

ACE Express Bus Reservation
Programme Manual

Table Of Contents

Introduction.....	3
Architectural Designs.....	4
Procedural Designs.....	9
Pseudocodes.....	10
User Interface Designs.....	20
Login Section.....	20
Dispatcher Section.....	21
Employee Section.....	24
Human Resource Section.....	27
User Feedback.....	30
Login Menu.....	30
Dispatcher Menu.....	32
Human Resource Menu.....	35
Dialogs.....	38
Software Testing.....	40
Bibliography.....	71
Appendices.....	72
Programme Manual.....	74
Database Design.....	87
Database structure.....	87
External File Structure (if any).....	87
Global Data (if any).....	87
User Manual.....	88
Implementation Method.....	88
Training methods employed.....	88
ACE Express Reservation Application User Manual.....	89
Login Overview.....	89
Dispatcher Overview.....	92
Employee Overview.....	95
Human Resource Overview.....	100
How to create a user profile.....	101
How to update user profile.....	102
How to Change user password.....	106
How to Delete User Account.....	108
How to logout.....	110

Introduction

Ace Express Pick-Up is a transport management service that coordinates employee transport details. Administrators validate contact data, dispatchers assign drivers, and drivers log pick-up and drop-off times. The project provides a centralized system for managing employee transport, with features for clients to update pick-up info, drivers to log times, and employees to manage profiles, select seats, and view tickets.

The project requires a database for storing transport details, a user-friendly interface for different roles, and secure login. Non-functional needs include reliability, scalability, security, and quick performance.

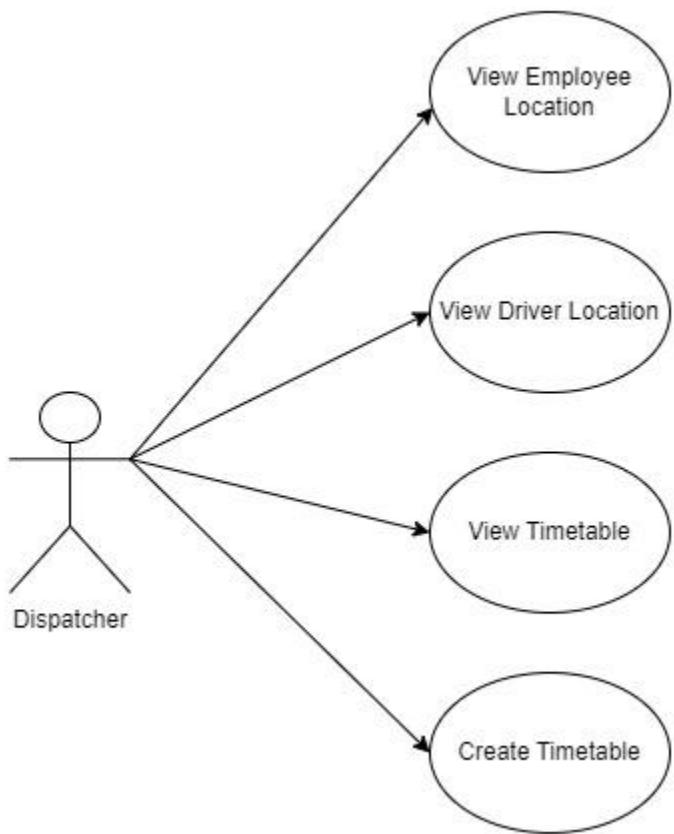
Hardware requirements involve servers for data processing, mobile devices for drivers, and GPS for real-time tracking. Input requirements include employee pick-up details, contact and profile updates, and seat selection. Output requirements consist of schedules for drivers, trip summaries for HR, user profiles, ticket receipts, payment records, and administrative reports on transport operations.

The system must ensure compatibility across devices, scalability for growth, strong security, optimal performance, and seamless integration with existing systems like GPS and payment services.

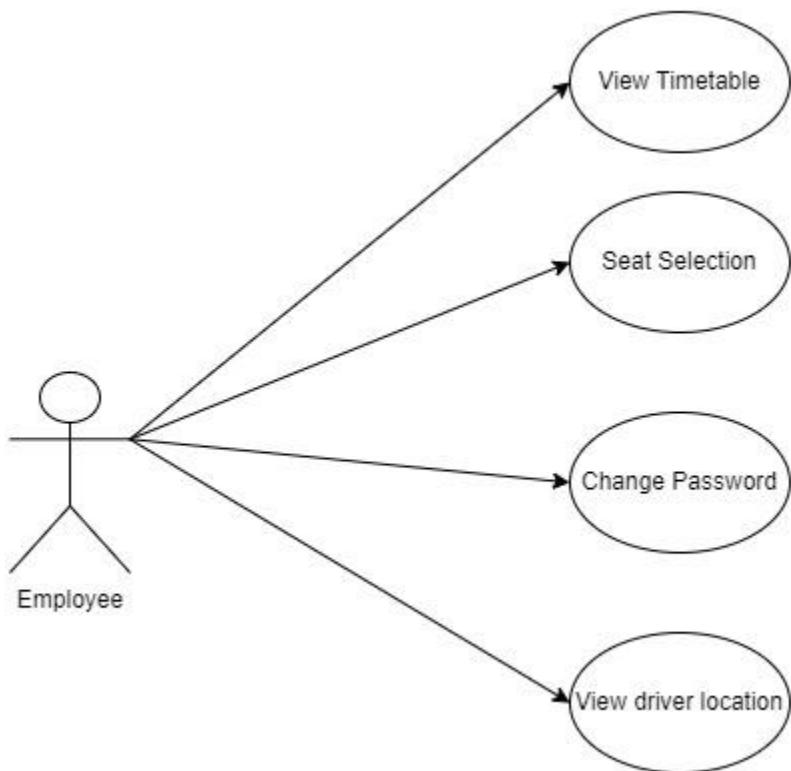
The design and implementation involved creating a transport management system with web and mobile access. Developers and designers built a user-friendly interface, integrated profile management, and secure authentication. The system was deployed on cloud servers, and IT staff maintained security and performance through regular updates and testing.

