PROJECT REPORT

CS107.3 Object Oriented Programming with C#

GYM MANAGEMENT SYSTEM

Developed by

Team **NextGen Insight**

NSBM GREEN UNIVERSITY TOWN

GYM MANAGEMENT SYSTEM FOR

CROSSFIT FITNESS

DEVEVLOPED BY

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UNDER THE GUIDANCE OF

Mr. Pramudya Thilakaratne

PROJECT SUBMITTED FOR THE MODULE

CS107.3 Object Oriented Programming with C#

Of BSc (Honors) DEGREE OF

SOFTWARE ENGINEERING / COMPUTER SECURITY / COMPUTER NETWORKS

19.2 BATCH

National School of Business & Management

(Affiliated to the University of Plymouth)

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- We would also like to acknowledge all the **seniors** for providing a helping hand to us in times of queries & problems.

- We are also very Thankful to Mr.Prabath **(the owner of CROSSFIT FITNESS CENTER)** who helped us in the Development of the Project by lending his valuable Support to us.

- We would like to Thanks our **colleagues** for keeping our Sprits High while preparing the Project.

- We would like to Thanks our **parents** for providing neccesary materials while preparing the project.

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Team **NextGen Insight**

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INTRODUCTION

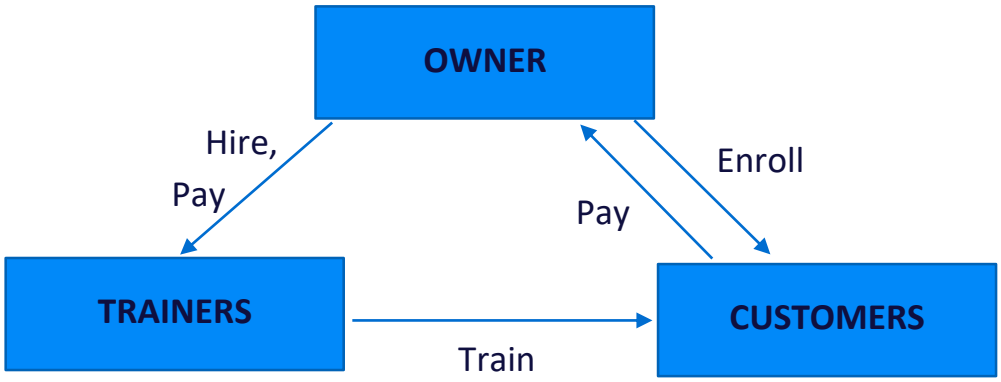
1.1 Business Overview

ABOUT BUSINESS

- Business Name – Cross Fit Fitness Center
- Name of the Owner – Mr.Prabath
- Location – Pamburana, Matara

In this business they provide a quality healthcare service. They help members prevent and overcome degenerative diseases, achieve their optimum fitness goals, realise personal lifestyle development objectives and rehabilitate them into good health. This is accomplished by designing exercise programs which are effective, efficient and motivational. All of these healthcare services are being delivered by a team of well trained, committed and passionate professionals, whilst being managed and guided by some of the most qualified and respected experts of the healthcare and fitness industry.

STRUCTURE OF BUSINESS



PROCESS OF BUSINESS

First client have to come and register as a member in the system. After that Trainers will get the measurements, give specific schedule to the member and train them. After that client can get supplements from owner.Every month trainers will analyze your progress and change the schedule.

EXISTING SYSTEM OF THE BUSINESS

The existing system in the organization is a manual information system.File processing systems used for registeration details,customer details,trainer details,supplement details,payments and members progress.The current system is time consuming and also it is very costly, because it involves a lot of paperwork.To manually handle the system was very difficult task.

ISSUES OF EXISTING SYSTEM

- Manual system cannot find details easily.
- Files can be damage or lost.
- When making payments, there can be mistakes so the accuracy is low
- Trainers can't remember the all schedule details.
- Difficult to search schedules and can be lost.
- Can't generate the business progress report easily.
- Manual system is bit slower.
- Duplication of same data.

SUGGESTED SOLUTION

Solution is to computerized the information system and give a software solution to the above mentioned issues in existing manual process.

The following are the reasons why the existing system should be computerized:

- ➢ To increase efficiency with reduced cost.
- ➢ To reduce the burden of paper work.
- ➢ To save time management for recording details of each and every member and employee.
- ➢ To generate required reports easily.

✓ <u>As a solution Team NextGen Insight offered to provide that computerized system.</u>

1.2 Proposed System

OBJECTIVES OF THE SYSTEM

- The main objective of the project is to design and develop a user friendly system.
- Easy to use and efficient computerized system.
- To develop an accurate and flexible system, it will eliminate data redundancy.
- Computerization can be helpful as means of saving time & money.
- To provide better graphical user interface.
- Less chances of information leakage.
- Provides security to data by using login & password.

SCOPE OF THE SYSTEM

- Storing information of members, trainers.
- Check validity of information provided by user.
- Storing information of members according to their id.
- Generating reports for different id.

SOFTWARE & HARDWARE REQUIREMENT

SOFTWARE

- Front End:- Visual Studio IDE
- Back End :- MySQL

HARDWARE

- One computer for the system
- 500 GB hard disc
- 1920*1080 Monitor
- 4GB RAM
- Core i5 processor
- DVD ROM
- Bar Code Reader
- 4G Router

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THEORITICAL BACKGROUND

2.1 Problem Identification

Defining a problem is one of the important activities of the project. The objective is to define precisely the business problem to be solved & thereby determined the scope of the new system.The main task within this activity is to review the organization needs that originally initiated the project. A clear understanding of the problem will help us in building a better system & reduce the risk of project failure. It also specifies the resources that have to be made available to the project.

Organization needs

- Register new members
- Search members.
- Register new trainers.
- View member details.
- Manage Accessories.
- Manage Payments.
- Mark attendance.

2.2 Feasibility Study

The feasibility study proposes one or more conceptual solutions to the problem set for the project. The objective in assessing feasibility is to determine whether a development project has a reasonable chance of success. It helps us to determine the input & output of the system. The following are the criteria that are considered to confirm the project feasibility.

The following feasibility study was undertaken for the proposed system:

Technical feasibility

The first study aspect is whether the current project is technically feasible and whether the project be carried out with the current equipment, existing software and available personnel. If new technology is required than what is the likelihood that it can be developed?

The process of assessing the development organization's ability to construct the proposed system.

- Familiarity with the application
- Familiarity with the technology
- Size of the system
- Complexity of the system
- Compatibility of the new system

Economic feasibility

The second study aspect is whether the project is economically feasible i.e. are there sufficient benefits in creating the system to make the cost acceptable. Are the costs of not creating the system so great that the project must be undertaken?

The process of identifying financial benefits and costs associated with the development project. Also referred to as Cost-Benefit Analysis.

- Development costs
- Annual operating costs
- Annual benefits

While considering economic feasibility, it is checked in points like performance, information and outputs from the system. MySQL is available in our computers so we does not require additional software cost for the client tools. The cost incurred to develop the system is freeware & does not incur the cost to the project. This justifies economical feasibility of the system.

Operational feasibility

The third study aspect is whether the project is operationally feasible or not. whether the system will be used if it is developed and implemented. Project is worth developing only if it can meet institutions operating requirements.

The operational feasibility is obtained by consulting with the system users. Check that proposed solution satisfies above organization needs or not. There is no resistance from employee since new system is helpful. The existing system is manual system, while the new system is computerized and extremely user friendly.

Social feasibility

Although generally there is always resistance, initially to any change in the system is aimed at reliving the work load of the users to extent the system is going to facilitate user to perform operations like generating reports with less possible errors. Thus there is no reason to make system socially unfeasible.

2.3 System Analysis

The phase is detailed appraisal of the existing system. This appraisal includes how the system works and what it does. It also includes finding out more detail- what are the problems with the system and what user requires from the system or any new change in the system.

System study

It is always necessary to study and recognize the problems of the existing system, which will help in finding out the requirements for new system. System study helps in finding different alternatives for better solution.

The project study basically deals with different operations and steps involved in generation of examination mark sheets. It includes:

- Data gathering
- Study of existing system
- Analyzing problem
- Studying various documents
- Feasibility study for further improvements

Following are the steps taken during the initial study:

- Initially, we collected all the information, which they wanted to store.
- Then we studied the working of the current system which is done manually. We noted the limitations of that system which motivated them to have a new system
- Then we analyzed the format the reports generated by the system.
- With the help these documents we got basic ideas about the system as well as input & output of the developed system.

➢ Above Existing System details and issues mentioned in 6pg are theoritically explained under system analysis phase.

2.4 System Design

Systems design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements.

Graphical Model

- -System Flow Chart
- -Data Flow Diagram (DFD)
- -Entity Relationship (ER) Diagram
- -Class Diagram
- -Use Case Diagram

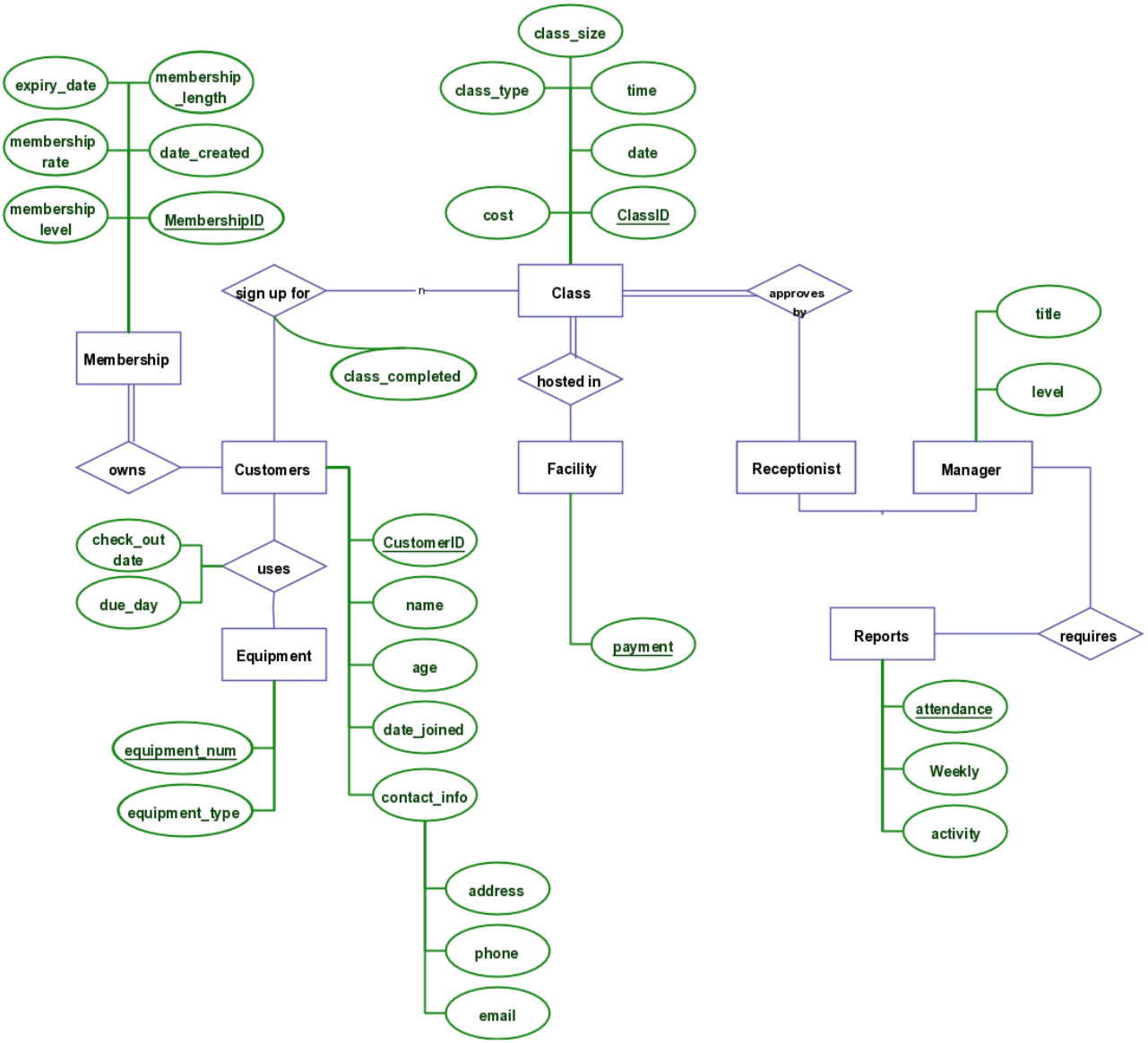
Descriptive Model

- -Structured English or Pseudo codes
- -Event list
- -Process Description
- -Decision Tree
- -Decision Table

