AMERICAN INTERNATIONAL UNIVERSITY–BANGLADESH (AIUB)

Dept. of Computer Science
Faculty of Science and Technology

CSC2210: OBJECT ORIENTED PROGRAMMING 2

Summer 2024-2025

Section: [*J*]

Group:08

Project Report On

Project Name ***[RENTAL MANAGEMENT SYSTEM]***

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Contents:

Introduction

The Rental Management System is a .NET desktop app that helps tenants view and book vacant flats or rooms. It supports both family flat rent (full flat) and bachelor rent (room by room). Owners are categorized as Normal or Premium, with premium posts shown first. An Admin Panel allows efficient management of users and properties, making the rental process simple, transparent, and organized.

Problem Statement

Finding and managing rental flats/rooms is painful for both sides:

- Tenants can't see real-time availability (full flat vs. single room).
- Owners struggle to publish, prioritize, and maintain listings.
- Admins have no single place to enforce policy and resolve disputes.
-

Gap Covered

Most small apps treat a flat as a single unit. In reality, bachelor availability is room-level while family availability is flat-level. Prioritization for Premium Owners is also usually missing.

Proposed Solution

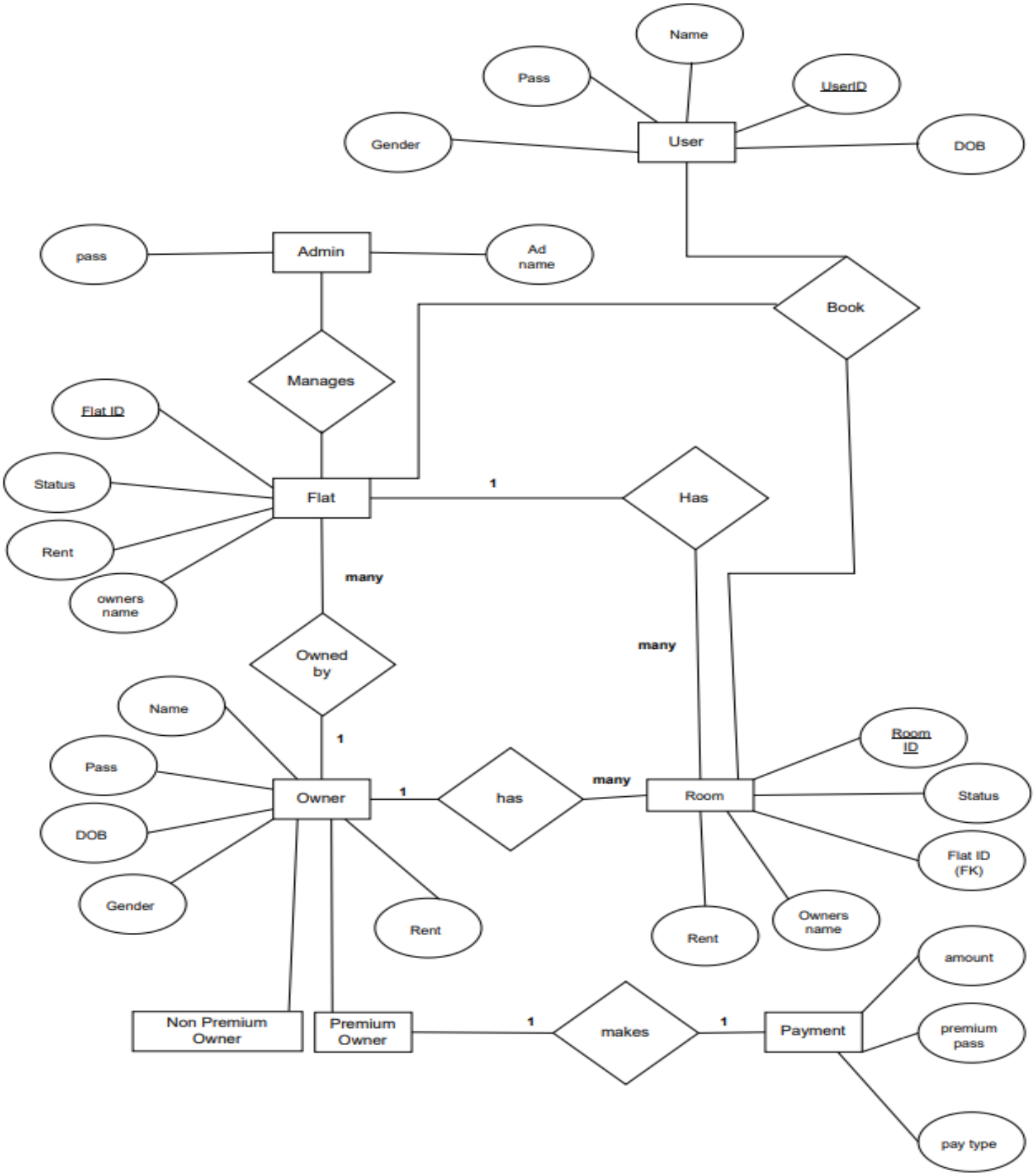
A desktop app built with .NET Framework (C#) Rental Management System serves that:

- Shows live availability of flats and rooms in each flat.
- Let's users book either a whole flat (family) or a single room (bachelor).
- Let's Owners (Normal/Premium) post and manage listings; Premium posts get priority.
- Provides an Admin panel to approve owners, moderate content, and audit bookings.
-

Objectives

- Realtime availability (flat vs. per-room).
- Fair booking with conflict prevention.
- Premium-first listing order.
- Simple, auditable data model.

ER Diagram:


Name
Pass
UserID
Gender
User
DOB
pass
Admin
Ad name
Book
Manages
Flat ID
Status
Flat
1
Has
Rent
owners name
many
many
Owned by
Name
1
Room ID
Pass
Owner
1
has
many
Room
Status
DOB
Flat ID (FK)
Gender
Rent
Rent
Owners name
amount
Non Premium Owner
Premium Owner
1
makes
1
Payment
premium pass
pay type

Features / User Details:

Tenant

- Search by building, floor, budget.
- Two tabs: Flats (family) and Rooms (bachelor).
- Real-time badges: Available / Booked.
- Book; see history; cancel pending bookings.

Owner (Normal)

- Register flats and (optionally) rooms per flat.
- Create one active listing per flat (family or bachelor).
- See inquiries & booking requests.

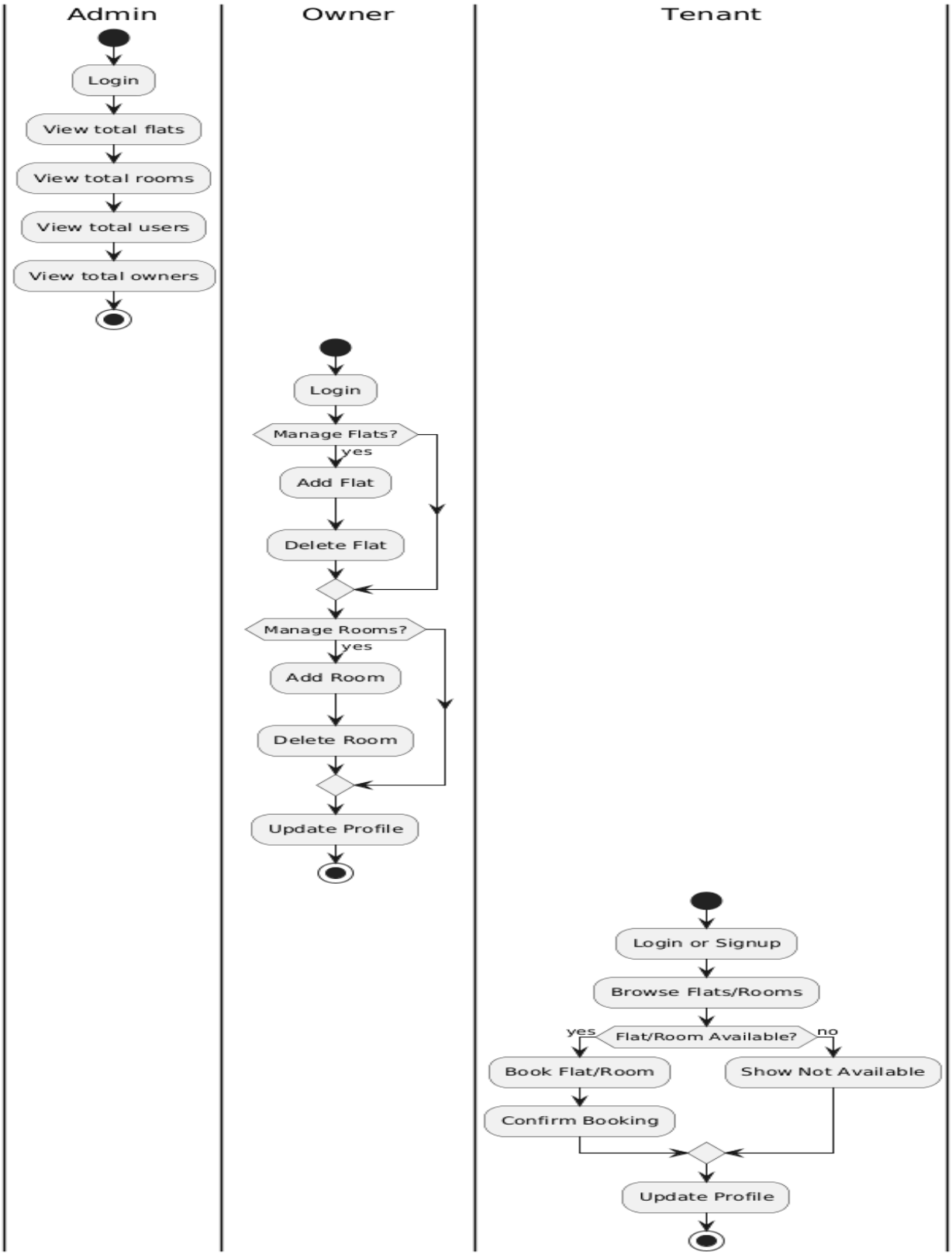
Owner (Premium)

- All Normal features + priority placement.
- Highlighted listing style (icon/badge) in results.