Architectural Designs

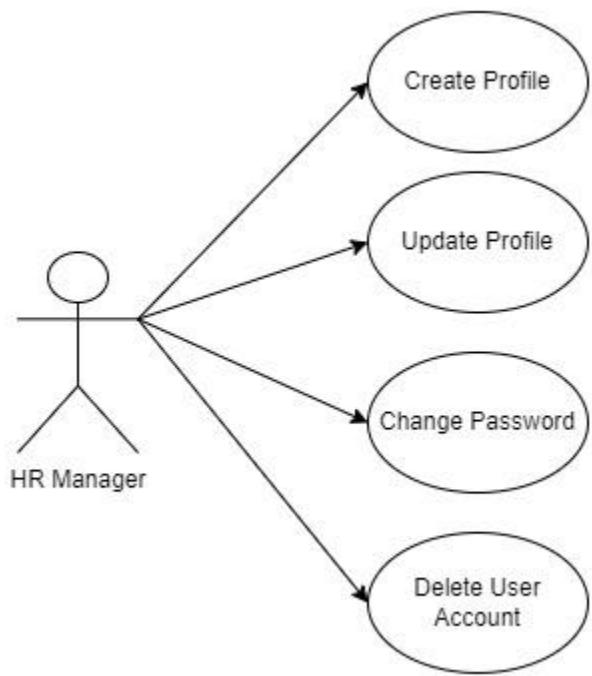
Dispatcher Use Case Diagram



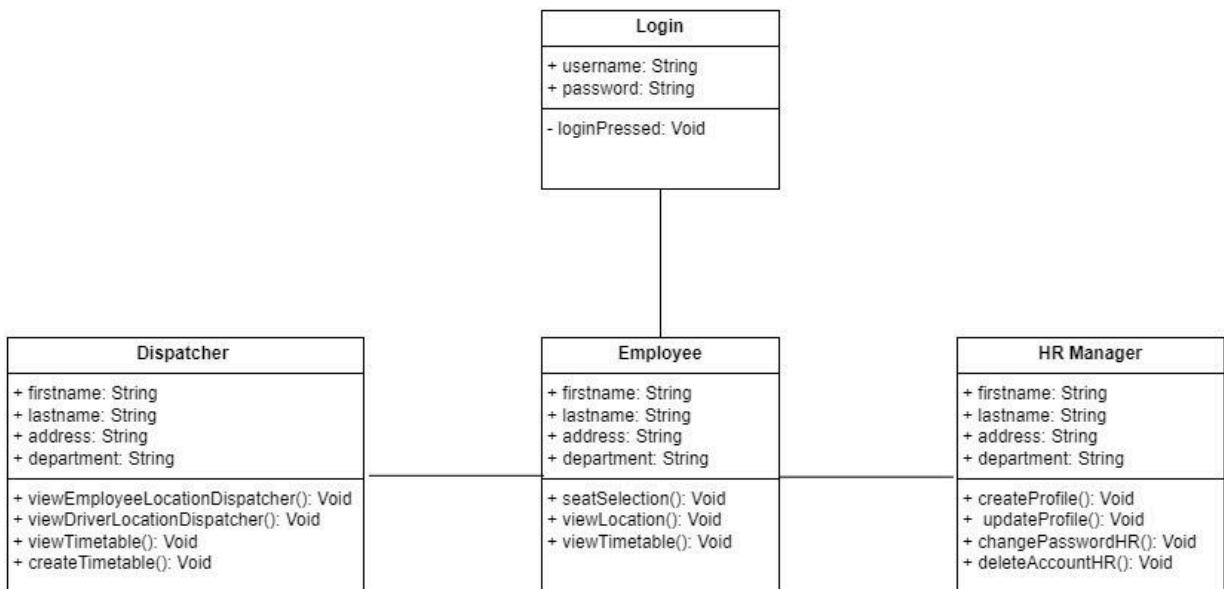
Employee Use Case Diagram



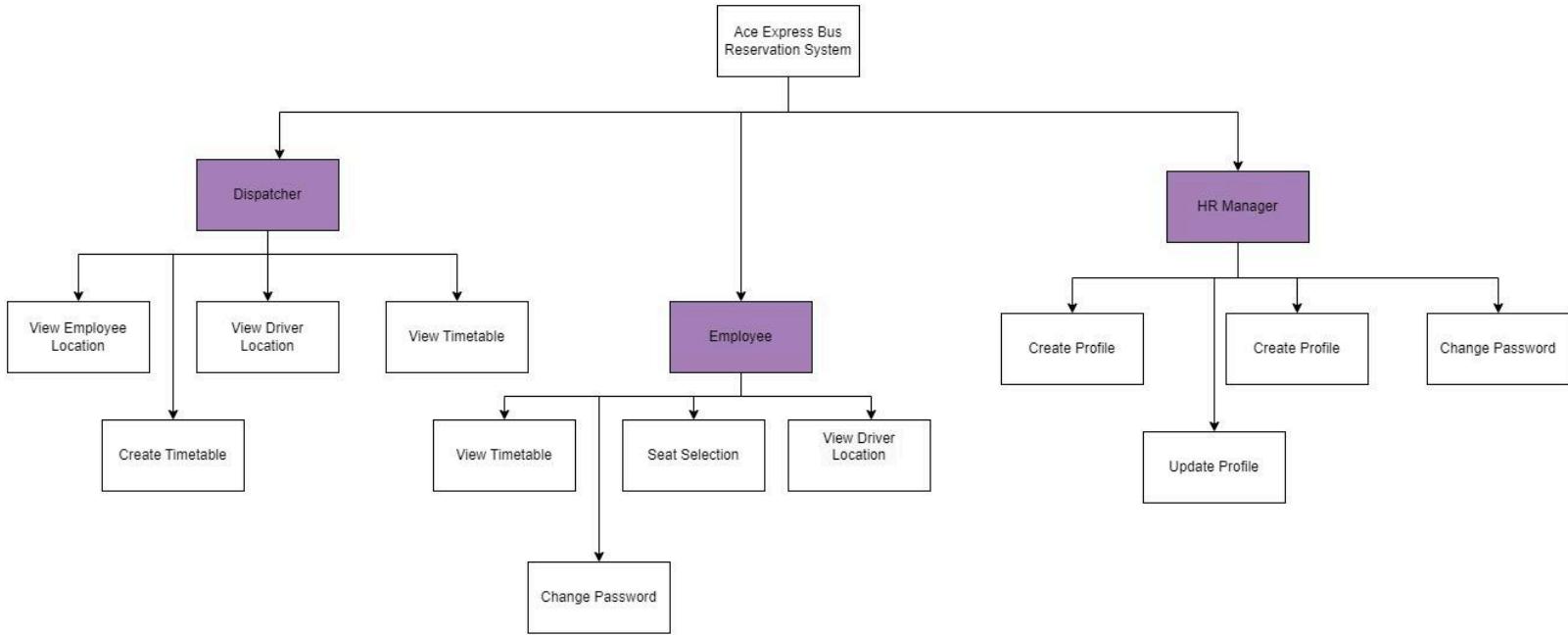
HR Manager Use Case Diagram



Class Diagram



Modular Decomposition Diagram



Procedural Designs

Ace Express Transportation is a Business Process Outsourcing company that provides transportation for employees. Their aim is to provide seamless transportation of client employees to their destination which is usually the client business place or employee's home. Once a client signs a contract with Ace Express their employees have to be registered and associated with their business. Employees should be able to book themselves a seat once they work for one of our clients. The most efficient way to accomplish this task is to allow registration and reservation through the app or web portal. To accomplish these tasks the following modules were created.

Employee module

Employee Module is used by the employees of the Ace Express clients. Functions in this module include Create a Profile, Change Password, Seat Selection, View Time Table and View Receipt. Each function is necessary to help each employee reserve a seat with ease and efficiency.

Dispatcher

The dispatcher module provides efficient use of Ace Express resources and helps to get the employees to their destinations in a timely manner. The dispatcher uses this module to View Employee Location, View Driver Location and also Create Time Tables. Using this information, they will be able to effectively manage company resources and get the employees to their destinations on time and efficiently.

HR Manager

The HR manager aids in the proper registration and management of employees. They are able to register employees. They are also the ones that delete employee information when they are no longer working with the company

Pseudocodes

Human Resource Pseudocode

humanResource()

 DECLARE firstname, lastname, address, department AS STRING

 WRITE firstname

 WRITE lastname

 WRITE address

 WRITE department

create_user_profile():

 DECLARE employee_number, firstname, lastname, telephone, department,
 supervisor_firstname AS STRING

 DECLARE supervisor_lastname, password, gender, address AS STRING

 DECLARE multiple_profiles AS BOOL

DOWHILE employee_number exist in database OR multiple_profiles == True

 WRITE "Add multiple profiles?"

 READ multiple_profiles

 WRITE "Enter Employee Number"

 READ employee_number

 WRITE "Enter firstname"

READ firstname

WRITE "Enter lastname"

READ lastname

WRITE "Enter Telephone"

READ telephone

WRITE "Enter Department"

READ department

WRITE "Enter Supervisor First Name"

READ supervisor_firstname

WRITE "Enter Supervisor Last Name"

READ supervisor_lastname

WRITE "Password"

READ password

WRITE "Enter Gender"

READ gender

WRITE "Enter Address"

READ address

IF employee_number exist in database

 WRITE "Employee number already exists, try another"

ELSE

 ADD user profile to database

ENDDO

update_user_profile():

DECLARE employee_number, firstname, lastname, telephone, department,
supervisor_firstname AS STRING

DECLARE supervisor_lastname, password, gender, address AS STRING

DECLARE multiple_profiles AS BOOL

DOWHILE employee_number does not exist in database OR multiple_profiles == True

WRITE "Update multiple profiles?"

READ multiple_profiles

WRITE "Enter Employee Number"

READ employee_number

WRITE "Enter firstname"

READ firstname

WRITE "Enter lastname"

READ lastname

WRITE "Enter Telephone"

READ telephone

WRITE "Enter Department"

READ department

WRITE "Enter Supervisor First Name"

READ supervisor_firstname

WRITE "Enter Supervisor Last Name"

```
READ supervisor_lastname  
WRITE "Password"  
  
READ password  
  
WRITE "Enter Gender"  
  
READ gender  
  
WRITE "Enter Address"  
  
READ address  
  
  
IF employee_number does not exist in database  
    WRITE "Employee number not exists, try another"  
ELSE  
    UPDATE user profile in database  
ENDIF  
ENDDO
```

```
change_user_password()  
  
DECLARE employee_number, new_password AS STRING  
DECLARE multiple_profiles AS BOOL  
  
  
DOWHILE employee_number not exist in database OR multiple_profiles == True  
    WRITE "Change multiple passwords?"  
    READ multiple_profiles
```

```
WRITE "Enter employee number"  
READ employee_number  
WRITE "Enter New Password"  
READ new_password  
  
IF employee_number does not exist in database  
    WRITE "Employee number not exists, try another"  
ELSE  
    UPDATE user password in database  
ENDIF  
ENDDO
```

```
delete_user_account()  
DECLARE employee_number AS STRING  
DECLARE multiple_profiles AS BOOL  
  
DOWHILE employee_number not exist in database OR multiple_profiles == True  
    WRITE "Delete multiple profiles?"  
    READ multiple_profiles  
  
    WRITE "Enter employee number"  
    READ employee_number
```

```
IF employee_number does not exist in database  
    WRITE "Employee number does not exists"  
ELSE  
    DELETE user profile in database  
ENDDO
```

Employee Pseudocode

```
employee()  
DECLARE firstname, lastname, address, department AS STRING
```

```
    WRITE firstname  
    WRITE lastname  
    WRITE address  
    WRITE department
```

```
change_user_password()  
DECLARE employee_number, new_password AS STRING  
DECLARE multiple_profiles AS BOOL
```

```
DOWHILE employee_number not exist in database OR multiple_profiles == True  
    WRITE "Change multiple passwords?"
```

READ multiple_profiles

WRITE "Enter employee number"

READ employee_number

WRITE "Enter New Password"

READ new_password

IF employee_number does not exist in database

 WRITE "Employee number not exists, try another"

ELSE

 UPDATE user password in database

ENDDO

reserveSeat()

DECLARE reserve_bus, bus_route, departure_time, arrival_time, driver AS STRING

DECLARE reserve_seat AS INTEGER

WRITE "Enter reserve bus"

READ reserve_bus

Fetch bus information from database

WRITE bus_route
WRITE departure_time
WRITE arrival_time
WRITE driver

WRITE "Enter reserve seat"
READ reserve_seat

view_driver_location()

DECLARE bus_number, driver, approximate_time AS STRING

Display driver location

WRITE bus_number
WRITE driver
WRITE "Driver in route."
WRITE driver, " will arrive shortly"
WRITE approximate_time

view_timetable()

Display timetable

Dispatcher Pseudocode

dispatcher()

DECLARE firstname, lastname, address, department AS STRING

WRITE firstname

WRITE lastname

WRITE address

WRITE department

view_employee_location()

Display driver location

view_driver_location()

Display driver location

view_timetable()

Display timetable

create_timetable()

