

**Publazer: A Mobile Based Institutional E-Repository System with Integrated  
Plagiarism Detection for USTP**

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**A PROJECT PROPOSAL**

Bachelor of Science in Information Technology

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November 2025

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# **CHAPTER I**

## **INTRODUCTION**

### **1.1 Background of the Study**

In recent years, Institutional Digital Repositories (IDRs) have become an essential tool for library deployment. These IDRs now house, store, and arrange the vast bulk of university academic content (Bhattacharjee, Sudip, & Pal, Surendra, 2022). According to Crow (2002), an institutional repository is a digital archive of the intellectual output produced by an institution's academics, research staff, and students that is easily available to end users both inside and outside the institution. In essence, it is an organizational commitment to the care of these digital artifacts, which includes organization, access, and distribution, as well as long-term preservation where appropriate (Lynch, 2003). An electronic thesis and capstone repository offers numerous instructional opportunities to enhance learning. For instance, students can readily review thesis and capstone project samples in research techniques courses to become familiar with the formatting and writing styles used in their field.

At the University of Science and Technology of the Southern Philippines (USTP), many completed scholarly works authored, developed, and created by students and faculty members are generally not stored in an electronic repository but rather primarily archived in hard-bounded copies within the college departments' libraries. While this traditional method guarantees that scholarly work is preserved and accessible to students physically, it presents several drawbacks in the current digital landscape.

The absence of a centralized, mobile-based repository leads to recurring problems: students struggling to find appropriate thesis and capstone projects for their review of related literature, brainstorming, and methodological assistance.

There is also limited accessibility outside the library premises, difficulty in searching through numerous titles manually, and the risk of wear and tear on physical copies over time. These issues hinder students' ability to maximize the wealth of knowledge already produced within USTP, creating unnecessary barriers to academic growth and innovation.

Furthermore, while scholarly publications must be preserved and made accessible, they must also be original. Currently, USTP lacks a mechanism to determine if new submissions overlap considerably with previously completed studies. This absence increases the potential of repetition in research outputs, as students may unwittingly repeat prior works rather than offering fresh insights. By including a plagiarism detecting tool in the repository, the system can protect academic integrity, eliminate duplicate studies, and encourage students to investigate new topics.

This capstone project holds significance as it addresses the pressing need for improved accessibility, preservation, and utilization of academic outputs in USTP through the development of a mobile-based e-repository system. This will enable end users, including students and faculty to browse and safely access all of the data kept in the electronic repository. The student can also browse journal references that provide a variety of resources that can be the basis for the upcoming study. The main features of this designed mobile application are essentially the ability to create functional, reliable, and usable electronic document storage.

## **1.2 Statement of the Problem**

### **1.2.1 General Problem**

The University of Science and Technology of the Southern Philippines (USTP) lacks a centralized mobile-based institutional repository system, resulting in significant challenges in accessing, organizing, and preserving scholarly works.

### **1.2.2 Specific Problems**

- Students and faculty experience difficulty locating relevant theses and capstone projects due to the manual, physical storage of academic outputs in department libraries.
- Access to research materials is restricted to individuals who can visit the library in person, limiting opportunities for remote study and causing delays in research activities.
- The continued reliance on hard-bounded copies leads to issues such as overcrowded storage areas, deterioration of documents, and difficulty retrieving older research works.
- Students have limited opportunities to conceptualize innovative projects because access to previous studies is constrained and inadequately organized.
- There is no existing mechanism to assess the originality of newly submitted academic papers, resulting in potential duplication of topics and reduced quality of research outputs.



### **1.3 Objectives of the Study**

#### **1.3.1 General Objective**

To design and develop Publazer, a mobile-based institutional e-repository system with integrated plagiarism detector for USTP. This platform will act as a digital repository for accessing scholarly works that students and faculty can browse conveniently.

#### **1.3.2 Specific Problems**

- To identify the current challenges faced by junior and senior college students and faculty in utilizing scholarly works within the existing manual repository system at USTP.
- To gather user requirements and functional expectations from students and faculty for the development of the Publazer system.
- To collect information on the categorization of scholarly works across different colleges and departments to determine appropriate data structures for departmental subcommunities within the repository.
- To explore the level of awareness and acceptability of integrating a plagiarism or similarity detection feature within the repository to promote originality and uphold academic integrity.
- To evaluate the acceptability and usability of the proposed Publazer system among target users to ensure it enhances research accessibility at USTP.

#### 1.4 Significance of the Study

The proposed Publazer: A Mobile Based Institutional E-Repository System with Integrated Plagiarism Detection for USTP system is expected to provide significant advantages to particular key stakeholders involved in academic research and documentation within the university. These beneficiaries include:

**Students:** They are the main target users and will benefit greatly from the development of a centralized and easily accessible digital repository. Publazer offers organized departmental collections, advanced search features, and mobile accessibility that help students efficiently locate theses, capstone projects, and related references. With the system's integrated plagiarism checker, students can also assess the originality of their work before submission, preventing unintentional duplication and encouraging ethical research practices. This access empowers students to conceptualize stronger research ideas, improve the quality of their outputs, and enhance their academic productivity.

**Faculty:** Faculties will gain a more efficient and transparent system for monitoring, reviewing, and validating student research outputs. The repository enables them to quickly check for existing studies, recommend relevant references, and utilize the plagiarism checker to verify the originality of submissions. This streamlines the advising process, reduces repetitive topics among students, and upholds the academic standards of the university. With improved access to consolidated research materials, faculty members can more effectively guide students and ensure the continuity and quality of departmental research agendas.

**Departmental Libraries:** Departmental libraries will benefit greatly from an organized, digital alternative to storing hard-bounded copies, which are prone to deterioration and difficult to manage. Publazer reduces physical storage demands, minimizes document misplacement, and simplifies the archiving process. With digital uploads and metadata tagging, custodians can maintain accurate and accessible departmental collections while reducing manual record-keeping tasks. This transformation ensures long-term preservation of valuable academic outputs and improves overall operational efficiency.

**Future Researchers:** The system also benefits future students and researchers by preserving a growing collection of academic works that will serve as references for upcoming studies. Publazer ensures that research materials remain accessible, organized, and protected against physical deterioration, enabling future users to build upon previous knowledge and contribute new ideas that strengthen the institution's research culture.

