

# **PROJECT REPORT**

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## Thesis Management System (TMS)

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## **Project Description**

This project delves into the domain of educational technology, specifically focusing on enhancing the master's thesis process at FAST-NUCES. The project aims to develop a web-based thesis management system (TMS) to streamline communication, document management, and feedback mechanisms for stakeholders involved in thesis research (Al-Samarrai et al., 2020). The current process often relies on manual paperwork and email communication, leading to inefficiencies and potential data inconsistencies (Wong & Cheung, 2021).

## **Functional Requirements for Each Module**

### **User Management**

- **Secure User Registration and Login:**
  - Users must create accounts with unique usernames and strong passwords meeting complexity requirements (e.g., minimum length, combination of uppercase and lowercase letters, numbers, and symbols).
  - Password hashing should be implemented to store passwords securely, never storing them in plain text.
  - Two-factor authentication (2FA) can be offered as an optional layer of security.
  - Email verification should be required to confirm user accounts and prevent unauthorized access.
- **Role-Based Access Control (RBAC):**
  - The system should define distinct user roles (e.g., student, supervisor, examiner, MSRC member, academic staff, administrator) with assigned permissions.
  - Permissions should clearly define what functionalities each user role can access within the system.
  - For example, students can only access functionalities related to submitting documents, while supervisors can access functionalities for reviewing documents and providing feedback.
- **User Profile Management:**
  - Users should be able to view and update their personal information within the system, such as name, email address, and affiliation.
  - The system should allow users to change their passwords periodically to maintain account security.

### **Document Management System**

- **Secure Online Storage:**

- The system should provide secure storage for thesis documents uploaded by students.
- Encryption at rest and in transit should be implemented to protect data confidentiality.
- Access controls should be enforced to ensure only authorized users can access specific documents based on their roles.
- **Version Control:**
  - The system should track all changes made to documents over time, allowing users to revert to previous versions if necessary.
  - Version history should include timestamps, user information, and a brief description of the changes made.
  - Users should be able to easily compare different versions of a document.
- **User Permissions for Document Access and Modification:**
  - The system should define permissions for document access and modification based on user roles.
  - Students should be able to upload, edit, and download their own thesis documents.
  - Supervisors and examiners should be able to access and review documents assigned to them.
  - Permissions can be further granular, allowing control over specific actions like adding comments, deleting sections, or approving final versions.

## **Communication Tools**

- **Secure Forum:**
  - The system should provide a secure platform for threaded discussions between students, supervisors, and committee members.
  - Access to forums should be controlled based on user roles and thesis assignments.
  - Features like message threading, quoting, and search functionalities should be implemented for efficient communication.
- **Real-Time Notification System:**
  - The system should deliver real-time notifications to users regarding important updates and deadlines.
  - Notifications can be sent via email or in-app messages depending on user preferences.

- Notifications can include information about document submissions, feedback received, upcoming deadlines, and committee meetings.

## **Feedback Tools**

- **Online Tools for Providing and Receiving Feedback:**

- The system should offer tools for supervisors and examiners to provide detailed feedback on submitted documents.
- Annotation capabilities should allow highlighting specific sections of the document, adding comments, and suggesting edits.
- Feedback should be timestamped and attributed to the respective user for clarity.

- **Option for Students to Respond to Feedback:**

- Students should be able to view feedback provided on their documents and respond to comments or questions raised.
- The system should facilitate discussions between students and supervisors/examiners for clarification and improvement.

## **Progress Tracking**

- **Personalized Dashboard:**

- Each user should have a personalized dashboard displaying their current thesis progress.
- The dashboard should provide an overview of submitted documents, completed milestones, and upcoming deadlines.
- Visual elements like progress bars or timelines can be used to effectively communicate progress.

- **Clear Display of Deadlines and Milestones:**

- The system should clearly display all deadlines and upcoming milestones associated with the thesis process.
- Deadlines can be categorized by type (e.g., submission deadlines, feedback deadlines, committee meeting deadlines).
- Users should be able to set reminders or receive automated notifications for approaching deadlines.

