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CS 411 – Software Engineering
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Software Test Plan

For

Automated Attendance System

Version 1.0

CS 2024, G1

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This document is an annotated Software Test Plan outline adapted from the IEEE Standard for Software Test Documentation (Std 829-1998).

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Revision History

Name	Date	Reason For Changes	Version
Hassan Alzourei	Oct. 08, 2024	Prepared initial version	0.1
All members	Oct. 09, 2024	Updated section 3	0.2
…			
Ali Albaqqal	Oct. 10, 2024	Complete review - Final version	1.0

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1. Introduction

An overview of the testing methodology, deliverables, and the creation and progression of the Automated Attendance System plan are given in this Software Test Plan (STP) document. The goals, approach, scope, reference sources, and acronyms and meanings pertinent to this STP are covered in detail in the sections that follow.

1.1 Objectives

This document is essential in defining the parameters, methodology, materials, and timetable for Automated Attendance System testing. It identifies the staff and equipment needed for the testing process, outlines the precise features and products that will be tested, and outlines the testing procedures that will be used. It also outlines the high-level schedules for the several testing stages, as well as the documentation of test outcomes and adherence to quality standards.

Along with outlining the expected expenses and resource allocation for testing jobs, the document also identifies important milestones, such as unit, integration, and user acceptability testing. In order to guarantee that the system performs as anticipated and satisfies the specifications listed in the Software Requirements Specification (SRS) document, it also attempts to address any possible risks related to the plan.

1.2 Testing Strategy

The table below summarizes the testing strategy for the Automated Attendance System and clarifies how each section of this STP contributes to the overall testing plan.

No.	Section	Components
1	**Introduction**	Introduces the testing strategy.
2	**Test Items**	A list of the test items (components) to be included.
3	**Features to Be Tested**	All software features and combinations that need to be tested.
4	**Features Not to Be Tested**	Interfaces and functionalities that will not be tested.
5	**Approach**	The overall approach to testing, including methodologies employed.
6	**Pass / Fail Criteria**	Defined criteria for evaluating test success.
7	**Roles and Responsibilities**	Team members are given particular responsibilities to do.
8	**Milestones, Schedules, Risks**	Identification of timelines and risk management strategies.

Table 1: Testing Strategy Summary

1.3 Scope

To ensure the Automated Attendance System meets its necessary requirements, testing will be conducted continuously throughout the development lifecycle. Our testing activities will adhere to established verification and validation (V&V) procedures, including Component Testing, Integration Testing, User Acceptance Testing, and Regression Testing.

As the system is developed, scheduled updates will be reviewed and applied after each significant phase of the development process. Additionally, unscheduled updates may be implemented as needed, particularly in response to high-priority issues that may affect requirements or design. For example, a critical defect identified early in the process must be addressed before progressing to the next stage, leading to updates in the Software Test Plan (STP).

In summary, our change management plan will focus on assessing the impact, significance, and nature of updates, ensuring alignment with the overall development timeline.

1.4 Reference Material

[1] "IEEE Standard for Software Project", The Institute of Electrical and Electronics Engineers, 1998. Software Test Plan 4

[2] Somerville, Ian, "Software Engineering", Addison Wesley (10th edition), 2018, Retrieved October 22, 2023 ISBN-10: 9332582696, ISBN-13: 978-9332582699.

1.5 Definitions and Acronyms

Table 1 below specifies the definitions related to all terms mentioned in this document.

Term	Definition
STP	Software Test Plan
SRS	Software Requirements Specification
IEEE	Institute of Electrical and Electronics Engineers
Face ID	Biometric authentication feature for attendance.
Geolocation	Technology for determining user location.

Table 2: Terminologies and Acronyms Definitions

2. Test Items

To ensure that everything functions as intended, every component of the Automated Attendance System will be tested. This includes the modules, user procedures, and operator procedures, all of which are thoroughly detailed in the Software Requirements Specification (SRS) and Software Design Specification (SDS) documents.

2.1 Program Modules

Module	Test Procedure	Expected Result
Face ID	Test for correct recognition, errors on invalid faces.	Successful recognition or appropriate error messages.
Geolocation	Check accuracy of location detection.	Accurate location results within acceptable range.
User Interface	Validate all UI elements function as expected.	All elements respond correctly to user actions.