### **1.5 Scope and Limitations**

The “Publazer: A Mobile-Based Institutional E-Repository System with Integrated Similarity Checker for USTP” focuses on developing a centralized digital repository system that enables junior and senior college students, faculty advisers, department record custodians, and administrators to store, access, and manage scholarly works. The scope of the project includes the design and implementation of a mobile application that supports user authentication, document upload, metadata tagging, departmental categorization, browsing and searching of academic outputs, and an internal plagiarism detection feature that compares new

submissions against existing repository entries. The system will consist of modules for user management, document management, similarity checking, departmental collections, and administrative monitoring. Publazer will be developed exclusively as a mobile platform, with its backend services hosted on an application server that securely handles metadata, file storage, and similarity reports. The initial dataset will include selected theses and capstone projects from participating USTP colleges for the current academic year, with repository access limited to registered users based on assigned roles. System development prioritizes usability, accessibility, and organized structure, with user feedback guiding interface refinement and feature integration.

Limitations of the system include dependence on stable internet connectivity for uploading, browsing, and similarity checking; reliance on internal repository documents only, as the plagiarism detector does not integrate with external databases; and the restriction of the platform to mobile devices, with no desktop or web version included in this development cycle. Additional constraints arise from dataset availability, since only selected and recently digitized academic works can be included, as well as from the limited timeframe, which prevents full migration of older physical documents. The system is also limited to junior and senior college students as its primary target users, which means lower-year students are not included in the initial deployment. The accuracy of metadata and stored records also depends on user compliance and administrative oversight, and issues related to data privacy and secure document handling must be managed within USTP's existing infrastructure. Despite these limitations, the project aims to significantly

improve the accessibility, preservation, and originality of scholarly works within the university.

## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE**

*This chapter shows how your study builds on existing knowledge.*

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#### **2.1 Related Literature**

*Summarize concepts and principles relevant to your study. (At least 5)*

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#### **2.2 Related Studies**

*Discuss local and foreign studies related to your topic. (At least 5)*

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### 2.3 Related Systems

To establish the foundation for this IT Capstone Project, a review of existing studies was conducted. Table 1 presents a comparative analysis of related works, highlighting key methodologies, system features, technological frameworks, and research gaps. This comparison provides insights into how previous studies approached similar problems and helps identify areas for improvement and innovation in the proposed system.

*Table 1 Comparison of Existing Systems*

Feature	Publazer	UPLOADER: UPOU	MSU: Thesis Repository	Electronic Repository: (Lalisan, Sobejana, 2019)	Digital Commons: ETSU	Archium Ateneo
User Authentication	✓	✓	✓	✓	✓	✓
Role-Based Access	✓					
Departmental/ College Collections	✓	✓	✓		✓	✓
Document Upload & Metadata	✓	✓			✓	✓

Advance Search & Filtering (Source Type & Publication Date)	✓					
Full Item Page	✓	✓				
Document Download	✓	✓			✓	✓
Social Media Sharing (Title, Abstract Page, & Repository Link)	✓				✓	✓
Plagiarism Detection	✓					

## 2.4 Synthesis

Conclude the chapter by summarizing what existing systems lack and how your project fills the gap. Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut.



## **CHAPTER III**

### **METHODOLOGY**

#### **3.1 Project Development Methodology**

The proponents will implement an Agile Software Development Methodology. Agile will serve as a flexible and adaptive framework that prioritizes iterative progress, continuous refinement, and active user collaboration. Instead of attempting to complete the entire system at once, the project will be divided into smaller, manageable phases that allow the proponents to gradually build, evaluate, and enhance core features.

Throughout each iteration, the proponents will gather feedback from key users such as junior and senior college students, faculty members, and library managers to ensure that components such as user authentication, document upload, metadata tagging, departmental categorization, browsing functions, and the internal plagiarism checker effectively meet their needs. Prototype versions will be tested after every cycle, allowing the team to identify issues early and make necessary improvements before progressing to the next stage and deploying it to the university.

The Agile approach will enable continuous monitoring of system design, performance, and usability. User feedback will guide the refinement of interface layouts, system workflows, and feature behavior, ensuring that the final output is intuitive and functional. By applying Agile principles, the proponents aim to develop a reliable digital repository that enhances access to academic resources, strengthens the integrity of research outputs, and supports USTP's goal of improving scholarly preservation and accessibility.



*Figure 1: Agile Development Software Method*

### 3.2 Requirement Gathering and Analysis

To understand what the system needs to achieve, the proponents gathered and reviewed both user and technical requirements. The proponents used various methods to collect data, including interviews and surveys. These methods helped ensure that the system is designed based on real situations and tackles the actual problems users face.

The proponents conducted a survey and interview with junior and senior college students, faculty members, and library managers, who represent the primary stakeholders in accessing and managing academic works at USTP. Students provided insights into their difficulties in locating research references, their need for organized browsing and advanced search functions, and their desire for a built-in similarity checker

before submitting proposals. Faculty members highlighted requirements related to document categorization, metadata accuracy, departmental organization, and originality checking to prevent duplicate research.