DECLARE bus_number, route, departure_time, arrival_time, driver AS STRING

DOWHILE bus_number exist in database

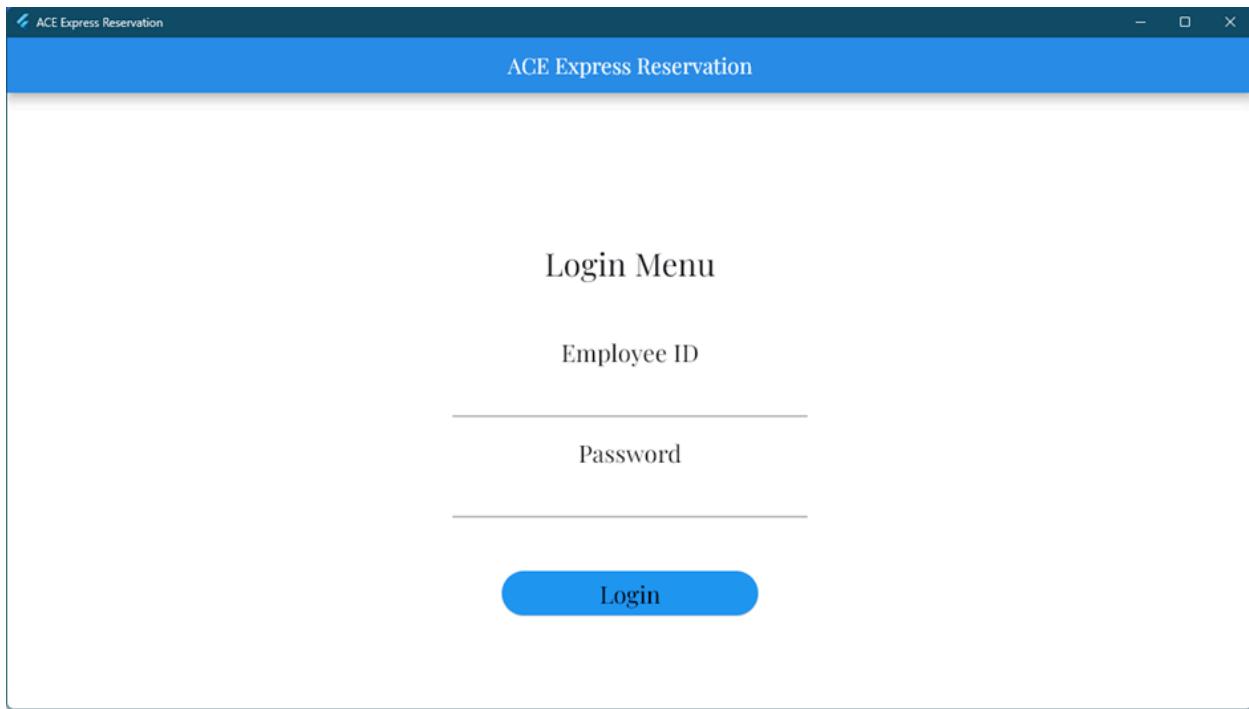
 WRITE "Add Route Schedule to Timetable"

 WRITE "Bus Number"

```
READ bus_number  
WRITE "Route"  
  
READ route  
  
WRITE "Department"  
  
READ departure_time  
  
    Vaildate departure_time  
  
WRITE "Arrival Time"  
  
READ arrival_time  
  
    Vaildate arrival_time  
  
WRITE "Driver Name"  
  
READ driver  
  
  
IF bus_number exist in database  
  
    WRITE "Bus Number already exists, try another"  
  
ELSE  
  
    ADD Timetable to database  
  
ENDDO
```

User Interface Designs

Login Section

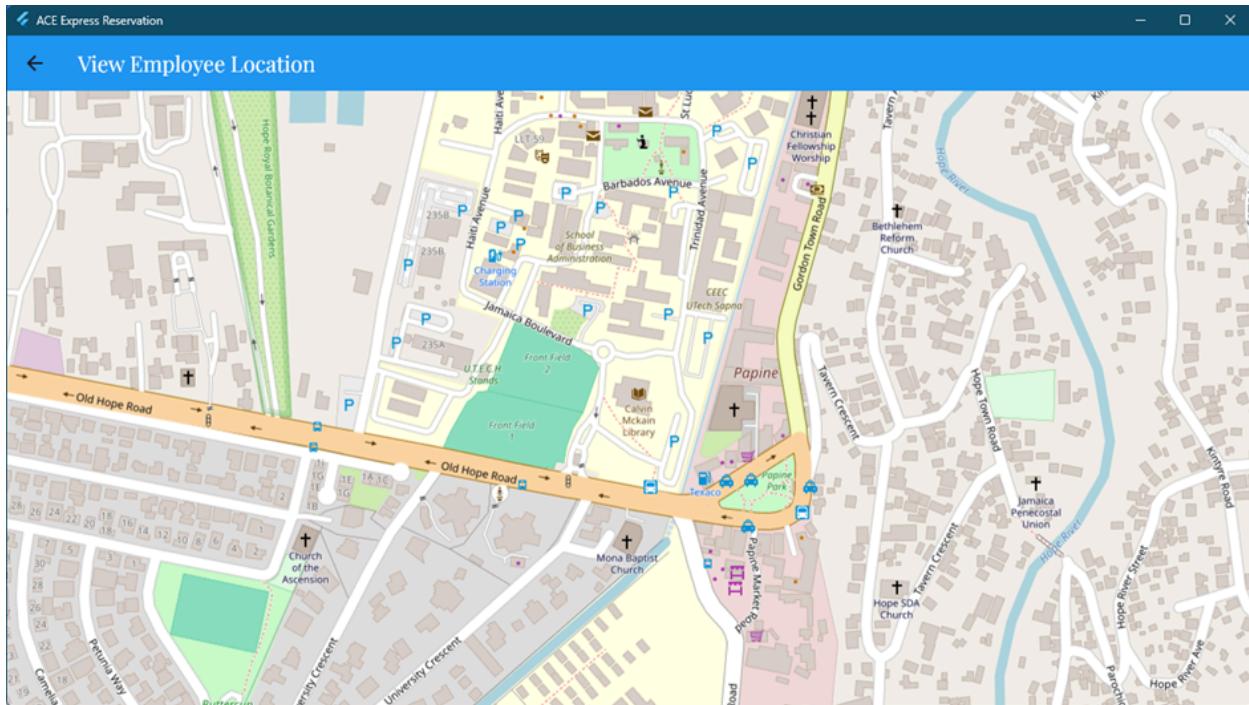


Login Screen

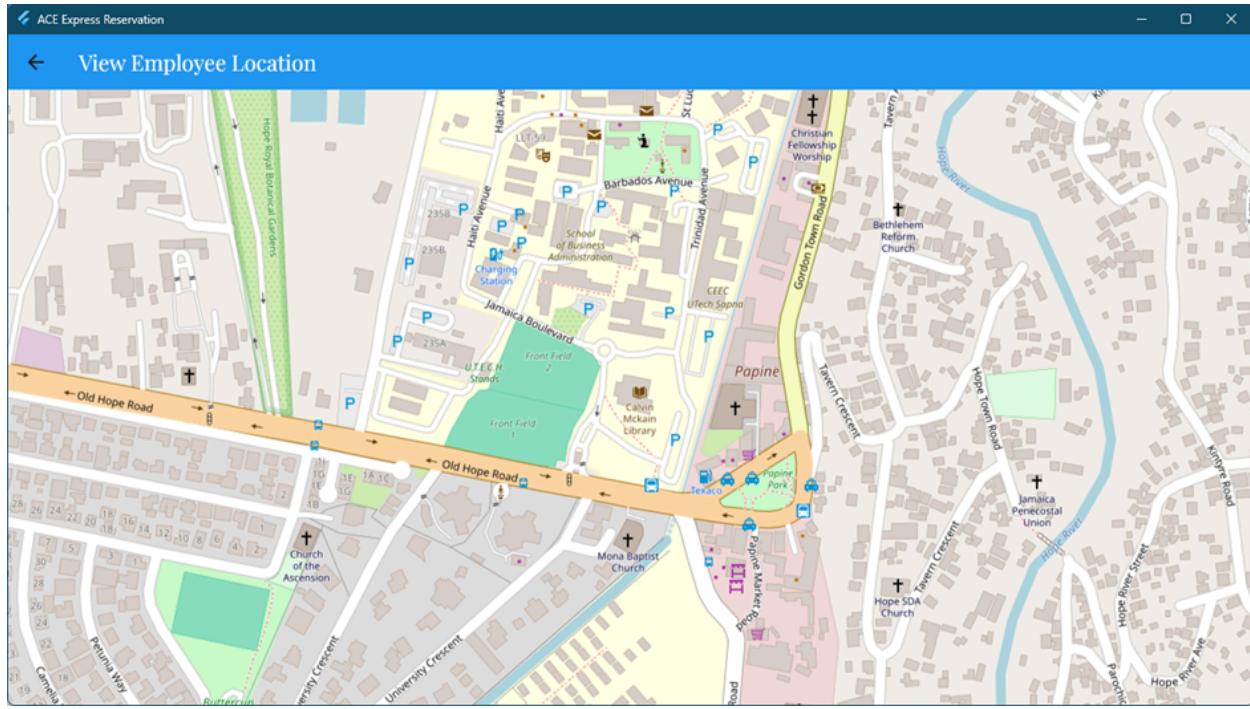
Dispatcher Section

The screenshot shows the Dispatcher Menu interface. On the left, there is a profile section for Bob Fletcher, located at 456 Main Street, Ocho Rios, St. Ann, Jamaica, and identified as a Dispatcher. Below this are four buttons: 'View Employee Location', 'View Driver Location', 'View Timetable', and 'Create Timetable'. On the right, a calendar for November 2024 is displayed, with the 7th highlighted in blue. A 'Logout' button is in the top right corner.

Dispatcher Screen



View Employee Location Screen



View Driver Location Screen

ACE Express Reservation				
← View Timetable				
Bus Number	Route	Departure Time	Arrival Time	Driver Name
B123	Company A to City Center	08:00 AM	09:30 AM	John Doe
B456	Company B to Suburb X	09:15 AM	10:45 AM	Jane Smith
B789	Industrial Park to Downtown	11:00 AM	12:15 PM	Mike Johnson
B101	University District to Airport	01:30 PM	03:00 PM	Emily Davis
B234	Residential Area to Hospital	04:45 PM	05:30 PM	David Lee
B16	Tech Park to City Center	5:30 PM	6:00 PM	Sarah Miller
B17	Downtown to Airport	6:45 PM	7:30 PM	David Lee
B18	University Campus to Train Station	8:00 AM	8:30 AM	Michael Johnson
B19	Hospital District to Shopping Mall	10:15 AM	11:00 AM	Emily Davis
B20	Industrial Zone to Residential Area	4:30 PM	5:15 PM	John Doe
B21	Port Area to City Center	7:45 AM	8:30 AM	Jane Smith
B22	Suburban Area to Business District	9:00 AM	9:45 AM	Michael Johnson

View Timetable Screen

ACE Express Reservation

← Create Timetable Entry Add Multiple Timetable Entries?

