

A project report on

SABRE CREW PORTAL SYSTEM

Submitted in partial fulfillment of the requirement
for the award of the degree

MASTER OF COMPUTER APPLICATIONS Of



Visvesvaraya Technological University
Belgaum, Karnataka
By

VIBHA K
1CY18MCA68



CMR INSTITUTE OF TECHNOLOGY
132, IT Park Road, Kundalahalli, Bangalore 560037
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Under the guidance of

Internal Guide

Ms. Ashwini Patil

Asst Professor, MCA Department
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Bangalore

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Bangalore



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2019-2020

CMR INSTITUTE OF TECHNOLOGY

Department of Master of Computer Applications

Bangalore - 560037



CERTIFICATE

This is to certify that the project work entitled

SABRE CREW PORTAL SYSTEM

*Submitted in partial fulfilment of the requirement
for the award of the degree of
Master of Computer Applications
of the*

*Visvesvaraya Technological University, Belgaum, Karnataka
is a result of the bonafide work carried out by*

**VIBHA K
1CY18MCA68**

during the academic year 2019-2020.

Signature of the Guide
Ms Ashiwni Patil
Asst.Prof, MCA

Signature of the HOD
Mrs.Gomathi T
HOD, MCA

Signature of the Principal
Dr. Sanjay Jain
PRINCIPAL, CMRIT

External Viva

Name of the Examiners

- 1.
- 2.

Signature with date

DECLARATION

I, **VIBHA K**, student of 6th MCA, **CMR Institute of Technology**, bearing the USN **1CY18MCA68**, hereby declare that the project entitled “**SABRE CREW PORTAL SYSTEM**” has been carried out by me under the supervision of External Guide **Mr. Natarajan Muthusamy**, Project Manager, Infogain Pvt Ltd, Bangalore and Internal Guide **Ms. Ashwini Patil, Assistant Professor, Dept. of Master of Computer Applications** and submitted in the partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications by the **Visvesvaraya Technological University** during the academic year 2019-2020. The reports has not been submitted to any other University or Institute for the award of any degree or certificate.

Place: Bangalore

VIBHA K

Date:

(1CY18MCA68)

ACKNOWLEDGEMENT

I would like to thank all those who are involved in this endeavour for their kind cooperation for its successful completion. At the outset, I wish to express my sincere gratitude to all those people who have helped me to complete this project in an efficient manner.

I offer my special thanks to my external project guide Mr. Natarajan Muthusamy, Project Manager, Infogain Pvt Ltd, Bangalore, and to my Internal Project guide Ms. Ashwini Patil, Department of MCA, CMRIT, Bangalore without whose help and support throughout this project would not have been this success.

I am thankful to Dr. SANJAY JAIN, Principal, CMRIT, Bangalore for his kind support in all respect during my study. I would like to thank Mr. Natarajan Muthusamy, Project Manager, Infogain Pvt Ltd, Bangalore, who gave opportunity to do this project at an extreme organization Most of all and more than ever, I would like to thanks my family members for their warmness, support, encouragement, kindness and patience. I am really thankful to all my friends who always advised and motivated me throughout the course.

VIBHA K
(1CY18MCA68)

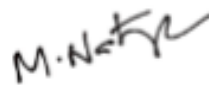


TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Vibha K**, D/o. Mr. H B Karkhani, has completed her final semester project "**Crew Portal System**" as a partial fulfillment for the award of Master of Computer Application degree , during the academic year 2020 under our joint supervision .

During the project we found her sincere and hard working.

For Infogain India (P)Ltd.



Natarajan Muthusamy
Project Manager

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CHAPTER 1

INTRODUCTION

1.1 Project Description

A windows application developed in this project is Crew Portal Management System. It is used by crew members of the Aviation industry to know their daily activities.

- Once the credentials are valid, the application allows the user to log in, else the crew is asked to enter a valid credential .Once successfully logged in, the application shows the personal details of the user and gives two menu driven options which are Roster Menu and Leave Management.
- Under Roster Menu, the options available are Flight Details and Hotel Details. It will give flight details history journey for that particular crew, where as the hotel details will display where the crew stayed in past in which hotel ,layover or base station.
- Under Leave Management the crew are given multiple options which are discussed below :apply leave, leave history and Manage Leaves. Using apply leave options, users can apply for leaves based on some criteria.
- The crew can able to view the leaves (from leave history), the user will be able to view the leaves which were approved by his/her managers. Inside the Manage Leave option, users can view the leaves for the future which are either not approved or pending for the time being. Along with this, we also gave the option to logout of the system. Using this, users can log out of the application and will be redirected to the login page.

Keywords Crew management portal, Roster, Leave management

Login to the application

User login to the application using valid credentials

Options available

Once successfully logged in user gets two options- roster and

Leave management, using roster user can see flight details and hotel details, using leave management user can apply for leave, view leave history and manage leave

Logout option

User has also the option for logging out of the application.

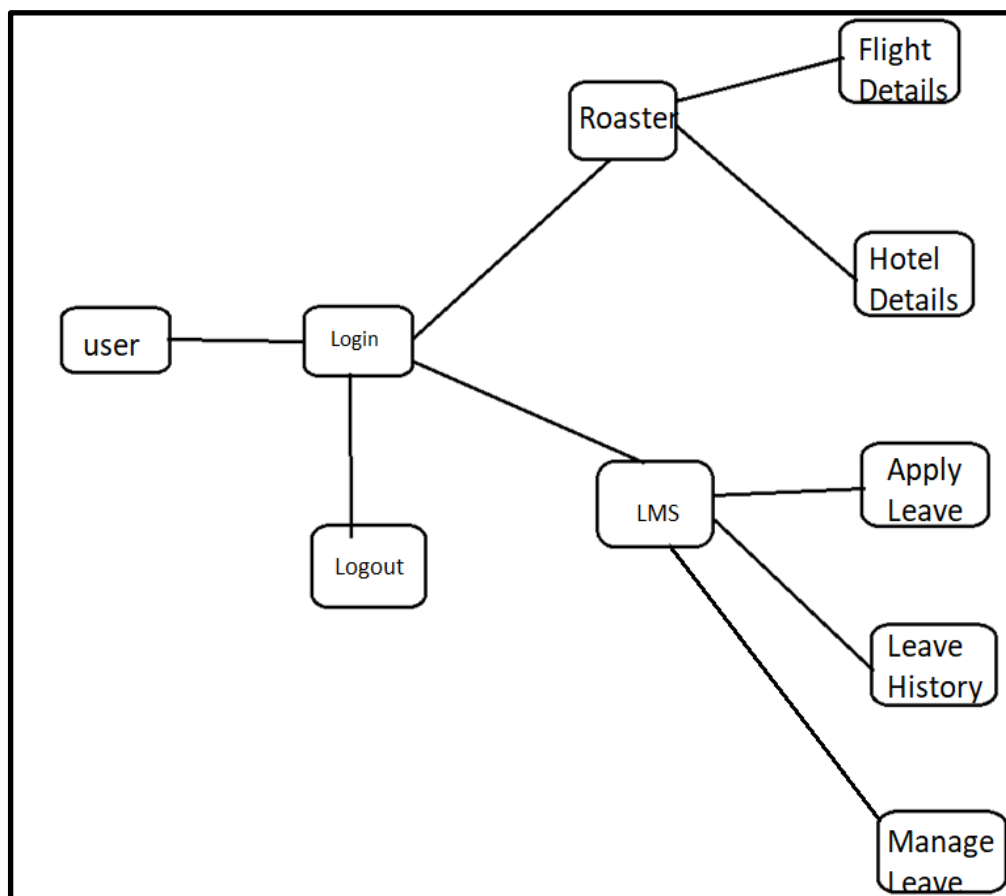


Fig 1.1 Workflow Diagram of Sabre Crew Portal System

1.2 Company Profile

Infogain is an software company first and foremost and we provide software solution Primarily to insurance companies and in those insurance companies we actually help their cost containment of any medicals so were really doing like amazing work if you think about it right like Were impacting the lives of people every day .

Platformization is really important because we are a company that have come together with many different acquisition and so every acquisition comes with platform that's the thing we work very closely with infogained on is how do you bring all of those together how do you converge of those

Together how do you converge those platform without interrupting the customers I mean you think about info gainers are engineering arm we have well over 300 engineers and its just critical to us because we're a software so again it's the technology and making sure that they lead on the technology but also helping us to get products to market very quickly.

Our companyan excellence in engineering and deep domain expertise and travel retail insurance who help move the needle positively impacting revenue reducing cost increasing speed to value mitigating to us and brining innovation



Fig 1.2 Infogain India Pvt. Ltd. Solutions

Infogain is a fast growing company offering a rapid and promising career path. It provides challenging and rewarding opportunities with fortune 500 clients. For a long period of time, Infogain is helping many other enterprises to provide more secured, cheap cost and more efficient products.

Infogain provides rich learning experience that taps into your interest, passions and career goals, a healthy work-life balance and come out happier and productive than ever. The new trainees who joins infogain are been given skilful trainings on latest technologies based on there technical fields at the time of recruitment. The company and employees work effectively to learn and grow together.

Infogain has deep understanding of clients' business and industry thereby creating long-term relationships. Infogain brings innovation to its business to grow and adapt to its marketplace. Constant adaption and innovation exceed its clients' expectation and allow it to deliver excellence to all its clients. Infogain is focused on working on next generation technologies.

Machine learning now with the recent wave of platformization which is happening all around us info gain and which is our partnering to take their software to a platform level this is main reduction in how that platform is developed so through micro services approach through native cloud native architectures all of these good technologies the info gain team members have been trained on and client we come up with the right standards which are right of our solutions And jointly redevelop or modernize their platform that the product sabre airline technology services which provide major services on three project there are Aviation,Transport, Hospitality. Aviation mainly deals which things related to the flying in the sky which are controlled by the humans.

There are various types of Aviation:

1. Air Transport (includes cargo and passenger air transport)
2. General Aviation (includes air ambulance and fire-fighting services)
3. Military Aviation (includes fighter aircrafts, ground attack aircrafts)

This Project is based on Crew Management Portal which comes under Air Transport type Aviation. So a CREW is an individual or a group of people who work on and operate an aircraft. A Crew can be categorized into two categories:

a) Flight Deck Crew

b) Cabin Crew

This project will basically manage and display all the phases related to a particular crew, which includes ROSTER followed by LEAVE MANAGEMENT.

The ROSTER class will give the Flight-Details and the Hotel-Details of that particular crew.

The LEAVE-MANAGEMENT class will give the APPLY-LEAVE option where that particular crew can apply for leave and then both admin and that crew go and check their leave-status and leave-history in LEAVE STATUS followed by LEAVE HISTORY options provided in the design.

CHAPTER 2

LITERATURE SURVEY

2.1 Existing System and Proposed System

Crew management system addresses the needs of any crew who is currently apart of aviation system. It also provides the crew to see his personal information , his attendance history details , crew can also apply for leave in this system and all his records are been stored in the database which can be only managed by the admin of the crew management system.

Few options to the crew like

- Travel Plan
- Automated Payroll
- Work and Rest Hours
- E- Appraisal

This is the existing system we already we have in our Crew Management System. Now along with these existing systems this project is looking for some more needful functionalities for the system as listed below

- Hotel Management
- Leave Management
- Leave Application
- Flight Details in various other formats
- Hotel Details in various other formats
- Layover Details

2.2 Feasibility Study

Technical Feasibility

While performing this particular application we came across a few technical issues , those are as follows :

1. All technologies with updated versions is needed to be used.
2. The proposed technology is needed to be checked whether it has the storage and capacity to hold the real time data.
3. While the project will be upgraded the technologies is needed also to be upgraded
4. The technology that is being used is to be kept noted if it is cost efficient and reliable.

Operational Feasibility

Operational feasibility study was conducted to sort out the problems mainly related to the cost and human functionality. Following points were considered to compete assume what all needed for feasibility:

1. The changes that can be assumed to get later in the project has to be kept noted.
2. The upgraded skill sets that are needed for the project has to be checked at a constant period of time with the time if they dont have they have to be upgraded with those skill sets.
3. The project usage needs to be checked by the operational team at a regular interval.

2.3 Tools and Technologies Used

This Crew Portal is a fully Windows based application.

So, for which the following tools have been used.

