SULTAN KUDARAT STATE UNIVERSITY
College of Computer Studies
Bachelor of Science in Information Technology
IT221 – Advanced Database Systems

EduCred: A DIGITAL STUDENT CREDENTIAL REQUEST AND PROCESSING MANAGEMENT SYSTEM FOR ENHANCED STUDENT SERVICES

JAY MARK F. ARENDAIN
NASAAN C. LIWANAG
AKO E. IKAW

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BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

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INTRODUCTION

Background of the Project

The processing of student credentials, such as transcripts, certificates, and other official documents, is a critical function in academic institutions. However, many schools, including Isulan National High School, still rely on manual processes, leading to delays, inefficiencies, and inconvenience for both students and administrative staff. The increasing demand for faster, more secure, and transparent credential requests has highlighted the need for a digital system that automates and improve the processes.

Isulan National High School has long followed a traditional, paper-based credential request process. Students typically submit manual request forms, which are then processed by school staff. The entire procedure from submission to approval and document release can take days or even weeks, depending on staff workload and the volume of requests.

Over the years, the school has attempted minor digitization efforts, such as maintaining Excel-based student records and using messaging apps for follow-ups. However, these approaches lack integration, security, and real-time tracking capabilities. As the student population grows, so does the demand for a more systematic and efficient credential processing system.

Recognizing these challenges, the school administration has expressed interest in exploring digital solutions that can modernize credential request processing while maintaining data security and accessibility.

Statement of the Problem

The existing credential request process at Isulan National High School is burdened by several inefficiencies that affect both students and administrative staff. The reliance on a manual, paper-based system results in slow processing times, requiring multiple steps before a request is approved and the document is released. Without a proper tracking mechanism, students are left uncertain about the status of their requests, often leading to frequent follow-ups and miscommunication. Additionally, the use of paper records and Excel-based tracking makes the process prone to errors, data loss, and tampering, raising concerns about record integrity and security. The system also creates significant inconvenience as students must physically visit the school to file requests and collect documents, while staff members must manually verify, process, and approve each application, increasing their workload.

To address the challenges of manual credential processing at Isulan National High School, we propose EduCred: A Digital Student Credential Request and Processing Management System. This web-based platform will allow students to request transcripts, diplomas, and certificates online, eliminating paperwork and in-person visits. Real-time tracking and notifications via email and SMS will enhance transparency, while role-based access control and digital authentication (QR codes/signatures) will ensure security. A centralized dashboard will improve staff workflow, reducing paperwork and improving efficiency. Additionally, reporting and analytics will provide insights to optimize administrative processes. EduCred modernizes credential requests, enhancing accessibility, security, and service quality.

General Objective of the Project

The primary objective of EduCred: A Digital Student Credential Request and Processing Management System is to design, develop, and implement an efficient, secure, and automated platform that will improve the credential request process at Isulan National High School. This system aims to eliminate manual inefficiencies by enabling online requests, real-time tracking, secure authentication, and optimized administrative workflows, ultimately improving service accessibility, security, and overall user experience for both students and school staff.

Specific Objectives of the Project

Specifically, this project aims to:

1. Manage administrative staff accounts, student's information, and credential requests.
2. Enables students to request credentials and generate requests slip with QR code online.
3. Provide students with automated status updates via email.
4. Scan and verify request slip with QR code.
5. Provide a data dashboard to monitor, process, and approve credential requests.
6. Generate reports such as list of academic tracks, list of credentials, list of credential requests, and request slip with QR code.

Significance of the Project

The project entitled EduCred: A Digital Student Credential Request and Processing Management System holds significant value for various stakeholders at Isulan National High School, particularly the school administration, office of the registrar, and students.

To the School Administration: The system modernizes credential request processing by improving operational efficiency, reducing paperwork, and ensuring secure data management. It also provides real-time reports and analytics, enabling administrators to monitor request volumes and processing times, ultimately enhancing decision-making and service delivery.

To the Office of the Registrar: The project will help improve the credential processing workflow by automating request submissions, approvals, and tracking, significantly reducing manual workload. The system's role-based access control and digital authentication features enhance security and data integrity, ensuring that only authorized personnel handle student credentials. By minimizing errors and delays, the registrar's office can provide faster and more reliable services.

