DELL

Session 2023 - 2027

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Course:

CSC-103L Object Oriented Programming B

Department of Computer Science

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Introduction:

This semester, we're creating a system to help companies manage their employees and products better. Our aim is to make it easy for organizations to keep track of who's doing what and what products they have. We're focusing on making it simple to use and giving it useful features. With our system, users can easily see what tasks their employees are working on and keep an eye on how products are moving through the system. Our goal is to help companies work more efficiently and smoothly, making everyone's job easier.

I use 3 tire model i.e. (BL, DL, UI) in my business application. Using database for storage of data.

- I have done Windows Form Application with Database Also, On Entity that is User is done with both file handling and Database.
- On the other hand, I have done my Console project of one entity that is User with both File handing and Database.

Users of Application:

- Admin
  Admin: He can manage Products employees and customers.
- Sales Person
  Sales Person: He can place orders for customers.
- Technician
  Technician: He can Update the product.
- Customer
  Customer: He can buy the product.

Functionalities :

- Following are the functionalities of user i.e, What user can do?

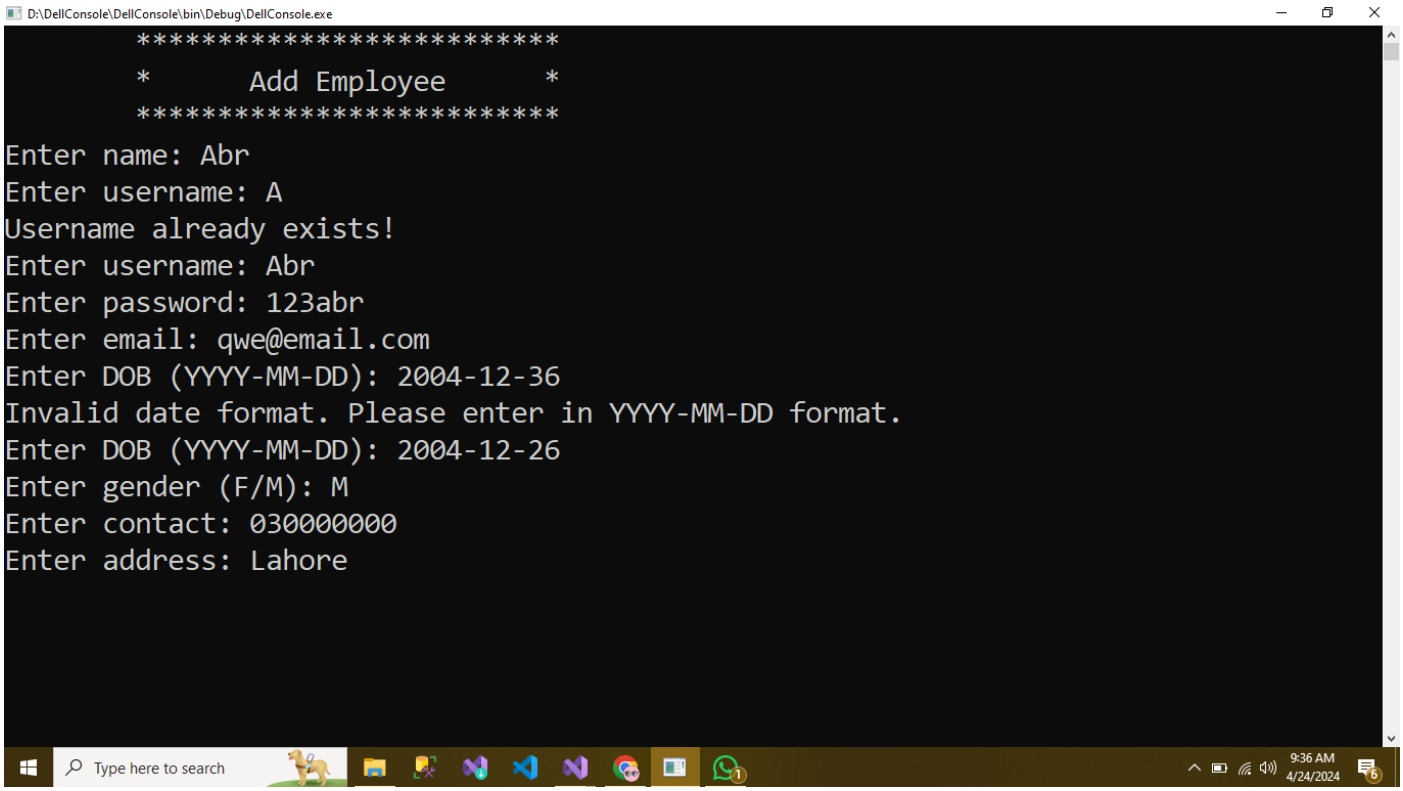
User Story ID	*ADMIN*	*Functions*	*So that I can*
	Admin	view all data	See all the data that are added.
		Manage sales person	Manage sale person.
		Manage technician.	Manage Technician.
		Manage Customer.	Manage customer.
		View orders	View orders
		Manage deactivate user	View users who have logged out
		Manage products	View all products

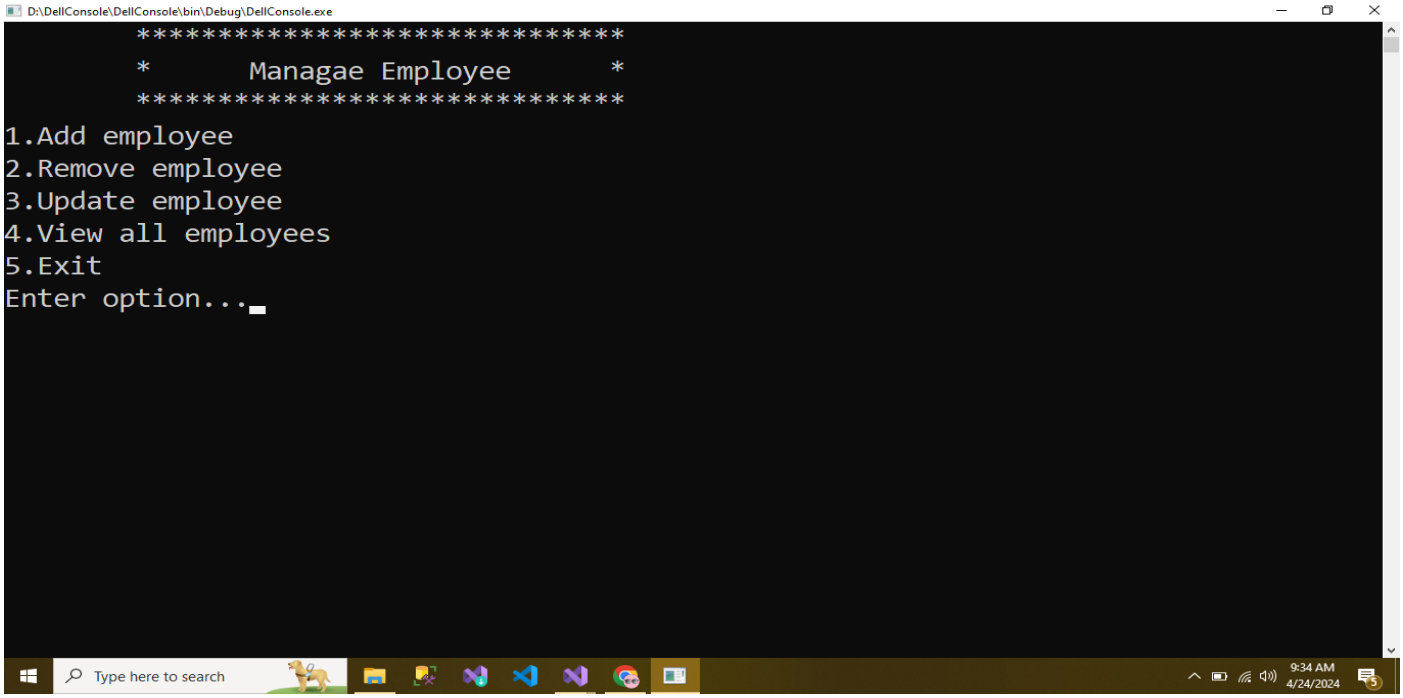
User Story ID	*Customer*	*Functions*	*So that I can*
	Customer	Buy	See all the data that are added.
		View cart	Manage sale person.
		Place order	Manage Technician.
		Confirm order	Manage customer.
		Update account	View orders

Wire frames:

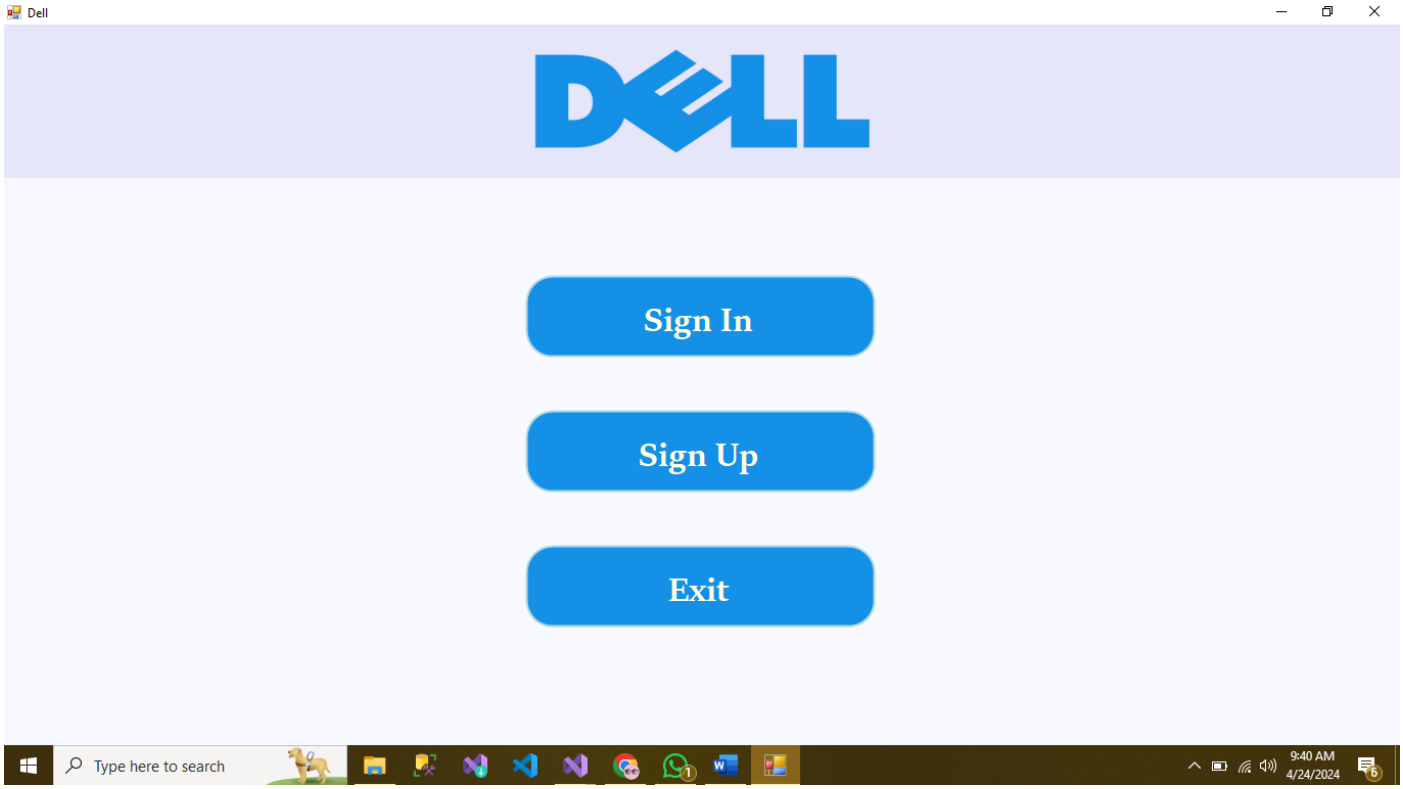
Majorly Four of interfaces in application i.e,

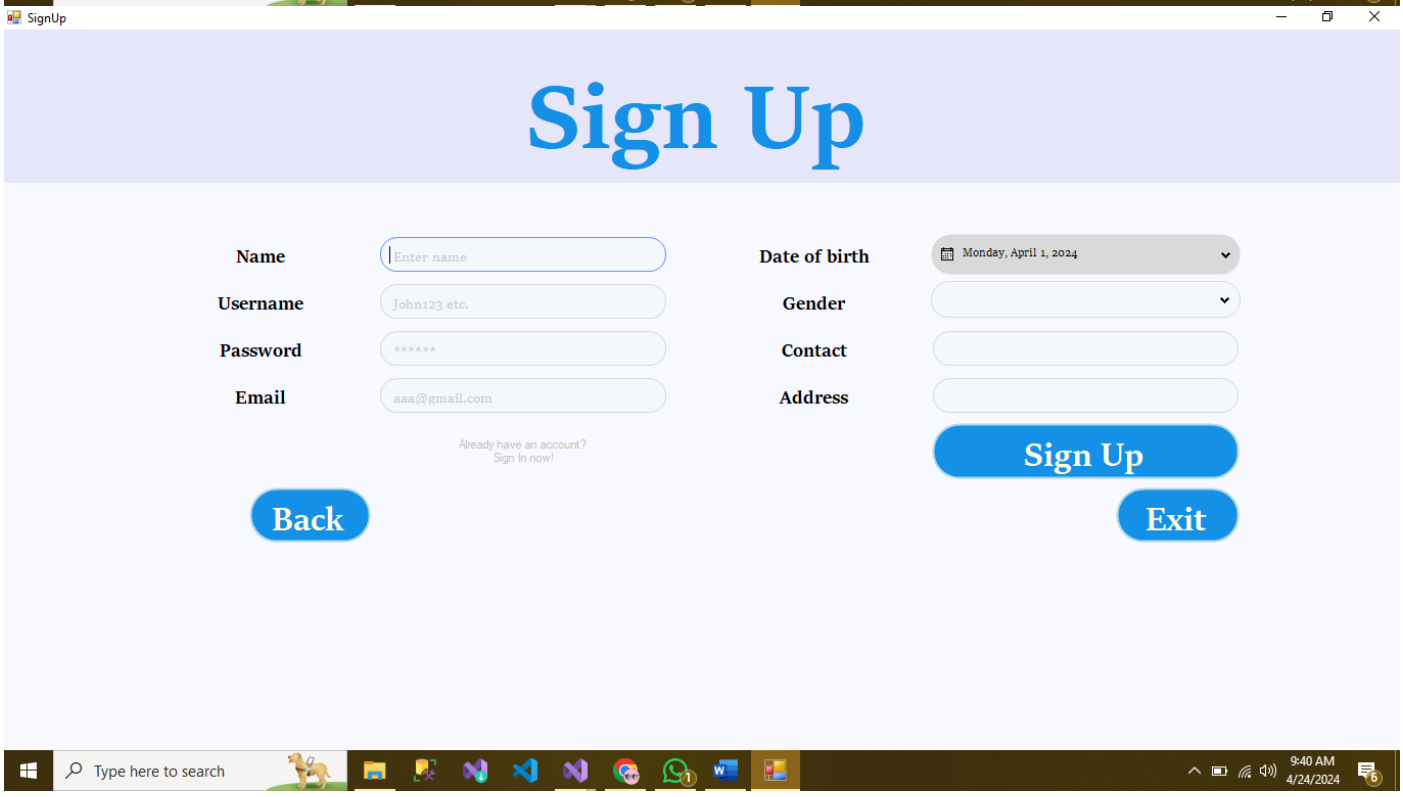
- **Login Interface.**
- **HomePage Interface.**
- **UserAccountPanel Interface.**
- **Console Wire frames:**