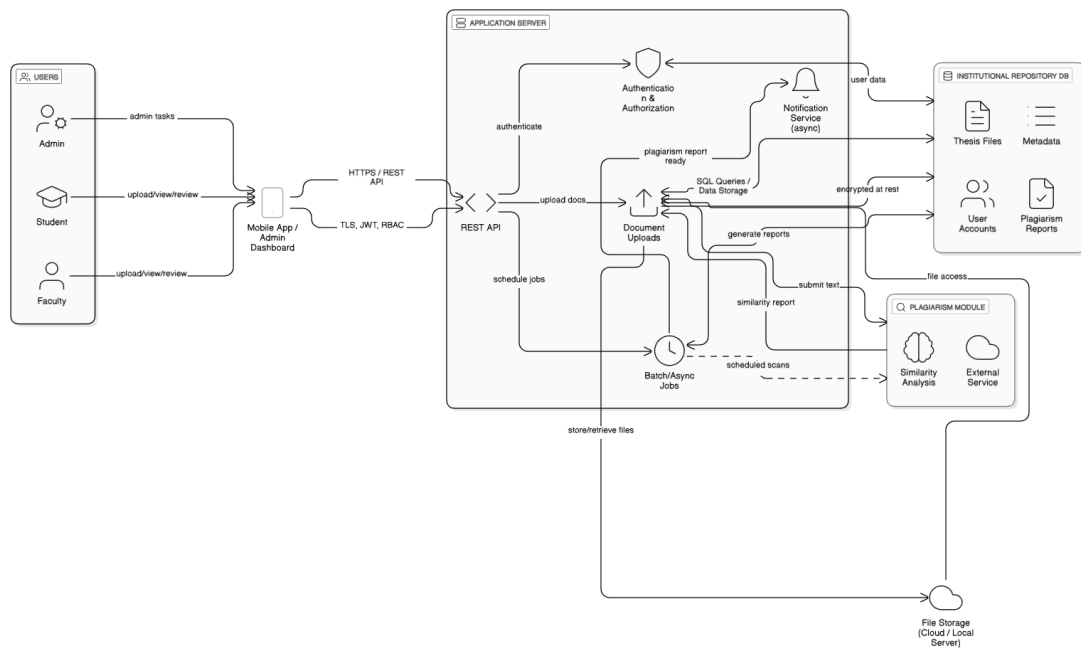
From a technical standpoint, the team looked at the system's feasibility and operational limits to find the best technology approach for Publazer. They selected a suitable technology stack for mobile development and backend processing. They defined the system's structure, designed the database for organized storage of scholarly works, and identified system security and performance needs. Key technical factors included ensuring secure user login, maintaining data integrity during document uploads and similarity checks, and supporting scalability to handle the growing number of academic outputs in the coming years. These evaluations laid the groundwork for creating a reliable and efficient mobile-based e-repository system.

The gathered information was analyzed by identifying common needs and translating them into functional and technical requirements. These include user authentication, document upload and retrieval, departmental subcommunity structuring, similarity checking, and secure storage. The results of this phase guided the system design and ensured that Publazer addresses real issues encountered in the current manual repository setup.

### **3.3 System Design**

#### **3.3.1 System Architecture**

This section presents the system architecture, which illustrates how the system's hardware and software components interact to support the academic works management and plagiarism checking process. The diagram shows how the users such as Admin, Students, and Faculty, access the system through a mobile application or admin dashboard, which communicates with the application server using secure HTTPS and REST APIs. Within the application server, various software modules such as Authentication, Document Uploads, Notification Services, Batch jobs, and the Plagiarism Module work together to process requests, analyze documents, generate reports, and store data. The architecture also highlights how the system connects to external components such as the Institutional Repository Database and cloud or local file storage. Overall, this diagram demonstrates the complete flow of data and functionality across both hardware devices and backend services.



*Figure 2 System Architecture*

### A. Users

The system supports multiple types of users with specific roles and privileges. The Admin handles user management and oversees repository activities, while the Student uploads, views, and reviews their thesis documents. The Faculty uploads, reviews, and verifies thesis submissions. The System Administrator manages technical operations and system maintenance, while the External Reviewer reviews and evaluates assigned thesis files. All users access the system through the mobile application interface.

## **B. Mobile Application / Admin Dashboard**

The Mobile Application, which includes an Admin Dashboard, serves as the main user interface of the system. Through the app, users can log in, upload documents, review files, and view plagiarism reports. The mobile app communicates with the Application Server via secure HTTPS/REST API connections. Protocols such as TLS, JWT, and RBAC are used to ensure data security, authentication, and role-based access control during all transactions.

## **C. Application Server**

The Application Server functions as the central processing unit of the system. It receives and handles all requests from the mobile app and manages communication between the front-end and the back-end components. Its main functions include:

- Authentication and Authorization – verifies user credentials and assigns role-based permissions.
- Document Uploads – receives and stores uploaded thesis files securely.
- SQL Queries and Data Storage – performs operations for data retrieval and storage in the repository database.
- Batch/Asynchronous Jobs – executes scheduled tasks such as plagiarism scanning and automatic report generation.
- Notification Service (Asynchronous) – sends alerts to users when plagiarism reports or system updates are available.

This component ensures smooth data processing and coordination between all modules of the system.

#### **D. Institutional Repository Database**

The Institutional Repository Database stores all critical information, including thesis files, metadata, user accounts, and plagiarism reports. All data is encrypted at rest to maintain security and confidentiality. The database enables efficient access and management of information through queries handled by the application server.

#### **E. Plagiarism Module**

The Plagiarism Module performs similarity analysis on uploaded thesis files. It includes a Similarity Analysis component that compares the text content and an External Service that may use third-party plagiarism detection APIs for deeper content checking. The module generates a similarity report, which is sent back to the application server for storage and reporting.

#### **F. File Storage (Cloud or Local Server)**

The File Storage component serves as the repository for all uploaded thesis files. It may operate on a cloud-based or local storage server, ensuring secure file management and easy retrieval for review, download, or plagiarism scanning. The application server communicates directly with this storage to upload and fetch files.

## G. Communication Flow

The communication process begins when users access the mobile application and perform actions such as login, upload, or file review. The Application Server processes these requests through secure REST API connections. Uploaded documents are stored in the File Storage and recorded in the Institutional Repository Database. The Plagiarism Module retrieves files for similarity analysis and sends back a plagiarism report to the server. The Application Server then updates the database and notifies the user through the mobile app.

This architecture ensures efficient, secure, and seamless interaction among users, the server, and the plagiarism detection system, providing a reliable mobile platform for managing and evaluating academic research works.

### 3.3.2 Database Design

[Include an ER Diagram and brief description of entities.](#) Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.





### *Figure 3 Publazer Database Design*

#### A. USERS

Represents all individuals who interact with Publazer, including students, faculty advisers, department custodians, and administrators. This entity stores personal information, login credentials, account roles, and department assignments that control system permissions and access.

#### B. DEPARTMENTS

Represents organizational grouping (faculty/college/department) under which works are categorized. It serves as a structural grouping for classifying documents and linking users to their respective academic units.