- Windows 10
- Visual Studio 2019
- CodeBlocks
- MySQL Server 2014 edition
- Winforms for GUI applications
- DIA UML Diagram Tool

Technologies used for this project are

- C#
- DOT.NET
- SQL
- WINFORMS

2.4 Hardware and Software Requirements

Hardware Requirements are as follows:

- Latest OS- Windows 7,8.1 Update,10
- Processor- At least 2GHz
- Hard-Disk- 16gb for 32 bit and 20gb for 64 bit os
- Graphics Card- DirectX 9 with WDDM driver
- Display- 800*600

Software Requirements are as follows:

C#: C# is one of the most popular languages to write software to build software. It is a power language which runs on a dot net framework and with the most advantage with that framework. All the code written will be converted to the native language code and then will be executed.

.NET: .NET Framework is a software framework most of the language are using this framework .C# also uses this framework, It contains the virtual machines with this framework .anytime application code is compiled and run on a user machine it run through those this framework, it contains all the components that support most of the language.

Winforms: Windows Forms is a free and open source class library which all used for the dot net framework,where it acts as a page with multiple pages we can interact with multiple pages at a time. It is mostly used for the Microsoft based applications.

Visual Studio 2017: Microsoft Visual Studio is the product of Microsoft where it is used as the editor to write and execute codes. This IDE will help to develop the software, mobile applications and web applications. Most of the developer will use this editor and it is mainly suitable for the C based languages.

CHAPTER3

SOFTWARE REQUIREMENTS SPECIFICATION

3.1 Functional Requirements

R1: login to the application

Input: user login to the application using valid credentials

Output: user successfully logins

R2: displaying the roster options with their respective sub-options

Input: the different options are selected

Output: the data from database are displayed on application UI

R3: displaying the Leave management options with their respective sub-options

Input: the different options are selected

Output: the data from database are displayed on application UI and the leave application data is added on to the database

R4: Logging out from the System

Input: User log out from the system using Logout option

Output: the user comes out of the system and the object created for that user gets destroyed.

3.2 Non-Functional Requirements

This will be the process that will help the users to utilize the system in more appropriate way and to provide which includes different variations of the security and other provisions of the documentations the features so according to the consideration multiple non-functional requirements can be discussed and included.

Performance

The performance of the application will enhance the project to be more understandable and application will ensure to satisfy the customer requirements as the project is mainly based on the aviation,the crew will get all the based functionality of the application.

Understandability

The Project should be very much simple and easy to understand to the crew.As the application will allow crew to get to know how much easy to access the application and also the ways to use it.

Security

The crew are allowed only to view the details of the respected crew,this will allow the security of the system as it is window based application we are not connected to the browser the security is maintained.

Documentations

Process will be new so required will be depicted understanding where all types of categories and sections that are included will be discussed and that are documented individually so that any time the crew required can reference and understand how to utilize and work on the system documents that are important will play the important role for optimizing the workability.

CHAPTER 4

SYSTEM DESIGN

4.1 System Perspective

Login to application

User login to application using valid credentials

Options available

Once successfully logged in user gets two options-

A) Roster

The combination of flight details and hotel details we call it has roster, the flight details include the details of the particular crew flight history. Hotel details include the details of the particular crew where he stayed and history of the crew.

B) Leave management

Using leave management crew can apply for leave. While applying leave crew also have to abide by some particular rules under the 'Rules Kit' proposed by IATA and ICAO.

View leave history is the history or the leave status where crew can check whether his applied leave status is approved or not and he can also see his previous leave history details there.

Logout option

User has also the option for logging out of the application.

