

B.SC. ENGG. PROJECT

A Project on Gym Management System

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Submitted to

Department of Computer Science & Engineering

(In partial fulfillment of the requirements for the degree of
Bachelor of Science in Computer Science & Engineering)



Department of Computer Science & Engineering

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Acknowledgment

We would like to express our thankfulness to Almighty Allah for endowing us with the ability to comprehend analyses and patiently develop the process. We are grateful to Shovon Roy, Lecturer, Bangladesh University of Business and Technology's Computer Science and Engineering Department, for his professional guidance and motivation during the development of this project, which is a big component of it. From our perspective, this project would not have progressed to this point without his invaluable assistance and advice.

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Abstract

People in today's society are less interested in using paperwork. Writing, storing and refining paper documents is time consuming and costly. It also requires more manpower. For this reasons, more or less everyone chooses to run a workplace using software applications. This boosts the efficiency of the task while keeping all of the data on the digital platform in a well-organized way. For example, in a gym, there are three types of people. If each person's data is maintained in the paper document, it will be pretty difficult for the gym manager to keep track of all of these records. As a result, we decided to develop a desktop application that will make the gym manager's job much easier.

Gym Management System

We hereby declare that the Project on Gym Management System studies on software development submitted in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering of Bangladesh University of Business and Technology (BUBT), under the guidance of our supervisor Shovon Roy, Lecturer, department of Computer Science and Engineering, is our own work and that it contains no material which has been accepted for the award to the candidate(s) of any other degree or diploma, except where due reference is made in the text of the project. To the best of our knowledge, it contains no materials previously published or written by any other person except where due reference is made in the project.

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Copyright

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Dedication

*Dedicated to our parents, teachers, friends and who loved us for all their love
and inspiration.*

Certificate

This is to certify that Afrina Akter Mim(ID:19202103310), Tasnim Islam(ID:19202103313), Rizvia Razzak Abani(ID: 19202103528) were belong to the department of Computer Science and Engineering, have completed their Project on Gym Management System satisfactorily in partial fulfillment for the requirement of Bachelor of Science in Computer Science and Engineering of Bangladesh University of Business and Technology in the year 2022.

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Approval

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Acronyms List

GMS Gym Management System

DBMS Database Management System

ERD Entity Relationship Diagram

SQL Structure Query Language

PK Primary Key

FK Foreign Key

GUI Graphical User Interface

C# C Sharp

VS Visual Studio

ASP Active Server Page

NET Network Enabled Technology

GC Garbage Collector

OOP Object Oriented Programming

MVC Model View Controller

CPU Central Processing Unit

GPU Graphics Processing Unit

UI User Interface

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Chapter 1

Introduction

Gyms have become an indispensable part of our life, providing our society with the best workout and body-building facilities. As a result, some management actions are required to keep track of every individual, including trainers, trainees, and employees. However, keeping paper records is quite tough. As a result, a computerized system to handle all of these difficulties is required. As a result, the foundation of our project is working on a management system for the gym industry. The Gymnasium Management System is an automated version of the manual system that we built.

This desktop application stores data that is needed to be stored for managing a gym. Besides the manager can make changes in this data when they need. This application has a database connected to it. For this, it can store all the data regarding the gym trainers, trainees, employees and all the transactions happened on the gym. To convert the paperwork to digitize document, "Gym Management System" application is developed.

Chapter 2

Project Review

2.1 Problem Statement

The body achieves what the mind believes. To keep the body in good health is a duty. As a result, society and the gymnasium business now require a well-organized, computer-based gymnasium management system.

This system enables the gym's owner and administrator to keep track of a vast amount of information of the people engaging with it and their daily transactions. The do this job we made Gymnasium Management System.

2.2 Objective of this Project

Our main goal is to develop a management system is to lessen up the paperwork and divert the work to a digital platform such as database. To make database access user friendly we developed a desktop application in which the administrator may access all records from a single location, and keep track of peoples, transactions, machinery, and expenses. He can make changes to this recorded data and delete as per his need.

The fundamentals of the C# language have become clearer by the end of this project. We have instilled in ourselves the mindset of producing software and working as part of a team. We discovered some previously unknown functions of the C# language as a result of completing

the project.

2.2.1 Feature of this Project

1. CRUD Operation over Every Table
2. Members, Trainers and Staffs Details Record,
3. Branch and Schedule Record,
4. Equipment Information Record,
5. Transaction Record and Calculation
6. Print Transaction over a Period of Time
7. Print Payment Information for the Member

2.2.2 Benefits of this Project

1. Efficient System- admin can easily maintain records with quite efficiently.
2. Removing Data Redundancy- get all the information in a single place
3. With No Wastage of Space- no paperwork is required.
4. Minimum or Less Employee Required- require less labor. In fact, only one Administrator can handle the whole system.

Chapter 3

Technologies

3.1 Software

3.1.1 Visual Studio

Microsoft Visual Studio is the company's integrated development environment (IDE). It is used to make websites, web apps, web services, and mobile apps, among other things. Windows API, Windows Forms, Windows Presentation Foundation, Windows Store, and Microsoft Silverlight are some of the Microsoft software development platforms used by Visual Studio. It has the ability to generate both native and managed code.

Visual Studio supports 36 programming languages, and the code editor and debugger can support practically any programming language (to varied degrees) if a language-specific service is available. C, C++, C++/CLI, Visual Basic.NET, C#, F, JavaScript, TypeScript, XML, XSLT, HTML, and CSS are among the built-in languages. Plug-ins provide support for other languages such as Python, Ruby, Node.js, and M, among others. In the past, Java (and J#) were supported.

