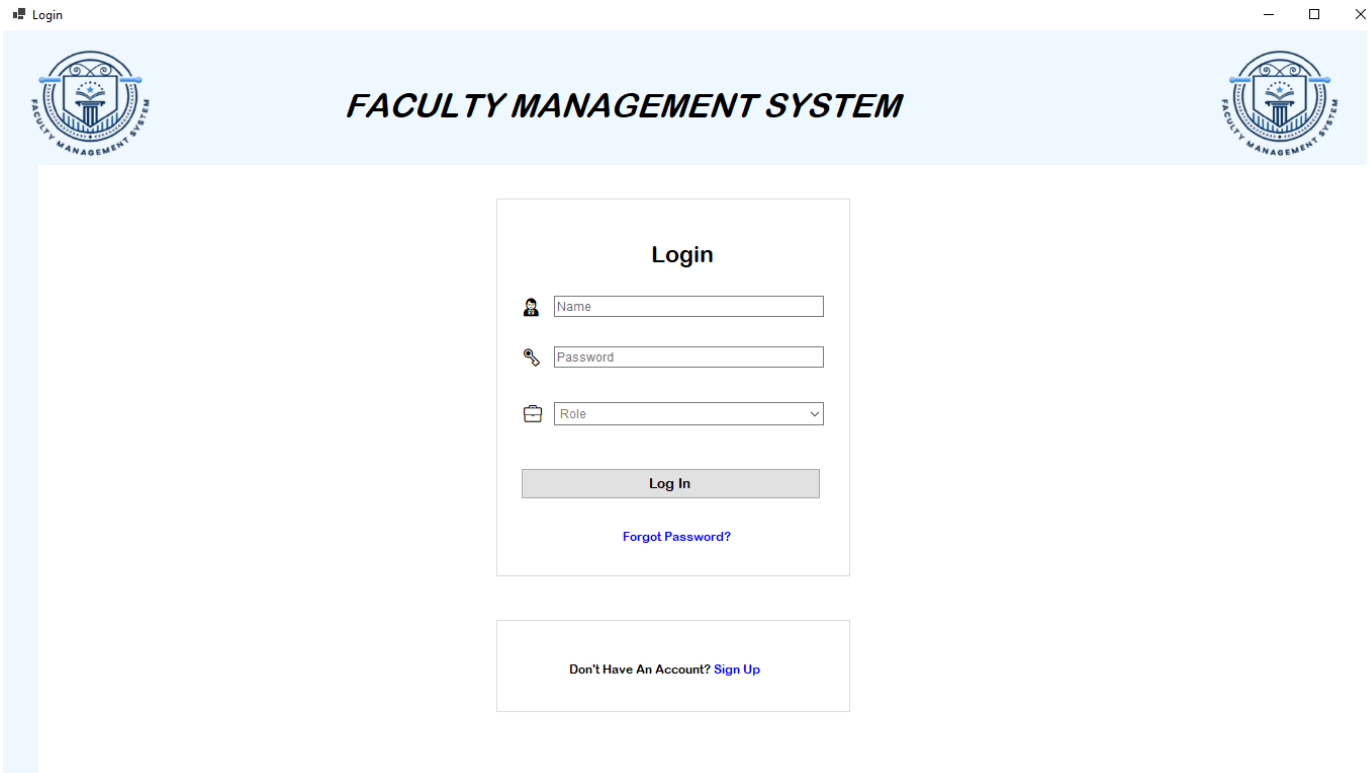
CSC104-Database Systems
Mid Project Report (Fall 2024)

Student Details

Repository Name	DBS25P041
Registration Number	2024-CS-41

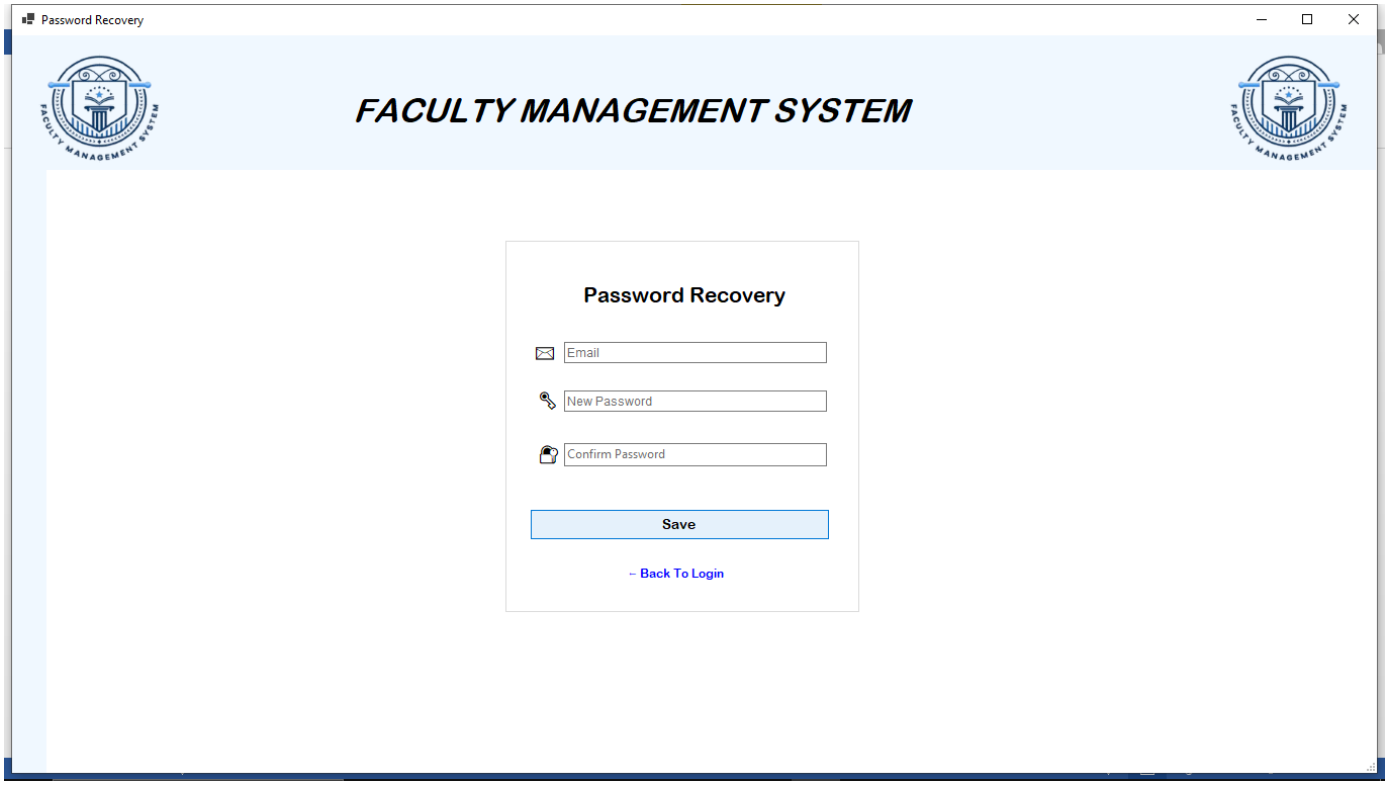
Project	
Project Title	Faculty Management System
Executive Summary	*This project, Faculty Management System, is a Windows-based application developed using C# and SQL to help manage faculty workload and resource allocation efficiently. The system allows administrators to assign courses, allocate rooms, track faculty schedules, and generate reports based on workload distribution.* *The project provides an interactive user interface where faculty members and administrators can easily manage and monitor assignments. Role-Based Access Control (RBAC) ensures that different users (Admin, Faculty, and Department Head) have access to the relevant functionalities.* *Key features of the project include:* • *Course Management: Assign courses to faculty members.* • *Project Assignment: Faculty members can be assigned research projects.* • *Room Allocation: Assign classrooms or labs to faculty.* • *Scheduling: Faculty schedules can be managed efficiently.* • *Reports Generation: Business reports provide insights into faculty workload distribution.* *The system is designed to reduce manual workload, prevent overburdening faculty, and optimize resource allocation. By using SQL queries for data retrieval and modification, the system ensures fast and efficient operations.* *The ultimate goal is to create a user-friendly and efficient faculty workload management system that can be expanded with additional features in the future.*

Interface Name	Login



UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
textBox1	TextBox	textBox1, Login, textBox1	SELECT * FROM Users WHERE username = @username;
textBox2	TextBox (Password)	textBox2, Login, textBox2	SELECT * FROM Users WHERE username = @username AND password_hash = HASHBYTES('SHA2_256', @password);
role	ComboBox	role, Login, role	SELECT DISTINCT role FROM Users; (For filling ComboBox)
signup	Button	signup, Login, signup	SELECT * FROM Users WHERE username = @username AND password_hash = HASHBYTES('SHA2_256', @password) AND role = @role;
linkLabel1	LinkLabel	linkLabel1, Login, linkLabel1	-- Redirects to password recovery page
linkLabel2	LinkLabel	linkLabel2, Login, linkLabel2	-- Redirects to signup page

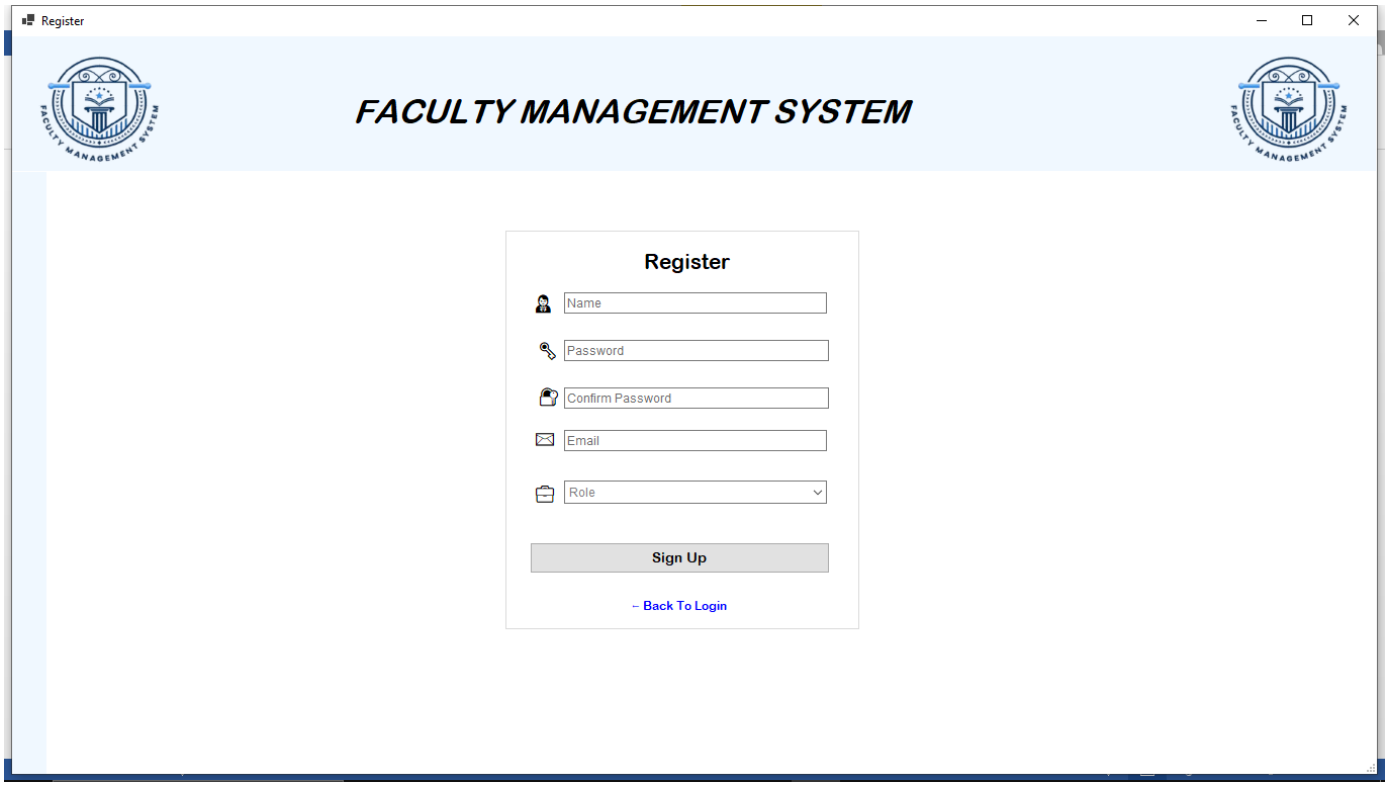
Interface Name	Password Recovery



UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
textBox3	TextBox	textBox3, forgotPassword, textBox3	SELECT * FROM Users WHERE email = @email;
textBox2	TextBox (Password)	textBox2, forgotPassword, textBox2	-- Used for password input, updated in reset button logic
textBox1	TextBox (Password)	textBox1, forgotPassword, textBox1	-- Used for password confirmation (No DB linkage)
reset	Button	reset, forgotPassword, reset	UPDATE Users SET password_hash = HASHBYTES('SHA2_256', @newPassword) WHERE email = @email;
linkLabel1	LinkLabel	linkLabel1, forgotPassword, linkLabel1	-- Redirects to the login page (Handled in UI logic)
panel1	Panel	panel1, forgotPassword, panel1	-- UI layout (No DB linkage)
panel2	Panel	panel2, forgotPassword, panel2	-- UI layout (No DB linkage)

panel3	Panel	panel3, forgotPassword, panel3	-- UI layout (No DB linkage)
pictureBox1	PictureBox	pictureBox1, forgotPassword, pictureBox1	-- Displays logo/image (No DB linkage)
pictureBox2	PictureBox	pictureBox2, forgotPassword	Displays logo/image
label6	Label	label6, forgotPassword, label6	Displays "FACULTY MANAGEMENT SYSTEM" (No DB linkage)

