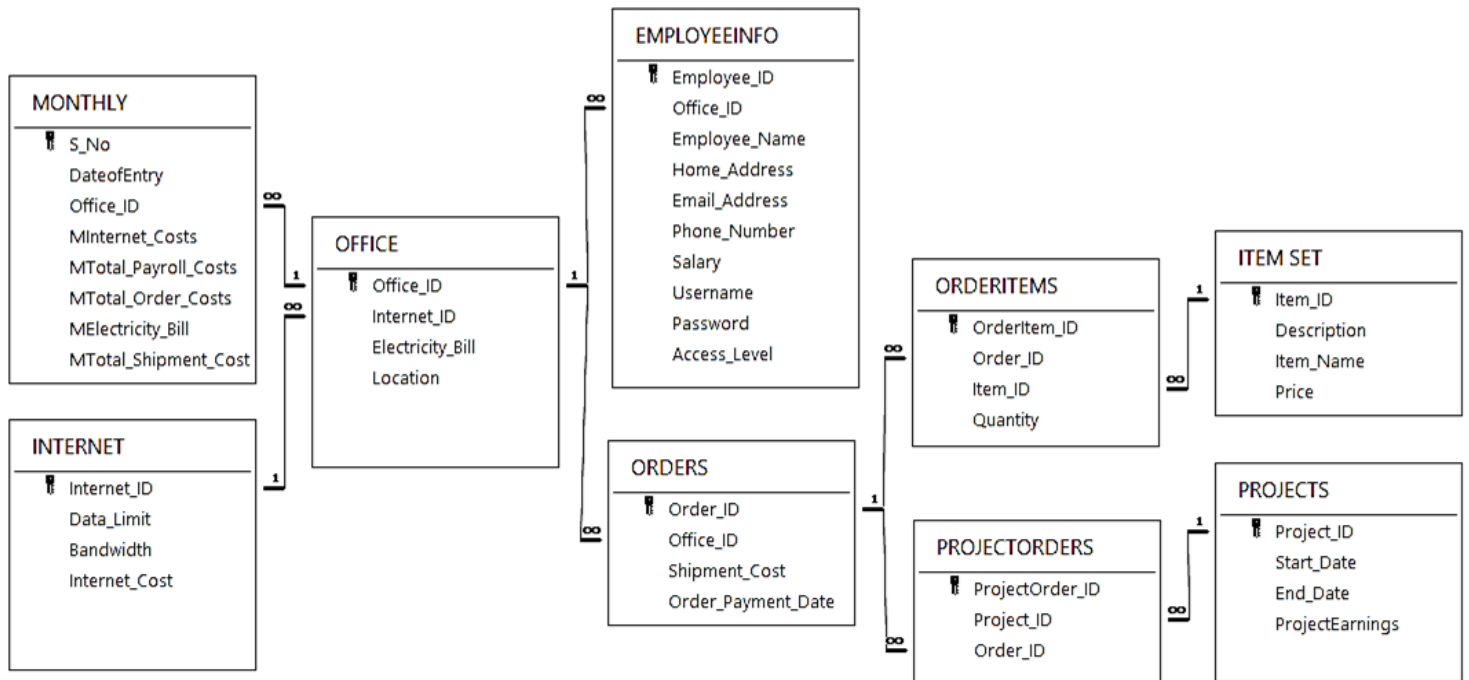


## Entity Relationship Diagram



 - Primary Key

## Tables showing Fields and Data Types

**Table: EMPLOYEEINFO**

Field Name	Data Type	Description	Other Details
Employee_ID	AutoNumber	Uniquely identifies an employee	Primary Key
Office_ID	Number	ID of an office	Foreign Key from OFFICE
Employee_Name	Text	Name of the employee	-
Home_Address	Text	Address of the employee	-
Email_Address	Text	Employee's contact email address	-
Phone_Number	Text	Employee's contact phone number	-
Salary	BigDecimal	Salary of the employee	-

Username	Number	Uniquely the account of the employee	-
Password	Text	Authentication to log into account	-
Access Level	Number	Level of authorization	-

**Table: OFFICE**

Field Name	Data Type	Description	Other Details
Office_ID	Number	Uniquely identifies an office	Primary Key
Internet_ID	Number	Gives information about internet usage and plan	Foreign Key from INTERNET
Electricity_Bill	BigDecimal	Cost of the electricity in an office	-
Location	Text	Gives the location of the office	

**Table: PROJECTS**

Field Name	Data Type	Description	Other Details
Project_ID	AutoNumber	Uniquely identifies the ongoing project	Primary Key
Start_Date	Date/Time	Date the project was started	-
End_Date	Date/Time	Date the project is finished	-
ProjectEarnings	BigDecimal	Payment received after completion of project	-

**Table: PROJECTORDERS**

Field Name	Data Type	Description	Other Details
ProjectOrder_ID	AutoNumber	Uniquely identifies multiple orders for a project	Primary Key
Project_ID	Number	ID of the Project	Foreign Key from PROJECTS
Order_ID	Number	ID of the Order	Foreign Key from ORDERS

**Table: ORDERITEMS**

Field Name	Data Type	Description	Other Details
OrderItem_ID	AutoNumber	Uniquely identifies multiple items in orders	Primary Key
Order_ID	Number	ID of an Order	Foreign Key from ORDERS
Item_ID	Number	ID of the item ordered	Foreign Key from ITEM SET
Quantity	Number	Quantity of items needed	-

**Table: ORDERS**

Field Name	Data Type	Description	Other Details
Order_ID	AutoNumber	Uniquely identifies order	Primary Key
Office_ID	Number	Identifies the office	Foreign Key from OFFICE
Shipment_Cost	BigDecimal	Cost of shipping the items	-
Order_Payment_Date	Date/Time	Date of the payment of the order	-

**Table: ITEMSET**

Field Name	Data Type	Description	Other Details
Item_ID	Number	Uniquely identifies item ordered	Primary Key
Description	Text	Description of the item	-
Item_Name	Text	Name of the item	-
Price	BigDecimal	Price of item	-

**Table: INTERNET**

Field Name	Data Type	Description	Other Details
Internet_ID	Number	Uniquely identifies internet plan	Primary Key
Data_Limit	Text	Data limit of the plan	-
Bandwidth	Text	Speed of the plan	-
Internet_Cost	BigDecimal	Cost of the plan	-