Mathematical Model

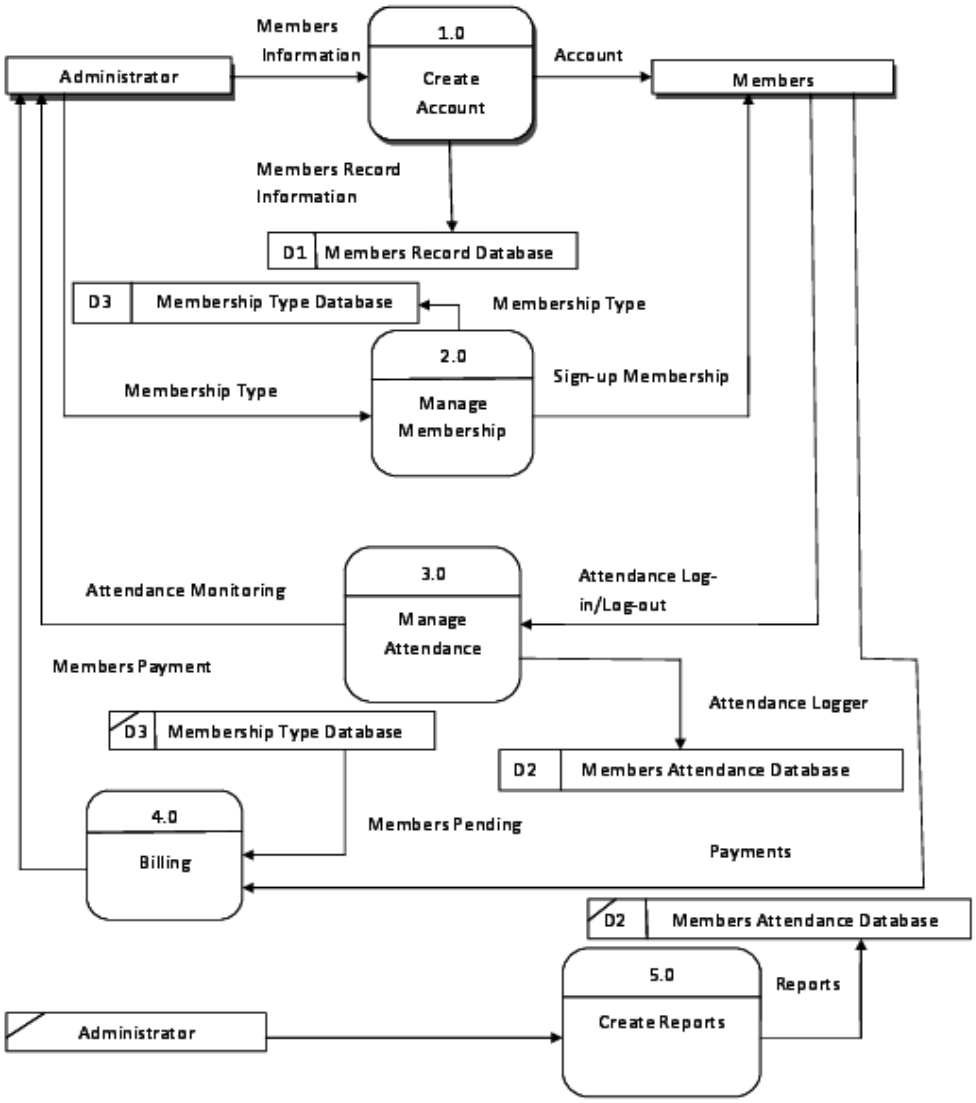
- Gross Pay = Basic Salary + Overtime Pay
- New Stock Level = Current Stock Level -Quantity Sol

Flow Chart

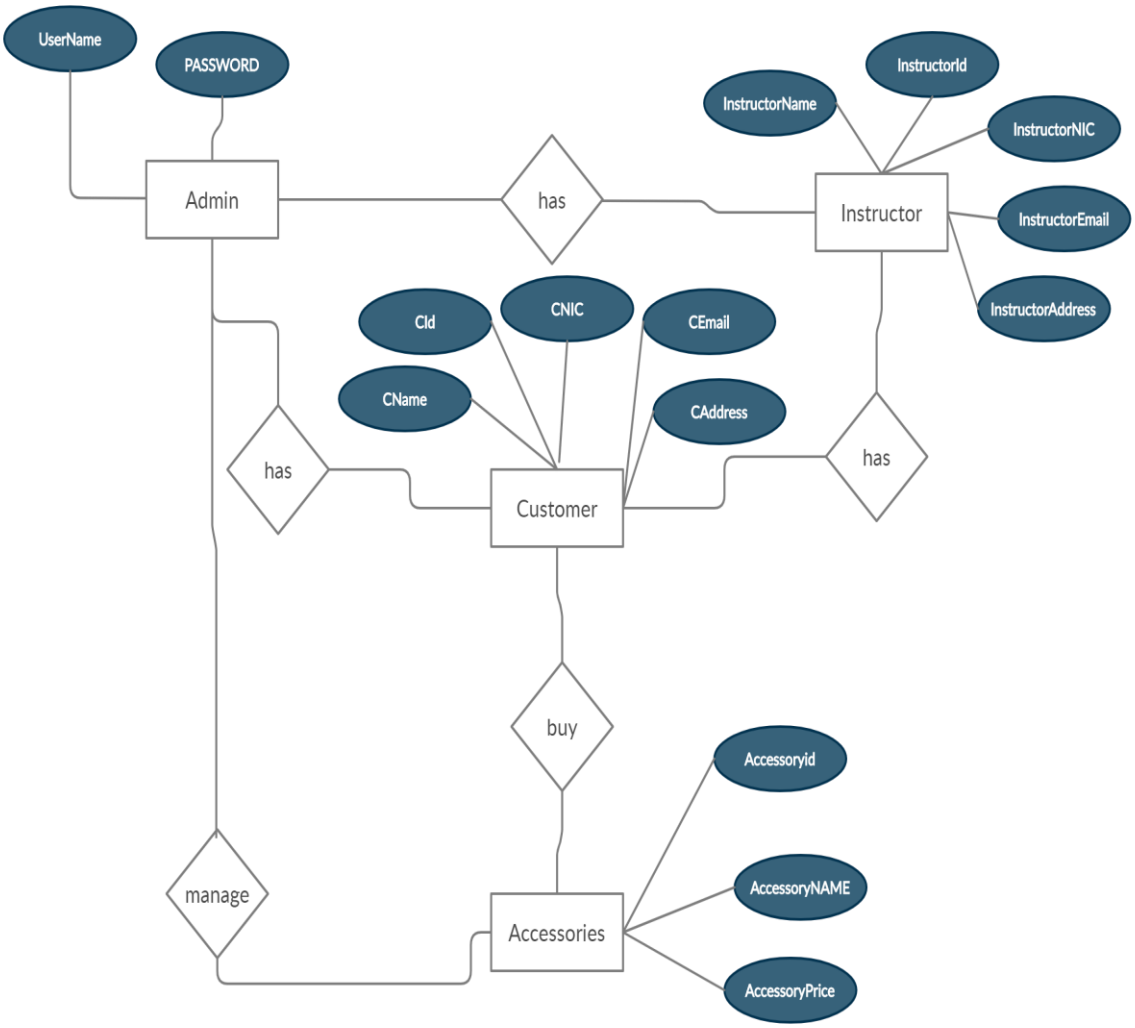

class_size
expiry_date
membership_length
class_type
time
membership rate
date_created
date
membership level
MembershipID
cost
ClassID
sign up for
n
Class
approves by
title
Membership
class_completed
hosted in
level
owns
Customers
Facility
Receptionist
Manager
check_out date
uses
CustomerID
due_day
name
payment
Reports
requires
Equipment
age
attendance
date_joined
equipment_num
Weekly
contact_info
equipment_type
activity
address
phone
email

