Republic of the Philippines
Laguna State Polytechnic University
Province of Laguna

COLLEGE OF COMPUTER STUDIES

CMSC 311 – Software Engineering
Final Project

Client Appointment and Monitoring Management System for Laguna Parole and Probation Office with SMS Notification

Software Requirements Specification (SRS)

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I. Introduction and Purpose

The Laguna Parole and Probation Office, a government agency, is currently in charge of keeping an eye on and providing assistance to those who have been released on parole or probation. Among the duties assigned to the office include scheduling appointments for clients and keeping an eye on them to ensure they follow the conditions of their release and receive the assistance they require to successfully reintegrate into society. The office has frequently used manual processes to schedule and monitor its clients' appointments. Time-consuming, error-prone, and often leading to operational inefficiencies in the workplace were these practices.

The office saw that they needed a better way to handle their clients and improve service performance. The Client Appointment and Monitoring Management System with SMS Notification has been deployed by the Laguna Parole and Probation Office to address this issue. Customers may arrange appointments using the system's web portal, and also have SMS notification feature has been especially valuable in today's fast-paced world, where people are constantly on the move, as it sends reminders to clients about their upcoming appointments, reducing the number of no-shows and improving the office's overall efficiency in serving their clients. The technology also automates customer progress tracking, enabling the office to keep track of each client's situation and promptly offer assistance as required. The system is an online platform that allows clients to schedule their appointments and receive automated reminders via SMS. The system also automates the monitoring of clients' progress, allowing the office to keep track of each client's case and provide timely support when needed.

II. Overall Description

The Laguna Parole and Probation Office in Santa Cruz, Laguna, is currently grappling with multiple challenges related to the management and arrangement of appointments for clients seeking probation, as well as the monitoring of offenders granted probation. The existing processes for handling client documents, files, and report generation are also deemed inefficient, primarily due to the substantial volume of customers. Recognizing the need for improvement, the office has identified various issues, such as the manual handling of client appointments, the need for faster document management, and challenges associated with overcrowding resulting from walk-in clients.

To address these concerns, a comprehensive solution has been proposed in the form of the Client Appointment and Monitoring Management System with SMS Notification. This

system aimed to streamline and automate the client management process, providing a more efficient and user-friendly approach to handle the diverse needs of the office.

The identified issues, such as manual client appointment handling, are targeted for resolution through the implementation of the new system. By introducing automation, the aim is to simplify and expedite the appointment management process, ensuring a smoother experience for both clients and office staff. The introduction of an automated system is expected to significantly reduce the administrative burden associated with managing appointments and improve overall service performance.

The proposed system addresses challenges related to document management, file organization, and report generation. With the implementation of the Client Appointment and Monitoring Management System, the office anticipates a more rapid and streamlined process for handling client documents. This includes improved organization, efficient file management, and faster generation of reports, all of which are crucial components in managing a high volume of customers effectively.

III. Functional and Non-functional Requirements

Functional Requirements

Authentication and User Management

- Users must be able to register, log in, and log out securely.
- The system must differentiate between user roles: Admin (Officer) and Client (Probationer).
- Admins must be able to create, update, and deactivate user accounts.
- Instead of activating via a link, users will receive a one-time password (OTP) through email, which they must enter on the website to activate their account. This improves ease of use and security.

Appointment Scheduling

- Officers can create, edit, cancel, and view appointments for clients.
- Clients can view upcoming and past appointments on their dashboard.
- Officers must be able to reschedule missed appointments.
- The system can automatically assign probationers to available parole officers based on area and availability to simplified the scheduling process.

Notifications

- The system must send automated SMS reminders for appointments.
- The system must also send notifications via Gmail for key events such as account creation or appointment updates.
- Officers can manually send notifications to specific clients.

File Management

- Clients can upload required documents such as IDs and compliance records.
- Officers can view, download, and delete client-submitted files.
- Clients can view and delete their own uploaded files.

Report Generation

- The system can generate reports including granted, denied, and revoked probationer lists.
- Reports can be filtered by date, officer, or case status.
- Officers can export reports in PDF or Excel formats.

Officer and Case Management

- Admins can add, edit, or remove officer profiles.
- Officers can assign clients to specific probation officers.
- The system includes new database tables for managing officers and their assigned areas for better case distribution and tracking.
- The system keeps a log of changes for tracking and auditing.

Assistant Bot

- Includes a built-in chatbot to assist users.
- The chatbot interface now features simple typing animations to improve user interaction and make the assistant feel more responsive and human-like.