**Table: MONTHLY**

Field Name	Data Type	Description	Other Details
S_No.	AutoNumber	Uniquely identifies each record for the monthly office costs	Primary Key
DateofEntry	Date/Time	Used to store the time and date of the automatic entry of records	-
Office_ID	Number	Automatically stores the Office_ID every month	Foreign Key from OFFICE
MInternet_Costs	BigDecimal	Automatically stores the cost of the internet plan, for that month, every month	-
MTotal_Payroll_Costs	BigDecimal	Automatically stores the total payroll costs, for that month, every month	-

MTotal_Order_Costs	BigDecimal	Automatically stores the costs of all orders, for that month, every month	-
MElectricity_Bill	BigDecimal	Automatically stores the cost of the electricity bill, for that month, every month	-
MTotal_Shipment_Costs	BigDecimal	Automatically stores the costs of all shipments, for that month, every month	-

## Proposed Query

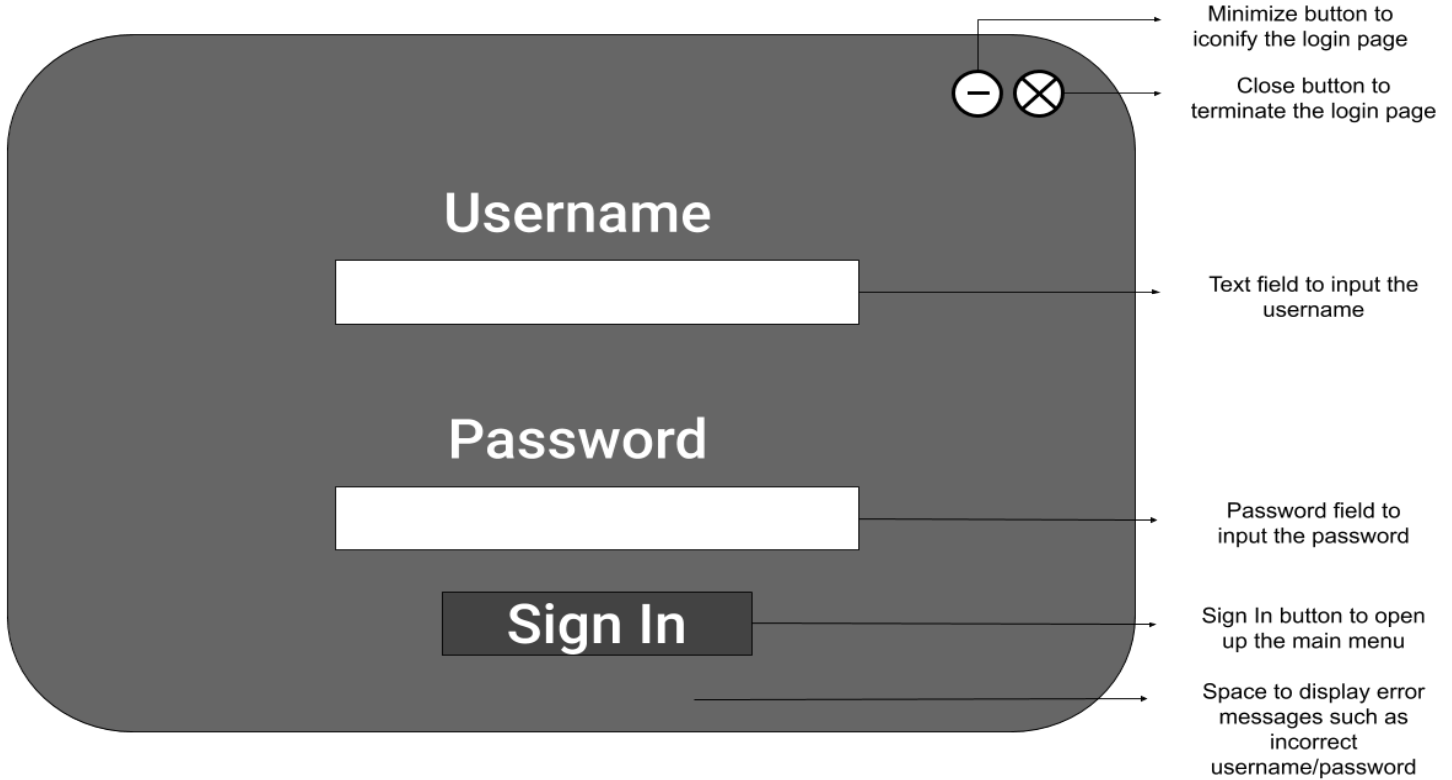
Query name	Purpose	Additional Information
QueryMonthlyExpenses	Provide base query for Report Expense List	Tables required: OFFICE, INTERNET, EMPLOYEES, ORDERS, ITEM SET Search: to find orders for the current month.
QueryOrderPayments	Provide base query for Report Upcoming Order Payments	Table: ORDERS Search: none
QueryOngoingProjects	Provide base query for Report Ongoing Projects	Table: PROJECTS Search: to find projects where current date is between Start_Date and End_Date

