (REG-SYS) to test cases and actual results.
- Confirm that all functional, UI, usability, validation, negative, and security-related checks were executed.
- Validate that the system adheres to:
  - oField validation rules
  - oBusiness logic rules
  - oNavigation rules
  - oData accuracy rules
- Error-handling standards



# Confirm System Readiness for Release

- Based on executed tests and defect status:
- Assess overall product stability and readiness for deployment.
- Evaluate remaining risks and provide final go/no-go recommendations.
- Ensure no compliance or security-critical gaps remain (Sessions, OTP, Login, Transfers).



## Produce Final Test Documentation

- Compile and deliver all closure documents, including:
- Test Execution Summary
- Defect Summary Report
- Requirement Traceability Matrix (RTM)
- Test Evidence (screenshots, logs, videos)
- Environment & tool configuration details
- Lessons Learned (process improvements and gaps)
- Ensure documents are archived for future regression or audits.



# Test planning & Tools

Phase	Date	Description
Requirement Analysis	22/09 – 29/09	Reviewing requirements and assigning tasks.
Sprint Setup (Jira)	29/09	Creating sprint and assigning tickets.
Test Case Design & Exec	Starts 30/09	Creating and executing manual tests.
Bug Reporting	01/10 – 15/11	Continuous logging of defects.
Regression & Retesting	05/11 – 12/11	Retesting fixes and core flows.
Final manual documentation	13&14/11	Write test closure,presentation
API TESTING	15/11-30/11	Test API for all Module.
Automation Testing	30/11-4/12	Write test script using java for parabank.

- Weekly meetings
- Tools (Jira, Excel, Discord, Github, IntelliJ IDEA, Postman )



# SCOPE

## Registration Module (REG) – In Scope

Testing includes full coverage of:

- Access to registration page
- Form opening functionality
- Required fields verification
- All detailed field validation rules:
  - Length rules
  - Format rules
  - Character restrictions
  - Blank-field handling
  - Leading space validation
  - Error message specificity
    - Username uniqueness and password rules
    - Confirm-password matching
    - Registration success flow
    - Disabled register button until all validations pass

Requirements Covered: REG-001 to REG-040

## AUTHENTICATION MODULE (AUTH) – IN SCOPE

TESTING INCLUDES:

- LOGIN WITH VALID AND INVALID CREDENTIALS
- ERROR HANDLING FOR BLANK FIELDS
- MANDATORY FIELD VERIFICATION IN PASSWORD RECOVERY
- RECOVERY USING REGISTERED VS. UNREGISTERED DATA
- SESSION PERSISTENCE AND LOGOUT BEHAVIOR

OUT OF SCOPE

- TEMPORARY PASSWORD GENERATION RULES

REQUIREMENTS COVERED: AUTH-001 TO AUTH-010

## Account Management Module (ACC) – In Scope

Testing includes:

- Display and correctness of Account Overview
- Account number formatting and links
- Real-time reflection of balances
- New account creation flow
- Freeze/close account actions with confirmation
- Account details page validation
- Multi-account handling and switching
- Default account behavior retention
- Account statements and filtering

Requirements Covered: ACC-001 to ACC-018



# SCOPE

## Transaction History & Transfer Module (TRX) – In Scope

Testing includes:

- Filtering by date, amount, ID, and type
- Amount validation (numeric, zero, blank)
- Balance validation before transfers
- Valid/invalid account selection
- Same-account transfer restrictions
- Debit/credit balance updates
- Confirmation messages and TRX logging
- Bill Pay sending & receiving validation

Requirements Covered: TRX-001 to TRX-018

## Loan Management Module (LN) – In Scope

Testing includes:

- Loan amount validation
- Down payment vs. total amount rules
- Balance verification for down payment

Requirements Covered: LN-001 to LN-003

## Profile Management Module (PROF) – In Scope

Testing includes:

- Pre-populated user data
- Updating profile fields with same rules as registration
- Success messages

Out of Scope: OTP verification for phone/email/password

Requirements Covered: PROF-001 to PROF-003

## System Module (SYS) – In Scope

Testing includes:

- Logout & session handling
- Navigation via ParaBank logo
- Browser back/forward behavior
- Auto-logout on browser closing

Requirements Covered: SYS-001 to SYS-005

## Out Of Scope

- Transaction Type Filter (Credit/Debit) not implemented
- Temporary password generation
- OTP verification
- Backend database-level testing
- Integration with external payment gateways
- Performance, load, and stress testing
- Penetration and advanced security testing
- Multi-language support



# TEST APPROACH

The testing approach for ParaBank is requirements-driven, ensuring that every functional rule across all modules (REG, AUTH, ACC, TRX, PROF, LN, SYS) is fully validated through structured, risk-based testing methods. The goal is to confirm that all system behaviors match the detailed requirements before release and that critical business flows operate correctly, securely, and reliably.