4.2 Context Diagram

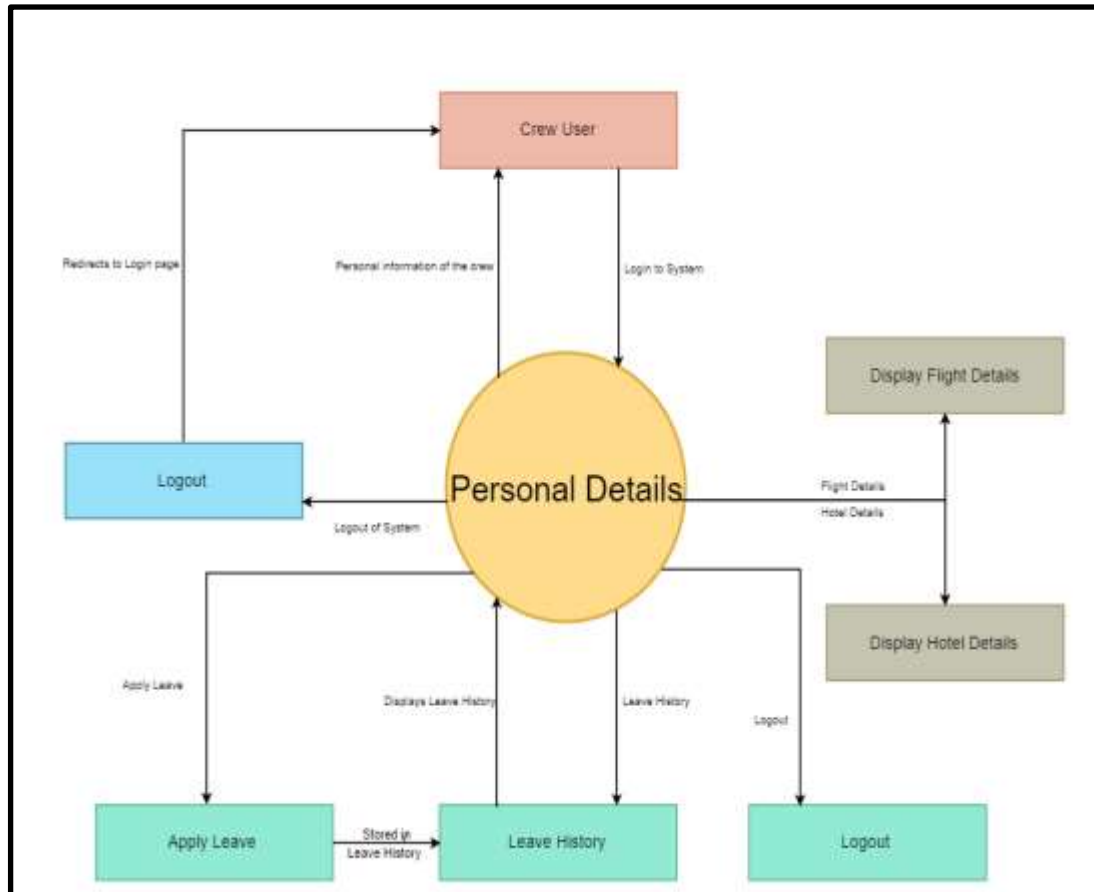


Fig 4.1 Context Diagram

CHAPTER 5

DETAILED DESIGN

5.1 Use Case Diagram

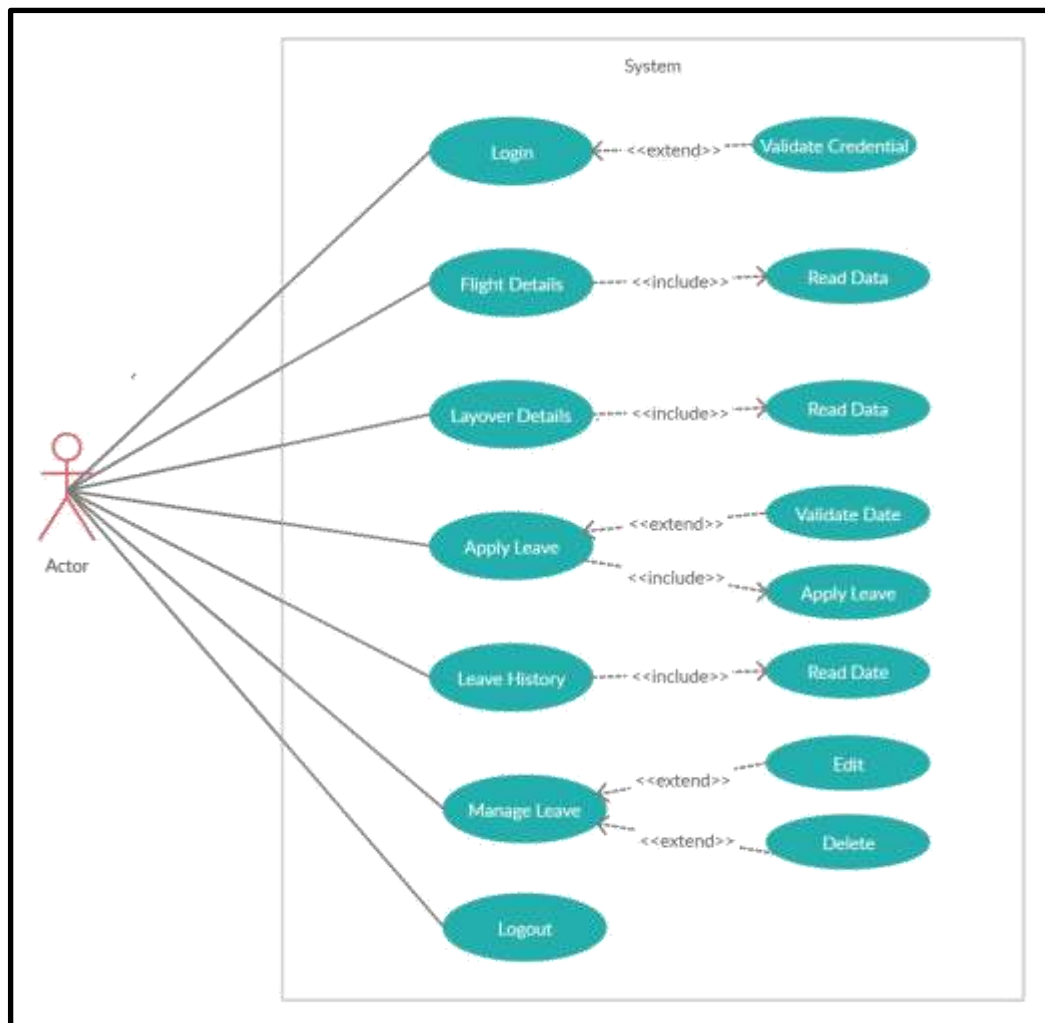


Fig 5.1 Use Case Diagram

5.2 Data Flow Diagram

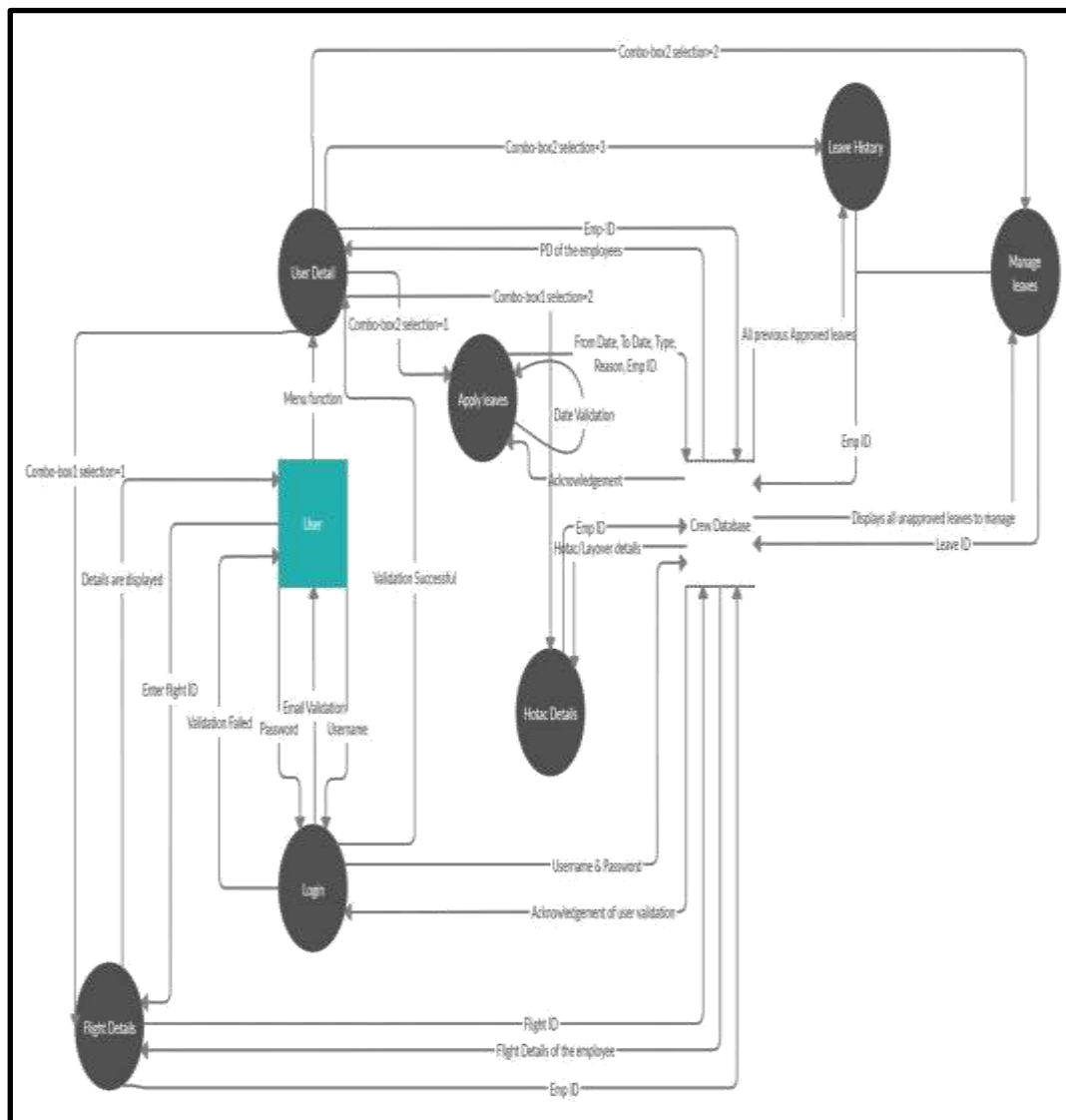


Fig 5.2 Data Flow Diagram

5.3 Sequence Diagram

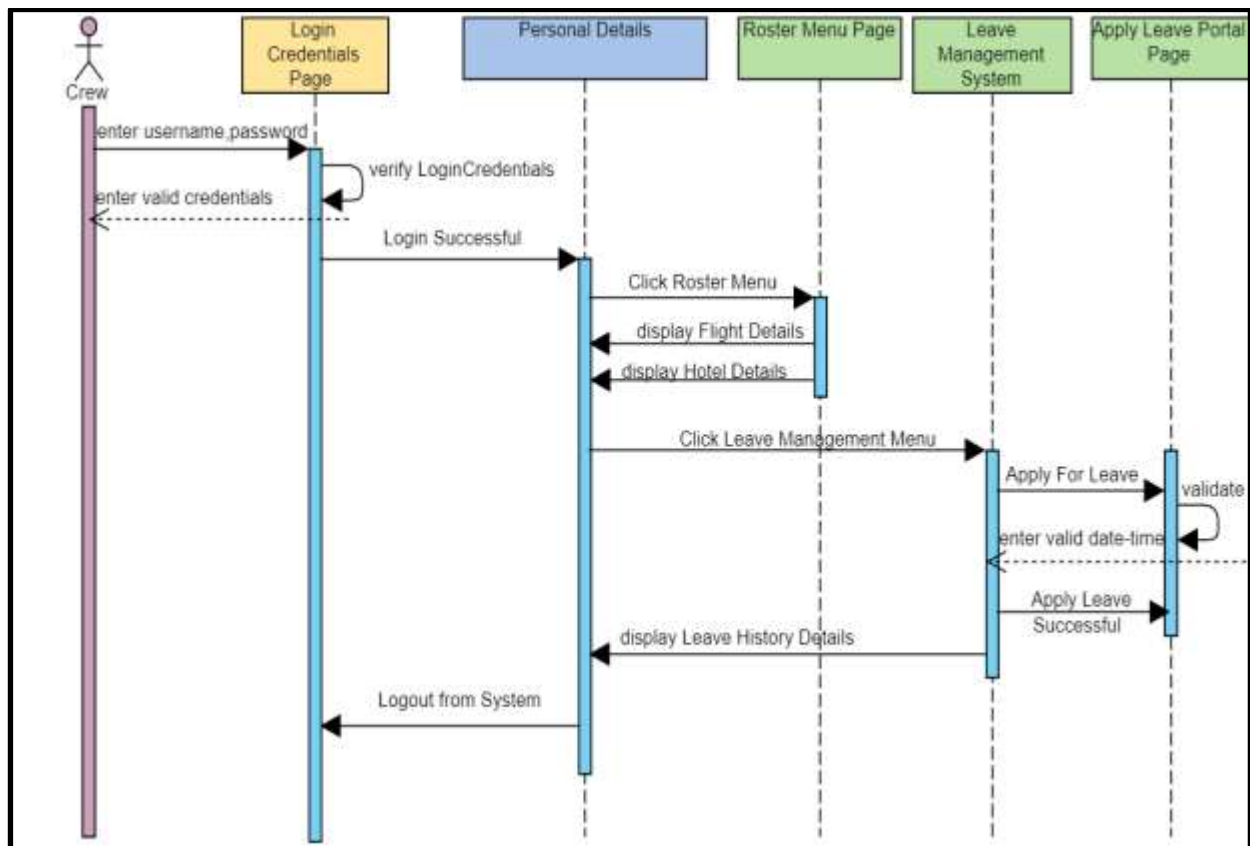


Fig 5.3 Sequence Diagram

5.4 Activity Diagram

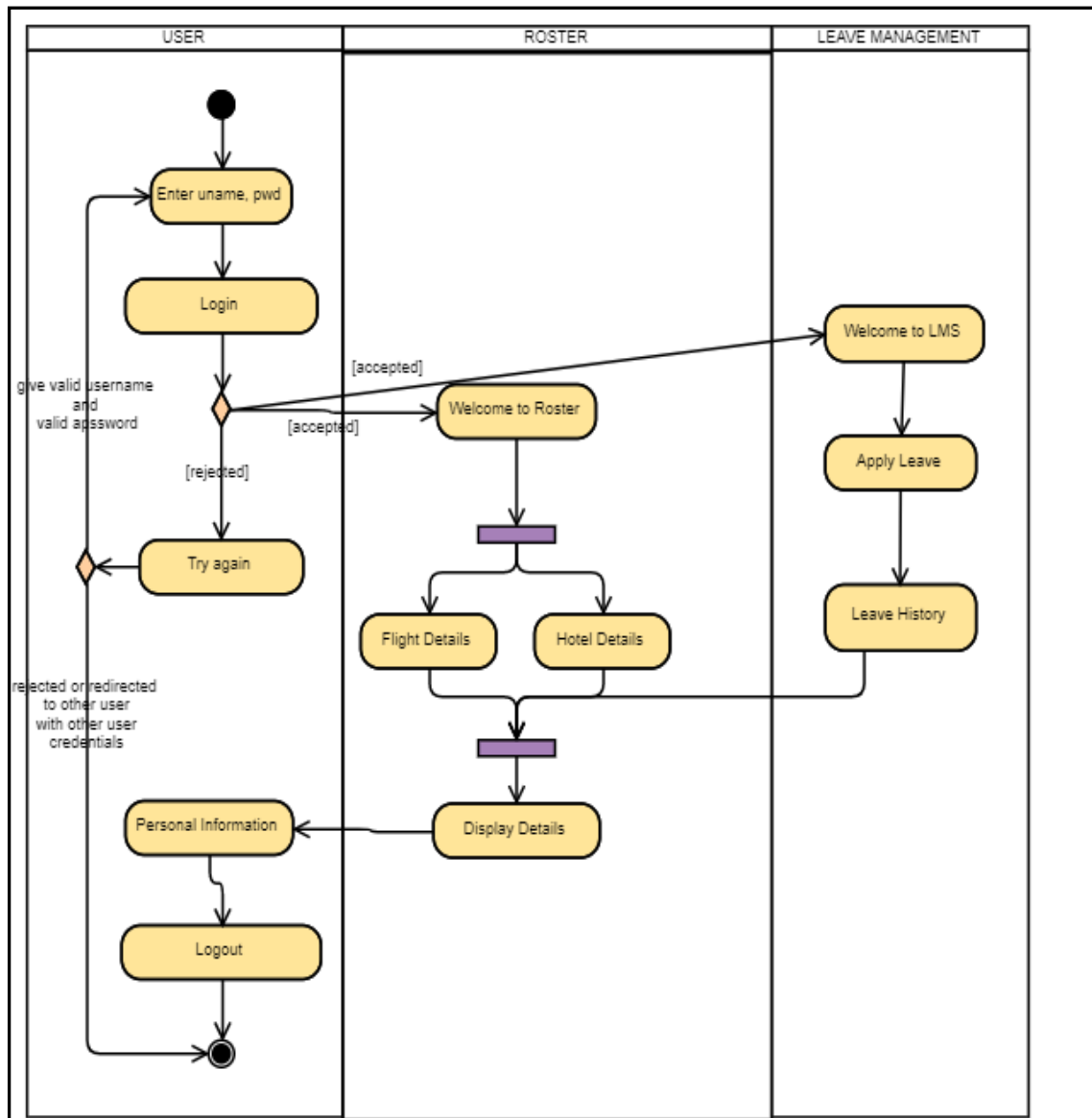


Fig 5.4 Activity Diagram

5.5 Entity-Relationship Diagram

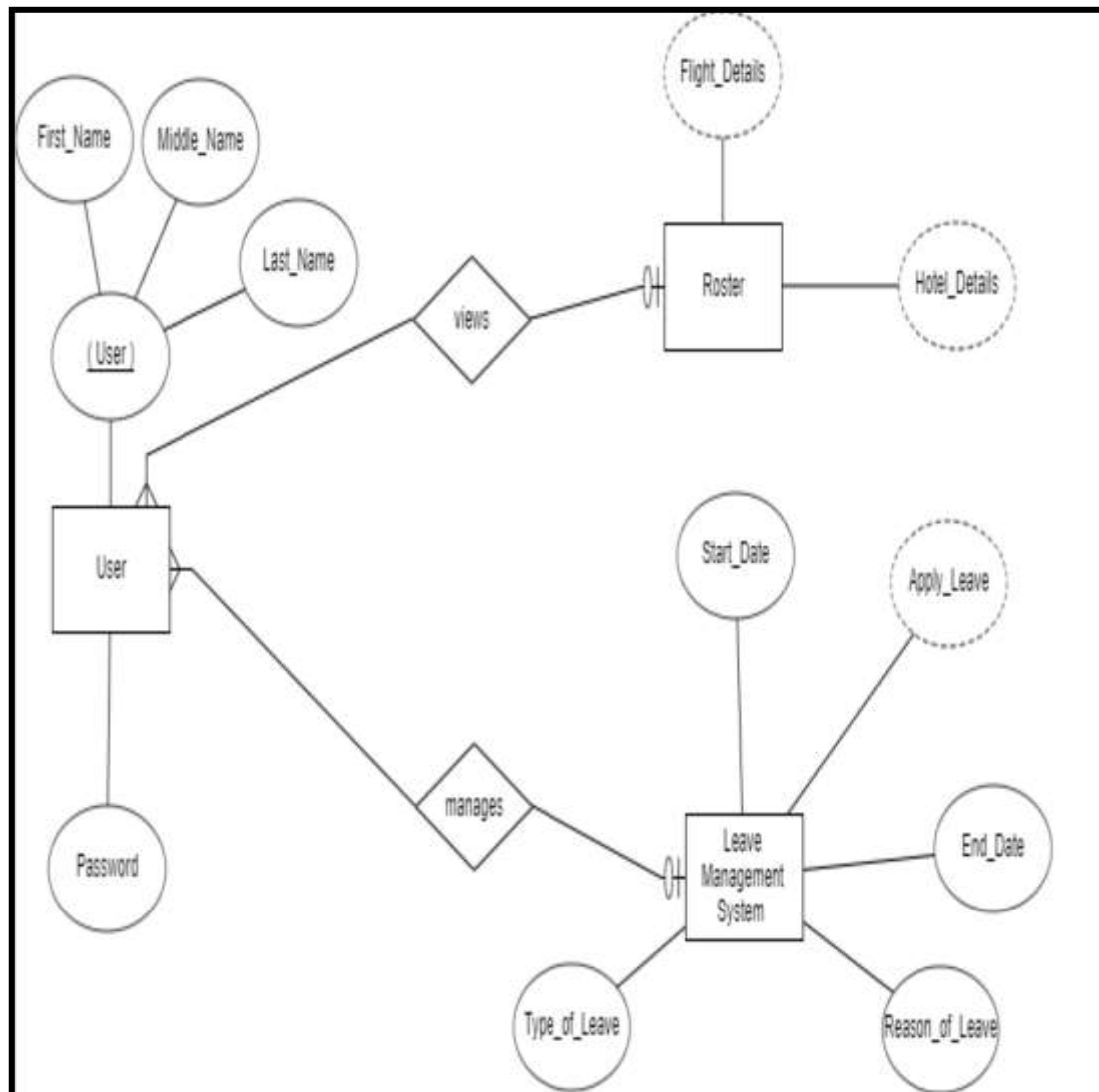


Fig 5.5 Entity-Relationship Diagram

CHAPTER 6 IMPLEMENTATION

windows application developed in this project is Crew Portal Management System. It is used by crew members of the Aviation industry to know their daily activities.

