Republic of the Philippines
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CHAPTER III

METHODOLOGY

This chapter presents the methodology to be followed in this study. This includes the sections about Project Design, Project Development, and Testing and Evaluation Procedures.

Project Design

The diagrams below show how the development of the system works.

Flowchart

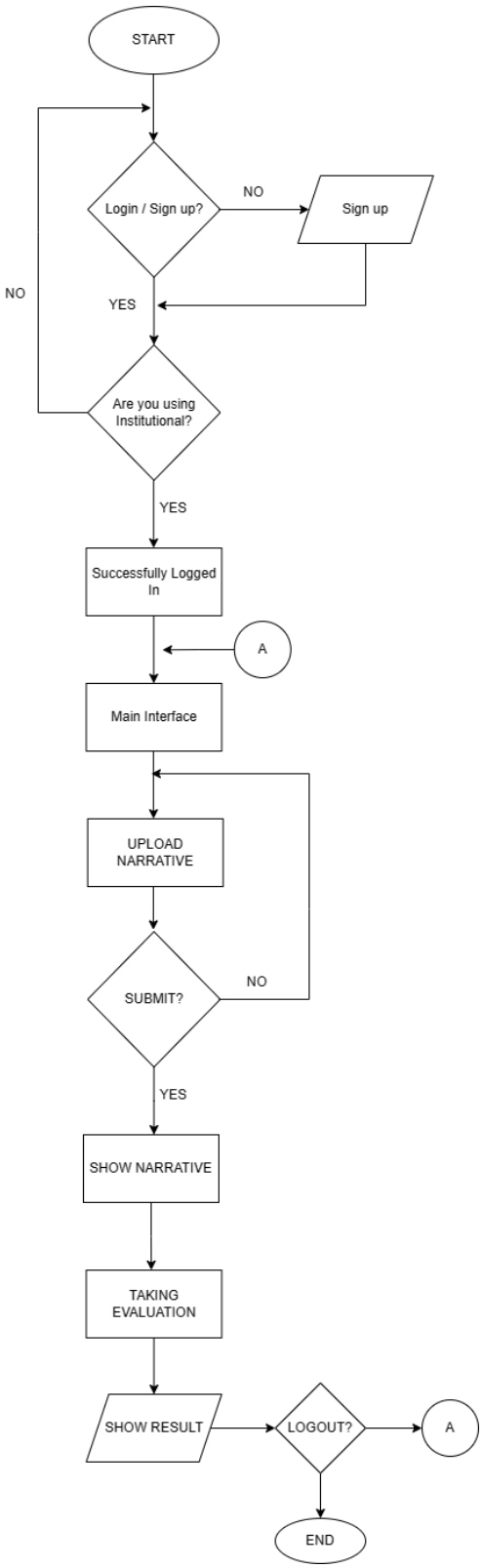

Figure 2. Flowchart of Narrative Report

Figure 2 illustrates the project's procedural flow. The flowchart begins with users accessing the system using their institutional account, where they are able to log in or sign up. Users are directed to the main interface once they have logged in. They can then choose to upload their narrative reports to the system. Upon submission, the system offers feedback on whether or not the report was successfully submitted. In addition, during their on-the-job training (OJT), users require an assessment to assess their emotions.

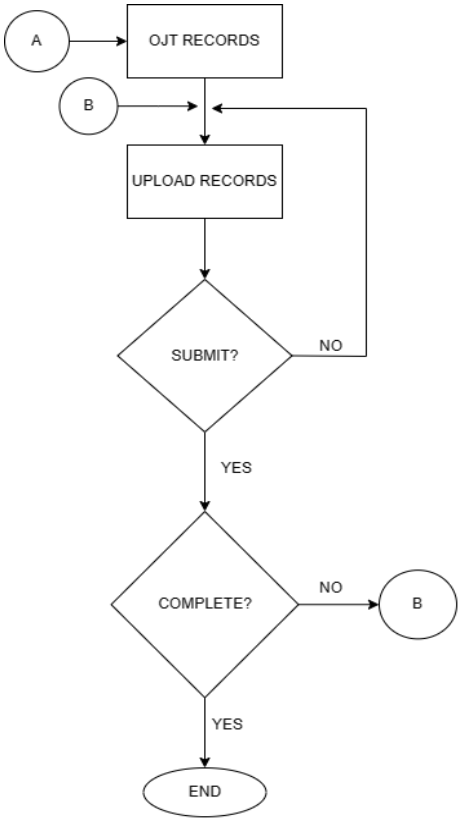

Figure 3. Flowchart of OJT Records

Figure 3 depicts the project's procedural flow. After logging in, users can proceed to upload the documents that are needed to complete their on-the-job training. Furthermore, users can view and edit their information within the system as well as access their submitted requirements.

