

# **PROJECT REPORT**

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## **Thesis Management System (TMS)**

**Course Instructor**

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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**

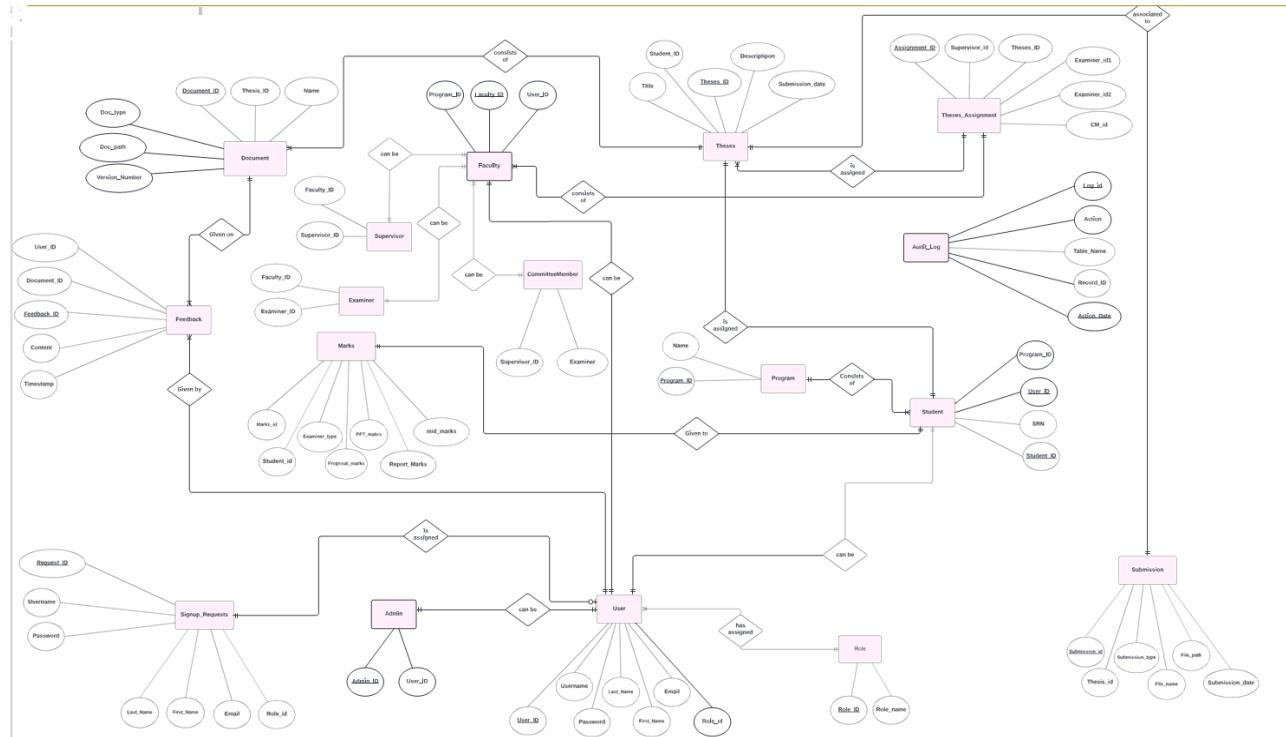
- **Ability to Generate Reports:**
  - The system should offer the ability to generate reports on various aspects of the thesis process, subject to further analysis and user needs.

- 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.