Table 3: Program Modules

2.2 Job Control Procedures

Testing will include validation of job control language (JCL) for scheduling and controlling tasks within the system. This ensures that all automated processes execute correctly and efficiently.

2.3 User Procedures

Testing will ensure that all user documentation is accurate and comprehensive, covering:

- Sign-up Process
- Login Functionality
- Attendance Marking
- Profile Management

2.4 Operator Procedures

Testing will establish that the system can be operated effectively in a production environment, including help desk procedures for user support.

3. Features To Be Tested

All of the software features and feature combinations that need to be tested are listed in the following table. Furthermore, it indicates the test design specifications linked to every feature and every combination of features.

Feature	Design Specification
User Authentication	Test login functionality through Face ID and password.
Attendance Marking	Validate geolocation accuracy for attendance recording.
User Management	Ensure users can create and update profiles successfully.
Reporting	Verify the generation and accuracy of attendance reports.

Table 4: Features to be Tested with Description

4. Features Not To Be Tested

To increase the dependability of our application, all necessary functionalities had testing mechanisms; however, if an interface or functionality didn't need testing, it wasn't included.

Feature Not to Be Tested	Reasoning
Non-functional Requirements	Performance metrics beyond basic functionality will be deferred.
Third-party Integrations	Integrations with external systems are out of scope for this phase.
Advanced User Roles	Features specific to administrative roles may not be included initially.
Mobile Compatibility	Cross-Platform Mobile Testing: This scope will not include testing on various mobile devices and operating systems.

Table 5: Features Not to be Tested with Reasoning

5. Approach

This section defines the wellness of the project by testing its functions, categorized in:

- Component testing
- Integration testing
- Conversation testing
- Job stream testing
- Interface testing
- Security testing
- Recovery testing
- Performance testing
- Regression testing
- Acceptance testing
- Beta testing

After defining the necessary prerequisites for each test, we execute the test process, which is the main component that consists of several actives and methods that are used as inputs to produce particular outputs. Next, we provide the anticipated outcome and contrast it with the actual outcome of the process to ultimately, assessing the test findings (yes/no verification). Consequently, the amount of time needed to finish a test varies based on the sort of exam and the nature of the items.

5.1 Component Testing

Component Testing is a method we can use to test each component separately, it finds the bugs in the module and verify the functioning of the software.

5.1.1 common functions

5.1.1.1 Login interface

Test ID	**Log in_01**
Prerequisite	The user has an account, and all his information should be in the database
Test procedure	These test procedures are applied to the Admin, Employee ,Student separately. The user clicks on “login” button by using each of the following options: a) Type correct Username and password b) Type empty username and correct password c) Type correct username and empty password d) Type correct username and incorrect password e) Type incorrect username and correct password Type correct username and capitalized password
Expected result	The expected results for the previous procedures are: a) Successfully login to the user homepage depending on his information b) An error message will be displayed “Incorrect username or password, please try again.” c) An error message will be displayed “Incorrect username or password, please try again.” d) An error message will be displayed “Incorrect username or password, please try again.” e) An error message will be displayed “Incorrect username or password, please try again.” An error message will be displayed “Incorrect username or password, please try again.”
Actual result	Same as the expected results
Verified (Yes/No)	Yes

Table 6: Log in test case

5.1.1.2 Forget password interface

Test ID	**Forget password_01**
Prerequisite	The user has an account, and all his information should be in the database
Test procedure	These test procedures are applied to the Admin, Employee ,Student separately. The user clicks on "submit" button by using each of the following options: a) Type correct username and correct phone number b) Type incorrect username and correct phone number c) Type correct username and incorrect phone number d) Type incorrect username and incorrect phone number e) Type correct username and empty phone number f) Type empty username and correct phone number Type empty username and empty phone number
Expected result	a) Allowing the user to access the forget password interface b) An error message will be displayed "Incorrect username or phone number, please try again" c) An error message will be displayed "Incorrect username or phone number, please try again" d) An error message will be displayed "Incorrect username or phone number, please try again" e) An error message will be displayed "Incorrect username or phone number, please try again" f) An error message will be displayed "Incorrect username or phone number, please try again" An error message will be displayed "Incorrect username or phone number, please try again"
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 7: Forget password test case