DFD diagram

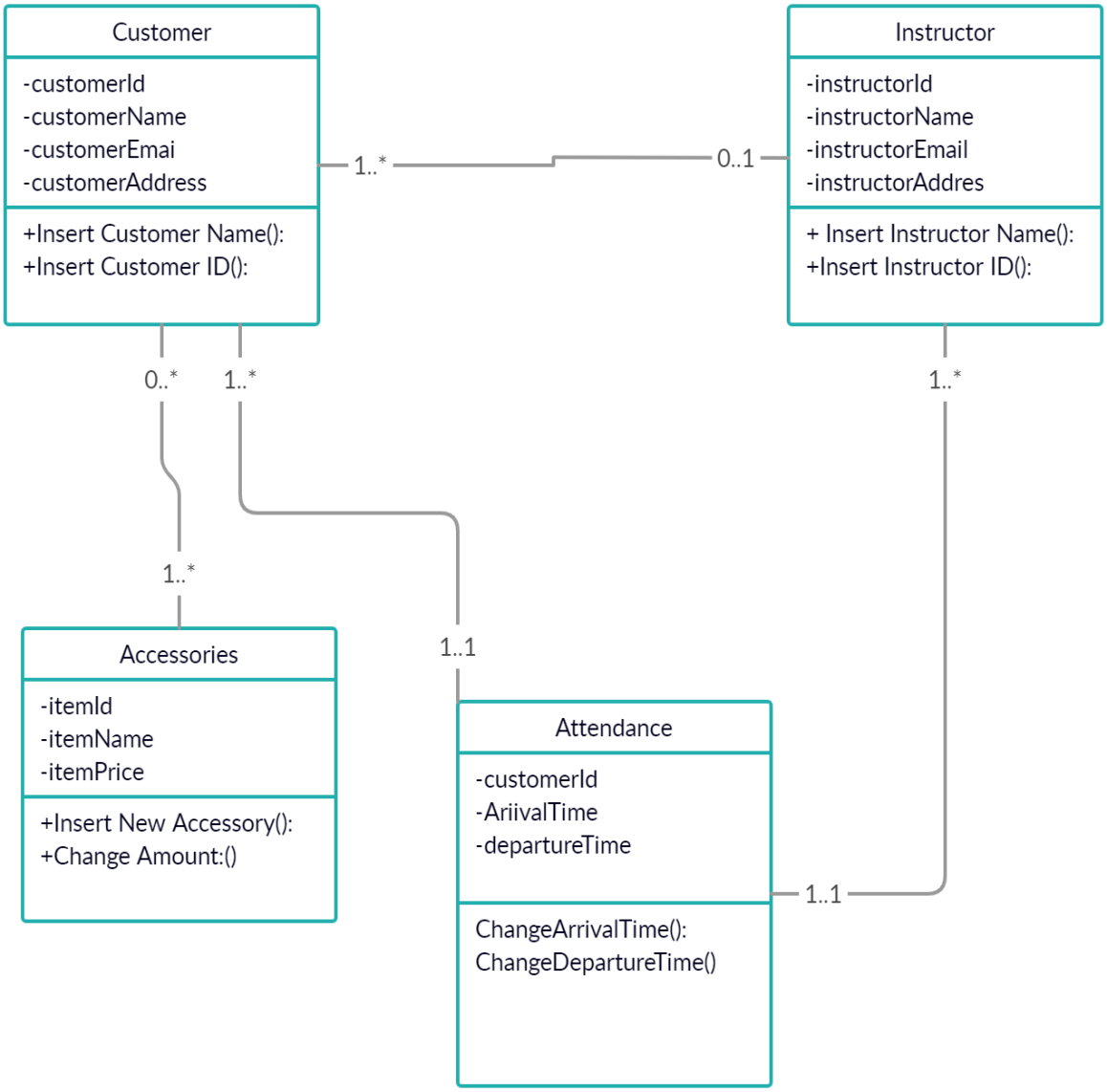
Data Flow Diagram



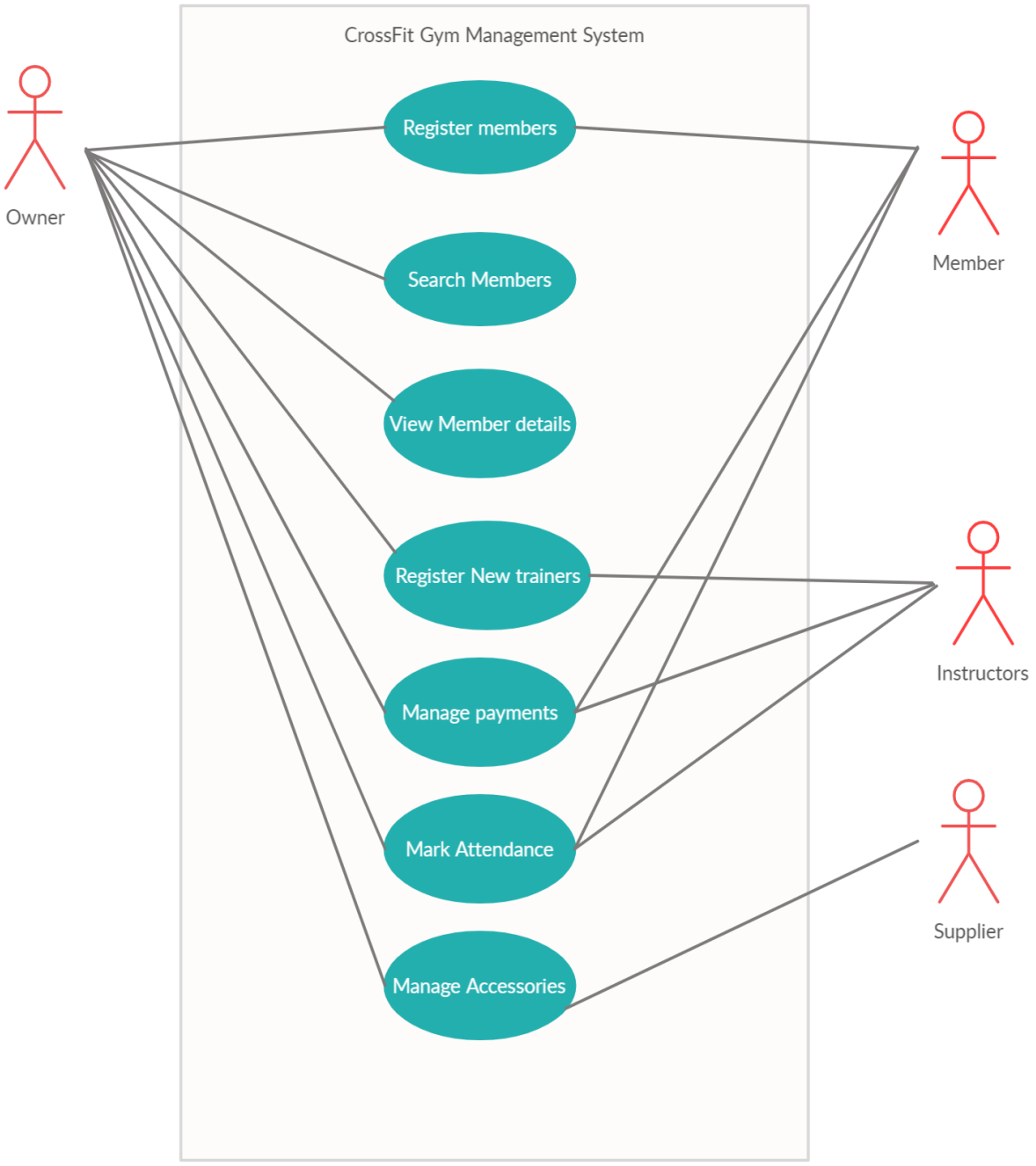
ER diagram


UserName
PASSWORD
Admin
has
InstructorId
InstructorName
InstructorNIC
Instructor
InstructorEmail
InstructorAddress
CId
CNIC
CEmail
CName
CAddress
has
has
Customer
buy
Accessoryid
manage
AccessoryNAME
Accessories
AccessoryPrice

CLASS diagram


Customer
-customerId
-customerName
-customerEmai
-customerAddress
+Insert Customer Name():
+Insert Customer ID():
1..*
0..1
Instructor
-instructorId
-instructorName
-instructorEmail
-instructorAddres
+ Insert Instructor Name():
+Insert Instructor ID():
0..*
1..*
1..*
1..*
Accessories
-itemId
-itemName
-itemPrice
+Insert New Accessory():
+Change Amount:()
1..1
Attendance
-customerId
-AriivalTime
-departureTime
ChangeArrivalTime():
ChangeDepartureTime()
1..1

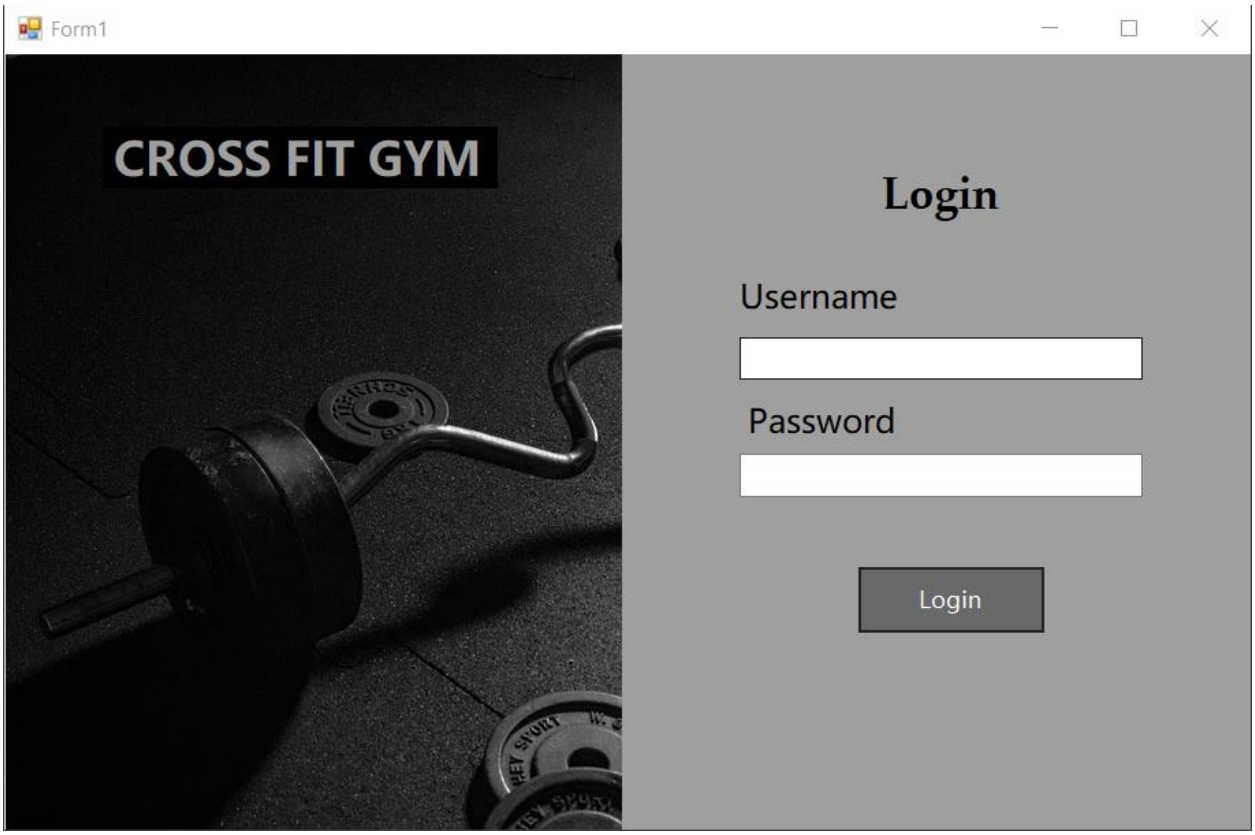
USE CASE diagram


CrossFit Gym Management System
Register members
Search Members
View Member details
Register New trainers
Manage payments
Mark Attendance
Manage Accessories
Owner
Member
Instructors
Supplier