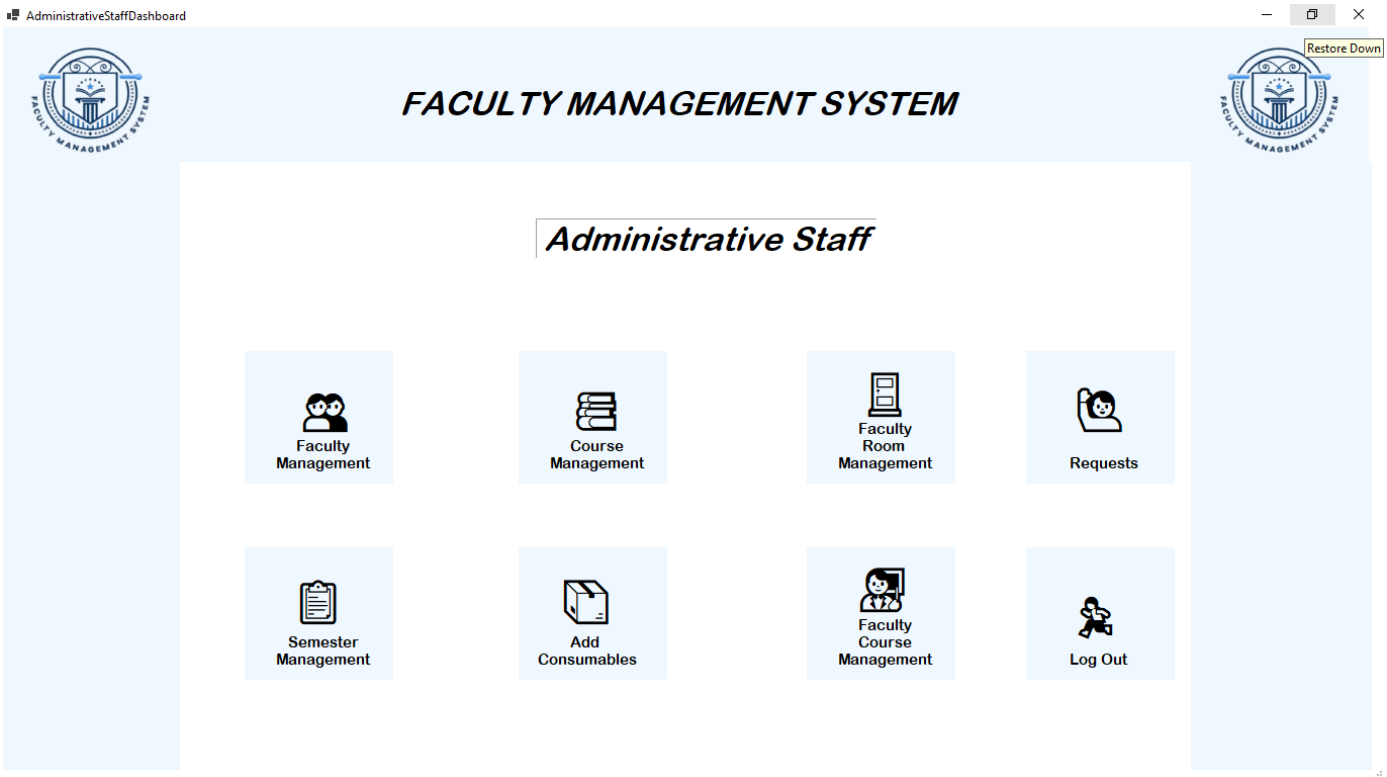
Interface Name	Register



UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**
textBox1	TextBox	textBox1, Register, textBox1	INSERT INTO Users (Name) VALUES (@name);
textBox2	TextBox (Password)	textBox2, Register, textBox2	-- Used for password input, inserted in signup button logic
textBox4	TextBox (Confirm Password)	textBox4, Register, textBox4	-- Used for password verification (No DB linkage)
textBox3	TextBox (Email)	textBox3, Register, textBox3	INSERT INTO Users (Email) VALUES (@email);

Role	ComboBox	Role, Register, Role	INSERT INTO Users (Role) VALUES (@role);
signup	Button	signup, Register, signup	INSERT INTO Users (Name, Email, Password_hash, Role) VALUES (@name, @email, HASHBYTES('SHA2_256', @password), @role);
linkLabel1	LinkLabel	linkLabel1, Register	Redirects to the Login page

Interface Name	Admin Dashboard

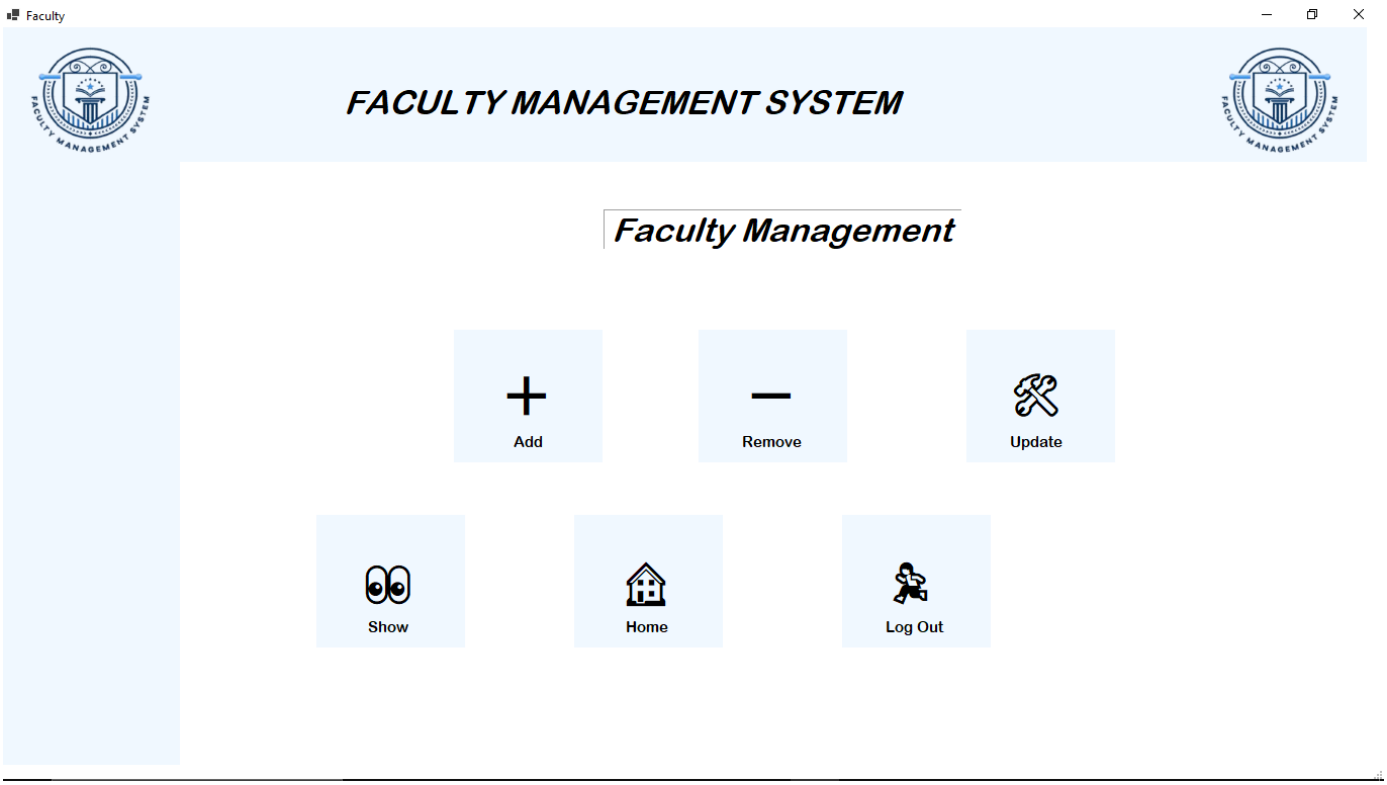


UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**
panel1	Panel	panel1, AdministrativeStaffDashboard, panel1	Not linked to DB (UI structure)
panel2	Panel	panel2, AdministrativeStaffDashboard, panel2	Not linked to DB (Navigation sidebar)

panel3	Panel	panel3, AdministrativeStaffDashboard, panel3	Not linked to DB (UI structure)
panel4	Panel	panel4, AdministrativeStaffDashboard, panel4	Not linked to DB (UI structure)
pictureBox1	PictureBox	pictureBox1, AdministrativeStaffDashboard, pictureBox1	Not linked to DB (UI Image)
pictureBox2	PictureBox	pictureBox2, AdministrativeStaffDashboard, pictureBox2	Not linked to DB (UI Image)
label1	Label	label1, AdministrativeStaffDashboard, label1	Not linked to DB (Static title text)
Heading	Label	Heading, AdministrativeStaffDashboard, Heading	Not linked to DB (Static title text)
label2	Label	label2, AdministrativeStaffDashboard, label2	Not linked to DB (Static icon/emoji)
label4	Label	label4, AdministrativeStaffDashboard, label4	Not linked to DB (Static icon/emoji)
label8	Label	label8, AdministrativeStaffDashboard, label8	Not linked to DB (Static icon/emoji)
label3	Label	label3, AdministrativeStaffDashboard, label3	Not linked to DB (Static icon/emoji)
linkLabel7	LinkLabel	linkLabel7, AdministrativeStaffDashboard, linkLabel7	Navigates to FacultyManagement page (No direct DB link)
linkLabel2	LinkLabel	linkLabel2, AdministrativeStaffDashboard, linkLabel2	Navigates to CourseManagement page (No direct DB link)
linkLabel8	LinkLabel	linkLabel8, AdministrativeStaffDashboard, linkLabel8	Navigates to Requests page (No direct DB link)
logout	LinkLabel	logout, AdministrativeStaffDashboard, logout	Not linked to DB (Logs out user)
linkLabel1	LinkLabel	linkLabel1,	Navigates to AddConsumables

		AdministrativeStaffDashboard, linkLabel1	(No direct DB link)
linkLabel3	LinkLabel	linkLabel3, AdministrativeStaffDashboard, linkLabel3	Navigates to SemesterManagement (No direct DB link)
linkLabel4	LinkLabel	linkLabel4, AdministrativeStaffDashboard, linkLabel4	Navigates to FacultyCourseManagement (No direct DB link)