## **Reporting Tools**

- **Ability to Generate Reports:**

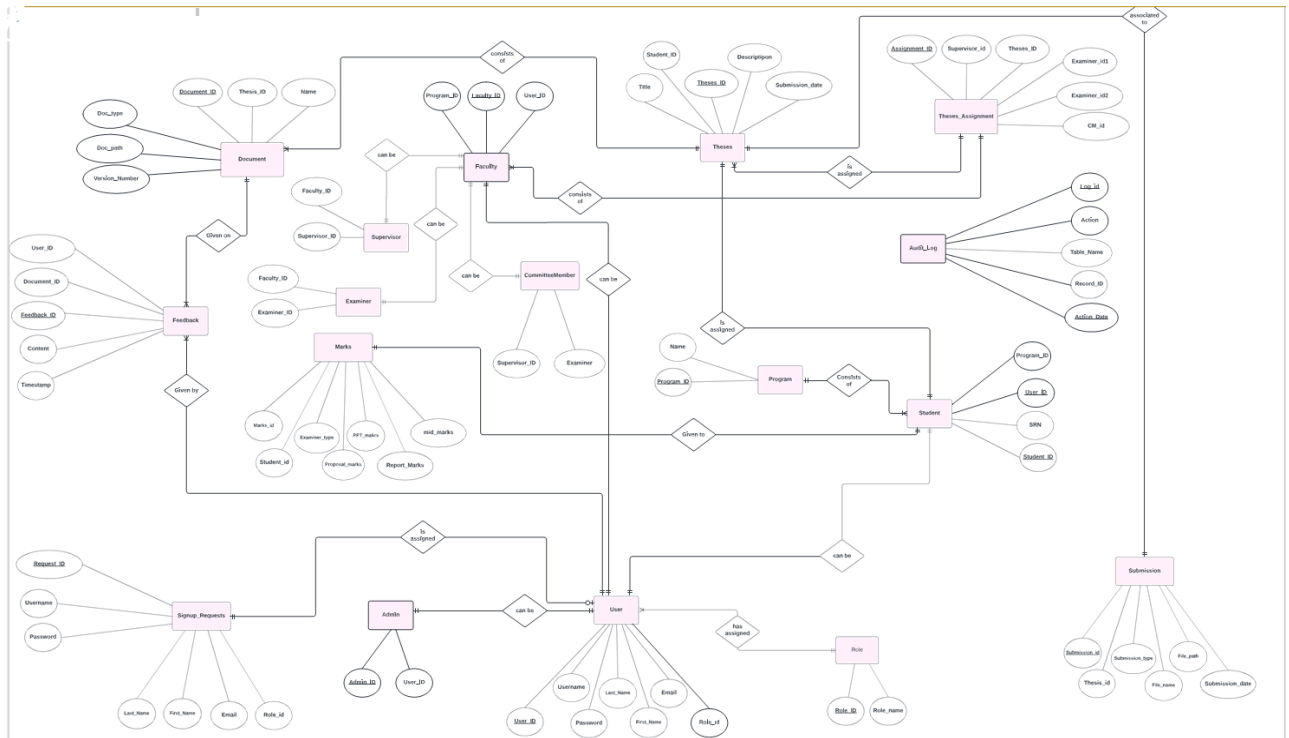
- The system should offer the ability to generate reports on various aspects of the thesis process, subject to further analysis and user needs.

- Reports can provide insights into student progress rates, committee activity levels, and overall thesis workload distribution.
- Different report types can be offered, such as individual student reports, committee reports, and program-wide reports.
- Filters and export options should be available to allow for detailed analysis and data sharing.

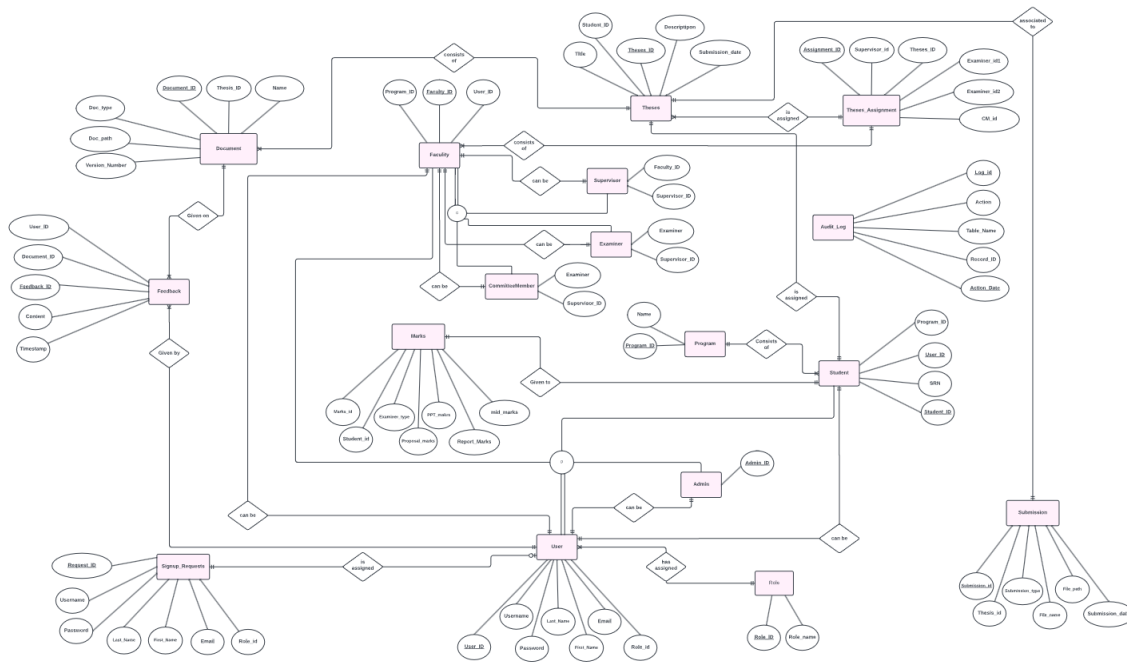
## **Committee Management**

- **Scheduling and Communication:** The system should provide tools for scheduling committee meetings, including features for:
  - Setting dates and times for meetings.
  - Inviting relevant committee members.
  - Managing conflicts and finding suitable meeting times for all attendees.
  - Sending meeting agendas and materials electronically.
- The system should also facilitate communication between committee members before, during, and after meetings. This could include:
  - Secure chat functionality for real-time communication.
  - File sharing capabilities for exchanging documents and resources.
  - Option to record meeting minutes electronically.