In this application, User is an employee of the aviation industry. Using his login credentials, users can log in to the application to the crew portal system. Once the credentials are valid, the application allows the user to log in, else the crew is asked to give a valid credencial. Once successfully logged in, the application shows the personal details of the user and gives two menu driven options which are Roster Menu and Leave Management.

Under Roster Menu, the options available are Flight Details and Hotel Details. It will give flight details history journey for that particular crew, where as the hotel details will display where the crew stayed in past in which hotel ,layover or base station.

Under Leave Management the crew are given multiple options which are discussed below. Using apply leave - options, crew can take leaves based on some criteria. Using leave- history, the crew can see the leaves which were approved by admins. Inside the Manage Leave option, users can view the leaves for the future which are either not approved or pending for the time being.

Along with this, we also gave the option to logout of the system. Using this, users can log out of the application and will be redirected to the login page.

The final result is the Crew Portal Management System. Using valid credentials, users can login to the application and are able to use all its functionalities . Else, for invalid credentials, users are not allowed to login to the application and ask for the re-entry of the valid credentials.

6.1 Screenshots

The below screenshot shows about the basic setup of the application, we have used the visual studio and win forms for the design of the application, this application will work in the windows application.

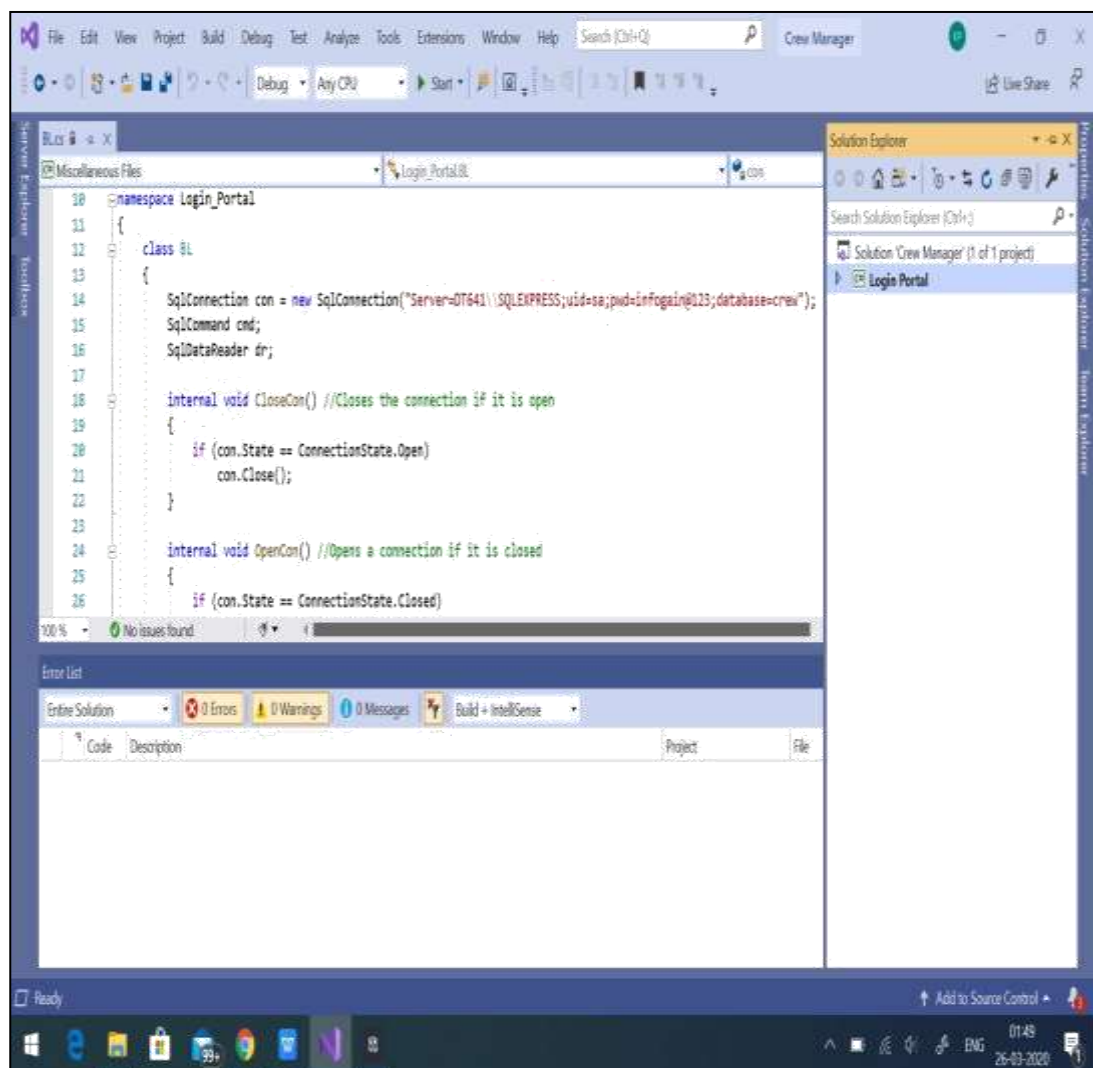
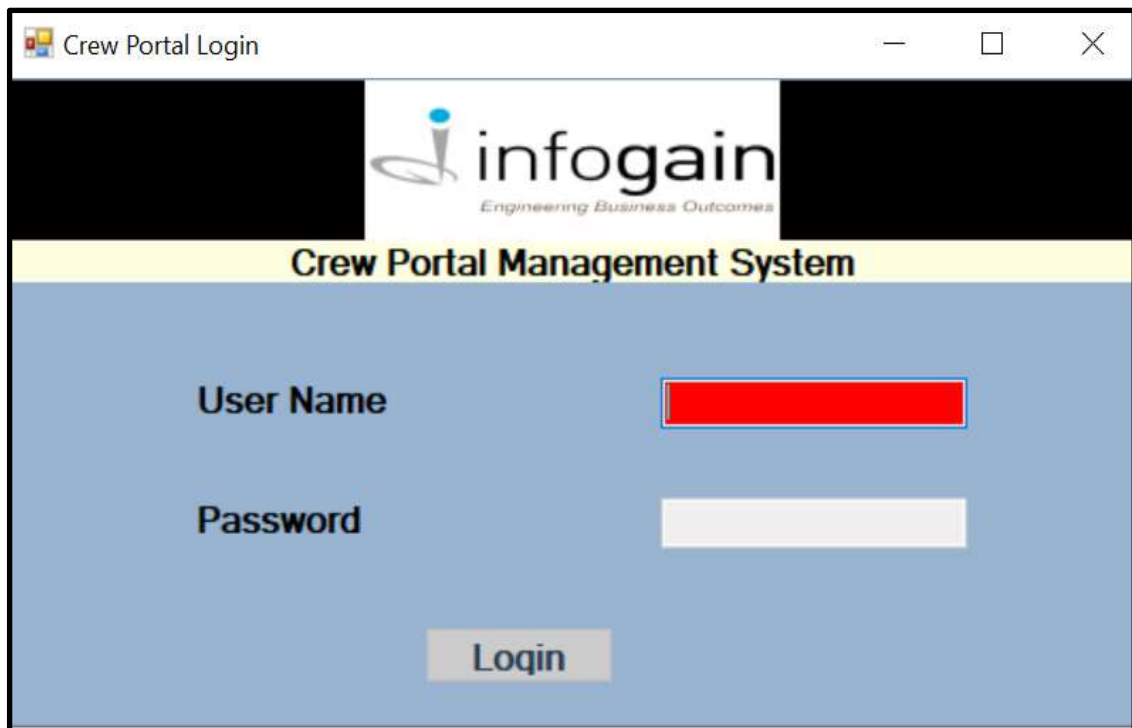


Fig 6.1 Visual Studio code Implementation Page

Login Portal

(Before Inputting any values)

Crew portal login is the first form of the application. All validations are applied here. This page will take you to the next page where crew can see respected personal information with other sub options.



The screenshot shows a web browser window titled "Crew Portal Login". The page features the "infogain" logo with the tagline "Engineering Business Outcomes". Below the logo is a yellow banner with the text "Crew Portal Management System". The main form area has a light blue background and contains two input fields: "User Name" (highlighted in red) and "Password". A "Login" button is positioned below the password field.

Fig 6.2 crew portal login

Crew Portal Login

(After inputting values correct username and valid password)

crew portal login is the first form of the application. All values are filled here. This page will take you to the next page where crew can see respected personal information with other sub option. In this page we have to login with the correct credentials of the crew or else you will not be allowed to click on the Login button.



The screenshot displays a web browser window titled "Crew Portal Login". The page features the "infogain" logo with the tagline "Engineering Business Outcomes". Below the logo, a yellow banner reads "Crew Portal Management System". The main content area is light blue and contains a login form. The "User Name" field is highlighted in red and contains the text "abc@infogain.co". The "Password" field is a standard white input box containing "abcInfo". A "Login" button is positioned below the password field.

Fig 6.3 Login Page with Valid Credentials

Personal Details Page

(Page that comes after the User Logs into the System)

This is the personal information page which displays employee id, full name, age, contact number, email id of that particular crew who has logged into the system. It also displays Roster menu and Leave Management sub menus which has its own sub options.



The screenshot shows a web browser window titled "PersonalDetails". The page header features the "infogain" logo with the tagline "Engineering Business Outcomes". Below the header is a yellow banner with the text "Crew Portal Management System". The main content area is titled "PERSONAL DETAILS" and contains a form with the following fields:

Field Label	Value
Employee Id	1
Full Name	abc title
Age	30
Phone No	3450852020
Email Id	abc@info.ac.in

On the right side of the form, there are two dropdown menus:

- Roster Menu**: A dropdown menu with three options: "Hotel Details", "Flight Details" (highlighted), and "Hotel Details".
- Leave Management**: A dropdown menu with one visible option: "Leave Management".

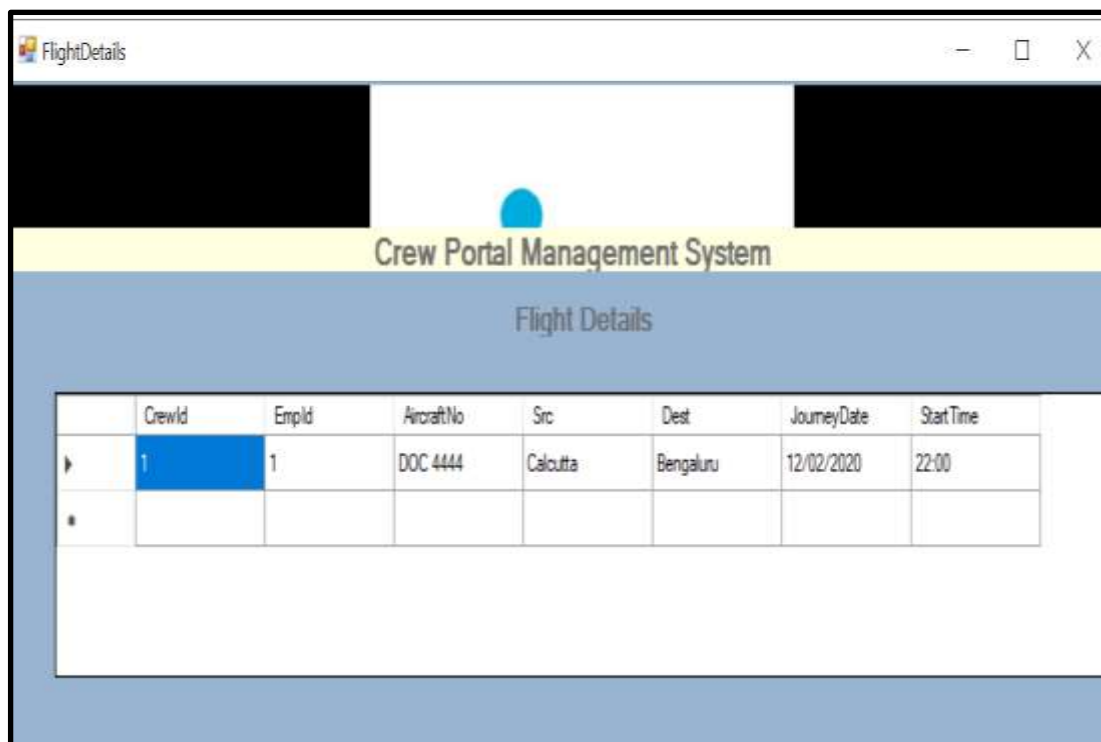
At the bottom right of the form, there is a "Logout" button.