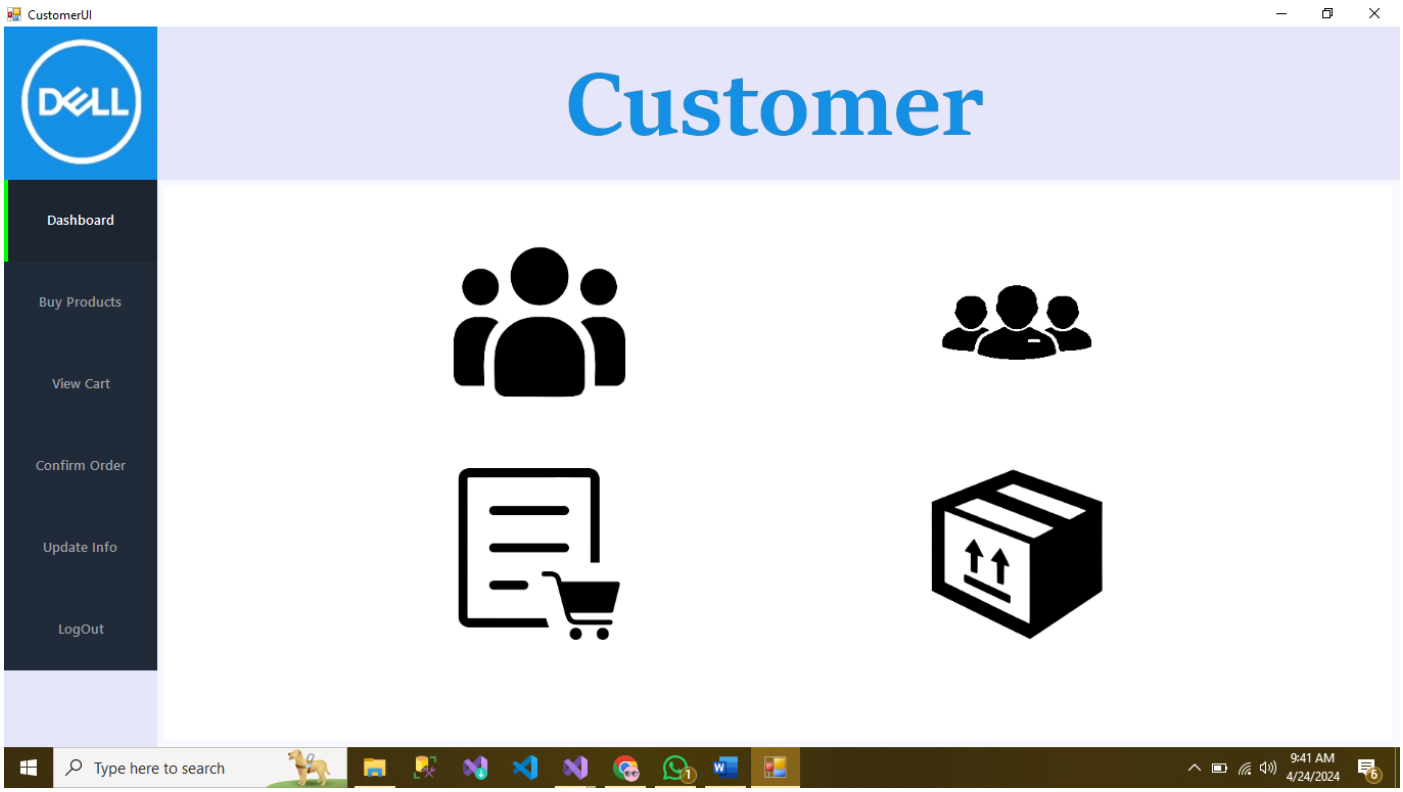


Windows Form Wire frames:






CeoUI
CEO
Dashboard
Manage SalesPersons
Manage Technicians
Manage Customers
View Orders by EmployeeID
View Orders by CustomerID
Manage Deactivated Users
Manage Products
Update Info
LogOut
Total Customers: 1
Total Employees: 0
Total Orders: 4
Total Products: 4
Type here to search
9:40 AM
4/24/2024


CustomerUI
Customer
Dashboard
Buy Products
View Cart
Confirm Order
Update Info
LogOut
Type here to search
9:41 AM
4/24/2024

Uniqueness:

- Unique thing I think in this application is that as you enter to make your account you have to give your gmail which is compulosory without gmail you can not create an account but as you give you mail a verification code is automatically send to the provided gmail which you have to enter as verification step with only correct code you can make account and use application.

Code:

BL Employee

```
using System;



namespace DellLibrary.BL

{

public class EmployeeBL : UserBL

{

private string designation; // Employee's job title

readonly private DateTime hireDate; // Date of employment

private DateTime resignationDate; // Date of resignation



// Full constructor with resignation date

public EmployeeBL(string name, string username, string password, string email, DateTime dob, string address, string contact, string gender, string status, string designation, DateTime hireDate, DateTime resignationDate) : base(name, username, password, email, dob, address, contact, gender, status)

{

this.designation = designation;

this.hireDate = hireDate;

this.resignationDate = resignationDate;

}



// Constructor without resignation date

public EmployeeBL(string name, string username, string password, string email, DateTime dob, string address, string
```

```
contact, string gender, string status, string designation, DateTime hireDate) : base(name, username, password, email, dob, address, contact, gender, status)

{

this.designation = designation;

this.hireDate = hireDate;

}



// Constructor with basic details

public EmployeeBL(string name, string username, string password, string email, DateTime dob, string address, string contact, string gender) : base(name, username, password, email, dob, address, contact, gender)

{

}

public EmployeeBL() { } // Default constructor

public EmployeeBL(string username, string password) : base(username, password) { } // Constructor with only username and password



public string GetDesignation() { return designation; } // Get employee designation

public void SetDesignation(string value) { designation = value; } // Set employee designation

public DateTime GetHireDate() { return hireDate; } // Get hire date

public DateTime GetResignationDate() { return resignationDate; } // Get resignation date

public void SetResignationDate(DateTime value) { resignationDate = value; } // Set resignation date

}

}
```