# ERD

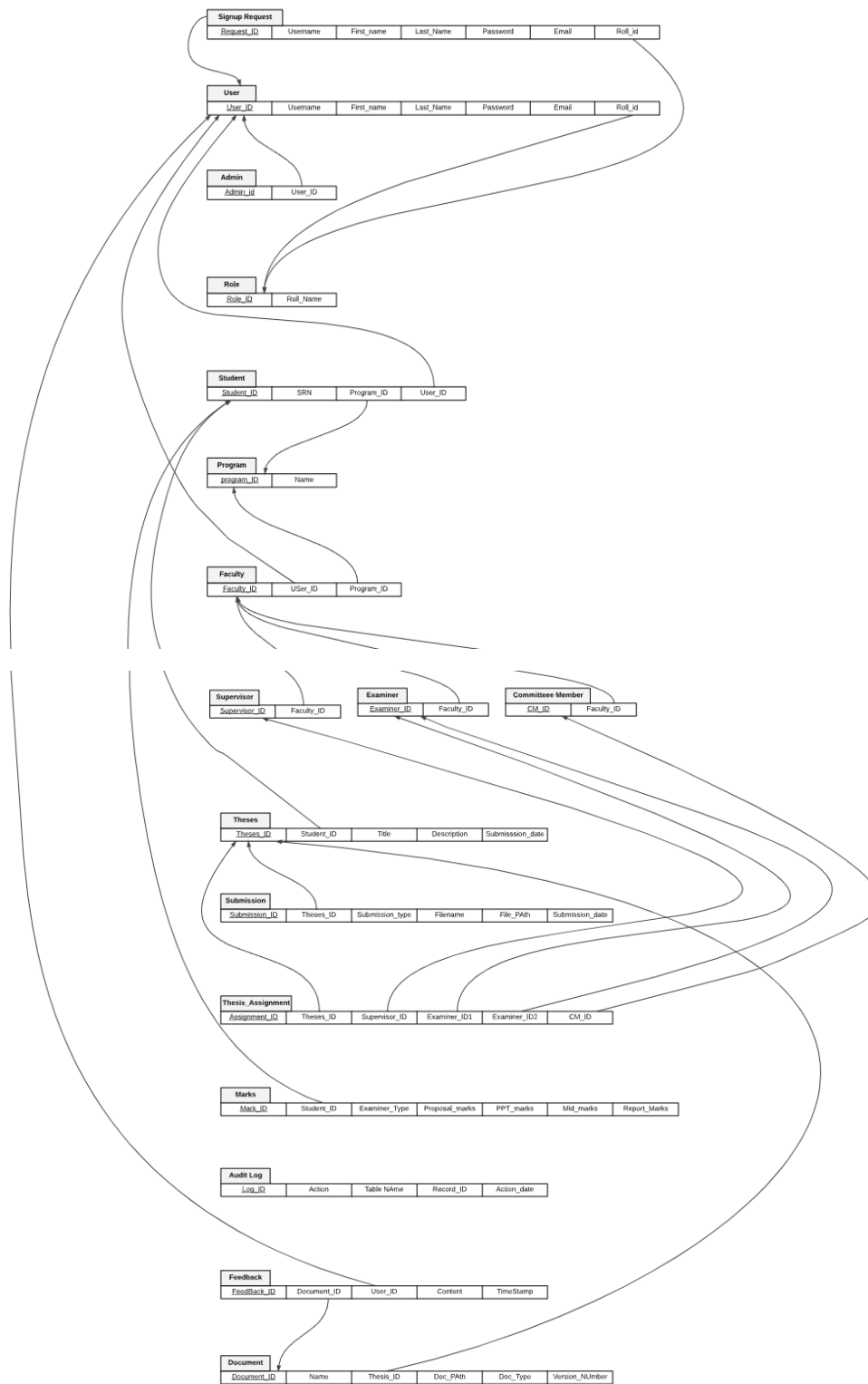


# EERD





# Relational Schema



## Normalization

The schema provided is already in 3NF. Here is detailed proof of it:

1. **Each table has a primary key that uniquely identifies each row.** This is a fundamental requirement for any relational database table.
2. **There are no partial dependencies.** A partial dependency exists when a non-key attribute is dependent on only a part of the primary key. In all the tables, any non-key attribute is either dependent on the entire primary key or another candidate key.
3. **There are no transitive dependencies.** A transitive dependency exists when a non-key attribute is dependent on another non-key attribute, which in turn is dependent on the primary key.

## Table-wise Analysis

By analyzing each table:

- **Roles:** role\_name uniquely identifies each role.
- **Users:** user\_id uniquely identifies each user, and all other attributes are dependent on it. There are no transitive dependencies.
- **Programs:** program\_id uniquely identifies each program.
- **Students:** student\_id uniquely identifies each student. user\_id (foreign key) ensures a user can only be one student, and program\_id references the program table. There are no transitive dependencies.
- **Faculty:** faculty\_id uniquely identifies each faculty member. user\_id ensures one user per faculty member, and program\_id (optional) is dependent on the faculty's expertise. There are no transitive dependencies.
- **Theses:** thesis\_id uniquely identifies each thesis, and student\_id (foreign key) references the student who submitted it. There are no transitive dependencies.
- **ThesisAssignments:** assignment\_id uniquely identifies each assignment. thesis\_id references the thesis, and supervisor\_id, examiner\_id1, examiner\_id2, and committee\_member\_id (all foreign keys) reference faculty members. There are no transitive dependencies.
- **Documents:** document\_id uniquely identifies each document, and thesis\_id (foreign key) references the thesis it belongs to. There are no transitive dependencies.
- **Feedback:** feedback\_id uniquely identifies each feedback entry. document\_id references the document it's for, and user\_id references the user who provided it. The ON DELETE CASCADE on the foreign key for user\_id ensures feedback is deleted if the user is deleted, preventing orphaned data. There are no transitive dependencies.