Fig 6.4 Personal Information Details Page

Flight Details Page

(After Selecting Flight Details Option from Roster)

In the personal information page, if the user wants to know about past flight details history he selects the Flight Details option from the Roster Menu. This data will be retrieved from the database for that particular crew.



The screenshot displays a web application window titled "FlightDetails". The header area is yellow and contains the text "Crew Portal Management System". Below the header, there is a blue bar with the text "Flight Details". The main content area is white and contains a table with the following data:

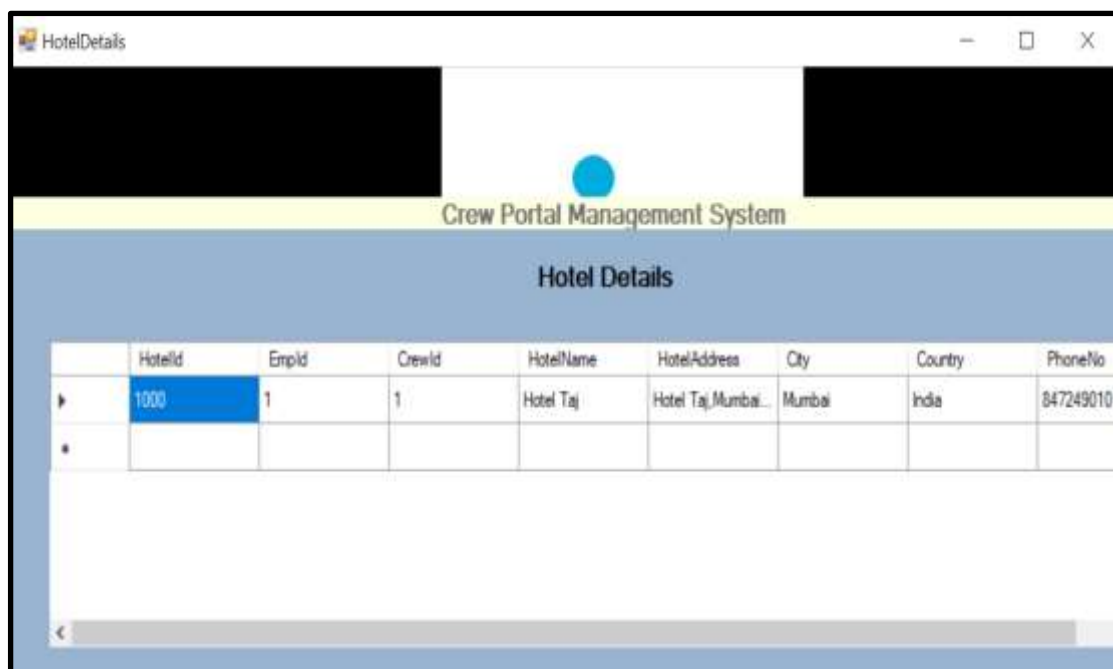
	CrewId	EmpId	AircraftNo	Src	Dest	JourneyDate	StartTime
▶	1	1	DOC 4444	Calcutta	Bengaluru	12/02/2020	22:00
*							

Fig 6.5 Flight Details Display

Hotels Details Page

(After Selecting Hotel Details Page from Roster)

In the personal information page, if the user wants to know about past hotel or layover details history he selects the Hotel Details option from the Roster Menu. This data will be retrieved from the database for that particular crew.



The screenshot shows a web application window titled "HotelDetails". The interface has a yellow header bar with the text "Crew Portal Management System" and a blue sub-header bar with the text "Hotel Details". Below the header is a table with the following columns: HotelId, EmpId, CrewId, HotelName, HotelAddress, City, Country, and PhoneNo. The first row of data is highlighted in blue and contains the values: 1000, 1, 1, Hotel Taj, Hotel Taj, Mumbai, India, and 847249010. There is a small blue circle icon above the table. The table has a scrollbar at the bottom.

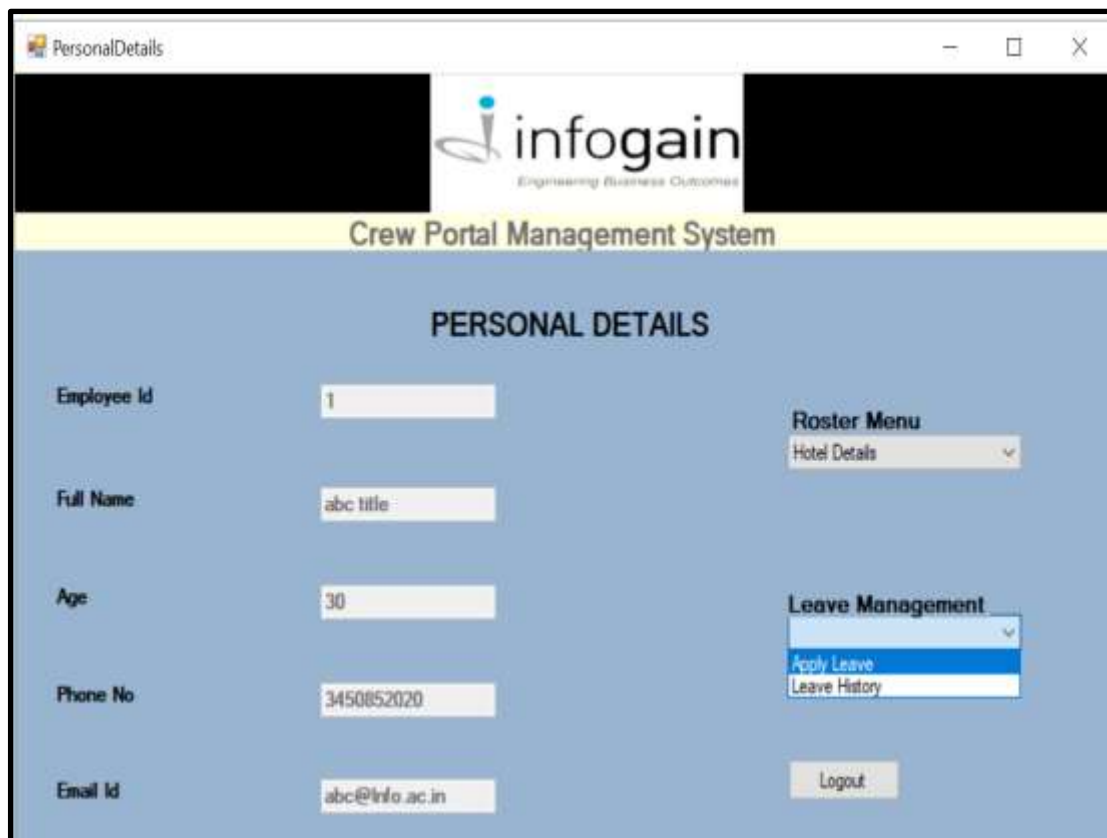
HotelId	EmpId	CrewId	HotelName	HotelAddress	City	Country	PhoneNo
1000	1	1	Hotel Taj	Hotel Taj, Mumbai	Mumbai	India	847249010

Fig 6.6 Hotel Details Display

Leave Management Menu

(After shifting from Roster menu crew can go for LMS)

If the crew wants to take a leave then he has to click apply- leave option to apply for Leave. And if the crew wants to see his leave history details he has to click the Leave History option.



The screenshot displays a web application window titled "PersonalDetails". The header features the "infogain" logo with the tagline "Engineering Business Outcomes". Below the header is a yellow banner reading "Crew Portal Management System". The main content area, titled "PERSONAL DETAILS", contains a form with the following fields:

- Employee Id: 1
- Full Name: abc title
- Age: 30
- Phone No: 3450852020
- Email Id: abc@info.ac.in

On the right side of the form, there are two dropdown menus and a button:

- Roster Menu**: A dropdown menu currently showing "Hotel Details".
- Leave Management**: A dropdown menu with two options: "Apply Leave" (highlighted in blue) and "Leave History".
- Logout**: A button located below the dropdown menus.

Fig 6.7 Leave Management Menu

Apply Leave Page

(User Selects for leave in this Leave Applying Portal)

If the crew wants to apply for leave from a particular date to another particular date (where End Date > Start Date and End Date ≤ 6 months from the Start date and if same date then it must be applied before ≤4 hours of that day), the crew also has to give the type of leave with proper reason for the type of leave he has applied for.



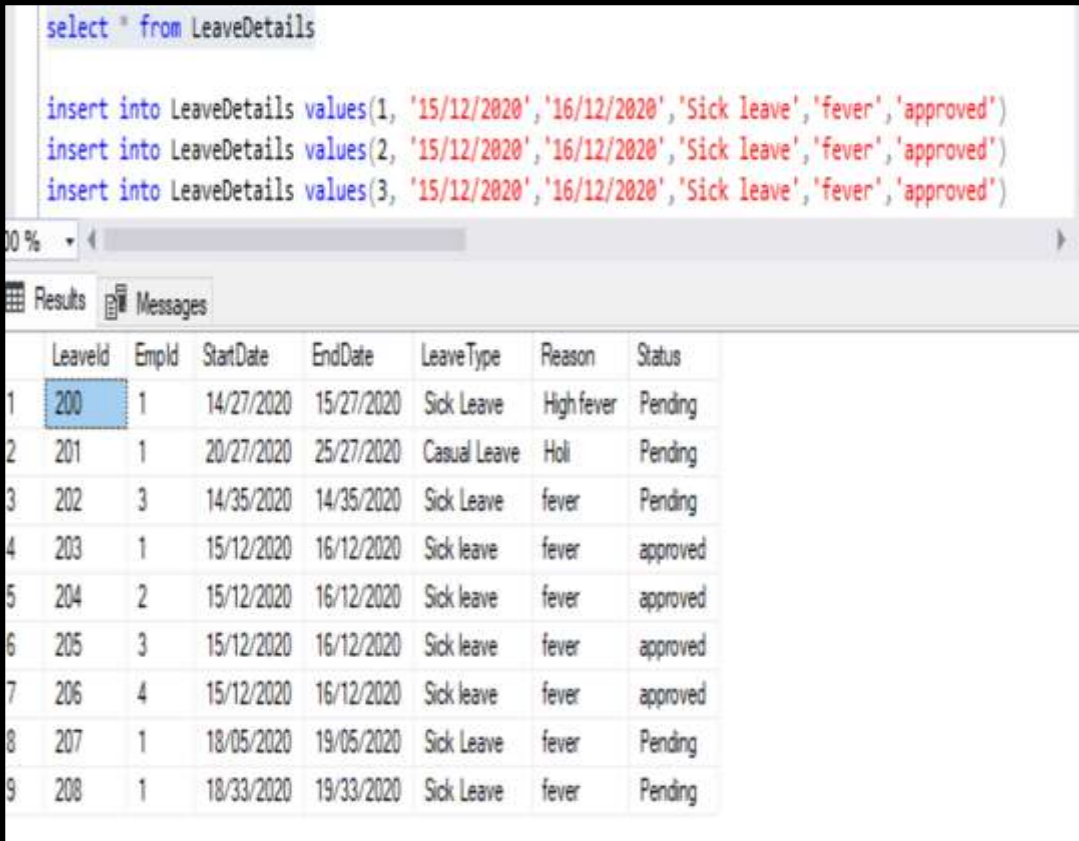
The screenshot shows a web application window titled 'ApplyLeave'. The header features the 'infogain' logo with the tagline 'Engineering Business Outcomes'. Below the header is a yellow banner with the text 'Crew Portal Management System'. The main content area is titled 'Leave Applying Portal' and contains four input fields: 'Start Date' (set to Tuesday, March 17, 2020), 'End Date' (set to Tuesday, March 17, 2020), 'Leave Type' (a dropdown menu showing 'Sick Leave'), and 'Reason' (a text box containing 'fever'). An 'Apply' button is located at the bottom center of the form.