DL Layer:

```
using DellLibrary.BL;
using DellLibrary.DL_Interfaces;
using DellLibrary.Utility;
using System;
using System.Collections.Generic;
using System.Data.SqlClient;
using System.Net.NetworkInformation;

namespace DellLibrary.DL.DB
```

```
{
   public class EmployeeDLDB : IUserDL, IEmployeeDL
   {
      public string AddEmployee(EmployeeBL user) // adds employee to DB
      {
         string message = Validations.IsValidNewUser(user); // checks if user is valid or not
         // if the user is valid
         if (message == "True")
         {
            // query to add employee
            string query = "INSERT INTO Employees (Name, Username, Password, Email, DOB, Address, Contact, Gender,
Status, Designation, HireDate) " +
                           "VALUES (@Name, @Username, @Password, @Email, @DOB, @Address, @Contact, @Gender, @Status,
@Designation, @HireDate)";

            // connection to the database
            using (SqlConnection con = Configuration.GetConnection())
            {
               try
               {
                  con.Open();
                  SqlCommand command = new SqlCommand(query, con);

                  // Add parameters
                  command.Parameters.AddWithValue("@Name", user.GetName());
                  command.Parameters.AddWithValue("@Username", user.GetUsername());
                  command.Parameters.AddWithValue("@Password", user.GetPassword());
                  command.Parameters.AddWithValue("@Email", user.GetEmail());
                  command.Parameters.AddWithValue("@DOB", user.GetDob());
                  command.Parameters.AddWithValue("@Address", user.GetAddress());
                  command.Parameters.AddWithValue("@Contact", user.GetContact());
                  command.Parameters.AddWithValue("@Gender", user.GetGender());
                  command.Parameters.AddWithValue("@Status", user.GetStatus());
                  command.Parameters.AddWithValue("@Designation", user.GetDesignation());
                  command.Parameters.AddWithValue("@HireDate", user.GetHireDate());

                  // execute command
                  int rowsAffected = command.ExecuteNonQuery();
                  if (rowsAffected > 0) // if the employee was added
                  {
                     message = "True";
                  }
               }
               catch (Exception e) // if error occurs
               {
                  message = e.Message;
               }
               finally // Close the database connection at end
               {
                  con.Close();
               }
            }
         }
         return message; // return the result message
      }
      public string UpdateEmployee(EmployeeBL user, string username, string email) // updates employee data
      {
         string message;
```

```
        // Determine if the user is a CEO
        bool isCEO = user.GetDesignation() == "CEO";

        // Validate user information
        message = Validations.IsValidUpdatedUser(user, username, email, isCEO);

        // If the user is valid
        if (message == "True")
        {
            // Query to update employee
            string query = "UPDATE Employees SET Name=@Name, Username=@Username, Password=@Password,
Email=@Email, DOB=@DOB, Address=@Address, Contact=@Contact, Gender=@Gender WHERE Username=@user";

            // Connection to the database
            using (SqlConnection con = Configuration.GetConnection())
            {
                try
                {
                    con.Open();
                    SqlCommand command = new SqlCommand(query, con);

                    // Add parameters
                    command.Parameters.AddWithValue("@Name", user.GetName());
                    command.Parameters.AddWithValue("@Username", user.GetUsername());
                    command.Parameters.AddWithValue("@user", username);
                    command.Parameters.AddWithValue("@Password", user.GetPassword());
                    command.Parameters.AddWithValue("@Email", user.GetEmail());
                    command.Parameters.AddWithValue("@DOB", user.GetDob());
                    command.Parameters.AddWithValue("@Address", user.GetAddress());
                    command.Parameters.AddWithValue("@Contact", user.GetContact());
                    command.Parameters.AddWithValue("@Gender", user.GetGender());

                    // Execute command
                    int rowsAffected = command.ExecuteNonQuery();
                    if (rowsAffected > 0) // If the employee was updated
                    {
                        message = "True";
                    }
                }
                catch (Exception e) // If an error occurs
                {
                    message = e.Message;
                }
                finally // Close the database connection at the end
                {
                    con.Close();
                }
            }
        }
        return message; // Return the result message
    }
    public string RemoveEmployee(string username) // removes employee
    {
        string message = "";
        // makes connection with DB to remove employee
        using (SqlConnection con = Configuration.GetConnection())
        {
```

```
        // first try to execute delete command
        string query = $"DELETE Employees where Username=@Username;";
        try
        {
            con.Open(); // opens Database Connection
            SqlCommand command = new SqlCommand(query, con); // command to execute the query

            // Add parameters
            command.Parameters.AddWithValue("@Username", username);

            SqlDataReader sqlDataReader = command.ExecuteReader(); // Execute the query
            int rowAffected = sqlDataReader.RecordsAffected;
            if (rowAffected>0)
            {
                message="True";
            }
        }
        // if any exception returns the exception message
        catch (Exception e)
        {
            message = e.Message;
        }
        finally // closes the database connection at the end
        {
            con.Close();
        }
    }
    // returns the message
    return message;
}
public string DeactivateEmployeeAccount(string username) // deactivates employee account
{
    string message="";

    // Query to update employee
    string query = "UPDATE Employees SET Status='Deactivated' WHERE Username=@username;";

    // Connection to the database
    using (SqlConnection con = Configuration.GetConnection())
    {
        try
        {
            con.Open();
            SqlCommand command = new SqlCommand(query, con);

            // Add parameters
            command.Parameters.AddWithValue("@username", username);

            // Execute command
            int rowsAffected = command.ExecuteNonQuery();
            if (rowsAffected > 0) // If the employee was updated
            {
                message = "True";
            }
        }
        catch (Exception e) // If an error occurs
        {
            message = e.Message;
```

```
        }
        finally // Close the database connection at the end
        {
            con.Close();
        }
    }
    return message; // Return the result message
}
public string ActivateEmployeeAccount(string username) // activates employee account
{
    string message = "";

    // Query to update employee
    string query = "UPDATE Employees SET Status='Active' WHERE Username=@username;";

    // Connection to the database
    using (SqlConnection con = Configuration.GetConnection())
    {
        try
        {
            con.Open();
            SqlCommand command = new SqlCommand(query, con);

            // Add parameters
            command.Parameters.AddWithValue("@username", username);

            // Execute command
            int rowsAffected = command.ExecuteNonQuery();
            if (rowsAffected > 0) // If the employee was updated
            {
                message = "True";
            }
        }
        catch (Exception e) // If an error occurs
        {
            message = e.Message;
        }
        finally // Close the database connection at the end
        {
            con.Close();
        }
    }
    return message; // Return the result message
}
public List<EmployeeBL> GetAllEmployees() // returns all employees list
{
    List<EmployeeBL> Employees = new List<EmployeeBL>();
    // makes connection with DB to get employees
    using (SqlConnection con = Configuration.GetConnection())
    {
        string query = $"Select * from Employees where Designation<>'CEO';";
        // first try to execute retreive command
        try
        {
            con.Open(); // opens Database Connection
            SqlCommand command = new SqlCommand(query, con); // command to execute the query
            SqlDataReader sqlDataReader = command.ExecuteReader(); // Execute the query
```

```
            while (sqlDataReader.Read()) // if employees data found
            {
                if (sqlDataReader.IsDBNull(11)) // if resignation date is null
                {
                    EmployeeBL employee = new EmployeeBL(sqlDataReader.GetString(0), sqlDataReader.GetString(1),
sqlDataReader.GetString(2), sqlDataReader.GetString(3), sqlDataReader.GetDateTime(4), sqlDataReader.GetString(5),
sqlDataReader.GetString(6), sqlDataReader.GetString(7), sqlDataReader.GetString(8), sqlDataReader.GetString(9),
sqlDataReader.GetDateTime(10));
                    Employees.Add(employee);
                }
                else
                {
                    EmployeeBL employee = new EmployeeBL(sqlDataReader.GetString(0), sqlDataReader.GetString(1),
sqlDataReader.GetString(2), sqlDataReader.GetString(3), sqlDataReader.GetDateTime(4), sqlDataReader.GetString(5),
sqlDataReader.GetString(6), sqlDataReader.GetString(7), sqlDataReader.GetString(8), sqlDataReader.GetString(9),
sqlDataReader.GetDateTime(10), sqlDataReader.GetDateTime(11));
                    Employees.Add(employee);
                }
            }
        }
        catch (Exception e) // if any exception returns the exception message
        {
            throw (e);
        }
        finally // closes the database connection at the end
        {
            con.Close();
        }
    }
    return Employees; // returns list
}
public EmployeeBL GetEmployeebyUsername(string username) // returns employee for a username
{
    EmployeeBL employee = null;
    // makes connection with DB to get employees
    using (SqlConnection con = Configuration.GetConnection())
    {
        string query = $"Select * from Employees where Username=@username and designation!='CEO';";
        // first try to execute retreive command
        try
        {
            con.Open(); // opens Database Connection
            SqlCommand command = new SqlCommand(query, con); // command to execute the query
            command.Parameters.AddWithValue("@Username", username);
            SqlDataReader sqlDataReader = command.ExecuteReader(); // Execute the query

            while (sqlDataReader.Read()) // if employees data found
            {
                if (sqlDataReader.IsDBNull(11)) // if resignation date is null
                {
                    employee = new EmployeeBL(sqlDataReader.GetString(0), username, sqlDataReader.GetString(2),
sqlDataReader.GetString(3), sqlDataReader.GetDateTime(4), sqlDataReader.GetString(5), sqlDataReader.GetString(6),
sqlDataReader.GetString(7), sqlDataReader.GetString(8), sqlDataReader.GetString(9), sqlDataReader.GetDateTime(10));
                }
                else
                {
                    employee = new EmployeeBL(sqlDataReader.GetString(0), username, sqlDataReader.GetString(2),
sqlDataReader.GetString(3), sqlDataReader.GetDateTime(4), sqlDataReader.GetString(5), sqlDataReader.GetString(6),
```

```
sqlDataReader.GetString(7), sqlDataReader.GetString(8), sqlDataReader.GetString(9), sqlDataReader.GetDateTime(10),
sqlDataReader.GetDateTime(11));
                    }
                }
            }
            catch (Exception e) // if any exception returns the exception message
            {
                throw (e);
            }
            finally // closes the database connection at the end
            {
                con.Close();
            }
        }
        return employee; // returns employee
    }
    public List<EmployeeBL> GetAllEmployeesByStatus(string eStatus) // returns the list of employees acc to current status
    {
        List<EmployeeBL> Employees = new List<EmployeeBL>();
        // makes connection with DB to get employees
        using (SqlConnection con = Configuration.GetConnection())
        {
            string query = $"Select * from Employees where Designation<>'CEO' and status = @estatus;";
            // first try to execute retreive command
            try
            {
                con.Open(); // opens Database Connection
                SqlCommand command = new SqlCommand(query, con); // command to execute the query
                command.Parameters.AddWithValue("@estatus", eStatus);
                SqlDataReader sqlDataReader = command.ExecuteReader(); // Execute the query

                while (sqlDataReader.Read()) // if employees data found
                {
                    if (sqlDataReader.IsDBNull(11)) // if resignation date is null
                    {
                        EmployeeBL employee = new EmployeeBL(sqlDataReader.GetString(0), sqlDataReader.GetString(1),
sqlDataReader.GetString(2), sqlDataReader.GetString(3), sqlDataReader.GetDateTime(4), sqlDataReader.GetString(5),
sqlDataReader.GetString(6), sqlDataReader.GetString(7), sqlDataReader.GetString(8), sqlDataReader.GetString(9),
sqlDataReader.GetDateTime(10));
                        Employees.Add(employee);
                    }
                    else
                    {
                        EmployeeBL employee = new EmployeeBL(sqlDataReader.GetString(0), sqlDataReader.GetString(1),
sqlDataReader.GetString(2), sqlDataReader.GetString(3), sqlDataReader.GetDateTime(4), sqlDataReader.GetString(5),
sqlDataReader.GetString(6), sqlDataReader.GetString(7), sqlDataReader.GetString(8), sqlDataReader.GetString(9),
sqlDataReader.GetDateTime(10), sqlDataReader.GetDateTime(11));
                        Employees.Add(employee);
                    }
                }
            }
            catch (Exception e) // if any exception returns the exception message
            {
                throw (e);
            }
            finally // closes the database connection at the end
            {
                con.Close();
```

```
            }
        }
        return Employees; // returns list
    }
    public List<EmployeeBL> GetEmployeesByDesignation(string designation,string status) // returns the list of employees with specific designation and status
    {
        List<EmployeeBL> Employees = new List<EmployeeBL>();
        // makes connection with DB to get employees
        using (SqlConnection con = Configuration.GetConnection())
        {
            string query = $"Select * from Employees where Designation=@designation and Status=@status;";
            // first try to execute retreive command
            try
            {
                con.Open(); // opens Database Connection
                SqlCommand sqlCommand = new SqlCommand(query, con);
                SqlCommand command = sqlCommand; // command to execute the query
                // Add parameters
                command.Parameters.AddWithValue("@designation", designation);
                command.Parameters.AddWithValue("@status", status);

                SqlDataReader sqlDataReader = command.ExecuteReader(); // Execute the query
                while (sqlDataReader.Read())
                {
                    string name = sqlDataReader.GetString(0);
                    string username = sqlDataReader.GetString(1);
                    string password = sqlDataReader.GetString(2);
                    string email = sqlDataReader.GetString(3);
                    DateTime birthDate = sqlDataReader.GetDateTime(4);
                    string address = sqlDataReader.GetString(5);
                    string contact = sqlDataReader.GetString(6);
                    string gender = sqlDataReader.GetString(7);
                    DateTime hireDate = sqlDataReader.GetDateTime(10);
                    EmployeeBL employee = new EmployeeBL(name, username,password,email,birthDate,address,contact,gender,status,designation,hireDate);
                    Employees.Add(employee);
                }
            }
            catch (Exception e) // if any exception returns the exception message
            {
                throw (e);
            }
            finally // closes the database connection at the end
            {
                con.Close();
            }
        }
        return Employees; // returns list
    }
    public bool UniqueAttributeCheck(string text, string attribute) // checks database for a unique attribute
    {
        // variable for checking attribute
        bool check = false;

        // query
        string Query = $"Select * from Employees where {attribute}='{text}';";
        using (SqlConnection con = Configuration.GetConnection()) // connection to database
```

```
        {
            try
            {
                con.Open();
                SqlCommand command = new SqlCommand(Query, con); // command to execute query
                SqlDataReader sqlDataReader = command.ExecuteReader(); // datareader
                if (sqlDataReader.Read()) // if attribute found
                {
                    check = true;
                }
            }
            catch (Exception)
            {
                check = true;
            }
            finally // Close the connection at end
            {
                con.Close();
            }
        }
        // Return the result of the check
        return check;
    }
    public UserBL UserSignIn(UserBL user) // checks user in database for signing in
    {
        EmployeeBL employee = null;
        // query to find user in the database
        string query = $"SELECT * FROM Employees WHERE Username COLLATE Latin1_General_BIN = @Username AND
Password COLLATE Latin1_General_BIN = @Password AND Status='Active';";
        using (SqlConnection con = Configuration.GetConnection()) // Connection to the database
        {
            try
            {
                con.Open();
                SqlCommand command = new SqlCommand(query, con); // command to execute the query
                // Add parameters
                command.Parameters.AddWithValue("@Username", user.GetUsername());
                command.Parameters.AddWithValue("@Password", user.GetPassword());
                SqlDataReader sqlDataReader = command.ExecuteReader(); // datareader
                if (sqlDataReader.Read() && sqlDataReader.IsDBNull(11)) // if employee was found && resignation date is null
                {
                    string designation = sqlDataReader.GetString(9);
                    employee = new EmployeeBL(sqlDataReader.GetString(0), sqlDataReader.GetString(1),
sqlDataReader.GetString(2), sqlDataReader.GetString(3), sqlDataReader.GetDateTime(4), sqlDataReader.GetString(5),
sqlDataReader.GetString(6), sqlDataReader.GetString(7), sqlDataReader.GetString(8), sqlDataReader.GetString(9),
sqlDataReader.GetDateTime(10));
                }
            }
            catch (Exception ex) // throw exception in case of errors
            {
                throw (ex);
            }
            finally
            {
                con.Close();
            }
        }
        return employee; // return the result message
```

```
    }
    public int GetEmployeeCount() // returns count of total employees in database
    {
        int EmployeeCount = 0;
        // makes connection with DB to get employees count
        using (SqlConnection con = Configuration.GetConnection())
        {
            string query = $"Select Count(*) from Employees;";
            // first try to execute retreive command
            try
            {
                con.Open(); // opens Database Connection
                SqlCommand command = new SqlCommand(query, con); // command to execute the query
                command.Parameters.AddWithValue("@Status", "Active"); // add parameters
                SqlDataReader sqlDataReader = command.ExecuteReader(); // Execute the query
                if (sqlDataReader.Read()) // if employees data found
                {
                    EmployeeCount= sqlDataReader.GetInt32(0);
                }
            }
            catch (Exception e) // if any exception returns the exception message
            {
                throw (e);
            }
            finally // closes the database connection at the end
            {
                con.Close();
            }
        }
        return EmployeeCount; // returns count
    }
  }
}
```