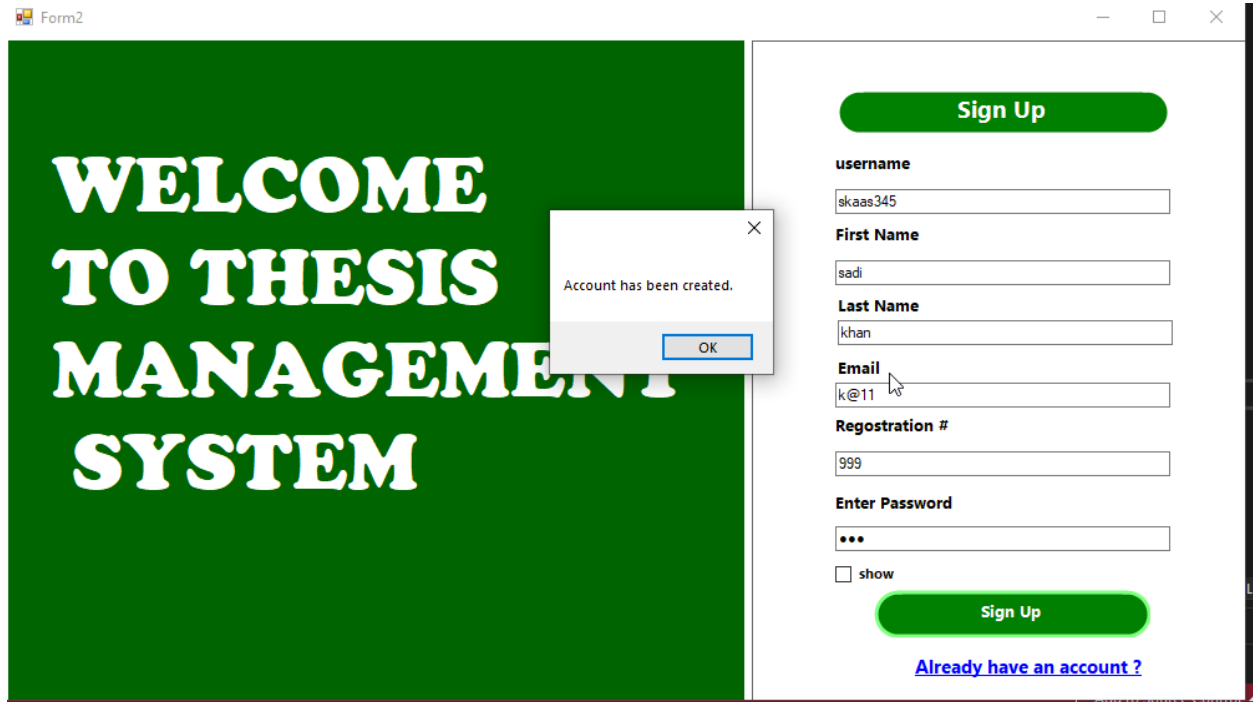
- **SignupRequests:** request\_id uniquely identifies each signup request, and all other attributes define the request details. There are no transitive dependencies.
- **Marks:** mark\_id uniquely identifies each mark entry. student\_id references the student, examiner\_type specifies the examiner role (Supervisor, Examiner1, Examiner2), and each mark attribute is directly dependent on the combination of student\_id and examiner\_type. There are no transitive dependencies.
- **Submissions:** submission\_id uniquely identifies each submission, thesis\_id references the thesis it belongs to, and other attributes define the submission details. There are no transitive dependencies.
- **AuditLog:** LogId uniquely identifies each log entry, and other attributes define the action details. There are no transitive dependencies.

Therefore, based on the analysis of each table's structure and relationships, all tables appear to be in 3NF.

# Implementation & User Guide

## 1. Student

### 1.1 Sign Up Page



The screenshot shows a web application window titled 'Form2'. On the left, a green banner reads 'WELCOME TO THESIS MANAGEMENT SYSTEM'. On the right, a 'Sign Up' form is visible. The form includes the following fields and elements:

- Sign Up** (button)
- username**: Input field containing 'skaas345'
- First Name**: Input field containing 'sadi'
- Last Name**: Input field containing 'khan'
- Email**: Input field containing 'k@11'
- Registration #**: Input field containing '999'
- Enter Password**: Input field with masked characters '...'
- ☐ **show** (checkbox)
- Sign Up** (button)
- [Already have an account ?](#) (link)

A dialog box is overlaid on the form, displaying the message 'Account has been created.' with an 'OK' button.

- First go to TMS portal
- Over here a signup page will be displayed to you
- You will have to add the required details to get you signed up