## Proposed Reports

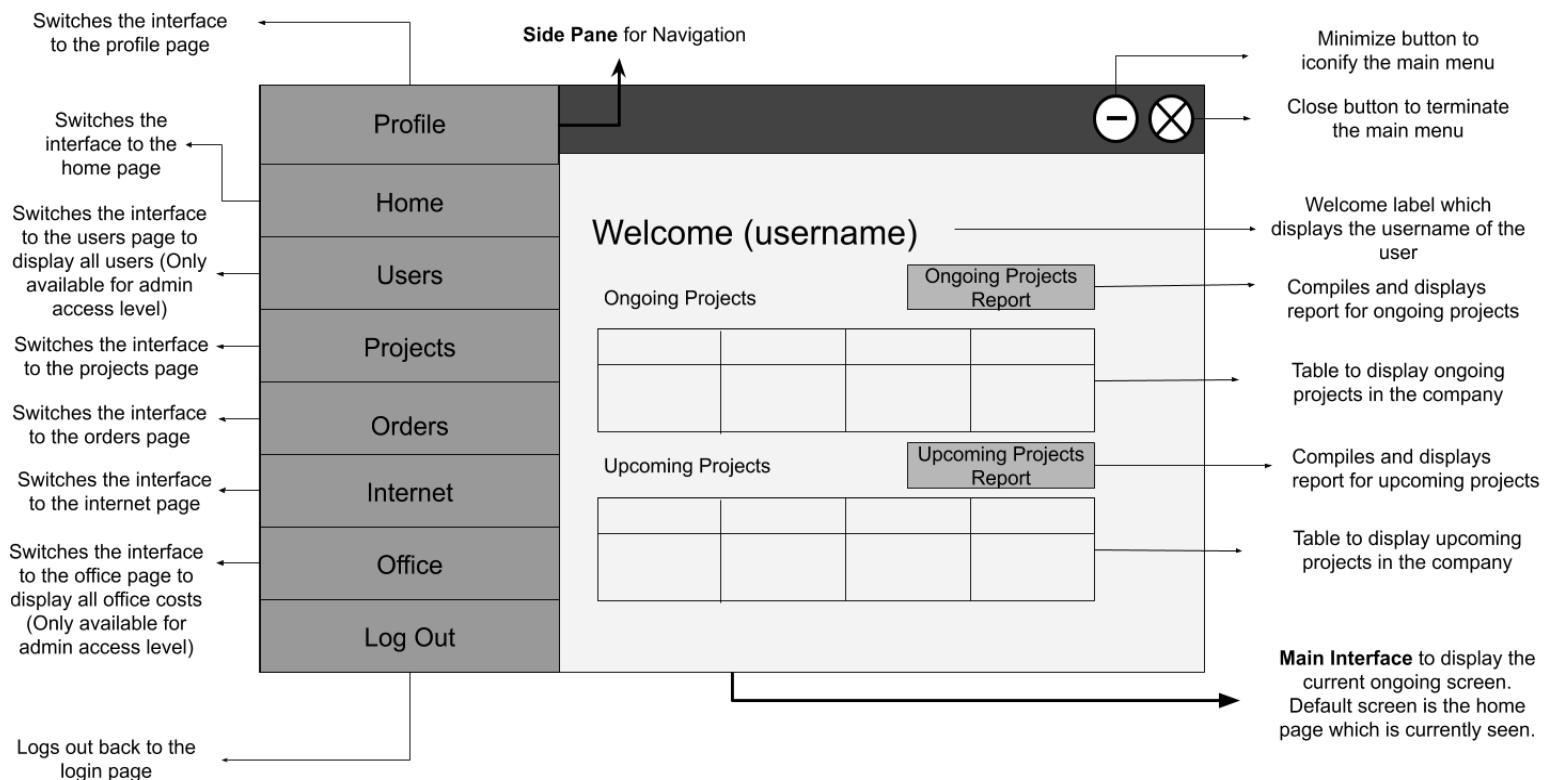
Report Name	Outline
Expense List	Shows the monthly expenses of the company. Based on QueryMonthlyExpenses
Upcoming Order Payments	Shows all the upcoming payments for the upcoming week. Based on QueryOrderPayments
Ongoing Projects	Displays all the projects which are currently ongoing. Based on QueryOngoingProjects.

# Design of the Product (GUI)

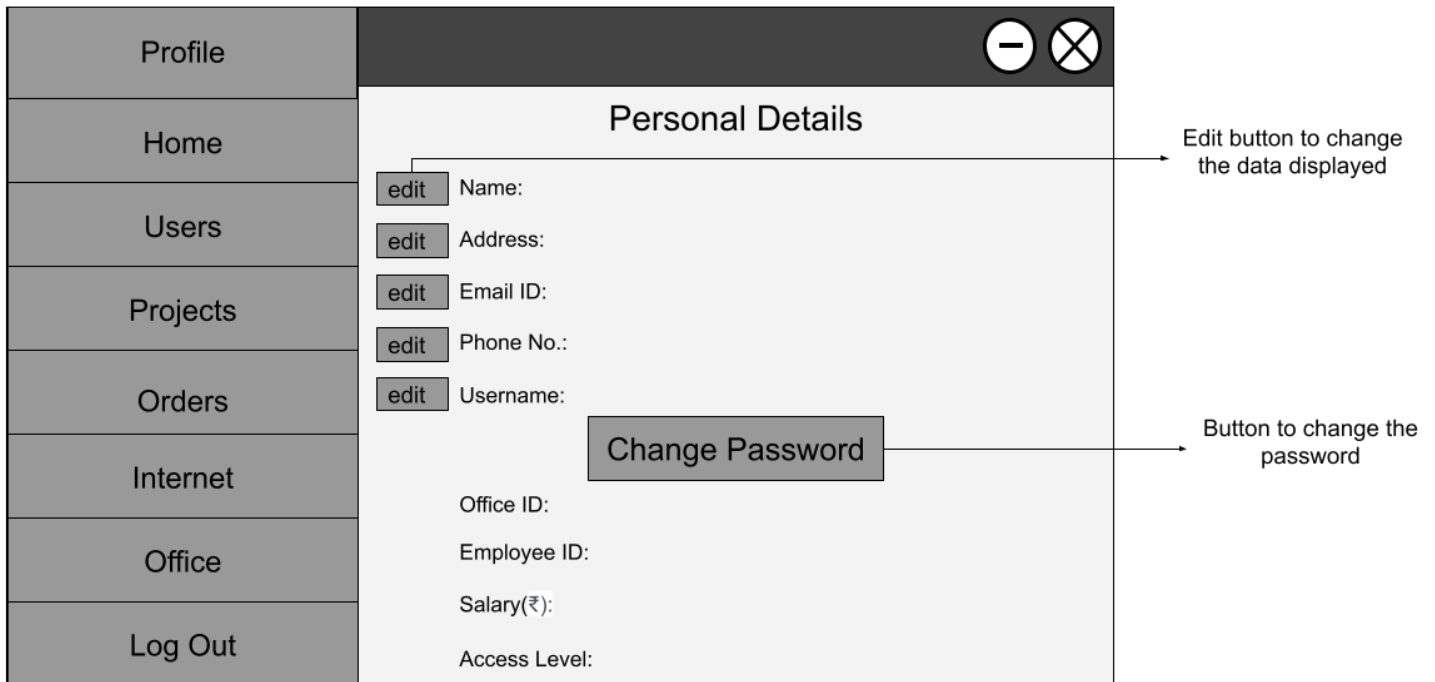
## Login Interface:



## Main Menu Interface (Home Page):



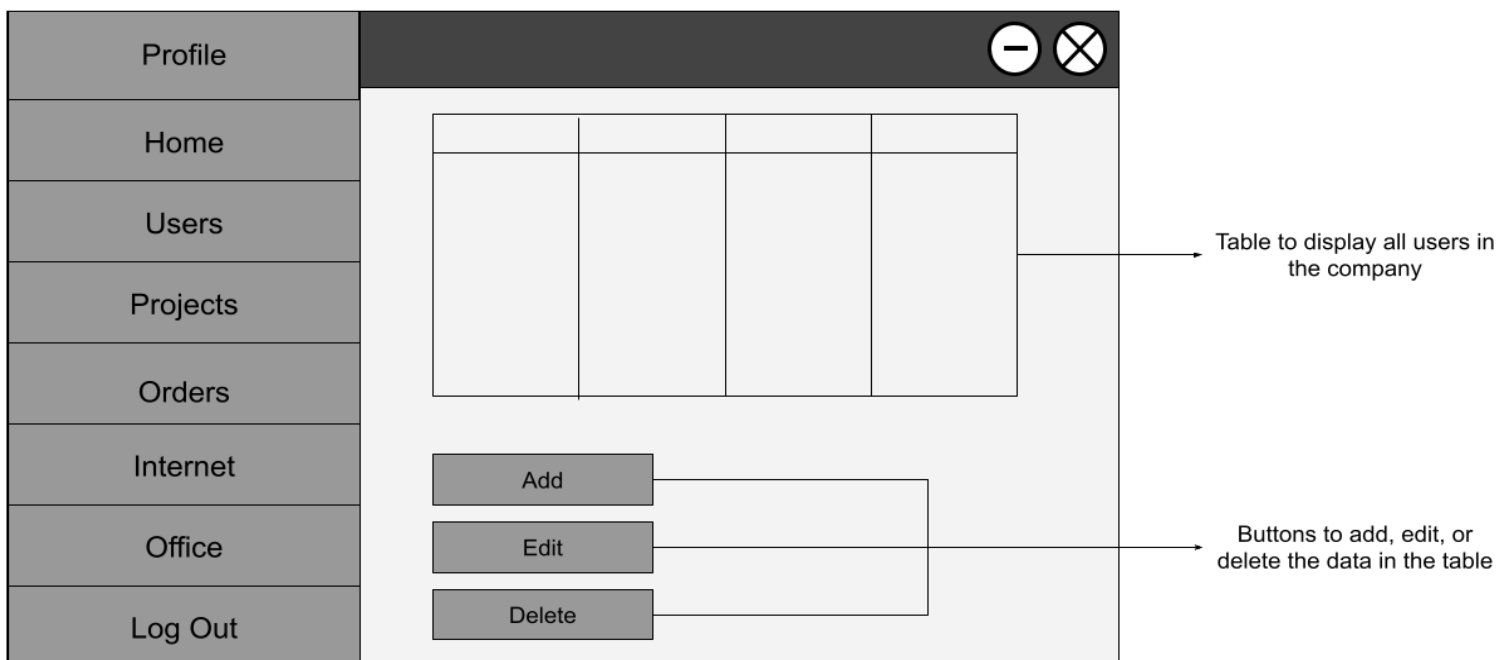
## Profile Page Interface:



The Profile Page Interface consists of a sidebar menu on the left and a main content area. The sidebar menu includes: Profile, Home, Users, Projects, Orders, Internet, Office, and Log Out. The main content area is titled "Personal Details" and contains several form fields, each with an "edit" button to its left: Name, Address, Email ID, Phone No., and Username. Below these fields is a "Change Password" button. At the bottom of the main content area, there are four labels: Office ID, Employee ID, Salary(₹), and Access Level. Annotations on the right side of the interface point to the "edit" button for the Name field, stating "Edit button to change the data displayed", and the "Change Password" button, stating "Button to change the password".

Menu Item	Form Field	Action
Profile	Name	edit
Home	Address	edit
Users	Email ID	edit
Projects	Phone No.	edit
Orders	Username	edit
Internet	Change Password	Change Password
Office	Office ID	
Log Out	Employee ID	
	Salary(₹)	
	Access Level	

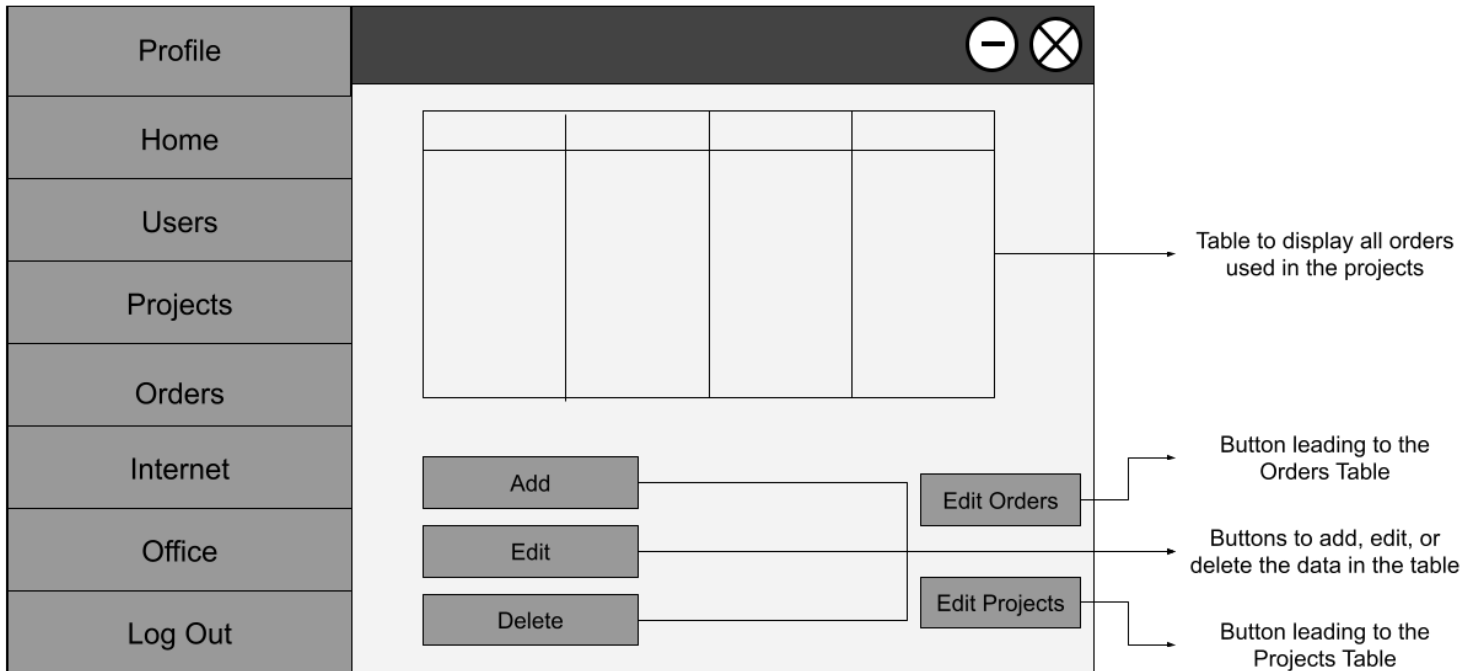
## Users Page Interface:



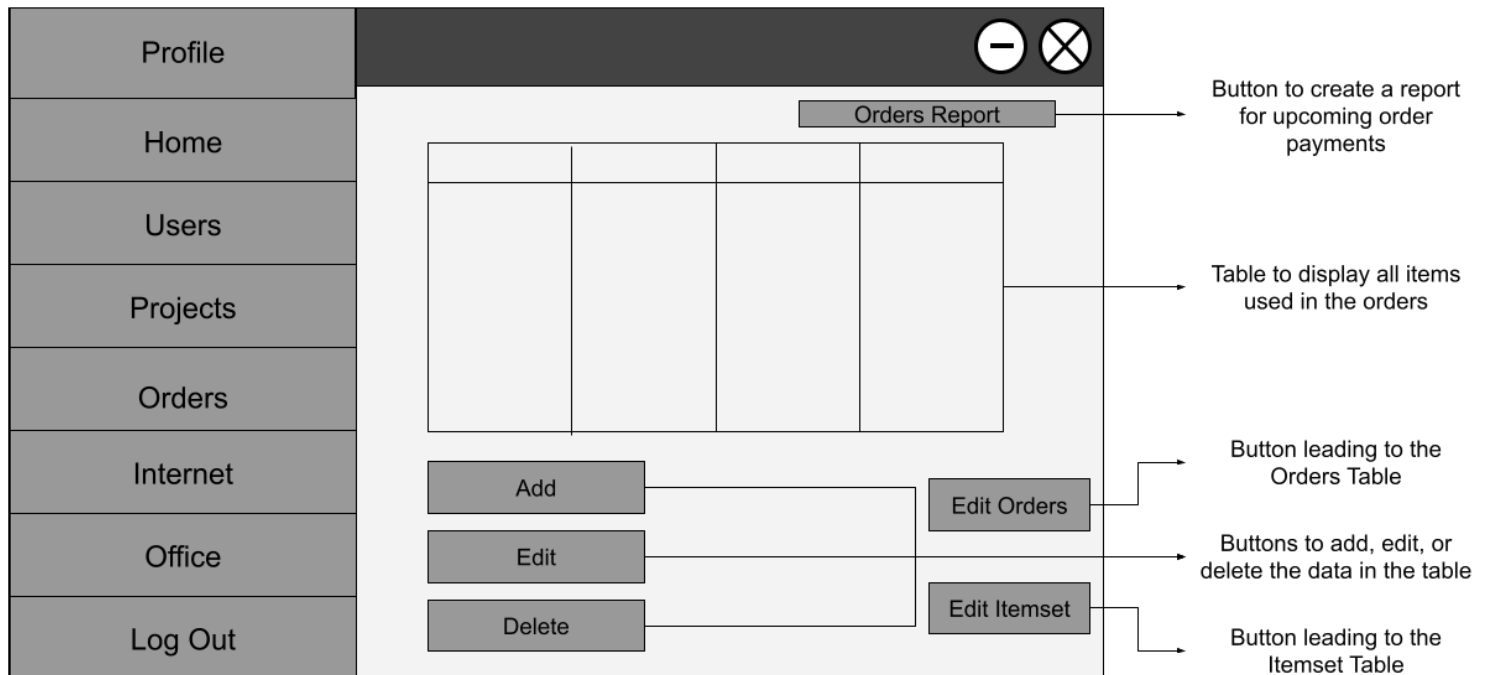
The Users Page Interface consists of a sidebar menu on the left and a main content area. The sidebar menu includes: Profile, Home, Users, Projects, Orders, Internet, Office, and Log Out. The main content area features a table with 4 columns and 2 rows. Below the table are three buttons: Add, Edit, and Delete. Annotations on the right side of the interface point to the table, stating "Table to display all users in the company", and the buttons, stating "Buttons to add, edit, or delete the data in the table".

Menu Item	Table	Action
Profile	Table (4 columns, 2 rows)	Add, Edit, Delete
Home		
Users		
Projects		
Orders		
Internet		
Office		
Log Out		

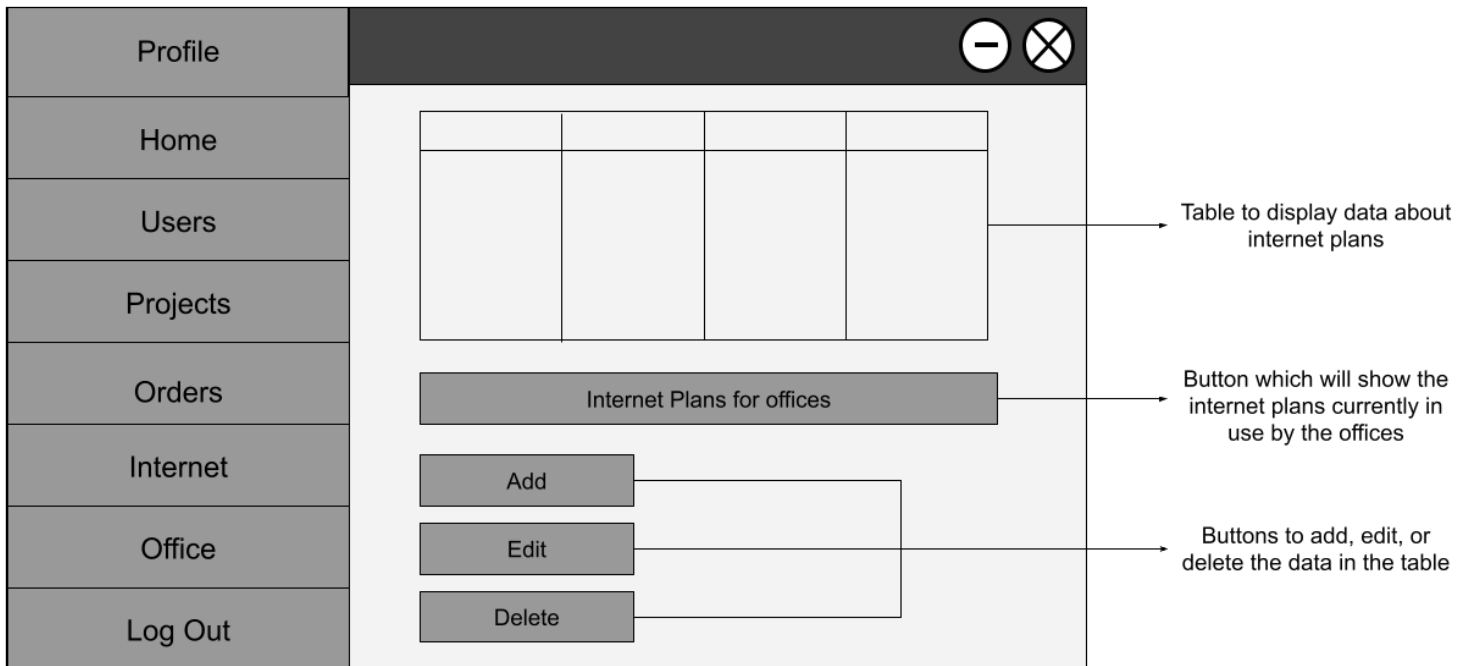
## Projects Page Interface:



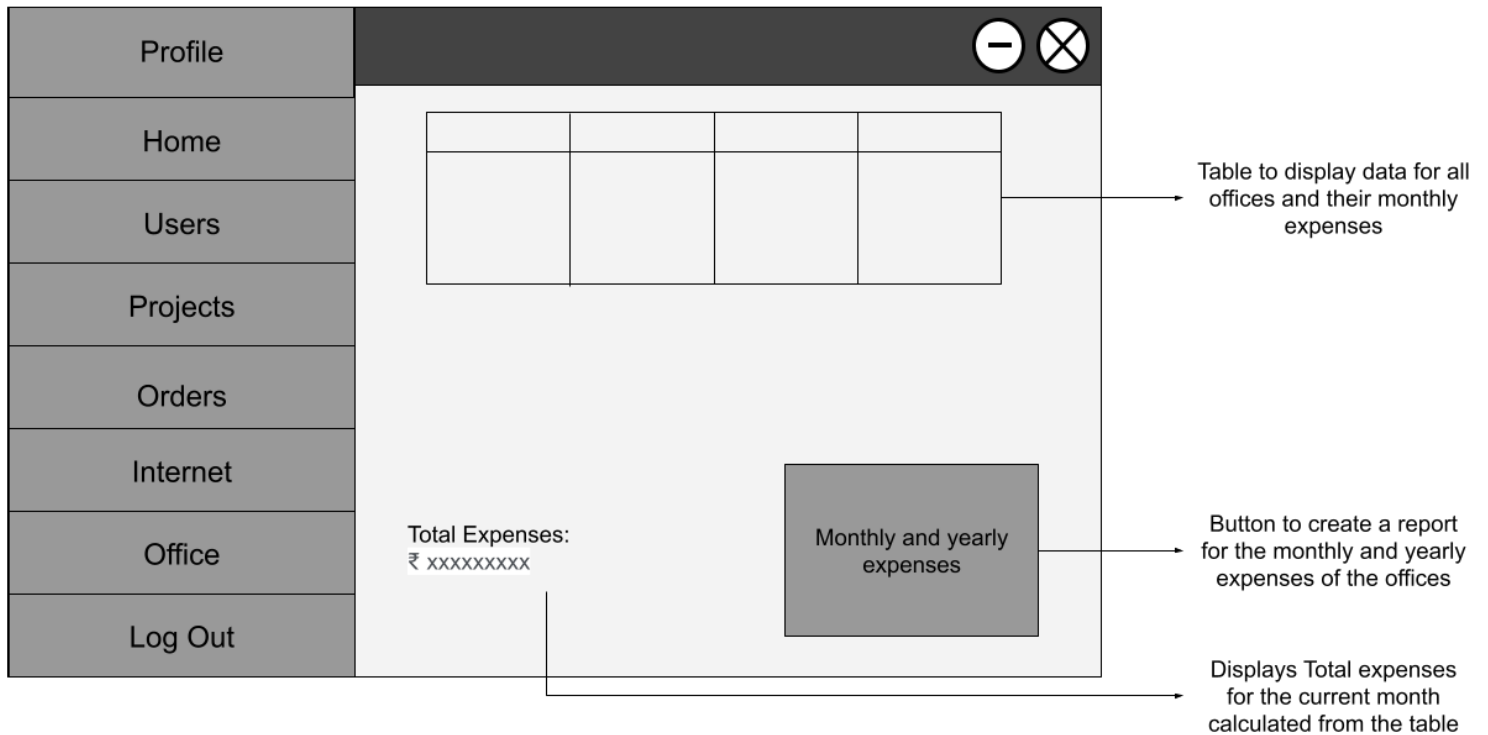
## Orders Page Interface:



## Internet Page Interface:



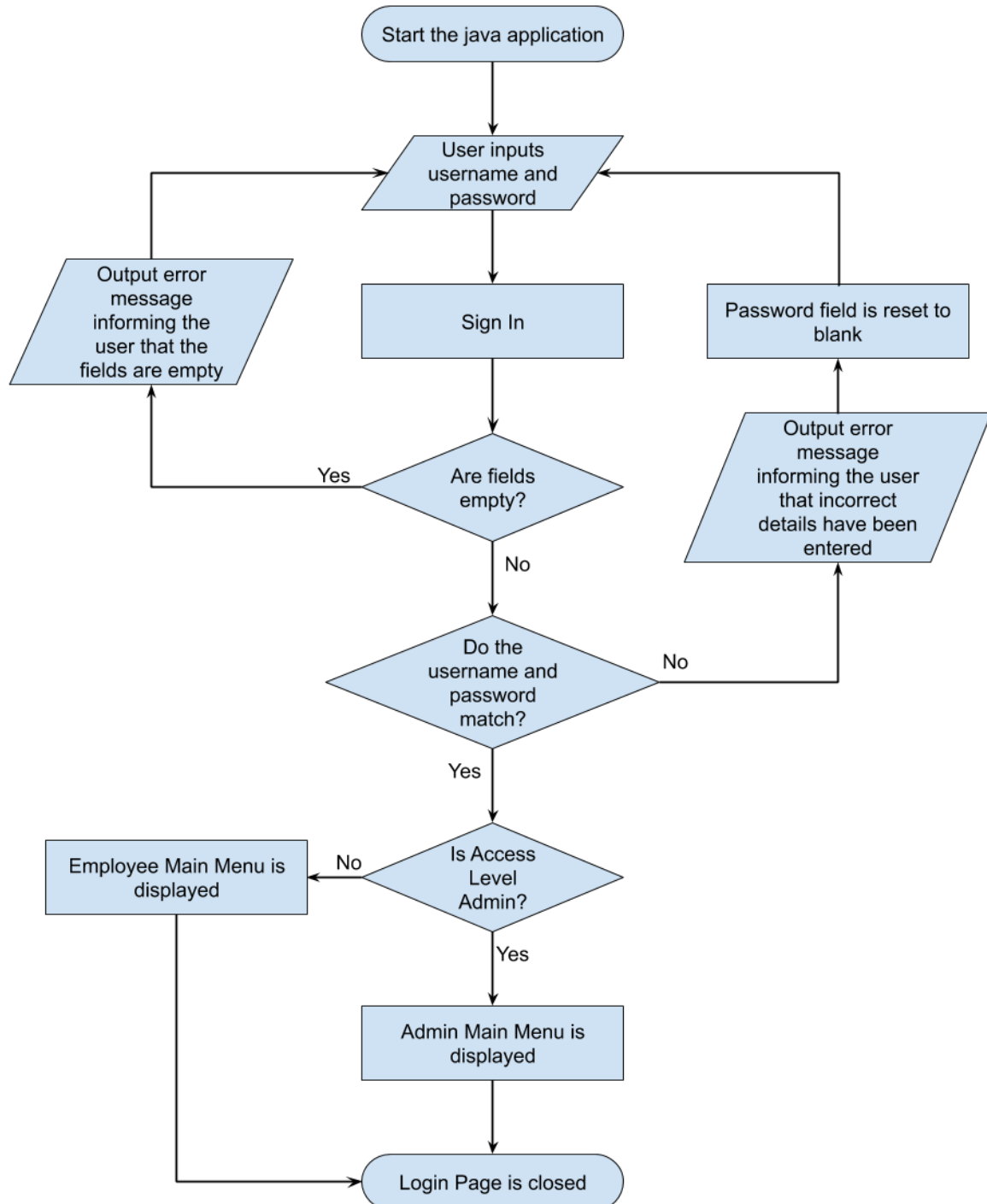
## Office Page Interface:





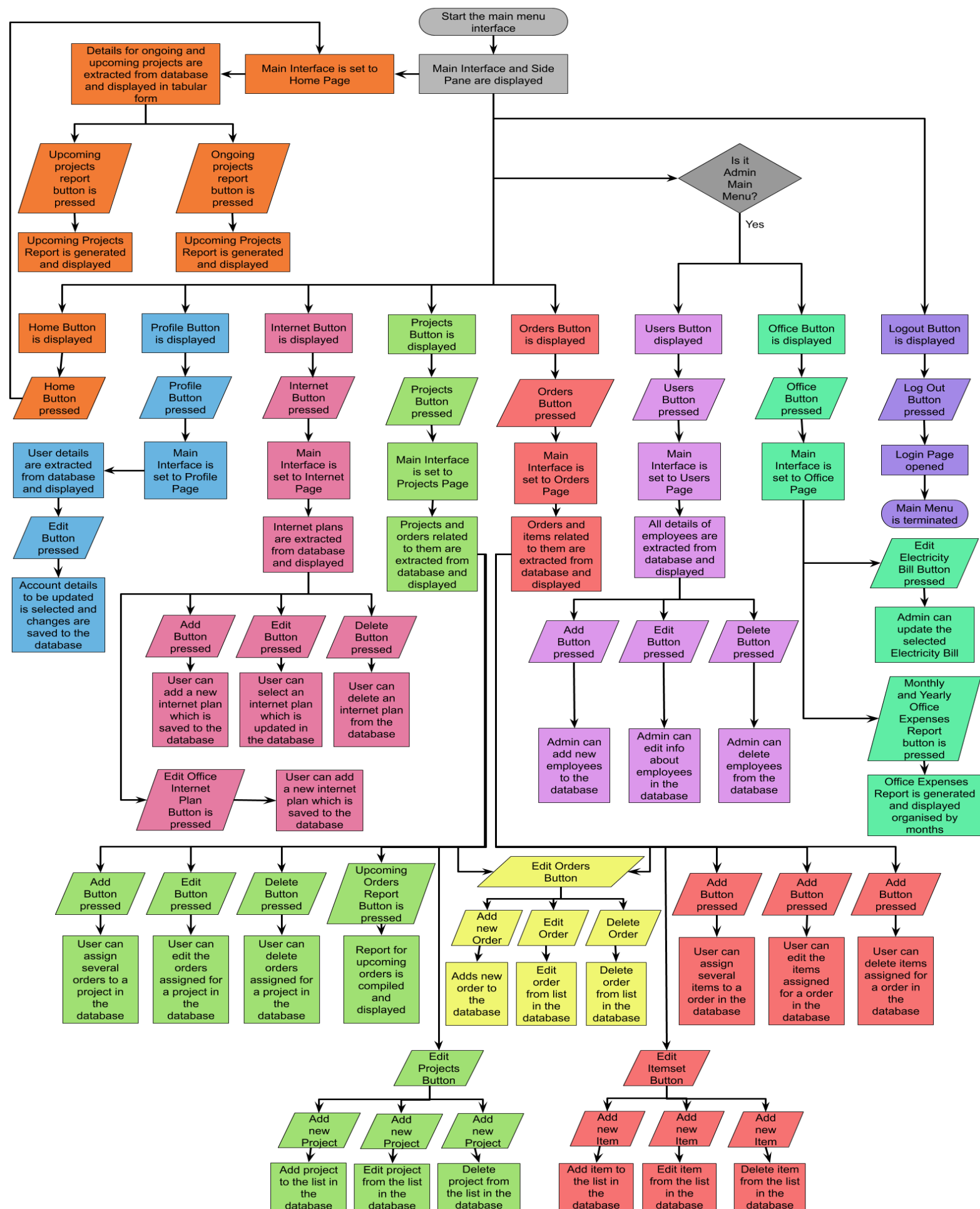
## Design of the Product (Diagrams)