#### C. DOCUMENTS

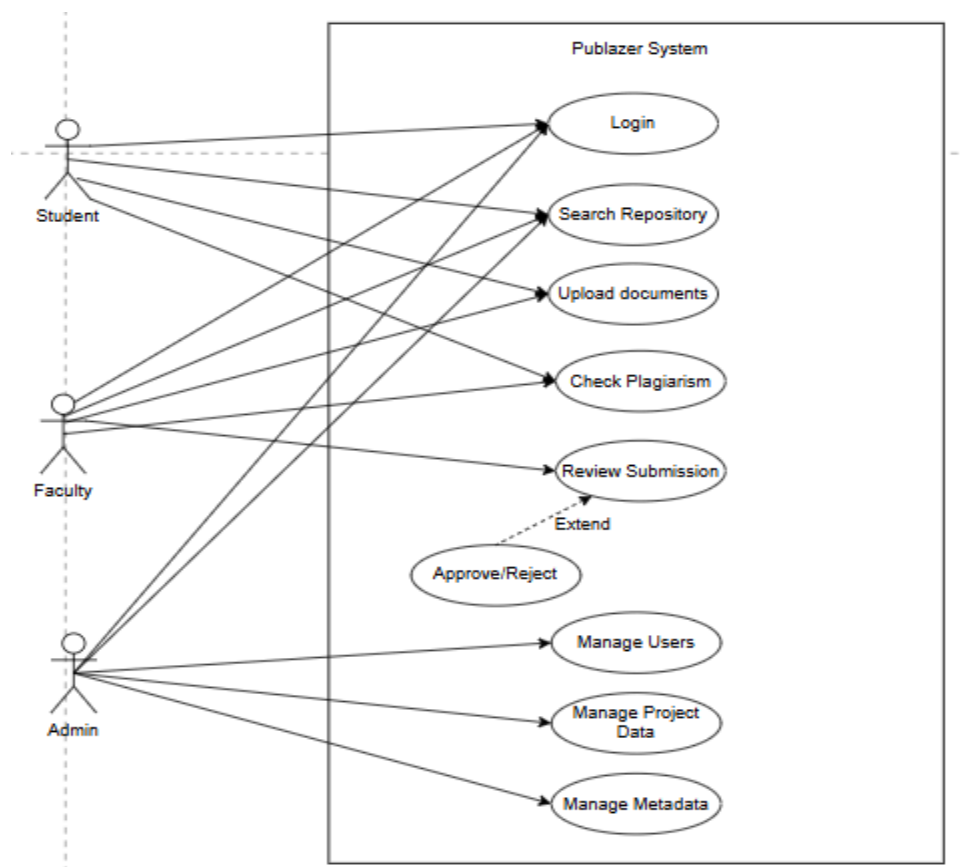
Stores metadata and upload details of scholarly outputs such as theses and capstone projects. This includes title, abstract, file location, uploader identity, department classification, school year, and approval status. It is the core of the repository.

#### D. DOCUMENTS

Stores metadata and upload details of scholarly outputs such as theses and capstone projects. This includes title, abstract, file location, uploader identity, department classification, school year, and approval status. It is the core of the repository.

### 3.3.3 Use Case Diagram

This section presents the Use Case Diagram, which outlines the interactions between users and the Publazer System. It identifies each actor and the functions they can perform, providing a clear visual representation of the system's functional requirements.



*Figure 4 Use Case Diagram*

### **1. USE CASE 1: Login**

- Actor: Student, Faculty, Admin, External Reviewer
- Preconditions: The user must already have a registered account in the system, and the system should be online and accessible.
- Flow of Events: The user must already have a registered account in the system, and the system should be online and accessible.
- Postconditions: Once the login is successful, the user gains access to the system according to their assigned role, and the login activity is recorded for audit and security purposes.

### **2. USE CASE 2: Search Repository**

- Actor: Student, Faculty
- Preconditions: The user must be logged in and the repository must contain searchable documents.
- Flow of Events: The user opens the search interface, enters keywords or applies filters, causing the system to query the database, retrieve and display matching documents with details, enable full view access, and log the activity for analytics.
- Postconditions: After the search, results are shown to the user, documents are accessible based on permissions, and the search activity is logged.

### **3. USE CASE 3: Upload Documents**

- Actor: Student
- Preconditions: The student must be logged in and have a document ready for upload with complete metadata.
- Flow of Events: The student uploads a document; the system checks the file, runs a plagiarism scan, saves it, and notifies the faculty for review.
- Postconditions: The document is stored in the repository with a plagiarism report, and its status is "Pending Review."

### **4. USE CASE 4: Check Plagiarism**

- Actor: Student, Faculty

- Preconditions: The system has uploaded documents, an active plagiarism module, and available comparison files in the repository.
- Flow of Events: After upload or manual request, the system runs a plagiarism check, compares the document with the repository, analyzes similarities, generates a report, saves it, and notifies the uploader and faculty.
- Postconditions: The system saves the plagiarism report, records the similarity score, notifies stakeholders, and updates the document status.

## **5. USE CASE 5: Review Submissions**

- Actor: Faculty, External Reviewer
- Preconditions: The user with reviewer privileges is logged in and documents are waiting for review.
- Flow of Events: The reviewer opens the dashboard, reviews assigned documents, evaluates and comments on a submission, marks it as approved or for revision, and the system updates the status and notifies the student.
- Postconditions: The system updates the review status, saves feedback for the student, sends a notification, and makes approved documents public.

## **6. USE CASE 6: Approve/Reject**

- Actor: Faculty
- Preconditions: The faculty member is logged in and has pending document submissions to review.
- Flow of Events: The faculty reviews a submission, checks its details and plagiarism results, then approves or rejects it with feedback.
- Postconditions: The system updates the document status as approved or rejected, and the student is notified.

## **7. USE CASE 7: Manage Users**

- Actor: Admin
- Preconditions: The admin is logged in with full privileges and can access the user management module.

- Flow of Events: The admin manages users by adding, editing, deleting, or changing roles; the system validates and updates the database, then notifies affected users.
- Postconditions: The system updates user accounts and permissions, applies changes instantly, and records the activity in the audit log.