Add Route Schedule to Timetable

Bus Number* _____

Route* _____

Departure Time* _____

Arrival Time* _____

Driver Name* _____

Add

Create Timetable Screen

Employee Section

The Employee Menu interface features a top navigation bar with the ACE Express Reservation logo, "Employee Menu", and a "Logout" button. Below the menu is a sidebar containing a user profile picture, the name "Sally Henderson", address "123 Harbour View Road, Kingston 11, Jamaica", and the title "Employee". Three buttons in the sidebar are "Change Password", "Reserve Seat", and "View Driver Location". To the right of the sidebar is a large calendar for November 2024, showing days from 27 to 30 of October, and 1 to 30 of November. The date "10" is highlighted with a blue circle. A "2 weeks" button is located at the top right of the calendar.

Employee Screen

The Edit Password interface has a top navigation bar with the ACE Express Reservation logo and a back arrow labeled "Edit Password". The main area contains three input fields: "Old Password*" with a placeholder line, "New Password*" with a placeholder line, and "Verify Password*" with a placeholder line. A "Submit" button is located at the bottom left of the input area.

Edit Password

ACE Express Reservation

Reserve Seat

Select

Reserve Bus: _____

Bus Route: _____

Departure Time: _____

Arrival Time: _____

Driver: _____

Reserve Seat: _____

Bus Number	Route	Departure Time	Arrival Time	Driver Name
B123	Company A to City Center	08:00 AM	09:30 AM	John Doe
B456	Company B to Suburb X	09:15 AM	10:45 AM	Jane Smith
B789	Industrial Park to Downtown	11:00 AM	12:15 PM	Mike Johnson
B101	University District to Airport	01:30 PM	03:00 PM	Emily Davis
B234	Residential Area to Hospital	04:45 PM	05:30 PM	David Lee
B16	Tech Park to City Center	5:30 PM	6:00 PM	Sarah Miller
B17	Downtown to Airport	6:45 PM	7:30 PM	David Lee
Total	Available Seats	Occupied Seats	Avg. Occupied Seats	Avg. Available Seats

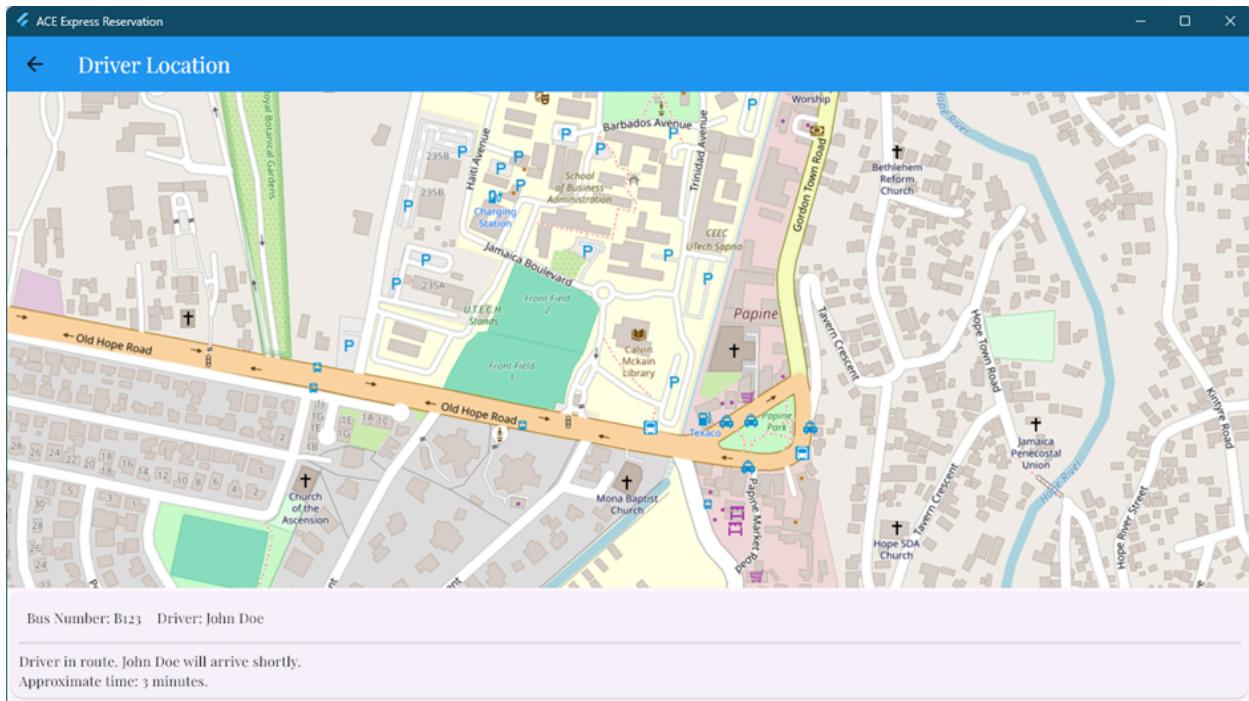
Reserve Seat Screen

ACE Express Reservation

Driver Location

Select Bus Schedule First

Driver Location Screen (If no bus and seats was reserved)

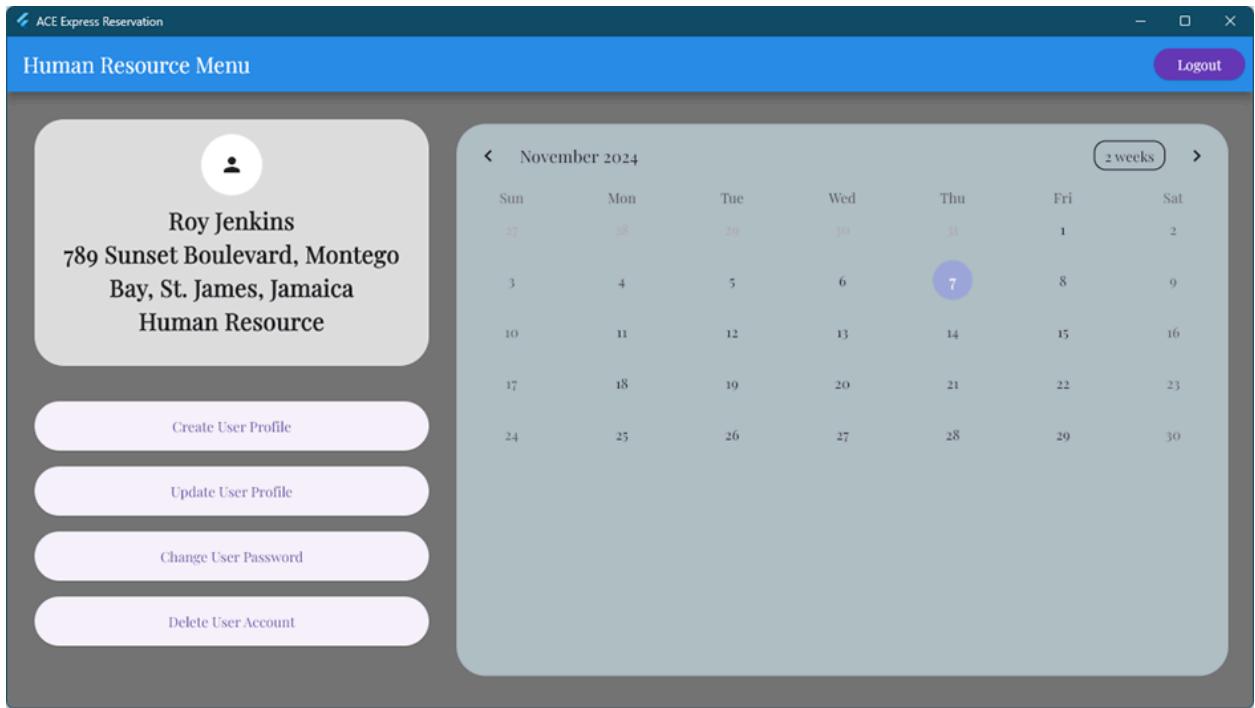


Driver Location Screen (If a bus and seats was reserved)

Bus Number	Route	Departure Time	Arrival Time	Driver Name
B123	Company A to City Center	08:00 AM	09:30 AM	John Doe
B456	Company B to Suburb X	09:15 AM	10:45 AM	Jane Smith
B789	Industrial Park to Downtown	11:00 AM	12:15 PM	Mike Johnson
B101	University District to Airport	01:30 PM	03:00 PM	Emily Davis
B234	Residential Area to Hospital	04:45 PM	05:30 PM	David Lee
B16	Tech Park to City Center	5:30 PM	6:00 PM	Sarah Miller
B17	Downtown to Airport	6:45 PM	7:30 PM	David Lee
B18	University Campus to Train Station	8:00 AM	8:30 AM	Michael Johnson
B19	Hospital District to Shopping Mall	10:15 AM	11:00 AM	Emily Davis
B20	Industrial Zone to Residential Area	4:30 PM	5:15 PM	John Doe
B21	Port Area to City Center	7:45 AM	8:30 AM	Jane Smith
B22	Suburban Area to Business District	9:00 AM	9:45 AM	Michael Johnson

View Timetable Screen

Human Resource Section



Human Resource Menu Screen

This screenshot shows the 'Create User Profile' screen. At the top left is the 'ACE Express Reservation' logo. On the right is a 'Create User Profile' button and an 'Add Multiple Profiles?' toggle switch. The form contains the following fields: Employee Number*, First Name*, Last Name*, Telephone*, Department* (dropdown menu), Supervisor First Name*, Supervisor Last Name*, Password*, Gender*, and Address*. A 'Submit' button is located at the bottom left.