### 1.2 Sign In Page

Form1

# WELCOME TO THESIS MANAGEMENT SYSTEM

**Login Here**

**Enter Email**  
s1@

**Enter Password**  
...  
☐ show

**Select Role**  
Student

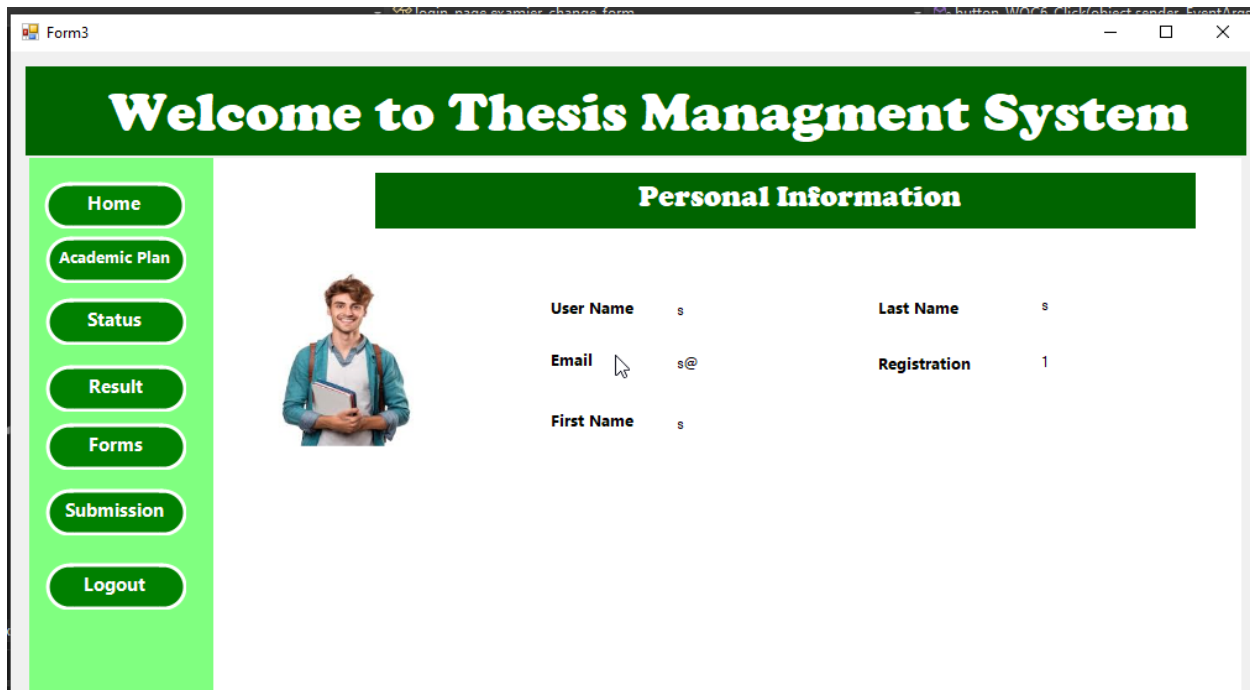
**Login**

[Don't have an account ?](#)

Login successful.  
OK

- First go to the sign In page of TMS portal.
- Then enter your Email and password
- Select the type of account you are signing in for

### 1.3 Home Page



The screenshot shows a web browser window titled "Form3". The main heading is "Welcome to Thesis Managment System" in a green banner. On the left is a green sidebar with buttons: Home, Academic Plan, Status, Result, Forms, Submission, and Logout. The main content area has a green header "Personal Information". Below this is a profile picture of a student and a table of personal details.

User Name	s	Last Name	s
Email	s@	Registration	1
First Name	s		

- After Logging in you will go to the home page
- Then you will have 6 options to choose from the side bar
- Your name will and your details will be displayed on the page

## 1.4 Calendar Page

academic\_plan

# Welcome to Thesis Managment System

[Home](#)  
[Academic Plan](#)  
[Status](#)  
[Result](#)  
[Forms](#)  
[Submission](#)  
[Change User](#)  
[Logout](#)

## Academic Plan

Week #	Objective	Due Date
0	Online Meeting with instructor to finalize topics	30-1-2024
1	Online Registration for thesis	12-2-2024
2	Acceptance and Rejection of topics for thesis	23-3-2024
3	Submission of thesis paper	21-4-2024
4	Submission of thesis paper	02-5-2024

- After clicking on the Academic Calendar you will be navigated to the calendar page
- Then you will have the Calendar displayed to you with all the events and the dates of them

## 1.5 Forms Page

Form4

# Welcome to Thesis Managment System

Pick the form of your choice

Home  
Academic Plan  
Status  
Result  
Forms  
Submission  
Logout

Thesis Registration Form  
Title Change Form  
Supervisor Change form  
Examiner Change Form

Form7

# Welcome to Thesis Managment System

## Thesis Registration Form

Home  
Academic Plan  
Status  
Result  
Forms  
Submission  
Logout

Name: skldjask  
Reg #: askdkl  
Program Name: daskdlak  
Contact: askdakl  
Enter Supervisor Name: dasakldj  
Title:   
Potenital Areas: askldlsj

Please fill in all fields.

OK

Submit



**Welcome to Thesis Managment System**

**Title Change Request Form**

**Name**  
titksd,ad

**Email**  
das,dl;

**New Title**  
dasldal;

**Current Title**  
asd;

**Reason / Justification**  
edadas,dsd,klasd,jasl,das,l

**Submit**

Data saved successfully!  
OK

**Welcome to Thesis Managment System**

**Examier Change Request Form**

**Name**  
jkskldas

**Examiner Name**  
dksadkl

**Program**  
ksjajkdl

**Thesis Name**  
ajkdsa

**Reason to Change Examiner**  
jklaskldaskldaskl

**Submit**

- Click on the Forms tab
- Then you will have 4 different forms to choose from 1)Thesis registration form 2) Supervisor Change request form 3) Title change form 4) Examiner change form
- In these forms you will have to enter the specific details required for each of the forms according to use