The Community edition of Visual Studio is the most basic and is offered for free. "Free, fully-featured IDE for students, open-source, and independent developers," says the Visual Studio Community edition's motto.

3.1.2 Xampp

XAMPP is a popular cross-platform web server that allows programmers to write and test their code on a local web server. It was created by the Apache Friends, and the audience can amend or modify its native source code. It includes Apache HTTP Server, MariaDB, and interpreters for PHP and Perl, among other computer languages. It's available in 11 languages and runs on a variety of platforms, including Windows' IA-32 package, Mac OS X's x64 package, and Linux's x64 package. Before publishing a website or client to the main server, XAMPP allows a local host or server to test it on computers and laptops. It is a platform that provides a suitable environment for testing and verifying the functionality of projects based on Apache, Perl, MySQL, and PHP using the host's system.

3.1.3 MySQL Connector/NET 8.0.23

The most recent General Availability release of the MySQL Connector/NET 8.0 series is MySQL Connector/NET 8.0.23. This version includes support for .NET 5.0 and the X DevAPI, which allows application developers to write code that blends the capabilities of the relational and document models using a modern, NoSQL-like syntax that requires no prior expertise with traditional SQL.

3.2 Programming Language

3.2.1 C# Language

C# (pronounced "See Sharp") is a programming language that Microsoft created and released in 2001. C# is a simple, modern, and object-oriented programming language that gives today's developers the flexibility and functionality they need to create software that will not only work today, but also for years to come. C# enables developers to create a wide range of safe and robust .NET applications. C# comes from the C family of languages, and will be immediately familiar to C, C++, Java, and JavaScript programmers. The C#

programming language was created to allow companies to create a variety of software using a single programming language. Web, mobile, and app development are all supported by C#. C likewise avoids unstructured language features and complexity.

3.3 Software framework

3.3.1 The .NET framework

The .NET framework is a software development framework from Microsoft. It is designed and developed by Microsoft and the first beta version released in 2000. It provides a controlled programming environment where software can be developed, installed and executed on Windows-based operating systems.

Framework Class Library contains a wide number of class libraries in this framework (FCL). CLR (Common Language Runtime) is the execution environment in which .NET software programs are run. Memory management, networking, security, and type safety are just a few of the services provided by this framework.

The .NET Framework is composed of four main components:

1. Common Language Runtime (CLR),
2. Framework Class Library (FCL),
3. Core Languages (WinForms, ASP.NET, and ADO.NET), and
4. Other Modules (WCF, WPF, WF, Card Space, LINQ, Entity Framework, Parallel LINQ, Task Parallel Library, etc.)

Chapter 4

System Analysis

4.1 System User Analysis

The administrator has complete control over the system. The administrator has access to the every database holding data of the members, trainers, staff, branch, schedule, equipment and transaction. But first he has to login first and then he can view all data, insert any data, change/update any data and also can delete any data from the database. He can print data from the transaction table as per his need.

An admin With his unique Name and Password must be logged in to be able to get into the system and gain the requisite limited access. When the application first opens, the system should display a user-friendly interface that allows the admin to log in. The system shall notify the admin if incorrect characters are used in the name or password fields. With a single click, the Admin can control all Members and their records.

The terms "add," "update," "view," and "delete" are used here to refer to the actions of adding, updating, viewing, and deleting records.

The term "search" is used here to search specific record from the database.

The term "print" is used here to print any data from the database.