## 1. Coverage of Requirements

All requirements from REG-001 to SYS-005 are mapped to test cases and covered through:

- Positive testing (valid inputs, correct flows)
- Negative testing (invalid inputs, blank fields, limits)
- Boundary testing (minimum/maximum lengths, number limits)
- Error-handling testing (accuracy of messages, field-specific errors)

A Requirement Traceability Matrix (RTM) ensures complete coverage.

## 2. Testing Method

A hybrid approach is used combining:

- Manual testing for field validation rules, UI behavior, form handling, and exploratory tests.
- Automated testing for stable, high-risk flows such as:

oLogin & Logout (AUTH)

oRegistration (REG positive paths)

oAccount Overview & Account actions (ACC)

oFund Transfers & Transaction history (TRX)

Automation supports regression and ensures repeated validation of core requirements.

## 3. Functional Focus Based on Requirements

Testing emphasizes high-risk requirement groups:

Registration (REG)

- Strict field validations (length, character limits, format, blank restrictions)
- Username uniqueness
- Password rules & confirmation
- Form submission behavior and error accuracy

Authentication (AUTH)

- Login rules for valid/invalid credentials
- Password recovery and session handling
- Error messages tied to missing or wrong data

Account Management (ACC)

- Display of account details, balances, and last login
- New account creation and account switching
- Freeze/close confirmation rules
- Statement filtering

Transactions (TRX)

- Date, amount, and transaction ID filtering
- Numeric and balance validation for transfers
- Updated balances and logging after successful transfer

Profile Management (PROF)

- Data update validation

Loan Management (LN)

- Numeric rules and down-payment validations

System (SYS)

- Session termination, logo navigation, browser actions, and language support

## 4-Risk-Based Prioritization

The highest priority is given to requirements that affect:

- Login and authentication (AUTH)
- Account access and balances (ACC)
- Money transfer correctness (TRX)
- Security and session rules (SYS)

Lower-risk or non-critical requirements are tested after core flows.

## 5. Test Data Strategy

Requirement-specific datasets are prepared, including:

- Valid and invalid name/ZIP/phone formats
- Unique usernames
- Accounts with different balances
- Transactions covering date and value boundaries
- Valid and invalid recovery inputs

Data supports both positive and negative requirement coverage.

## 6. Exit Criteria

Testing can close when:

- All requirements have verified test cases
- All critical/high defects related to requirements are fixed
- RTM shows full coverage
- All mandatory flows (REG → AUTH → ACC → TRX → PROF) pass successfully



# TEST TECHNIQUES

## 1. Boundary Value Analysis (BVA)

Applied to validate numeric and character-based fields and system limits across multiple modules:

- Registration (REG):
  - oFirst Name, Last Name: 2–30 characters
  - oAddress: 10–45 characters
  - oCity & State: 2–20 characters
  - oZIP Code: 2–20 characters
  - oPhone Number: 12–15 digits
  - oPassword: 8–12 characters
- Transactions (TRX):
  - oTransfer Amount: lower boundary = 0 rejected, upper boundary = available balance accepted
- Loan Module (LN):
  - oLoan Amount & Down Payment: minimum/maximum values validated
- System Limits:
  - oMaximum number of accounts creation

## 2. Equivalence Partitioning (EP)

Used to group input data into valid and invalid classes for efficient coverage:

- Registration & Profile (REG, PROF):
  - oNames: alphabetic vs. numeric/special characters
  - oAddress/City/State: valid vs. invalid characters, blank, or leading space
  - oUsername: valid/invalid characters, uniqueness, and length
  - oPassword: valid combinations of letters, numbers, special characters
- Authentication (AUTH):
  - oValid/invalid username-password combinations
  - oPassword recovery with correct vs. incorrect customer data
- Transaction History & Transfers (TRX):
  - oNumeric vs. non-numeric amounts
  - oValid vs. invalid account selections
- Loan Module (LN):
  - oValid vs. invalid source account balances