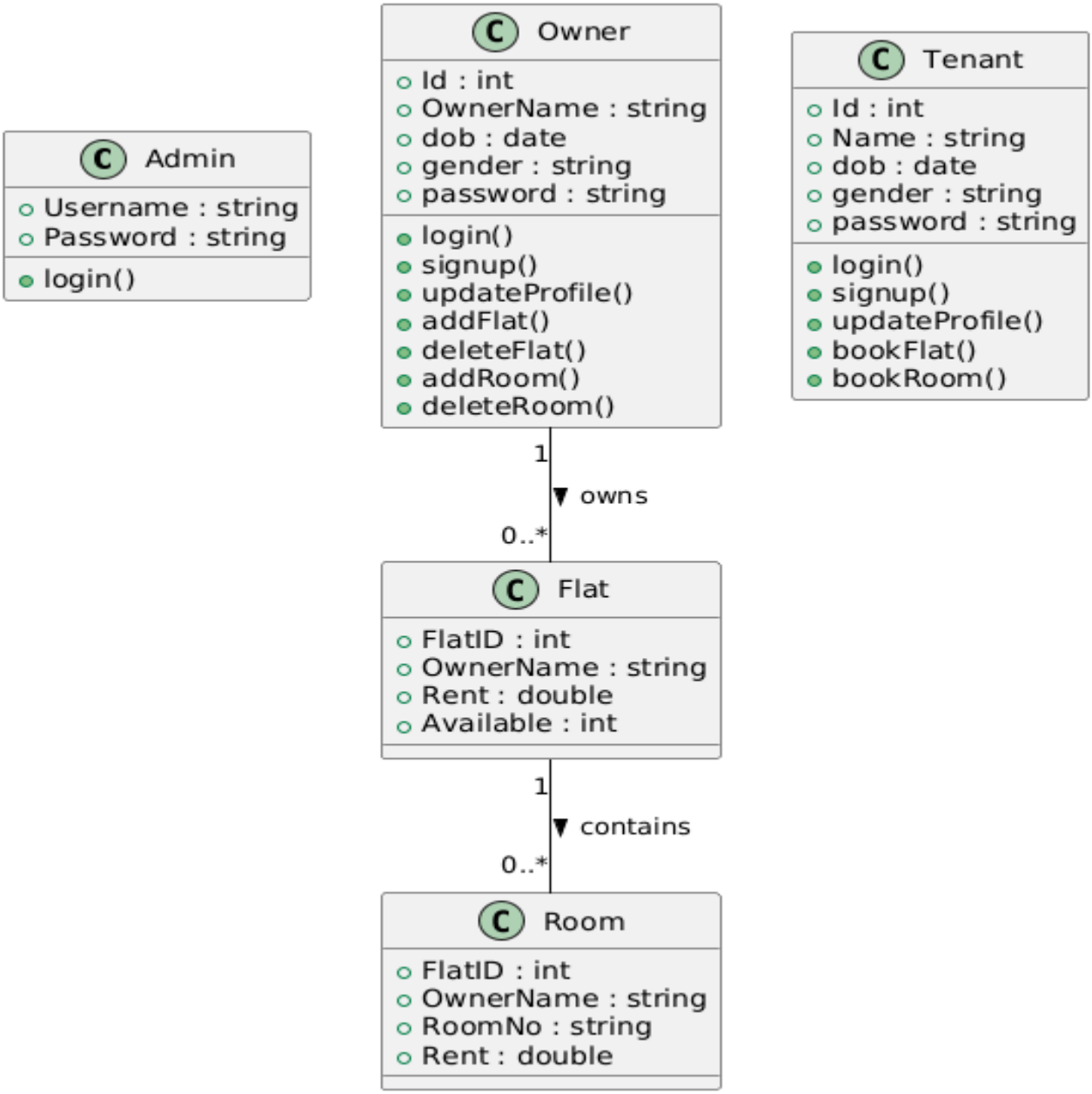
Admin

- Verify & activate Owner accounts.
- Deactivate abusive listings.
- View system logs & payments.

ACTIVITY DIAGRAM:

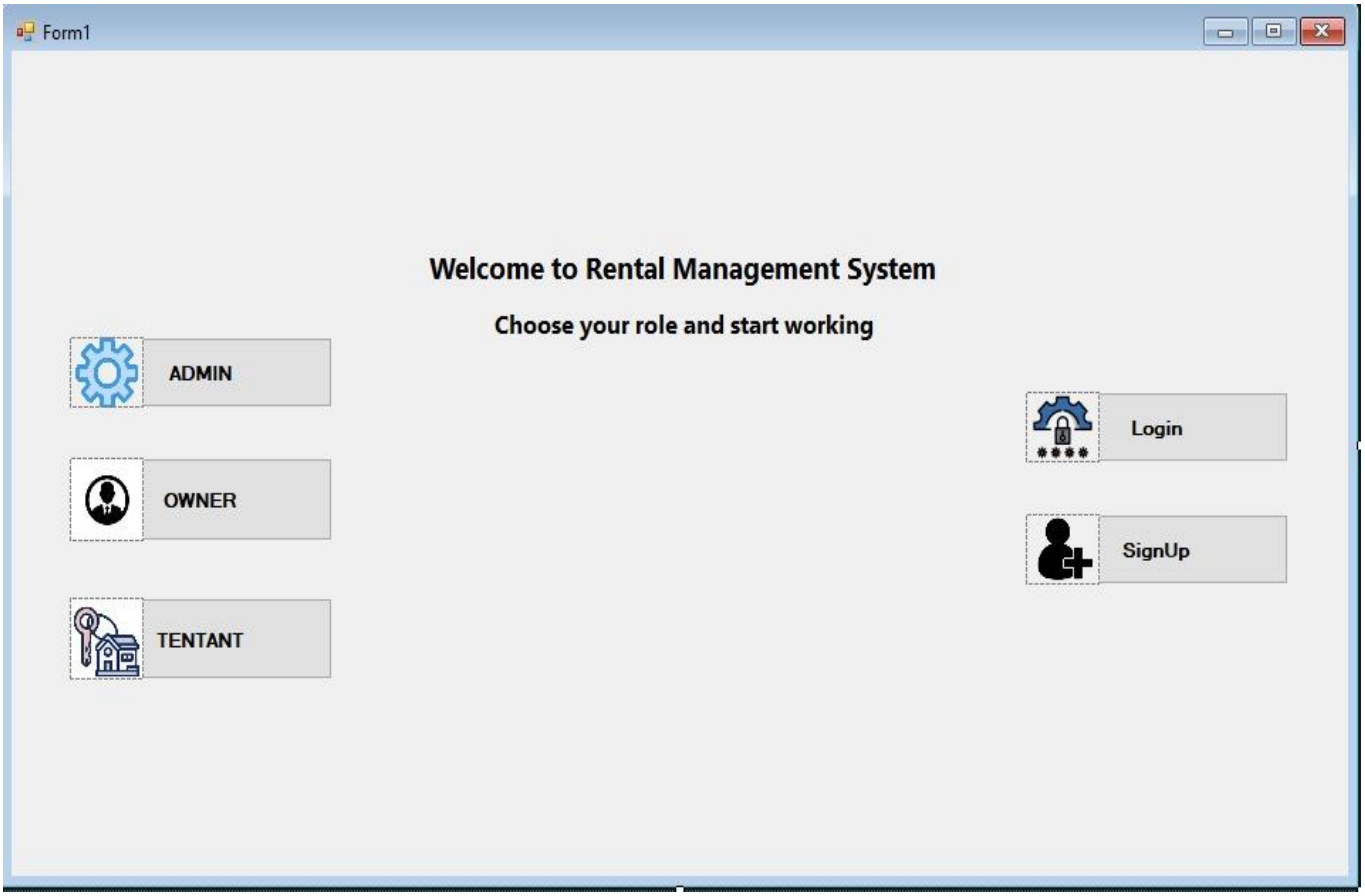


Sequence Diagram:



Form & Query

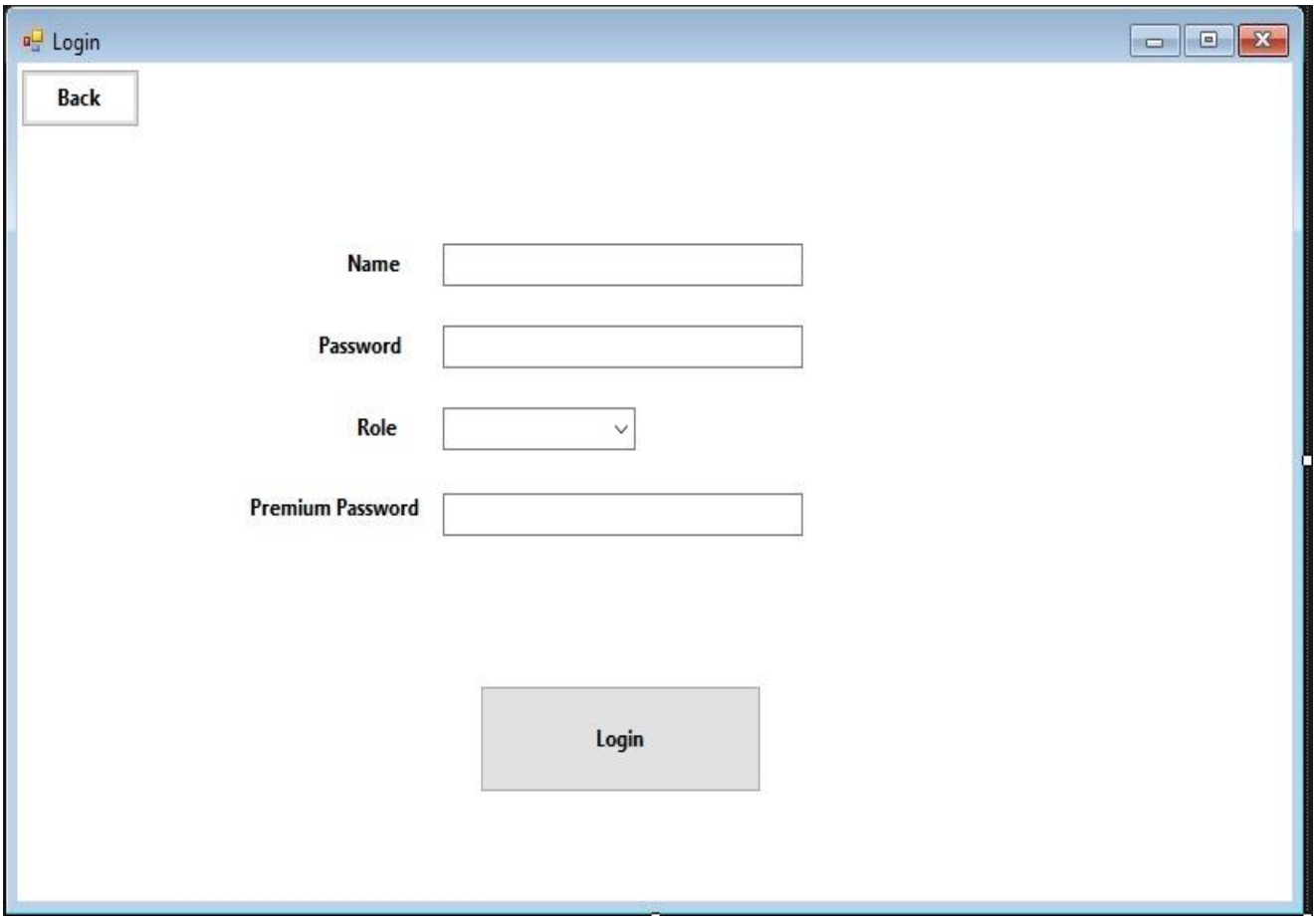
Form1 Form:



Login Query:

```
query = "SELECT * FROM [owner] WHERE name=@name AND password=@password AND
premiumPass=@premiumPass";

query = "SELECT * FROM [owner] WHERE name=@name AND password=@password";

query= "SELECT * FROM [user] WHERE name=@name AND password=@password";
```

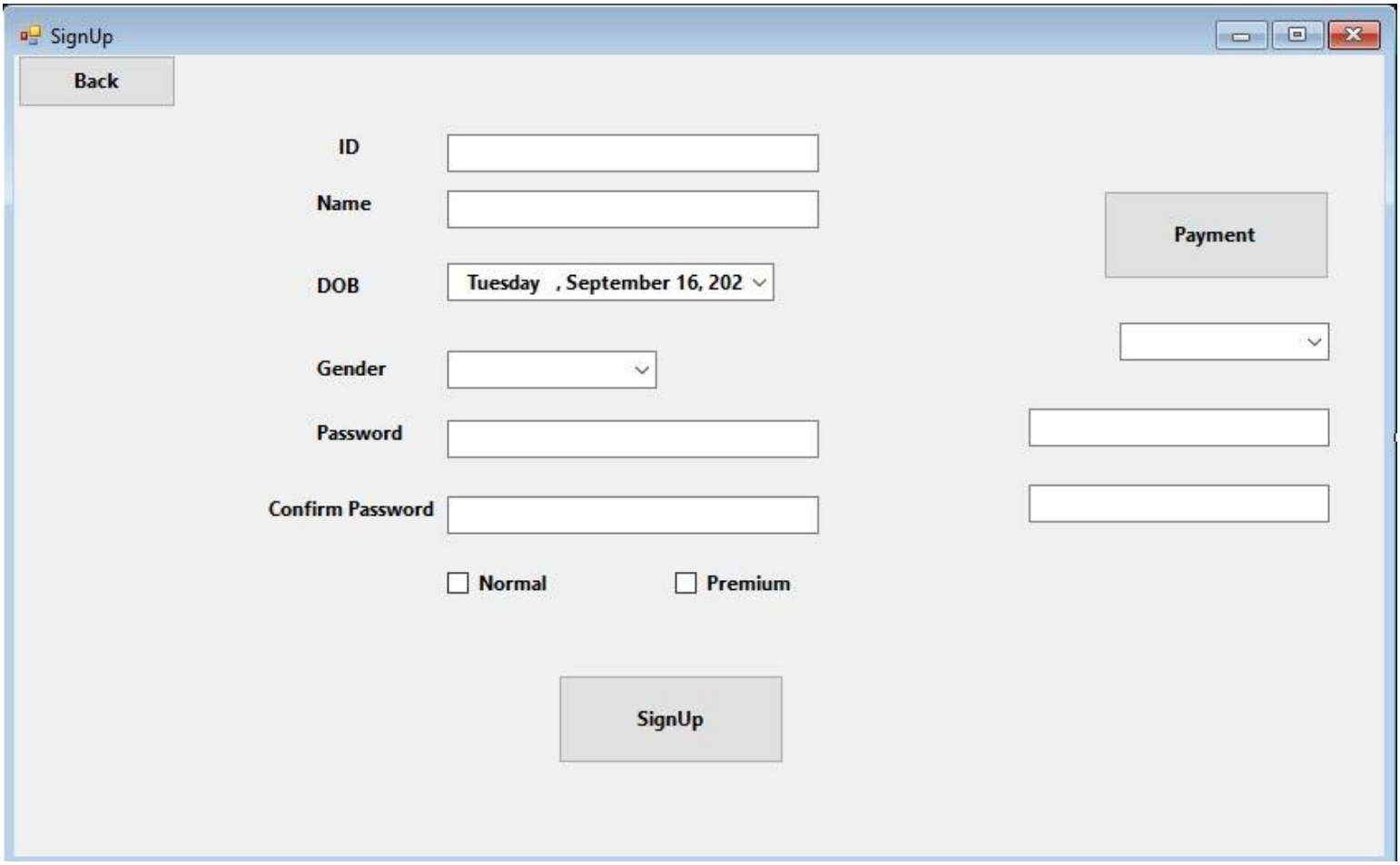
Login Form:



Sign Up Query:

```
string sql = @"INSERT INTO [user]
        (Id, name, dob, gender, password) VALUES (Id, @name, @dob, @gender, @password)";

string sql = @"INSERT INTO [owner]
        (Id, name, dob, gender, password, premium, normal, premiumPass)
        VALUES (@Id, @name, @dob, @gender, @password, @premium, @normal, @premiumPass)";
```