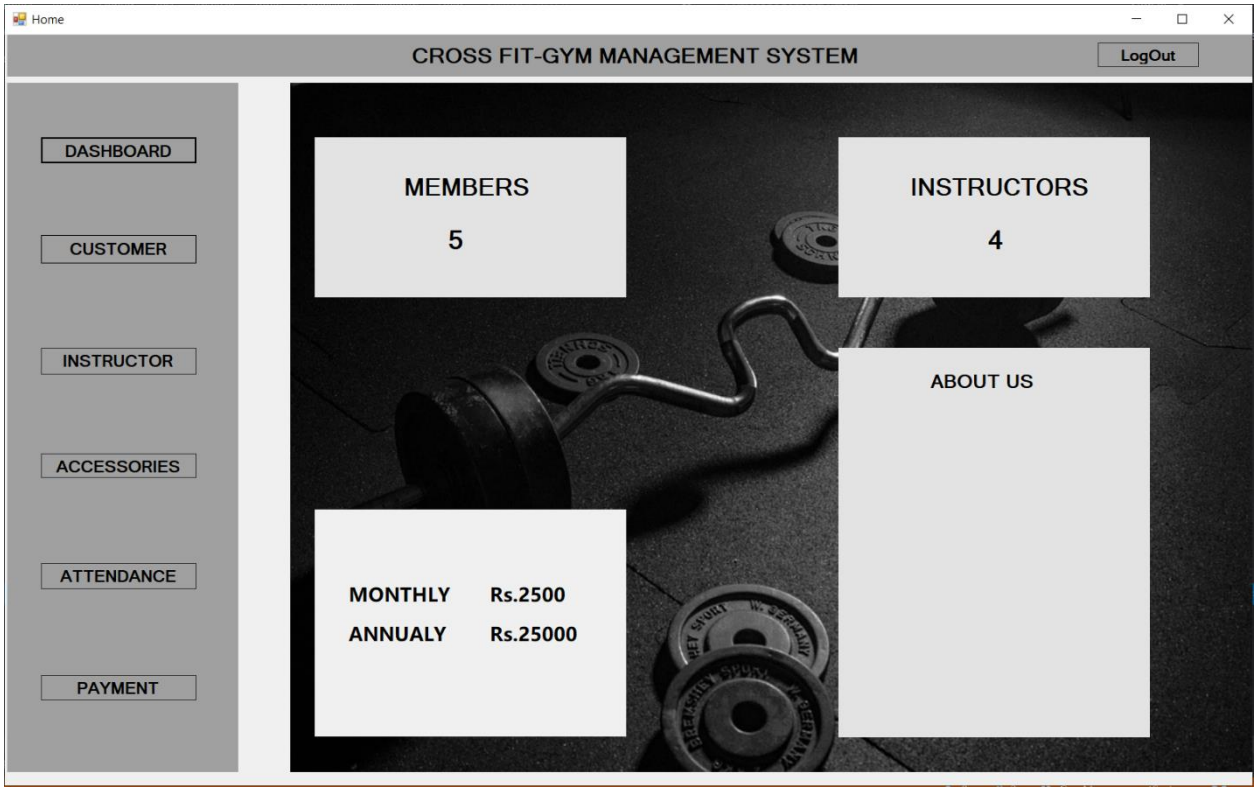
2.5 System Development

Samples of the Developed System

1) **Login Page**



2) Dash Board

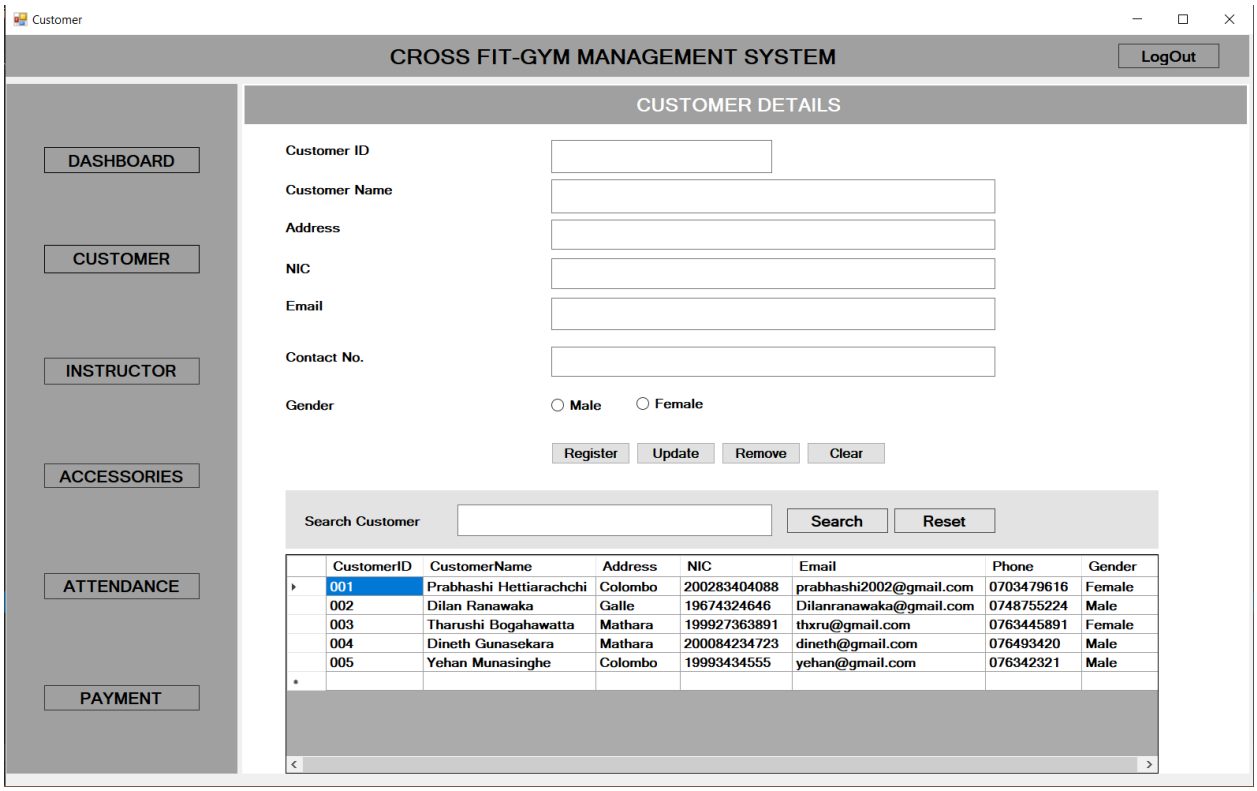


Buttons named Dashboard, Customer, Instructor, Accessories, Attendance, and Payment displayed in the nav bar direct you to the relevant interfaces.

Display box named as Members represent the number of members that use the gym and when new members attend to the gym the number inside the display box changes.

The rest of display boxes represent the monthly fee, annual fee, the number of instructors and the about us information about the gymnasium.

3) Customer details



Buttons named Dashboard, Customer, Instructor, Accessories, Attendance, and Payment displayed in the nav bar direct you to the relevant interfaces.

There are labels named Customer Id, Customer Name, Address, NIC, Email, Contact Number, Gender and the text boxes represented in front of them are to type the relevant information relevant to the label.

As we enter the information and click the button named “Register”, the relevant information gets added and displays as a record in the data grid displayed below.

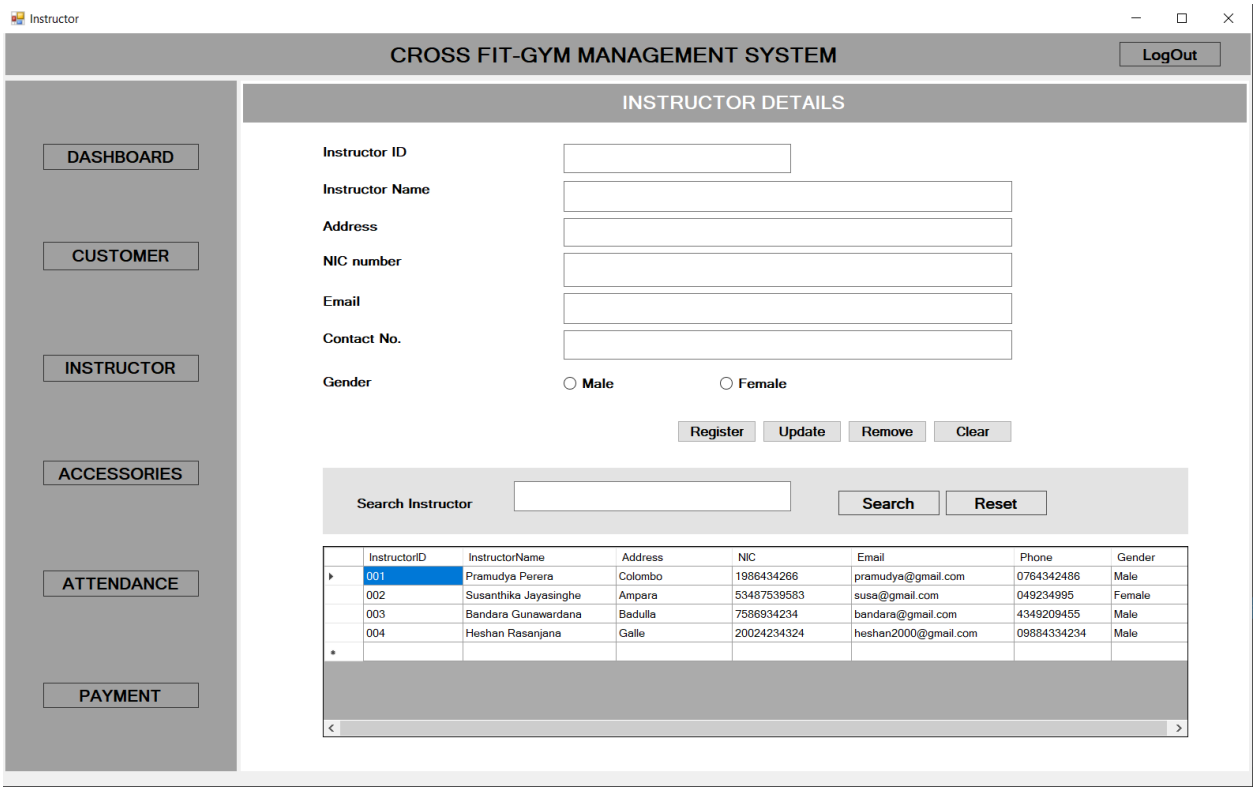
In case a customer needs to change his/her Contact number, he can change the details entered before relevant to the label Contact number and click the “Update” button. So, the record related to that member in the database is updated.

In order to remove a record from the database, user can enter the relevant Customer ID in front of the “Customer ID” label and click on the button named “Remove”. Then the whole record of the relevant Customer will be deleted.

By clicking on the “Clear” button, the user can clear the information entered in the text boxes.

In case you want to search for a certain customer’s details, you can type the needed customer ID in the text box of the “Search Customer bar” and by clicking on the “Search” button we can get the only record related to that Customer ID. By clicking on the “Reset” button, all records relating to all the customers registered to the gym will be displayed.

4) Instructor



Buttons named Dashboard, Customer, Instructor, Accessories, Attendance, and Payment displayed in the nav bar direct you to the relevant interfaces.

There are labels named Instructor Id, Instructor Name, Address, NIC, Email, Contact Number, Gender and the text boxes represented in front of them are to type the relevant information relevant to the label.

As we enter the information and click the button named “Register”, the relevant information gets added and displays as a record in the data grid displayed below.