FH:

```
using DellLibrary.BL;
using DellLibrary.DL_Interfaces;
using DellLibrary.Utility;
using System;
using System.Collections.Generic;
using System.IO;

namespace DellLibrary.DL.FH
{
  public class EmployeeDLFH : IUserDL, IEmployeeDL
  {
    private string filePath = "D:\\employee.txt"; // Path to the CSV file
    public string AddEmployee(EmployeeBL user)
    {
      string message = Validations.IsValidNewUser(user); // Validate user
      if (message == "True")
      {
        try
        {
          // Construct CSV line
          string newEmployee =
$"{user.GetName()},{user.GetUsername()},{user.GetPassword()},{user.GetEmail()},{user.GetDob()},{user.GetAddress()},{user
.GetContact()},{user.GetGender()},{user.GetStatus()},{user.GetDesignation()},{user.GetHireDate()}";
```

```
            // Append to CSV file
            File.AppendAllText(filePath, newEmployee + Environment.NewLine);
            message = "True"; // Success
        }
        catch (Exception e)
        {
            message = e.Message; // Error occurred
        }
    }
    return message; // Return result message
}
public string UpdateEmployee(EmployeeBL user, string username, string email)
{
    string message;

    // Determine if the user is a CEO
    bool isCEO = user.GetDesignation() == "CEO";

    // Validate user information
    message = Validations.IsValidUpdatedUser(user, username, email, isCEO);

    // If the user is valid
    if (message == "True")
    {
        try
        {
            string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

            for (int i = 0; i < lines.Length; i++)
            {
                string[] parts = lines[i].Split(','); // Split the line into parts

                // Check if the username matches
                if (parts[1] == username)
                {
                    // Update the user's information
                    lines[i] =
$"{user.GetName()},{user.GetUsername()},{user.GetPassword()},{user.GetEmail()},{user.GetDob()},{user.GetAddress()},{user
.GetContact()},{user.GetGender()}";
                    break; // Exit the loop since the user is found
                }
            }

            // Write the updated lines back to the file
            File.WriteAllLines(filePath, lines);
            message = "True"; // Success
        }
        catch (Exception e)
        {
            message = e.Message; // Error occurred
        }
    }
    return message; // Return the result message
}
public string RemoveEmployee(string username)
{
    string message = "";
```

```
        try
        {
            string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file
            List<string> updatedLines = new List<string>();

            foreach (string line in lines)
            {
                string[] parts = line.Split(',');
                if (parts[1] != username) // If the username does not match, keep the line
                {
                    updatedLines.Add(line);
                }
            }

            // Write the updated lines back to the file
            File.WriteAllLines(filePath, updatedLines);
            message = "True"; // Success
        }
        catch (Exception e)
        {
            message = e.Message; // Error occurred
        }

        return message; // Return the result message
    }
    public List<EmployeeBL> GetAllEmployees()
    {
        List<EmployeeBL> employees = new List<EmployeeBL>();

        try
        {
            // Read all lines from the CSV file
            string[] lines = File.ReadAllLines(filePath);

            // Loop through each line
            foreach (string line in lines)
            {
                string[] parts = line.Split(','); // Split the line into parts

                // Check if the designation is not CEO and if there's no resignation date
                if (parts[9] != "CEO" && string.IsNullOrEmpty(parts[11]))
                {
                    // Create an EmployeeBL object based on the data in the CSV line
                    EmployeeBL employee;
                    if (parts.Length >= 12 && !string.IsNullOrEmpty(parts[11]))
                    {
                        employee = new EmployeeBL(parts[0], parts[1], parts[2], parts[3], DateTime.Parse(parts[4]), parts[5], parts[6],
parts[7], parts[8], parts[9], DateTime.Parse(parts[10]), DateTime.Parse(parts[11]));
                    }
                    else
                    {
                        employee = new EmployeeBL(parts[0], parts[1], parts[2], parts[3], DateTime.Parse(parts[4]), parts[5], parts[6],
parts[7], parts[8], parts[9], DateTime.Parse(parts[10]));
                    }

                    employees.Add(employee); // Add the employee to the list
                }
            }
```

```
    }
    catch (Exception e)
    {
        throw e; // Throw any exceptions that occur
    }

    return employees; // Return the list of employees
}
public string ActivateEmployeeAccount(string username)
{
    string message = "";

    try
    {
        // Read all lines from the CSV file
        string[] lines = File.ReadAllLines(filePath);

        // Loop through each line
        for (int i = 0; i < lines.Length; i++)
        {
            string[] parts = lines[i].Split(','); // Split the line into parts

            // Check if the username matches
            if (parts.Length > 1 && parts[1] == username)
            {
                // Update the status to 'Active'
                parts[8] = "Active";

                // Join the parts back into a line
                lines[i] = string.Join(",", parts);

                // Write the updated lines back to the file
                File.WriteAllLines(filePath, lines);

                message = "True"; // Success
                break; // Exit the loop since the user is found
            }
        }
    }
    catch (Exception e)
    {
        message = e.Message; // Error occurred
    }

    return message; // Return the result message
}
public string DeactivateEmployeeAccount(string username)
{
    string message = "";

    try
    {
        string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

        for (int i = 0; i < lines.Length; i++)
        {
            string[] parts = lines[i].Split(','); // Split the line into parts
```

```
            // Check if the username matches
            if (parts[1] == username)
            {
                // Update the user's status
                parts[8] = "Deactivated";
                lines[i] = string.Join(",", parts); // Join parts back into a line
                break; // Exit the loop since the user is found
            }
        }

        // Write the updated lines back to the file
        File.WriteAllLines(filePath, lines);
        message = "True"; // Success
    }
    catch (Exception e)
    {
        message = e.Message; // Error occurred
    }

    return message; // Return the result message
}
public List<EmployeeBL> GetEmployeesByDesignation(string designation, string status)
{
    List<EmployeeBL> employees = new List<EmployeeBL>();

    try
    {
        string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

        foreach (string line in lines)
        {
            string[] parts = line.Split(','); // Split the line into parts

            if (parts[9] == designation && parts[8] == status) // Check if designation and status match
            {
                // Create an EmployeeBL object
                EmployeeBL employee = new EmployeeBL(parts[0], parts[1], parts[2], parts[3], DateTime.Parse(parts[4]),
parts[5], parts[6], parts[7], parts[8], parts[9], DateTime.Parse(parts[10]));
                employees.Add(employee);
            }
        }
    }
    catch (Exception)
    {
        // Handle exceptions if needed
    }

    return employees; // Return the list of employees
}
public EmployeeBL GetEmployeebyUsername(string username)
{
    EmployeeBL employee = null;

    try
    {
        string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

        foreach (string line in lines)
```

```
            {
                string[] parts = line.Split(','); // Split the line into parts

                // Check if the username matches
                if (parts[1] == username)
                {
                    // Create an EmployeeBL object
                    employee = new EmployeeBL(parts[0], parts[1], parts[2], parts[3], DateTime.Parse(parts[4]), parts[5], parts[6],
parts[7], parts[8], parts[9], DateTime.Parse(parts[10]));
                    break; // Exit the loop since the user is found
                }
            }
        }
        catch (Exception)
        {
            // Handle exceptions if needed
        }

        return employee; // Return the employee object
    }
    public List<EmployeeBL> GetAllEmployeesByStatus(string status)
    {
        List<EmployeeBL> employees = new List<EmployeeBL>();

        try
        {
            string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

            foreach (string line in lines)
            {
                string[] parts = line.Split(','); // Split the line into parts

                if (parts[8] == status) // Check if the status matches
                {
                    // Create an EmployeeBL object
                    EmployeeBL employee = new EmployeeBL(parts[0], parts[1], parts[2], parts[3], DateTime.Parse(parts[4]),
parts[5], parts[6], parts[7], parts[8], parts[9], DateTime.Parse(parts[10]));
                    employees.Add(employee);
                }
            }
        }
        catch (Exception)
        {
            // Handle exceptions if needed
        }

        return employees; // Return the list of employees
    }
    public bool UniqueAttributeCheck(string text, string attribute)
    {
        bool check = false;

        try
        {
            string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

            foreach (string line in lines)
            {
```

```
            string[] parts = line.Split(','); // Split the line into parts

            if (parts[1] == text) // Check if the attribute matches
            {
               check = true; // Attribute found, it's not unique
               break;
            }
         }
      }
      catch (Exception)
      {
         // Handle exceptions if needed
      }

      return check; // Return the result of the check
   }
   public UserBL UserSignIn(UserBL user)
   {
      EmployeeBL employee = null;

      try
      {
         string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

         foreach (string line in lines)
         {
            string[] parts = line.Split(','); // Split the line into parts

            // Check if the username and password match
            if (parts[1] == user.GetUsername() && parts[2] == user.GetPassword() && parts[8] == "Active")
            {
               // Create an EmployeeBL object
               employee = new EmployeeBL(parts[0], parts[1], parts[2], parts[3], DateTime.Parse(parts[4]), parts[5], parts[6],
parts[7], parts[8], parts[9], DateTime.Parse(parts[10]));
               break; // Exit the loop since the user is found
            }
         }
      }
      catch (Exception)
      {
         // Handle exceptions if needed
      }

      return employee; // Return the employee object
   }
   public int GetEmployeeCount()
   {
      int employeeCount = 0;

      try
      {
         string[] lines = File.ReadAllLines(filePath); // Read all lines from the CSV file

         // Increment count for each active employee
         foreach (string line in lines)
         {
            string[] parts = line.Split(','); // Split the line into parts
```

```
                if (parts[8] == "Active") // Check if the status is active
                {
                    employeeCount++;
                }
            }
        }
        catch (Exception)
        {
            // Handle exceptions if needed
        }

        return employeeCount; // Return the count
    }
  }
}
using System;
using System.Collections.Generic;

namespace DellConsole.UI
{
  internal class AdminUI
  {
    // List of options available in the admin menu
    private static List<string> menu = new List<string>() {"1.Add employee","2.Remove employee","3.Update employee", "4.View all
employees","5.Exit"};

    // Displays the admin menu options and returns the user's choice
    public static string PrintAdminMenu()
    {
      // Display each menu option
      foreach (string item in menu)
      {
        Console.WriteLine(item);
      }

      // Prompt the user to enter their choice
      Console.Write("Enter option...");

      // Return the user's choice
      return Console.ReadLine();
    }
  }
}
using DellLibrary.BL;
using DellLibrary.Utility;
using System;
namespace DellConsole.UI
{
  internal class EmployeeUI
  {
    // Takes inputs for new employee
    public static EmployeeBL EmployeeInputs()
    {
      // Variables to store user inputs
      string name, username, password, email, contact, gender, address;
      DateTime dob;

      // Loop for name input and validation
      name = NameInput();