Search and Filter

- Users can search for appointments, files, or users by keywords.
- Admins can filter client lists based on compliance status or case outcome.

Non-functional Requirements

Performance

- System response time should not exceed three seconds for most user actions.
- The system must support at least 100 users simultaneously without slowing down.

Security

- All data must be encrypted in transit (HTTPS) and sensitive data must be encrypted at rest.
- The system must automatically log out inactive users after 10 minutes.
- Login attempts must be limited to prevent brute-force attacks.
- Replaces activation via a link by requiring users to enter a one-time password sent to their email, improving security during account registration.

Usability

- The system must work well on both desktop and mobile devices.
- Interface design must follow accessibility standards for readability and usability.

Maintainability and Support

- The system should be modular and easy to update without affecting the entire platform.
- System activity logs should be retained for at least six months.

Availability and Backup

- The system must be available at all times except for scheduled maintenance.
- Daily backups should be automatically created and securely stored.

Testability

- All major features should have corresponding test cases for both unit and system testing.
- A test environment should be available for safe experimentation and upgrades.

IV. System Features and Interfaces

Features

- **Client Dashboard**
  Displays the client's scheduled appointments, appointment history, and uploaded documents.
- **Officer Dashboard**
  Allows probation officers to view upcoming appointments, monitor client progress, and access case details.
- **Admin Panel**
  Enables system administrators to manage officer accounts, assign clients, and generate reports.
- **Appointment Scheduling Module**
  Supports setting, editing, canceling, and viewing of client appointments.
- **Notification System**
  Sends automated reminders and messages via SMS and Gmail.
- **File Management System**
  Allows clients and officers to upload, view, download, or delete required documents.
- **Report Generation**
  Automatically generates probationer reports such as granted, denied, and revoked statuses, which can be filtered and exported.
- **User Role Management**
  Controls user access and system functionality based on roles (Client, Officer, Admin).

Interfaces

- **User Interface (UI)**
  A web-based interface developed with HTML 5, CSS, and JavaScript, accessible on both desktop and mobile browsers.
- **Database Interface**
  Uses MySQL to manage user data, appointments, files, and reports securely and efficiently.
- **API Interface**
  The system uses PHP-based server-side scripts to handle communication between the user interface and the back-end logic. These scripts process requests such as scheduling appointments, managing files, sending SMS and Gmail notifications, and accessing the database.

V. Assumptions and Constraints

Assumptions

In developing this system, the following assumptions were made:

1. Users have basic digital literacy – It is assumed that clients and staff can use web-based systems to access the platform.

2. Stable internet connection is available – The system relies on internet access for real-time search, SMS and Email notifications, and appointment scheduling.

3. Clients have access to mobile phones – SMS reminders are expected to reach clients via their registered mobile numbers.

4. Data provided by clients and officers are accurate – The system functions based on the assumption that all entered data is valid and truthful.

5. System will be maintained regularly – It is assumed that responsible staff will update, back up, and maintain the system to keep it secure and functional.

Constraints

1. Limited to LPPO Sta. Cruz branch – The system is only developed and tested within the Laguna Parole and Probation Office in Sta. Cruz.

2. Dependent on third-party SMS services – SMS notifications rely on the availability and uptime of external messaging providers.

3. Scope does not cover other LGU departments – The system is specifically designed for parole and probation management and does not include other municipal functions.

4. Budget and time limitations – Feature enhancements and system testing were limited to the capstone project's duration and available resources.

5. User feedback limited to selected testers – The evaluation and improvements are based on inputs from a specific group of officers and clients.

VI. Use Case Diagrams or Descriptions

Actors:

- Client – A person under probation/parole supervision or a family member/relative of the person under probation/parole who can access their appointment and case details.
- Admin – The system administrator who manages accounts, schedules, and overall system data.

Common Use Case:

1. Log In – All users (admins and clients) must securely log into the system to access their respective dashboards.

Client Use Case:

2. Log In - Access the system securely using credentials.
3. Toggle Password - Option to show or hide password during login for ease.
4. Use LPPO Assistant Bot - Get real-time guidance or help within the system.
5. View Assigned Parole Officer - They can see who is handling the case for better communication.
6. View Appointment Schedule - Check scheduled appointments and details.
7. Receive SMS Notification - Get reminders about upcoming appointments.
8. View Case Status - Know whether their case is granted, denied, or revoked.
9. Upload/View/Delete Files - Submit and manage documents related to their case.
10. Real-Time Search (Client Side) - Instantly search their records, appointments, or files.
11. Receive Message Popups - Get alert messages or confirmations while using the system.