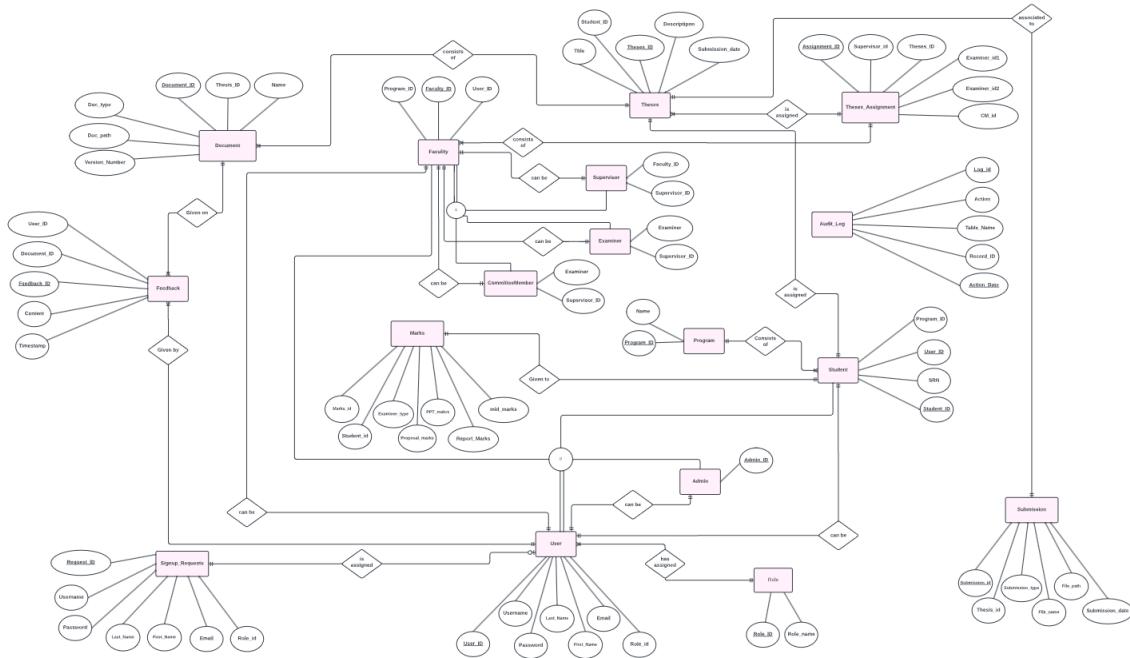
## Committee Management

- **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.