Chapter 5

System Overview

5.1 System User Panel

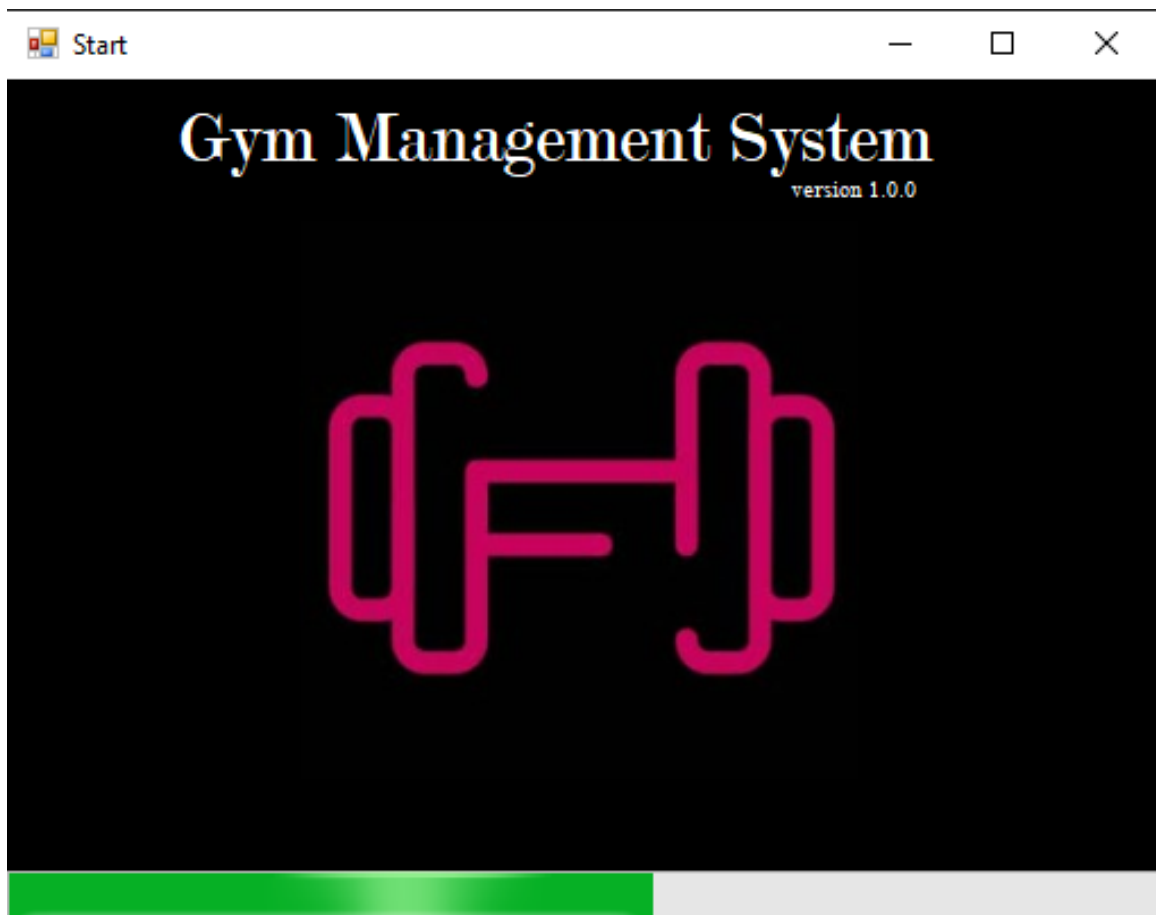
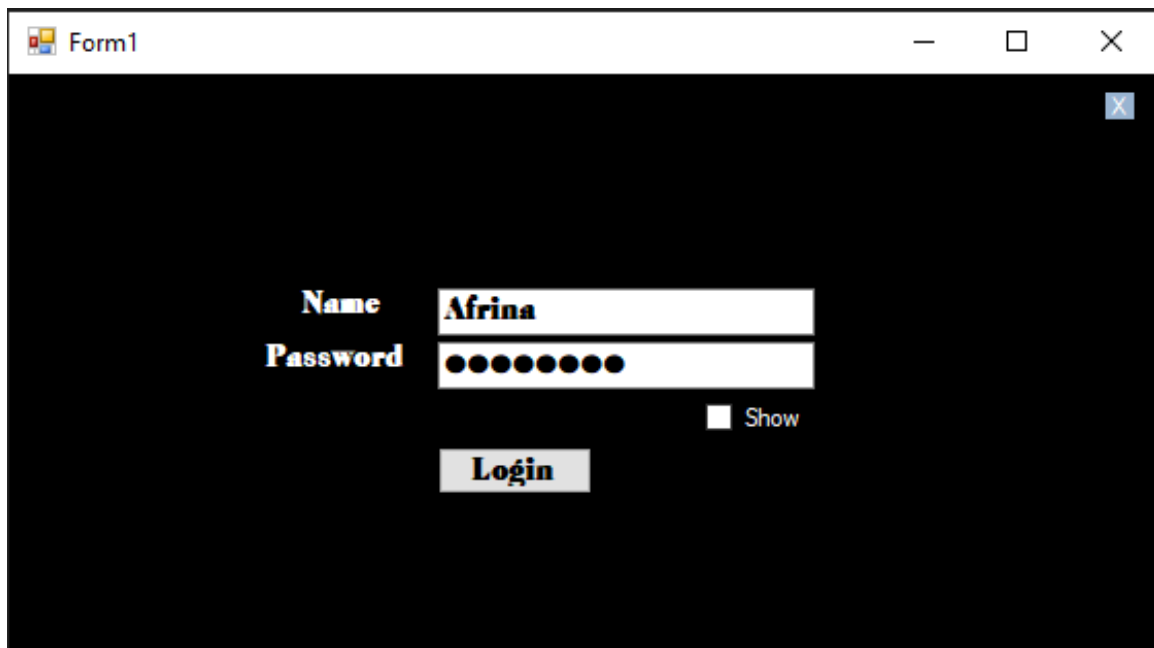


Figure 5.1: Starting Page



The screenshot shows a window titled "Form1" with a dark background. It contains a login form with the following elements:

- Name:** A text input field containing the name "Afrina".
- Password:** A password input field represented by a series of black dots.
- Show:** A checkbox labeled "Show" located to the right of the password field.
- Login:** A button labeled "Login" positioned below the password field.