Create User Profile Screen

ACE Express Reservation

Update User Profile

Update Multiple Profiles?

Employee Number*	<input type="text"/>
First Name*	<input type="text"/>
Last Name*	<input type="text"/>
Telephone*	<input type="text"/>
Department*	<input type="text"/>
Supervisor First Name*	<input type="text"/>
Supervisor Last Name*	<input type="text"/>
Password*	<input type="text"/>
Gender*	<input type="text"/>
Address*	<input type="text"/>

Submit

Update User Profile Screen

ACE Express Reservation

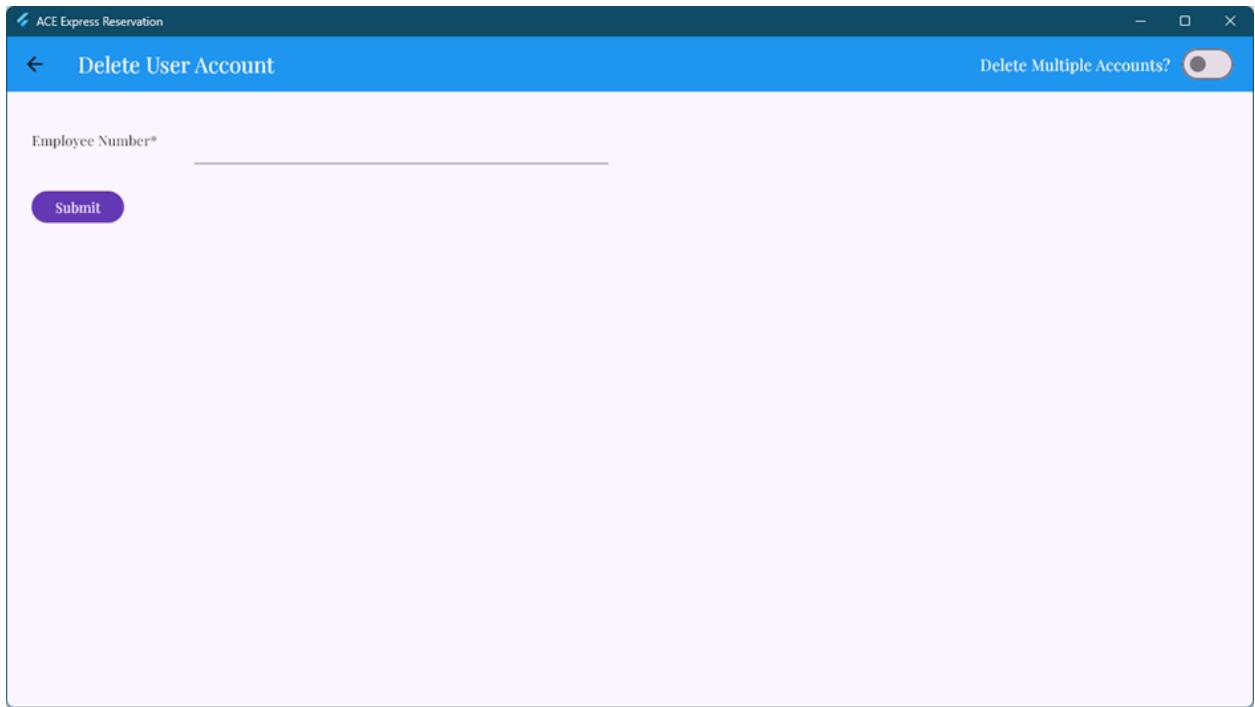
Change User Password

Change Multiple Passwords?