# TEST TECHNIQUES

## 3. Error Guessing

Applied to uncover hidden UI, workflow, and validation issues not explicitly covered by requirements:

- Registration & Profile (REG, PROF):  
Special characters, spaces, blank entries, or partially completed forms
- Authentication (AUTH):  
Repeated invalid logins, quick navigation, session persistence issues
- Account & Transactions (ACC, TRX):  
Same-account transfer attempts  
Freezing/closing accounts without confirmation  
Unexpected sequence of multiple transfers or account switches
- System (SYS):  
o Browser back/forward navigation after logout  
Abrupt browser close to test session auto-logout

## 4. Exploratory Testing

Performed to evaluate behaviors of complex or dynamic features across modules:

- Default Account Selection & Multi-Account Handling (ACC):  
Switching between Checking, Savings, and Loan accounts  
Retention of default account selection during navigation and transactions
- Statement Filtering (ACC, TRX):  
Applying multiple date ranges and transaction types  
Behavior when no transactions match filters
- Profile & Security Features (PROF, AUTH, SYS):  
OTP verification during password/email/phone updates  
Temporary password generation & expiration  
Multilingual support verification
- Loan Operations (LN):  
Down payment handling edge cases and insufficient balance scenarios

## Summary

- BVA ensures boundary correctness for numeric, character, and system limits.
- EP efficiently covers valid vs. invalid inputs across all fields and modules.
- Error Guessing identifies hidden defects, unusual workflows, and security/session gaps.
- Exploratory Testing validates unlisted or dynamic features to ensure robustness and usability.

This combination guarantees full requirement coverage, risk-based prioritization, and confidence in release readiness.



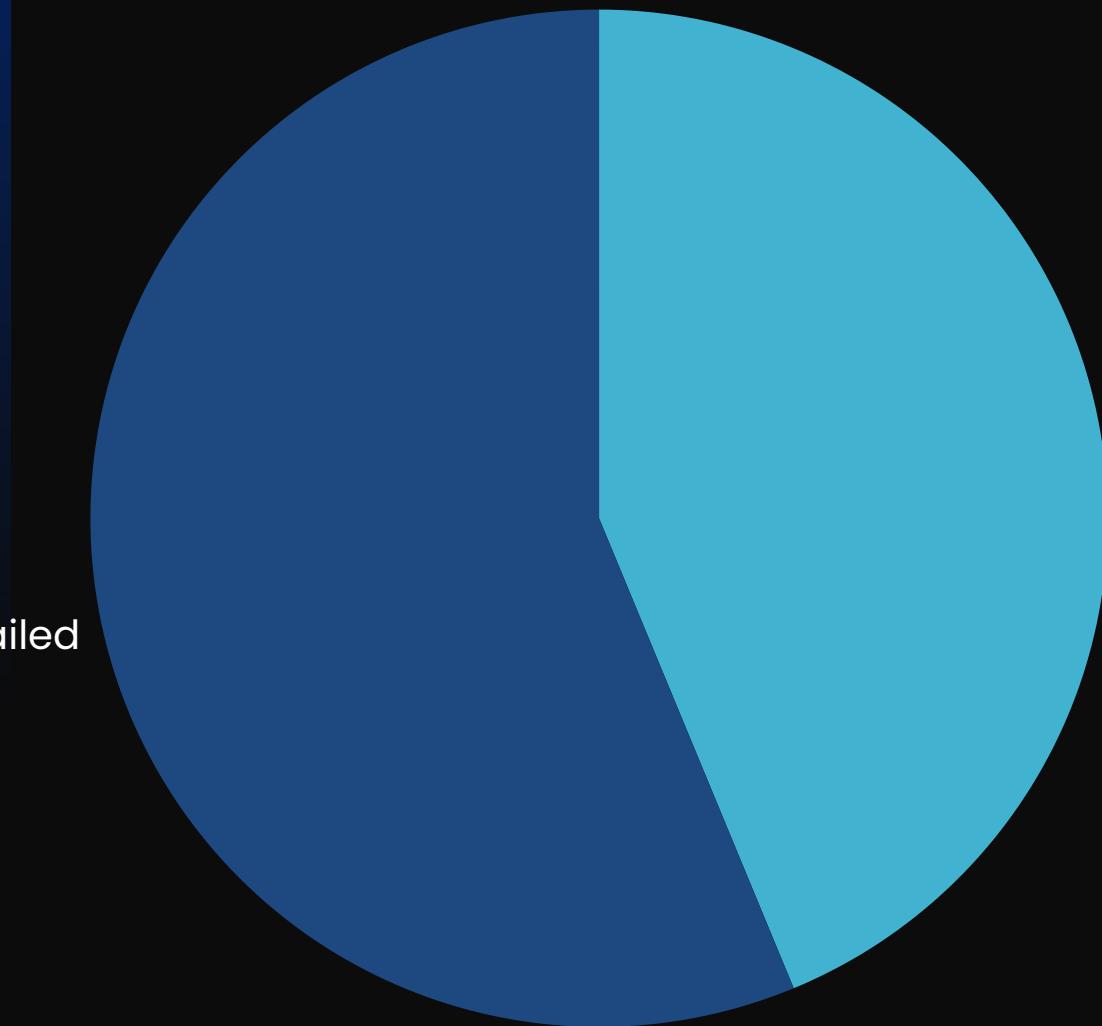
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# TEST EXECUTION SUMMARY