To the Students: The system offers a convenient, accessible, and transparent way to request and receive credentials. The system eliminates the need for in-person visits, allowing students to submit requests online and track their status in real time through email notifications. This reduces waiting times and enhances the overall student experience, ensuring a seamless and efficient credential request process.

Scope of the Project

The EduCred: A Digital Student Credential Request and Processing Management System is designed to enhance the credential request process at Isulan National High School, benefiting the school administration, office of the registrar, and students. The system's scope includes an online platform where students can request transcripts, diplomas, and other credentials without the need for in-person visits. It features real-time request tracking, automated notifications via email, and a centralized dashboard for the registrar's office to manage and approve requests efficiently. To ensure security, the system incorporates role-based access control and digital authentication using QR codes. Additionally, it provides reporting and analytics tools to help administrators monitor request volumes and improve service efficiency.

Limitations of the Project

The system specifically designed for handling credential requests and does not cover other administrative tasks such as student enrollment, grading, or faculty management. While the system automates the request and approval process, physical document printing and release may still require in-person interaction. The effectiveness of EduCred also depends on internet connectivity and user adoption, meaning students and staff must have access to digital devices to utilize the system. Furthermore, initial data entry and migration from existing manual records may require time and effort from the registrar's office. Despite these limitations, EduCred provides a modern, efficient, and secure solution to significantly enhance the credential request and processing experience for students and administrative staff.

DOCUMENTATION OF THE EXISTENCE AND SERIOUSNESS OF THE PROBLEM

Documentation of the Current System

At Isulan National High School, student credential requests, such as transcripts, diplomas, and certificates, are currently processed manually. Students must visit the registrar's office, fill out paper-based request forms, and wait for approval before returning to collect their documents. This system is time-consuming, inefficient, and prone to errors, leading to delays and inconvenience for both students and administrative staff. The traditional method was used by the business, as shown in Figure 1.

Figure 1. Screenshots of the Current System

Problems Identified in the Current System

Based on the interview and observation with the school administrators, registrar, and students, the identified problems in the current system are the following:

Cumbersome and Time-Consuming Process: Students must visit the registrar's office multiple times first to submit requests and later to check on their status or claim their documents. This results in long queues, wasted time, and inefficient service delivery.

Lack of Transparency and Tracking: There is no automated way for students to track the progress of their requests. Many are left uncertain about the status of their documents, often requiring follow-up visits or phone calls, which further burdens the registrar's office.

Manual Record-Keeping and Data Management Challenges: The use of paper-based forms and spreadsheets makes it difficult to organize, retrieve, and update student records efficiently. This manual approach increases the likelihood of misplaced requests, lost documents, or data inconsistencies.

Prone to Human Errors and Delays: Processing requests manually increases the chance of clerical errors, such as misspelled names, incorrect information, or misplaced requests. Additionally, approval bottlenecks can prolong waiting times, especially during peak periods such as graduation season.

Limited Security and Authentication Measures: Without digital verification methods, fraudulent document requests or unauthorized access to sensitive student information pose a security risk. The reliance on paper documents also makes it difficult to verify authenticity without additional measures.

Seriousness of the Problem

The inefficiencies of the current system significantly impact students, staff, and the overall administrative process at Isulan National High School. The delays and errors in processing credentials affect students' ability to meet deadlines for college applications, job opportunities, and scholarship requirements. For the registrar's office, the high volume of manual requests creates administrative strain, reducing productivity and service quality.

Need for a Digital Solution

To address these challenges, a digital transformation is essential. Implementing EduCred: A Digital Student Credential Request and Processing Management System will automate the credential request process, reducing processing times, enhancing security, and improving transparency for both students and school administrators.

TECHNICAL REQUIREMENTS

The following materials will be used in the development of the proposed system entitled “EduCred: A Digital Student Credential Request and Processing Management System for Enhanced Student Services”.

Table 1. *Hardware Requirements*

ITEM	*SPECIFICATION*
Processor	Intel Core i5 Processor
Memory	8GB DDR4
Hard Disk	256 SSD
Power Supply	ATX Casing w/ Power Supply 700W
Monitor	15.6 LED Monitor
Printer	L-Series Printer
QR Code Scanner	Handheld USB QR Barcode Scanner

Table 1 shows the hardware requirements needed for the system; this includes the minimum hardware parts of computer to support the development process of the system.