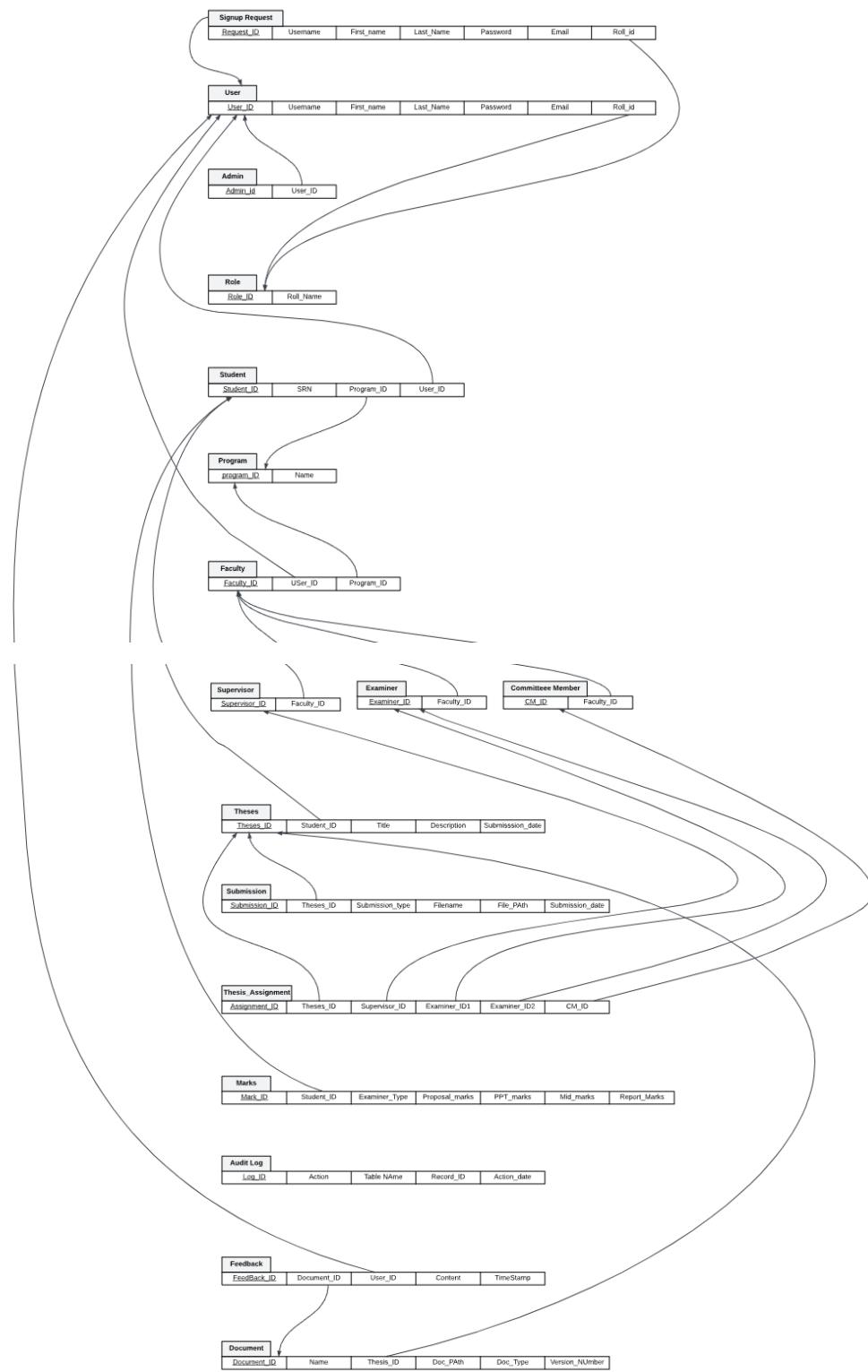
ERD



# 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.

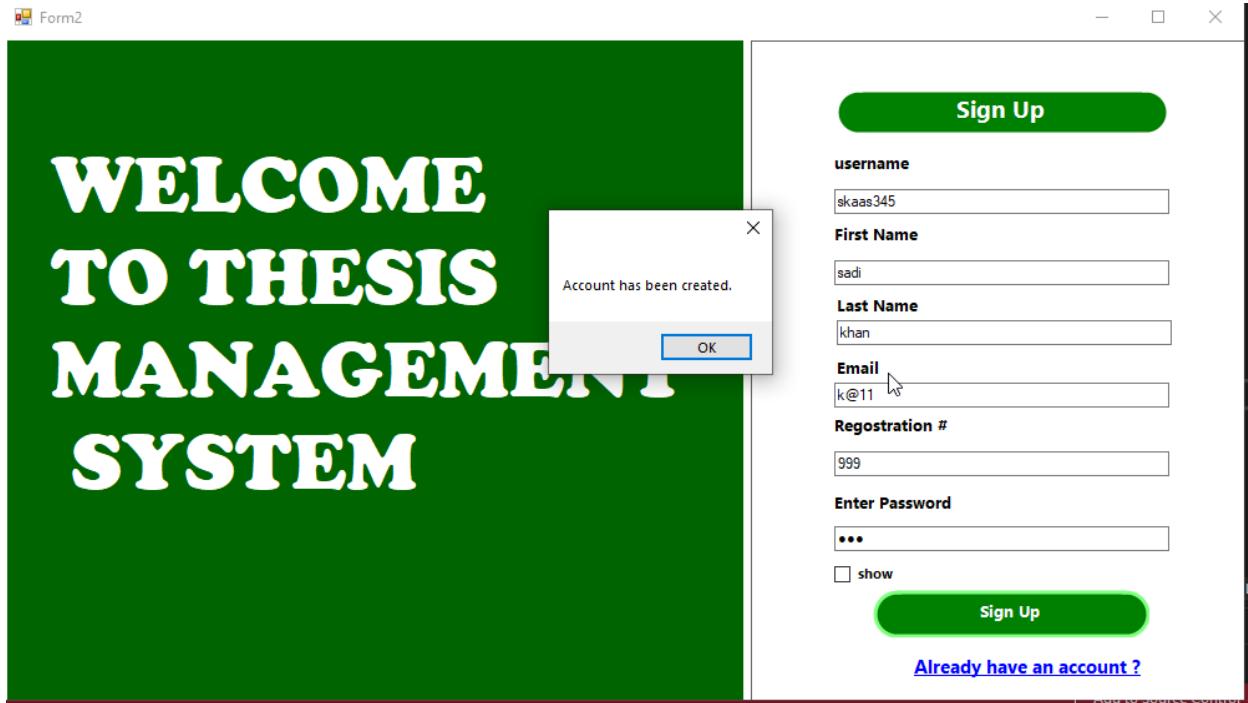
- **SignupRequests:** request\_id uniquely identifies each signup request, and all other attributes define the request details. There are no transitive dependencies.
- **Marks:** mark\_id uniquely identifies each mark entry. student\_id references the student, examiner\_type specifies the examiner role (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