5.1.1.3 Edit profile interface

Test ID	**Edit profile_01**
Prerequisite	The user is already logged into their account
Test procedure	These test procedures are applied to the Admin, Employee ,Student separately. The user clicks “save” button after using the following options: a) Type correct username and password b) Type a wrong username c) Type and wrong password d) Type an empty username Type and empty password
Expected result	a) The account information will be updated b) An error message will be displayed “Invalid input” c) An error message will be displayed “Invalid input” d) An error message will be displayed “Invalid input” An error message will be displayed “Invalid input”
Actual result	Same as the expected results
Verified (Yes/No)	Yes

Table 8: Edit profile test case

5.1.2 Admin functionality

5.1.2.1 Student request interface

Test ID	**View student request_01**
Prerequisite	The user is an admin and already logged into their account
Test procedure	These test procedures are only applied to admin only. The user clicks on “search” button by using each of the following options: a) Type correct student ID b) Type incorrect student ID Type empty Student ID
Expected result	The results on the previous procedure are: a) The student with the same ID’s request will be shown b) An error message will be displayed “There is not request linked to this ID” It will show all the requests for all students
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 9: View requests test case

5.1.2.2 Student list interface

Test ID	**View student_01**
Prerequisite	The user is an admin and already logged into their account
Test procedure	These test procedures are only applied to admin only. The user clicks on "search" button by using each of the following options: a) Type correct student ID b) Type incorrect student ID Type empty Student ID
Expected result	The results on the previous procedure are: a) The student with the same ID will be shown b) An error message will be displayed "There is no student with this ID" c) This will show all the students.
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 10: View Students test case

5.1.2.2.1 Delete student interface

Test ID	**Delete student_01**
Prerequisite	The user is an admin and already logged into their account
Test procedure	These test procedures are only applied to admin only. a) The user clicks on "search" button by using each of the following options: 1) Type correct ID 2) Type incorrect ID 3) Type empty ID b) The user clicks on "Delete student" button
Expected result	The results on the previous "search" procedure are: a) The student information will be shown in the interface b) An error message will be displayed "there is no Student with this ID number" c) An error message will be displayed "there is no Student with this ID number" The result of the "Delete Student" is: All Student information will be deleted from the database
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 11: Delete Students test case

5.1.2.2.2 Add Student interface

Test ID	**Add student_01**
Prerequisite	The user is an admin and already logged into their account
Test procedure	These test procedures are only applied to admin only. The user clicks on "Add" button by using each of the following options: a) Type correct ID, Name, Phone number, and password b) Type incorrect ID c) Type incorrect name d) Type incorrect Phone number e) Type incorrect password Type empty fields
Expected result	The results on the previous procedure are: a) The student will be added to the database b) An error message will be displayed "Invalid input" c) An error message will be displayed "Invalid input" d) An error message will be displayed "Invalid input" e) An error message will be displayed "Invalid input" An error message will be displayed "Invalid input"
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 12: Add Students test case

5.1.2.3 Employee list interface

Test ID	**View Emplyee_01**
Prerequisite	The user is an admin and already logged into their account
Test procedure	These test procedures are only applied to admin only. The user clicks on "search" button by using each of the following options: a) Type correct Employee ID b) Type incorrect Employee ID Type empty Employee ID
Expected result	The results on the previous procedure are: a) The Employee with the same ID will be shown b) An error message will be displayed "There is no Employee with this ID" c) This will show all the Employees.
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 13: View employee test case

5.1.2.3.1 Delete employee interface

Test ID	**Delete Employee_01**
Prerequisite	The user is an admin and already logged into their account
Test procedure	These test procedures are only applied to admin only. a) The user clicks on "search" button by using each of the following options: 1) Type correct ID 2) Type incorrect ID 3) Type empty ID b) The user clicks on "Delete Employee" button
Expected result	The results on the previous "search" procedure are: a) The Employee information will be shown in the interface b) An error message will be displayed "there is no Employee with this ID number" c) An error message will be displayed "there is no Employee with this ID number" The result of the "Delete Employee" is: All Employee information will be deleted from the database
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 14: Delete Employees test case