Employee Number*	<input type="text"/>
New Password*	<input type="text"/>

Submit

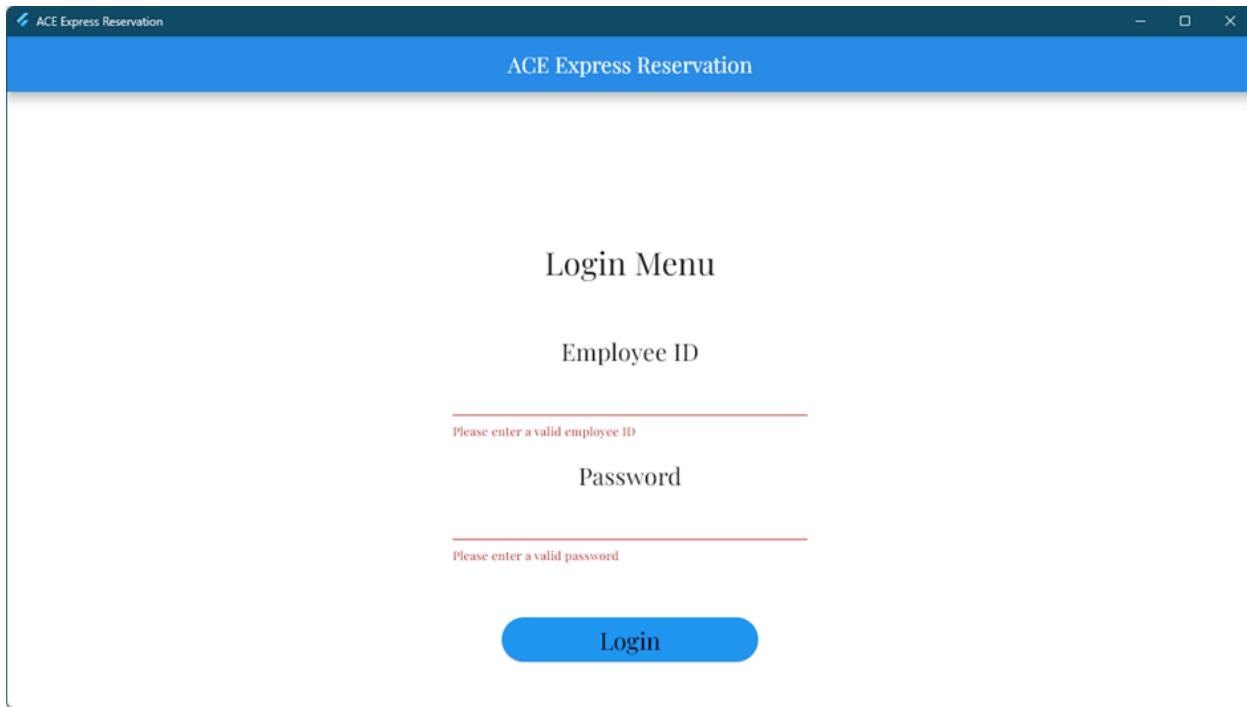
Change User Password Screen



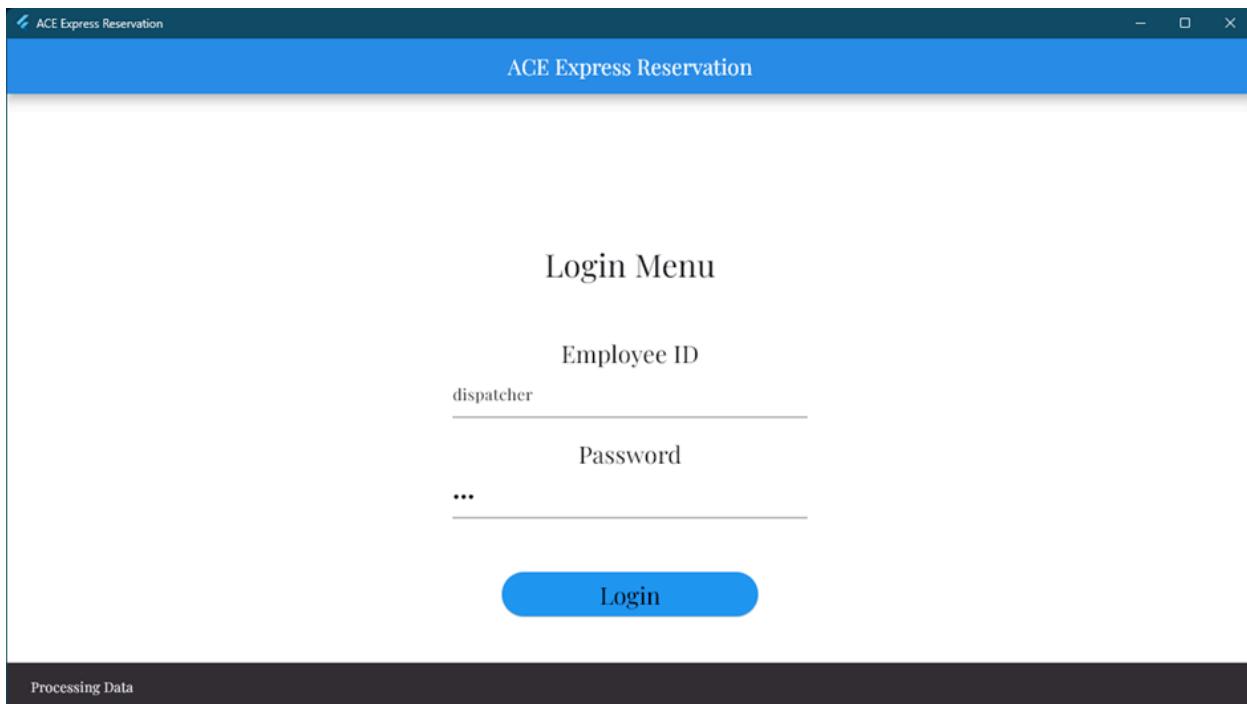
Delete User Account Screen

User Feedback

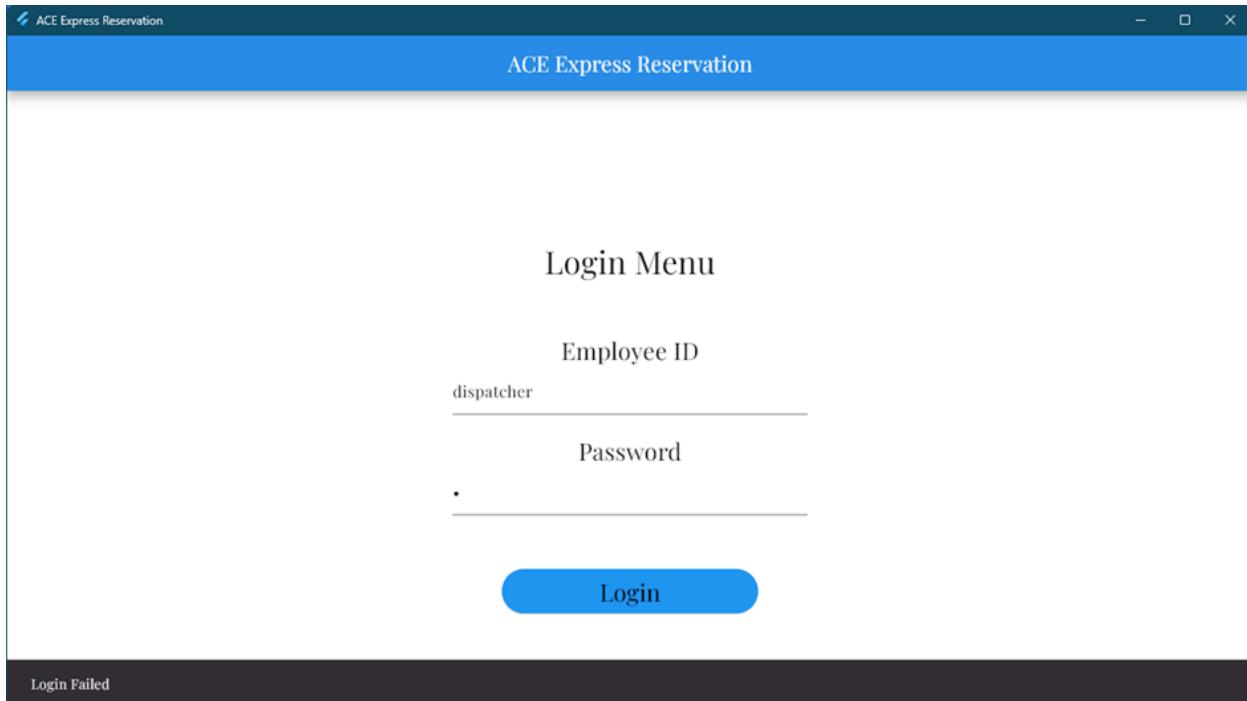
Login Menu



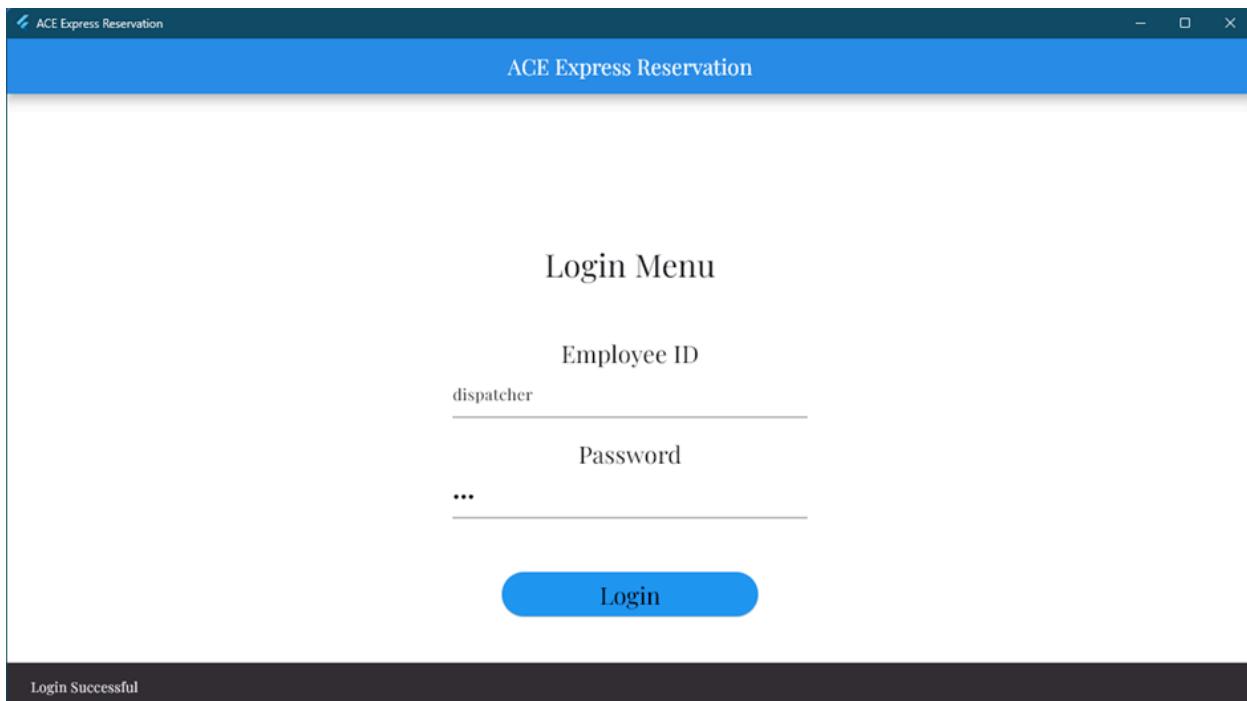
Input Validation User Feedback



Processing Data User Feedback

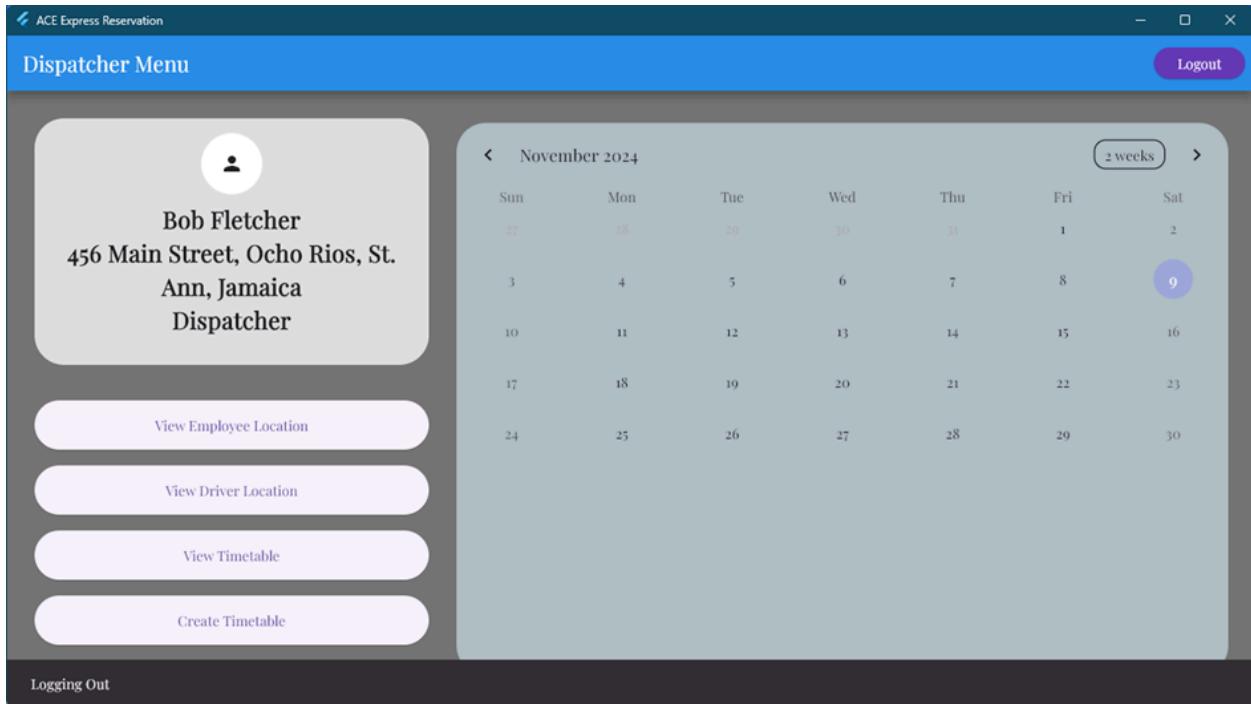


Logging Failed User Feedback (Incorrec Credentials)