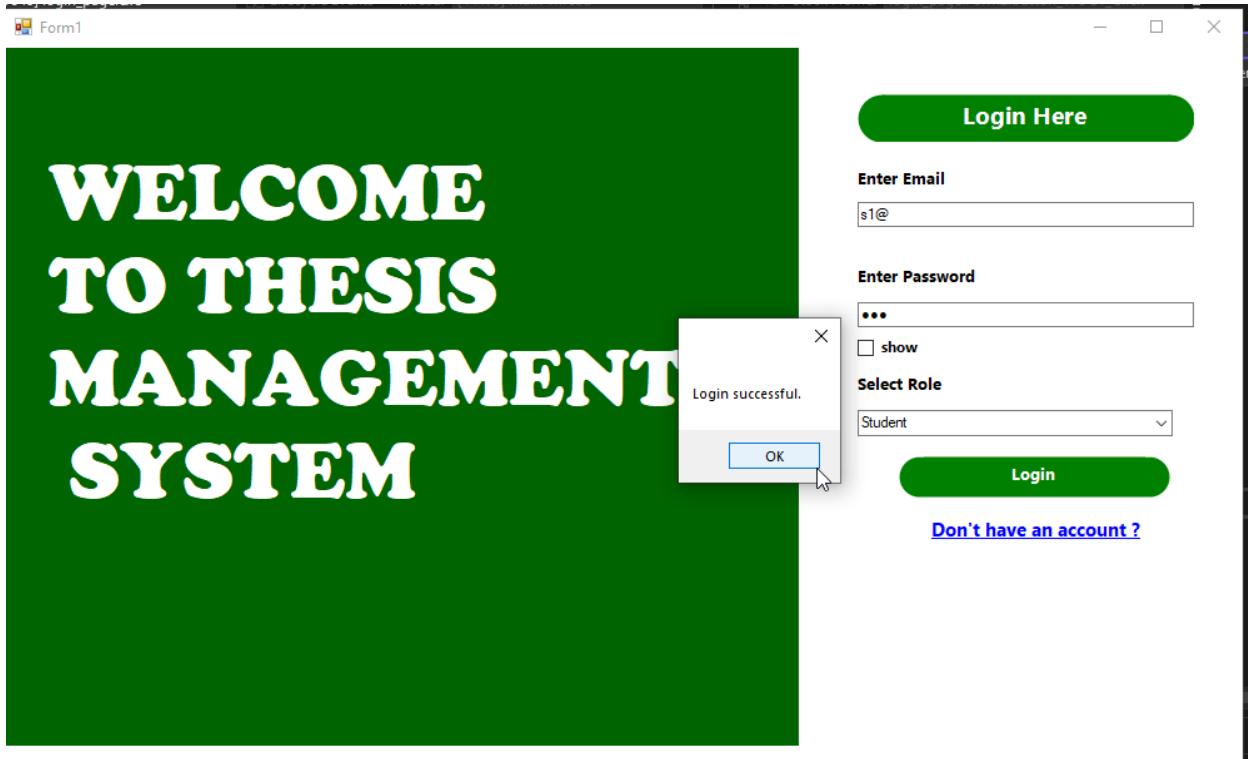
## 1. Student

### 1.1 Sign Up Page



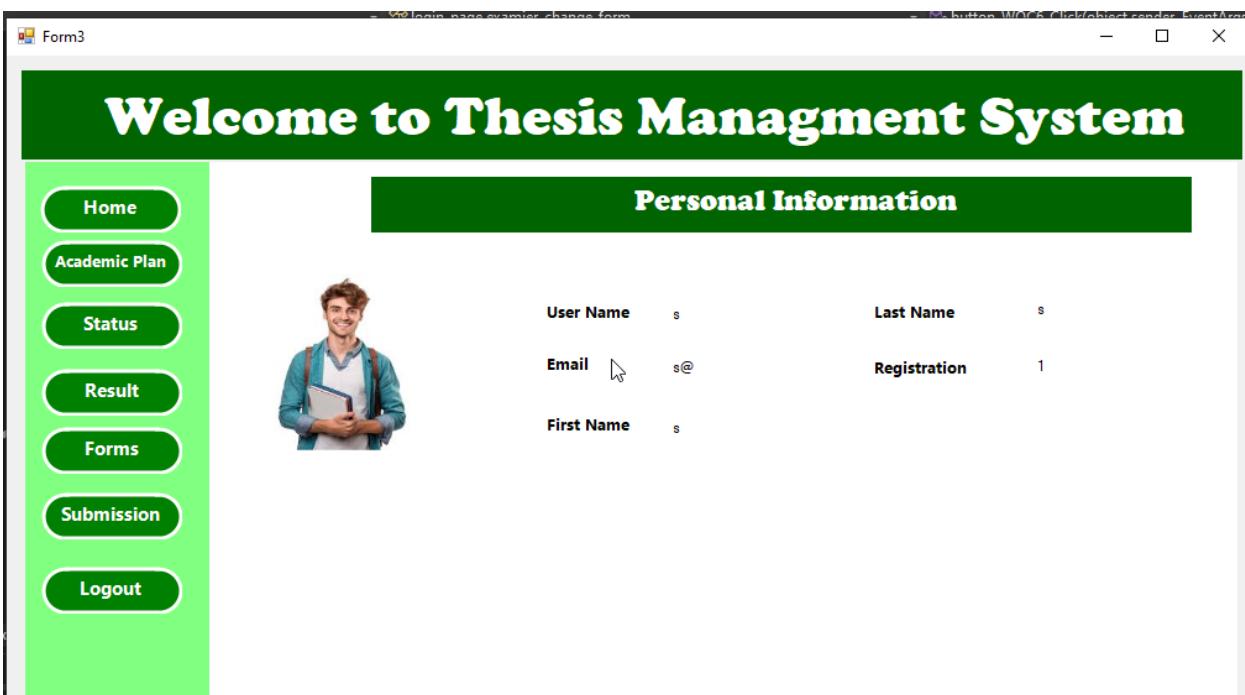
- First go to TMS portal
- Over here a signup page will be displayed to you
- You will have to add the required details to get you signed up

### 1.2 Sign In Page



- 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



- 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

The screenshot shows a web application window titled "Welcome to Thesis Management System". On the left, there is a vertical sidebar with rounded corners containing the following menu items: Home, Academic Plan, Status, Result, Forms, Submission, Change User, and Logout. The "Academic Plan" item is highlighted with a green background. The main content area has a dark green header bar with the title "Academic Plan". Below this is a table with three columns: "Week #", "Objective", and "Due Date". The table contains five rows of data:

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 Management 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 Management System

## Thesis Registration Form

Name: skldjask  
Reg #: askdkl  
Program Name: dasdklak

Contact: askdakl  
Enter Supervisor Name: dasakldj  
Title:

Potential Areas:  
sakldlsj

Please fill in all fields.  
OK

Submit

Form5

# Welcome to Thesis Management System

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

**Title Change Request Form**

Name

Email

New Title

Current Title

Reason / Justification

Data saved successfully!