5.1.2.3.2 Add employee interface

Test ID	**Add Employee_01**
Prerequisite	The user is an admin and already logged into their account
Test procedure	These test procedures are only applied to admin only. The user clicks on "Add" button by using each of the following options: a) Type correct ID, Name, Phone number, and password b) Type incorrect ID c) Type incorrect name d) Type incorrect Phone number e) Type incorrect password Type empty fields
Expected result	The results on the previous procedure are: a) The student will be added to the database b) An error message will be displayed "Invalid input" c) An error message will be displayed "Invalid input" d) An error message will be displayed "Invalid input" e) An error message will be displayed "Invalid input" An error message will be displayed "Invalid input"
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 15: Add Employee test case

5.1.3 Employee interface

5.1.3.1 My classes interface

Test ID	**My classes_01**
Prerequisite	The user is an Employee and already logged into their account
Test procedure	These test procedures are only applied to Employee only. The user clicks on "search" button by using each of the following options: a) Type correct Couse ID b) Type incorrect Course ID Type empty Course ID
Expected result	The results on the previous procedure are: a) The class with the same course ID will be shown b) An error message will be displayed "There is not class linked to this ID" It will show all classes with all courses
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 16: My classes test case

5.1.3.2 View students

Test ID	**View student_01**
Prerequisite	The user is an Employee and already logged into their account
Test procedure	These test procedures are only applied to Employee only. The user clicks on "search" button by using each of the following options: a) Type correct student ID b) Type incorrect student ID Type empty Student ID
Expected result	The results on the previous procedure are: 1) The student with the same ID will be shown. 2) An error message will be displayed "There is no student with this ID". 3) This will show all the students.
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 17: View students test case

5.1.3.3 Count absence Interface

Test ID	Count absence_01
Prerequisite	The user is an Employee and already logged into their account
Test procedure	These test procedures are only applied to Employee only. 1) The user clicks on “search class” button by using each of the following options: a) Type correct Couse ID b) Type incorrect Course ID c) Type empty Course ID 2) the list of all students in the class with show up, then the user press on the “absent” combo box using each of the following options: a) if checked means absent if unchecked means present
Expected result	The results on the previous “search class” procedure are: a) The class with the same course ID will be shown b) An error message will be displayed “There is not class linked to this ID” c) It will show all the classes with all the courses. The result of the previous “absent” procedure is: a) Student is absent Student is present
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 18: Count absence test case

5.1.4 Student interface

5.1.4.1 my classes interface

Test ID	**My classes_01**
Prerequisite	The user is a student and already logged into their account
Test procedure	These test procedures are only applied to Students only. The user clicks on "search" button by using each of the following options: a) Type correct Student ID b) Type incorrect Student ID Type empty Student ID
Expected result	The results on the previous procedure are: a) The classes that the students are assigned to will be shown b) An error message will be displayed "There is no class linked to this ID" An error message will be displayed " invalid input"
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 19: My classes test case

5.1.4.2 My teachers interface

Test ID	**My teachers_01**
Prerequisite	The user is a student and already logged into their account
Test procedure	These test procedures are only applied to Students only. The user clicks on "search" button by using each of the following options: a) Type correct Student ID b) Type incorrect Student ID Type empty Student ID
Expected result	The results on the previous procedure are: a) The teachers that are assigned to the student are to will be shown b) An error message will be displayed "Invalid input" An error message will be displayed " invalid input"
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 20: My teachers test case

5.1.4.3 student request interface

Test ID	**request_01**
Prerequisite	The user is a student and already logged into their account
Test procedure	These test procedures are only applied to Students only. The user will press "send request" button by using one of the following options: a) Type correct name, Id, and course code b) Type incorrect name c) Type incorrect ID d) Type incorrect course code Type empty fields
Expected result	The results on the previous procedure are: a) A request will be sent b) An error message will be displayed "invalid input" c) An error message will be displayed "invalid input" d) An error message will be displayed "invalid input" An error message will be displayed "invalid input"
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 21: Student request test case