Wireframe of the System

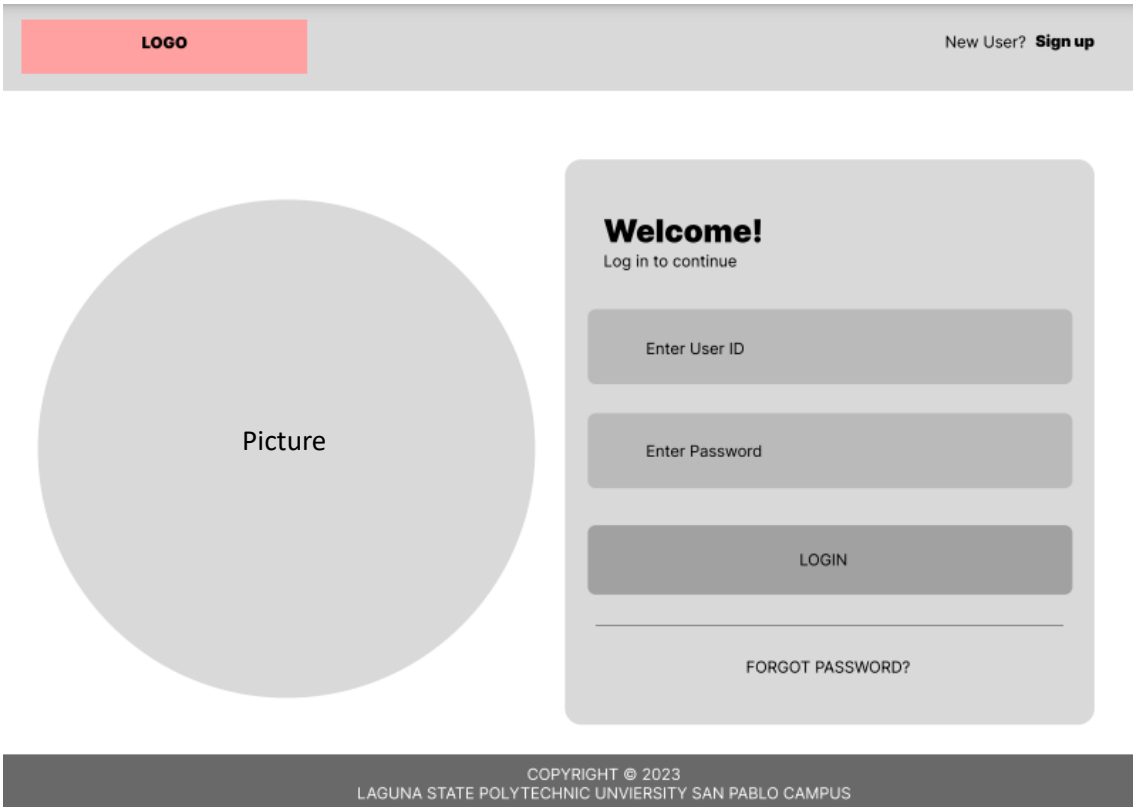

Figure 4. Login Page of the System

Figure 4 depicts the system's login page, which includes the Sign-up and Login buttons as well as hyperlinks for Forgot Password and User Email. Above the login is a welcome message that tells you to continue exploring. Additionally, a hyperlinked version of the logo may be seen in the top left corner.

Figure 5. Home Page of the System

The system's home page after logging in is shown in Figure 5. The navigation menu is displayed in the top left corner and includes links for Home, OJT Records,

Narrative Report, Account, and Logout. The user's name and profile are also displayed on the left side. Furthermore, it includes a welcome statement and a succinct summary. There is an About button that leads users to a section that provides a summary of the system and is accompanied by an appropriate image or logo. The system's developers are highlighted further down the page in the developer section. The address, phone number, and email are included under the contact section. Users can enter their name, email address, and message in the contact form on the right side and then submit it by clicking the appropriate button. At the very least, the footer includes the logo and contact information, including an email address.