OK

e6

# Welcome to Thesis Management System

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

**Examiner Change Request Form**

Name

Examiner Name

Program

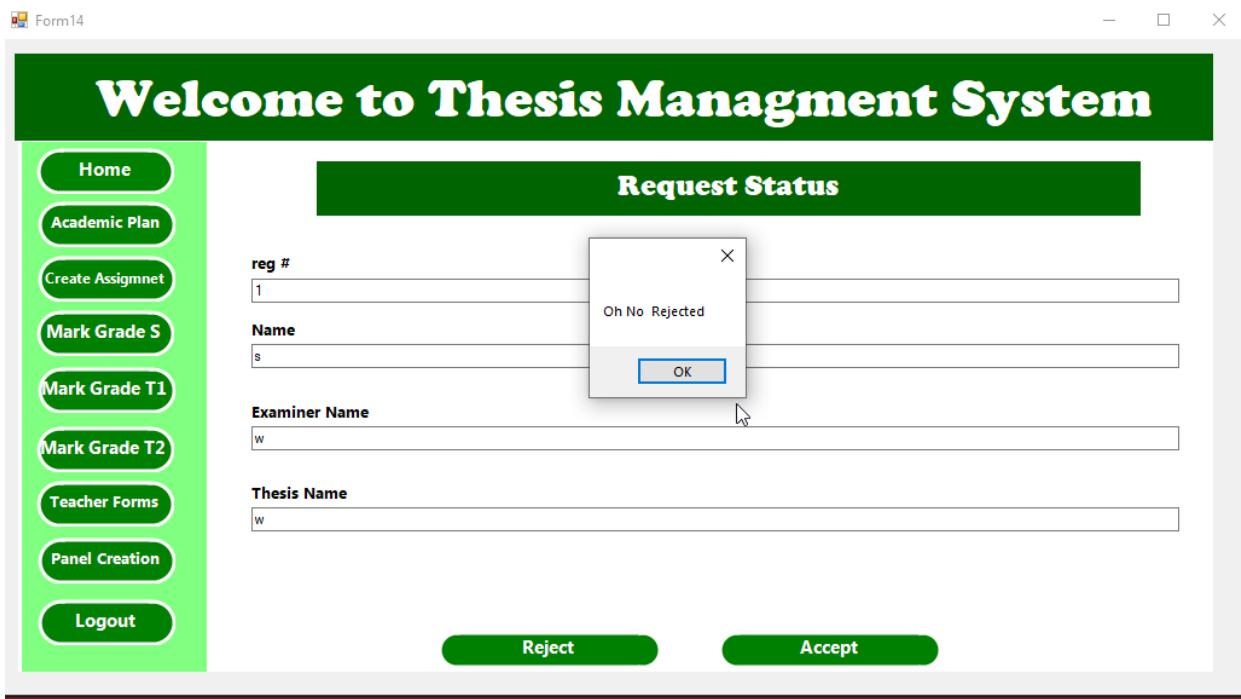
Name

Thesis Name