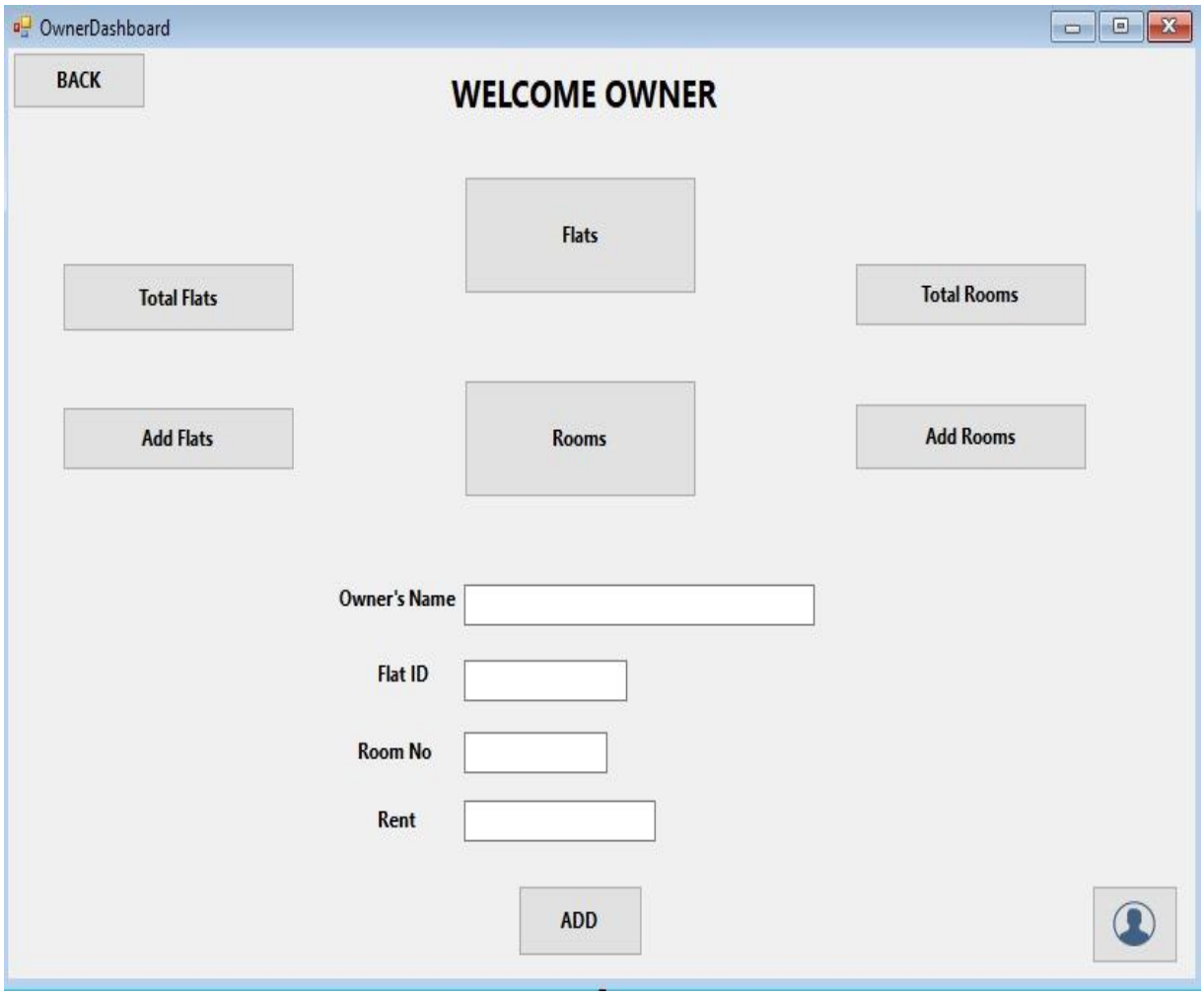
Sign Up Form:



Owner Query:

```
string queryRoom = "INSERT INTO Room(OwnerName, FlatID, RoomNo, Rent, Available)
VALUES(@OwnerName, @FlatID, @RoomNo, @Rent, 1)";

string queryFlat = "INSERT INTO Flat(OwnerName, FlatID, Rent, Available)
VALUES(@OwnerName, @FlatID, @Rent, 1)";
```

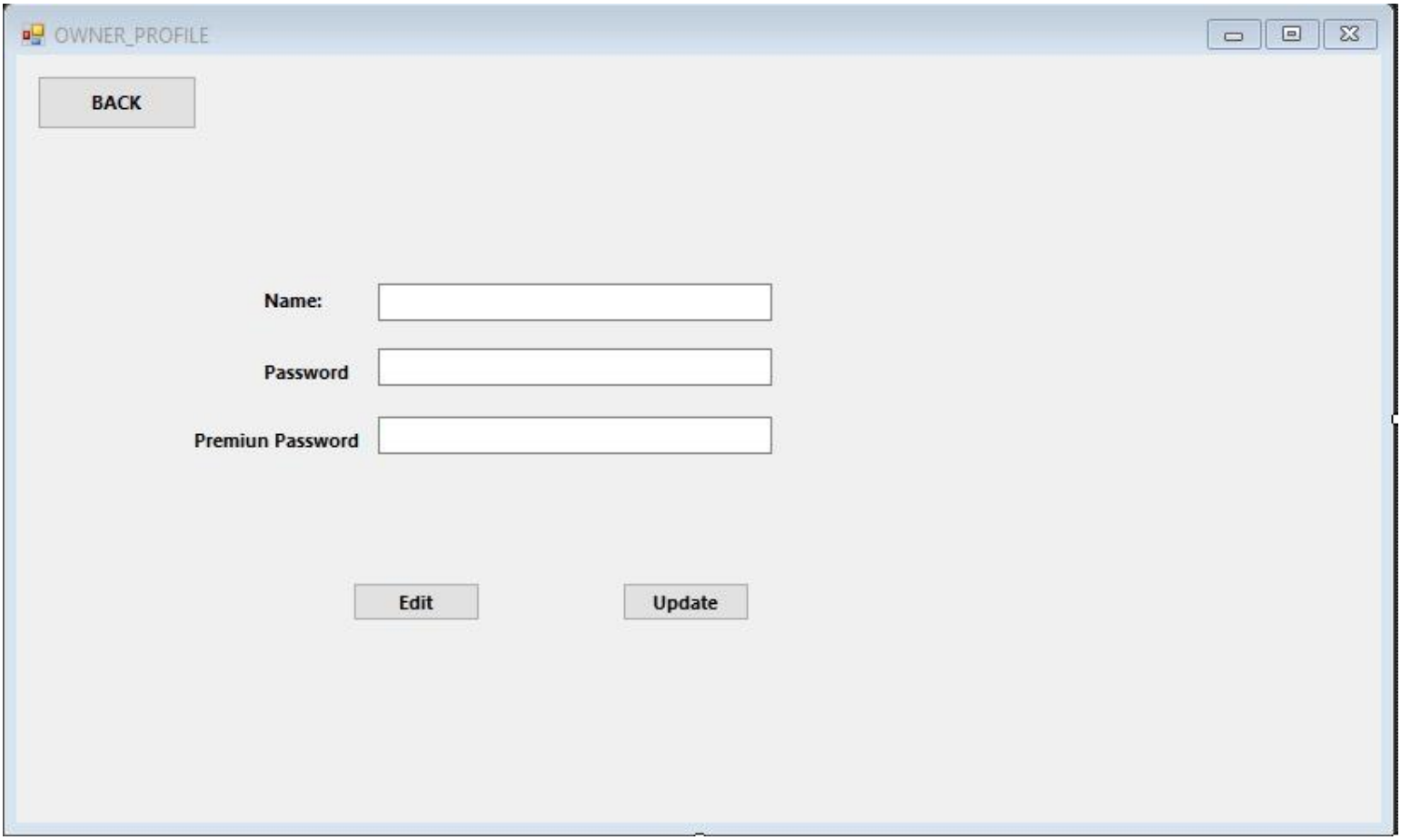
OwnerDashBoard Form:



Owner Profile Query:

```
        string query = "SELECT Id, name, password FROM owner WHERE Id = @Id";
string query = "UPDATE owner SET name = @name, password=@password WHERE Id = @Id";
```