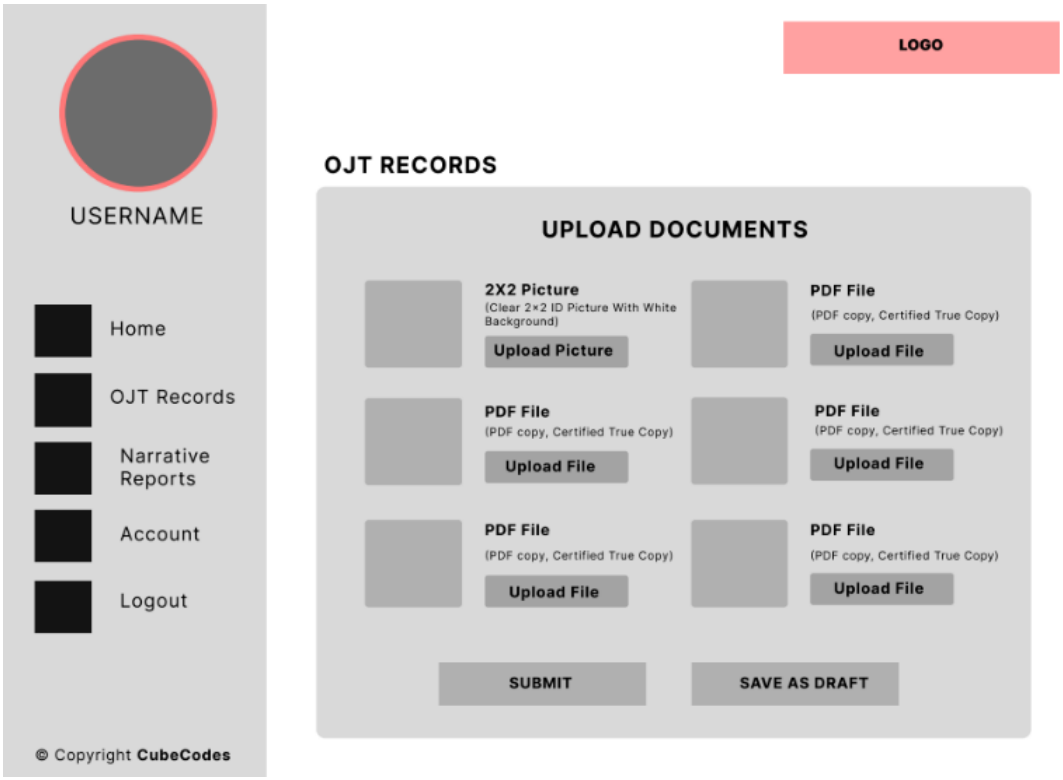

Figure 6. OJT Records Page of the System

The OJT Records portion of the system is shown in Figure 6 and can be accessed by clicking the OJT Records button on the navigation bar. The documents that have been submitted or that are necessary for the OJT process are displayed in this area. Users are provided with a button to upload required files, such as images and PDF files. Also accessible are buttons for saving papers as drafts and submitting all uploaded documents to the system for processing.

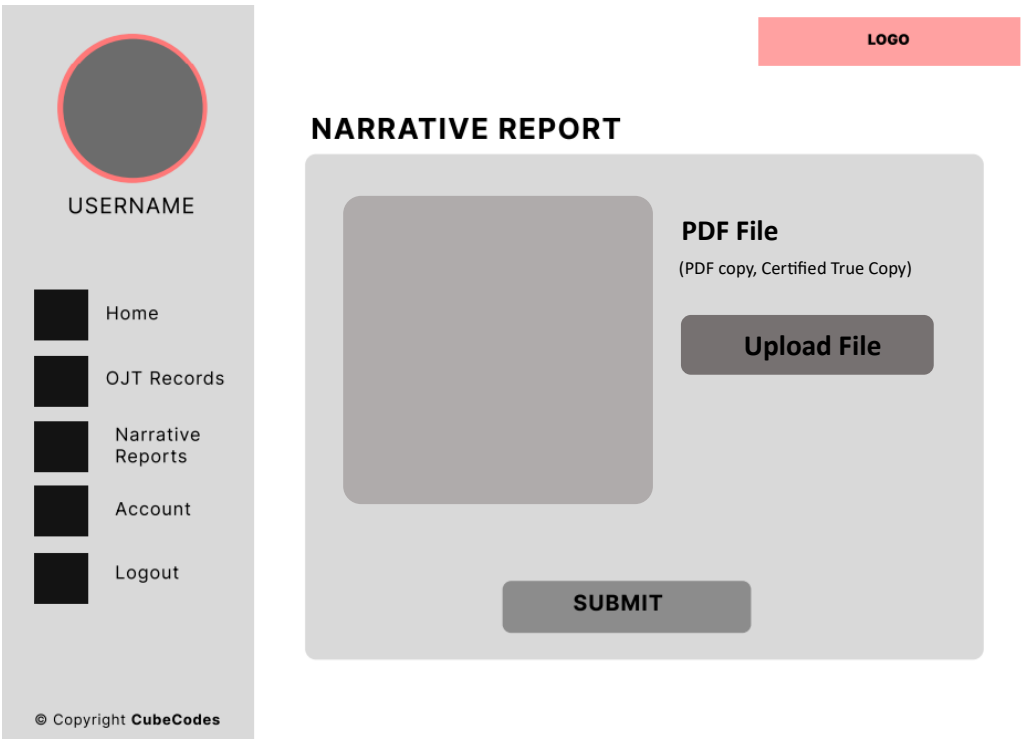

Figure 7. Narrative Report Page of the System

Figure 7 shows the narrative report tab that can be reached by clicking on it from the navigation bar's Narrative Report button. Two buttons are present on the page: one is for uploading the narrative report, and the other is for submitting the submission in its

entirety. The website also contains a piece of text that says that a PDF file is the only acceptable format for the report, making it clear to the user what kind of file to submit.