```

```
        // Loop for username input and validation
        username = UsernameInput();

        // Loop for password input and validation
        password = PasswordInput();

        // Loop for email input and validation
        email = EmailInput();

        // Loop for date of birth input and validation
        dob = DOBInput();

        // Loop for gender input and validation
        gender = GenderInput();

        // Loop for contact input and validation
        contact = ContactInput();

        // Loop for address input
        address = AddressInput();

        // Create and return an EmployeeBL object with validated inputs
        EmployeeBL employee = new EmployeeBL(name, username, password, email, dob, address, contact, gender, "Active",
"SalesPerson", DateTime.Now);
        return employee;
    }
    // Takes inputs to update existing employee
    public static EmployeeBL UpdateEmployee(EmployeeBL employee,string email)
    {
        // Update name
        employee.SetName(NameInput());
        // Update password
        employee.SetPassword(PasswordInput());
        // Update email
        employee.SetEmail(EmailInput(email));
        // Update dob
        employee.SetDob(DOBInput());
        // Update gender
        employee.SetGender(GenderInput());
        // Update address
        employee.SetAddress(AddressInput());
        // Update contact
        employee.SetContact(ContactInput());

        return employee; // return the updated employee
    }
    // Method responsible for gathering and validating user's name input
    private static string NameInput()
    {
        string name;
        while (true)
        {
            // Prompt the user to enter their name
            name = Utility.Input("name");

            // Validate the entered name
            string nameCheckResult = Validations.NameCheck(name);
```

```
        // If validation fails, display error message and prompt again
        if (nameCheckResult != "True")
        {
            Console.WriteLine(nameCheckResult);
        }
        // If validation succeeds, return value
        else
        {
            return name;
        }
    }
}

// Method responsible for gathering and validating user's username input
private static string UsernameInput()
{
    string username;
    while (true)
    {
        // Prompt the user to enter their username
        username = Utility.Input("username");

        // Validate the entered username
        string usernameCheckResult = Validations.UsernameCheck(username);

        // If validation fails, display error message and prompt again
        if (usernameCheckResult != "True")
        {
            Console.WriteLine(usernameCheckResult);
        }
        // If validation succeeds, return value
        else
        {
            return username;
        }
    }
}

// Method responsible for gathering and validating user's password input
private static string PasswordInput()
{
    string password;
    while (true)
    {
        // Prompt the user to enter their password
        password = Utility.Input("password");

        // Validate the entered password
        string passwordCheckResult = Validations.PasswordCheck(password);

        // If validation fails, display error message and prompt again
        if (passwordCheckResult != "True")
        {
            Console.WriteLine(passwordCheckResult);
        }
        // If validation succeeds, return value
        else
```

```
        {
            return password;
        }
    }
}

// Method responsible for gathering and validating user's email input
private static string EmailInput()
{
    string email;
    while (true)
    {
        // Prompt the user to enter their email
        email = Utility.Input("email");

        // Validate the entered email
        string emailCheckResult = Validations.EmailCheck(email);

        // If validation fails, display error message and prompt again
        if (emailCheckResult != "True")
        {
            Console.WriteLine(emailCheckResult);
        }
        // If validation succeeds, return value
        else
        {
            return email;
        }
    }
}
// Method responsible for gathering and validating user's updated email input
private static string EmailInput(string email)
{
    string email2;
    while (true)
    {
        // Prompt the user to enter their email
        email2 = Utility.Input("email");

        // Validate the entered email
        string emailCheckResult = Validations.UpdatedEmailCheck(email,email2);

        // If validation fails, display error message and prompt again
        if (emailCheckResult != "True")
        {
            Console.WriteLine(emailCheckResult);
        }
        // If validation succeeds, return value
        else
        {
            return email;
        }
    }
}
// Method responsible for gathering and validating user's date of birth input
private static DateTime DOBInput()
{
    DateTime dob;
```

```
    while (true)
    {
        // Prompt the user to enter their date of birth
        string dobInput = Utility.Input("DOB (YYYY-MM-DD)");

        // Attempt to parse the entered date of birth
        if (DateTime.TryParse(dobInput, out dob))
        {
            // Validate the parsed date of birth
            string ageCheckResult = Validations.AgeCheck(dob);

            // If validation fails, display error message and prompt again
            if (ageCheckResult != "True")
            {
                Console.WriteLine(ageCheckResult);
            }
            // If validation succeeds, return value
            else
            {
                return dob;
            }
        }
        // If parsing fails, display error message and prompt again
        else
        {
            Console.WriteLine("Invalid date format. Please enter in YYYY-MM-DD format.");
        }
    }
}

// Method responsible for gathering and validating user's gender input
private static string GenderInput()
{
    string gender;
    while (true)
    {
        // Prompt the user to enter their gender
        Console.Write("Enter gender (F/M): ");
        gender = Console.ReadLine().ToLower();

        // Validate the entered gender
        if (gender == "f" || gender == "m" || gender == "female" || gender == "male")
        {
            // Normalize the gender value
            gender = gender == "f" || gender == "female" ? "Female" : "Male";
            return gender;
        }
        // If validation fails, display error message and prompt again
        else
        {
            Console.WriteLine("Invalid gender input. Please enter 'F' or 'M'.");
        }
    }
}

// Method responsible for gathering and validating user's contact input
private static string ContactInput()
{
```

```
        string contact;
        while (true)
        {
            // Prompt the user to enter their contact information
            Console.Write("Enter contact: ");
            contact = Console.ReadLine();

            // Validate the entered contact information
            string contactCheckResult = Validations.ContactCheck(contact);

            // If validation fails, display error message and prompt again
            if (contactCheckResult != "True")
            {
                Console.WriteLine(contactCheckResult);
            }
            // If validation succeeds, exit the loop
            else
            {
                return contact;
            }
        }
    }
    // Method responsible for gathering user's address input
    private static string AddressInput()
    {
        string address;
        while (true)
        {
            // Prompt the user to enter their address
            Console.Write("Enter address: ");
            address = Console.ReadLine();

            // If address is empty, display error message and prompt again
            if (string.IsNullOrEmpty(address))
            {
                Console.WriteLine("Address cannot be empty.");
            }
            // If validation succeeds, return value
            else
            {
                return address;
            }
        }
    }
    // Method responsible for printing an employee's info
    public static void PrintEmployeeInfo(EmployeeBL employee)
    {
        // Print the employee's details
        Console.WriteLine($"{employee.GetName(),-15}{employee.GetUsername(),-15}{employee.GetPassword(),-
15}{employee.GetEmail(),-15}{employee.GetDob().ToString("yyyy-MM-dd"),-15}{employee.GetAddress(),-
15}{employee.GetContact(),-15}{employee.GetGender(),-15}{employee.GetDesignation(),-
15}{employee.GetHireDate().ToString("yyyy-MM-dd"),-15}");
    }
  }
}
using System;

namespace DellConsole.UI
```

```
{
    internal class Utility
    {
        // Displays the main menu and returns the user's choice
        public static string Menu()
        {
            Console.WriteLine("1.Manage employees\n2.Exit");
            Console.Write("\nEnter option...");
            return Console.ReadLine();
        }

        // Displays a message and prompts the user to press any key to continue
        public static void PressAnyKeyToContinue(string message)
        {
            Console.WriteLine(message);
            Console.Write("Press any key to continue...");
            Console.ReadKey();
        }

        // Displays the header for the application
        public static void Header()
        {
            Console.WriteLine("       *************************");
            Console.WriteLine("       *      Dell System      *");
            Console.WriteLine("       *************************");
        }

        // Displays the header for adding an employee
        public static void AddEmpHeader()
        {
            Console.WriteLine("       *************************");
            Console.WriteLine("       *      Add Employee     *");
            Console.WriteLine("       *************************");
        }

        // Displays the header for removing an employee
        public static void RemoveEmpHeader()
        {
            Console.WriteLine("       ******************************");
            Console.WriteLine("       *      Remove Employee     *");
            Console.WriteLine("       ******************************");
        }
        // Displays the header for managing employees
        public static void ManageEmpHeader()
        {
            Console.WriteLine("       *******************************");
            Console.WriteLine("       *      Managae Employee     *");
            Console.WriteLine("       *******************************");
        }

        // Displays the header for updating an employee
        public static void UpdateEmpHeader()
        {
            Console.WriteLine("       ******************************");
            Console.WriteLine("       *      Update Employee     *");
            Console.WriteLine("       ******************************");
        }

        // Displays the header for viewing employee data
        public static void ViewEmpHeader()
        {
```

```
            Console.WriteLine("        ***************************");
            Console.WriteLine("        *      View Employee      *");
            Console.WriteLine("        ***************************");
        }

        // Prompts the user to input a value for a specific attribute and returns the input
        public static string Input(string attribute)
        {
            Console.Write("Enter "+attribute+": ");
            return Console.ReadLine();
        }
        // Prompts the user to input option
        public static string YesNoOption()
        {
            // Prompt the user for input
            Console.WriteLine("\nDo you want to delete user data (Y/N)?");

            // Keep looping until a valid input is received
            while (true)
            {
                // Read the user's input from the console and convert it to lowercase
                Console.Write("Enter option: ");
                string option = Console.ReadLine().ToLower();

                // Check if the input matches one of the valid options
                if (option == "y" || option == "yes" || option == "no" || option == "n")
                {
                    // Convert the input to uppercase (Y or N) for consistency
                    option = option == "yes" || option == "y" ? "Y" : "N";

                    // Return the valid option
                    return option;
                }
            }
        }
    }
}
using DellLibrary.DL.DB;
using DellLibrary.DL.FH;
using DellLibrary.DL_Interfaces;

namespace DELLConsole.Utility
{
    internal class ObjectHandler
    {
        // makes object of interfaces
        private static readonly IEmployeeDL employeeDL = new EmployeeDLFH();
        // private static readonly IEmployeeDL employeeDL = new EmployeeDLDB();
        // returns the employeeDL object of interface
        public static IEmployeeDL GetEmployeeDL() { return employeeDL; }
    }
}

using DellConsole.UI;
using DELLConsole.Utility;
using DellLibrary.BL;
using System;
using System.Collections.Generic;

namespace DellConsole
{
```