## **8. USE CASE 8: Manage Project Data**

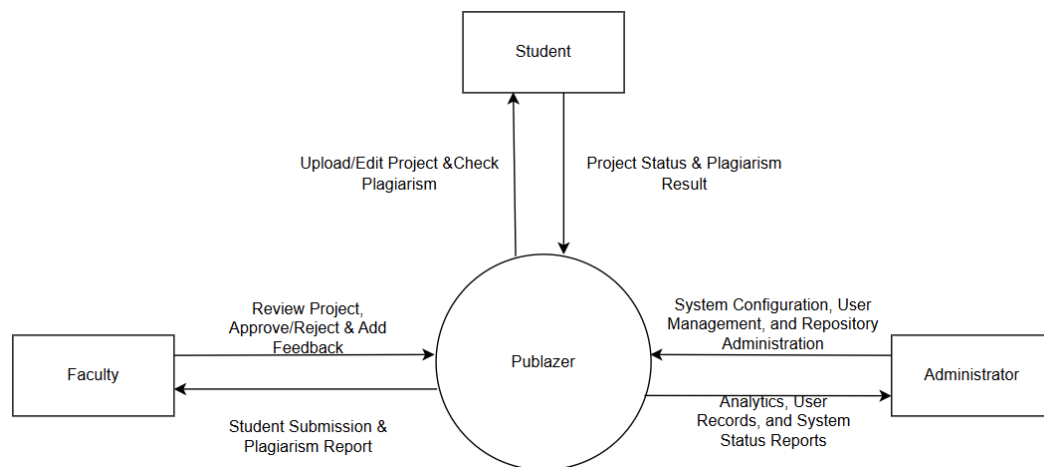
- Actor: Admin
- Preconditions: The admin must be logged in with the necessary access rights to manage repository data, and the repository should contain stored projects or research documents.
- Flow of Events: The admin manages project details, the system validates changes, updates the database, and reflects them in the repository.
- Postconditions: The project or research data are successfully updated, added, or removed in the system, and all actions are logged for tracking and accountability.

## **9. USE CASE 9: Manage Metadata**

- Actor: Admin
- Preconditions: Admin is logged in and has access to document metadata management tools.
- Flow of Events: The admin manages document metadata by adding, editing, or deleting fields, and the system saves the updates.
- Postconditions: The metadata is successfully updated in the system.

### 3.3.4 Context Diagram

This diagram illustrates the system boundaries of Publazer and the flow of information between the system and its external entities. It highlights how students, faculty, and administrators interact with the system through the exchange of project files, reviews, configurations, and system outputs.



*Figure 5 Context Diagram*

The context diagram provides an overview of how Publazer operates as a centralized platform for project submission, review, and academic repository management. Students interact with the system by uploading project files, requesting plagiarism checks, and receiving status updates along with similarity results. Faculty members review

submissions, provide approval or feedback, and retrieve plagiarism reports to ensure academic integrity. Meanwhile, administrators manage system configurations, user accounts, and repository maintenance while receiving analytics and system reports generated by Publazer. This diagram establishes the overall boundaries of the system by emphasizing the external entities that communicate with the platform and the primary data exchanges involved in its operations.

### 3.3.5 Data Flow Diagram

#### 3.3.5.1 Level 1 Data Flow Diagram

This diagram expands the internal processes of Publazer, illustrating how the system handles project submission, plagiarism checking, review workflows, user management, and administrative operations. It defines the major subsystems and shows how data flows between processes, data stores, and external users within the system's boundaries.