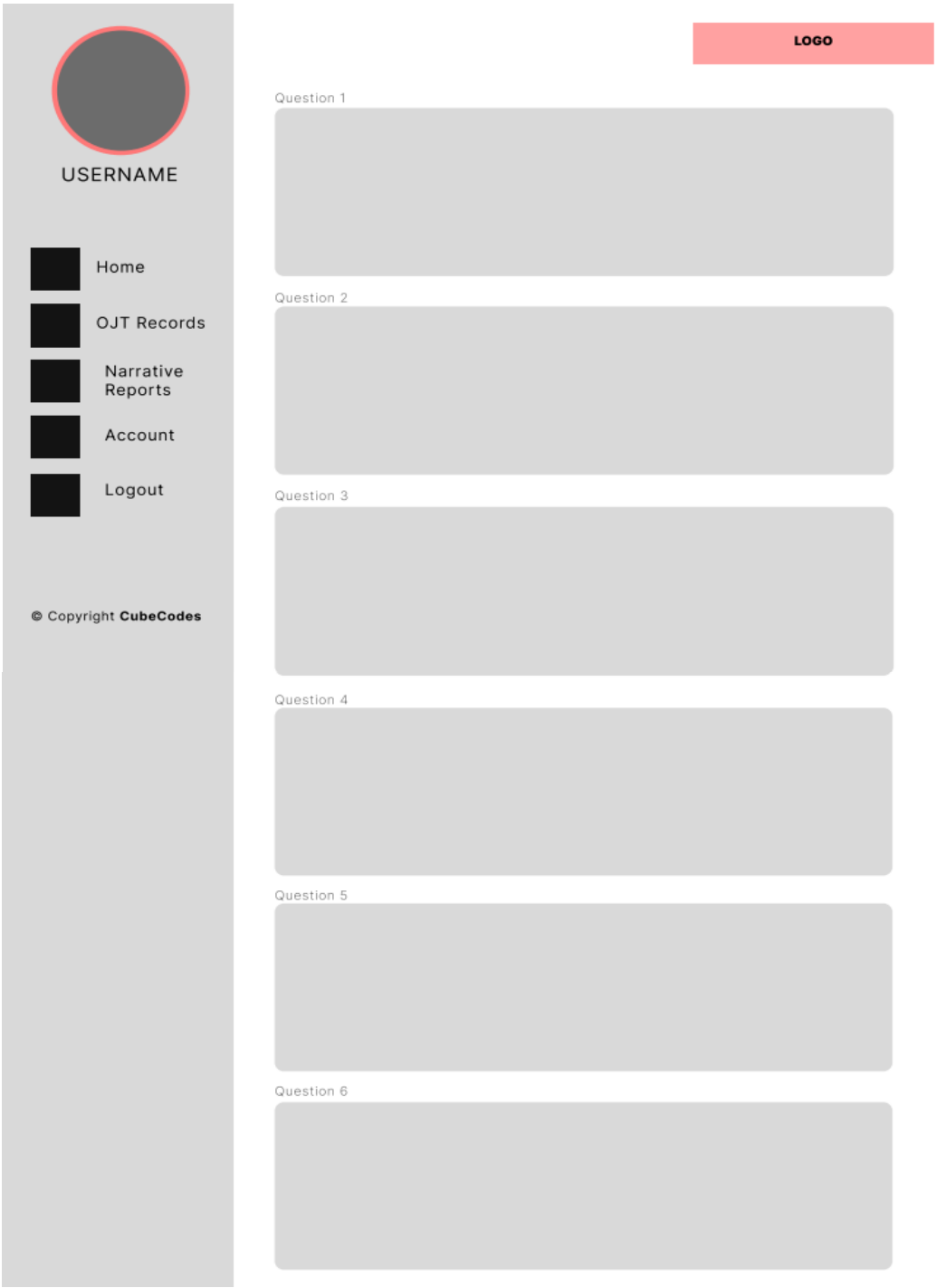

Figure 8. Sentiment Analysis Page of the System

After clicking or submitting the narrative report, the system's sentiment analysis page appears in Figure 8. The sentiment analysis must be completed by the user in order to determine if their feelings about their OJT experience are positive, negative, or neutral. You may see the evaluation's questions and response options on the Sentiment Analysis website.