5.1.4.4 student review interface

Test ID	**review _01**
Prerequisite	The user is a student and already logged into their account
Test procedure	These test procedures are only applied to Students only. 1) The user will press "rate" button by using one of the following options: a) The student specifies the appropriate number rating (from 1-5) b) The student writes any other number c) Type empty field 2) The student types a comment on the text area a) Type comment Type empty field
Expected result	The result for the previous "rate" button procedure are: a) The rating will be saved in the database b) An error message will be displayed "invalid input" c) An error message will be displayed "invalid input" The result for the previous "comment" procedure are: a) The Comment will be saved in the database The rating will be saved without a comment
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 22: Student review test case

5.2 integration Testing

5.2.1 Admin

Test ID	**Admin Homepage_01**
Prerequisite	The user is an Admin and already logged into their account
Test procedure	These test procedures are only applied to Admin only. The procedures mentioned are required to be done one by one: a) Access the “edit profile” and perform the respective component’s test b) Access the “requests” and perform the respective component’s test c) Access the “student” and perform the respective component’s test d) Access the “employees” and perform the respective component’s test Access the “reviews” and perform the respective component’s test
Expected result	a) The result of the procedure is the same in subsection 5.1.1.3 b) The result of the procedure is the same in subsection 5.1.2.1 c) The result of the procedure is the same in subsection 5.1.2.2 d) The result of the procedure is the same in subsection 5.1.2.3 The result of the procedure will show a list of all received reviews
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 23: Admin homepage test case

5.2.2 Employee

Test ID	**Employee Homepage_01**
Prerequisite	The user is an Employee and already logged into their account
Test procedure	These test procedures are only applied to Employee only. The procedures mentioned are required to be done one by one: a) Access the “edit profile” and perform the respective component’s test b) Access the “my classes” and perform the respective component’s test c) Access the “view student” and perform the respective component’s test Access the “count absence” and perform the respective component’s test
Expected result	a) The result of the procedure is the same in subsection 5.1.1.3 b) The result of the procedure is the same in subsection 5.1.3.1 c) The result of the procedure is the same in subsection 5.1.3.2 The result of the procedure is the same in subsection 5.1.3.3
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 24: Employee homepage test case

5.2.3 Student

Test ID	**Student Homepage_01**
Prerequisite	The user is a student and already logged into their account
Test procedure	These test procedures are applied to students only. The procedures mentioned are required to be done one by one: d) Access the "my classes" and perform the respective component's test e) Access the "my teachers" and perform the respective component's test f) Access the "request" and perform the respective component's test Access the "review" and perform the respective component's test
Expected result	d) The result of the procedure is the same in subsection 5.1.4.1 e) The result of the procedure is the same in subsection 5.1.4.2 f) The result of the procedure is the same in subsection 5.1.4.3 The result of the procedure is the same in subsection 5.1.4.4
Actual result	Same as the expected answers
Verified (Yes/No)	Yes

Table 25: Student homepage test case

5.3 Conversion Testing

As part of transitioning from the old system to the new application, it is crucial to ensure that all data is accurately converted without loss or corruption. This includes attendance records, user profiles, and historical data, which are essential for maintaining continuity and system integrity.

- **Objective:** Confirm that historical attendance records, user profiles, and system configurations are successfully migrated without data loss or corruption.
- **Technique:** Use automated scripts to compare old and new datasets, focusing on attendance logs and user credentials. Random manual checks will also verify data accuracy.
- **Completion Criteria:** All records match between the two systems, and no irregularities or errors are detected.

5.4 Job Stream Testing

In a production environment, the application's processes rely on sequential operations to function correctly. Job stream testing ensures these tasks, which often depend on each other, are executed in the correct order without interruption or error. This is vital for ensuring real-world reliability.

- **Objective:** Validate the system's ability to handle sequential tasks, such as logging attendance, generating reports, and syncing data.
- **Technique:** Simulate real-world operations, including data entry, processing, and report generation, to check for task dependencies.
- **Completion Criteria:** All tasks are completed in the correct order, and no interruptions occur in dependent operations.