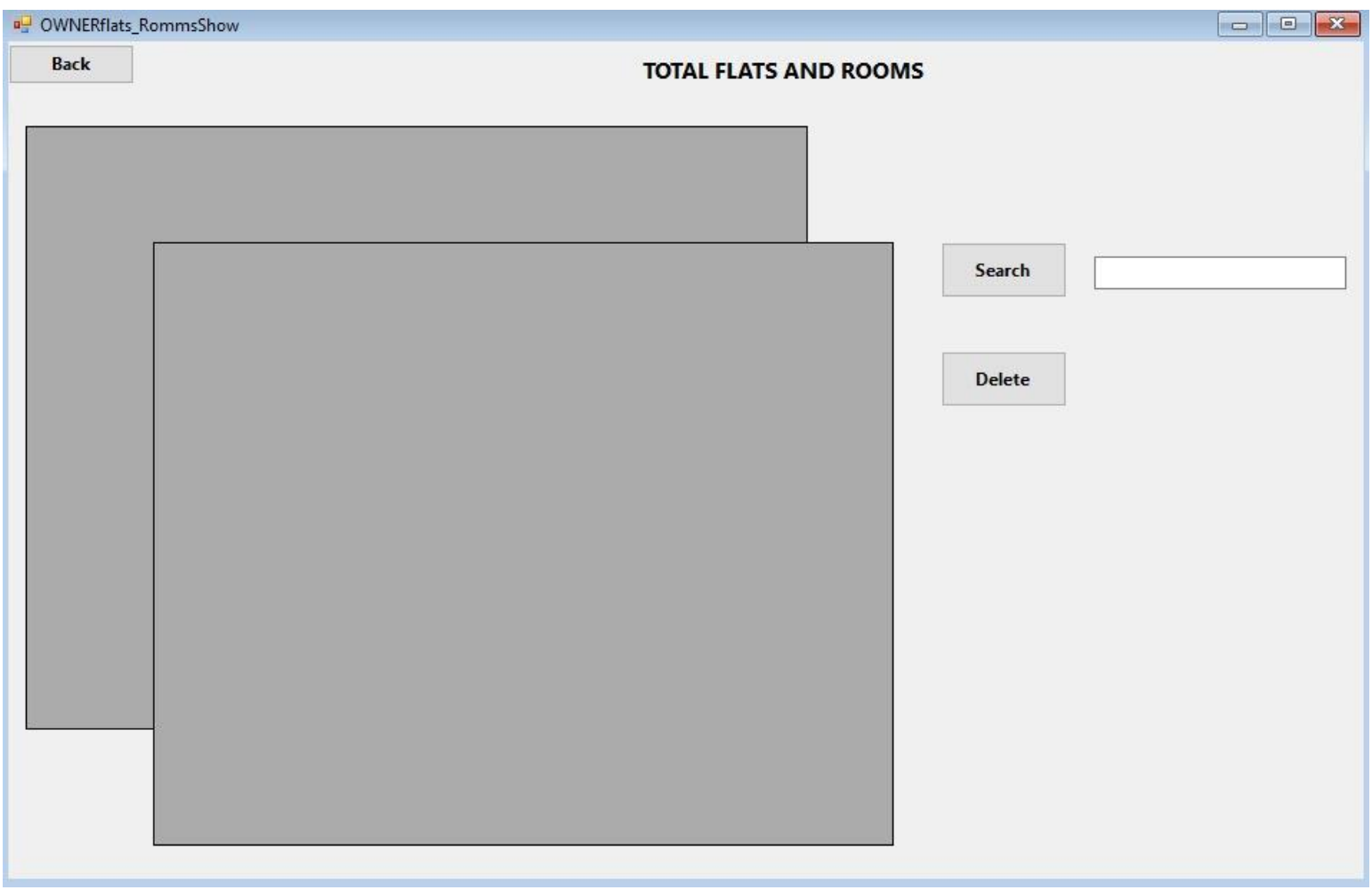
OwnerProfile Form:



Owner Flat Show Query:

```
 string query = @"SELECT f.OwnerName, f.FlatID, f.Rent, f.Available
 FROM Flat f
   INNER JOIN owner s ON f.OwnerName = s.name
  WHERE f.OwnerName = @OwnerName
                ORDER BY CASE WHEN s.premium = 'Yes' THEN 0 ELSE 1 END";

 string query = @"SELECT f.OwnerName, f.FlatID, f.Rent, f.RoomNo, f.Available
FROM Room f
INNER JOIN owner s ON f.OwnerName = s.name
WHERE f.OwnerName = @OwnerName
                  ORDER BY CASE WHEN s.premium = 'Yes' THEN 0 ELSE 1 END";

 string searchQuery = @"
            SELECT *
            FROM Flat
           WHERE
               OwnerName LIKE @searchTerm
               OR FlatID LIKE @searchTerm
               OR CAST(Rent AS NVARCHAR) LIKE @searchTerm";

 string query = "DELETE FROM Flat WHERE FlatID = @FlatID";

 string query = "DELETE FROM Room WHERE FlatID = @FlatID";
```

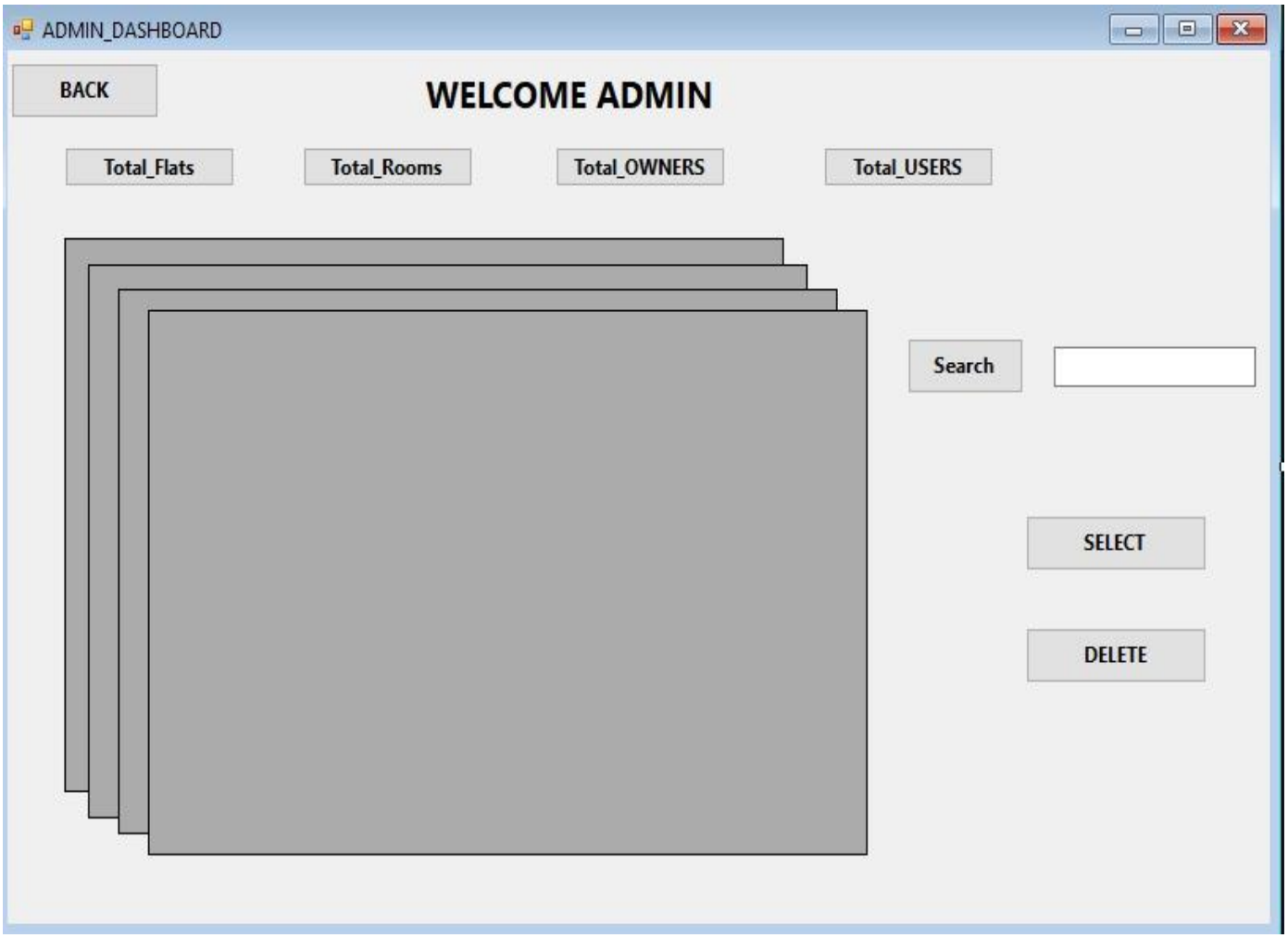
OwnerFlatShow Form:



Admin Query:

```
string searchQuery = @"SELECT * FROM Flat
                WHERE
                   OwnerName LIKE @searchTerm
                   OR FlatID LIKE @searchTerm
                   OR CAST(Rent AS NVARCHAR) LIKE @searchTerm";


          query = "DELETE FROM [dbo].[Flat] WHERE FlatID=@Id";
          query = "DELETE FROM [dbo].[Room] WHERE RoomNo=@Id";
          query = "DELETE FROM [dbo].[owner] WHERE Id=@Id";
         query = "DELETE FROM [dbo].[user] WHERE Id=@Id";


     string query = "SELECT f.OwnerName,f.FlatID,f.Rent,f.Available FROM Flat f INNER JOIN
owner s   ON f.OwnerName = s.name ORDER BY CASE WHEN s.premium = 'Yes' THEN 0 ELSE 1 END;";

    string query = "SELECT f.OwnerName,f.FlatID,f.Rent,f.RoomNo, f.Available FROM Room f INNER
JOIN owner s  ON f.OwnerName = s.name ORDER BY CASE WHEN s.premium = 'Yes' THEN 0 ELSE 1 END;";

     string query = "SELECT * from [owner]";
     string query = "SELECT * from [user]";
```