Figure 5.2: Login Page

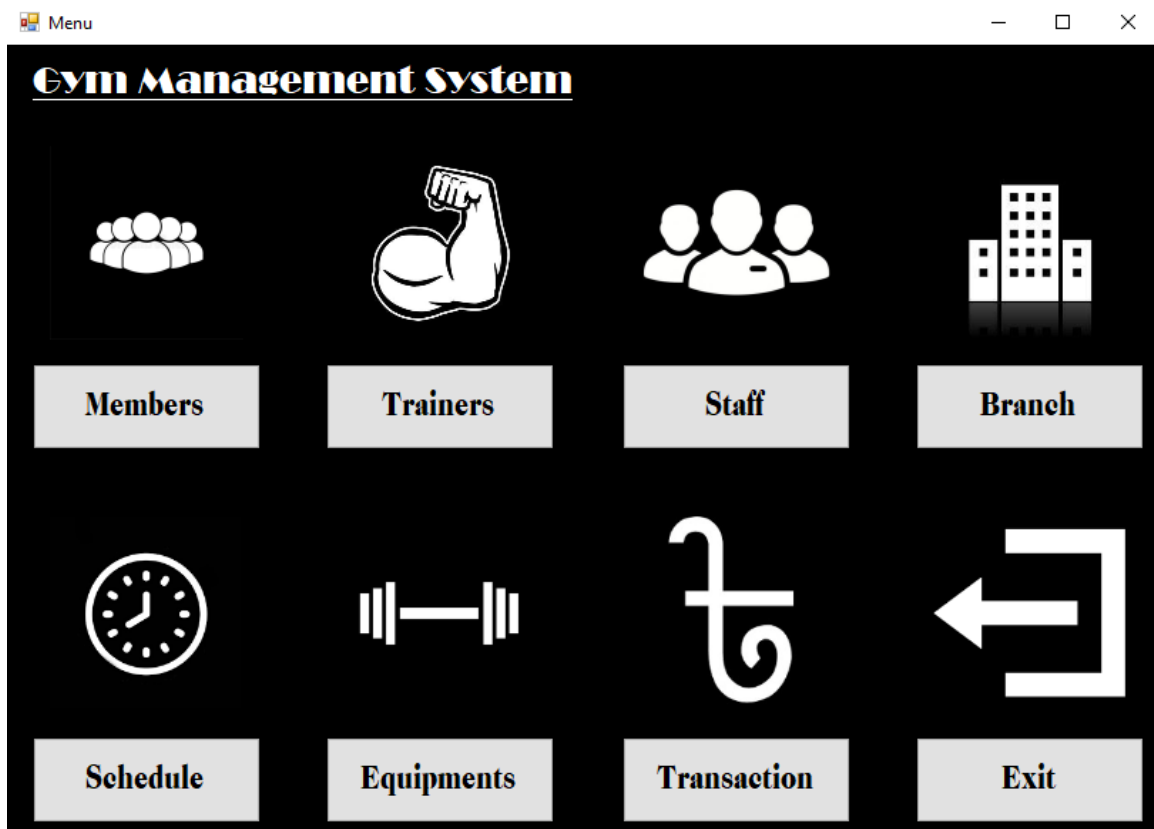


Figure 5.3: Menu Page

Member

Member Details

ID 2001 **Fees** 1500
Name Sadia Islam **Membership** Till April
Address F-5, Rd No. 12, Rupnagar, Mirpur, Dhaka-12 **Schedule** EVEN
Contact 01677845126 **Trainer** 1001
Reg Date 3/4/2022 8:00:19 PM **Branch** 1

	m_id	m_name	m_address	m_num	fees	reg_date	mem_status	t_id	sc_id	br_id
▶	2001	Sadia Islam	F-5, Rd No. 1...	01677845126	1500	3/4/2022 8:0...	Till April	1001	EVEN	1
	2002	Maria Hoque	C-11, Rd No ...	01755948632	1500	3/4/2022 8:0...	Till April	1001	EVEN	1
	2003	Faria Akhter	A-2, Pallabi, ...	01965784236	500	3/5/2022 1:4...	Till March	0	AFT	1
	2004	Jannatul Naima	E-14, Mirpur-...	01623450987	1500	3/5/2022 1:4...	Till March	1002	MOR1	1
	2006	Maria Rahman	C-5, Pallabi, ...	01758963147	500	3/7/2022 1:5...	Till March	0	AFT	1
*										

Figure 5.4: Member Data Page

Trainer

Trainer Details

ID **Payment**
Name **Reg Date**
Address **Schedule**
Contact **Branch**

	t_id	t_name	t_address	t_num	payment	reg_date	sc_id	br_id
▶	1001	Radia Hamid	E-7, Rd No. 14, ...	01975632147	5000	2/25/2022 11:04 ...	EVEN	1
	1002	Farhana Tamanna	C-4, Mirpur-12, D...	01789421563	5000	2/25/2022 9:20 ...	MOR1	1
	1004	Jakia Sultana	D-5, Mirpur-12, D...	01774593236	5000	2/25/2022 9:51 ...	MOR2	1
	1005	Abonti Roy	F-11, Pallabi, Mirp...	01678945624	5000	3/5/2022 1:40 PM	AFT	1
*								

Figure 5.5: Trainer Data Page

The screenshot shows a web application window titled 'Trainer'. Inside, there's a form titled 'Trainer Details'. The form has two columns of input fields. The left column contains 'ID' (with value 1005), 'Name', 'Address', and 'Contact'. The right column contains 'Payment', 'Reg Date', 'Schedule' (a dropdown menu), and 'Branch' (a dropdown menu). Below these fields are five buttons: 'Insert', 'Update', 'Delete', 'Reset', and 'Search' (highlighted in blue). At the bottom, there's a table with 8 columns: t_id, t_name, t_address, t_num, payment, reg_date, sc_id, and br_id. The first row of the table is highlighted in blue and contains the values: 1005, Abonti Roy, F-11, Pallabi, Mirp..., 01678945624, 5000, 3/5/2022 1:40 PM, AFT, and 1. Below the table is a large grey rectangular area.