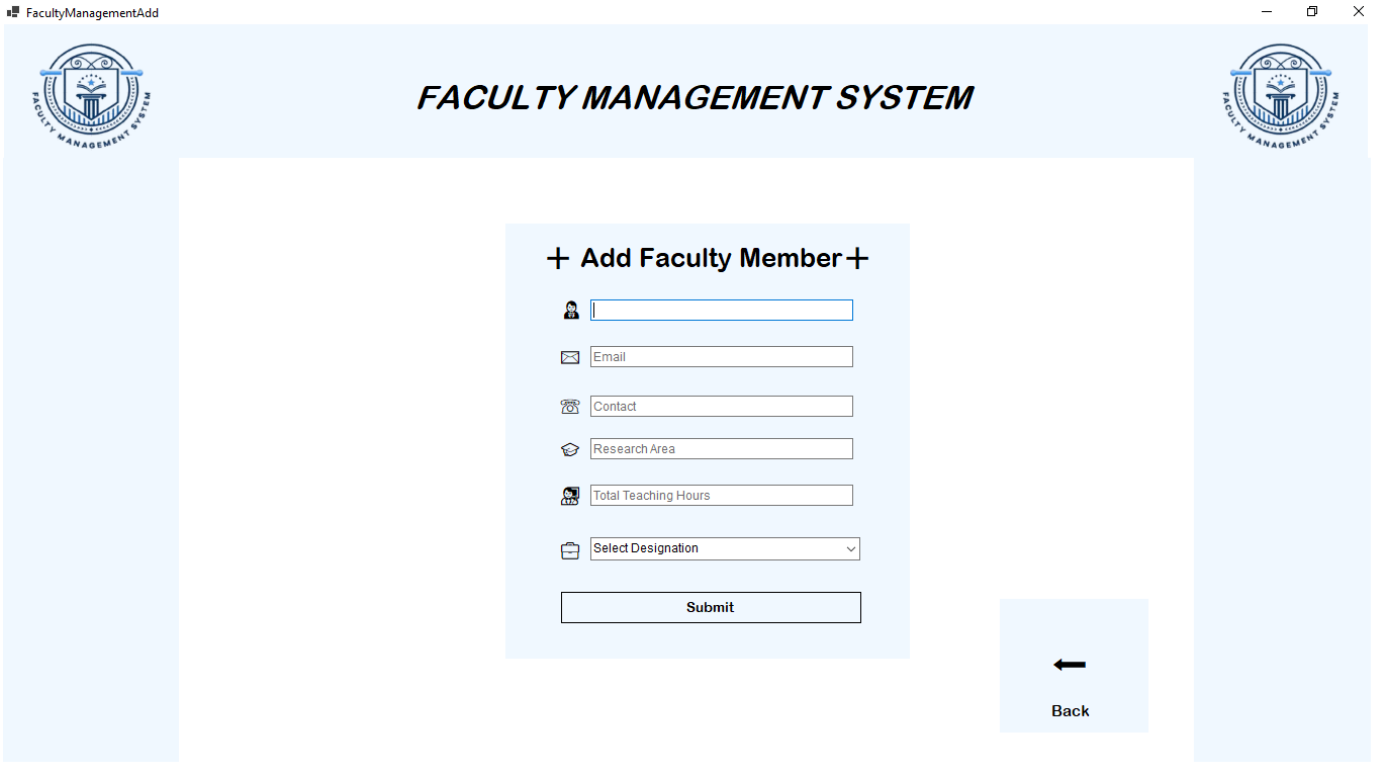
Interface Name	Faculty Management



UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**
panel1	Panel	panel1, FacultyManagement, Panel	Not linked to DB
H1	Label	H1, FacultyManagement, Label	Not linked to DB
panel2	Panel	panel2, FacultyManagement, Panel	Not linked to DB

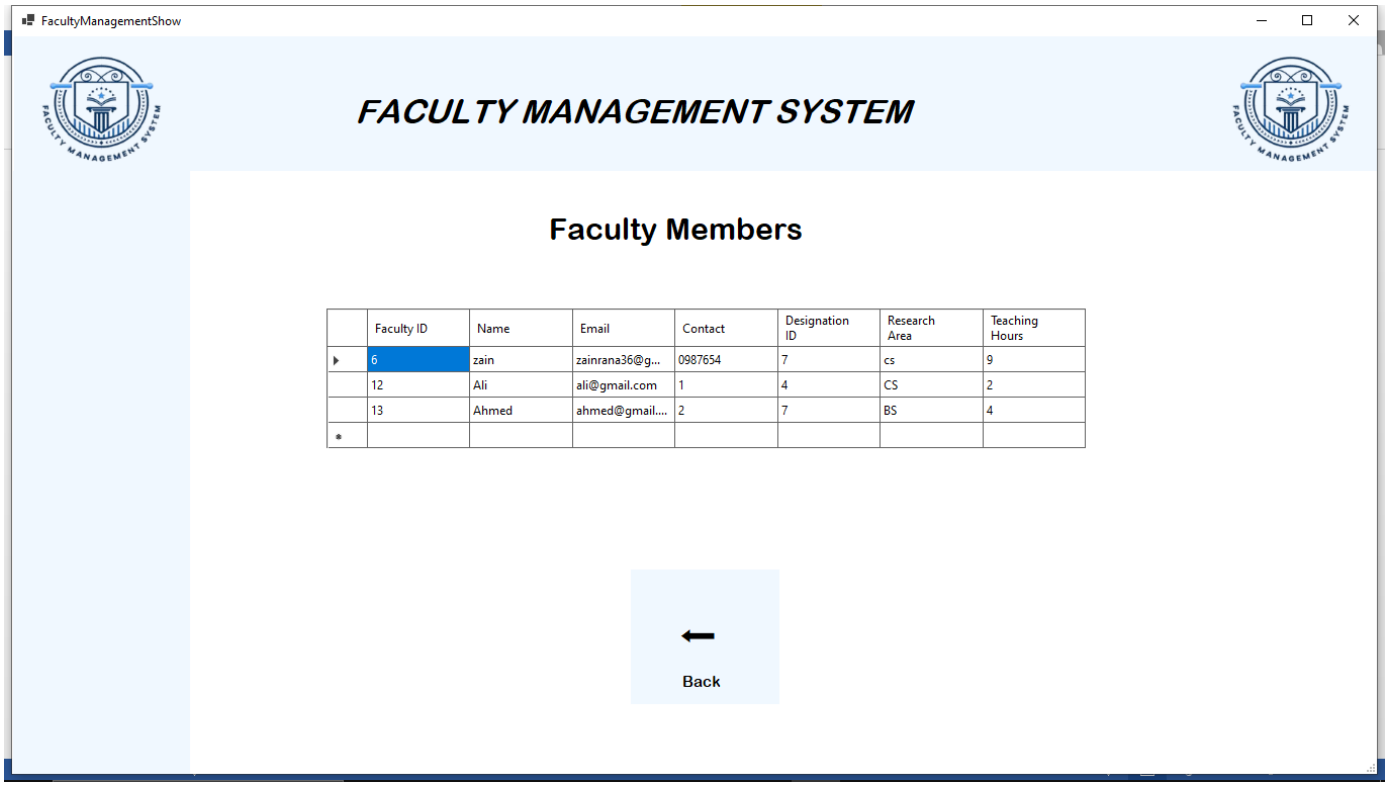
pictureBox1	PictureBox	pictureBox1, FacultyManagement, PictureBox	Not linked to DB
label6	Label	label6, FacultyManagement, Label	Not linked to DB
pictureBox2	PictureBox	pictureBox2, FacultyManagement, PictureBox	Not linked to DB
addmember	LinkLabel	addmember, FacultyManagement, LinkLabel	INSERT INTO Faculty (Name, Email, Department, Role) VALUES (@name, @email, @department, @role);
removemember	LinkLabel	removemember, FacultyManagement, LinkLabel	DELETE FROM Faculty WHERE FacultyID = @facultyID;
updatemember	LinkLabel	updatemember, FacultyManagement, LinkLabel	UPDATE Faculty SET Name = @name, Email = @email, Department = @department, Role = @role WHERE FacultyID = @facultyID;
Home	LinkLabel	Home, FacultyManagement, LinkLabel	Not linked to DB (Navigation)
logout	LinkLabel	logout, FacultyManagement, LinkLabel	Not linked to DB (Navigation)
label2	Label	label2, FacultyManagement, Label	Not linked to DB
label1	Label	label1, FacultyManagement, Label	Not linked to DB
label3	Label	label3, FacultyManagement, Label	Not linked to DB
label4	Label	label4, FacultyManagement, Label	Not linked to DB
label5	Label	label5, FacultyManagement, Label	Not linked to DB
showfaculty	LinkLabel	showfaculty, FacultyManagement, LinkLabel	SELECT * FROM Faculty;
label7	Label	label7, FacultyManagement, Label	Not linked to DB

Interface Name	Add Faculty Member



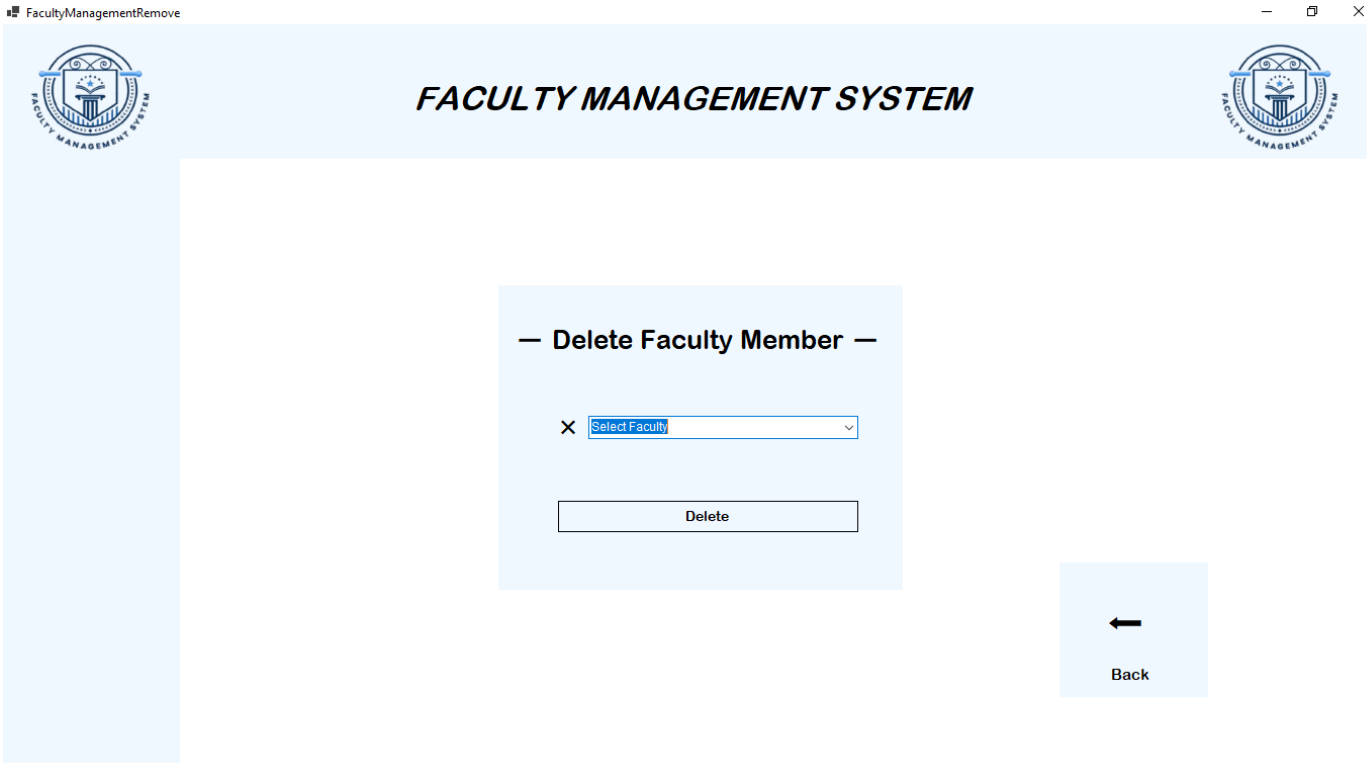
UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
txtFullName	TextBox	FullName, Faculty, full_name	INSERT INTO Faculty (full_name) VALUES (@fullName); (For Insert) UPDATE Faculty SET full_name = @fullName WHERE FacultyID = @facultyID; (For Update)
txtEmail	TextBox	Email, Faculty, email	INSERT INTO Faculty (email) VALUES (@Email); (For Insert) UPDATE Faculty SET email = @Email WHERE FacultyID = @facultyID; (For Update)
cmbDepartment	ComboBox	Department, Faculty, department_id	INSERT INTO Faculty (department_id) VALUES (@departmentID); (For Insert)