## Registration Module

Total Test Cases 64  
Test Cases Passed 28  
Test Cases Failed 36  
Test Cases Blocked 0  
Pass Rate  $28/64 \approx 43.75\%$   
Total Defects Found 36

Test Cases Failed  
56.3%





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# TEST EXECUTION SUMMARY

## Forget Login

Total Test Cases 46

Test Cases Passed 14

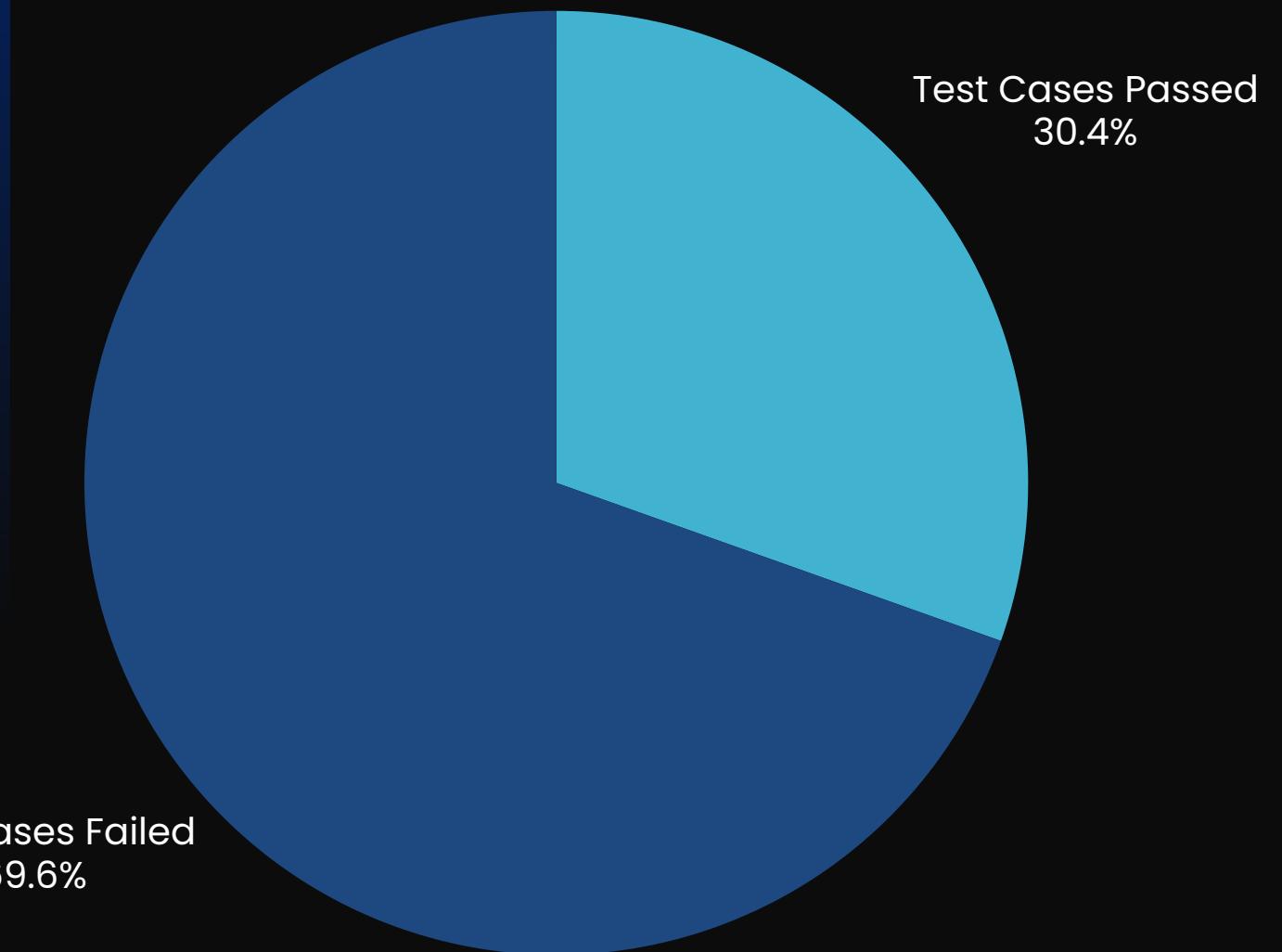
Test Cases Failed 32

Test Cases Blocked 0

Pass Rate  $14/46 \approx 30.43\%$

Total Defects Found :32

Test Cases Failed  
69.6%





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# TEST EXECUTION SUMMARY