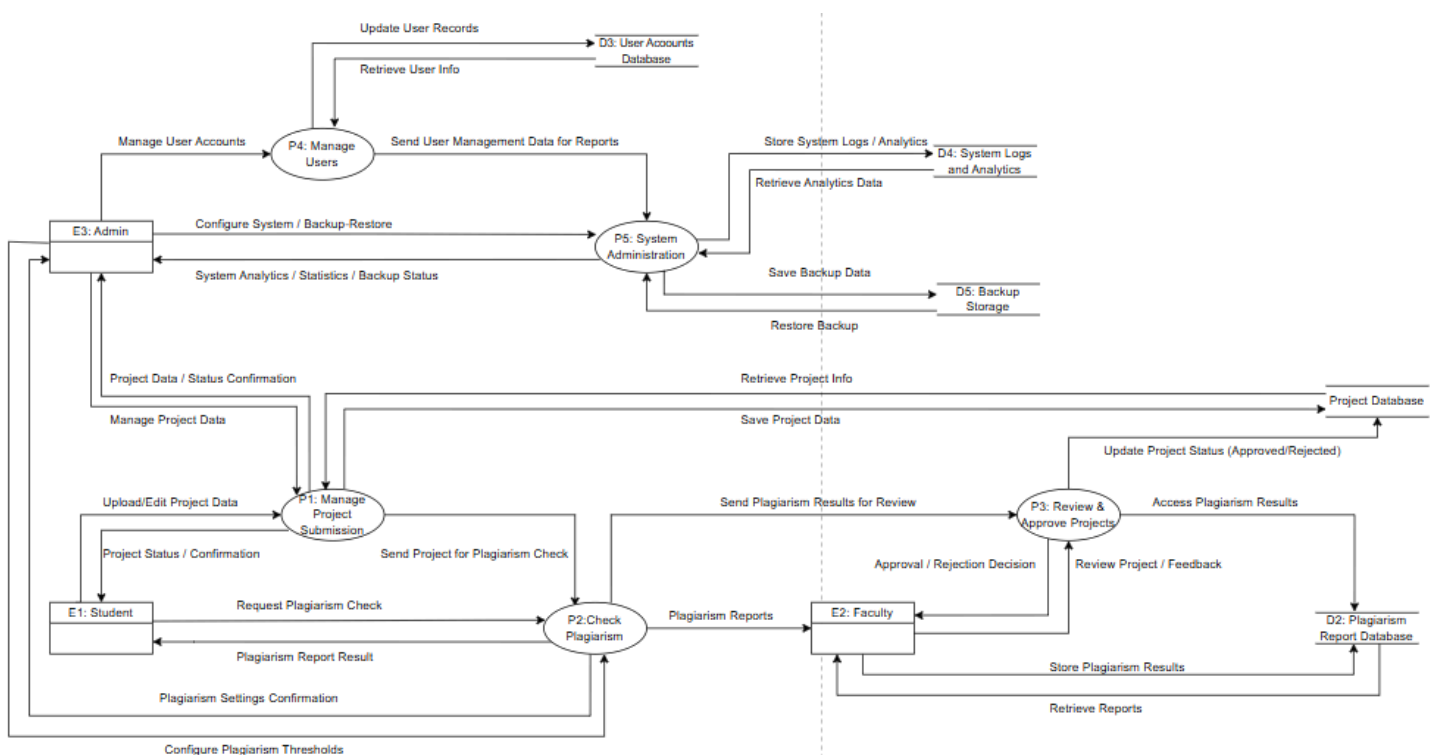


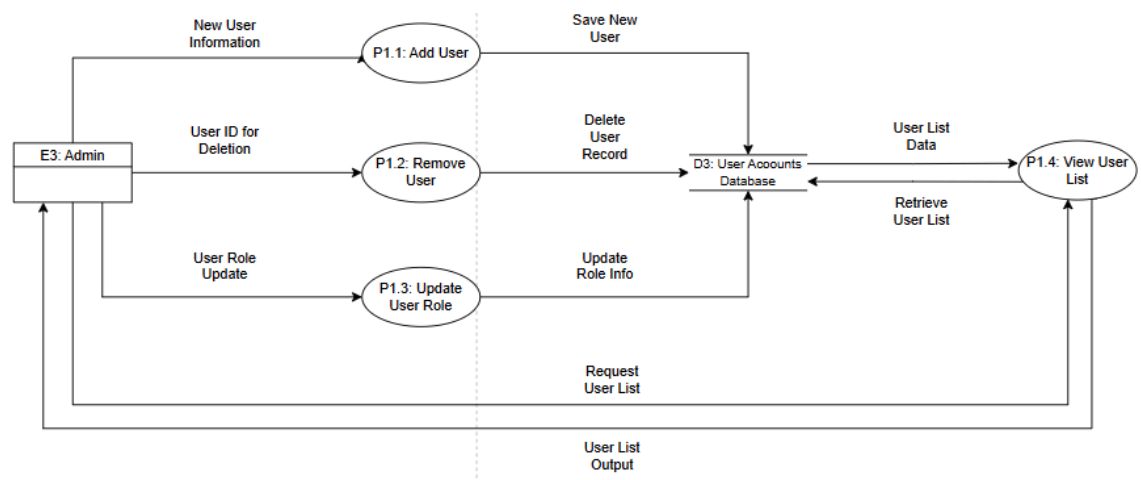
Figure 6 Level 1 Data Flow Diagram

The Level 1 DFD provides a detailed breakdown of Publazer's core functions. It shows how students submit their projects, request plagiarism checks, and receive status updates. Faculty members interact with the system by reviewing submissions, providing feedback, and issuing approval or rejection decisions. The diagram also highlights administrative functions such as user management, system configuration, analytics monitoring, and backup operations. Each process interacts with its designated data stores including project records, user accounts, plagiarism reports, system logs, and backup storage to ensure data integrity and proper workflow execution. Through these interconnected flows, the diagram demonstrates how Publazer manages academic submissions efficiently and ensures secure, organized processing across all user roles.



### 3.3.5.2 Level 2 Data Flow Diagram

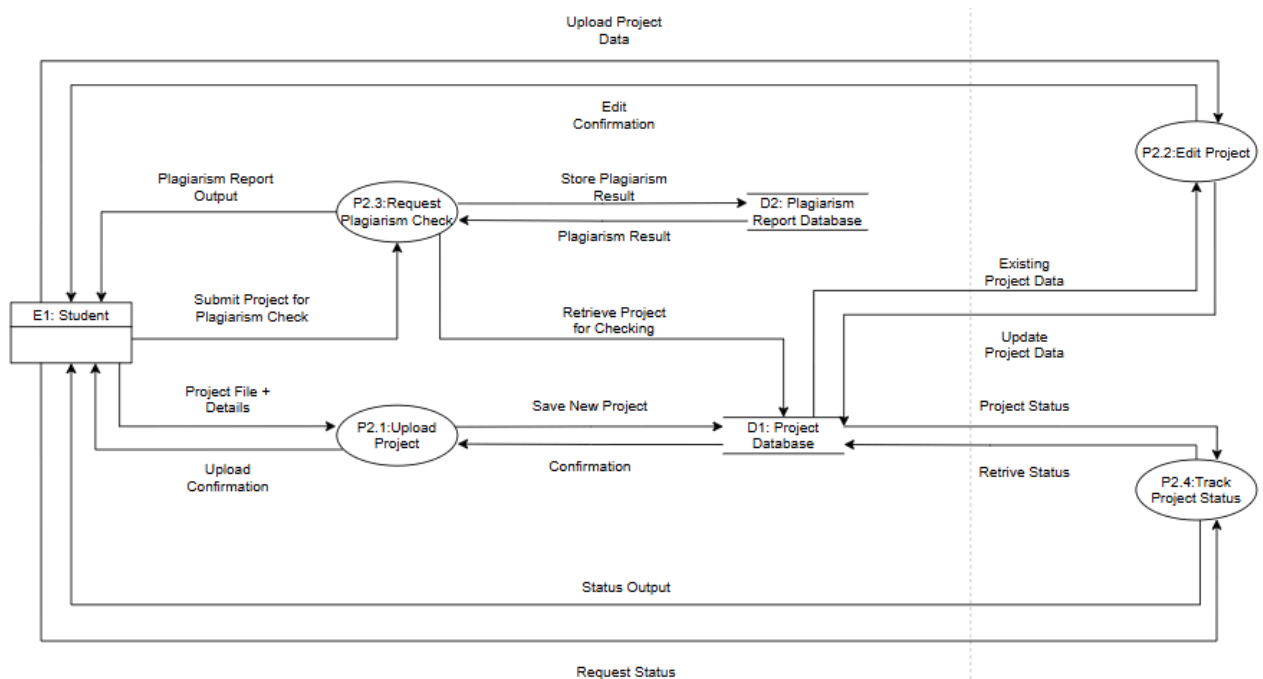
This section details the Level 2 Data Flow Diagram for **Process 1: Manage Users**, illustrating the internal subprocesses involved in creating, modifying, viewing, and deleting user accounts, as well as the data interactions between the administrator and the system's user database.



*Figure 7 Level 2 Data Flow Diagram of Process 1.0*

This Level 2 diagram expands the Manage Users process into four subprocesses: adding new users, removing existing accounts, updating user roles, and retrieving the user list for administrative review. The administrator interacts directly with each subprocess, while all user-related information is stored and retrieved from the User Accounts Database. This refined breakdown shows how Publazer maintains accurate user records and ensures proper role-based access across the system.