Interface Name	Show Faculty Members



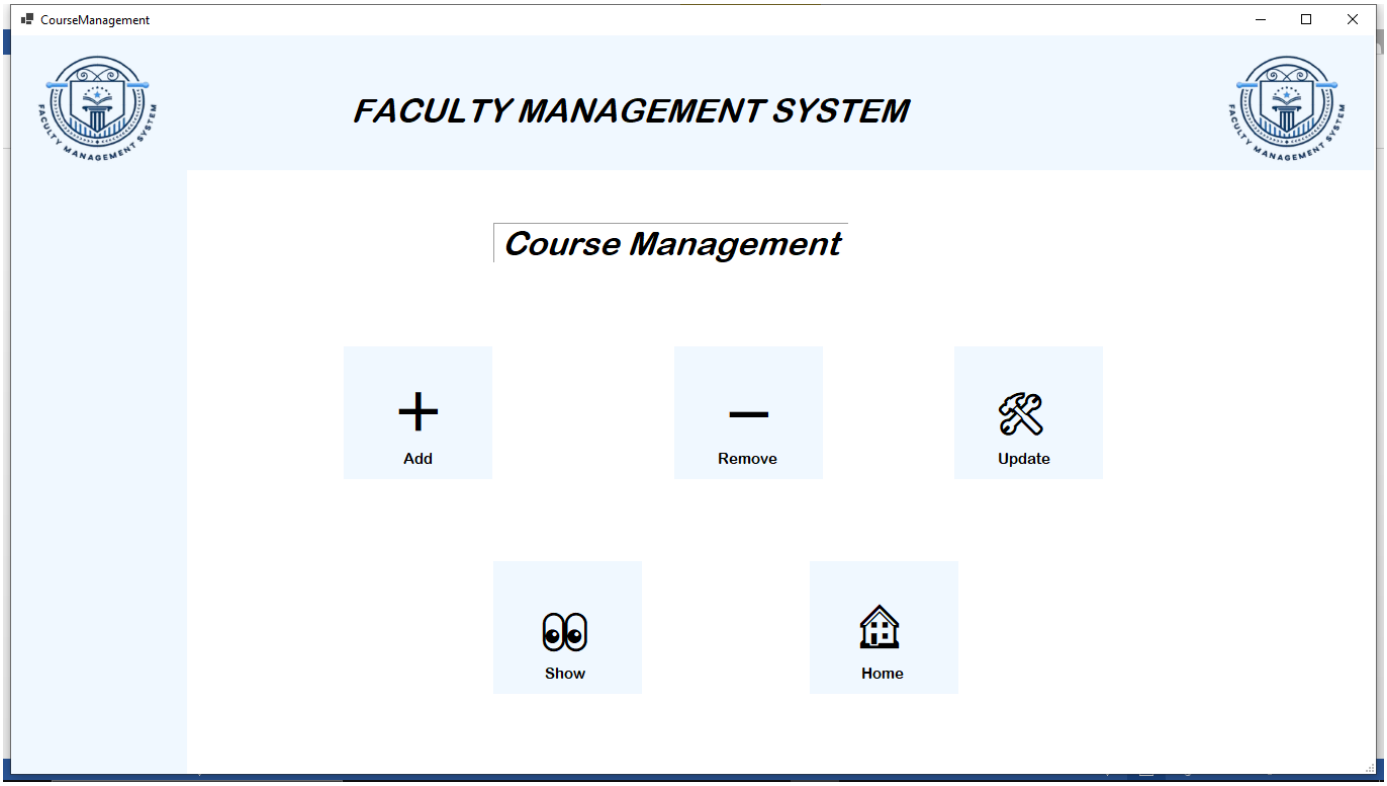
UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**
dvgFaculty	DataGridView	dvgFaculty, FacultyManagementShow, dvgFaculty	SELECT * FROM Faculty; (Fetches faculty data for display)
H1	Label	H1, FacultyManagementShow, H1	Static text, no database query needed
logout	LinkLabel	logout, FacultyManagementShow, logout	Triggers logout functionality (No direct DB interaction)
label1	Label	label1, FacultyManagementShow, label1	Static text, no database query needed

Interface Name	Remove Faculty Member



UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
Members	ComboBox	FacultyMember, Faculty, faculty_id	SELECT faculty_id, full_name FROM Faculty; (Fetches faculty members for selection)
Delete	Button	-	DELETE FROM Faculty WHERE faculty_id = @faculty_id; (Deletes selected faculty member)

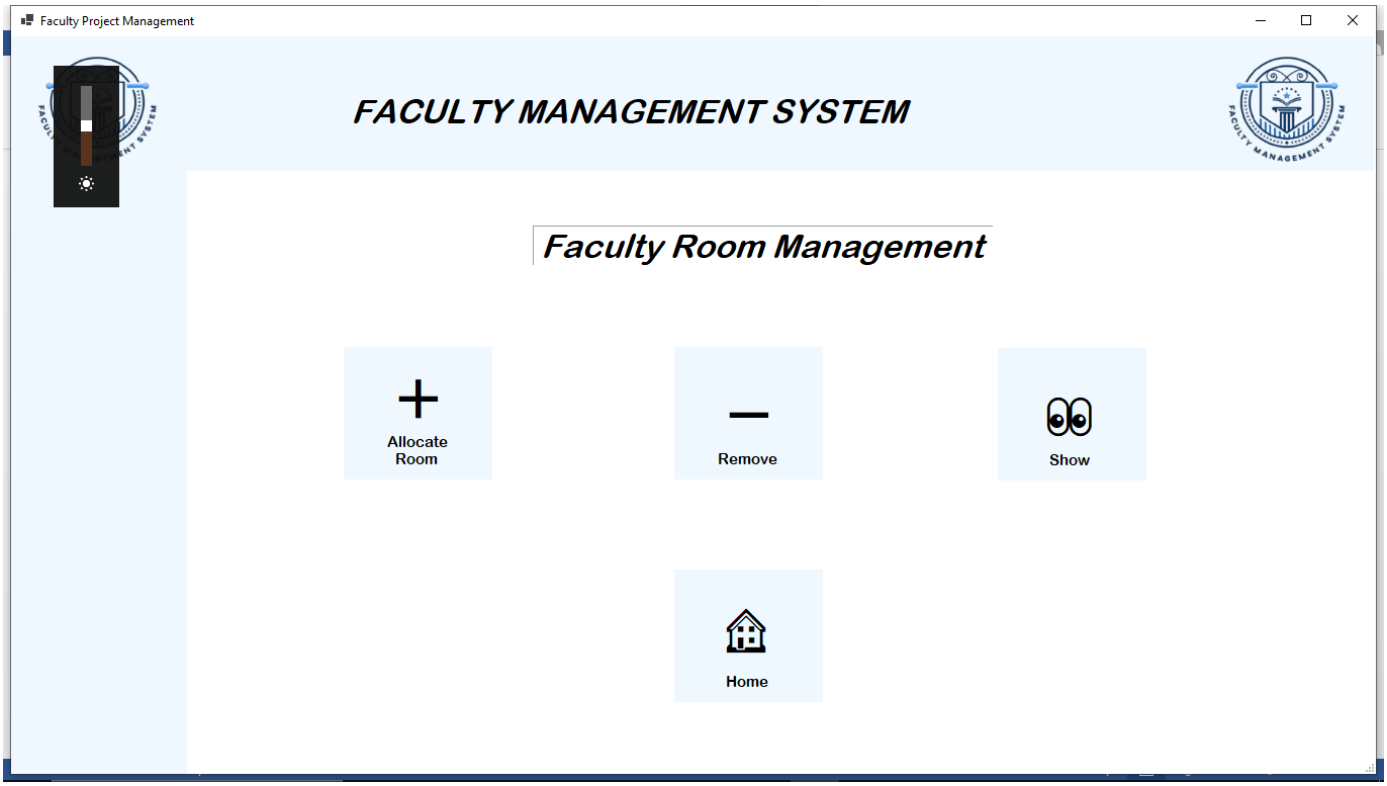
Interface Name	Course Management



UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**
addmember	LinkLabel	addmember	INSERT INTO Courses (course_name, department_id, faculty_id) VALUES (@course_name, @department_id, @faculty_id);
removemember	LinkLabel	removemember	DELETE FROM Courses WHERE course_id = @course_id;
updatemember	LinkLabel	updatemember	UPDATE Courses SET course_name = @course_name, department_id = @department_id, faculty_id = @faculty_id WHERE course_id = @course_id;

showfaculty	LinkLabel	showfaculty	SELECT * FROM Courses;
Home	LinkLabel	Home	N/A (Navigation)
H1	Label	H1	N/A (UI Heading)

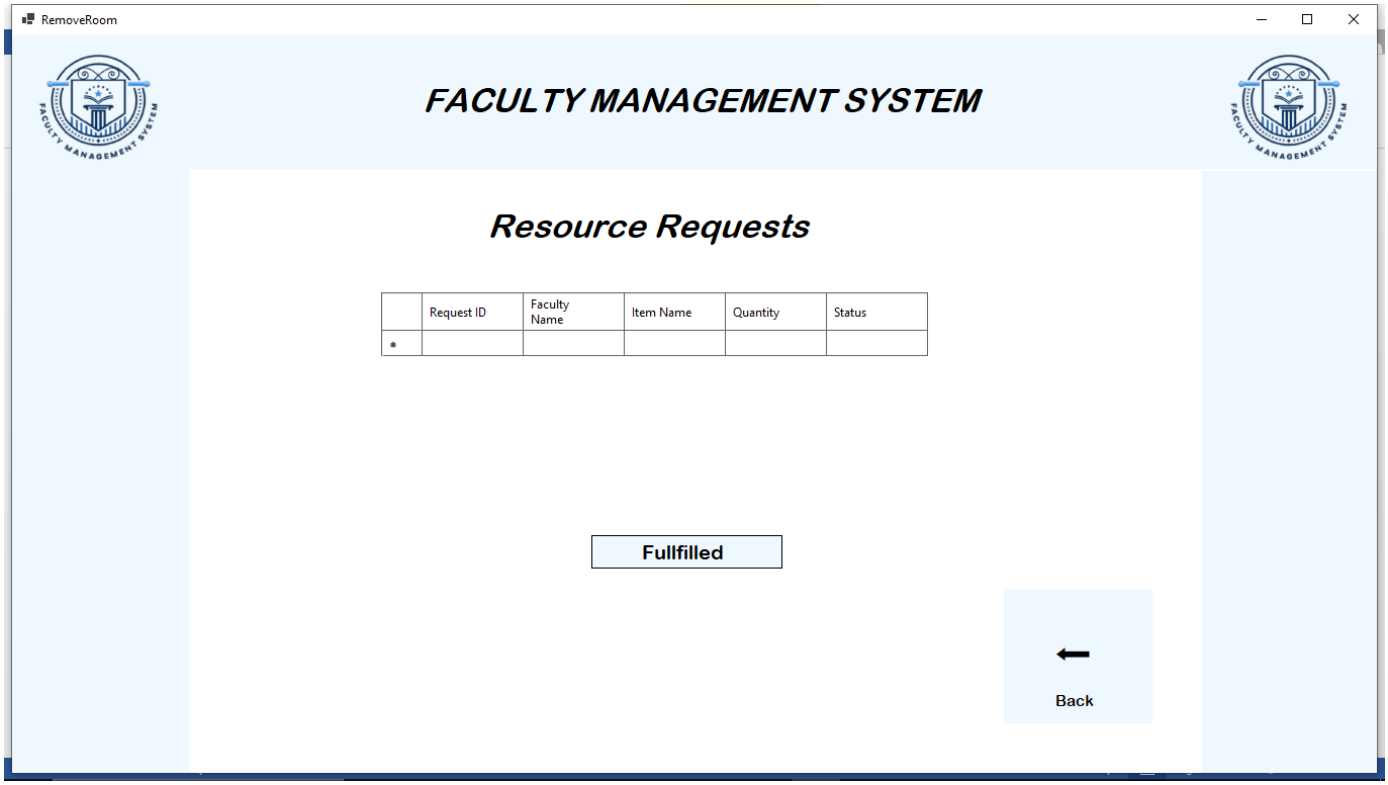
Interface Name	Room Management



UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**
addmember	LinkLabel	addmember, FacultyRoomManagement	INSERT INTO RoomAllocation (faculty_id, room_id, allocated_date) VALUES (@faculty_id, @room_id, @allocated_date);

removemember	LinkLabel	removemember, FacultyRoomManagement	DELETE FROM RoomAllocation WHERE allocation_id = @allocation_id;
showfaculty	LinkLabel	showfaculty, FacultyRoomManagement	SELECT * FROM Faculty;
Home	LinkLabel	Home, FacultyRoomManagement	N/A (Navigation)
H1	Label	H1, FacultyRoomManagement	N/A (UI Heading)