## Authentication Module

Total Test Cases 11

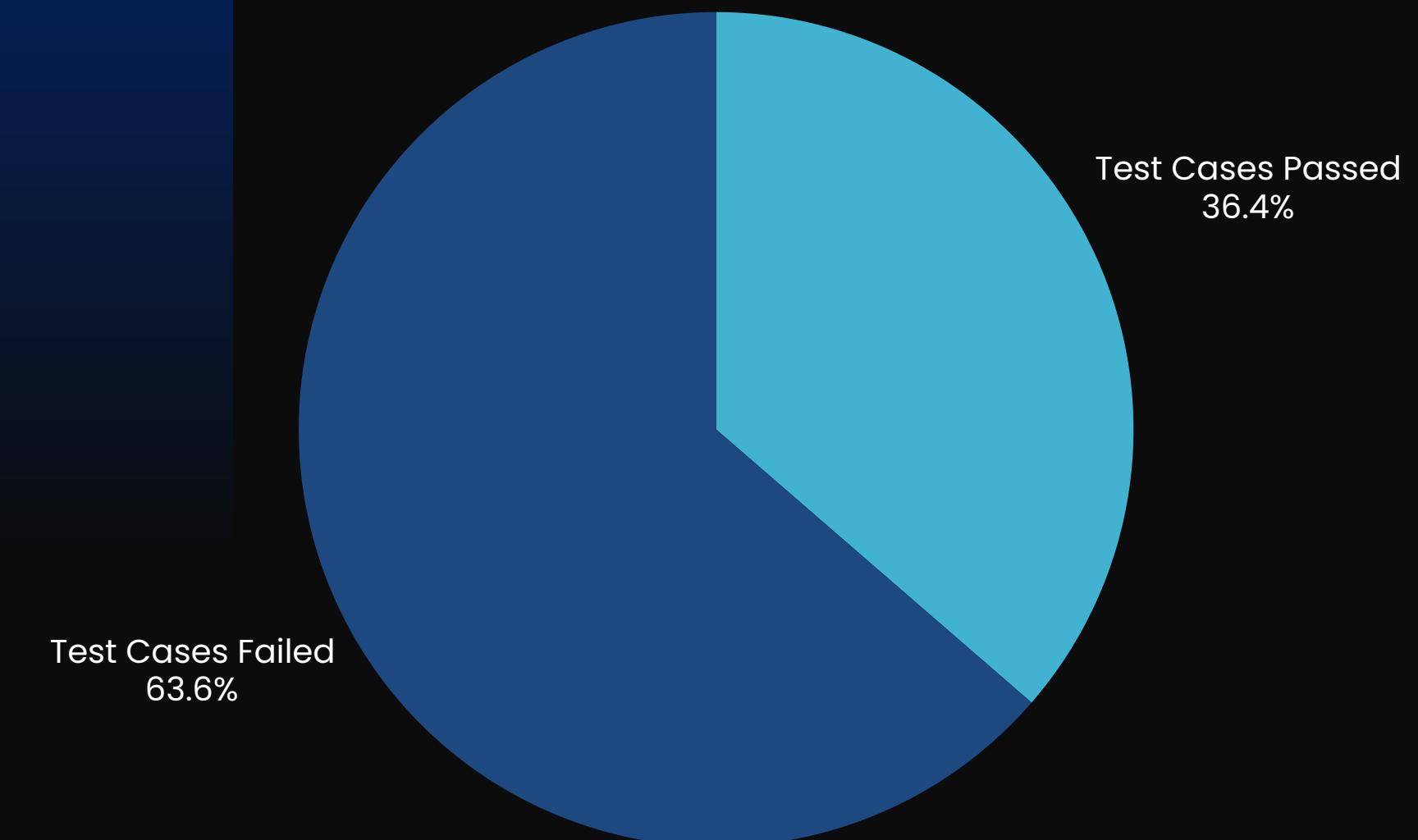
Test Cases Passed 4

Test Cases Failed 7

Test Cases Blocked 0

Pass Rate 14/46≈30.43%

Total Defects Found :7





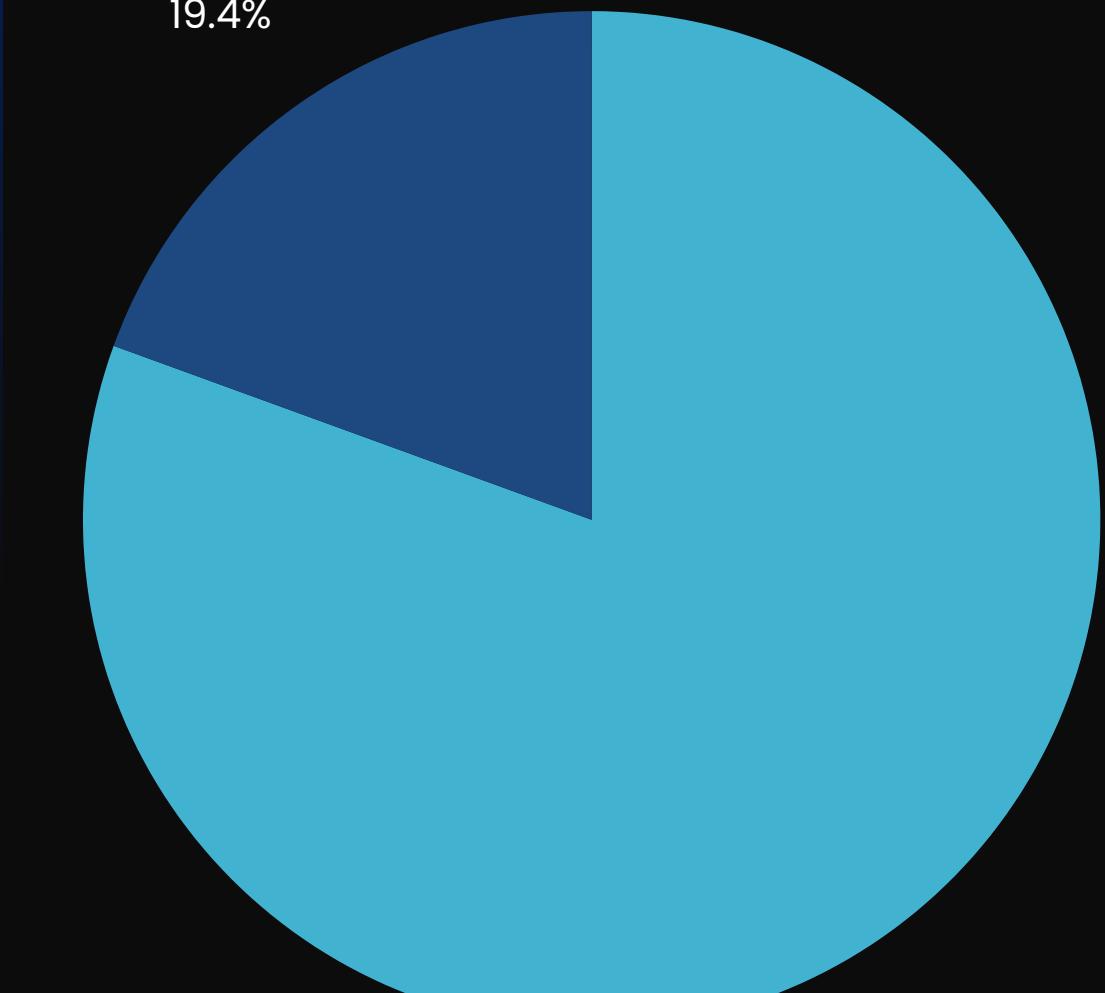
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# TEST EXECUTION SUMMARY