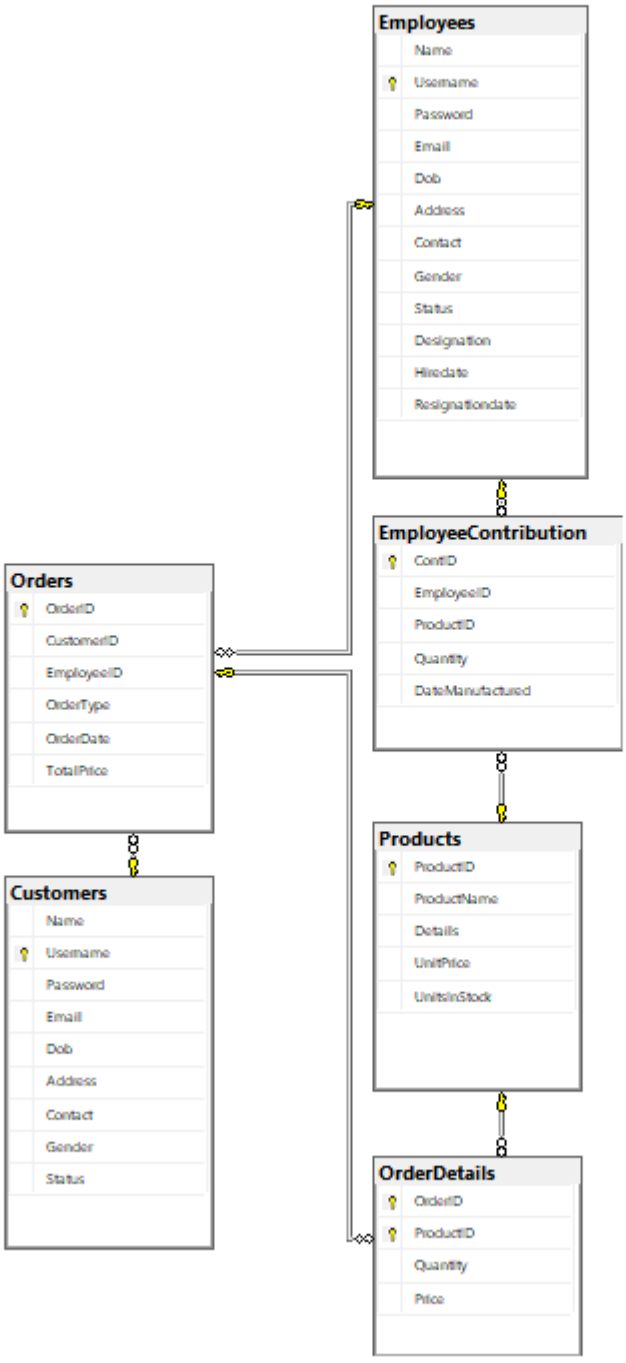
```
internal class Program
{
   static void Main()
   {
      while (true)
      {
         // Clear the console screen
         Console.Clear();

         // Display the header for the admin menu
         Utility.Header();

         // Display the main menu and get user's choice
         string option = Utility.Menu();

         // If the user chooses option 1 (Admin menu)
         if (option == "1")
         {
            while (true)
            {
               // Clear the console screen
               Console.Clear();

               // Display the header for the manage employee menu
               Utility.ManageEmpHeader();

               // Print the admin menu and get user's choice
               option = AdminUI.PrintAdminMenu();

               // If the user chooses to add an employee
               if (option == "1")
               {
                  // Display header for adding employee
                  Console.Clear();
                  Utility.AddEmpHeader();

                  // Gather inputs for a new employee
                  EmployeeBL employee = EmployeeUI.EmployeeInputs();

                  // Add the employee to the data layer
                  string message = ObjectHandler.GetEmployeeDL().AddEmployee(employee);

                  // Display success or error message
                  if (message == "True")
                  {
                     Utility.PressAnyKeyToContinue("\nEmployee added successfully!");
                  }
                  else
                  {
                     Utility.PressAnyKeyToContinue(message);
                  }
               }
               // If the user chooses to remove an employee
               else if (option == "2")
               {
                  // Display header for removing employee
                  Console.Clear();
                  Utility.RemoveEmpHeader();

                  // Prompt for employee username
                  string username = Utility.Input("employee username");
```