### Login Flowchart:



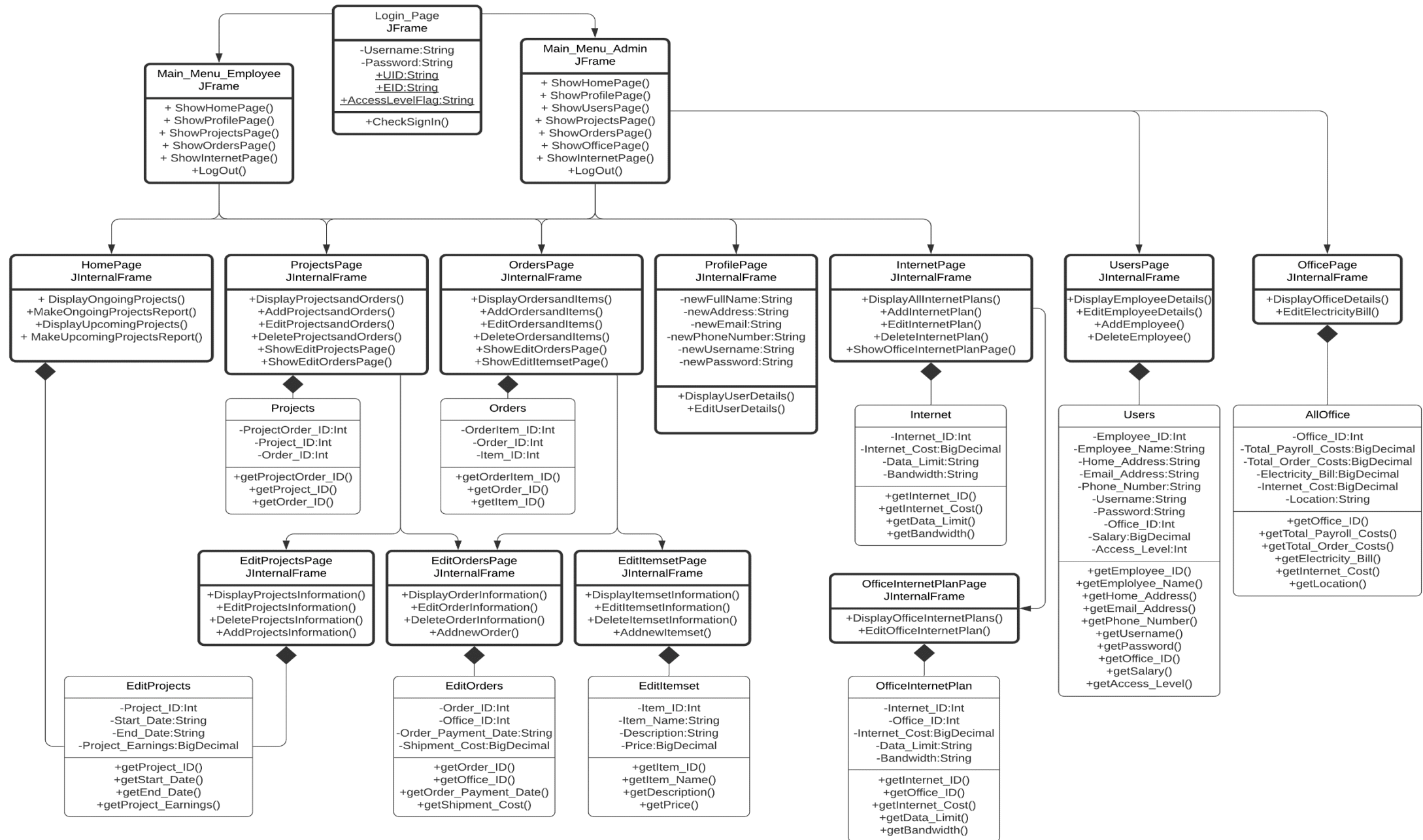
# Main Menu Flowchart:

The flowchart is colour coded to make navigation easier. Each colour shows one branch of the flowchart of the interface through which a table can be updated. Yellow is an exception as it can be accessed through two different pages.



# UML Diagram:

This UML Diagram only shows the important attributes and operations. The variables UID and EID are used in several classes for querying data. AccessLevelFlag is used to ensure that employees and admin are directed to the different interfaces. Passive classes are used for the construction of the tables in their respective active classes.



## Testing of the product:

Test type	Method to Test and Expected Result
MySQL Database connectivity with NetBeans IDE and Java	Use MySQL queries to enter data into the database or retrieve data from the database. The data entered should be visible on the database and the data retrieved should be displayed on the screen.
Authentication is required by asking the user to enter their login details before providing access to the GUI and correct interface is displayed according to the access level	<p>1) After starting the application, the user should be asked to enter their username and password. Inputting incorrect username and password should result in an appropriate error message. Example- "Incorrect Password."</p> <p>2) Enter username and password for employee and admin to check if the correct main menu is displayed. If the access level for the entered username and password is 1, then admin interface should be displayed and if it is 2, the employee interface should be displayed.</p>
Calculating office expenses accurately	Use test values and look at the result to see if the results of the calculations match the expected results which can be obtained by manual calculations.
Relationships between the tables created correctly	<p>1) Delete a record in the parent table. The data should not be deleted if it exists in another table as a foreign key as it is restricted. Instead, an error is shown.</p> <p>2) Update record in the parent table. The data should cascade to the other tables where it exists as a foreign key.</p> <p>3) Before adding the data in the parent table, it should not be usable from the child table as a foreign key. Instead, an appropriate error is displayed.</p>
Data Validation for input works as properly	Create a new record for a table through the data entry forms and add the wrong data type. An error is displayed stating that the wrong data type has been entered. Example- Input 'One' instead of 1.
The queries for the 'Add' buttons in data entry forms works as expected	<p>1) Enter data into the data entry form and press the confirm button. The data should be added to the table as a record and should be visible in the database.</p> <p>2) Click the cancel button. No changes should be made to the database.</p>
The queries for the 'Edit buttons in data entry forms works as expected	<p>1) Select data to be changed and edit it in the data entry form. Press the update button. The changes should be visible in the database.</p> <p>2) Click the cancel button. No changes should be made to the database.</p>
The queries for the 'Delete' buttons in data entry forms works as expected	Select the data and press the delete button. The data should be removed from the database.
Queries for event scheduler to add data into 'Monthly' table, which is required for monthly and yearly reports, works properly	Set the system date and time to before a new month starts. When the new month starts, the appropriate data should be entered into the monthly table according to the query designed.
Queries to display information	Open any page where data is displayed from the database. The data displayed should match the current data within the database.
Reports are compiled and displayed correctly	Click on a create report button. The report should correctly display all the data. In case new data is entered when the report is recompiled it should be shown in the report. The report should be printed as it is shown.