Table 2. *Software Requirements*

ITEM	*SPECIFICATION*
Programming Language (front-end)	PHP7 Programming (PHP Hypertext Preprocessor)
Web Scripting Languages	HTML, CSS, JavaScript (Bootstrap)
Cross-platform web server	XAMPP Control Panel v.3.2.4
Web Designing Tools	Adobe Photoshop 2020 Sublime Text 3
Project Management Tool	MS Project 2013
Diagramming and vector graphics	MS Visio 2013
Database Application (back-end)	MySQL5.7
Operating System	Windows 10 x64

Table 2 shows the software requirements needed to develop the system. This includes the minimum operating system, front end and backend software as well as the domain name needed to deploy the system online.

METHODS TO BE USED IN DEVELOPING THE SYSTEM

Figure 2. Agile Software Development Methodology

Agile Software Development Methodology was designed to ensure that system requirements are met efficiently in existing computerized systems. It provides a structured approach to requirement gathering, planning, development, implementation, and testing, ensuring a logical and systematic process. This methodology emphasizes flexibility, continuous feedback, and iterative development, allowing for adaptability to changes while maintaining technical accuracy and user satisfaction.

PROJECT SCHEDULES OF THE PROJECT (GANTT CHART)

SPRINT 1 *(Objectives 1 & 2)*

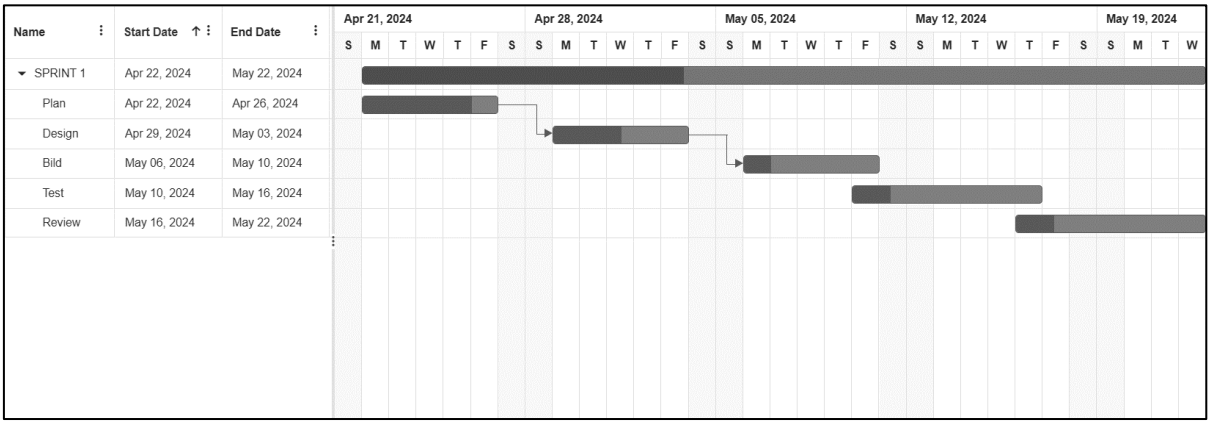


Figure 3. SPRINT 1 Project Schedules

Figure 3 shows the timeline, tasks and duration of the project and the expected completion date of SPRINT 1.