Reason to Change Examiner

- 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



- 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

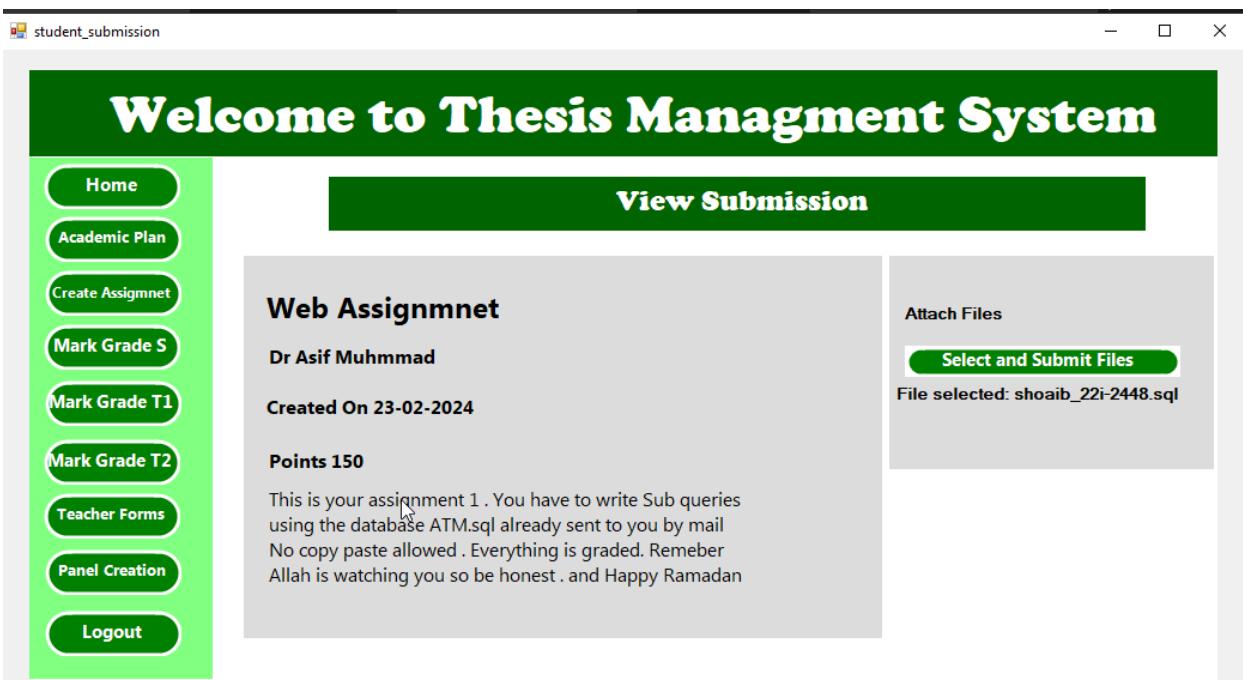
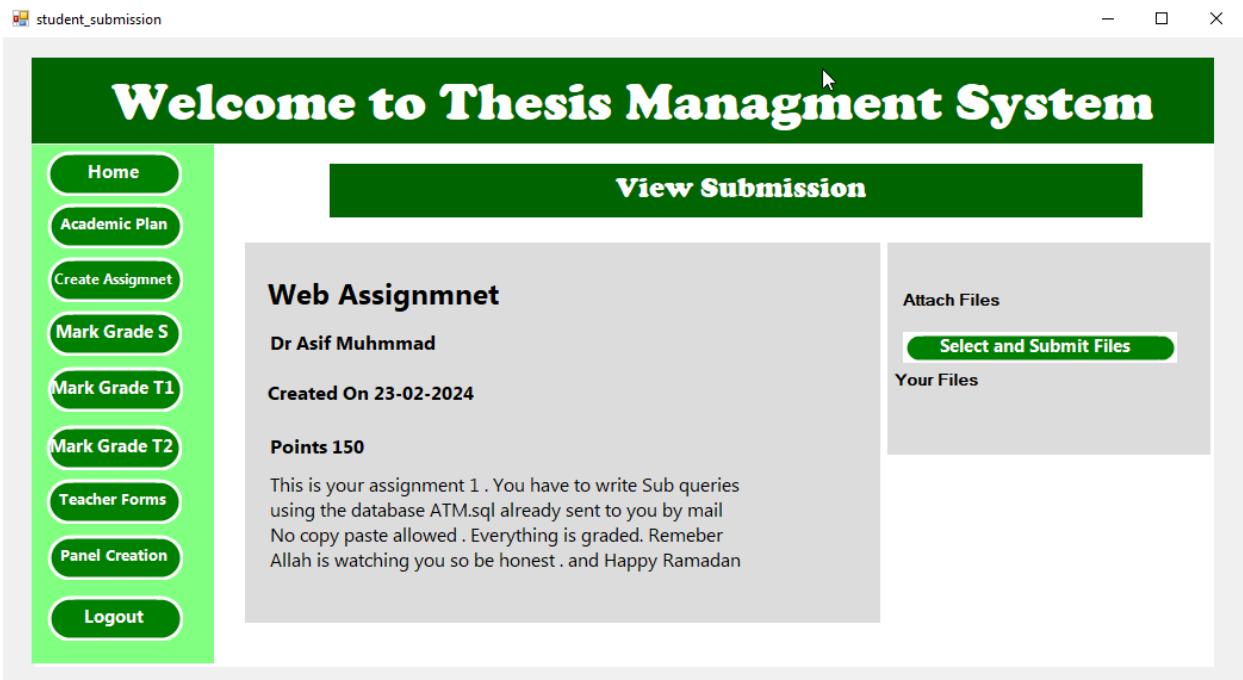
### 1.7 Results Page