Fig 6.8 Apply Leave Page

Database

(After inserting data for apply leave data goes into database)

After the crew apply for the leave all his details for the leave will be stored in the database which can be handled only by the admin and can also be viewed only by the admin. The admin after looking into the details filled by the crew will give approval for the leave to the crew.



The screenshot shows a database management interface. At the top, there is a SQL query editor with the following text:

```
select * from LeaveDetails  
  
insert into LeaveDetails values(1, '15/12/2020', '16/12/2020', 'Sick Leave', 'fever', 'approved')  
insert into LeaveDetails values(2, '15/12/2020', '16/12/2020', 'Sick Leave', 'fever', 'approved')  
insert into LeaveDetails values(3, '15/12/2020', '16/12/2020', 'Sick Leave', 'fever', 'approved')
```

Below the query editor, there are tabs for 'Results' and 'Messages'. The 'Results' tab is active, displaying a table with 9 rows and 8 columns. The columns are: LeaveId, EmpId, StartDate, EndDate, LeaveType, Reason, and Status. The table contains the following data:

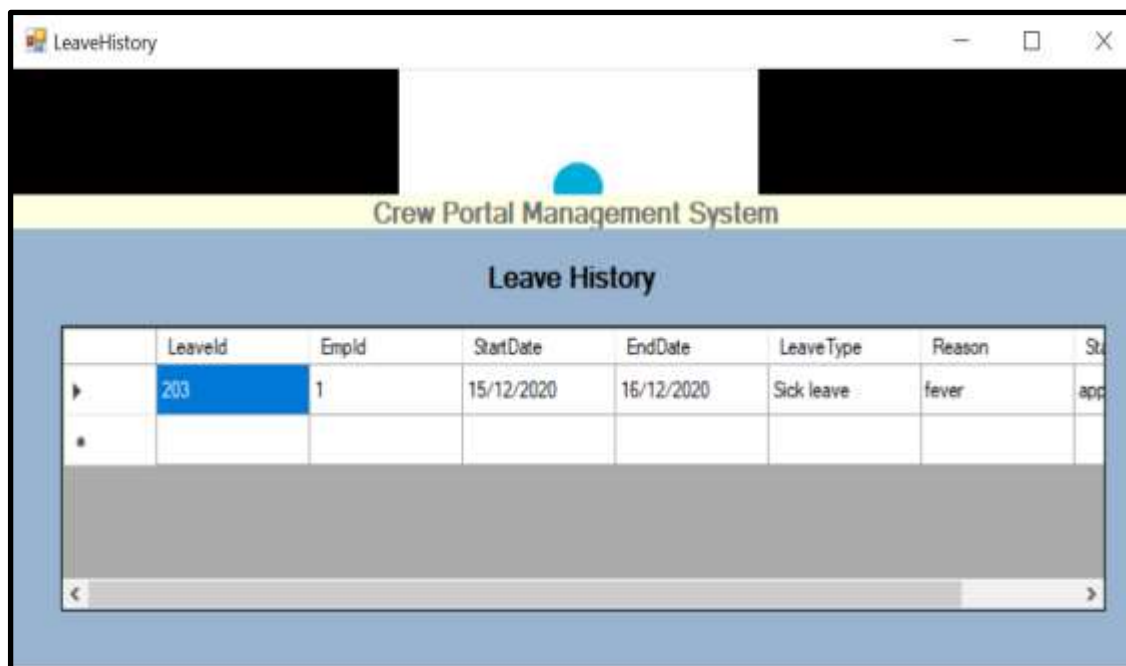
	LeaveId	EmpId	StartDate	EndDate	LeaveType	Reason	Status
1	200	1	14/27/2020	15/27/2020	Sick Leave	High fever	Pending
2	201	1	20/27/2020	25/27/2020	Casual Leave	Holi	Pending
3	202	3	14/35/2020	14/35/2020	Sick Leave	fever	Pending
4	203	1	15/12/2020	16/12/2020	Sick leave	fever	approved
5	204	2	15/12/2020	16/12/2020	Sick leave	fever	approved
6	205	3	15/12/2020	16/12/2020	Sick leave	fever	approved
7	206	4	15/12/2020	16/12/2020	Sick leave	fever	approved
8	207	1	18/05/2020	19/05/2020	Sick Leave	fever	Pending
9	208	1	18/33/2020	19/33/2020	Sick Leave	fever	Pending

Fig 6.9 Admin Database Display

Leave History Details

(After Selecting Leave History options)

After applying now if the crew wants to see his leave history details in future, for that he has to click to the option Leave History under the Leave Management menu in the Personal Information Details page, here the crew will be able to see both his past leave history details and also the approval status given by the admin for his recently added applied leave.



	LeaveId	EmpId	StartDate	EndDate	LeaveType	Reason	Sta
▶	203	1	15/12/2020	16/12/2020	Sick leave	fever	app
*							

Fig 6.10 Leave History Details Page

Logout Option

(Crew chooses to log out of the system)

If the crew now wants to come out of the system once he finishes his task, he has to click to Logout to come out of the system.

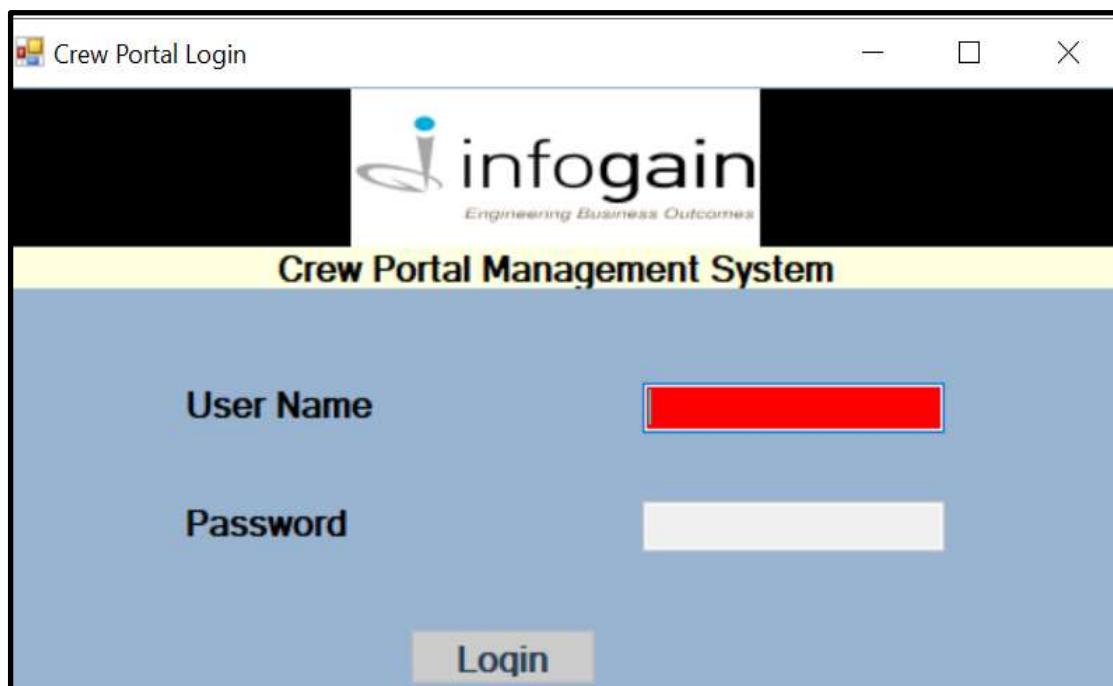
The screenshot shows a web browser window titled 'PersonalDetails'. The page header features the 'infogain' logo with the tagline 'Engineering Business Outcomes'. Below the header is a yellow banner with the text 'Crew Portal Management System'. The main content area has a blue background and is titled 'PERSONAL DETAILS'. It contains several input fields for 'Employee Id' (value: 1), 'Full Name' (value: abc title), 'Age' (value: 30), 'Phone No' (value: 3450052020), and 'Email Id' (value: abc@info.ac.in). To the right of these fields are two dropdown menus: 'Roster Menu' and 'Leave Management' (with 'Leave History' selected). A blue 'Logout' button is located at the bottom right of the form area.

Fig 6.11 Logout Display Page

Main Login-Portal

(After the user logs out of the system he comes back to the main login portal)

Once the crew member selects Log out option he will be taken back to the Login portal where he has to log in to go back to the personal information page.



The screenshot shows a web browser window titled "Crew Portal Login". The page features the "infogain" logo with the tagline "Engineering Business Outcomes". Below the logo is a yellow banner with the text "Crew Portal Management System". The main content area has a light blue background and contains two input fields: "User Name" (a red rectangular field) and "Password" (a white rectangular field). A "Login" button is positioned at the bottom center of the form.

Fig 6.12 Main Login Page

6.2 Code Snippet

LoginPage

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Data.SqlClient;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace CrewPortal
{
    public partial class Login_Form : Form
    {
        string UserName;
        string Password;
        bool found;

        public static string CrewMember;

        public Login_Form()
        {
            InitializeComponent();

            private void ValidateLogin()
            {
                int index = UserName.IndexOf('@');
                if(index>0)
                {
                    stringstr = UserName.Substring(index);

                    if (str.Equals("@infogain.com"))
                    {
                        UserName_Text.BackColor = Color.White;

                        Password_Text.Enabled = true;

                        if(Password==null)
                            Password = "";
                        if(!Password.Equals(""))
```

```

cmd.CommandText = query;
cmd.Parameters.AddWithValue("name", UserName);

SqlDataReader reader = cmd.ExecuteReader();

while (reader.Read())
{
    name = reader["UserName"].ToString();
    pass = reader["Password"].ToString();
    while (reader.Read())
    {
        name = reader["UserName"].ToString();
        pass = reader["Password"].ToString();

        if (name.Equals(UserName) && pass.Equals>Password))
        {
            found = true;
            CrewMember = UserName;
            Login_Button.Enabled = true;
            break;
        }
    }

    con.Close();
}

else
{
    {
        UserName_Text.BackColor = Color.Red;
        Password_Text.Enabled = false;
        Login_Button.Enabled = false;
    }
}

private void UserName_Label_Click(object sender, EventArgs e)
{
}

private void Login_Form_Load(object sender, EventArgs e)
{
    CrewMember = "";

    Image image = Image.FromFile("D:\\nEWu\\Documents\\C#
files\\CrewPortal\\Infogain-logo-2018.png");

    InfogainLogo_PictureBox.Image = image;

    InfogainLogo_PictureBox.SizeMode=        PictureBoxSizeMode.StretchImage;

    UserName_Text.BackColor = Color.Red;
    Password_Text.Enabled = false;
    Login_Button.Enabled = false;

```

```

        found = false;
    }

    private void InfogainLogo_PictureBox_Click(object sender, EventArgs e)
    {

    }

    private void UserName_Text_TextChanged(object sender, EventArgs e)
    {
        UserName = UserName_Text.Text;

        ValidateLogin();
    }

    private void Password_Text_TextChanged(object sender, EventArgs e)

```

Personal.cs

```

using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Data.SqlClient;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;

namespace CrewPortal
{
    public partial class PersonalDetails : Form
    {
        //objects
        FlightDetailsfd;
        HotelDetailshd;
        ApplyLeave al;
        LeaveHistorylh;
        ManageLeavesls;

        public PersonalDetails()
        {
            InitializeComponent();
        }

        private void textBox1_TextChanged(object sender, EventArgs e)
        {

        }

        private void PersonalDetails_Load(object sender, EventArgs e)
        {

            fd = new FlightDetails();

```

```
hd = new HotelDetails();
al = new ApplyLeave();
lh = new LeaveHistory();
ls = new ManageLeaves();

string name;
InfogainLogo_PictureBox.SizeMode = PictureBoxSizeMode.StretchImage;
CrewPortal_Textbox.Enabled = false;

Id_Text.Enabled = false;
Name_Text.Enabled = false;
Age_Text.Enabled = false;
PhoneNo_Text.Enabled = false;
EmailId_Text.Enabled = false;