## 1.6 Status Track Page

Form14

# Welcome to Thesis Managment System

**Request Status**

reg #  
1

Name  
s

Examiner Name  
W

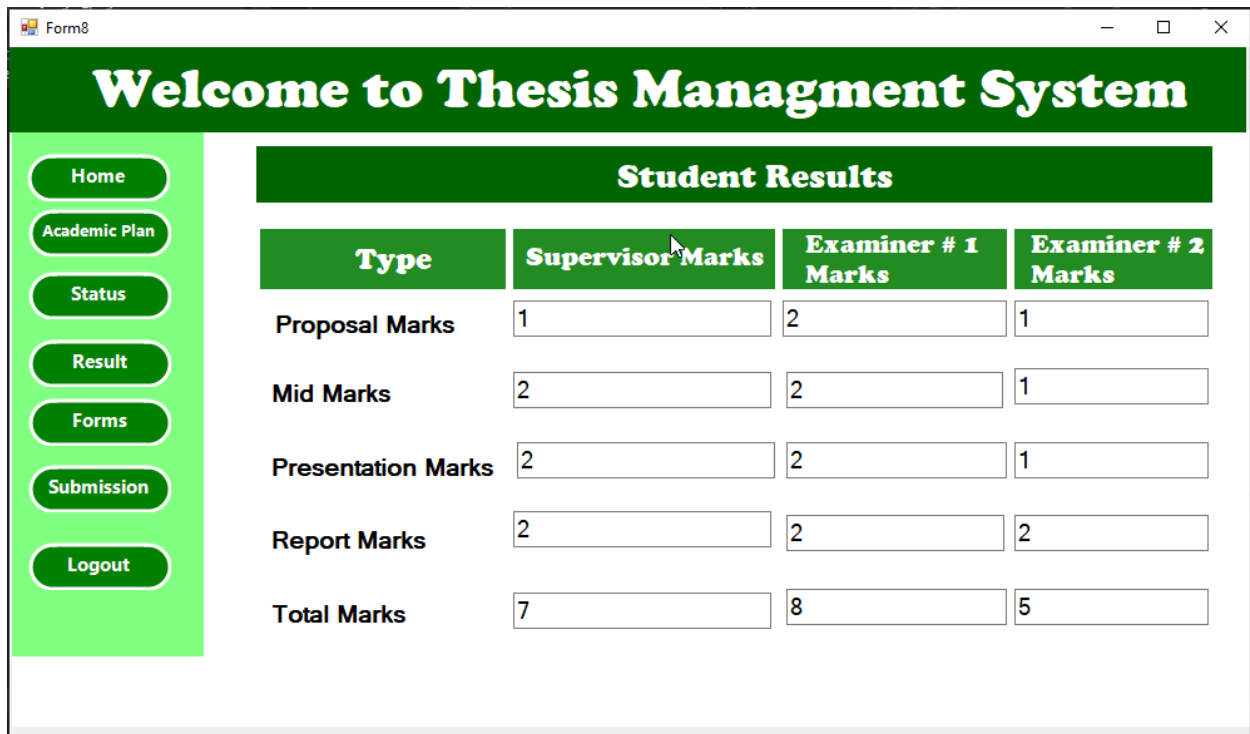
Thesis Name  
W

Oh No Rejected  
OK

Reject Accept

- Click the status tab
- Then you will see the status of different requests as that of thesis request form or supervisor change request form and title change request form