The screenshot shows a Windows application window titled "Form8". The title bar has standard minimize, maximize, and close buttons. The main interface features a green header bar with the text "Welcome to Thesis Management System" in white. To the left is a vertical sidebar with rounded corners and a light green background. It contains seven buttons labeled "Home", "Academic Plan", "Status", "Result", "Forms", "Submission", and "Logout", each with a black outline. The main content area is titled "Student Results" in a dark green bar. Below this is a table with four columns: "Type", "Supervisor Marks", "Examiner # 1 Marks", and "Examiner # 2 Marks". The table rows represent different types of marks: "Proposal Marks", "Mid Marks", "Presentation Marks", "Report Marks", and "Total Marks". Each row contains three input fields for the supervisor and two examiners. The "Supervisor Marks" field for "Proposal Marks" contains the value "1". The "Examiner # 1 Marks" field for "Proposal Marks" contains the value "2". The "Examiner # 2 Marks" field for "Proposal Marks" contains the value "1". The "Supervisor Marks" field for "Mid Marks" contains the value "2". The "Examiner # 1 Marks" field for "Mid Marks" contains the value "2". The "Examiner # 2 Marks" field for "Mid Marks" contains the value "1". The "Supervisor Marks" field for "Presentation Marks" contains the value "2". The "Examiner # 1 Marks" field for "Presentation Marks" contains the value "2". The "Examiner # 2 Marks" field for "Presentation Marks" contains the value "1". The "Supervisor Marks" field for "Report Marks" contains the value "2". The "Examiner # 1 Marks" field for "Report Marks" contains the value "2". The "Examiner # 2 Marks" field for "Report Marks" contains the value "2". The "Supervisor Marks" field for "Total Marks" contains the value "7". The "Examiner # 1 Marks" field for "Total Marks" contains the value "8". The "Examiner # 2 Marks" field for "Total Marks" contains the value "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 the sign-up process for an academic officer. On the left, a large green banner reads "WELCOME TO THESIS MANAGEMENT SYSTEM". In the center, a small white modal window displays the message "Account has been created." with an "OK" button. To the right, there is a larger sign-up form. The form fields include:

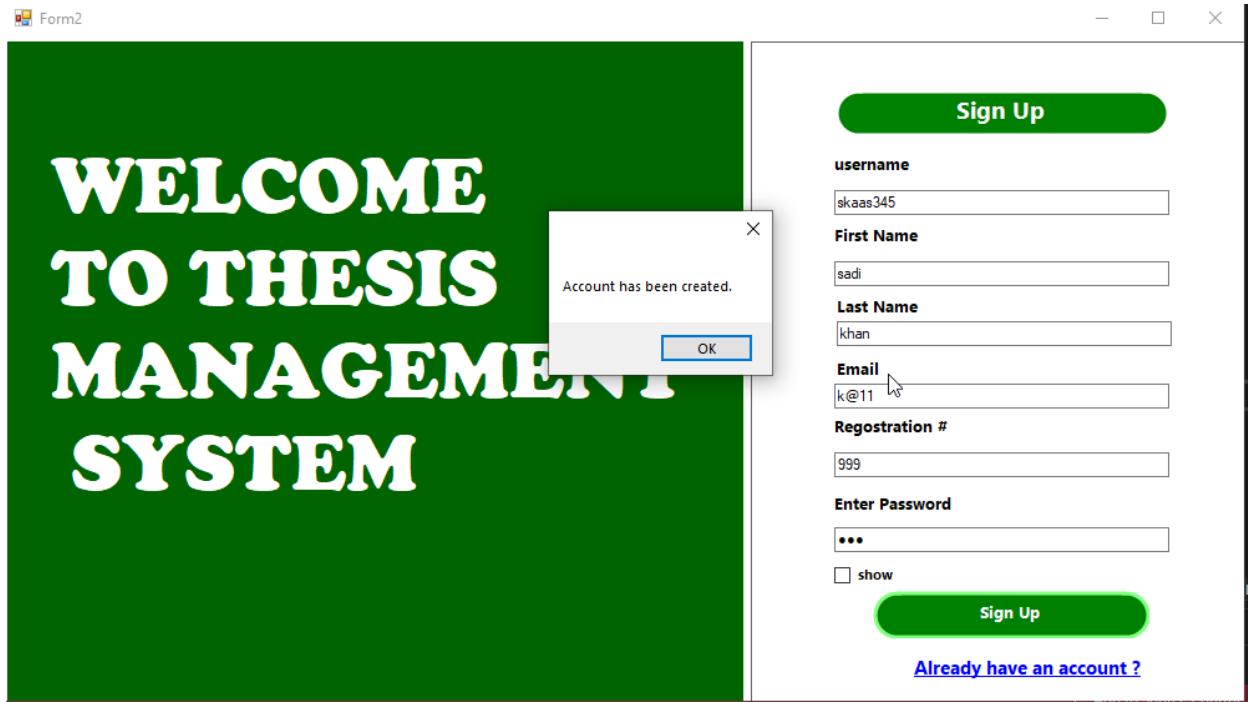
- username:** skaas345
- First Name:** sadi
- Last Name:** khan
- Email:** k@11
- Registration #:** 999
- Enter Password:** (redacted)
- show

At the bottom of the form is a large green "Sign Up" button. Below the button, a blue link reads "Already have an account ?".