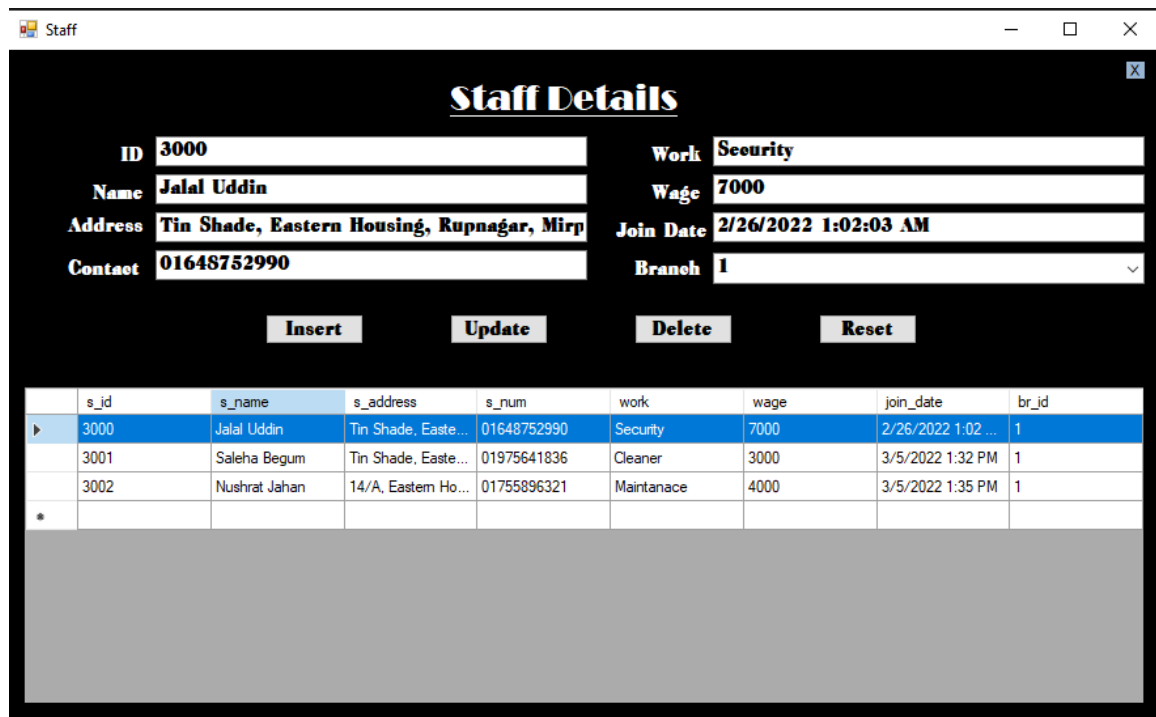
t_id	t_name	t_address	t_num	payment	reg_date	sc_id	br_id
1005	Abonti Roy	F-11, Pallabi, Mirp...	01678945624	5000	3/5/2022 1:40 PM	AFT	1

Figure 5.6: Search Trainer by ID

This screenshot is identical to the previous one, showing the 'Trainer Details' form and table. The 'Search' button is highlighted in blue, indicating the search operation. The table shows the details for the trainer with ID 1005, whose name is 'Abonti Roy'.

t_id	t_name	t_address	t_num	payment	reg_date	sc_id	br_id
1005	Abonti Roy	F-11, Pallabi, Mirp...	01678945624	5000	3/5/2022 1:40 PM	AFT	1

Figure 5.7: Search Trainer by Name



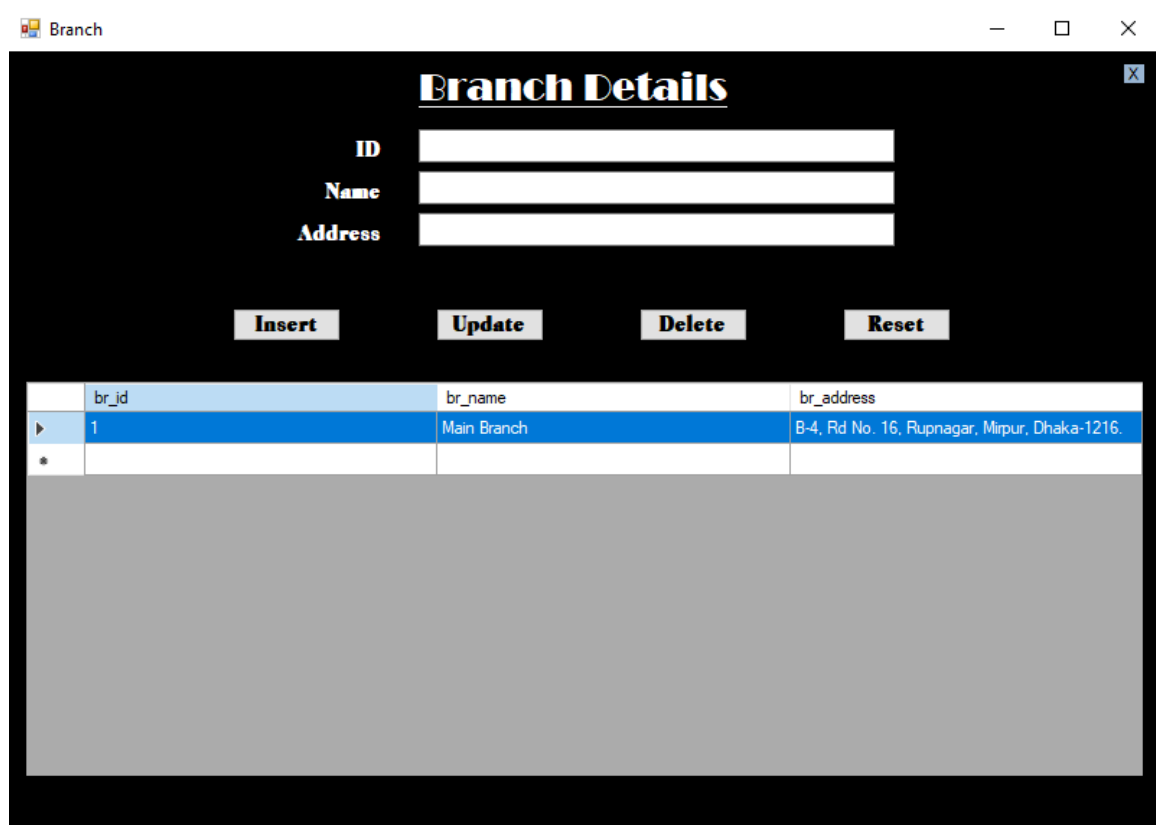
Staff Details

ID 3000 **Work** Security
Name Jalal Uddin **Wage** 7000
Address Tin Shade, Eastern Housing, Rupnagar, Mirp... **Join Date** 2/26/2022 1:02:03 AM
Contact 01648752990 **Branch** 1