5.5 Interface Testing

The system's efficiency relies heavily on its ability to communicate with external systems such as biometric devices, APIs, and the university's database. Interface testing ensures that these integrations function smoothly, supporting critical operations like attendance tracking and reporting.

- **Objective:** Test the integration of external components like biometric devices, APIs, and the university's database.
- **Technique:** Verify data flow between the system and external interfaces under normal and error conditions. Simulate failed API calls to ensure proper error handling.
- **Completion Criteria:** All interfaces operate efficiently, and data exchanges are accurate and secure.

5.6 Security Testing

Given the sensitive nature of user data handled by the system, robust security measures are critical. Security testing ensures that unauthorized users cannot access the system and that personal and institutional data are protected against breaches.

- **Objective:** Ensure sensitive user data, such as personal information and attendance records, is secure.
- **Technique:** Simulate attacks, including incorrect login attempts and role-based access violations. Test data encryption during storage and transmission.
- **Completion Criteria:** Unauthorized access is prevented, and security controls function as intended.

5.7 Recovery Testing

Failures such as power outages or server crashes can disrupt system operations. Recovery testing validates the system's ability to handle such disruptions, ensuring that normal operations can resume quickly, and data integrity is maintained.

- **Objective:** Test the system's backup and recovery processes for handling crashes, power outages, and other disruptions.
- **Technique:** Simulate scenarios like server disconnect during operations to evaluate recovery procedures.
- **Completion Criteria:** The system restarts successfully, and all data is intact without any loss.

5.8 Performance Testing

The performance of the system directly affects user experience, particularly during peak usage. Performance testing assesses how well the system can handle large workloads and ensures it meets the required speed and responsiveness standards.

- **Objective:** Measure system responsiveness and stability when handling concurrent users or heavy data processing.
- **Technique:** Simulate up to 200 simultaneous users performing login, attendance marking, and report generation.
- **Completion Criteria:** Key operations complete within 2 seconds, and no performance degradation occurs under load.

5.9 Regression Testing

Every update or change to the system carries a risk of introducing errors into previously functioning features. Regression testing ensures that these risks are mitigated and that the system remains stable and reliable after modifications.

- **Objective:** Validate that core features remain functional after updates or new feature implementations.
- **Technique:** Re-test critical workflows like login, data synchronization, and report generation after every update.
- **Completion Criteria:** Existing functionalities work as expected, and no new bugs are introduced.

5.10 Acceptance Testing

Acceptance testing is the final step to verify that the system meets all user requirements before deployment. It focuses on aligning the system's functionality with the expectations of stakeholders, ensuring readiness for real-world use.

- **Objective:** Verify that all functionalities satisfy the requirements defined in the SRS.
- **Technique:** Conduct tests with students, instructors, and administrators to validate the system's usability and reliability.
- **Completion Criteria:** Stakeholders approve the system for deployment after confirming it meets all acceptance criteria.

5.11 Beta Testing

Before the final release, the system undergoes beta testing, where a limited group of users interacts with a pre-release version. This phase provides valuable feedback on usability and functionality, helping identify and resolve any remaining issues.

- **Objective:** Detect and resolve any remaining issues through user feedback before final release.
- **Technique:** Provide the system to a small group of users and gather feedback on functionality, usability, and reliability.
- **Completion Criteria:** All reported issues are resolved, and the system meets user expectations for deployment.

6. Pass / Fail Criteria

This section outlines the pass/fail criteria for the Automated Attendance System software, which include the Suspension Criteria, Resumption Criteria, and Approval Criteria.

- Suspension Criteria

  This criterion is dedicated as classification to events that may cause the system to suspend, whether partially or completely:

  - Unavailability of internal project components (i.e. Software/Hardware)
  - Unavailability of external project components (i.e. Database)
  - Unavailability of developing/testing personnel (i.e. Vacations/Holidays)

- Resumption Criteria

  Should the system be halted, the continuation of testing if and the following conditions are fulfilled:

  - availability of internal project components
  - availability of external project components
  - availability of developing/testing personnel

- Approval Criteria

  To approve the test, the following approval criteria must be reviewed:

  - The test case should not cause unintended consequences to either internal or external system components.
  - The test case's outcome should match expectations.
  - The test case should be executed under the specified conditions without errors or failures.
  - The test case should be reproducible with consistent results.
  - Any deviations or issues found during the test should be documented and resolved before approval.