- 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

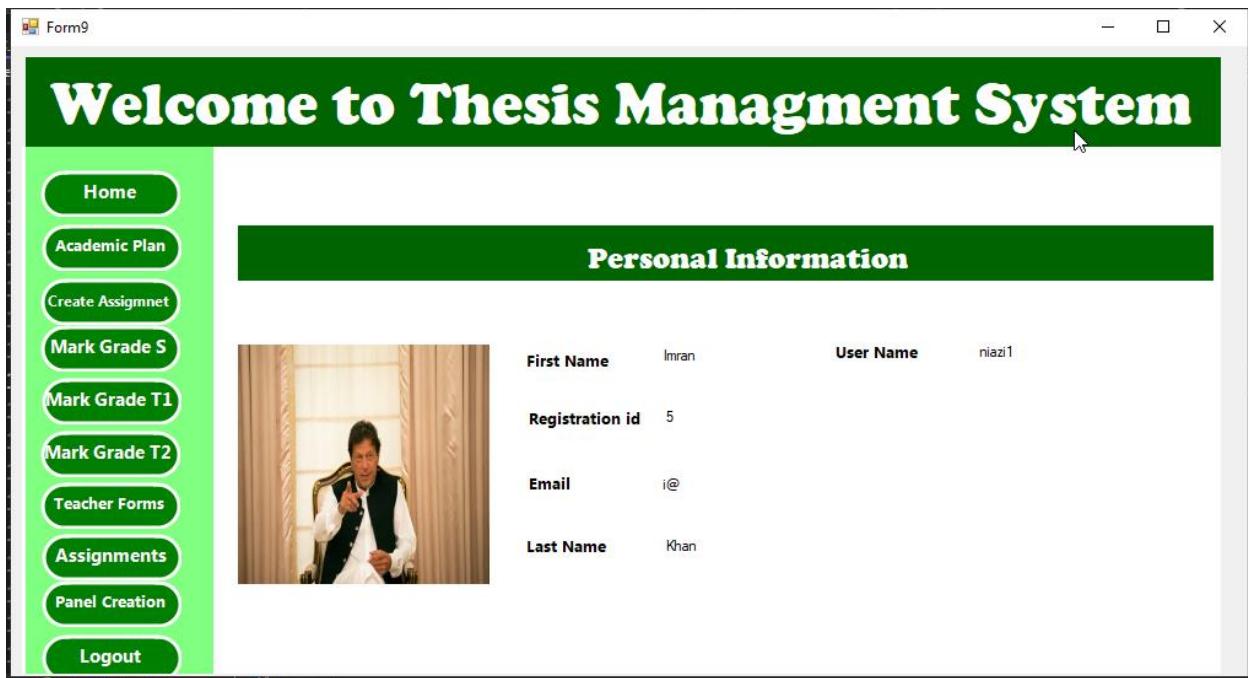
## 3.Teacher

### 3.1 Sign Up Page



- 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



- 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 Windows application window titled "Welcome to Thesis Management System". On the left, there is a vertical sidebar with a green background containing several buttons: "Home", "Academic Plan", "Create Assignment", "Mark Grade", "Teacher Forms" (which is highlighted in blue), "Assignments", "Panel Creation", and "Logout". The main area has a white background with a green header bar containing the text "Thesis Registration Request Forms". Below this, there is a table with five columns: "Reg #", "Name", "Instructor Name", "Thesis Name", and "Email". Each column contains a text input field. To the right of the "Email" field is a blue button labeled "Action" with a hand cursor icon pointing at it.

- 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 Windows application window titled "Form12". The main title bar is green with white text. Below it, a large green header bar contains the text "Welcome to Thesis Managment System" in white. To the left of the header is a vertical sidebar with rounded corners, containing several green buttons with white text: "Home", "Academic Plan", "Create Assigment", "Mark Grade S", "Mark Grade T1", "Mark Grade T2", "Teacher Forms", "Panel Creation", and "Logout". The main content area has a white background. It features a green header bar with the text "Panel Creation" in white. Below this, there are three sets of input fields arranged horizontally. The first set is labeled "Thesis Name" with the value "sdkl", "Program" with the value "asjklida", and "panel Number" with the value "askjndl". The second set is labeled "Supervisor Name" with the value "akljsd", "Examiner 1" with the value "asjklndl", and "Examiner 2" with the value "daskld". The third set is labeled "Examiner # 3" with the value "sdj". At the bottom right of the content area is a green "Submit" button. A cursor arrow is visible on the right side of the screen.

- 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 screenshot shows the 'Create Assignments' page of the Thesis Management System. On the left, a vertical sidebar contains rounded rectangular buttons for various functions: Home, Academic Plan, Create Assignment, Mark Grade S, Mark Grade T1, Mark Grade T2, Teacher Forms, Panel Creation, and Logout. The main area has a dark green header bar with the title 'Welcome to Thesis Management System'. Below it, another dark green bar displays 'Create Assignmnets'. The form fields include: 'Title' (input: dsjklj), 'For' (input: sdaskl), 'Instructions' (input: sdasjkldasjkldasjkd;asdkskdaed sdkldaslkdk), 'Points' (input: dsdasl), and 'Date' (dropdown: Sunday, May, 5, 2024). A green 'Submit' button is located at the bottom right.

This screenshot is similar to the one above, showing the 'Create Assignments' page. The main difference is a modal dialog box in the center that says 'Assignment created successfully!' with an 'OK' button. The rest of the interface, including the sidebar and form fields, appears identical to the first screenshot.

- 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