Id_Text.Font = new Font(Id_Text.Font, FontStyle.Bold);
Name_Text.Font=new Font(Name_Text.Font, FontStyle.Bold);
Age_Text.Font=new Font(Age_Text.Font, FontStyle.Bold);
PhoneNo_Text.Font = new Font(PhoneNo_Text.Font, FontStyle.Bold);
EmailId_Text.Font = new Font(EmailId_Text.Font, FontStyle.Bold);
User = Login_Form.CrewMember;
```

CHAPTER 7

SOFTWARE TESTING

Software testing is the process of verification and validation for checking whether a software or an application is free from bug or is meeting the technical requirement as guided by its design

Software testing is a simple way of testing your codes so that your code actually works that how it was intended to work not from programmer perspective from a real world perspective from a user perspective many times when we write code we get so much involved in it that we stop thinking like a regular person or how a regular user is going to interact with your software and that includes a lot of bugs at a later time so job of a software tester to think having a mindset about how these problems can be approached.

How i can convey to the problems to the software developers so that these problems can be resolver and a whole bunch of things it's not just about knowing your tools it's more about a mindset that you should have a mindset for solving the problems that's basically your software testing now this next statement might hurt some of the testers out here but software testing is still considered as entry level job in majority of the companies including MNCs and it might a sad truth but I have to put out the truth in front of you software testers are paid a little bit less compared to software developers .

Software developers get interacted with more amount of code as compared to tester around the reason why majority of people want to get into software testing because they think I am not really good in coding that's why I think I should opt out for software testing which is again not a good way of approaching the software testing and also not a good idea in the long term

7.1 Test Cases

Table 1: Test cases Implementation

Test Id	Test Objective	Test Data	Test Steps	Priority	Results	Pass/Fail
T1	check customer login with invalid password	Email=abc@infogain.com Password=abc	1.Go to Visual Studio 2.enter email, password 3.click Submit	High	Invalid Credentials	Pass
T2	Check customer login with valid password	Email=abc@infogain.com Password=abcInfo	1.Go to Visual Studio 2.Enter email, password 3.Click Submit	High	Login Successful	Pass
T3	Check customer login with incorrect format of email id	Email=abc@gmail.com Password=No Input Option	1.Go to Visual Studio 2.Enter email, password 3.Click Submit	High	Incorrect Email so cannot go for password input	Pass
T4	Check customer login with correct format of email id and valid password	Email=abc@infogain.com Password=Sneha@123	1.Go to Visual Studio 2.Enter email, password 3.Click Submit	High	Login Successful	Pass
T5	Check Logout Function	Click on Logout button	Click on Logout	Low	Logout successful	Pass
T6	Using the search Bar in Flight Details	Flight ID=109990	Enter the flight id	Medium	Fetch the Flight details of that Crew	Pass

T7	Using the search bar in Flight Details	Flight ID=Null	Enter the flight id	Medium	Throws an exception	Fail
T8	Using the search bar in Flight Details	Emp ID=1605270	Enter the flight id	Medium	Doesn't fetch the flight details of the crew	Pass
T9	Apply Leave within proper time	Apply After 6 Months	Go to LMS and apply leave	High	User not able to apply leave	Pass
T10	Apply Leave within proper time	Apply Before Current Date	Go to LMS and apply leave	Low	User not able to apply leave	Pass
T11	Apply Leave within proper time	Apply Leave within 6 Months	Go to LMS and apply leave	Medium	User able to apply leave	Pass
T12	Apply Sick Leave with proper time	Apply Leave before 4 hours of flight	Go to LMS and apply leave	High	User able to apply leave	Pass
T13	Check the dropdown menu	Select HOTAC/LAYOVER from drop down menu	Select HOTAC/LAYOVER from drop down menu	Medium	Opens the HOTEL/LAYOVER form	Pass
T14	Using the search bar	Hotel Id=Null	Enter the Hotel ID	Medium	Throws an exception	Fail
T15	Using the search bar	Hotel Id=142	Enter the Hotel ID	Medium	Fetch the Hotel-Layover details of the crew	Pass
T16	Check the dropdown menu	Select Leave History from Dropdown Menu	Select Leave History from Dropdown Menu	Medium	Opens the Leave History Form	Pass

T17	Check the dropdown menu	Select Manage Leave from Dropdown Menu	Select Manage Leave from Dropdown Menu	Medium	Opens the Manage Leave Form	Pass
T18	Using the search bar in Manage Leaves	Leave id=1	Enter the Leave Id	Medium	Unlocks Edit and Delete Buttons	Pass
T19	Using the search bar in Manage Leaves	Leave id=500	Enter the Leave Id	Medium	Doesn't unlock Edit and Delete Buttons	Pass
T20	Using the search bar in Manage Leaves	Leave id=null	Enter the Leave Id	Medium	Doesn't unlock Edit and Delete Buttons	Pass
T21	Checking the edit button of leave management	Click on edit button	Click on edit button	Medium	Opens the Applied Leave form after deleting the searched value	Pass
T22	Checking the delete button of leave management	Click on delete button	Click on delete button	Medium	Deletes the searched value	Pass

CHAPTER 8

CONCLUSION

This application will basically manage and display all the phases related to a particular crew, which includes ROSTER followed by LEAVE MANAGEMENT.

The primary use of this application is to provide communication between a crew of the aviation industry and their respective managers. Basically, an aviation industry has different departments like Operations, Cargo, Passenger handling, Catering, Sales and Marketing, etc.

So, the Roster and the leave management are one of those departments handling flight schedules, hotels to stay and Leave of the crew members respectively. Hence, our application is for these two departments.

The technology used in this project is .net, winforms and the programming language is C#. The application designed using this technology is easy and fast.

CHAPTER 9

FUTURE ENHANCEMENTS

Future enhancement is necessary as all the new features that will be needed by the users in the future has to be organized by the provider so references of new aspects will be discussed and the modifications will be done accordingly.

For future research, the functionalities for other departments can be included in this application to provide more ease to maintain day to day operations of crew members.

Many other functionalities are going to be added to this portal later

- Crew-Information
- Crew Documents
- Crew-Qualifications
- Planned Absence Maintenance
- Qualification Maintenance
- Crew-Pay Portal

APPENDIX A BIBLIOGRAPHY

- <https://www.infogain.com/>-For all the information about the company
- <https://www.infogain.com/travel-and-hospitality/>
- www.google.com
- www.wikipedia.com

APPENDIX B

USER MANUAL

The Sabre Crew Portal System is required by the organizations who are linked with the Aviation system or the organisation. Aviation or Air transport is referred as the activity that are done on the sky that is operated by the human.

General Aviation=Business Jets + Glider + Any plane on hire + Airplane Ambulance

Scheduled Aviation=Commercial Scheduled passenger transport and Commercial Scheduled cargo transport

Civil Aviation= General + Scheduled

This project “Sabre Crew Portal System“ is based on Crew Portal Management System. Before we start with the workflow and the implementations of the project we should know about few of the major keywords that are needed for this project to get started.

Crew Member: A person assigned a work in the aircraft ,and any person who related to the aviation will be referred as the crew.



Fig 9.1 Cockpit Diagram First Officer and Pilot

Cockpit or Flight Crew Member:

Flight crew means the pilots who fly the airplane and other people like crew office.

Cabin Crew Member

Cabin Crew means those who perform duties like passenger safety ,task assigned to them by the operator and the pilot and co-pilot of the aircraft

This project Crew Portal Management system can only be used by the crew members who are part of the organization and have their crew-id and employee-id.

The project starts with the Login page where the crew member has to fill in with his valid credentials i.e. user-mail-id and password. Only then he can login to the system.