SPRINT 2 *(Objectives 3 & 4)*

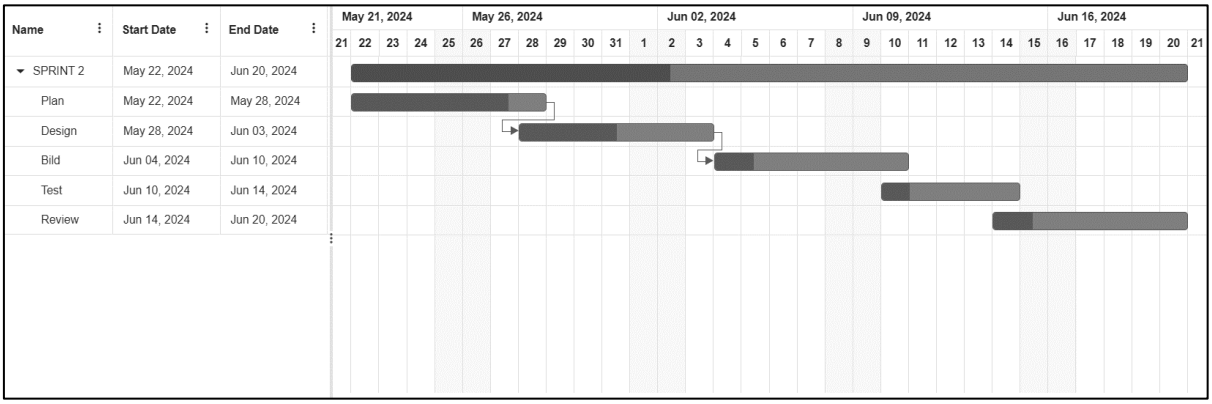


Figure 4. SPRINT 1 Project Schedules

Figure 4 shows the timeline, tasks and duration of the project and the expected completion date of SPRINT 2.

SPRINT 3 *(Objective 5)*

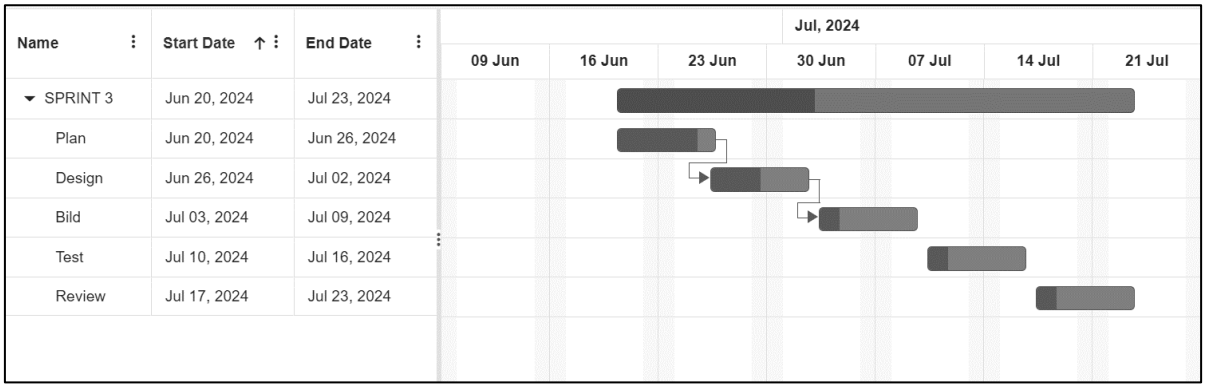


Figure 5. SPRINT 3 Project Schedules

Figure 5 shows the timeline, tasks and duration of the project and the expected completion date of the SPRINT 3.

SPRINT 4 *(Objective 6)*

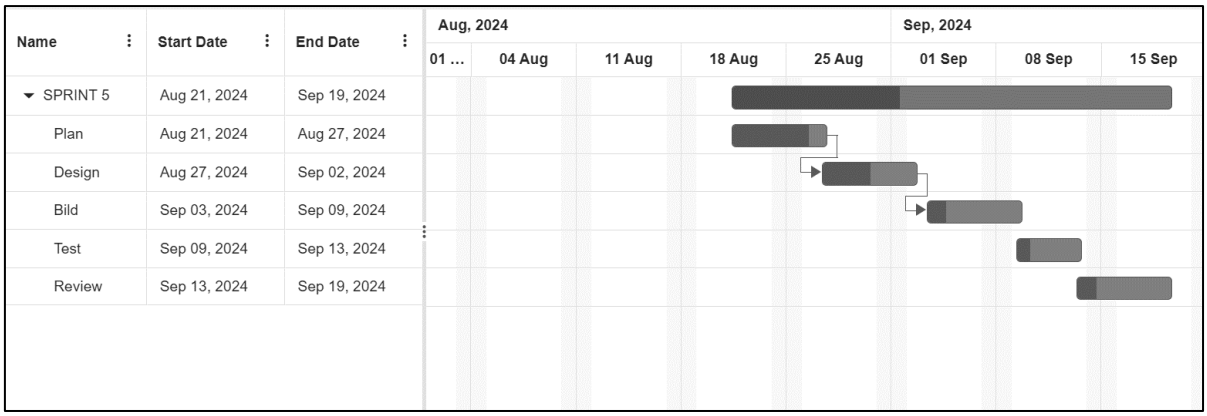


Figure 6. SPRINT 5 Project Schedules

Figure 6 shows the timeline, tasks and duration of the project and the expected completion date of the SPRINT 4.