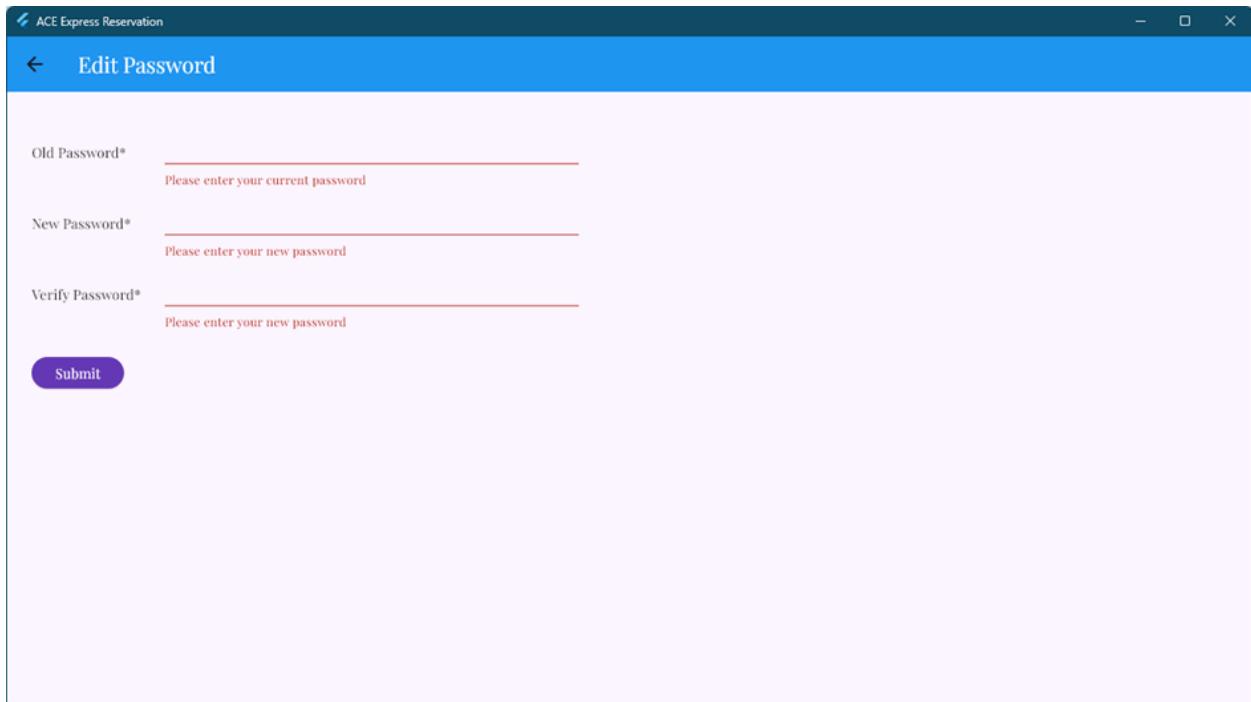


Logging Successful User Feedback

Dispatcher Menu



Logging Out User Feedback



Input Validation User Feedback

ACE Express Reservation

Edit Password

Old Password* Password is incorrect

New Password*

Verify Password*

Submit

Input Validation User Feedback

ACE Express Reservation

Edit Password

Old Password* Password does not match

New Password*

Verify Password*

Submit

Input Validation User Feedback

ACE Express Reservation

Create Timetable

Add Route Schedule to Timetable

Bus Number*	<input type="text"/> Please enter a bus number
Route*	<input type="text"/> Please enter a route
Departure Time*	<input type="text"/> Please enter a valid departure time
Arrival Time*	<input type="text"/> Please enter a valid arrival time
Driver Name*	<input type="text"/> Please enter a driver name

Add

Input Validation User Feedback

ACE Express Reservation

Create Timetable

Add Route Schedule to Timetable

Bus Number*	B123	Bus Number already exists, try another
Route*	HWT to Spanish Town	
Departure Time*	9:00 AM	
Arrival Time*	12:00 PM	
Driver Name*	Dennis Smith	

Add

Bus Number Validation User Feedback

ACE Express Reservation

Create Timetable

Add Route Schedule to Timetable

Bus Number*	B1231
Route*	HWT to Spanish Town
Departure Time*	9 AM <small>Please enter a valid departure time. Format: HH:MM AM/PM</small>
Arrival Time*	12 PM <small>Please enter a valid arrival time. Format: HH:MM AM/PM</small>
Driver Name*	Dennis Smith

Add

Validation Departure and Arrival Time

Human Resource Menu

ACE Express Reservation

Create User Profile

Add Multiple Profiles?

Employee Number*	Please enter a employee number
First Name*	Please enter a first name
Last Name*	Please enter a last name
Telephone*	Please enter a telephone number
Department*	Please select a department
Supervisor First Name*	Please enter a first name
Supervisor Last Name*	Please enter a last name
Password*	Please enter a password

ACE Express Reservation

Create User Profile

Add Multiple Profiles?

Telephone*
Please enter a telephone number

Department*
Please select a department

Supervisor
First Name*
Please enter a first name

Supervisor
Last Name*
Please enter a last name

Password*
Please enter a password

Gender*
Please enter a gender

Address*
Please enter a address

Submit

Create User Profile Validation User Feedback

ACE Express Reservation

Update User Profile

Update Multiple Profiles?

Employee
Number*
Please enter a valid employee number

First Name*
Please enter a valid first name

Last Name*
Please enter a valid last name

Telephone*
Please enter a valid phone number

Department*
Please select a department

Supervisor
First Name*
Please enter a valid first name

Supervisor
Last Name*
Please enter a valid last name

Password*
Please enter a valid password

ACE Express Reservation

Update User Profile

Update Multiple Profiles?

Telephone*
Please enter a valid phone number

Department*
Please select a department

Supervisor
First Name*
Please enter a valid first name

Supervisor
Last Name*
Please enter a valid last name

Password*
Please enter a valid password

Gender*
Please enter a gender

Address*
Please enter a valid address

Submit

Input Validation User Feedback

ACE Express Reservation

Change User Password

Change Multiple Passwords?

Employee Number*
Please enter a valid employee number

New Password*
Please enter a valid password

Submit

Input Validation User Feedback

ACE Express Reservation

Delete User Account

Employee Number* Please enter a valid employee number

Delete Multiple Accounts?

Input Validation User Feedback

Dialogs

ACE Express Reservation

Reserve Seat

Reserve By	Seat Number			
Reserve B	B123			
Bus Route	B456			
Departure	B789			
Arrival Time	B101			
Driver: John	B101			
Reserve S	B234			
Bus Number	B16			
B123	B17			
B456	B18			
B789	B19			
B101	B20			
B234	B21			
B16	B22			
B17	Downtown to Airport	6:45 PM	7:30 PM	David Lee

Reserve Bus Dialog

ACE Express Reservation

Reserve Seat

Select

Reserve Bus 1

Bus Route: 2

Departure 3

Arrival Time 3

Driver: Joe 4

Reserve Seats 5

Bus Number 6

B123 7

B456 8

B789 9

B101 11

B234 12

B16 13

B17

Downtown to Airport

6:45 PM

7:30 PM

David Lee

This screenshot shows the 'Reserve Seat' dialog box. It includes fields for bus route, departure, arrival time, driver, and a list of available seats. The seat 'B16' is highlighted.

Reserve Seat Dialog

ACE Express Reservation

Create User Profile

Add Multiple Profiles?

Employee Number* _____

First Name* _____

Last Name* _____

Telephone* _____

Department* Human Resource

Supervisor First Name* Sales

Supervisor Last Name* Accounting

Password* Dispatcher

Gender* Finance

Address* IT

Operations

Submit

This screenshot shows the 'Create User Profile' dialog. It includes fields for employee information, supervisor details, password, gender, address, and a dropdown menu for department selection. The 'Human Resource' option is currently selected.

Department Dialog (Create and Update)

Software Testing

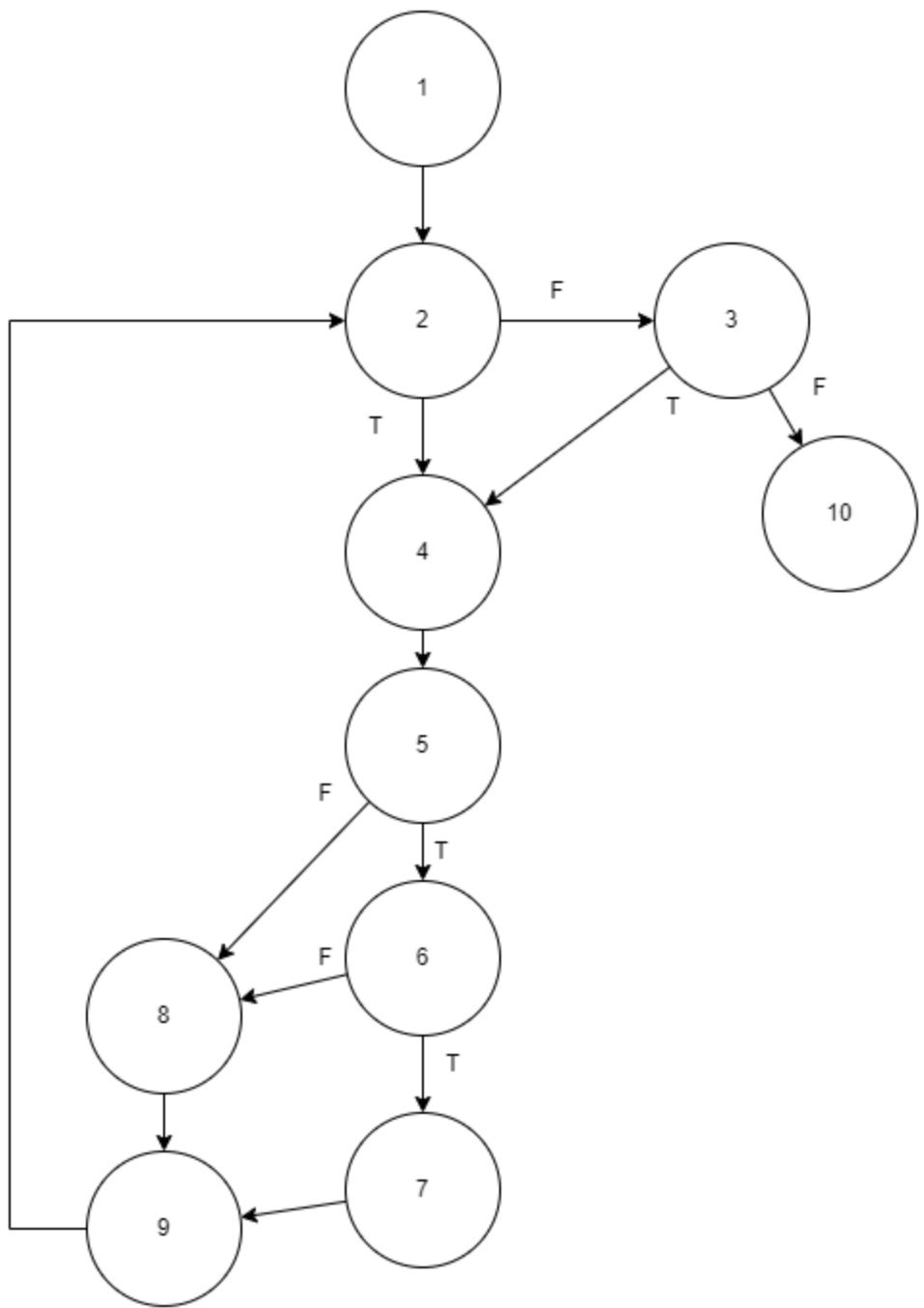
The testing process consisted of both Black Box testing, focusing on validating functionality from the end-user's perspective, and White Box testing, which ensured robust internal logic and code structure. This comprehensive approach guaranteed a rigorous and well-rounded assessment of the system's performance and reliability.