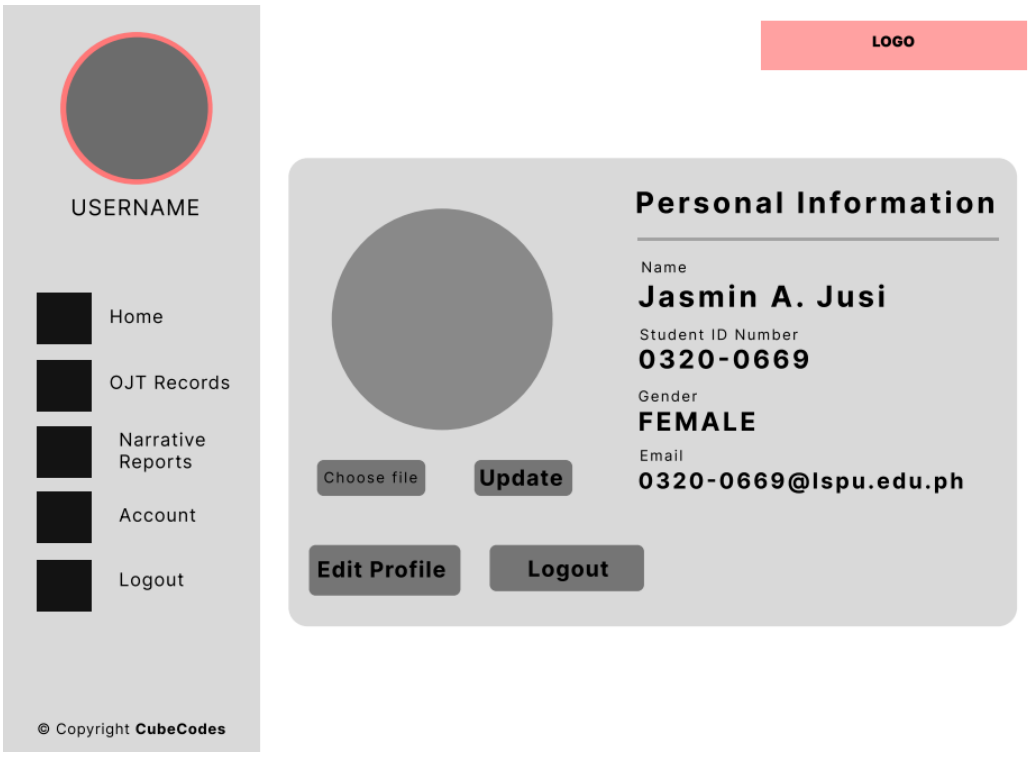

Figure 9. Profile Page of the system

Figure 9 depicts the system's profile page after you clicked the account option in the navigation bar. All of the users' exclusive data, including their name, student ID number, gender, and email address, appears on their profile page. The user's profile image is included in the area for pictures. Additionally, there are three buttons: a button for updating the profile image, a button for updating the personal information, and a button for logging out.

Use Case Diagram

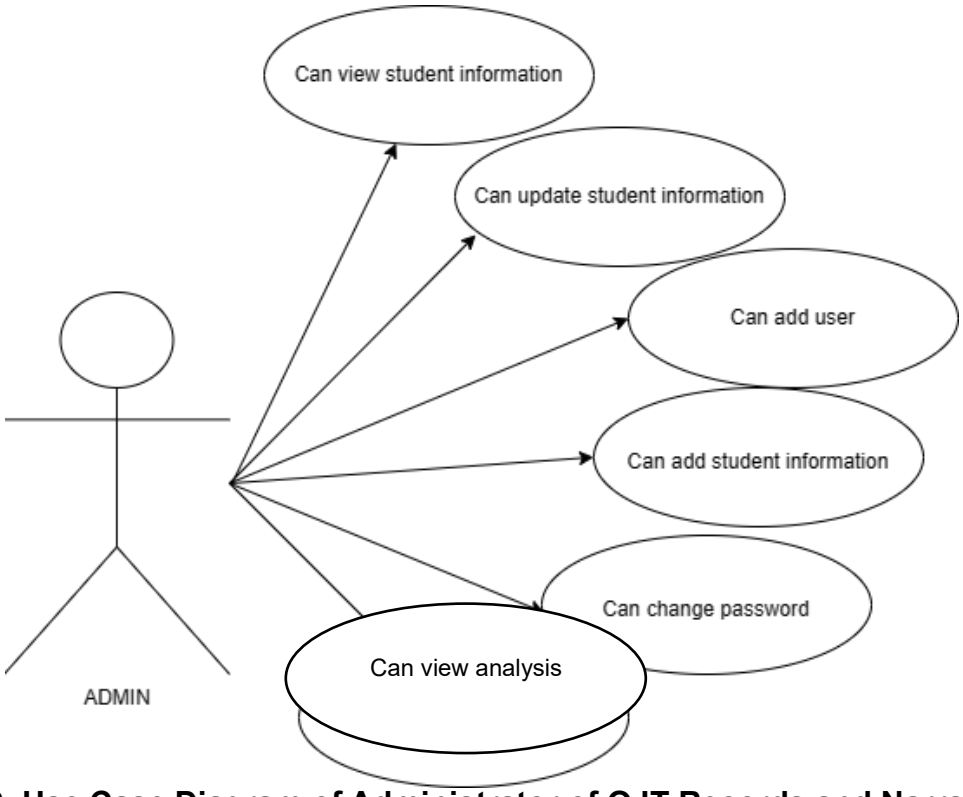

Figure 10. Use Case Diagram of Administrator of OJT Records and Narrative Report Archiving System

Figure 10 shows how the administrator may control the entire system. The administrator has access to all student information and is the sole authority that is allowed to edit student information. The illustration also emphasizes the administrator's capability to add user and student information. Furthermore, the administrator has the privilege to change the password for their account as needed. In addition, following the evaluation process, the administrator can assess the analysis.