DATABASE IMPLEMENTATION

Table 3. Entities and Attributes

Entity Name	Primary Key	Attributes
Admin	admin_id	name, username, role, password
Student	student_id	name, email, contact_no, password
Credential	credential_id	credential_type, description
CredentialRequest	request_id	student_id (FK), reqrcode, credential_id (FK), request_date, status
Registrar	registrar_id	name, email, role, password
Notification	notification_id	request_id (FK), student_id (FK), message, sent_at
Admin	admin_id	name, email, role, password

Table 4. Cardinality and Relationships

Entities Involved	Cardinality	Relationship
Student → CredentialRequest	1:M	One student can make multiple credential requests.
CredentialRequest → Credential	M:1	Each request contains specific credential type (e.g., transcript, diploma).
CredentialRequest → Registrar	M:1	Many requests are processed by a single registrar.
Student → Notification	1:M	A student can receive multiple notifications.
CredentialRequest → Notification	1:M	Each credential request generates multiple notifications (e.g., "Approved," "Ready for Pickup").
Admin → Registrar	1:M	One admin can manage multiple registrar staff.

Entity-Relationship Diagram

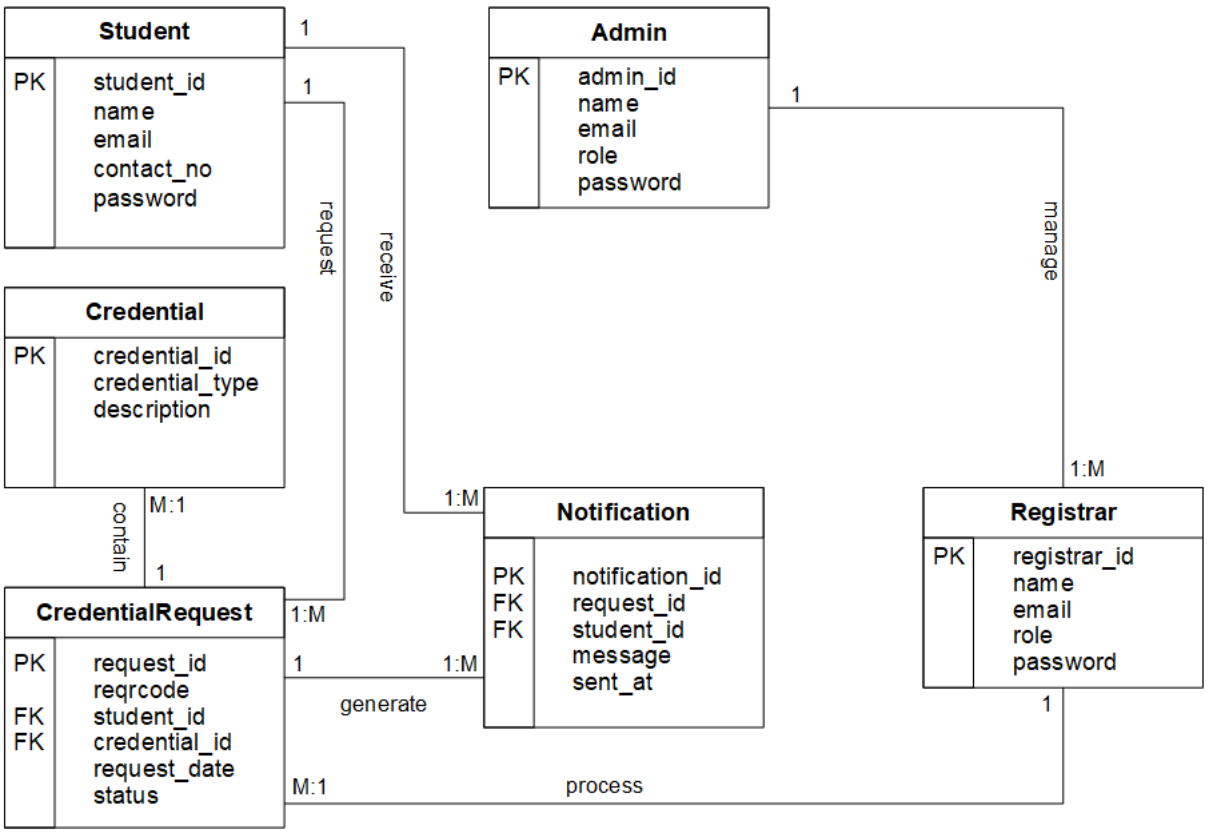


Figure 7. Entity-Relationship Diagram

Figure 7 shows the Entity-Relationship Diagram (ERD) for EduCred visually represents the database structure, showing how entities are related and the cardinality between them.

Database Tables and Structure

Table 5. Student Table

Stores information about students who request credentials.

Column Name	Data Type	Constraints
student_id	INT	PRIMARY KEY, AUTO_INCREMENT
name	Varchar (100)	NOT NULL
email	Varchar (100)	UNIQUE, NOT NULL
contact_no	Varchar (15)	UNIQUE, NOT NULL
password	Varchar (255)	NOT NULL

Table 6. Credential Table

Stores different types of credentials that can be requested.

Column Name	Data Type	Constraints
credential_id	INT	PRIMARY KEY, AUTO_INCREMENT
credential_type	Varchar (50)	NOT NULL
description	TEXT	

Table 7. CredentialRequest Table

Manages student requests for credentials.

Column Name	Data Type	Constraints
request_id	INT	PRIMARY KEY, AUTO_INCREMENT
reqrcode	Varchar (50)	NOT NULL
student_id	INT	FOREIGN KEY REFERENCES Student(student_id) ON DELETE CASCADE
credential_id	INT	FOREIGN KEY REFERENCES Credential(credential_id) ON DELETE CASCADE
request_date	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP
status	Varchar (50)	DEFAULT 'Pending'

Table 8. Registrar Table

Stores information about registrar staff who process credential requests.

Column Name	Data Type	Constraints
registrar_id	INT	PRIMARY KEY, AUTO_INCREMENT
name	Varchar (100)	NOT NULL