Insert Update Delete Reset

	s_id	s_name	s_address	s_num	work	wage	join_date	br_id
▶	3000	Jalal Uddin	Tin Shade, Easte...	01648752990	Security	7000	2/26/2022 1:02 ...	1
	3001	Saleha Begum	Tin Shade, Easte...	01975641836	Cleaner	3000	3/5/2022 1:32 PM	1
	3002	Nushrat Jahan	14/A, Eastern Ho...	01755896321	Maintanace	4000	3/5/2022 1:35 PM	1
*								

Figure 5.8: Staff Data Page



Branch Details

ID
Name
Address

Insert Update Delete Reset

	br_id	br_name	br_address
▶	1	Main Branch	B-4, Rd No. 16, Rupnagar, Mirpur, Dhaka-1216.
*			

Figure 5.9: Branch Data Page

Schedule

Schedule Details

ID
Name
Description

	sc_id	sc_name	description
▶	AFT	Afternoon Hour	From 02:00PM to 06:00PM
	EVEN	Evening Hour	From 06:00PM to 10:00PM
	MOR1	Early Morning	From 07:00AM to 11:00AM
	MOR2	Late Morning	From 11:00AM to 02:00PM
*			

Figure 5.10: Schedule Data Page

Equipment

Equipment Details

ID
Name
Specification

Quantity
Unit Price
Branch

	e_id	e_name	specification	qnt	u_price	br_id
▶	11	Kettlebell	15-Pound Vinyl Coated K...	5	2150	1
	12	Medium-Weight Dumbbells	8-Pound Neoprene Dumb...	6	1500	1
	13	Treadmill	Motorized Treadmill DK-1...	3	39000	1
	14	Stationary Bicycle	Heavy Duty Magnetic Ex...	2	16000	1
	15	Fitness Ball	COREFX Anti-Burst Ball 6...	1	1500	1
	16	Yoga Mat	Silicon Yoga Mat 6mm	5	450	1
*						

Figure 5.11: Equipment Data Page

Transaction

Transaction Details

ID
 Name
 Unit Cost
 Quantity
 Total
 Ref ID
 Details
 Date **2022-03-12**
 Branch

Transaction between **2022-03-12** to **2022-03-12**

c_id	c_name	unit	quantity	total	details	c_date	br_id	ref_id
1	Equipment Kettl...	2150	5	10750	From Amazon	3/4/2022	1	11
2	Equipment Dum...	1500	1	1500	From Amazon	3/4/2022	1	12
4	Equipment Trea...	39000	3	117000	From Amazon	3/1/2022	1	13
5	Received from ...	1500	2	3000	March and April	3/6/2022	1	2001
6	Received from ...	1500	2	3000	March and April	3/5/2022	1	2002
7	Wage Jalal Uddin	7000	1	7000	February	3/6/2022	1	3000
8	Wage Saleha B...	3000	1	3000	February	3/6/2022	1	3001

Figure 5.12: Transaction Data Page

Transaction

Transaction Details

ID **6**
 Name **Received from Maria Hoque**
 Unit Cost **1500**
 Quantity **2**
 Total **3000**
 Ref ID **2002**
 Details **March and April**
 Date **2022-03-05**
 Branch **1**

Transaction between **2022-03-12** to **2022-03-12**

c_id	c_name	unit	quantity	total	details	c_date	br_id	ref_id
1	Equipment Kettl...	2150	5	10750	From Amazon	3/4/2022	1	11
2	Equipment Dum...	1500	1	1500	From Amazon	3/4/2022	1	12
4	Equipment Trea...	39000	3	117000	From Amazon	3/1/2022	1	13
5	Received from ...	1500	2	3000	March and April	3/6/2022	1	2001
6	Received from ...	1500	2	3000	March and April	3/5/2022	1	2002
7	Wage Jalal Uddin	7000	1	7000	February	3/6/2022	1	3000
8	Wage Saleha B...	3000	1	3000	February	3/6/2022	1	3001

Valerie GYM
 Date: 3/12/2022 11:21:23 PM
 Transaction ID: 6
 Name: Received from Maria Hoque
 Unit Cost: 1500
 Quantity: 2
 Total: 3000
 Reference ID: 2002
 Details: March and April
 Pay Date: 2022-03-05