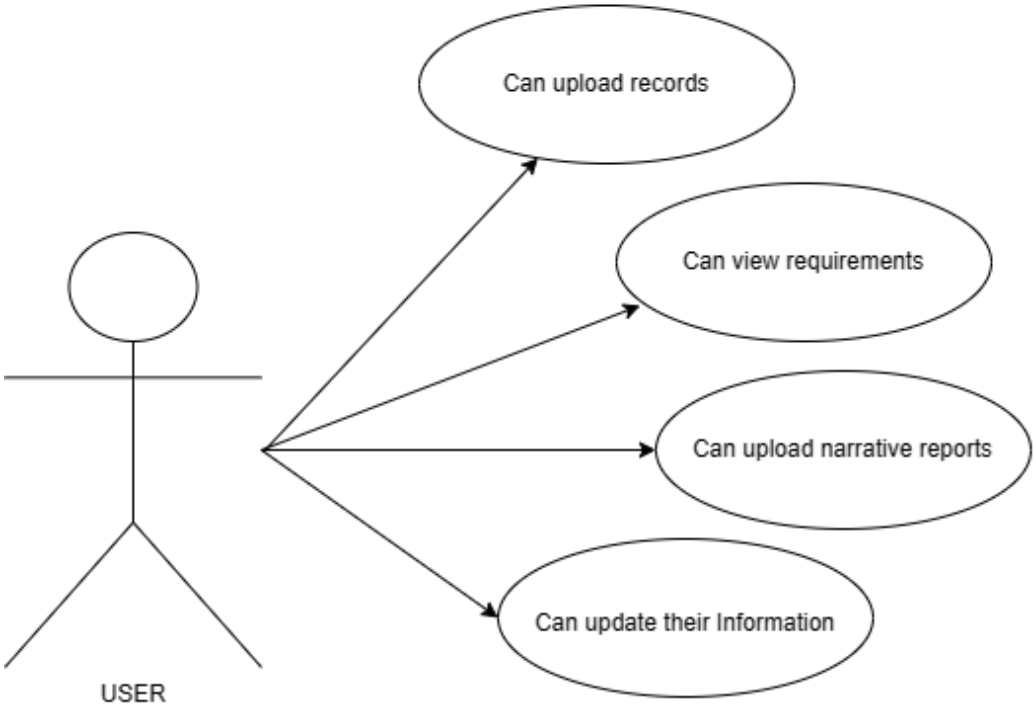

Figure 11. Use Case Diagram of User of OJT Records and Narrative Report Archiving System

Figure 11 depicts how users can make use of the proposed system. It demonstrates that users have the option to see their requirements as well as submit their information or records. Users can also update their personal information in the system and upload their narrative reports.

Project Development

A modified waterfall approach, which divides the software development process into different phases, was used to accomplish the project. The result of one phase serves as the input for the following phase in the waterfall model, which has each phase move in a sequential order.