email	Varchar (100)	UNIQUE, NOT NULL
role	Varchar (100)	NOT NULL
password	Varchar (255)	NOT NULL

Table 9. Notification Table

Stores notifications sent to students about request status updates.

Column Name	Data Type	Constraints
notification_id	INT	PRIMARY KEY, AUTO_INCREMENT
request_id	INT	FOREIGN KEY REFERENCES CredentialRequest(request_id) ON DELETE CASCADE
student_id	INT	FOREIGN KEY REFERENCES Student(student_id) ON DELETE CASCADE
message	TEXT	NOT NULL
sent_at	TIMESTAMP	DEFAULT CURRENT_TIMESTAMP

Table 10. Admin Table

Stores administrator accounts who manage the system.

Column Name	Data Type	Constraints
admin_id	INT	PRIMARY KEY, AUTO_INCREMENT
name	Varchar (100)	NOT NULL
email	Varchar (100)	UNIQUE, NOT NULL
role	Varchar (100)	NOT NULL
password	Varchar (255)	NOT NULL

Database Schema

```
-- Create Student Table
CREATE TABLE Student (
    student_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
    email VARCHAR(100) UNIQUE NOT NULL,
    contact_no VARCHAR(15) UNIQUE NOT NULL,
    password VARCHAR(255) NOT NULL
);

-- Create Credential Table
CREATE TABLE Credential (
    credential_id INT PRIMARY KEY AUTO_INCREMENT,
    credential_type VARCHAR(50) NOT NULL,
    description TEXT
);

-- Create CredentialRequest Table
CREATE TABLE CredentialRequest (
    request_id INT PRIMARY KEY AUTO_INCREMENT,
    student_id INT NOT NULL,
    credential_id INT NOT NULL,
    request_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    status ENUM('Pending', 'Processing', 'Approved', 'Rejected', 'Ready for
Pickup') DEFAULT 'Pending',
    FOREIGN KEY (student_id) REFERENCES Student(student_id) ON DELETE
CASCADE,
    FOREIGN KEY (credential_id) REFERENCES Credential(credential_id) ON
DELETE CASCADE
);

-- Create Registrar Table
CREATE TABLE Registrar (
    registrar_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
    email VARCHAR(100) UNIQUE NOT NULL,
    role ENUM('Registrar', 'Assistant Registrar') NOT NULL,
    password VARCHAR(255) NOT NULL
);

-- Create Notification Table
CREATE TABLE Notification (
    notification_id INT PRIMARY KEY AUTO_INCREMENT,
    request_id INT NOT NULL,
    student_id INT NOT NULL,
    message TEXT NOT NULL,
    sent_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (request_id) REFERENCES CredentialRequest(request_id) ON
DELETE CASCADE,
    FOREIGN KEY (student_id) REFERENCES Student(student_id) ON DELETE
CASCADE
);

-- Create Admin Table
CREATE TABLE Admin (
```

```
    admin_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
    email VARCHAR(100) UNIQUE NOT NULL,
    role ENUM('Super Admin', 'System Admin') NOT NULL,
    password VARCHAR(255) NOT NULL
);
```