7. Testing Process

This section will outline the test deliverables, testing tasks, responsibilities, resources, and schedule.

- Test Deliverables

The deliverable produced from the testing process will be the Software Test Plan (STP). Once the test phases are successfully completed, the project will be ready for delivery.

- Testing Tasks

After completing the Software Requirements and Design Specification documents, the Software Testing Plan should be documented. All testing activities and defects must be monitored to ensure the system remains maintainable. Additionally, both software and hardware should be tested across different environments.

- Responsibilities

By adhering to the component specifications and integration testing tasks, all team members are responsible for testing the software. This includes preparing the necessary documentation and addressing any software testing errors.

- Resources

The resources used to accomplish the software testing phase are shown in the table below.

Resource Category	Description
Hardware	Any device that supports the application and Wi-Fi
Software	• MySQL Workbench • IntelliJ IDEA
Support	IAU IT Department
Human	Project team members with specific skills and experience, as outlined in sections 3.1.2 and 3.1.3 of the SPMP document, will be involved.

Table 26: Resource category

- Schedule

		Week												
		3	4	5	6	7	8	9	10	11	12	13	14	15
Deliverable	***Project Definition***	√												
	Project Proposal	√	√											
	SPMP		√	√	√									
	SRS				√	√	√							
	Status Report						√	√						
	SDS							√	√	√				
	STP									√	√	√	√	
	Presentation												√	√

Table 27: Schedule

8. Environmental Requirements

In the section that follows, every essential aspect of the testing environment is discussed in detail. It includes sections on hardware and software setups, security measures, test tools, publications required for system testing, and, lastly, associated risks and presumptions.

8.1 Hardware

The required hardware for conducting the testing procedures will be a PC with an active high-speed Wi-fi connection also we would need the use of the mobile device of the student and the instructor.

8.2 Software

The required software for conducting the testing procedures will be:

- Windows and IOS
- MySQL Workbench for testing database connectivity.
- NetBeans IDE

8.3 Security

By safeguarding and preserving the privacy of all user data, the (AAS) program avoids data breaches of any kind. Application security testing tools (AST) are used to guarantee security. It has been confirmed that the system securely and reliably maintains the following credentials, which are necessary for the sign-in process.

- The user’s biometrics.
- The user’s ID and Password.

8.4 Tools

The tools necessary for conducting the tests include NetBeans IDE, which provides the mandatory tools for testing and debugging the application. As well as MySQL Enterprise Audit tools which provides implementation for security policy-based solutions for the database. For automated testing framework, Appium will be used.

8.5 Publications

The documents required to carry out the (AAS) software testing are:

- Software Project Management Plan (SPMP)
- Software Requirement Specification (SRS)
- Software Design Specification (SDS)

8.6 Risks and Assumptions

The Software Development Life Cycle (SDLC) steps must be followed to achieve all software requirements and develop high-quality, error-free software. Rapid development and modification may result in changes to the test plan, which may pose certain risks. The probable risks and assumptions, as well as a contingency plan for each risk are listed below.

8.6.1 Test Item Availability

To complete the testing procedure, unit items must be available. When there is an interruption, the inaccessibility of a unit to be tested may cause a delay. The integration and testing procedures are slowed as a result. It would make a considerable difference if the accessible products were evaluated first.

8.6.2 Test Resource Availability

Resource unavailability might cause test delays and put tests on hold. The proposed contingency plan would be to contact the concerned resource support team to immediately put resource running in the optimum way for testing.

8.6.3 Time Constraints

Schedule changes and unanticipated delays may cause a delay in the testing phase and delivery time. To meet the requirements and meet the deadline, a proposed contingency method would be to reschedule and extend operation hours.

9. Change Management Procedures

Prior to approval, any alterations or modifications to this test plan in the future must go through several steps. All parties involved will first discuss and approve any changes proposed by the client or team members. Only then will the test plan be adjusted to reflect the approved changes. If at least one person objects to the change, it could be rejected; in that case, no changes will be taken into consideration.

10. Plan Approvals