## Account & Transaction Module

Total Test Cases 36  
Test Cases Passed 29  
Test Cases Failed 7  
Test Cases Blocked 0  
Pass Rate  $29/36 \approx 80\%$   
Total Defects Found 7

Test Cases Failed  
19.4%



Test Cases Passed  
80.6%



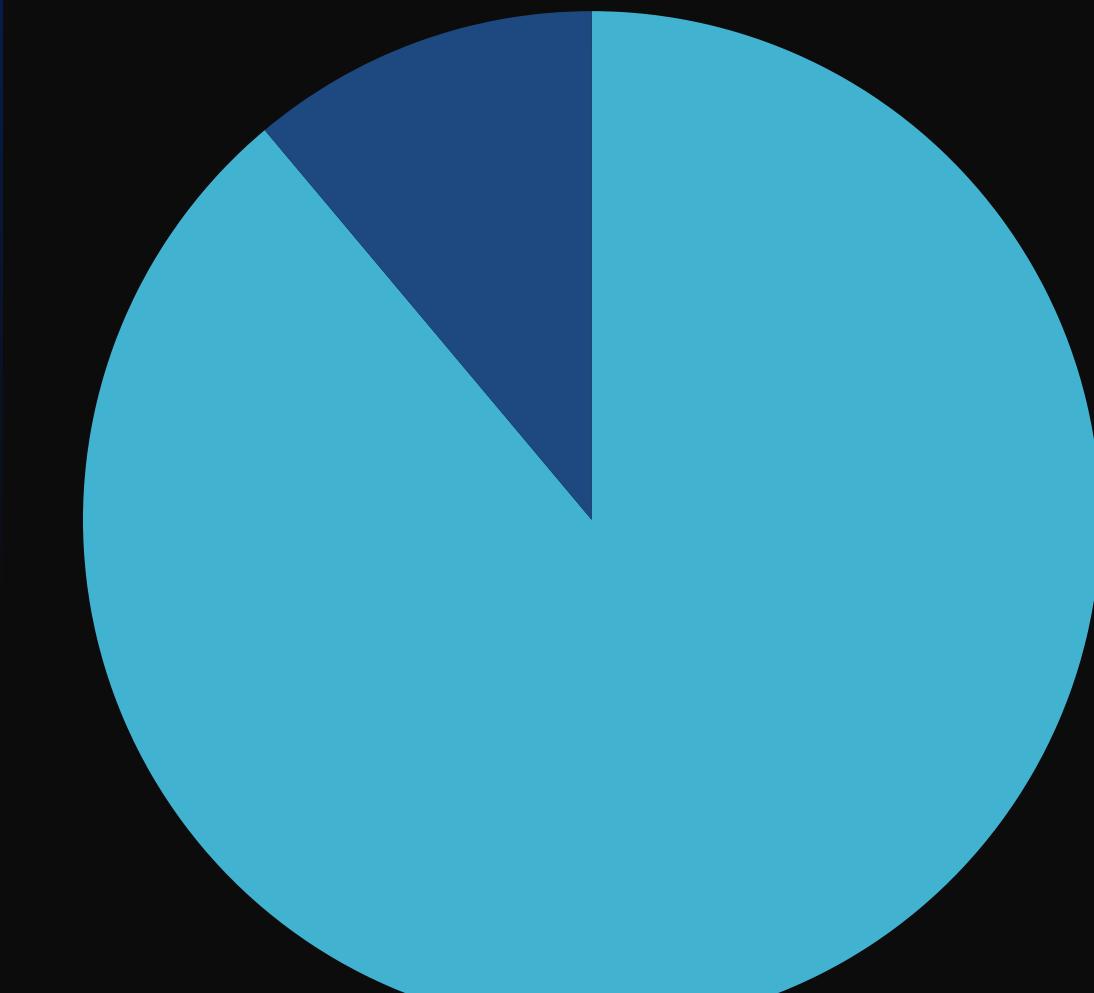
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# TEST EXECUTION SUMMARY

## Profile & loan & System module

Total Test Cases 9  
Test Cases Passed 8  
Test Cases Failed 1  
Test Cases Blocked 0  
Pass Rate  $8/9 \approx 88.8\%$   
Total Defects Found 1