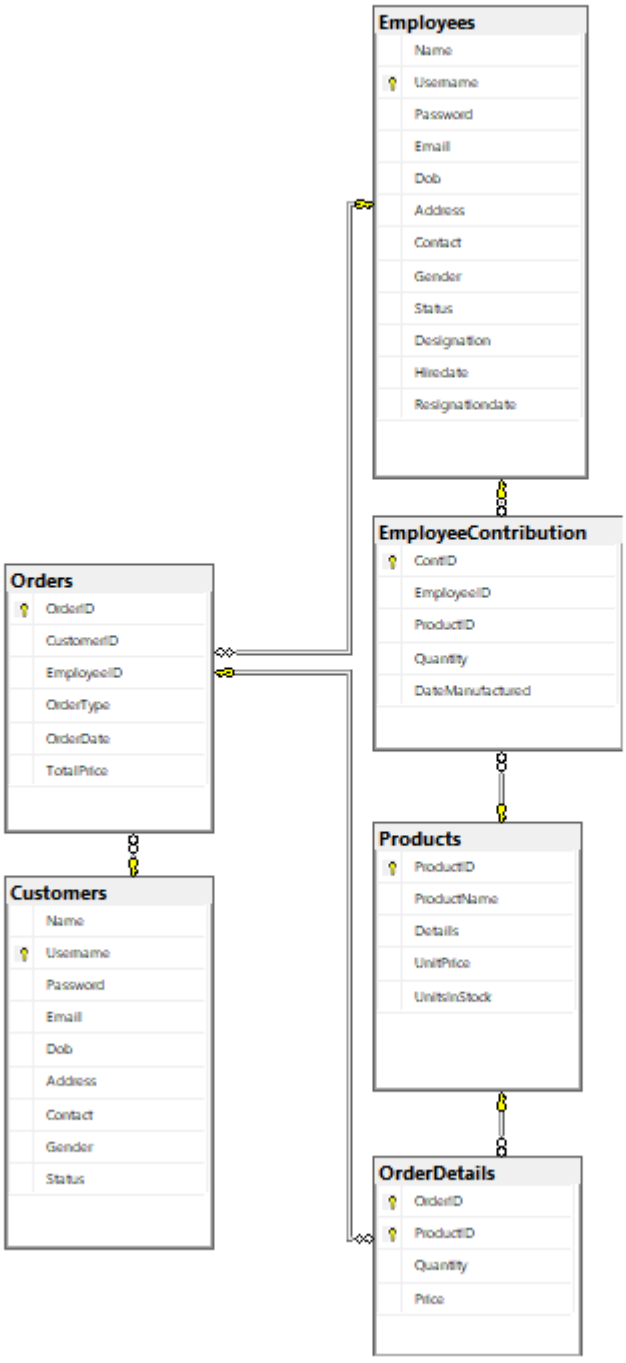
```
                try
                {
                    // Attempt to get employee details
                    EmployeeBL employee = ObjectHandler.GetEmployeeDL().GetEmployeebyUsername(username);
                    if (employee != null)
                    {
                        // Display employee details and confirm deletion
                        Console.WriteLine($"\n\n{"Name",-15}{"Username",-15}{"Password",-15}{"Email",-15}{"DOB",-
15}{"Address",-15}{"Contact",-15}{"Gender",-15}{"Designation",-15}{"Join Date",-15}");
                        EmployeeUI.PrintEmployeeInfo(employee);
                        string op = Utility.YesNoOption();
                        if (op == "Y")
                        {
                            // Remove employee from data layer
                            op = ObjectHandler.GetEmployeeDL().RemoveEmployee(username);
                            if (op == "True")
                            {
                                Utility.PressAnyKeyToContinue("\nEmployee deleted successfully!");
                            }
                            else
                            {
                                Utility.PressAnyKeyToContinue("\nEmployee data not deleted!");
                            }
                        }
                        else
                        {
                            Utility.PressAnyKeyToContinue("\nEmployee data not deleted!");
                        }
                    }
                    else
                    {
                        Utility.PressAnyKeyToContinue("\nEmployee data not found!");
                    }
                }
                catch (Exception ex)
                {
                    Utility.PressAnyKeyToContinue(ex.Message);
                }
            }
            // If the user chooses to update an employee
            else if (option == "3")
            {
                // Display header for updating employee
                Console.Clear();
                Utility.UpdateEmpHeader();

                // Gather username input to update employee data
                string username = Utility.Input("employee username");
                try
                {
                    // Attempt to get employee details
                    EmployeeBL employee = ObjectHandler.GetEmployeeDL().GetEmployeebyUsername(username);
                    if (employee != null)
                    {
                        string email = employee.GetEmail();
                        // Display employee details and prompt for update
                        Console.WriteLine($"\n\n{"Name",-15}{"Username",-15}{"Password",-15}{"Email",-15}{"DOB",-
15}{"Address",-15}{"Contact",-15}{"Gender",-15}{"Designation",-15}{"Join Date",-15}");
                        EmployeeUI.PrintEmployeeInfo(employee);
                        // Update employee information
                        employee = EmployeeUI.UpdateEmployee(employee, email);
```

```
                        string op = ObjectHandler.GetEmployeeDL().UpdateEmployee(employee, username, email);
                        if (op == "True")
                        {
                            Utility.PressAnyKeyToContinue("\nEmployee updated successfully!");
                        }
                        else
                        {
                            Utility.PressAnyKeyToContinue("\nEmployee data not updated!");
                        }
                    }
                    else
                    {
                        Utility.PressAnyKeyToContinue("\nEmployee data not found!");
                    }
                }
                catch (Exception ex)
                {
                    Utility.PressAnyKeyToContinue(ex.Message);
                }
            }
            // If the user chooses to view all employees
            else if (option == "4")
            {
                // Display header for viewing all employees
                Console.Clear();
                Utility.ViewEmpHeader();

                // Retrieve all employees with a specific designation
                List<EmployeeBL> employees = ObjectHandler.GetEmployeeDL().GetEmployeesByDesignation("SalesPerson",
"Active");

                // Display all employees
                Console.WriteLine($"\n\n{"Name",-15}{"Username",-15}{"Password",-15}{"Email",-15}{"DOB",-15}{"Address",-
15}{"Contact",-15}{"Gender",-15}{"Designation",-15}{"Join Date",-15}");
                foreach (EmployeeBL emp in employees)
                {
                    EmployeeUI.PrintEmployeeInfo(emp);
                }
                Utility.PressAnyKeyToContinue("\nAll employees data!");
            }
            // If the user chooses to go back to the main menu
            else if (option == "5")
            {
                break; // Exit the current loop to return to the main menu
            }
            // If the user enters an invalid option
            else
            {
                Utility.PressAnyKeyToContinue("Wrong user input!");
            }
        }
    }
    // If the user chooses option 2 (Exit)
    else if (option == "2")
    {
        // Exit the application
        Environment.Exit(0);
    }
    // If the user enters an invalid option
    else
    {
```

```
                Utility.PressAnyKeyToContinue("Wrong user input!");
            }
        }
    }
  }
}
```

CRC:


Employees
Name
Username
Password
Email
Dob
Address
Contact
Gender
Status
Designation
Hiredate
Resignationdate
EmployeeContribution
ContID
EmployeeID
ProductID
Quantity
DateManufactured
Orders
OrderID
CustomerID
EmployeeID
OrderType
OrderDate
TotalPrice
Products
ProductID
ProductName
Details
UnitPrice
UnitsInStock
Customers
Name
Username
Password
Email
Dob
Address
Contact
Gender
Status
OrderDetails
OrderID
ProductID
Quantity
Price


Employees
Name
Username
Password
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Dob
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Gender
Status
Designation
Hiredate
Resignationdate
EmployeeContribution
ContID
EmployeeID
ProductID
Quantity
DateManufactured
Orders
OrderID
CustomerID
EmployeeID
OrderType
OrderDate
TotalPrice
Products
ProductID
ProductName
Details
UnitPrice
UnitsInStock
Customers
Name
Username
Password
Email
Dob
Address
Contact
Gender
Status
OrderDetails
OrderID
ProductID
Quantity
Price