**Test Strategy Document**

**1. Objective:**

Define a high-level strategy for automating the testing of key features of the RFID Attendance System and Cashless Payment Website, ensuring comprehensive coverage and reliable outcomes using Katalon Studio.

**2. Scope:**

The testing scope includes:

* Login module
* RFID-based student attendance tracking
* Wallet creation, top-up, deduction
* Real-time updates using sockets
* Role-based dashboards (Admin, Student, Parent, Teacher)
* ML Prediction integration

**3. Testing Types:**

 Unit Testing – backend functions (wallet balance update, attendance status)

 Integration Testing – simulate RFID and wallet update together

 System Testing – UI/UX consistency and live data sync

 Acceptance Testing – validate use cases like lecture attendance, blocking users, wallet top-up

 Regression Testing – after ML model updates or DB changes

**4. Environment Requirements:**

 Frontend: React

 Backend: Node.js (Express)

 DB: MongoDB

 Testing Tool: Katalon Studio (for UI automation)

**5. Testing Tools:**

- Katalon Studio for automation.

- Excel defect triage and reporting.

**6. Roles and Responsibilities:**

- Automation Tester: Develop and execute test cases in Katalon Studio.

- Documentation Specialist: Prepare and maintain all test documentation.

- Defect Manager: Track and prioritize issues for resolution.

**7. Deliverables:**

- Test Plan

- Test Cases

- Defect Triage Matrix

- Bug Reports

- Software Release Notes

- Test Execution Reports

- Test Summary Report

- User Manual for Katalon execution

**8. Risks and Mitigation:**

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| Risk | Mitigation |
| Dynamic dropdowns cause locator issues | Use Selenium code for stable control |
| UI timing causes flaky test results | Add robust waitUntilVisible/sleep |
| Modal layers interfere with clicks | Ensure modal focus or switch context |