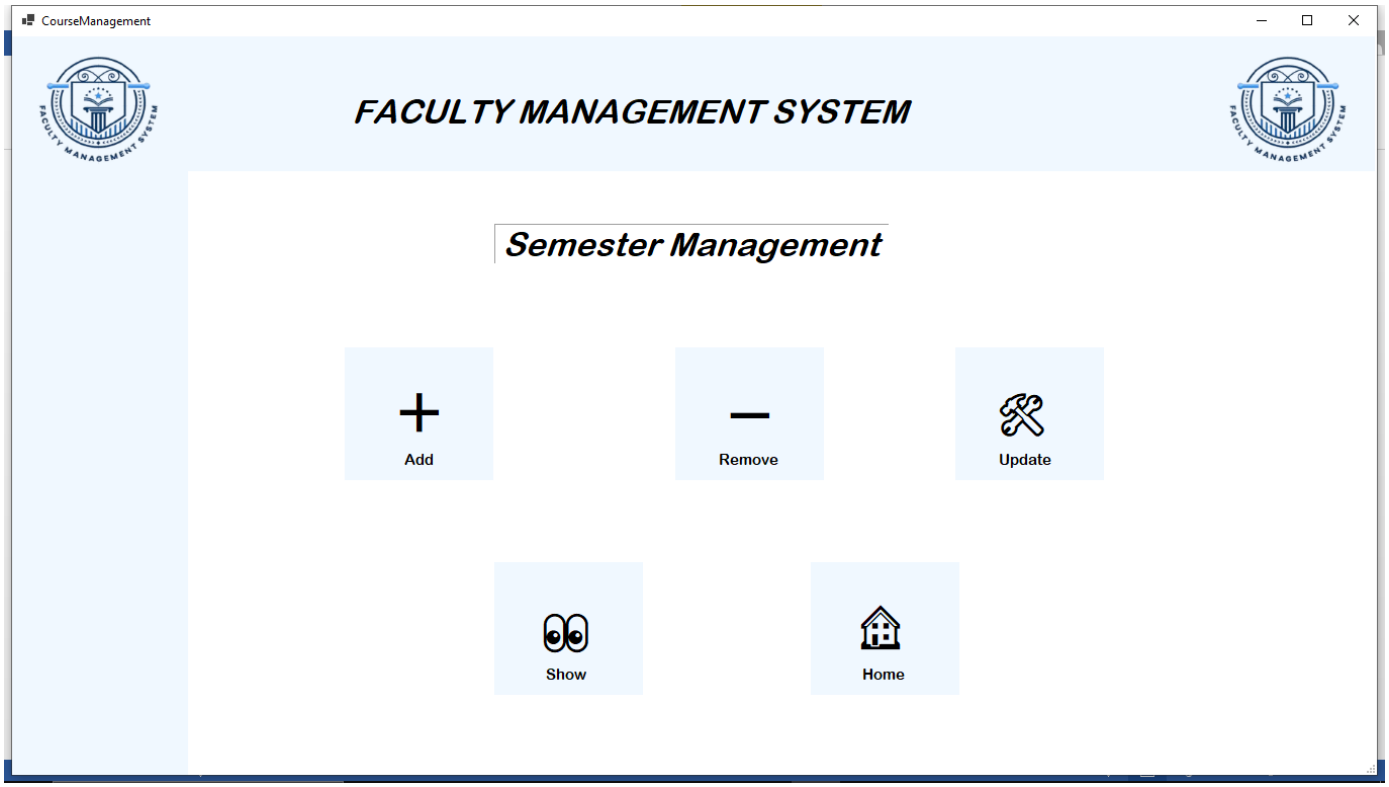
Interface Name	Fulfilled Request



UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**

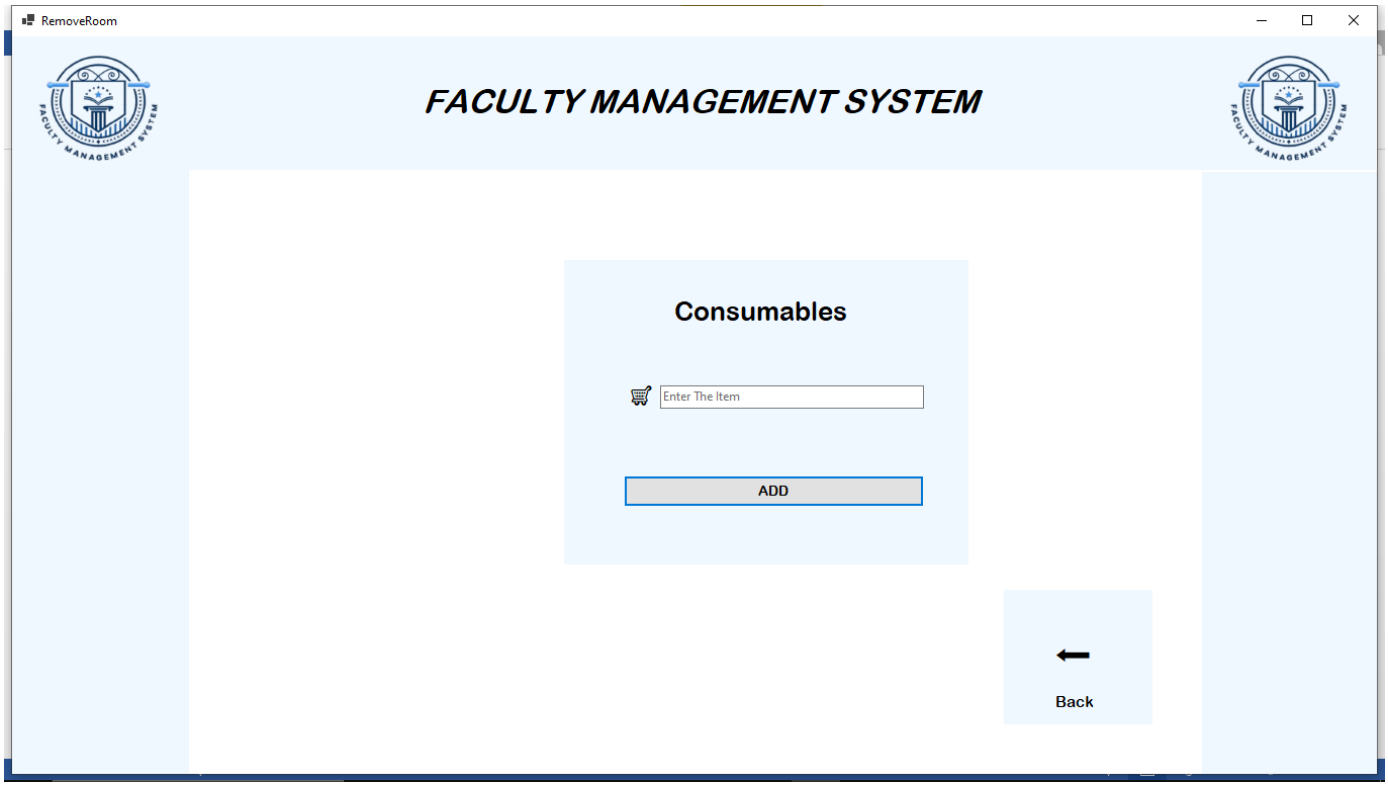
requests	DataGridView	requests	SELECT RequestID, FacultyID, ResourceName, Status FROM Requests;
btnUpdate	Button	btnUpdate	UPDATE Requests SET Status = 'Fulfilled' WHERE RequestID = @RequestID AND Status = 'Pending';

Interface Name	Semester Management



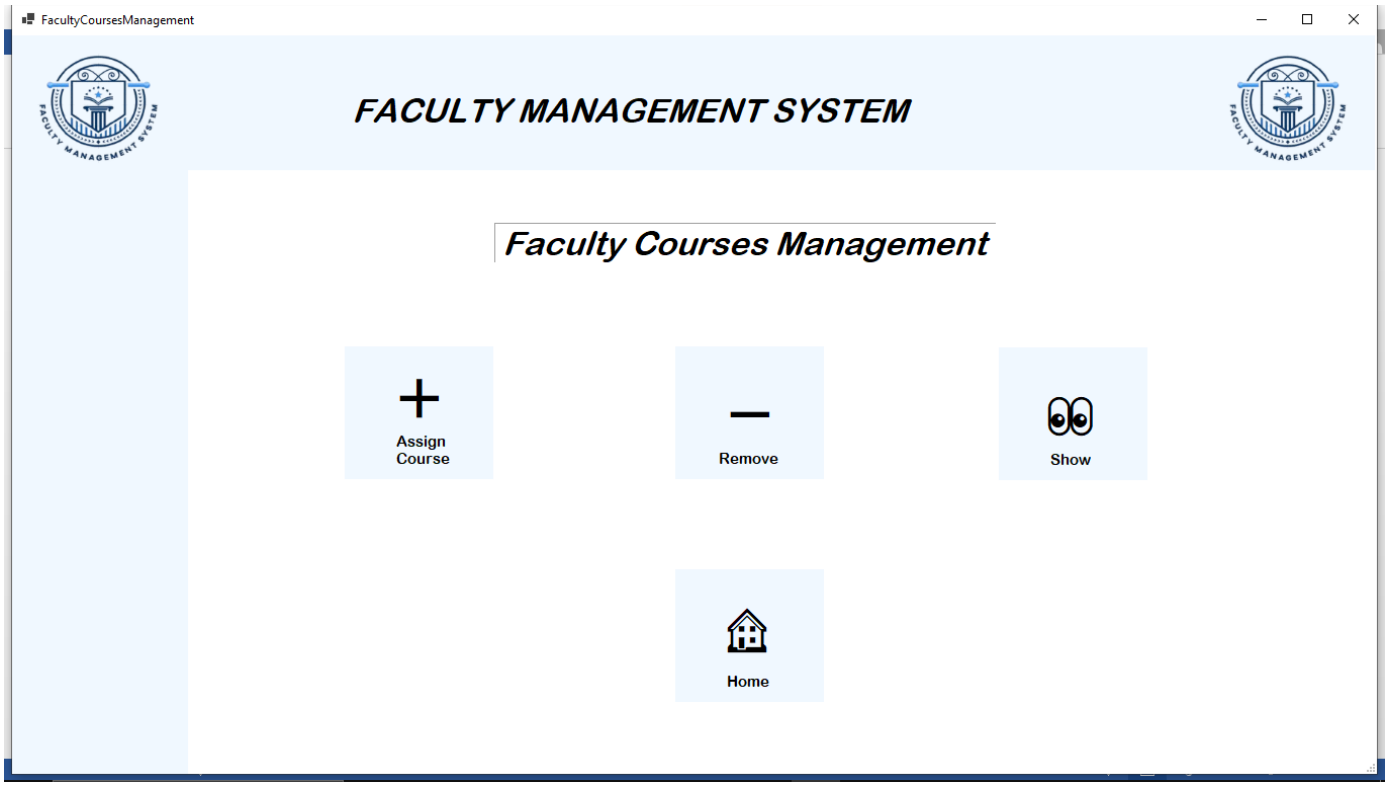
UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
addmember	LinkLabel	addmember	INSERT INTO Semester (Column1, Column2, ...) VALUES (@Value1, @Value2, ...);
removemember	LinkLabel	removemember	DELETE FROM Semester WHERE SemesterID = @SemesterID;
updatemember	LinkLabel	updatemember	UPDATE Semester SET Column1 = @Value1, Column2 = @Value2 WHERE SemesterID = @SemesterID;
showfaculty	LinkLabel	showfaculty	SELECT * FROM Faculty;
Home	LinkLabel	Home	Navigation to home page (No DB Query)
H1	Label	H1	UI Display (No DB Query)
panel1	Panel	panel1	UI Layout (No DB Query)