Once any crew member logs into the system he will be directly taken to the Personal Details Information Page where the crew will be able to see all his personal information like- employee-id, full name, age, contact number, mail-id.

The Crew will also get two options to go for in that page:

- a) Roster Menu
- b) Leave Management Menu

Before we go further about the sub-options available in those menu we should know what those two are:

Roster

The schedule of a flight and the hotel details in aviation we generally refer as the roster .when the crew is in duty and all the details will be stored in the flight details .and the crew is paid according to the time of hours worked and extra will be paid also if crew do extra time in flight .

In our project this Roster has further two sub-options for the crew

- a) Flight details: where the crew member can see his past flight travel history.
- b) Hotel/Layover details: where the crew member can see his past hotel or layover travel history.

Leave Management

Leave management portal page is the windows based application where each crew leave details are maintained and regularly updated with any changes either from the crew or admin side .

This leave management system provides certain rules to be followed as stated by icao and iata .This leave management system can be regularly update the personal information of the crew like his rank , his flight details history , contract and many more. This system also allows crews to apply for leave cancel for there leave as well as also help in tracking all there past leaves and point balances .In this system admins can create either first comes first serve bid windows which can run for any period of time for only few selected groups of crews or they can also create priority based selection .

In our project we have two sub-options for the crew member under the Leave Management menu:

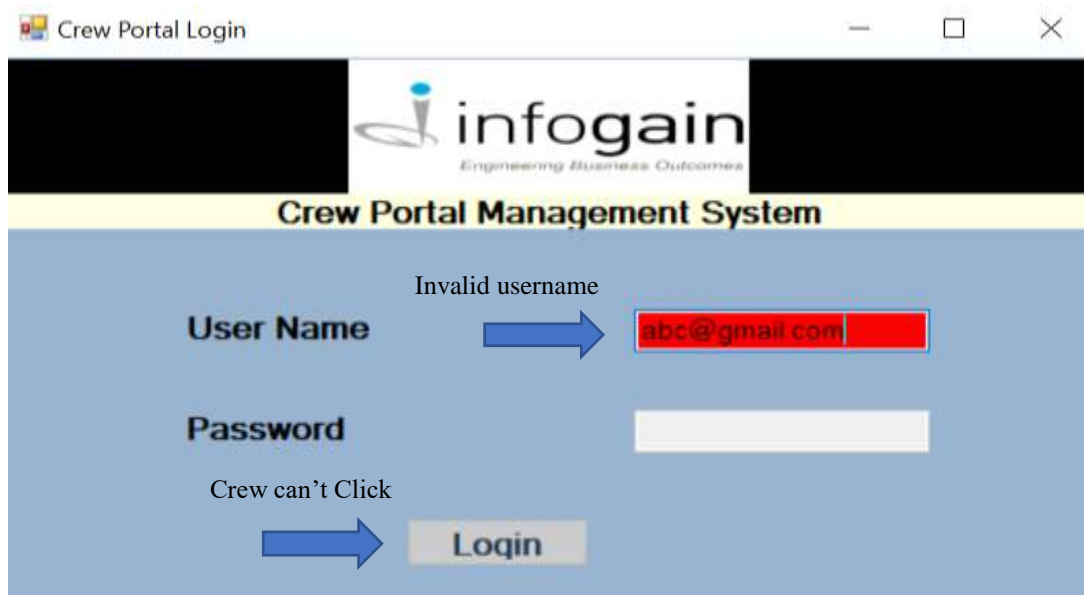
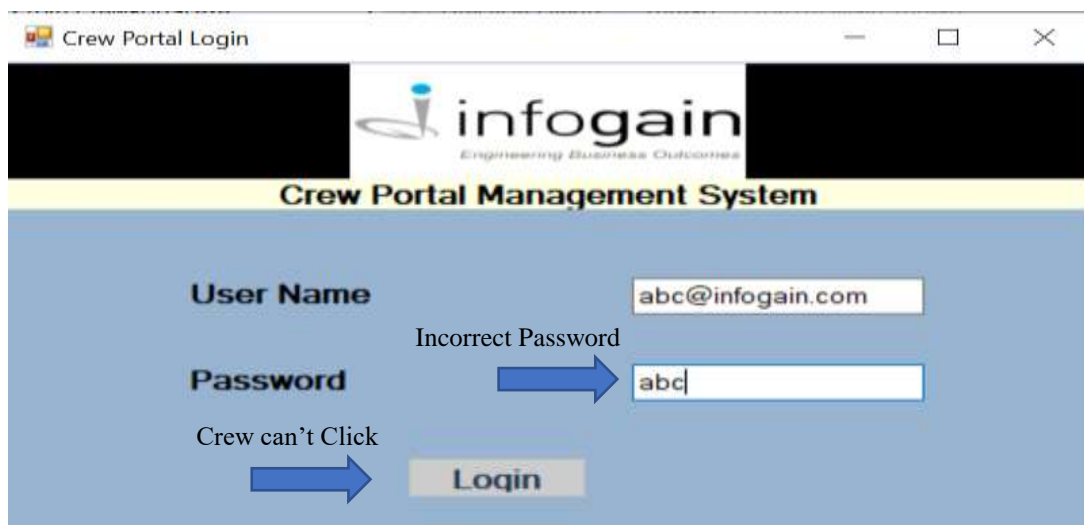
- a) **Apply Leave:** Here the crew can apply for the leave giving valid start dates and end dates and leave type and reason according to that, keeping in mind 'Rules Toolkit'.
- b) **Leave History:** Here the crew can check for his leave approval status and can also see his past leave history details.

Execution Steps

Step 1: Login Portal

Crew portal login is the first form of the application. All the values are filled here.

This page will take you to the next page where crew can see respected personal information with other sub option. In this page we have to login with the correct credentials of the crew or else you will not be allowed to click on the Login button.



Crew Portal Login

infogain
Engineering Business Outcomes

Crew Portal Management System

User Name: abc@infogain.com

Password: abcInfo

Click to Login

Login

Step 2: Display Personal Details Page

This is the personal information page which displays employee id, full name, age, contact number, email id of that particular crew who has logged into the system. It also displays Roster menu and Leave Management sub menus which has its own sub options.

PersonalDetails

infogain
Engineering Business Outcomes

Crew Portal Management System

PERSONAL DETAILS

Employee Id: 1

Full Name: abc title

Age: 30

Phone No: 3450852020

Email Id: abc@info.ac.in

Roster Menu

Leave Management

Logout

Step 5: Apply for Leave

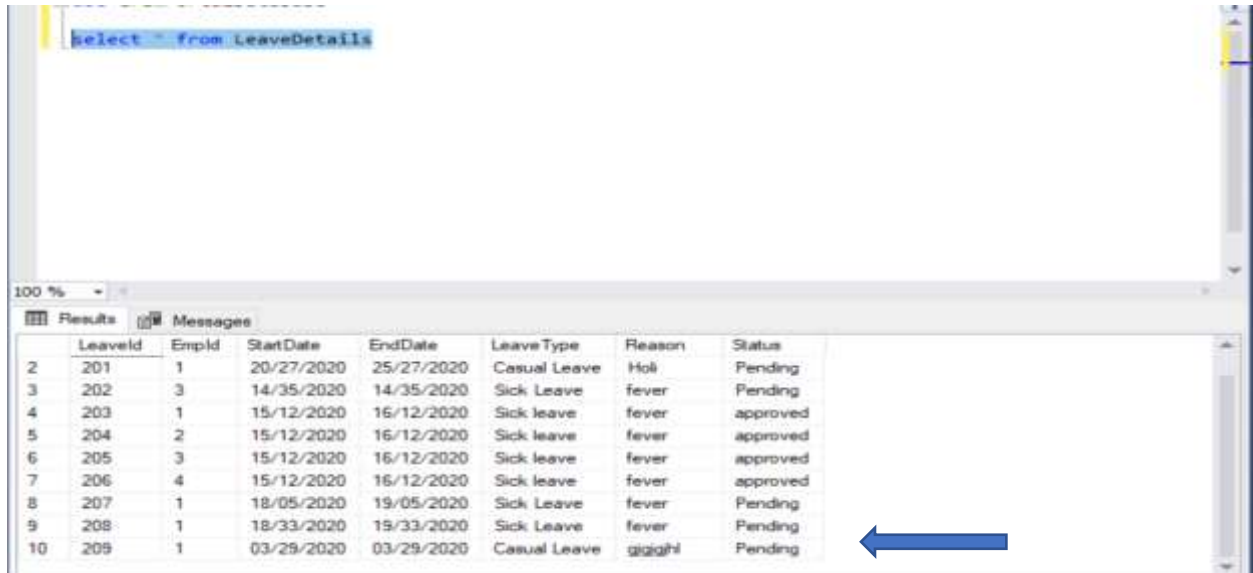
If the crew wants to apply for leave from a particular date to another particular date (where ending date of the leave must be greater than the starting date and the date of ending must be in a period of six month from the starting date and if the dates are same then the leave must be applied atleast before four hours of that day), the crew also has to give the type of leave with proper reason for the type of leave he has applied for.

The screenshot shows the 'Leave Applying Portal' interface. The 'Start Date' is set to Saturday, May 16, 2020, and the 'End Date' is set to Thursday, May 14, 2020. The 'Leave Type' is set to 'Casual Leave'. A blue arrow points to the 'Apply' button. A modal dialog box is displayed with the message 'Please enter valid date' and an 'OK' button. The 'Email Id' field contains 'abc@info.ac.in' and a 'Logout' button is visible in the bottom right corner.

The screenshot shows the 'Leave Applying Portal' interface. The 'Start Date' is set to Wednesday, June 3, 2020, and the 'End Date' is set to Wednesday, June 3, 2020. The 'Leave Type' is set to 'Casual Leave' and the 'Reason' field contains 'alright'. A blue arrow points to the 'Apply' button. The 'Email Id' field contains 'abc@info.ac.in' and a 'Logout' button is visible in the bottom right corner.

Step 6: Data goes into the Database

After the crew apply for the leave all his details for the leave will be stored in the database which can be handled only by the admin and can also be viewed only by the admin. The admin after looking into the details filled by the crew will give approval for the leave to the crew.

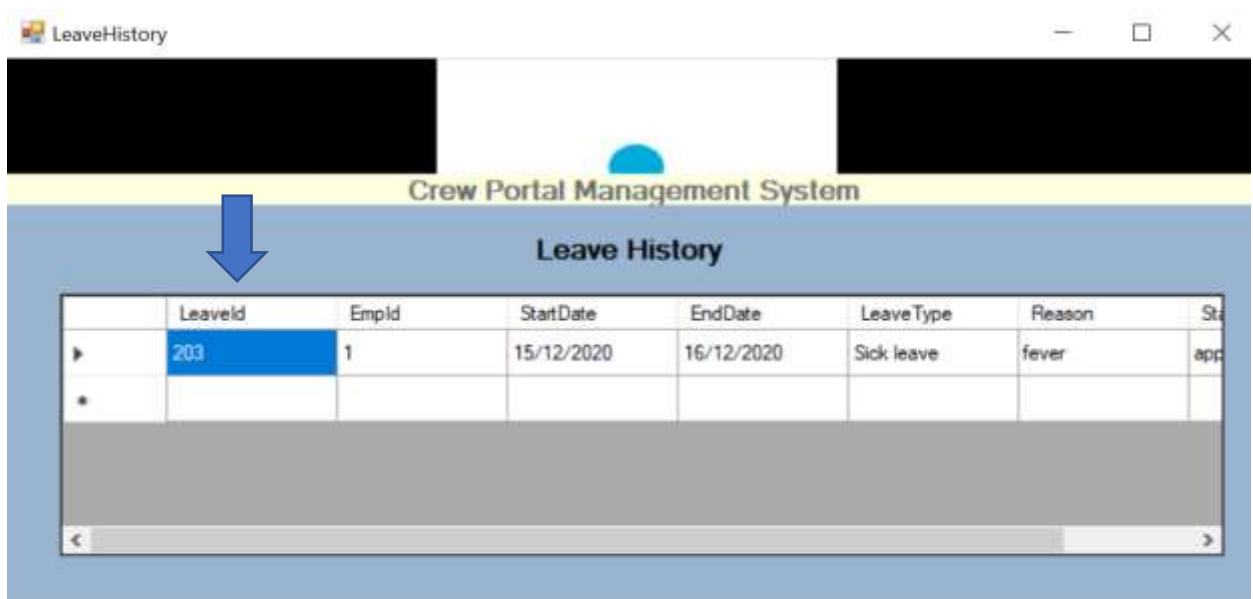


The screenshot shows a database query window with the SQL statement `select * from LeaveDetails`. Below the query, a table displays the results of the query. The table has columns: LeaveId, EmpId, StartDate, EndDate, LeaveType, Reason, and Status. A blue arrow points to the last row of the table.

	LeaveId	EmpId	StartDate	EndDate	LeaveType	Reason	Status
2	201	1	20/27/2020	25/27/2020	Casual Leave	Holi	Pending
3	202	3	14/35/2020	14/35/2020	Sick Leave	fever	Pending
4	203	1	15/12/2020	16/12/2020	Sick leave	fever	approved
5	204	2	15/12/2020	16/12/2020	Sick leave	fever	approved
6	205	3	15/12/2020	16/12/2020	Sick leave	fever	approved
7	206	4	15/12/2020	16/12/2020	Sick leave	fever	approved
8	207	1	18/05/2020	19/05/2020	Sick Leave	fever	Pending
9	208	1	18/33/2020	19/33/2020	Sick Leave	fever	Pending
10	209	1	03/29/2020	03/29/2020	Casual Leave	gigighi	Pending

Step 7: Display Leave History

After applying now if the crew wants to see his leave history details in future, for that he has to click to the option Leave History under the Leave Management menu in the Personal Information Details page, here the crew will be able to see both his past leave history details and also the approval status given by the admin for his recently added applied leave.



The screenshot shows the 'Crew Portal Management System' interface. A blue arrow points to the 'Leave History' section, which displays a table of leave details. The table has columns: LeaveId, EmpId, StartDate, EndDate, LeaveType, Reason, and Status. The first row is highlighted in blue.

	LeaveId	EmpId	StartDate	EndDate	LeaveType	Reason	Status
▶	203	1	15/12/2020	16/12/2020	Sick leave	fever	app
*							

Step 8: Logout from the System

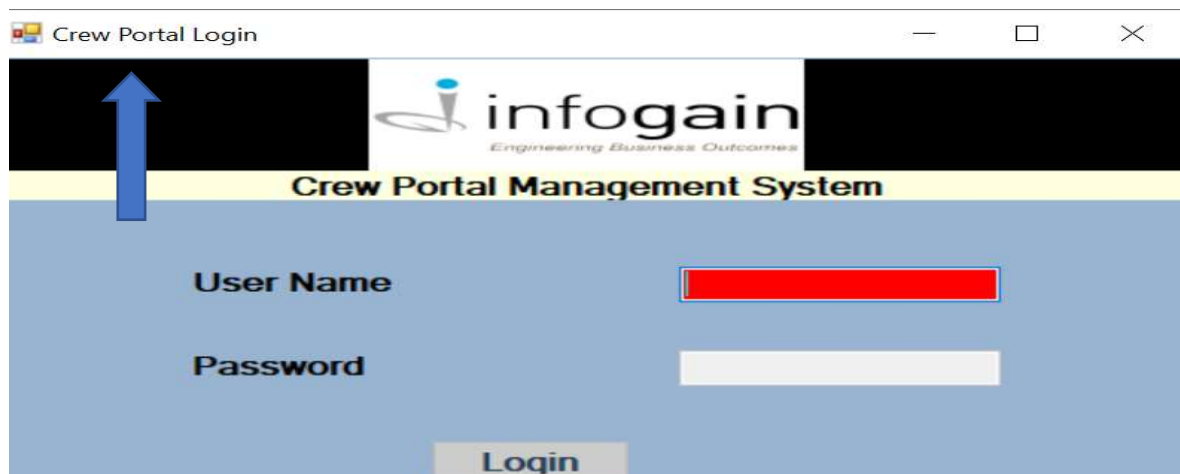
If the crew now wants to come out of the system once he finishes his task, he has to click to Logout to come out of the system.



The screenshot shows a web application window titled 'PersonalDetails'. The header features the 'infogain' logo and the text 'Engineering Business Outcomes'. Below the header is a yellow banner with the text 'Crew Portal Management System'. The main content area is titled 'PERSONAL DETAILS' and contains several input fields: 'Employee Id' (value: 1), 'Full Name' (value: abc title), 'Age' (value: 30), 'Phone No' (value: 3450852020), and 'Email Id' (value: abc@info.ac.in). To the right of these fields are two dropdown menus: 'Roster Menu' and 'Leave Management' (with 'Leave History' selected). A blue arrow points from the 'Logout' button at the bottom right towards the 'Leave Management' dropdown menu.

Step 9: Return to the main Login page

Once the crew member selects Logout option he will be taken back to the Login portal where he has to log in to go back to the personal information page.



The screenshot shows a web application window titled 'Crew Portal Login'. The header features the 'infogain' logo and the text 'Engineering Business Outcomes'. Below the header is a yellow banner with the text 'Crew Portal Management System'. The main content area contains two input fields: 'User Name' (with a red rectangular highlight) and 'Password'. A 'Login' button is located at the bottom center. A blue arrow points upwards from the bottom left towards the 'User Name' input field.