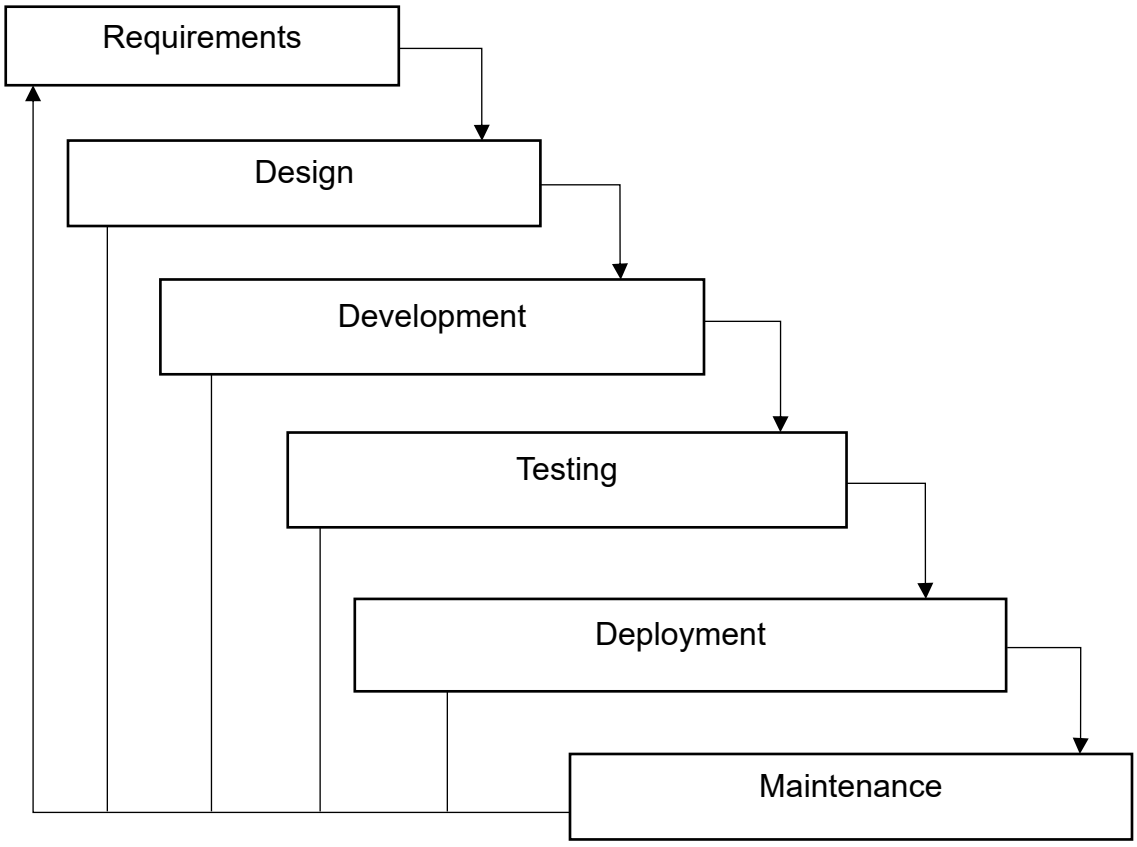

Figure 12. Modified Waterfall Model of OJT Records and Narrative Report Archiving System

Phase 1: Requirements

To gather all the necessary data for system development, the developers will conduct an interview and discussions with stakeholders, including OJT Coordinators, administrators, and students to gather comprehensive requirements. The information gathered will help the developers to define the objectives and the requirements of the OJT Records and Narrative Report Archiving System. The developer will then have the opportunity to develop a website information system that could help them hold the records and information of the users of their archiving system.

Phase 2: Design

In this phase, the developers will create a high-level system design including flowcharts, wireframe for the interface of the system, and use case diagram for administrator and user. It helps serve as a guide for the developers to develop the system.

Phase 3: Development

This phase involves the development of actual coding of the proposed system. The developers will use different scripting languages such as CSS, PHP, HTML, and JavaScript. Developers will establish a connection and integrate the system with a database management system (DBMS) using MySQL.

Phase 4: Testing

The development team will collaborate closely with the stakeholders, including users, throughout this phase in order to gather feedback, address issues, and implement necessary enhancements. Before deploying the proposed system, this phase may require several iterations to refine the system and ensure its quality.

Phase 5: Deployment

After undergoing the testing phase, the system is ready to be deployed and used by the end-users. The developers will provide comprehensive training for the administrator on how to use the system, including its features, functionalities, and any specific procedures or workflows.

Phase 6: Maintenance

The last phase in the development of the system, during this phase the focus is on ensuring the smooth operation, stability, and continuous improvement of the OJT Records and Narrative Report Archiving System. The developers should regularly update and enhance the system. Also, the developers should have an effective-communication channels with users and stakeholders, this allows efficient reporting and resolution of issues, as well as gathering valuable feedback for further system improvements.

Project Testing and Evaluation

The system will undergo several testing types and phases to ensure the quality, functionality, and usability of OJT Records and Narrative Report Archiving System. It aims to identify and address discrepancies in the system before its proper deployment and to evaluate its performance against the specified requirements.

Functionality Testing

The developers will perform the testing to ensure that the system performs its intended functions correctly and meets the functional requirements of its users and stakeholders. With this, the developers will have an idea if the system is user-friendly and easily understand by the users and its stakeholders including administrator. By conducting comprehensive functionality testing, it helped the developers to know what does the system needed to improve to meet its users and stakeholder's expectations.

Table 1. Functionality Testing

Test Case Description	Test Steps	Expected Result	Actual Outcome	Status
User Authentication	1. Login using institutional account 2. Did not use institutional account by logging in	1. User successfully logged in to the system. 2. User login denied.	Actual Outcome	Passed or Failed

Document Upload	1. Upload a valid OJT records file 2. Upload an invalid file format	1. File is successfully uploaded and saved. 2. System displays an error message and rejects the file	Actual Outcome	Passed or Failed
Information Viewing and Updating	1. View personal information 2. Update personal information	1. User's personal information is displayed correctly. 2. Changes are successfully saved and reflected in the system	Actual Outcome	Passed or Failed
Report Generation	1. Generate an OJT report 2. Generate a Narrative report	1. System generates a comprehensive and accurate report 2. Narrative report is generated with correct content and format	Actual Outcome	Passed or Failed

The functionality testing table that will be utilized by the developers is shown in Table 1. The first column gives a succinct summary of the test case and details the functionality that is being tested. The sequential steps needed to run the test case are listed in the test steps column. It offers testers a simple, organized guide to refer to whilst doing the tests. The expected result determines the behavior of each test case.