Interface Name	Add Consumables



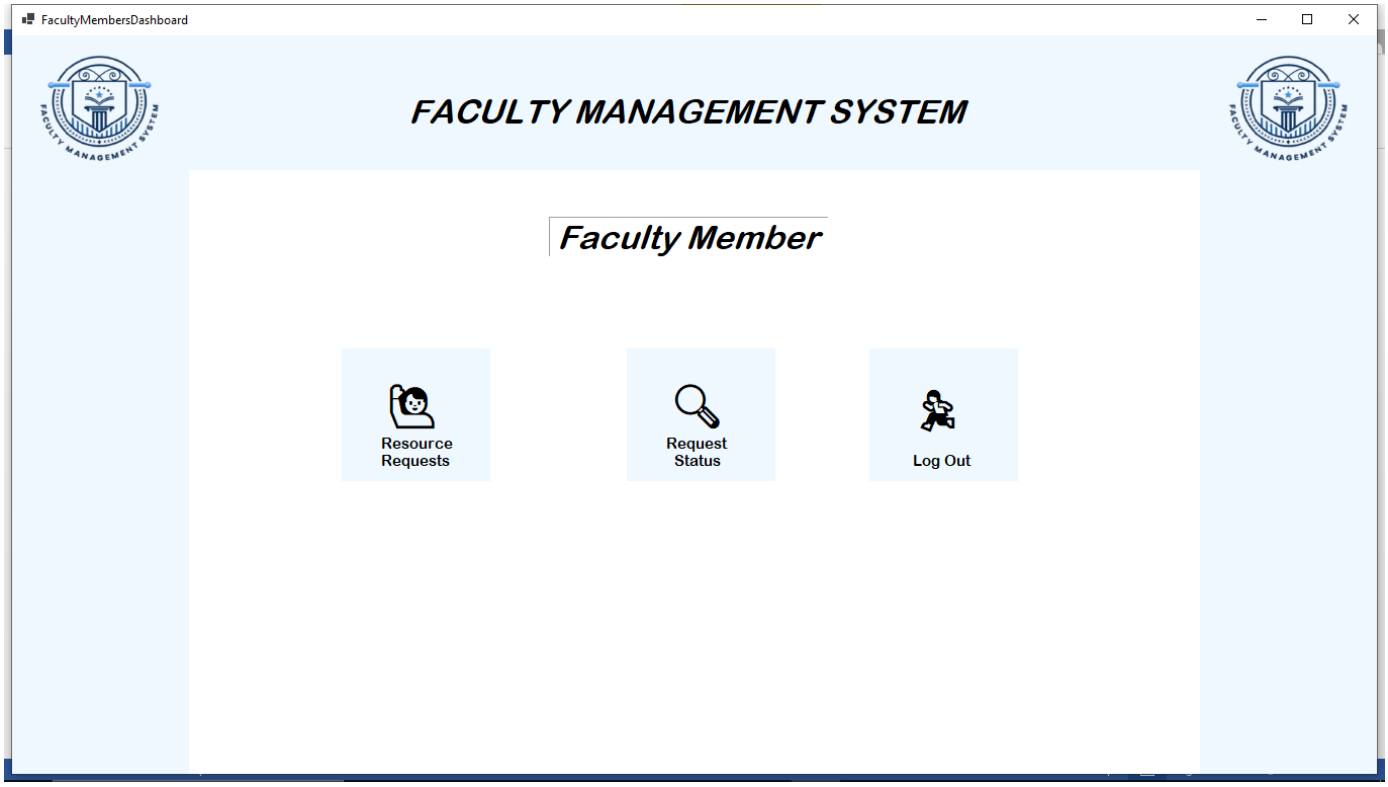
UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
textBox1	TextBox	textBox1	INSERT INTO Consumables (Column1) VALUES (@Value1); (Modify based on actual column name)
Delete	Button	Delete	DELETE FROM Consumables WHERE ConsumableID = @ConsumableID;
logout	LinkLabel	logout	Logs out the user (No DB Query)
label6	Label	label6	AddConsumables, label6
H1	Label	H1	AddConsumables, H1
label1	Label	label1	AddConsumables, label1
label2	Label	label2	AddConsumables, label2
fnameicon	Label	fnameicon	AddConsumables, fnameicon

Interface Name	Faculty Course Management



UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
addmember	LinkLabel	addmember	INSERT INTO FacultyCourses (CourseID, FacultyID) VALUES (@CourseID, @FacultyID);
removemember	LinkLabel	removemember	DELETE FROM FacultyCourses WHERE CourseID = @CourseID AND FacultyID = @FacultyID;
showfaculty	LinkLabel	showfaculty	SELECT FacultyID, Name, Department FROM Faculty;

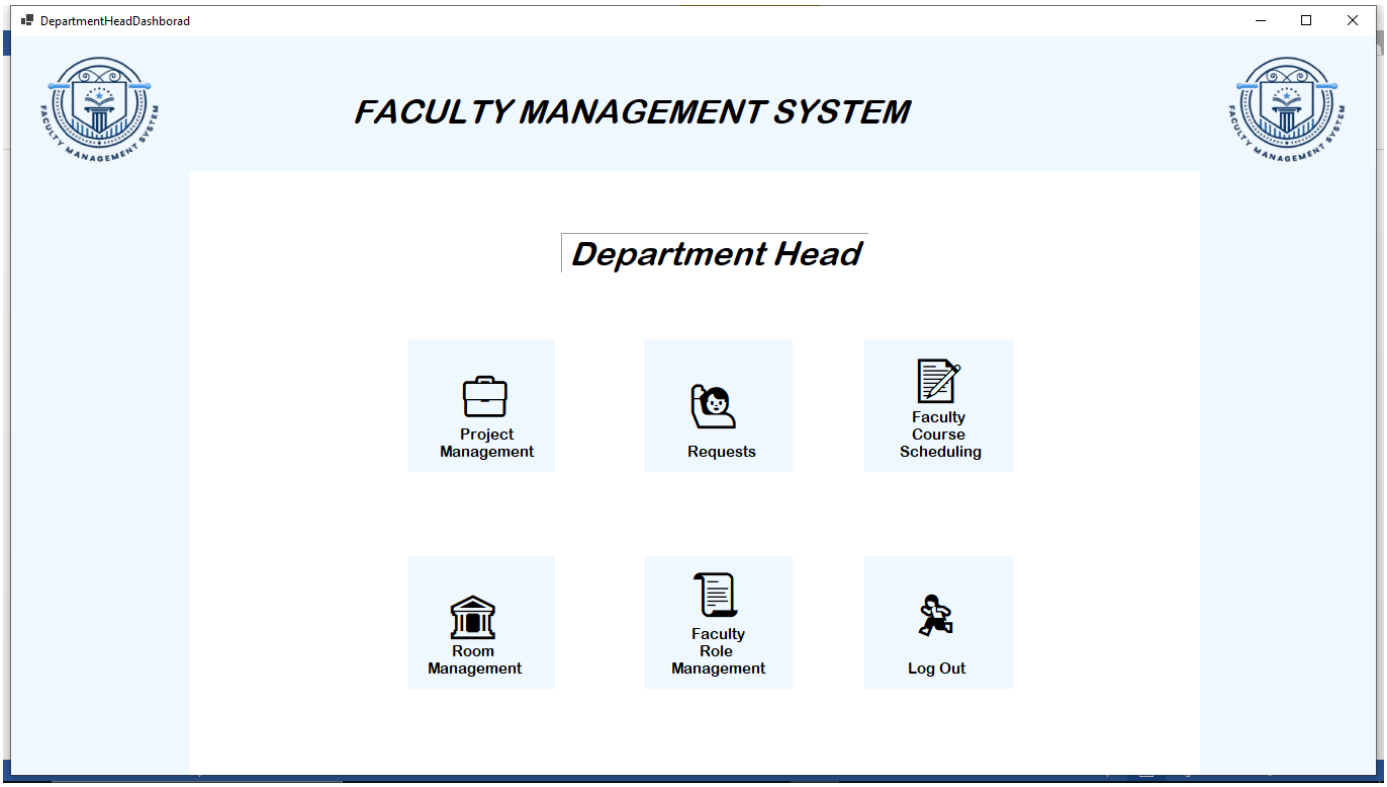
Interface Name	Faculty Member Dashboard



UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
linkLabel8	LinkLabel	ResourceRequests	ResourceRequests (RequestID, FacultyID, ResourceType, Status)

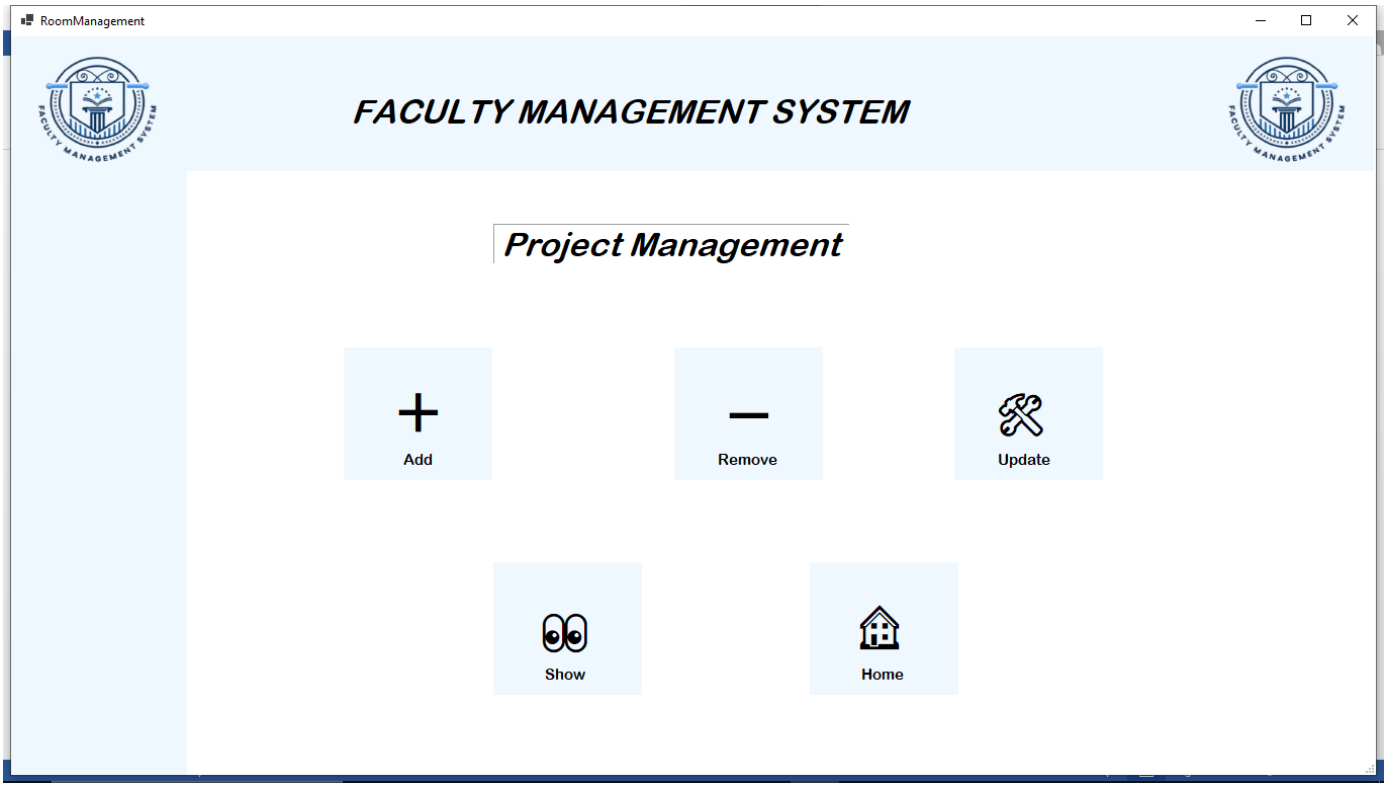
linkLabel1	LinkLabel	RequestStatus	ResourceRequests (RequestID, FacultyID, Status, ApprovalDate)
logout	LinkLabel	Logout	Not linked (Logout functionality)