APPENDIX A. System Screenshots

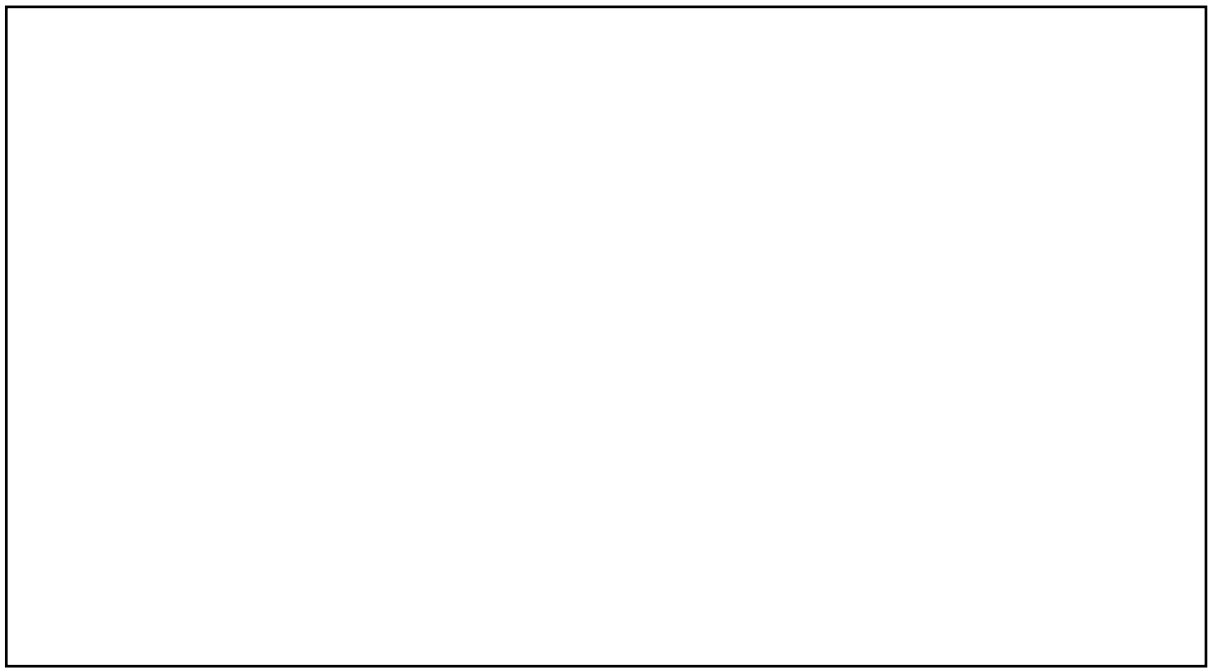
Objective 1: Manage Administrative Staff Accounts