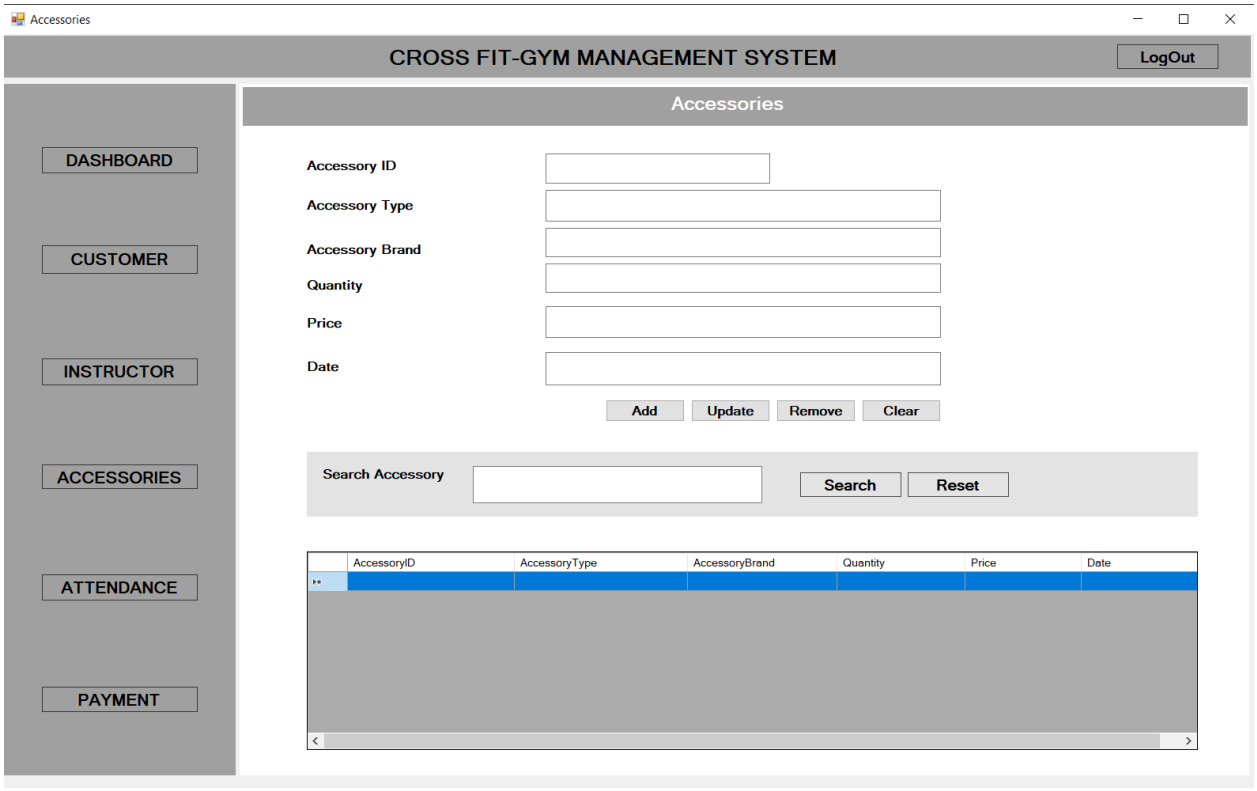
In case an instructor needs to change his/her Contact number, he can change the details entered before relevant to the label Contact number and click the “Update” button. So, the record related to that Instructor in the database is updated.

In order to remove a record from the database, user can enter the relevant Customer ID in front of the “Customer ID” label and click on the button named “Remove”. Then the whole record of the relevant Customer will be deleted.

By clicking on the “Clear” button, the user can clear the information entered in the text boxes.

In case you want to search for a certain Instructor’s details, you can type the needed Instructor ID in the text box of the “Search Instructor bar” and by clicking on the “Search” button we can get the only record related to that Instructor ID. By clicking on the “Reset” button, all records relating to all the instructors registered to the gym will be displayed.

5) Accessories



Buttons named Dashboard, Customer, Instructor, Accessories, Attendance, and Payment displayed in the nav bar direct you to the relevant interfaces.

There are labels named Accessory Id, Accessory Name, Accessory Brand, Quality, Price, Date and the text boxes represented in front of them are to type the relevant information relevant to the label.

As we enter the information and click the button named “Register”, the relevant information gets added and displays as a record in the data grid displayed below.

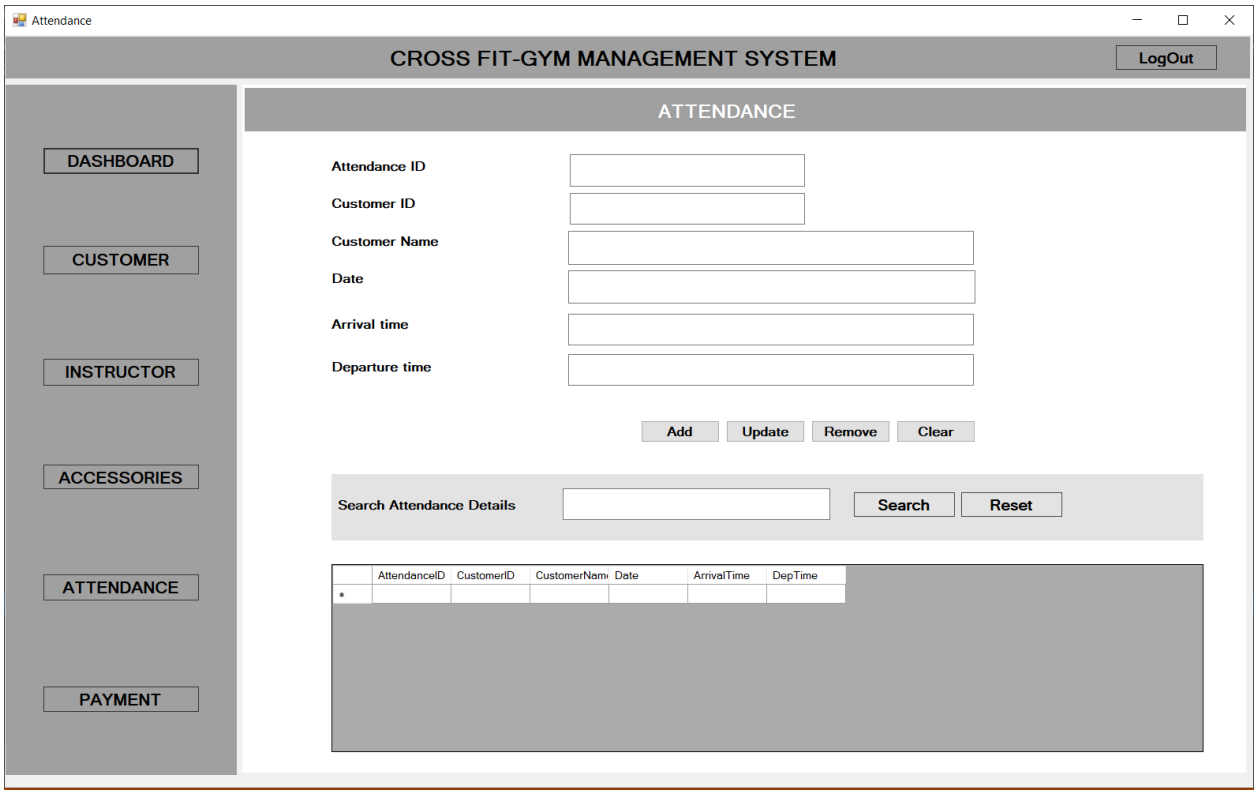
In case an accessory change its price, it can change the details entered before relevant to the label Price and click the “Update” button. So, the record related to that Accessory in the database is updated.

In order to remove a record from the database, user can enter the relevant Accessory ID in front of the “Accessory ID” label and click on the button named “Remove”. Then the whole record of the relevant Accessory will be deleted.

By clicking on the “Clear” button, the user can clear the information entered in the text boxes.

In case you want to search for a certain Accessory’s details, you can type the needed Accessory ID in the text box of the “Search Accessory bar” and by clicking on the “Search” button we can get the only record related to that Accessory ID. By clicking on the “Reset” button, all records relating to all the Accessories available at the gym will be displayed.

6) Attendance



Buttons named Dashboard, Customer, Instructor, Accessories, Attendance, and Payment displayed in the nav bar direct you to the relevant interfaces.

There are labels named Attendance Id, Customer Id, Customer name, Date, Arrival time, Departure time and the text boxes represented in front of them are to type the relevant information relevant to the label.

As we enter the information and click the button named “Register”, the relevant information gets added and displays as a record in the data grid displayed below.

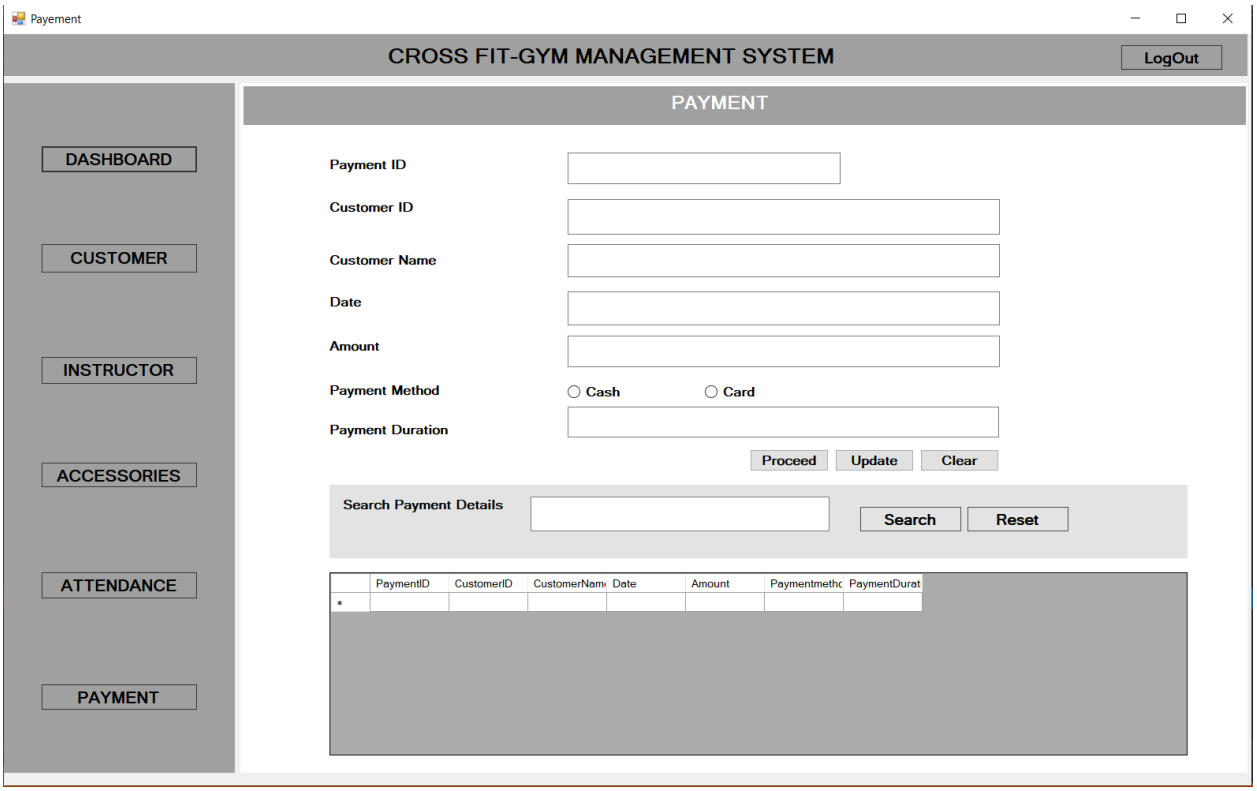
In case an accessory change its arrival and departure times, it can change the details entered before relevant to the label arrival and departure times and click the “Update” button. So, the record related to that Attendance in the database is updated.