This Level 2 diagram elaborates the internal workflow of **Process P2: Manage Projects**, showing how students upload, modify, request plagiarism checking, and track the status of their project submissions. It illustrates the sub-processes involved and how project-related data moves between the student, the system, and the associated data stores.

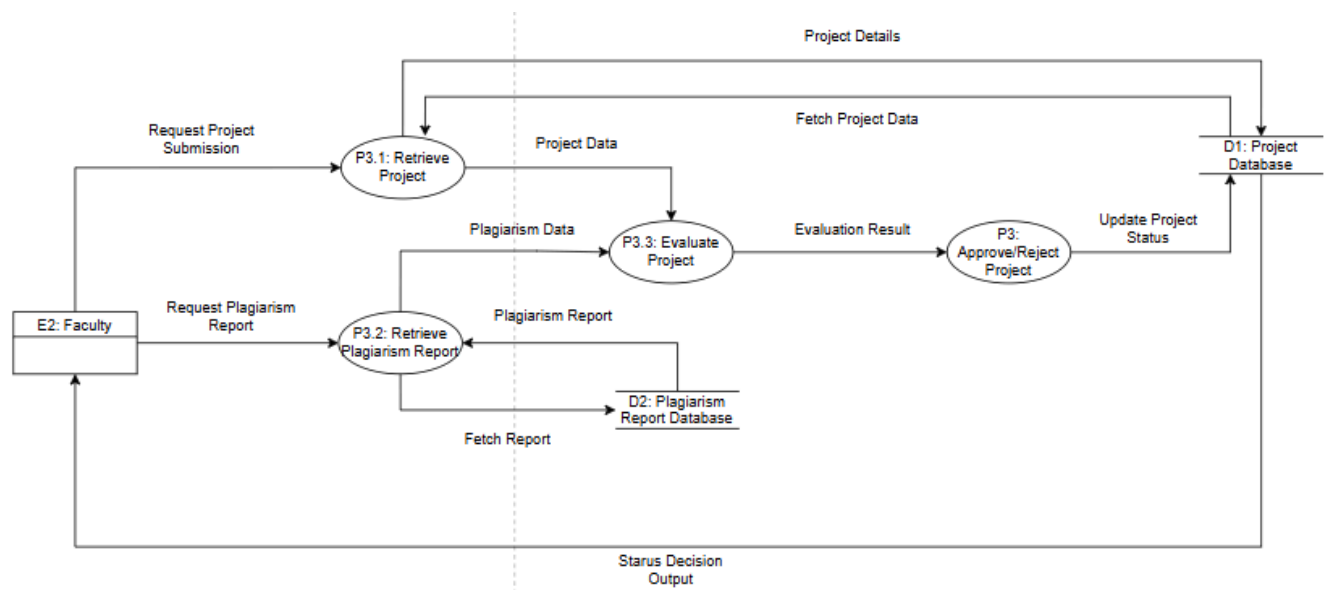


*Figure 8 Level 2 Data Flow Diagram of Process 2.0*

This diagram breaks down the project management process into four sub-processes that handle all student interactions with their project files. It shows how uploaded or updated project data is stored in the Project Database, how plagiarism requests are processed and recorded in the Plagiarism Reports Database, and how the system retrieves information to provide feedback and

status updates to the student. With these sub-processes working together, the system ensures that projects are consistently validated, stored, checked, and tracked throughout their full submission lifecycle.

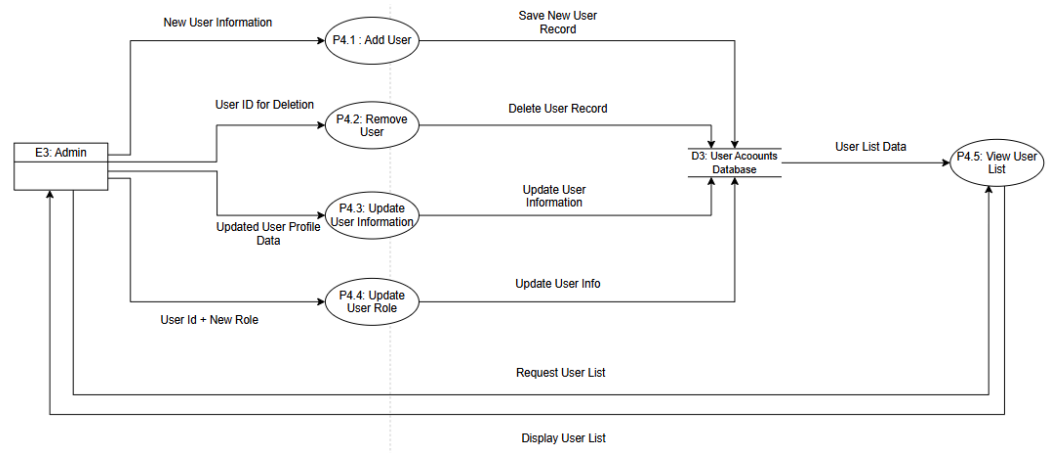
This Level 2 Data Flow Diagram further breaks down **Process 3: Review & Evaluate Projects**, presenting the detailed workflow followed by faculty members when assessing student submissions within the Publazer System. It illustrates how project files and plagiarism reports are retrieved, how evaluations are performed, and how decisions are finalized and recorded. The diagram clarifies the interactions between subprocesses and data stores to ensure a transparent and systematic review process.



*Figure 9 Level 2 Data Flow Diagram of Process 3.0*

This diagram explains how the system supports faculty during the project review cycle. The process begins with retrieving the submitted project and its corresponding plagiarism report to provide complete evaluation data. Once both sources of information are gathered, the faculty conducts an assessment that includes feedback, comments, and recommendations. The evaluation is then passed to the approval stage, where the faculty finalizes the decision to accept or reject the submission. After the decision is made, the system updates the project's status in the database and provides the faculty with a confirmation output. Overall, this Level 2 breakdown ensures that the review workflow remains structured, accurate, and fully traceable.