Figure 5.13: Selected Transaction Preview Page

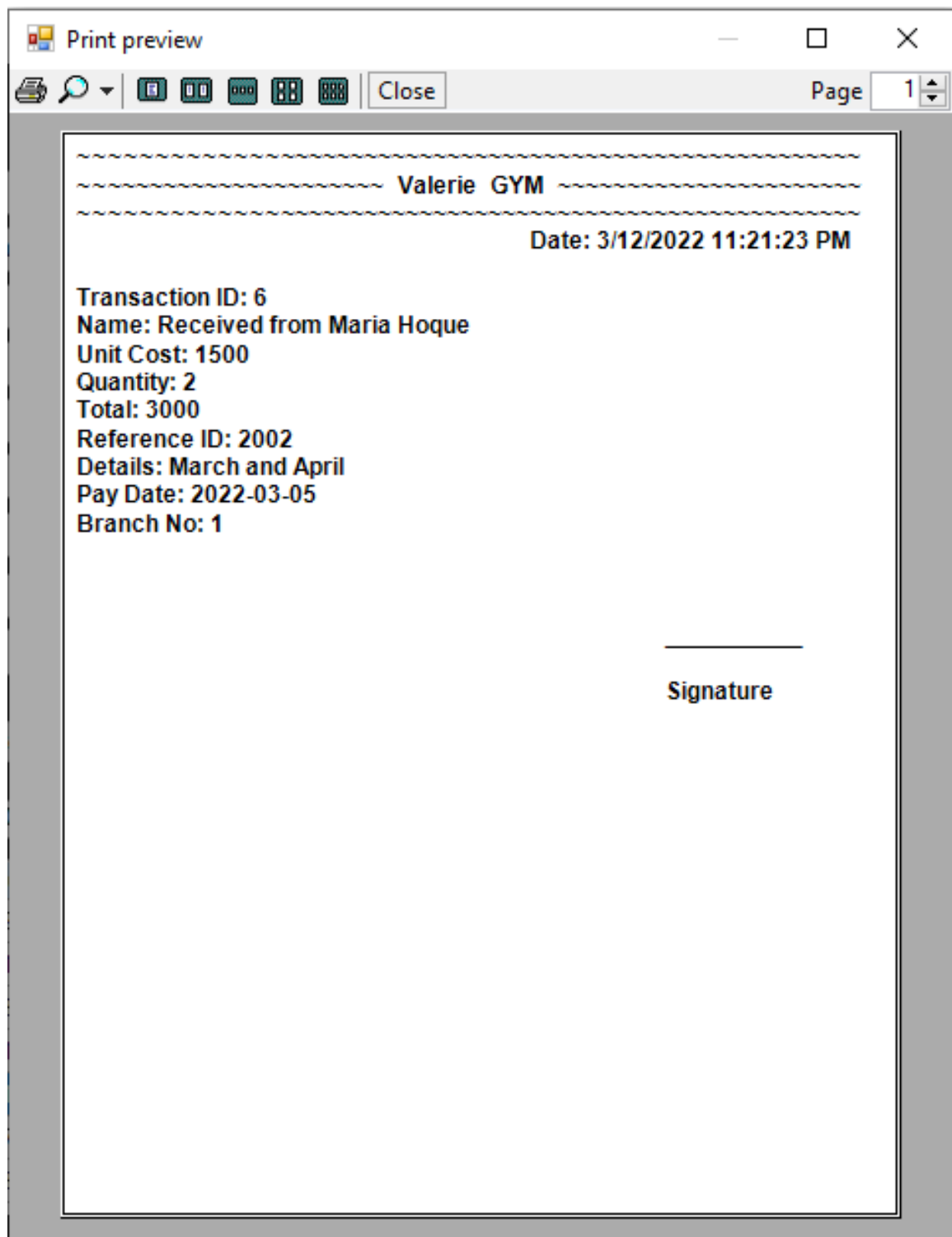


Figure 5.14: Selected Transaction Row Print

Transaction

Transaction Details

ID 6 Name Received from Maria Hoque Unit Cost 1500 Quantity 2 Total 3000 Ref ID 2002 Details March and April Date 2022-03-05 Branch 1	Valerie GYM Date: 3/12/2022 11:21:23 PM Transaction ID: 6 Name: Received from Maria Hoque Unit Cost: 1500 Quantity: 2 Total: 3000 Reference ID: 2002 Details: March and April Prev Date: 2022-03-05
--	--

Transaction between 2022-03-01 to 2022-03-05

c_id	c_name	unit	quantity	total	details	c_date	br_id	ref_id
1	Equipment Kettl...	2150	5	10750	From Amazon	3/4/2022	1	11
2	Equipment Dum...	1500	1	1500	From Amazon	3/4/2022	1	12
4	Equipment Trea...	39000	3	117000	From Amazon	3/1/2022	1	13
6	Received from ...	1500	2	3000	March and April	3/5/2022	1	2002
*								

Figure 5.15: Transaction Search Between Two Date

Print preview

Page 1

c_id	c_name	unit	quantity	total	details	c_date	br_id	ref_id
1	Equipment Kettl...	2150	5	10750	From Amazon	3/4/2022	1	11
2	Equipment Dum...	1500	1	1500	From Amazon	3/4/2022	1	12
4	Equipment Trea...	39000	3	117000	From Amazon	3/1/2022	1	13
6	Received from ...	1500	2	3000	March and April	3/5/2022	1	2002
*								