In order to remove a record from the database, user can enter the relevant Attendance ID in front of the relevant label and click on the button named “Remove”. Then the whole record of the relevant Attendance will be deleted.

By clicking on the “Clear” button, the user can clear the information entered in the text boxes.

In case you want to search for a certain Customer’s details regarding his/ her attendance, you can type the needed Customer ID in the text box of the “Search Attendance bar” and by clicking on the “Search” button we can get the only record related to that Customer ID. By clicking on the “Reset” button, all records relating to all the Customers’ attendance available at the gym will be displayed.

7) Payment



Buttons named Dashboard, Customer, Instructor, Accessories, Attendance, and Payment displayed in the nav bar direct you to the relevant interfaces.

There are labels named Payment Id, Customer Id, Customer name, Date, Amount, Payment method and the text boxes represented in front of them are to type the relevant information relevant to the label.

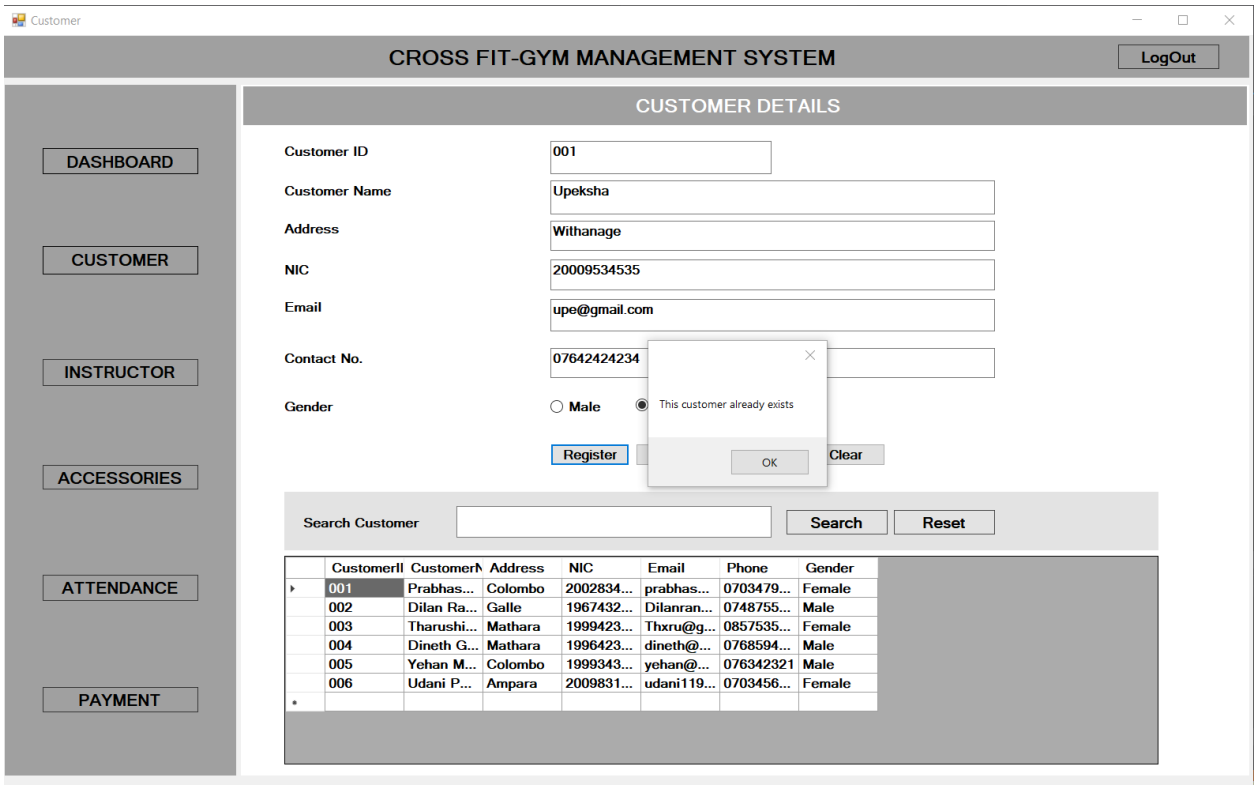
As we enter the information and click the button named “Proceed”, the relevant information gets added and displays as a record in the data grid displayed below.

In case the payment duration is changed, it can change the details entered before relevant to the label Payment durations time and click the “Update” button. So, the record related to that payment in the database is updated.

By clicking on the “Clear” button, the user can clear the information entered in the text boxes.

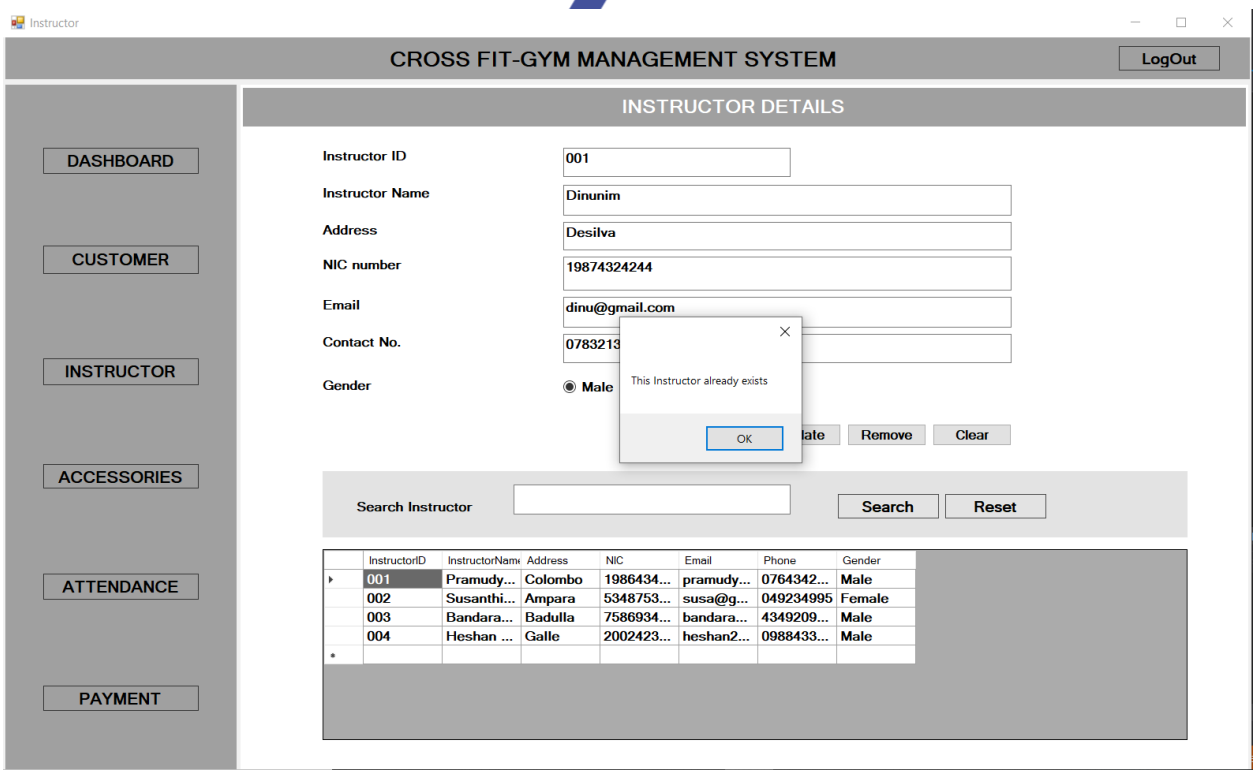
In case you want to search for a certain Customer’s details regarding his/ her payment, you can type the needed Customer ID in the text box of the “Search Payment Details bar” and by clicking on the “Search” button we can get the only record related to that Customer ID. By clicking on the “Reset” button, all records relating to all the Customers’ payments available at the gym will be displayed.