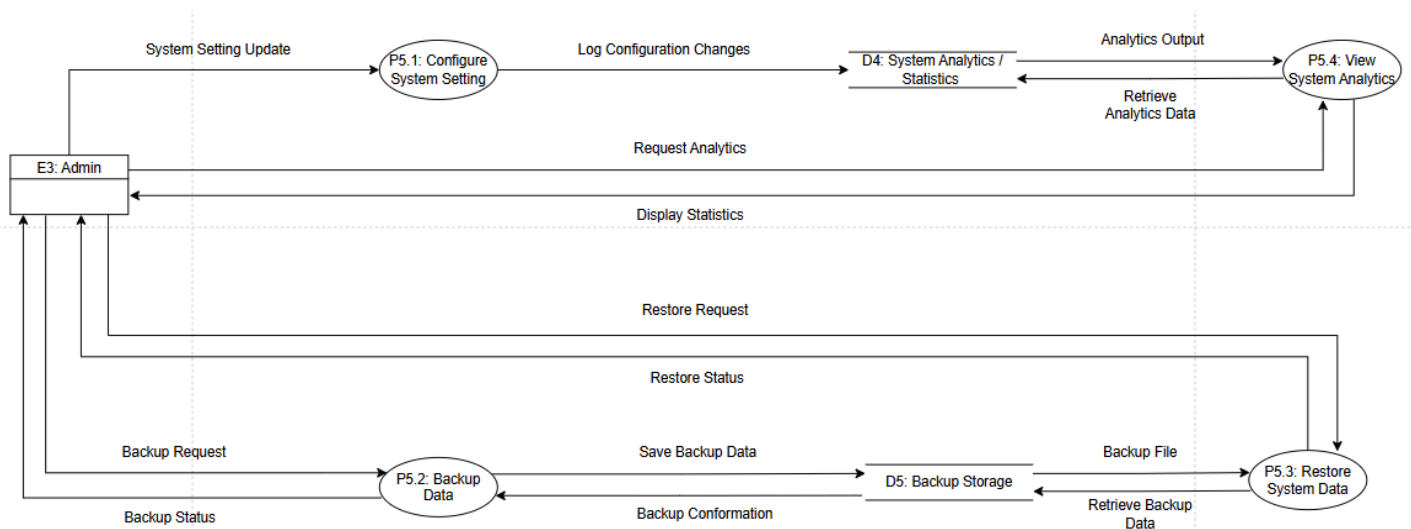
This Level 2 Data Flow Diagram expands **Process 4: Manage Users**, providing a detailed view of how administrators handle all account-related activities within the Publazer System. It shows how user information is created, modified, updated, or retrieved, as well as how each subprocess interacts with the User Accounts Database. The diagram presents the complete workflow that supports secure user onboarding, maintenance, and access control inside the system.



*Figure 10 Level 2 Data Flow Diagram of Process 4.0*

This diagram illustrates the step-by-step management of user accounts. The process begins when the Admin inputs new user details to add an account or provides a User ID when removing or updating an existing user. Each subprocess receives the appropriate input from the Admin and performs actions such as saving new records, deleting accounts, modifying user information, or revising assigned roles. When the Admin requests the full user list, the system retrieves and compiles all stored records from the database to present an updated overview of users. Overall, this Level 2 breakdown ensures that every user-management action is properly validated, stored, and reflected in the system. It maintains a structured, accurate, and traceable workflow that preserves the integrity of user accounts and reinforces secure role-based access throughout Publazer.

This Level 2 Data Flow Diagram further expands **Process 5: System Administration**, presenting a detailed breakdown of the administrative tasks required to maintain, configure, and monitor the Publazer System. It illustrates how the Admin manages system settings, performs backup and restoration procedures, and retrieves system analytics. The diagram shows how each subprocess interacts with the system's data stores—specifically the System Logs & Analytics database and the Backup Storage—to ensure stable, secure, and reliable operation of the platform.



*Figure 11 Level 2 Data Flow Diagram of Process 5.0*

This diagram explains how the system supports administrators in performing essential maintenance functions. The workflow begins when the Admin requests to update configuration

settings, initiate data backup, restore previous system files, or view system analytics. Each subprocess processes the request and communicates with the necessary data store. Configuration updates are logged for security and auditing, backup requests save system data into backup storage, and restore operations retrieve saved backup files for system recovery. When analytics are requested, the system gathers stored logs and performance data to generate reports and statistics for the Admin. Overall, this Level 2 breakdown ensures that system administration tasks are carried out in a structured, secure, and trackable manner. It highlights how Publazer maintains operational integrity through proper configuration logging, reliable backup mechanisms, controlled restoration processes, and accessible analytical insights that support informed decision-making and system monitoring.

### 3.4 System Development

#### 3.4.1 Hardware Requirements

Table 2 outlines the hardware requirements necessary to build and operate the system. These components will ensure that the system runs smoothly during coding, debugging, and emulator testing.

*Table 2 Hardware Requirements for Publazer: E-Repository System*

Component	Specification
Operating System	Windows 10
Processor	Quad-core processor
Memory	8 GB RAM
Storage	Minimum 500GB Drive

Back-up storage	1TB external/secondary drive
Network	Minimum 25mbps of Internet Connection

### 3.4.2 Software Requirements

Table 3 illustrates the software requirements necessary to build and operate the system.

*Table 3 Software Requirements*

Tool	Purpose
Flutter	
Android Studio	

### 3.5 Testing

To ensure that Publazer works well and is user-friendly, the team will carry out a series of testing procedures to check if the system meets the needs of its users. Testing will include interactive sessions where selected students, faculty members, and library managers will perform real tasks within the system, like browsing documents, uploading projects, and taking part in plagiarism tests. This will help the team see if the system runs smoothly, supports academic tasks, and provides a user-friendly experience.

The usability testing phase will use the System Usability Scale (SUS) to measure the user experience and interface quality of the Publazer mobile app. The SUS will assess how easy it is to navigate, how clear the



design is, task completion speed, and overall user satisfaction. Participants, including junior and senior college students, faculty advisers, and library managers will interact with the system to perform various actions, like searching for projects, uploading documents, and conducting plagiarism checks.

During the testing, participants will fill out SUS questionnaires after using the system. The results will provide measurable usability scores that highlight the system's strengths and pinpoint areas needing improvement. By focusing on user feedback, this testing phase aims to fine-tune the interface layout, improve overall usability, and make sure the system is accessible and effective for all USTP stakeholders.