Admin Use Case:

2. Toggle Password - Show or hide password during login.
3. Add/Edit/Delete/Archive Accounts - Manage all user accounts, including clients and officers.
4. Assign Parole Officers to Clients - Connect each client to a responsible officer.
5. Set/Edit/Cancel Appointments - Oversee scheduling tasks for all clients.
6. Manage Denied/Revoked Reason Sections - Record and update reasons for case decisions.

7. Send SMS and Professional Emails - Notify clients and officers through official communication.
8. Real-Time Search (Admin Side) - Quickly access client or appointment information.
9. Generate Reports - Create reports for granted, denied, and revoked cases.
10. System Maintenance - Keep the system updated, secure, and error-free.

VII. Testing Tool Documentation

The system was evaluated using two primary testing tools: Black Box Testing and Usability Evaluation through Questionnaires.

1. Black Box Testing

Black box testing was used to validate the system's major functions such as login, appointment scheduling, file management, SMS notifications, and real-time search features. This method was chosen because it allowed the testers to focus on system outputs without needing to view the internal code. It ensured that each module functioned as expected when used by clients, admins, and parole officers.

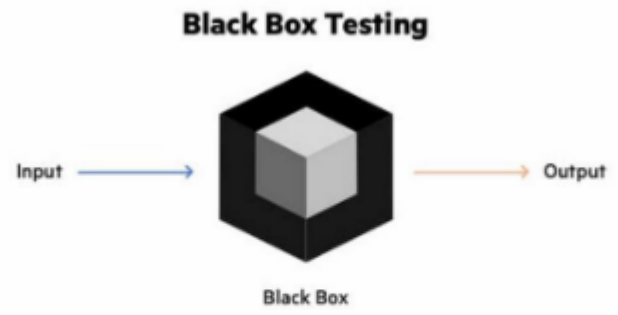
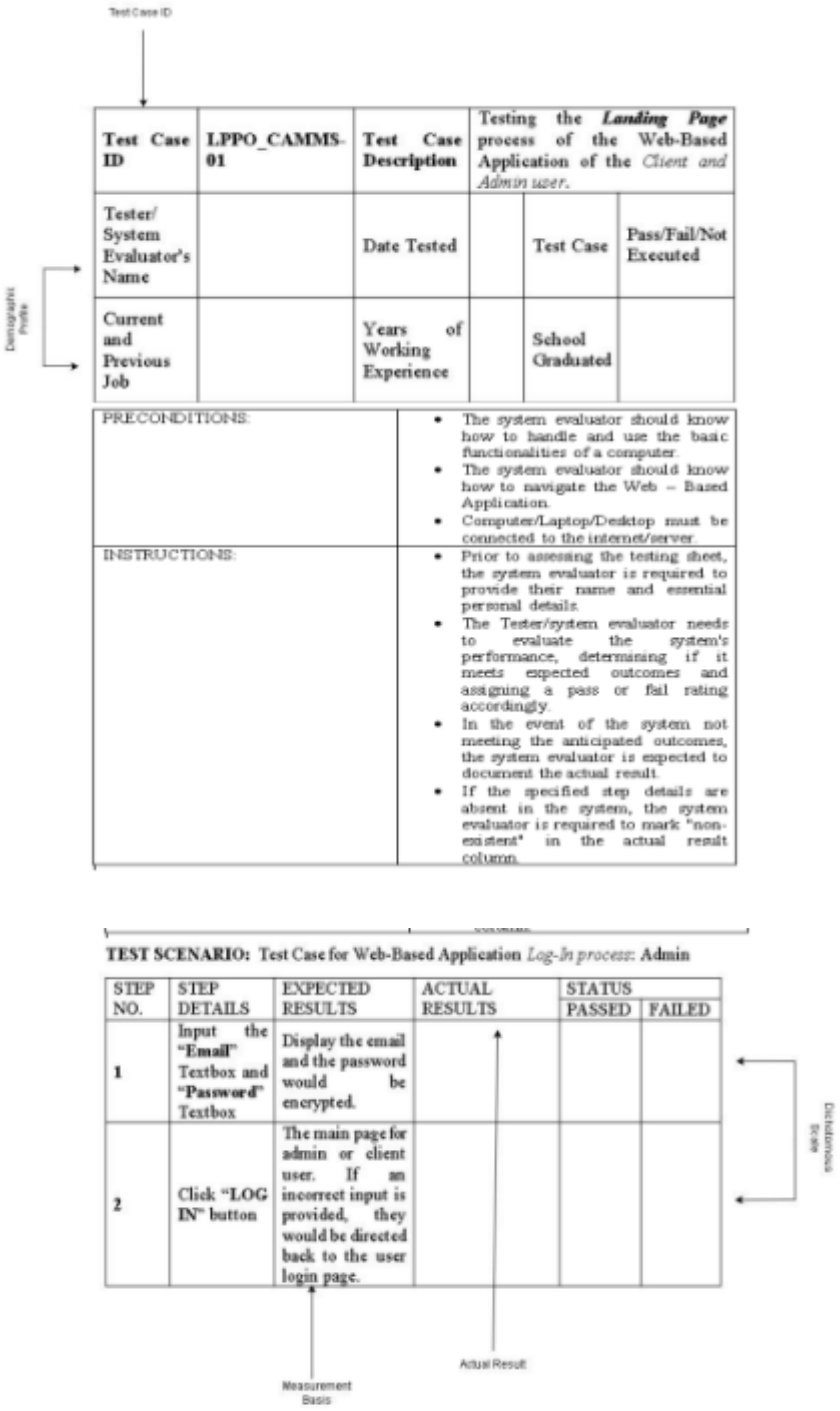