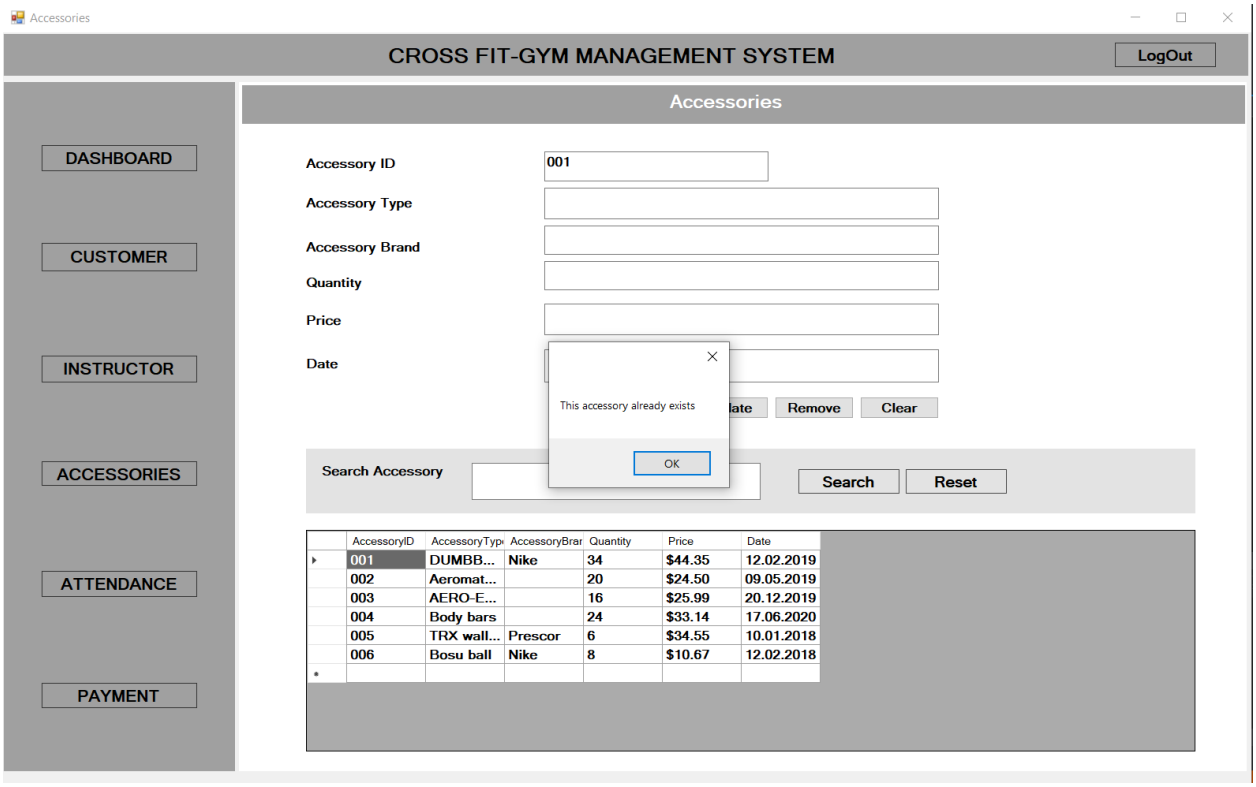
Primary Key Exceptions

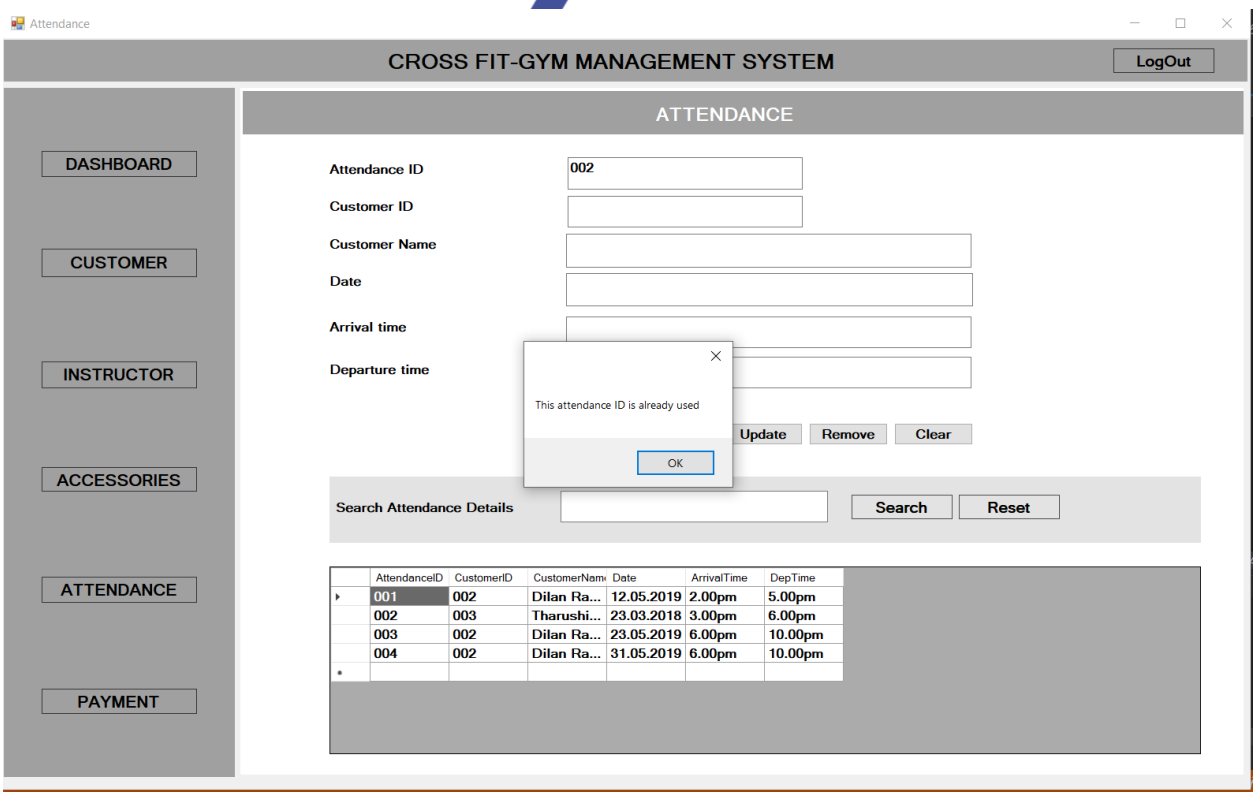


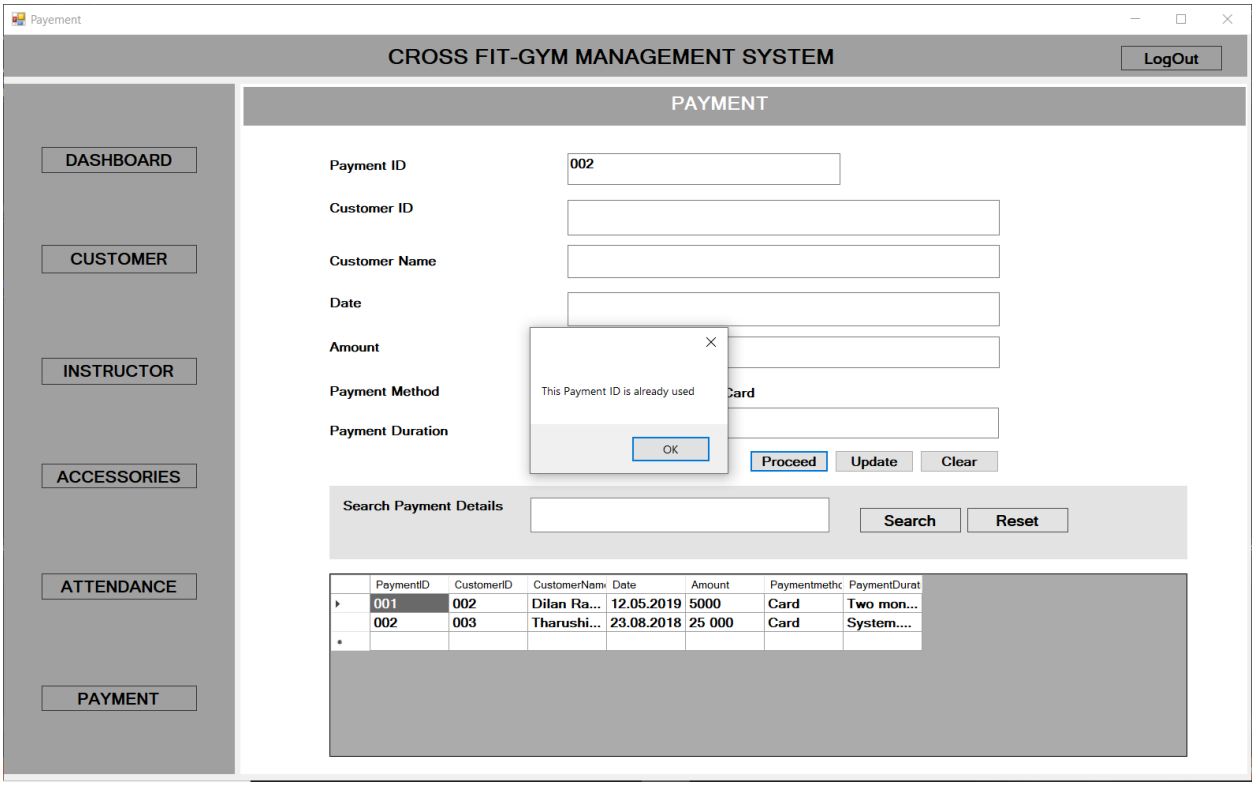
Here, the Customer ID used for registering the new customer named Upeksha is “001”. But it was used and entered before for adding a customer. So, here an error is displayed in the alert box showing “The customer already exists”.

Likewise the other interfaces also generates alerts when an already existing Id is used again.


Instructor
CROSS FIT-GYM MANAGEMENT SYSTEM
LogOut
INSTRUCTOR DETAILS
DASHBOARD
CUSTOMER
INSTRUCTOR
ACCESSORIES
ATTENDANCE
PAYMENT
Instructor ID
001
Instructor Name
Dinunim
Address
Desilva
NIC number
19874324244
Email
dinu@gmail.com
Contact No.
Gender
Male
This Instructor already exists
OK
Remove
Clear
Search Instructor
Search
Reset
InstructorID InstructorName Address NIC Email Phone Gender
001 Pramudy... Colombo 1986434... pramudy... 0764342... Male
002 Susanthi... Ampara 5348753... susa@g... 049234995 Female
003 Bandara... Badulla 7586934... bandara... 4349209... Male
004 Heshan ... Galle 2002423... heshan2... 0988433... Male

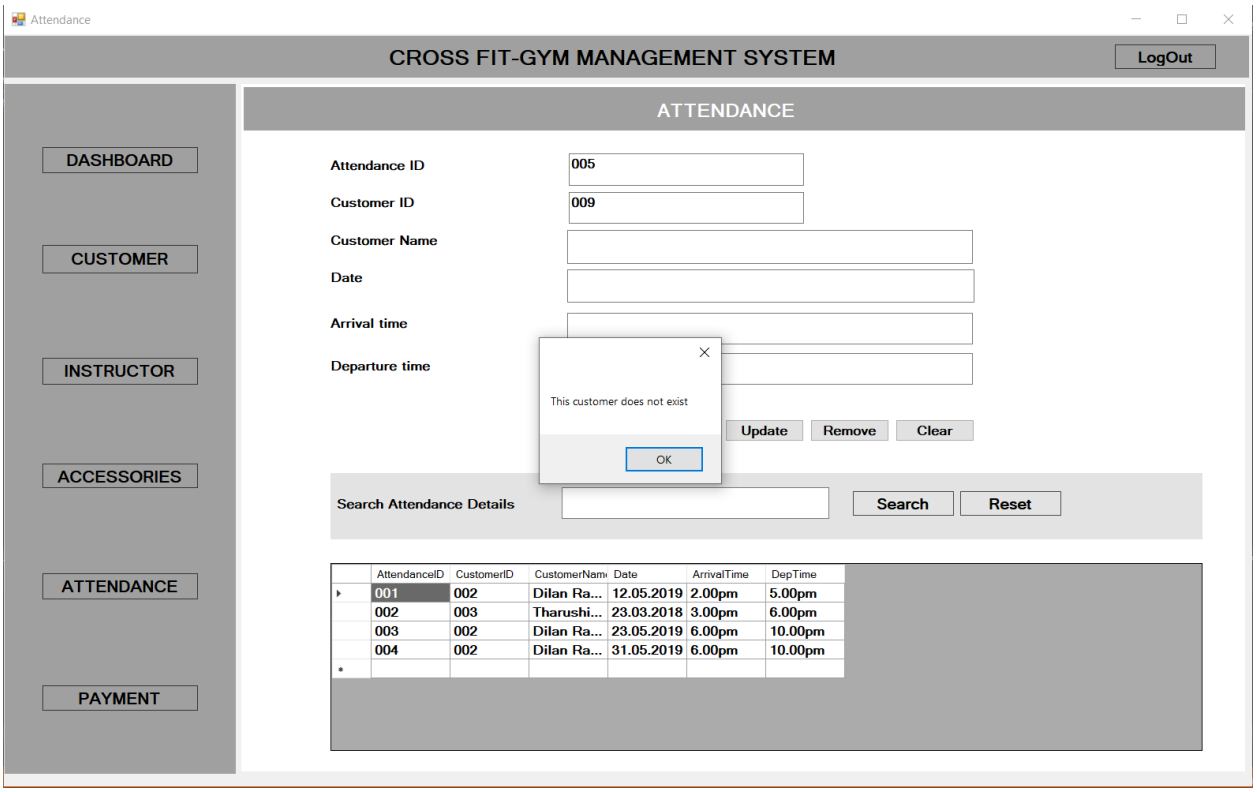

Accessories
CROSS FIT-GYM MANAGEMENT SYSTEM
LogOut
Accessories
DASHBOARD
CUSTOMER
INSTRUCTOR
ACCESSORIES
ATTENDANCE
PAYMENT
Accessory ID
001
Accessory Type
Accessory Brand
Quantity
Price
Date
This accessory already exists
OK
Remove
Clear
Search Accessory
Search
Reset
AccessoryID AccessoryType AccessoryBrand Quantity Price Date
001 DUMBB... Nike 34 $44.35 12.02.2019
002 Aeromat... 20 $24.50 09.05.2019
003 AERO-E... 16 $25.99 20.12.2019
004 Body bars 24 $33.14 17.06.2020
005 TRX wall... Prescor 6 $34.55 10.01.2018
006 Bosu ball Nike 8 $10.67 12.02.2018