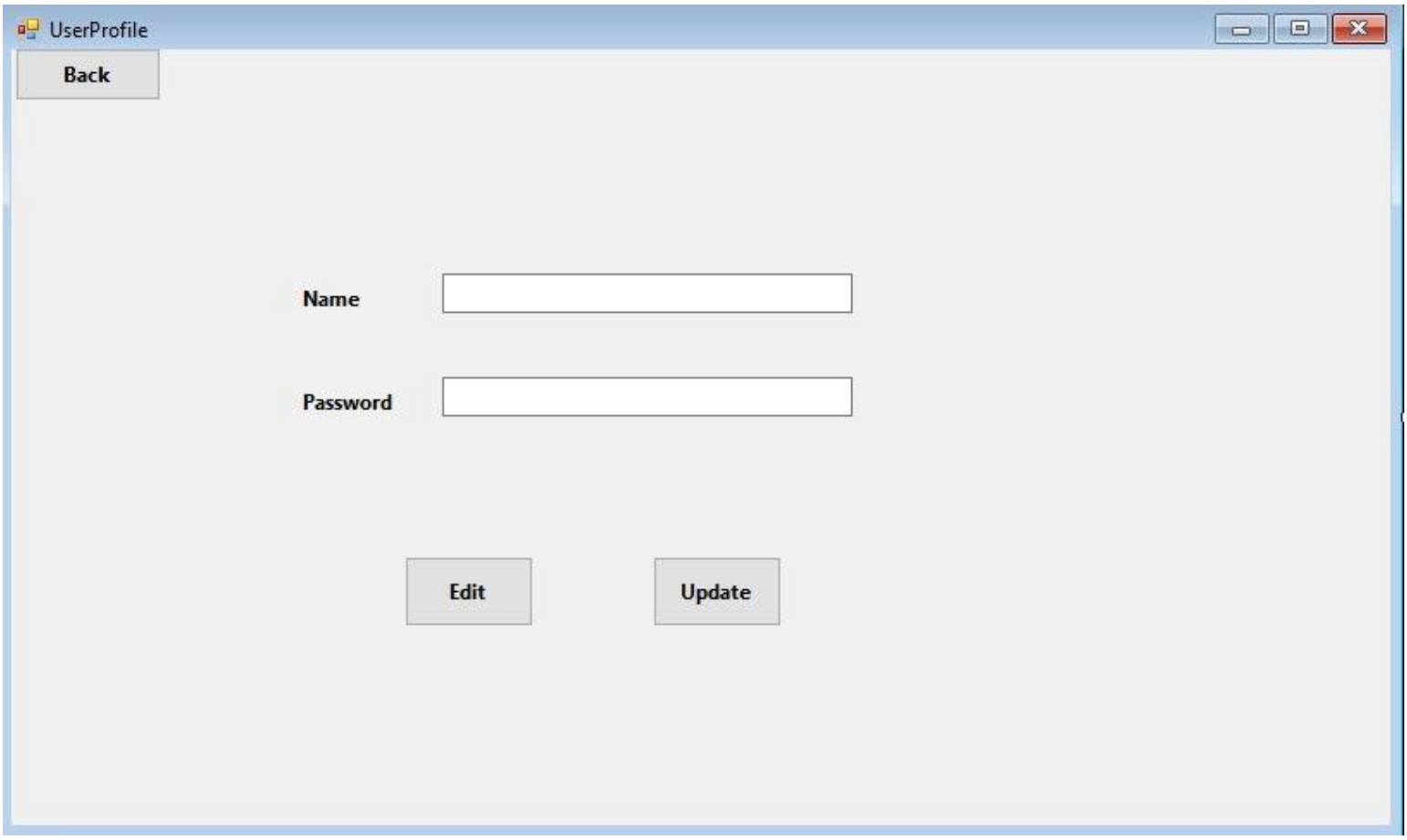
AdminDashboard Form:



User Profile Query:

```
        string query = "SELECT Id, name, password FROM [user] WHERE Id = @Id";
string query = "UPDATE [user] SET name = @name, password=@password WHERE Id = @Id";
```

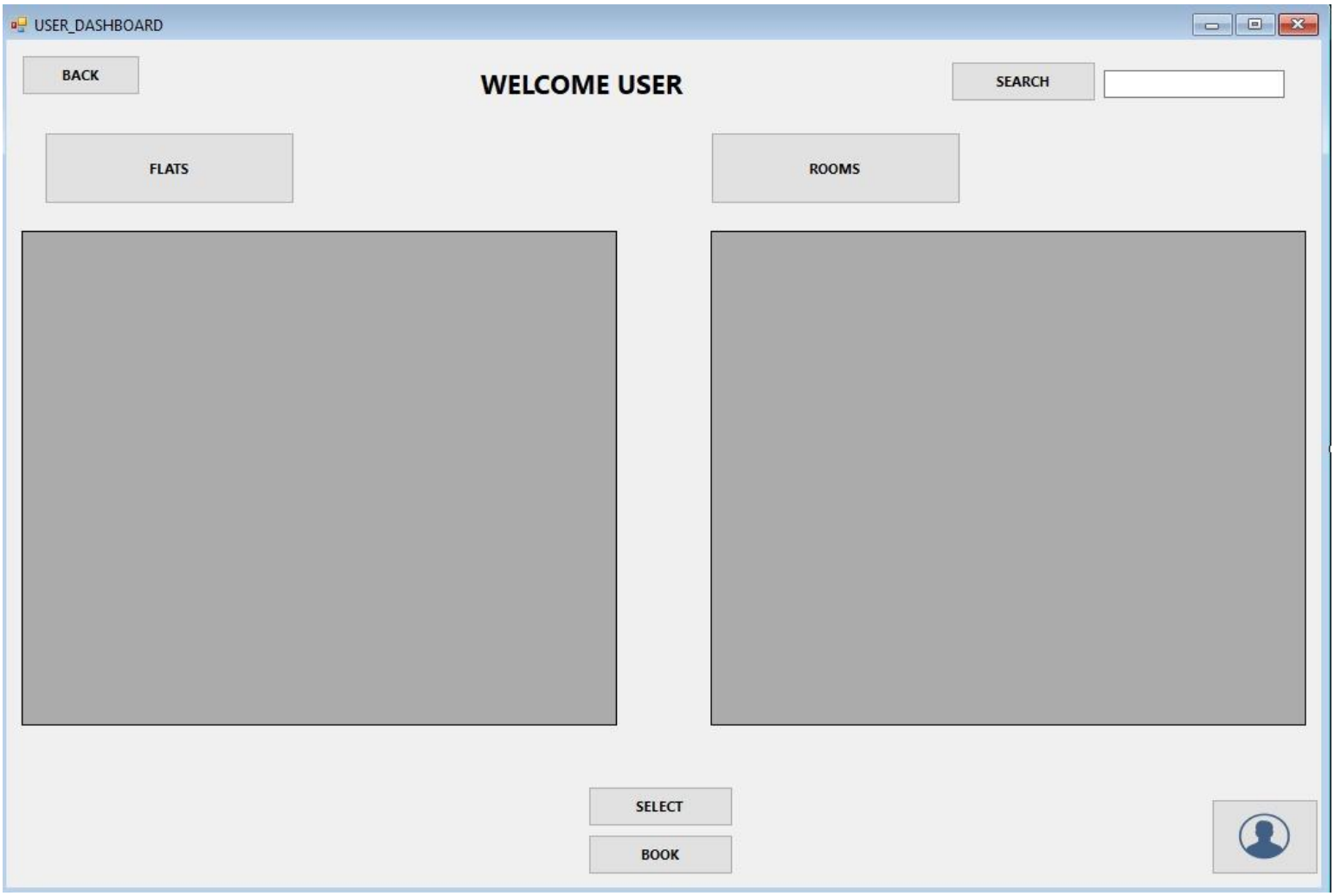
UserProfile Form:



User Dashboard Query:

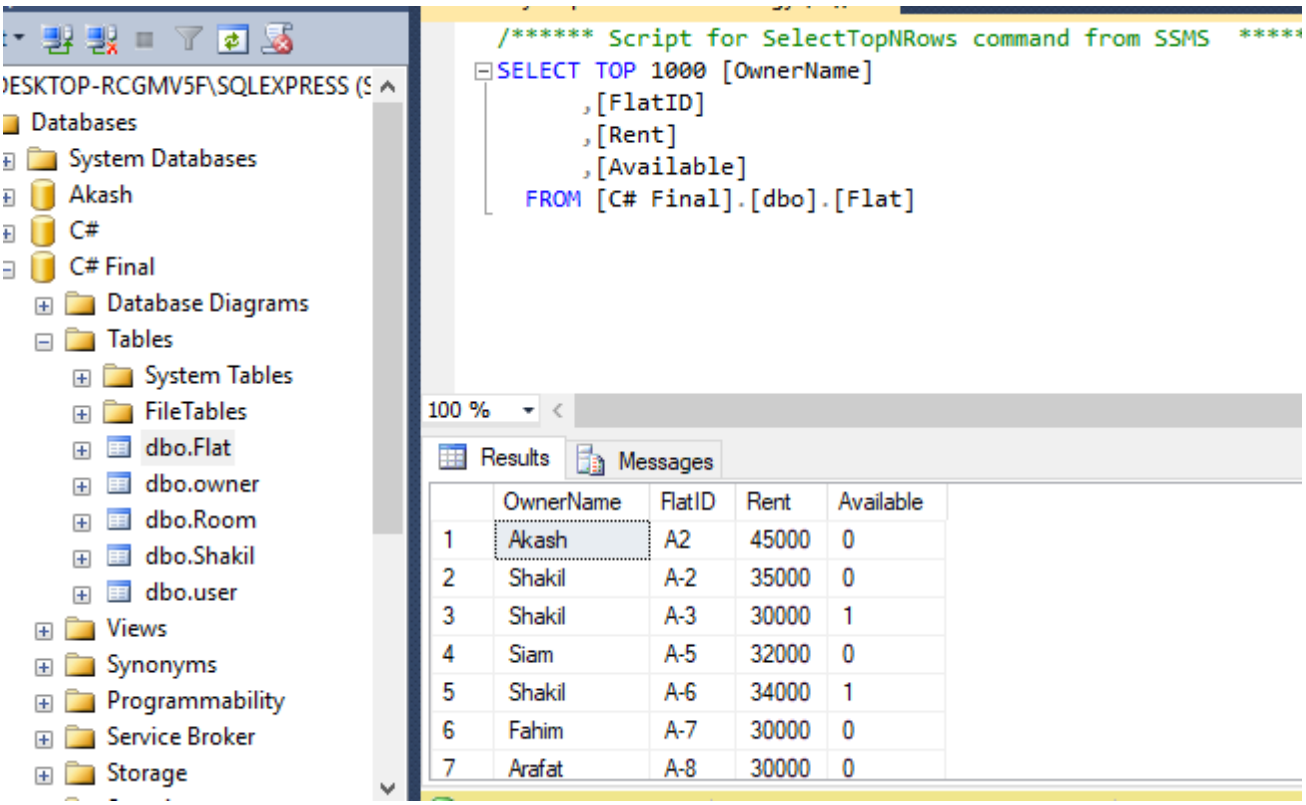
```
string query = "SELECT f.OwnerName,f.FlatID,f.Rent,f.Available FROM Flat f INNER JOIN owner s  ON
         f.OwnerName = s.name ORDER BY CASE WHEN s.premium = 'Yes' THEN 0 ELSE 1 END;";

   string query = "SELECT f.OwnerName,f.FlatID,f.Rent,f.RoomNo, f.Available FROM Room f INNER JOIN
    owner s  ON f.OwnerName = s.name ORDER BY CASE WHEN s.premium = 'Yes' THEN 0 ELSE 1 END;";
```

User Dashboard From:



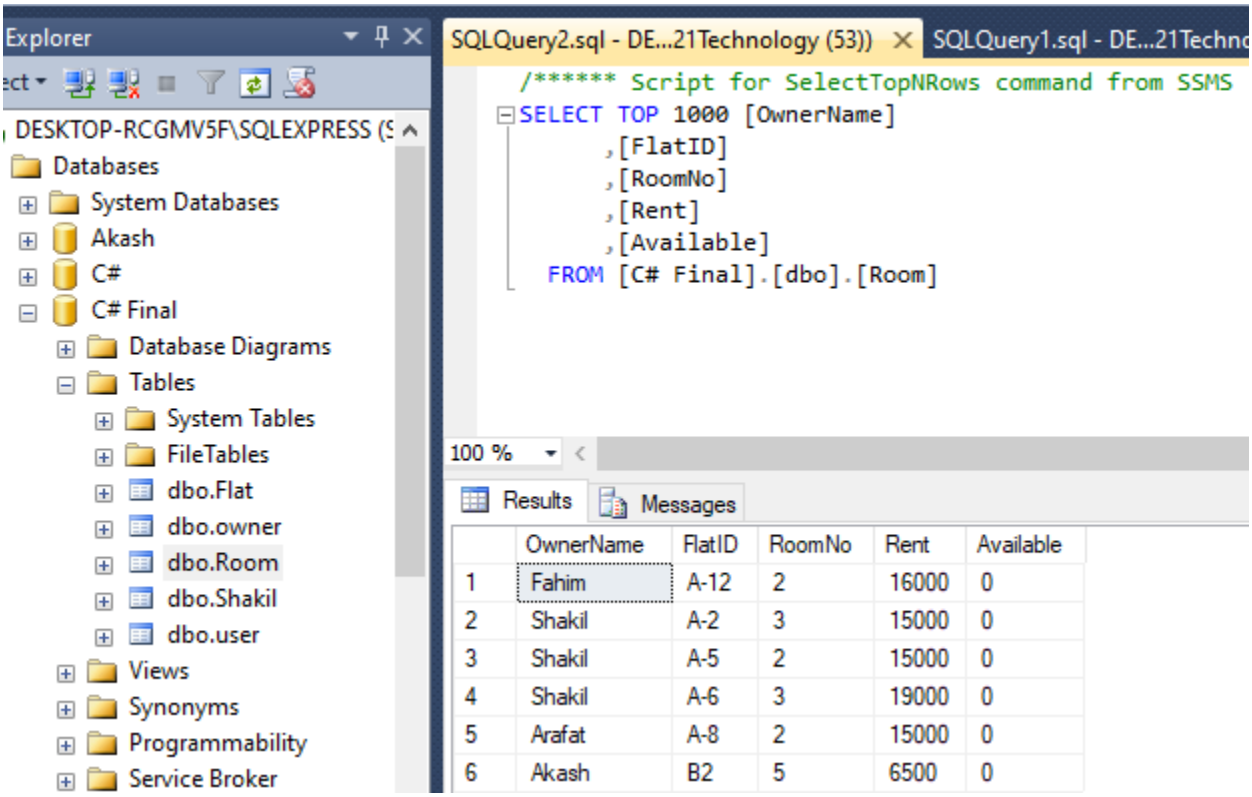
Database Table

Flat Table

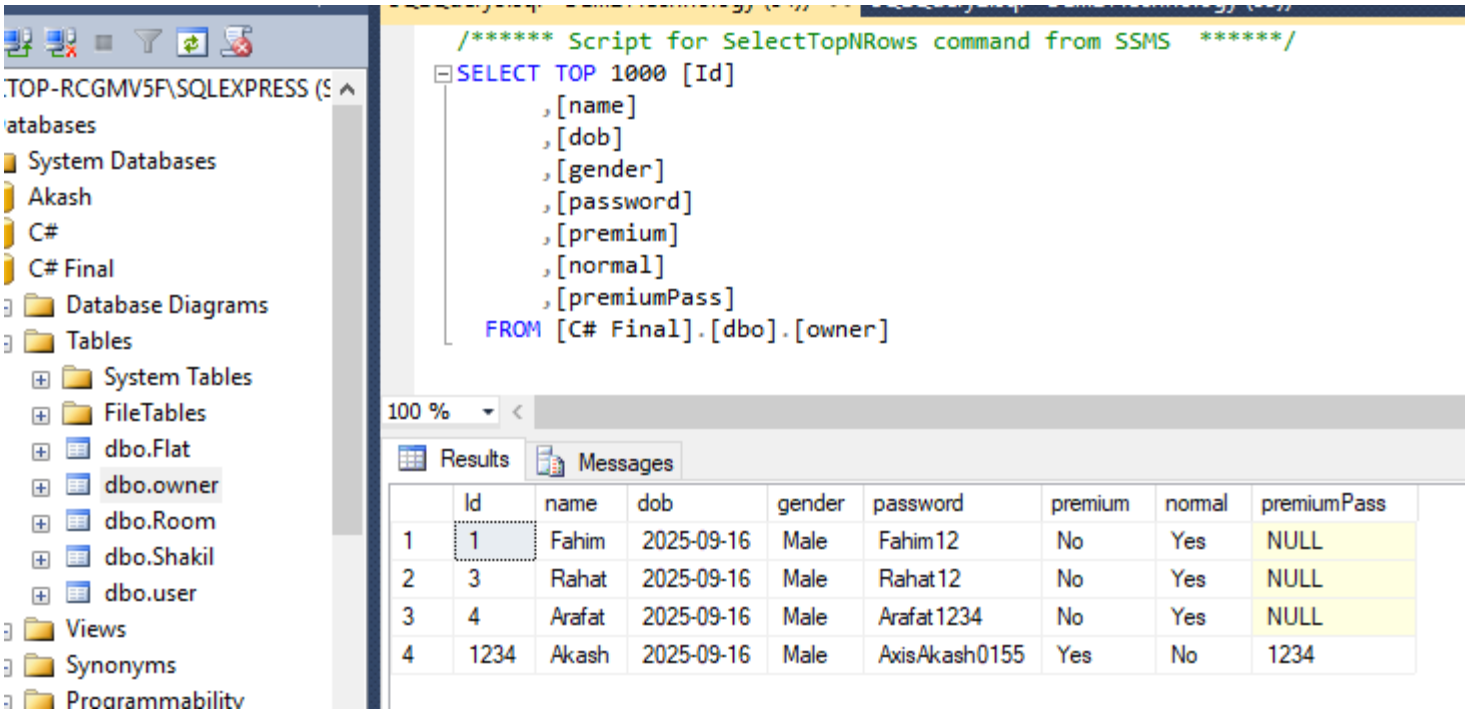


	OwnerName	FlatID	Rent	Available
1	Akash	A2	45000	0
2	Shakil	A-2	35000	0
3	Shakil	A-3	30000	1
4	Siam	A-5	32000	0
5	Shakil	A-6	34000	1
6	Fahim	A-7	30000	0
7	Arafat	A-8	30000	0