During testing, it acts as an objective against which the actual result is measured. The Actual Outcome column is filled out during testing to record the precise outcome obtained from executing the test case. The status column, the last column used to track the overall progress and status of each test case. It helps in identifying which test cases have passed or failed. If passed, the Expected Result is being shown in the Actual Outcome and if not, it is failed.

Browser Testing

The developers will use this instrument for browser testing to ensure that the system works properly across different web browsers. It will also be used to check if the system is responsive to different screen sizes when it is viewed on a chosen browser.

Table 2. Browser Testing

Web Browsers	Status/Compatibility	Actual Outcome	Recommended
Browser	Passed or Failed	Outcome	Yes or No

The browser testing table that will be utilized by the developers is shown in Table 2. The table's first column indicates which browser will be used for testing. The Status column is used to track the overall progress and status of each browser testing test case. It helps the developers to identify which test case have failed or passed. If Passed, the browser met the expected outcome and if not, the Status/Compatibility is failed. Failed test cases require further investigation and resolution to ensure that the system functions correctly across different browsers. Final column would be recommendation, if the specific browser met the expected outcome, the developers will

then recommend that specific browser and if not, it will not be recommended by the developers.

Evaluation Procedure

System Usability Scale (SUS)

It provides a standardized and quantitative measure of the perceived usability of a system by capturing users' subjective assessments. Ten items compose the entirety of the SUS questionnaire, and every question is evaluated on a five-point Likert scale from strongly agree to strongly disagree. The assessments are intended to evaluate several usability characteristics, such as learnability, efficiency, and overall user satisfaction.

Table 3. Evaluation

1	I think I would like to use this system frequently.
2	I think the system was easy to use
3	I found the system unnecessarily complex
4	I think that I would need the support of a technical person to be able to use this system.
5	I found the various functions in this system were well integrated.
6	I thought there was too much inconsistency in this system.
7	I would imagine that most people would learn to use this system very quickly.
8	I found the system very cumbersome to use.
9	I felt very confident using the system.
10	I needed to learn a lot of things before I could get going with this system.

The table above shows the SUS questions that can be administered to a sample of users who have interacted with the system to gather their subjective feedback on its usability.

Table 4. Likert Scale System Usability Scales

Rating	Interpretation
5	Strongly Agree
4	Agree
3	Fair
2	Disagree
1	Strongly Disagree

The table above shows the criteria to be used to rate the usability of the system. The ratings breakdown for the responses is 5, which is considered as the highest point and 1 point for the lowest point. The responses to the ten items are combined to create a composite score that ranges from 0 to 100, which is used to determine the SUS score. The scores for the even-numbered things are deducted by 5, while the scores for the odd-numbered ones are deducted by 1. After adding together, the individual item scores and multiplying by 2.5, the SUS score is determined.

Project Evaluation Procedure

To determine the acceptability of the system, the developers will conduct the evaluation process using ISO/IEC 9126 for evaluating the system. ISO/IEC 9126 is a widely recognized framework for assessing software quality composed of functionality,

reliability, usability, efficiency, maintainability, and portability. The system was evaluated by twenty-four (24) non-IT respondents and four (4) IT Professionals.

These are the characteristics that can be used for evaluating the system:

- Functionality – used by the developers if the system meets specified functional requirements and performs the intended tasks properly.
- Reliability – used by the developers if the system has the ability to perform consistently and reliably under various conditions, and its resistance to failures or errors.
- Usability – used by the developers to ensure the ease of use, intuitiveness, and efficiency of the system's user interface and interaction design.
- Efficiency – used by the developers to determine system's performance in terms of resource utilization, response time, and throughput.
- Maintainability – used by the developers to test with which the system can be modified and enhanced over time without introducing defects.
- Portability – used by the developers to test the system's ability to transferred to different platforms, allowing for ease of deployment.

Statistical Treatment of Data

To test the reliability of data, the developers will used a simplified numerical scale for evaluating software quality of the system.

Table 5. Numerical Scale of ISO/IEC 9126

Scale	Interpretation
4.51- 5.00	Excellent
3.51-4.50	Good
2.51-3.50	Average
1.51-2.50	Below Average
1.00-1.50	Poor

Table 5 presents the numerical scales that will be used to quantify and measure the quality for evaluating the system. 1.00 – 1.50 is interpreted as “Poor”, 1.51 – 2.50 is interpreted as “Below Average”, 2.51 – 3.50 is interpreted as “Average”, 3.51 – 4.50 is interpreted as “Good” and 4.51 – 5.00 is interpreted as “Excellent”.