Test Cases Failed  
11.1%



Test Cases Passed  
88.9%



# TEST EXECUTION SUMMARY

## Over All

Total Test Cases Executed → 166

Total Passed → 83

Total Failed → 83

Overall Pass Rate → 50%

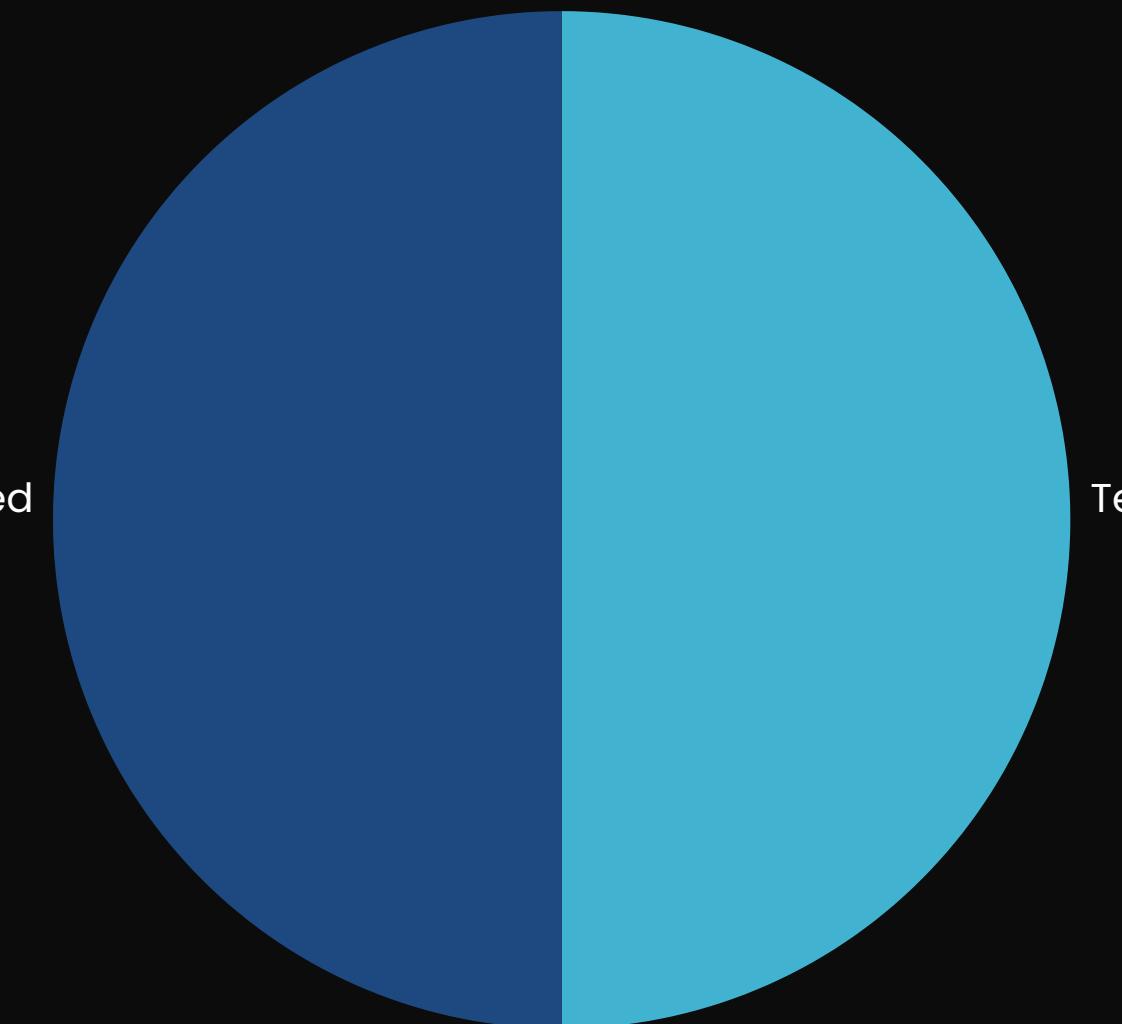
Total Defects Logged → 89

Highest defect contribution → Registration  
(40.45%)

Highest pass rate → Profile/Loan/System (88%)

Test Cases Failed  
50%

Test Cases Passed  
50%





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# **SPECIAL THANKS FOR OUR INSTRUCTOR ENG \ ABDELRAHMAN RAMADAN**



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