Figure 5.16: Searched Transaction Data Print

Chapter 6

Diagram

6.1 Schema Diagram

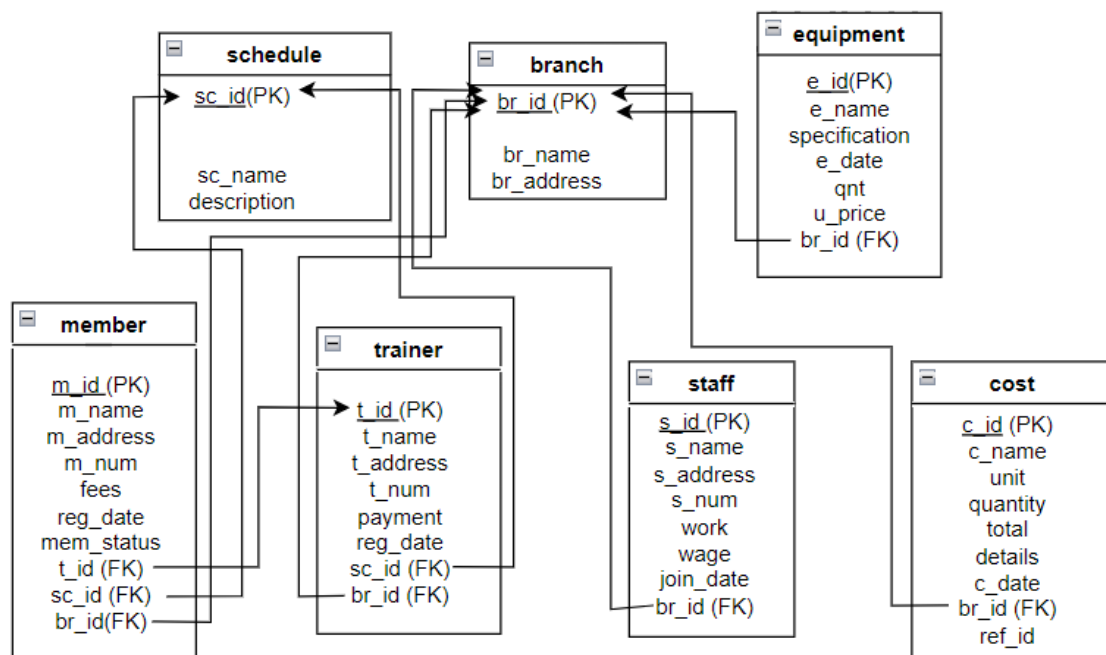


Figure 6.1: Schema Diagram

6.2 ER Diagram

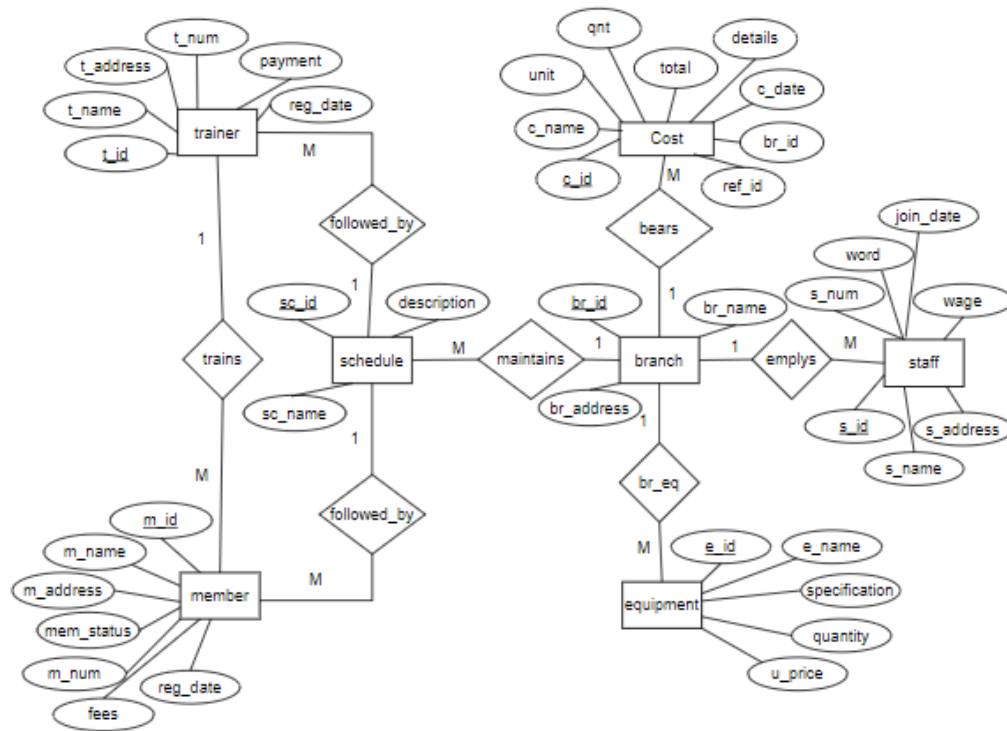


Figure 6.2: ER Diagram

Chapter 7

Future Work

Since our project has been developed in a very short time, it lacks many features and there are some mistakes too. But these imperfections and lack of features can be solved in the future. Some of them are,

- **User-friendly interface :** This project has a very simple and monochromatic GUI which may not be likeable to all. So, we can develop this project more attractive and more user-friendly.
- **Improved data access :** This application is now only access-able in a single desktop with a local database. But we want to make the database online and the application available to the users so that they can have access in selected files.
- **More database query :** We want to add more feature to this project which will contains some more database query to show the admin the exact data he wants and make changes how exactly he wants.

Chapter 8

Conclusion

When we first started the project, we knew very little about C#. Along with the progression of the course, we were introduced to a number of new concepts and aspects of the C# language during the project preparation. We were able to apply all of the theoretical C# concepts we learned in class to our application, making it more and more practical. We've attempted to make our project more compact and user-friendly over time. During this semester, we studied different C# programming ideas and are now in a position to successfully create an error-free application.

Reference

<https://dotnet.microsoft.com/en-us/learn/csharp>