### 1.7 Results Page

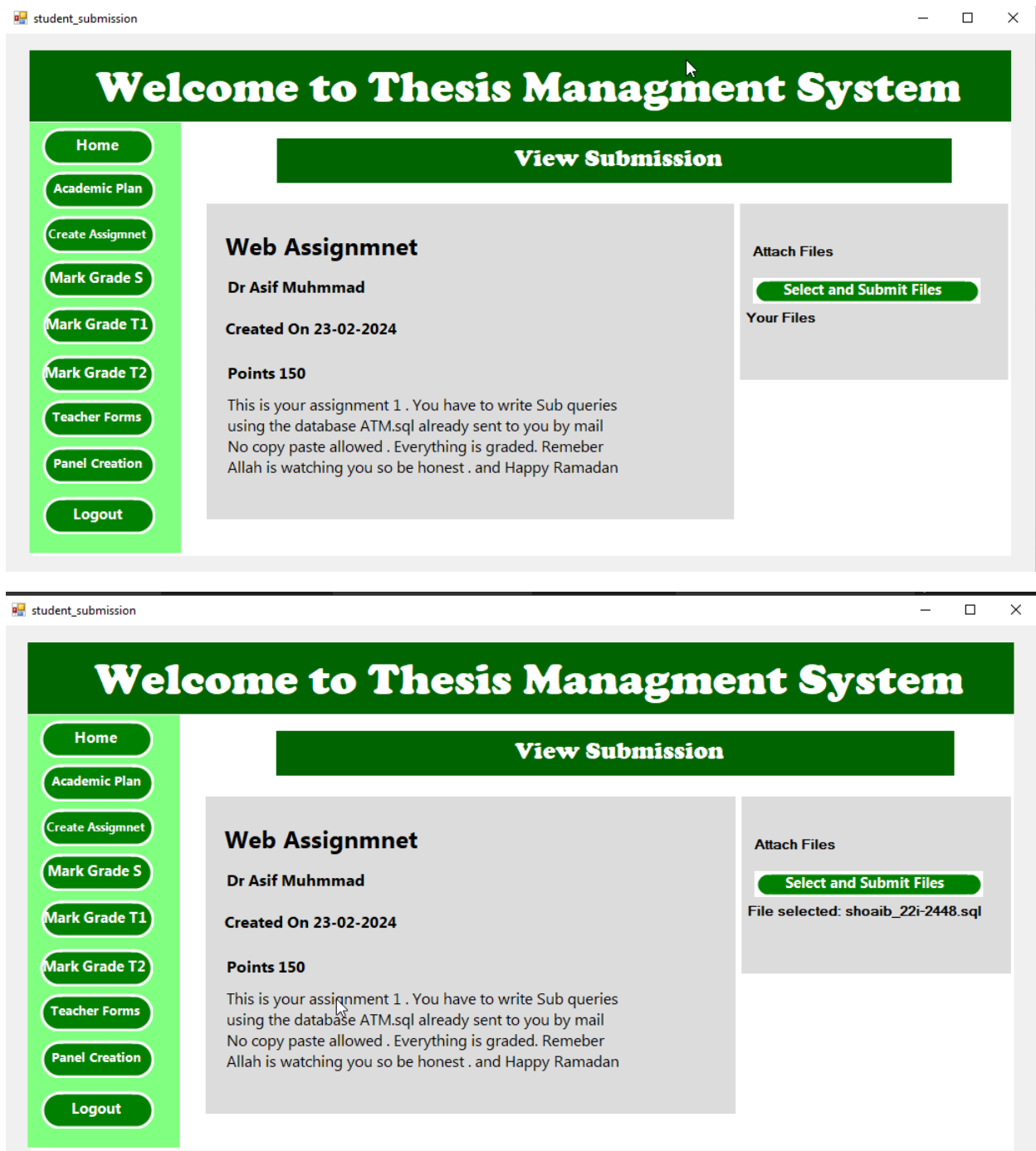


The screenshot shows a web application window titled 'Form8'. The main header is a green bar with the text 'Welcome to Thesis Managment System' in white. On the left, there is a green sidebar with buttons for 'Home', 'Academic Plan', 'Status', 'Result', 'Forms', 'Submission', and 'Logout'. The main content area has a green header 'Student Results' above a table. The table has four columns: 'Type', 'Supervisor Marks', 'Examiner # 1 Marks', and 'Examiner # 2 Marks'. The rows are: 'Proposal Marks' (1, 2, 1), 'Mid Marks' (2, 2, 1), 'Presentation Marks' (2, 2, 1), 'Report Marks' (2, 2, 2), and 'Total Marks' (7, 8, 5).

Type	Supervisor Marks	Examiner # 1 Marks	Examiner # 2 Marks
Proposal Marks	1	2	1
Mid Marks	2	2	1
Presentation Marks	2	2	1
Report Marks	2	2	2
Total Marks	7	8	5

- Select the results tab
- Over here you will see the results of your thesis and other submissions

## 1.8 Submissions Page



- Select the submissions tab
- Then you will see the assignment or the project which is due for submission
- After clicking on it you will be navigated to its submission tab

- Then click add or create to upload your work
- After that click on the turn in button to submit your work

## 2. Academic Officer

### 2.2 Sign Up Page

The screenshot shows a web application window titled 'Form2'. The main content area is split into two parts. On the left, a green banner with white text reads 'WELCOME TO THESIS MANAGEMENT SYSTEM'. On the right, a white panel contains a 'Sign Up' form. The form has a green 'Sign Up' button at the top. Below it are input fields for 'username' (containing 'skaas345'), 'First Name' (containing 'sadi'), 'Last Name' (containing 'khan'), 'Email' (containing 'k@11'), and 'Registration #' (containing '999'). There is a password field labeled 'Enter Password' with a 'show' checkbox. At the bottom of the form is another green 'Sign Up' button and a link that says 'Already have an account?'. A modal dialog box is centered over the form, displaying the message 'Account has been created.' with an 'OK' button.

- First go to the TMS portal
- Here you will have to sign up for the academic officer
- You will have to fill in the required information for the academic officer

## 3. Teacher

### 3.1 Sign Up Page

**Form2**

# WELCOME TO THESIS MANAGEMENT SYSTEM

Account has been created.

**Sign Up**

**username**  
skaas345

**First Name**  
sadi

**Last Name**  
khan

**Email**  
k@11

**Registration #**  
999

**Enter Password**  
...

☐ show

**Sign Up**

[Already have an account ?](#)

- First go to the TMS portal
- Here you will have to sign Up for the Teacher
- You will have to fill in the required information for the teacher

### 3.2 Home Page

**Form9**

# Welcome to Thesis Managment System

**Home**

**Academic Plan**

**Create Assigment**

**Mark Grade S**

**Mark Grade T1**

**Mark Grade T2**

**Teacher Forms**

**Assignments**

**Panel Creation**

**Logout**

**Personal Information**

**First Name** Imran

**User Name** niazi1

**Registration id** 5

**Email** i@

**Last Name** Khan

- After Logging in you will go to the home page

- Then you will have 7 options to choose from the side bar
- Your name along with your picture and your details will be displayed on the page