Objective 1: Manage Academic Tracks

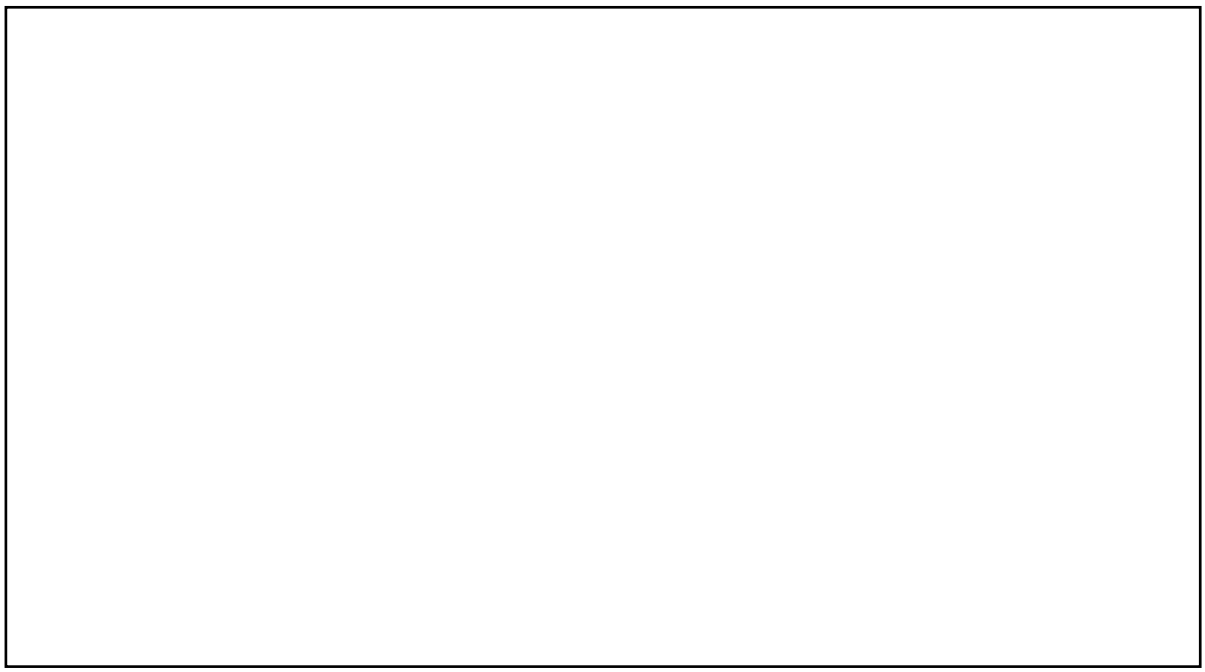
Objective 1: Manage Credential Document Details

Objective 1: Manage Credential Requests

Objective 2: Students to Request Credentials



Objective 2: Generate Requests Slip with QR code



Objective 3: Students with Automated Status Updates via Email

Objective 4: Scan and Verify Request Slip with QR code

Objective 5: Data Dashboard

Objective 6: Generated Reports

APPENDIX B: Approved Letter Permission to Data and Information Gathering

Republic of the Philippines
SULTAN KUDARAT STATE UNIVERSITY
College of Computer Studies
Isulan Campus, 9805, Isulan, Province of Sultan Kudarat

October 01, 2024

LITO S. VALENCIA
Business Owner
VALENCIA DRY GOOD STORE
Isulan, Sultan Kudarat

Sir:

Greetings of Peace!

In partial fulfillment of our requirements for our subject IS211—Enterprise Architecture (EA), we 2nd year college students from the Sultan Kudarat State University—College of Computer Studies, Isulan Campus, taking up the Bachelor of Science in Information Systems (BSIS), are writing you to humbly ask permission if we can conduct a data and information gathering in the formulation of our Business Information System proposal.

The goal of this project is to design and develop a business information system (BIS) within the context of an enterprise architecture (EA) that aligns with the organization's strategic objectives, enhances operational efficiency, and supports informed decision-making, scalability, and business agility across all departments.

In this regard, we are seeking your consent and approval to conduct data and information gathering. Rest assured that all information derived herein will be gathered and intended only for the subject and will be treated with the utmost confidentiality. We hope for your positive response on this humble matter. Your approval to conduct this study will be greatly appreciated.

Sincerely,

JUAN B. DELA CRUZ **ROEL G. DIMALANTA** **GINA G. DIMALANTA**

Noted:

JAY MARK F. ARENDAIN, MIS
Subject Instructor

Approved:

LITO S. VALENCIA
Business Owner

Letter Requesting Permission to Conduct Data and Information Gathering

APPENDIX C: Pictorials during the Conduct of Data and Information Gathering

Photos/Images

Photos/Images