Room Table

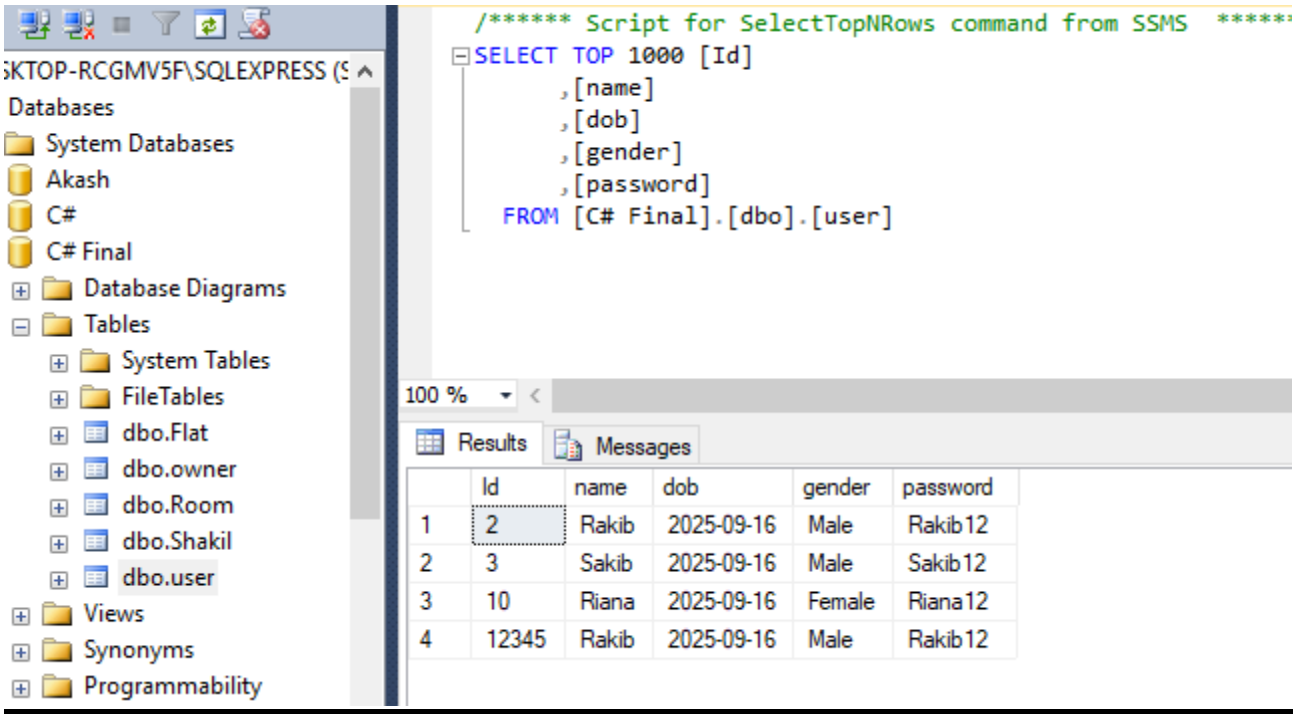

Explorer
DESKTOP-RCGMV5F\SQLEXPRESS (S
Databases
System Databases
Akash
C#
C# Final
Database Diagrams
Tables
System Tables
FileTables
dbo.Flat
dbo.owner
dbo.Room
dbo.Shakil
dbo.user
Views
Synonyms
Programmability
Service Broker
SQLQuery2.sql - DE...21Technology (53))
SQLQuery1.sql - DE...21Techno
/****** Script for SelectTopNRows command from SSMS
SELECT TOP 1000 [OwnerName]
,[FlatID]
,[RoomNo]
,[Rent]
,[Available]
FROM [C# Final].[dbo].[Room]
100 %
Results
Messages
OwnerName FlatID RoomNo Rent Available
1 Fahim A-12 2 16000 0
2 Shakil A-2 3 15000 0
3 Shakil A-5 2 15000 0
4 Shakil A-6 3 19000 0
5 Arafat A-8 2 15000 0
6 Akash B2 5 6500 0

Owner Table



	Id	name	dob	gender	password	premium	normal	premiumPass
1	1	Fahim	2025-09-16	Male	Fahim12	No	Yes	NULL
2	3	Rahat	2025-09-16	Male	Rahat12	No	Yes	NULL
3	4	Arafat	2025-09-16	Male	Arafat1234	No	Yes	NULL
4	1234	Akash	2025-09-16	Male	AxisAkash0155	Yes	No	1234

User Table


SKTOP-RCGMV5F\SQLEXPRESS (S
Databases
System Databases
Akash
C#
C# Final
Database Diagrams
Tables
System Tables
FileTables
dbo.Flat
dbo.owner
dbo.Room
dbo.Shakil
dbo.user
Views
Synonyms
Programmability
/****** Script for SelectTopNRows command from SSMS ******
SELECT TOP 1000 [Id]
,[name]
,[dob]
,[gender]
,[password]
FROM [C# Final].[dbo].[user]
100 %
Results
Messages
Id name dob gender password
1 2 Rakib 2025-09-16 Male Rakib12
2 3 Sakib 2025-09-16 Male Sakib12
3 10 Riana 2025-09-16 Female Riana12
4 12345 Rakib 2025-09-16 Male Rakib12

1) Tables & Columns

user

- Id INT PRIMARY KEY
- name NVARCHAR(100) NOT NULL UNIQUE
- dob DATE NULL
- gender NVARCHAR(20) NULL
- password NVARCHAR(200) NOT NULL

owner

- Id INT PRIMARY KEY
- name NVARCHAR(100) NOT NULL UNIQUE
- dob DATE NULL
- gender NVARCHAR(20) NULL
- password NVARCHAR(200) NOT NULL
- premium NVARCHAR(10) NOT NULL DEFAULT 'No' -- e.g., 'Yes' / 'No' (used for ordering)
- normal NVARCHAR(10) NULL -- present in inserts; keep for compatibility
- premiumPass NVARCHAR(100) NULL -- used in one login variant

Flat

- FlatID NVARCHAR(50) PRIMARY KEY -- used for search & delete
- OwnerName NVARCHAR(100) NOT NULL -- joins to owner.name
- Rent DECIMAL(12,2) NOT NULL
- Available BIT NOT NULL DEFAULT 1

Room

- RoomNo NVARCHAR(50) PRIMARY KEY -- used for delete
- FlatID NVARCHAR(50) NOT NULL -- ties room to a flat
- OwnerName NVARCHAR(100) NOT NULL -- mirrors Flat for query convenience
- Rent DECIMAL(12,2) NOT NULL
- Available BIT NOT NULL DEFAULT 1

2) Keys & Relationships

- Flat.OwnerName → owner.name (FK)
- Room.FlatID → Flat.FlatID (FK)
- Room.OwnerName → owner.name (FK)
- Enforce owner.name uniqueness to support those JOIN ... ON f.OwnerName = s.name queries and login lookups.
- Keep Available as BIT since your UI shows “Available / Booked”.

3) Suggested Indexes

- owner(name) — UNIQUE (support joins & logins)
- Flat(OwnerName), Flat(Rent) — for search and premium-first ordering
- Room(FlatID), Room(OwnerName) — for owner views & joins

Conclusion:

The Rental Management System is a .NET desktop application designed to streamline the process of property rentals. It enables tenants to easily view and book available flats or rooms, supporting both family rentals (entire flat) and bachelor rentals (room-by-room). Owners are classified as Normal or Premium, with premium listings given display priority to enhance visibility. An integrated Admin Panel ensures efficient oversight of users, properties, and transactions. This system provides a structured, transparent, and reliable solution for managing house rentals.

References:

[1] Microsoft, Windows Forms Overview. [Online].
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[3] TutorialsTeacher, C# .NET Framework Tutorial. [Online].
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[4] GeeksforGeeks, Database Management System (DBMS) Concepts. [Online].
Available: https://www.geeksforgeeks.org/dbms

[5] OpenAI, Emma (ChatGPT) – Project guidance and system design assistance for Rental Management System. [Online].
Available: https://chat.openai.com

GitHub Link:

https://github.com/AxisAkash/lost-Found.git