Figure 4. Black box testing. (2020, September 24). Learning Center.
Source: https://www.imperva.com/learn/application-security/black-box-testing/
The figure 4 above was the tool used to test the system by the researchers.

2. Manual Testing

To ensure the credibility and reliability of the application, **ten (10) IT Specialists** were engaged to test the system manually. A custom questionnaire was prepared for black box test scenarios, including step numbers, descriptions, and expected outcomes. A **dichotomous scale** ("Pass" or "Fail") was used to assess whether the actual outputs matched the expected results. This binary scale provided precise feedback, confirming if the system

responded accurately to defined test inputs. As cited by Birkett (2019), a dichotomous scale gives clearer and more objective results for this type of testing.



Test Case ID	**LPPO_CAMMS-01**	**Test Case Description**	Testing the ***Landing Page*** process of the Web-Based Application of the *Client and Admin user.*		
Tester/ System Evaluator's Name		**Date Tested**		**Test Case**	**Pass/Fail/Not Executed**
Current and Previous Job		**Years of Working Experience**		**School Graduated**	

PRECONDITIONS:	• The system evaluator should know how to handle and use the basic functionalities of a computer. • The system evaluator should know how to navigate the Web – Based Application. • Computer/Laptop/Desktop must be connected to the internet/server.
INSTRUCTIONS:	• Prior to assessing the testing sheet, the system evaluator is required to provide their name and essential personal details. • The Tester/system evaluator needs to evaluate the system's performance, determining if it meets expected outcomes and assigning a pass or fail rating accordingly. • In the event of the system not meeting the anticipated outcomes, the system evaluator is expected to document the actual result. • If the specified step details are absent in the system, the system evaluator is required to mark "non-existent" in the actual result column.

TEST SCENARIO: Test Case for Web-Based Application *Log-In process:* Admin

STEP NO.	STEP DETAILS	EXPECTED RESULTS	ACTUAL RESULTS	STATUS	
				PASSED	FAILED
1	Input the "**Email**" Textbox and "**Password**" Textbox	Display the email and the password would be encrypted.			
2	Click "LOG IN" button	The main page for admin or client user. If an incorrect input is provided, they would be directed back to the user login page.			

Figure 5. Actual Structural Format of the Testing Tool

3. Usability Evaluation using Questionnaires

A user acceptance survey based on the Technology Acceptance Model (TAM) was used to assess the system's ease of use, usefulness, and overall quality. This tool was selected to gather direct feedback from the system's actual users including probation officers and staff through face-to-face testing. The results showed high acceptability, with average mean scores ranging from 4.31 to 4.49 on a 5-point Likert scale, confirming that the system was effective and user-friendly.

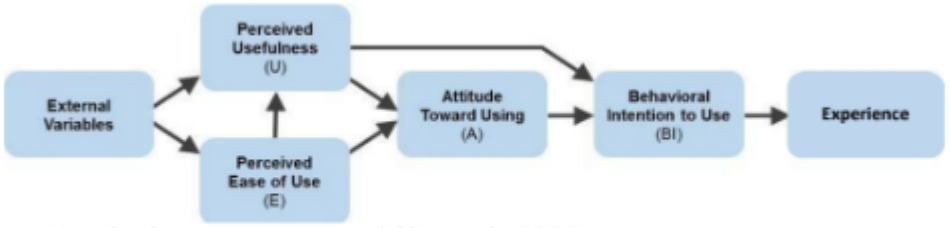


Figure 6. Technology Acceptance Model by Davis (1980)