### 3.3 Teacher Forms Page

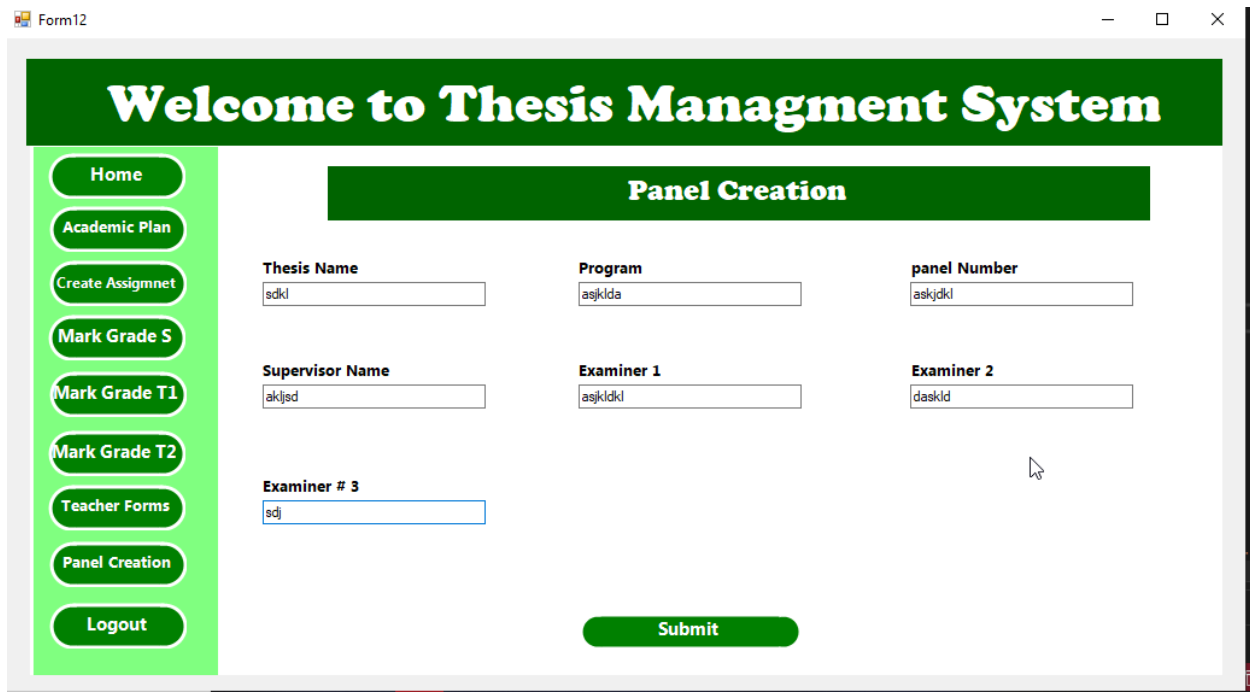
The screenshot shows a web browser window titled "Nmae". The main heading is "Welcome to Thesis Managment System". On the left is a green sidebar with buttons: Home, Academic Plan, Create Assigmet, Mark Grade, Teacher Forms, Assignments, Panel Creation, and Logout. The main content area has a green header "Thesis Registration Request Forms". Below it is a table with columns: Reg #, Name, Instructor Name, Thesis Name, and Email. The first row contains input fields with the letters 'i', 's', 'w', and 'w' respectively. An "Action" link with a hand cursor is next to the Email column.

Reg #	Name	Instructor Name	Thesis Name	Email
<input type="text" value="i"/>	<input type="text" value="s"/>	<input type="text" value="w"/>	<input type="text" value="w"/>	<a href="#">Action</a>

- Click on the Forms tab
- Then you will have 4 different forms to choose from 1)Thesis registration request forms 2) Supervisor Change request forms 3) Title change request forms 4) Examiner change request forms
- In these forms you will have to have to decide what request to accept or decline on the basis of your role
- If you have no form pending in the requests then a popup will show that no form pending
- If you want to do specific work on them then a popup will show that you are not a HOD, or a supervisor or an examiner depending on your role
- Click on any of the form pending it will then get you a detailed view containing the information in it that was sent by the student



### 3.4 Panel Creation Page



The screenshot shows a web application window titled "Form12". The main header is a green banner with the text "Welcome to Thesis Managment System". On the left, there is a vertical sidebar with green buttons for "Home", "Academic Plan", "Create Assigmnnet", "Mark Grade S", "Mark Grade T1", "Mark Grade T2", "Teacher Forms", "Panel Creation", and "Logout". The "Panel Creation" button is highlighted. The main content area has a green header "Panel Creation" and a form with the following fields: "Thesis Name" (value: sddl), "Program" (value: asjklda), "panel Number" (value: askjdkl), "Supervisor Name" (value: akljsd), "Examiner 1" (value: asjkldkl), "Examiner 2" (value: daskld), and "Examiner # 3" (value: sdj). A green "Submit" button is at the bottom right of the form.

- Click on the Panel Creation tab
- Then you will have a form to choose from and enter the details in it
- Then after submitting the panels will be created

### 3.6 Assignments Page

The image displays two screenshots of a web application titled "Welcome to Thesis Managment System". The interface features a green sidebar with navigation buttons: Home, Academic Plan, Create Assigmnnet, Mark Grade S, Mark Grade T1, Mark Grade T2, Teacher Forms, Panel Creation, and Logout. The main content area is titled "Create Assignmnets" and contains a form with the following fields:

- Tilte**: A text input field containing "dlsjklj".
- For**: A text input field containing "sdaskl".
- Instructions**: A text area containing "sdasjkldaskldasjkld;asdkjskdasd" and "skldaskldak".
- Points**: A text input field containing "dsdasl".
- Date**: A date picker showing "Sunday , May 5, 2024".
- Submit**: A green button at the bottom right.

The second screenshot shows the same form after submission. The "Tilte" field now contains "kldaskld", the "For" field contains "s;d", and the "Points" field contains "12". A modal dialog box is displayed in the center of the screen with the message "Assignment created successfully!" and an "OK" button. The "Submit" button is now disabled and greyed out.

- Click on the assignments tab
- Then you will have the option to create assignments as you like
- You can set the marks of the assignment, its due date, title and its description