Interface Name	Department Head Dashboard



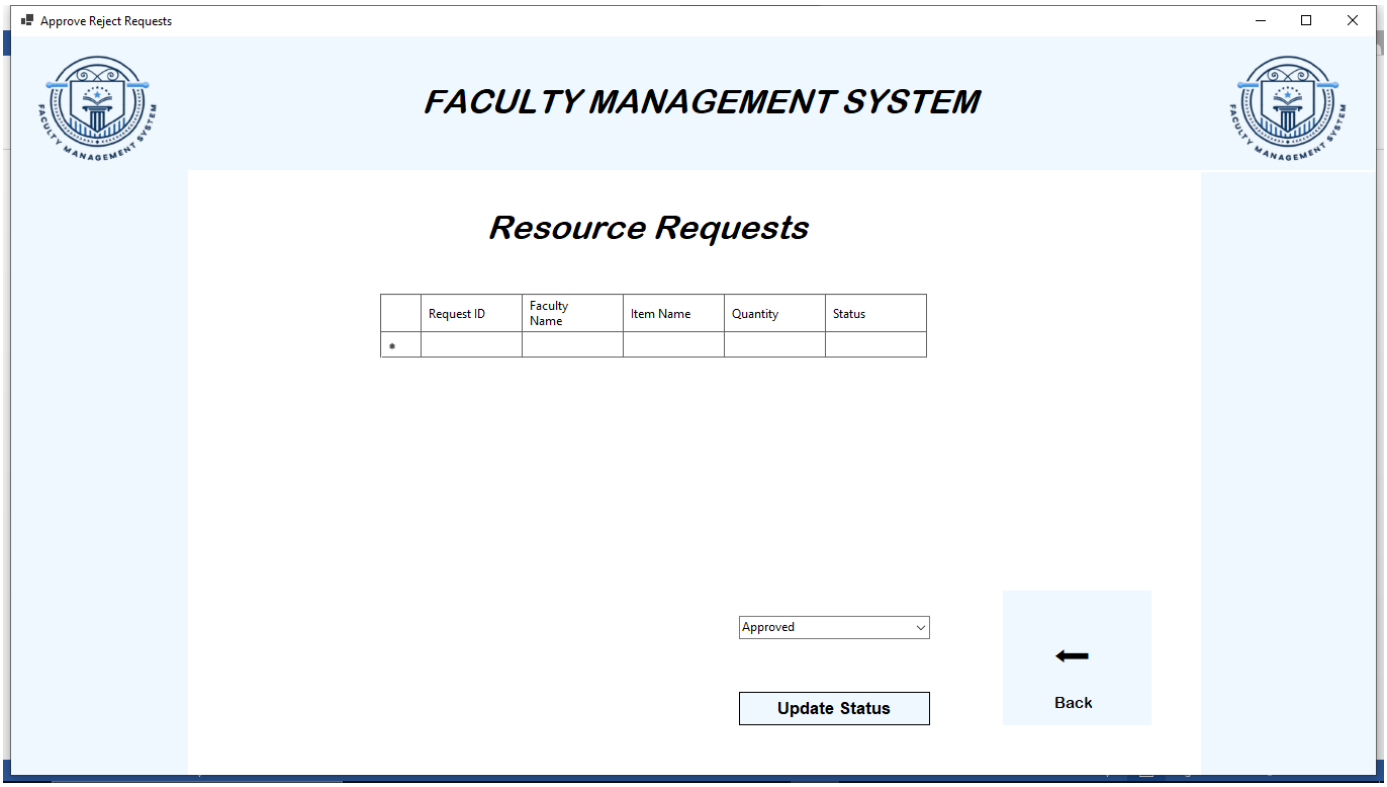
UI Component Name	**Type of UI component**	**Class Attribute name, Classname, attribute name**	**Linked to which database column/table**
Username Field	TextBox	Username	User, Username
Password Field	PasswordBox	Password	User, Password
Role Selection	ComboBox	Role	User, Role
Faculty Name Field	TextBox	FacultyName	Faculty, Name
Workload Field	NumericUpDown	Workload	FacultyWorkload, Workload
Resource Dropdown	ComboBox	ResourceType	Resource, Type
Submit Button	Button	SubmitButton	UIControls, Submit
Faculty Requests Grid	DataGridView	FacultyRequests	Requests, FacultyRequests

Interface Name	Project Management



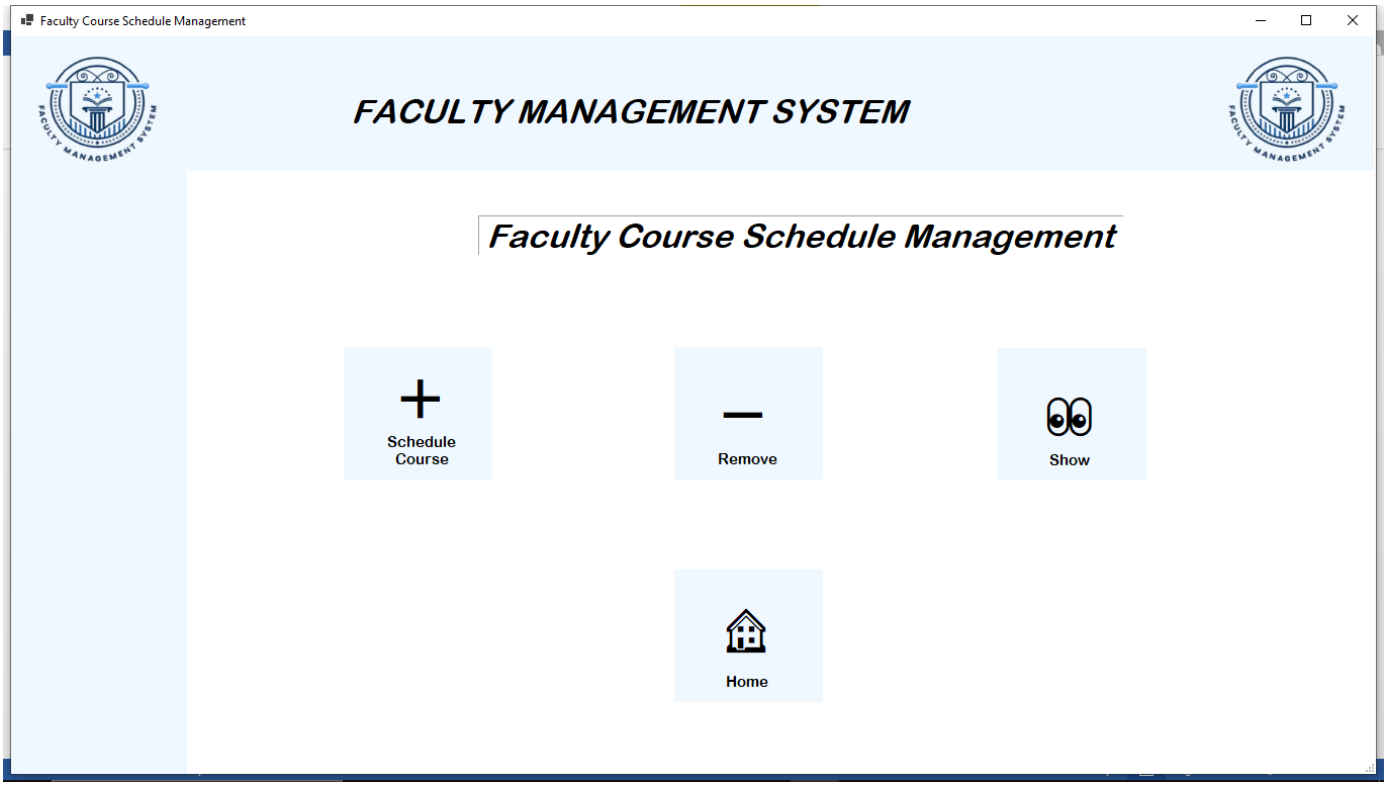
UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
H1	Label	HeaderText	ProjectManagement, H1
addmember	LinkLabel	AddMemberLink	ProjectManagement, addmember
removemember	LinkLabel	RemoveMemberLink	ProjectManagement, removemember
updatemember	LinkLabel	UpdateMemberLink	ProjectManagement, updatemember
showfaculty	LinkLabel	ShowFacultyLink	ProjectManagement, showfaculty
Home	LinkLabel	HomeLink	ProjectManagement, Home
label6	Label	TitleText	ProjectManagement, label6
panel1	Panel	SidePanel	ProjectManagement, panel1
panel2	Panel	HeaderPanel	ProjectManagement, panel2
pictureBox1	PictureBox	RightLogo	ProjectManagement, pictureBox1
pictureBox2	PictureBox	LeftLogo	ProjectManagement, pictureBox2

Interface Name	Approve Reject Requests



UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
dataGridViewRequests	DataGridView	requestsList	Request, List<Request>
comboBoxStatus	ComboBox	selectedStatus	Request.Status
btnUpdate	Button	UpdateRequestStatus()	Request.UpdateStatus()
logout	LinkLabel	BackToDashboard()	Navigation.Back()
label6	Label	Static Text	UI Display

Interface Name	Faculty Course Schedule Management

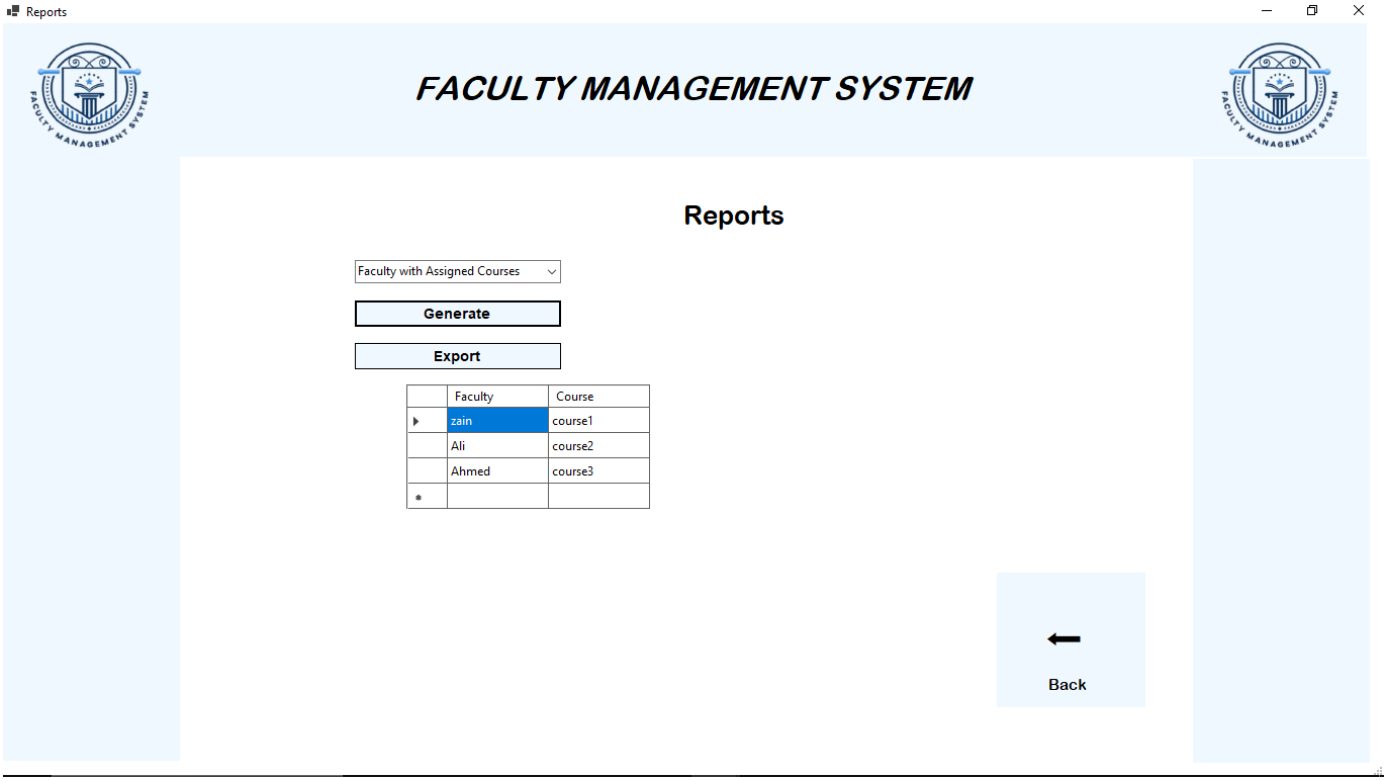


UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
addmember	LinkLabel	ScheduleCourse()	CourseSchedule.Schedule()
removemember	LinkLabel	RemoveCourse()	CourseSchedule.Remove()
showfaculty	LinkLabel	ShowFacultySchedule()	CourseSchedule.View()
Home	LinkLabel	GoToHome()	Navigation.Home()
panel2	Panel	UI Layout	Static
panel1	Panel	UI Layout	Static
label6	Label	"FACULTY MANAGEMENT SYSTEM"	Static UI Text
H1	Label	"Faculty Course Schedule Management"	Static UI Text
label2 (+)	Label	UI Symbol for Add	Linked to addmember
label4 (−)	Label	UI Symbol for Remove	Linked to removemember
label7 (👀)	Label	UI Symbol for Show	Linked to showfaculty
label3 (🏠)	Label	UI Symbol for Home	Linked to Home

Business Report-1	Faculty Course Assignments

Business Report Name: Faculty with Assigned Courses

Sample Report:



Query to build Report:

SELECT f.name AS Faculty, c.course_name AS Course
FROM faculty_courses fc
JOIN faculty f ON fc.faculty_id = f.faculty_id
JOIN courses c ON fc.course_id = c.course_id";

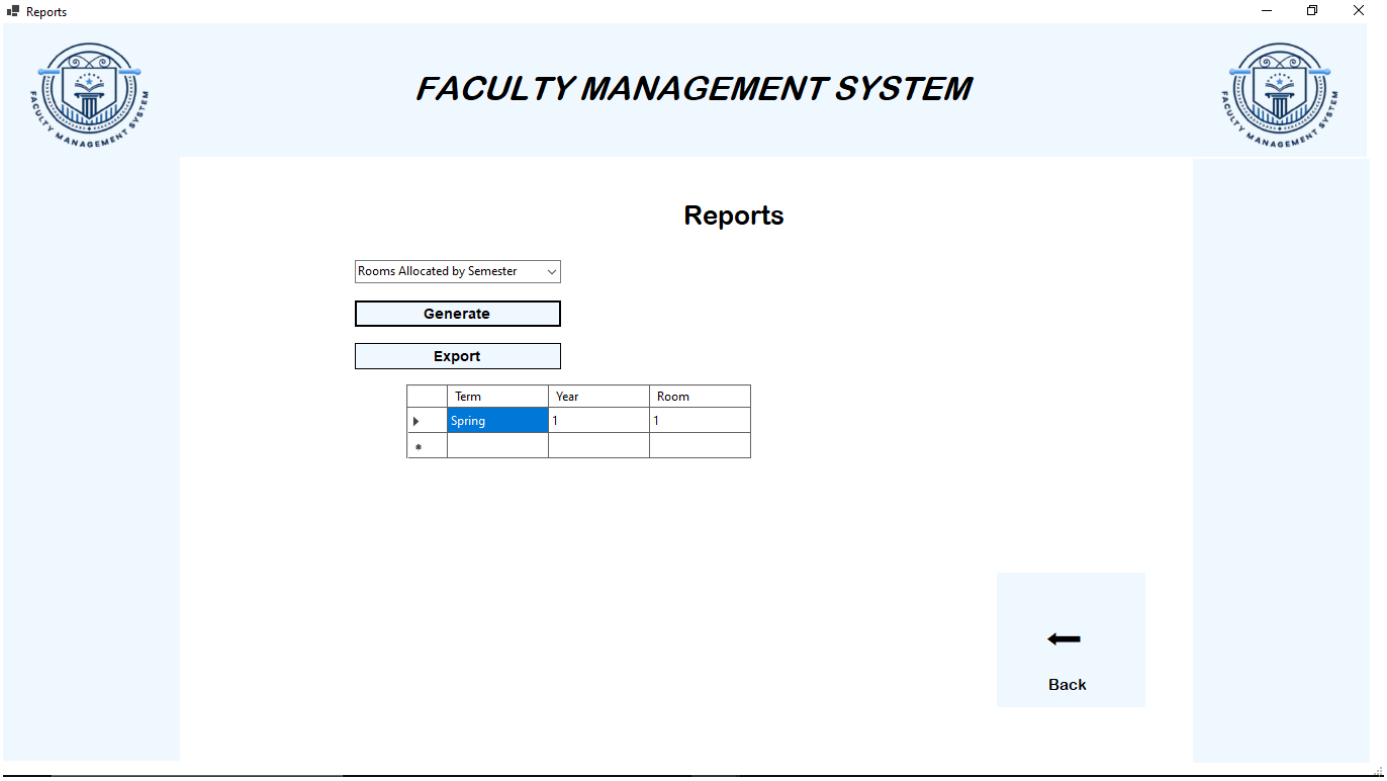
Interface Name	Update Faculty Member

UI Component Name	Type of UI component	Class Attribute name, Classname, attribute name	Linked to which database column/table
cmbFaculty	ComboBox	FacultyMember, Faculty, faculty_id	faculty_id / Faculty (Foreign Key)
txtName	TextBox	FacultyMember, faculty_name	faculty_name / FacultyMember
txtEmail	TextBox	FacultyMember, faculty_email	faculty_email / FacultyMember
txtContact	TextBox	FacultyMember, faculty_contact	faculty_contact / FacultyMember
txtResearchArea	TextBox	FacultyMember, research_area	research_area / FacultyMember
txtTeachingHours	TextBox	FacultyMember, teaching_hours	teaching_hours / FacultyMember
cmbDesignation	ComboBox	FacultyMember, designation	designation / FacultyMember
btnUpdate	Button	-	- (Triggers Update Query)

Business Report-2	Rooms Allocated By Semester

Business Report Name: Rooms Allocated By Semester

Sample Report:



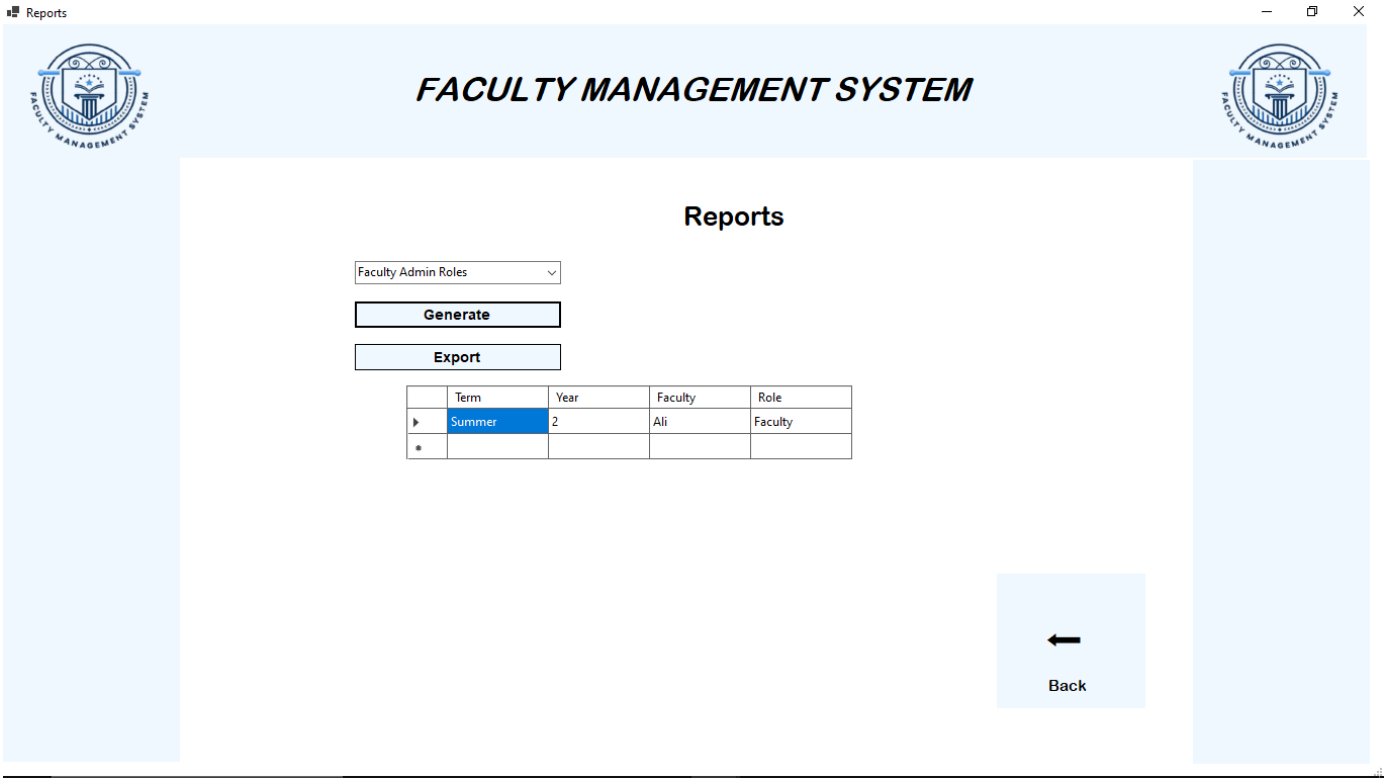
Query to build Report:

SELECT s.term AS Term, s.year AS Year, r.room_name AS Room
FROM faculty_room_allocations fra
JOIN semesters s ON fra.semester_id = s.semester_id
JOIN rooms r ON fra.room_id = r.room_id

Business Report-3	Faculty Admin Roles

Business Report Name: Faculty Admin Roles

Sample Report:



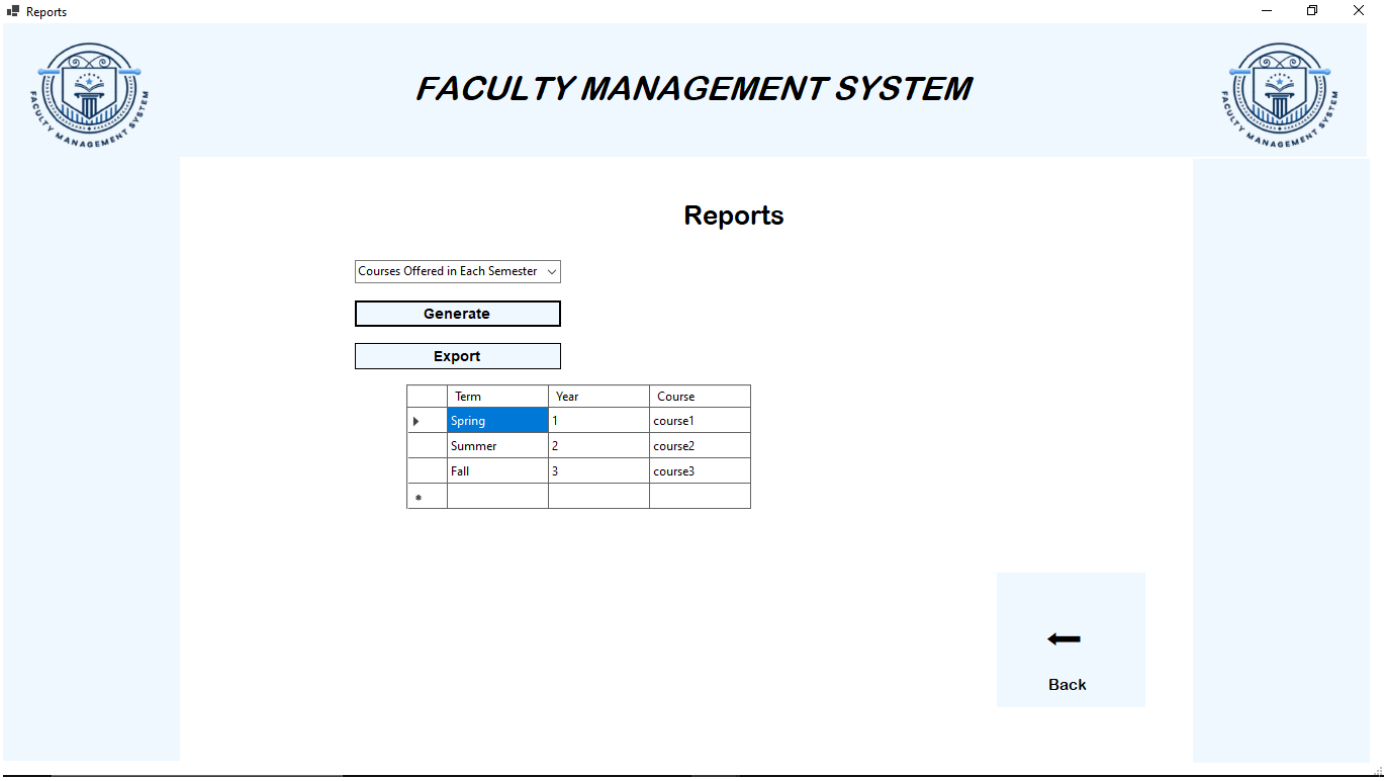
Query to build Report:

SELECT f.name AS Faculty, far.role_name AS Role, s.term AS Term, s.year AS Year
FROM faculty_admin_roles far
JOIN faculty f ON far.faculty_id = f.faculty_id
JOIN semesters s ON far.semester_id = s.semester_id

Business Report-4	Courses Offered By Semester

Business Report Name: Courses Offered By Semester

Sample Report:



Query to build Report:

SELECT s.term AS Term, s.year AS Year, c.course_name AS Course
FROM faculty_courses fc
JOIN semesters s ON fc.semester_id = s.semester_id
JOIN courses c ON fc.course_id = c.course_id