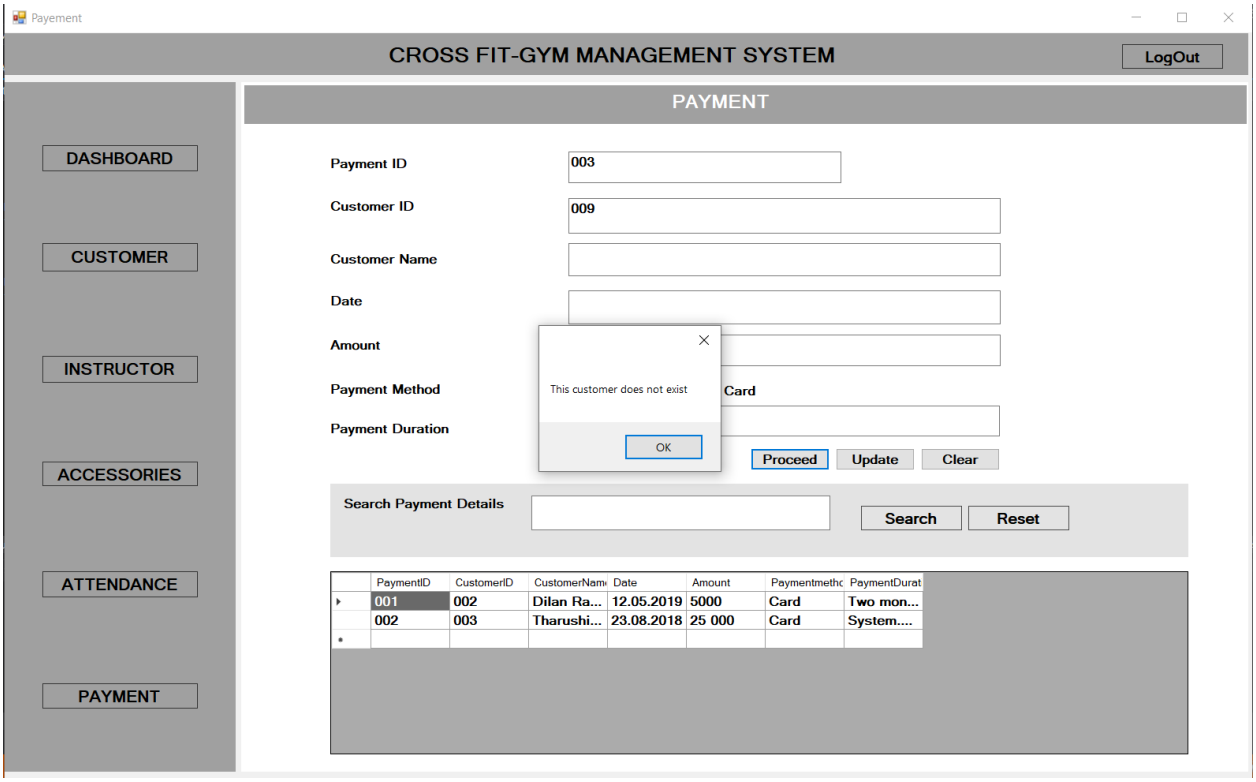

Attendance
CROSS FIT-GYM MANAGEMENT SYSTEM
LogOut
DASHBOARD
CUSTOMER
INSTRUCTOR
ACCESSORIES
ATTENDANCE
PAYMENT
ATTENDANCE
Attendance ID
002
Customer ID
Customer Name
Date
Arrival time
Departure time
This attendance ID is already used
OK
Update
Remove
Clear
Search Attendance Details
Search
Reset
AttendanceID CustomerID CustomerNam Date ArrivalTime DepTime
001 002 Dilan Ra... 12.05.2019 2.00pm 5.00pm
002 003 Tharushi... 23.03.2018 3.00pm 6.00pm
003 002 Dilan Ra... 23.05.2019 6.00pm 10.00pm
004 002 Dilan Ra... 31.05.2019 6.00pm 10.00pm


Payement
CROSS FIT-GYM MANAGEMENT SYSTEM
LogOut
DASHBOARD
CUSTOMER
INSTRUCTOR
ACCESSORIES
ATTENDANCE
PAYMENT
PAYMENT
Payment ID
002
Customer ID
Customer Name
Date
Amount
Payment Method
Payment Duration
This Payment ID is already used
OK
Proceed
Update
Clear
Search Payment Details
Search
Reset
PaymentID CustomerID CustomerNam Date Amount Paymentmetho PaymentDurat
001 002 Dilan Ra... 12.05.2019 5000 Card Two mon...
002 003 Tharushi... 23.08.2018 25 000 Card System....

For another instance when the user has entered Customer ID 009 but, it does not exist in the data grid an error is formed when an entry is done in this interface regarding to a contact that does not exist in the data grid.

Likewise, this happens on the attendance and payment interfaces where an ID is used to identify the relevant payment or attendance record of a registered customer.




Payement
CROSS FIT-GYM MANAGEMENT SYSTEM
LogOut
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ATTENDANCE
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Payment ID
003
Customer ID
009
Customer Name
Date
Amount
Payment Method
Card
Payment Duration
This customer does not exist
OK
Proceed
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Clear
Search Payment Details
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PaymentID CustomerID CustomerNam Date Amount Paymentmethc PaymentDurat
001 002 Dilan Ra... 12.05.2019 5000 Card Two mon...
002 003 Tharushi... 23.08.2018 25 000 Card System....

2.6 System Testing

The system testing deals with the process of testing the system as a whole. This is done after the integration process. Moving through each module from top to bottom tests the entire system. The verification and validation process are then carried out. The errors that occur the testing phase are eliminated and a well functioning system is developed.

Test case design focuses on a set of techniques, which meets all testing objectives, which are mentioned below.

1. Testing is a process of executing a program with the intent of finding an error.
2. A successful test is one that uncovers an as yet undiscovered error.

Testing demonstrates that software functions work according to specifications. In addition data collected from testing provides a good indication of software reliability and some indication of software quality as a whole.

Testing results in the deduction in the numbers of errors. Critical modules are tested as early as possible .The following tests have been carried out after developing the system.

Various Testing Methods

Validation Testing

Validation testing can be defined in many ways but a simple definition is that validation succeeds when the software functions in a manner that can be reasonably expected by the users .After validation test has been conducted one of the two possible conditions exists

1. The function or the performance characteristics confirm to specification and are accepted.
2. A deviation from specification is uncovered and a deficiency list is created.

Output Testing

After performing the validation testing the next step is output testing of the proposed system since no system is useful if it does not produce the required output in the specific format. The outputs generated or displayed by the system under consideration are tested by asking the users about the formats required by them.

User Acceptance Testing

User acceptance of a system is a key factor for the success of any system. The system under consideration is tested for user acceptance by constantly keeping in touch with prospective system users at the time development and making changes whenever required.

2.7 Maintenance

The maintenance activity consist of following tasks:

1. Backup
2. Digonastic
3. Integrity changes
4. Recovery
5. Design changes

These features ensure the availability of the databases round the clock as the database maintenance is possible online when the system is in use. RDBMS allows an online maintenance, rapid recovery and software based fault tolerance. The rapid recovery features allows the system adminiatrator to provide ‘time’ to go back for the recovery of the data if the system fails due to power or network crash. Based on theis time, system automatically goes back and collects all the changes and writes to disk.

SCOPE FOR FURTHER DEVELOPMENT

The software has been developed in such a way that it can accept modifications and further changes. The software is very user friendly and future any changes can be done easily.

Every system should allow scope for further development or enhancement. The system can be adapted for any further development. The system is so flexible to allow any modification need for the further functioning of programs.

Since the objectives may be brought broad in future, the system can be easily modified accordingly, as the system has been modularized. The future expansion can be done in a concise manner in order to improve the efficiently of the system.

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PROJECT SHEDULE

NO	PHASES	START DATE	DURATION (DAYS)	FINISH DATE
1	PROJECT SEARCH	7/18/2020	4	7/22/2020
2	FINALIZE PROJECT	7/23/2020	1	7/23/2020
3	REQUIREMENT OF PROJECT	7/24/2020	2	7/26/2020
4	SCHEDULLING THE PROJECT	7/27/2020	1	7/27/2020
5	GATHER INFORMATION	7/27/2020	3	7/30/2020
6	DATA & PROGRAM MODELS	7/31/2020	7	7/31/2020
7	CONTEXT LEVEL DFD	8/1/2020	1	8/1/2020
8	SYSTEM FLOW CHART	8/2/2020	1	8/2/2020
9	SYSTEM DESIGN	8/3/2020	1	8/3/2020
10	INTERFACE DESIGINING	8/3/2020	2	8/5/2020
11	PROJECT CODING	8/5/2020	6	8/10/2020
12	MODEL TESTING WITH VALIDATION	8/11/2020	8	8/13/2020
13	SYSTEM INTEGRATION	28/12/2010	4	12/16/2020
14	SYSTEM TESTING	8/18/2010	8	12/21/2020
15	COMPLETE REPORT	8/13/2020	8	8/21/2020

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WORKLOAD MATRIX

WORKLOAD
REPORT
DATABASE
PAYMENT PAGE CODING
ATTENDANCE PAGE CODING
ACCESSORIES PAGE CODING
INSTRUCTOR PAGE CODING
LOG IN INTERFACE CODING
CUSTOMER PAGE CODING
DASHBOARD INTERFACE CODING
INTERFACES DESIGN
2
4
2
4
4
6
2.5
2.5
2.5
2.5
16
16
16
16
16
16
18595
18175
18099
18092
18577

-5-

CONCLUSION

The "**CROSSFIT GYM MANAGEMENT SYSTEM**" for CROSS FIT FITNESS CENTER is successfully designed and developed to fulfilling the necessary requirements, as identified in the requirements analysis phase, such as the system is very much user friendly, validations are performing very efficiently.

The new computerized system was found to be much faster and reliable and user friendly then the existing system, the system has been designed and developed step by step and tested successfully. It eliminates the human error that are likely to creep in the kind of working in which a bulk quantity of data and calculations as to be processed.

The system results in quick retrieval of information that is very vital for the progress any organization. Cost is minimized in case of stationary. Burden of manual work is reduced as whenever transaction takes place, there is a no need to record it in many places manually.

-THE END-