Login Cyclomatic Analysis

```
login()
DECLARE employee_id, password AS STRING 1
                2                                3

DOWHILE employee_id does not exist in database OR password does not exist in database
    WRITE "Enter employee ID"
    READ employee_id
    WRITE "Enter password"
    READ password

    Validate user credentials 4
                5                                6
    IF employee_id match in database AND password match in database
        WRITE "Login Successful" 7
    ELSE
        WRITE "Login Failed" 8
    ENDIF 9
ENDDO 10
```



Region = 5

$$V(G) = (E - N) + 2$$

$$V(G) = (13 - 10) + 2$$

$$V(G) = 5$$

$$V(G) = P + 1$$

$$V(G) = 4 + 1$$

$$V(G) = 5$$

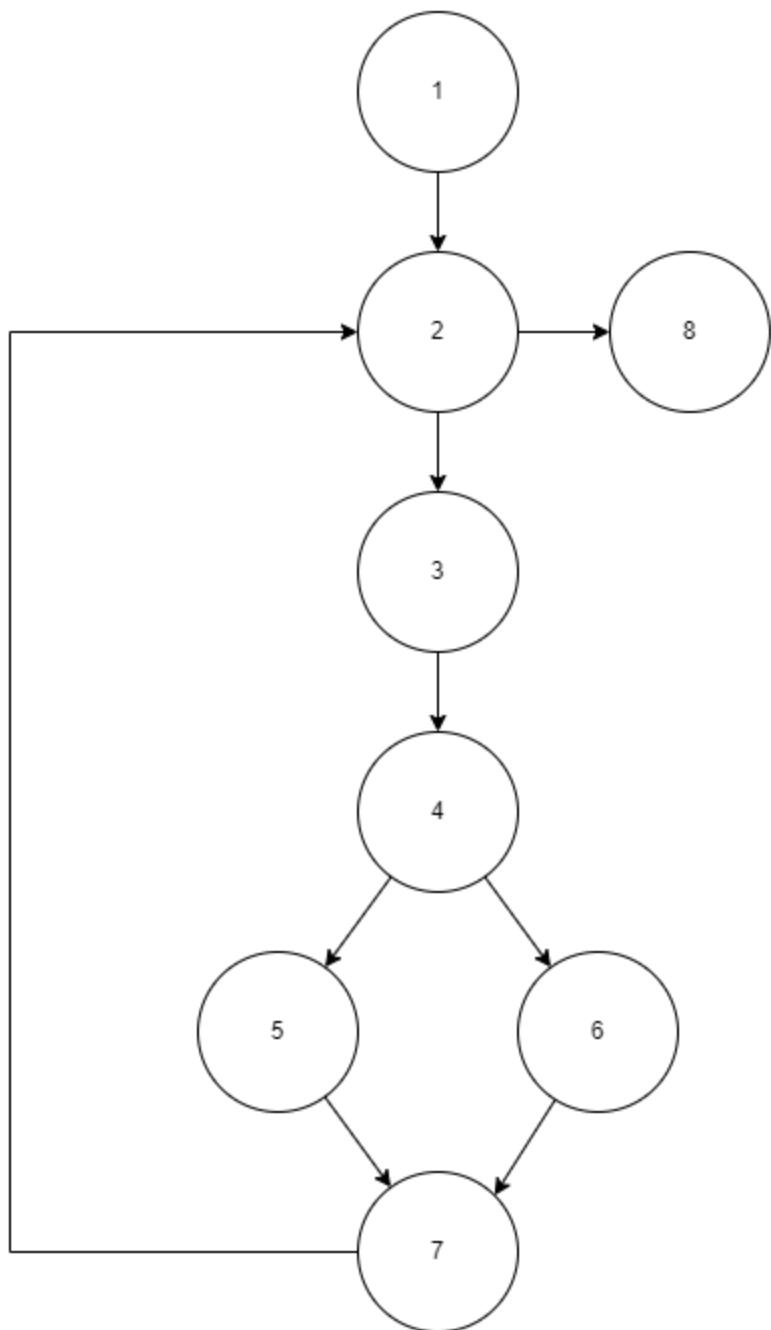
Paths	Assumed Values	Expected Results
1, 2, 4, 5, 8, 9, 2, 3, 10	employee_id = "johndoe" password = "123"	WRITE "Login Failed"
1, 2, 4, 5, 6, 8, 9, 2, 3, 10	employee_id = "sallyhenderson" password = "12345"	WRITE "Login Failed"
1, 2, 4, 5, 6, 7, 9, 2, 3, 10	employee_id = "sallyhenderson" password = "123"	WRITE "Login Successful"
1, 2, 3, 4, 5, 8, 9, 2, 3, 10	employee_id = "johndoe" password = "123"	WRITE "Login Failed"
1, 2, 3, 4, 5, 6, 8, 9, 2, 3, 10	employee_id = "sallyhenderson" password = "12345"	WRITE "Login Failed"
1, 2, 3, 4, 5, 6, 7, 9, 2, 3, 10	employee_id = "sallyhenderson" password = "123"	WRITE "Login Successful"
1, 2, 3, 10	employee_id = "sallyhenderson" password = "123"	

Create Timetable Cyclomatic Analysis

```
create_timetable()
DECLARE bus_number, route, departure_time, arrival_time, driver AS STRING    1

DOWHILE bus_number exist in database      2
    WRITE "Add Route Schedule to Timetable"
    WRITE "Bus Number"
    READ bus_number
    WRITE "Route"
    READ route
    WRITE "Department"
    READ departure_time
        Vaildate departure_time
    WRITE "Arrival Time"
    READ arrival_time
        Vaildate arrival_time
    WRITE "Driver Name"
    READ driver      3

    IF bus_number does not match in database      4
        WRITE "Bus Number already exists, try another"      5
    ELSE
        ADD Timetable to database      6
    ENDIF      7
ENDDO      8
```



Region = 3

$$V(G) = (E - N) + 2$$

$$V(G) = (9 - 8) + 2$$

$$V(G) = 3$$

$$V(G) = P + 1$$

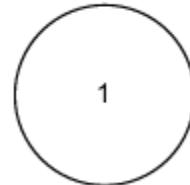
$$V(G) = 2 + 1$$

$$V(G) = 3$$

Paths	Assumed Values	Expected Results
1, 2, 3, 4, 5, 7, 2, 8	bus_number = "B128" route = "Company A to City Center" departure_time = "08:00 AM" arrival_time = "12:00 PM" driver = "Dwight Thompson"	WRITE "Route added to timetable successfully"
1, 2, 3, 4, 6, 7, 2, 8	bus_number = "B123" route = "Company A to City Center" departure_time = "08:00 AM" arrival_time = "09:30 AM" driver = "John Doe"	WRITE "Bus Number already exists, try another"
1, 2, 8	bus_number = "B123" route = "Company A to City Center" departure_time = "08:00 AM" arrival_time = "09:30 AM" driver = "John Doe"	

Display employee details cyclomatic analysis

```
1
DECLARE firstname, lastname, address, department AS STRING
WRITE firstname
WRITE lastname
WRITE address
WRITE department
```



$$V(G) = (E - N) + 2$$

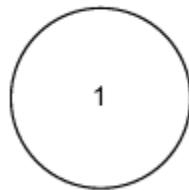
$$V(G) = (0 - 1) + 2$$

$$V(G) = 1$$

Paths	Assumed Values	Expected Results
1	firstname= Daniel lastname = Lion address =7 Den ave Kingston 12 department= Finance	Employee details successfully displayed

Reserve seat cyclomatic analysis

```
1
DECLARE reserve_bus, bus_route, departure_time, arrival_time, driver AS STRING
DECLARE reserve_seat AS INTEGER
WRITE "Enter reserve bus"
READ reserve_bus
Fetch bus information from database
WRITE bus_route
WRITE departure_time
WRITE arrival_time|
WRITE driver
WRITE "Enter reserve seat"
READ reserve_seat
```



$$V(G) = (E - N) + 2$$

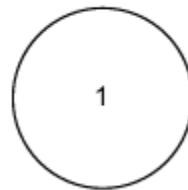
$$V(G) = (0 - 1) + 2$$

$$V(G) = 1$$

Paths	Assumed Values	Expected Results
1	reserve_bus= B127 bus_route=HWT to papine departure_time= 9:00 A:M arrival_time=9:30 driver= Bob reserve_seat=7	Seat successfully reserved

View Driver location cyclomatic analysis

```
1
DECLARE bus_number, driver, approximate_time AS STRING
Display driver location
WRITE bus_number
WRITE driver
WRITE "Driver in route."
WRITE driver, " will arrive shortly"
WRITE approximate_time
```



$$V(G) = (E - N) + 2$$

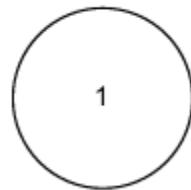
$$V(G) = (0 - 1) + 2$$

$$V(G) = 1$$

Paths	Assumed Values	Expected Results
1	bus_number= A777 driver= Greg approximate_time=30 mins	Diver location successfully viewed

Display Time table cyclomatic analysis

1
Display timetable



$$V(G) = (E - N) + 2$$

$$V(G) = (0 - 1) + 2$$

$$V(G) = 1$$

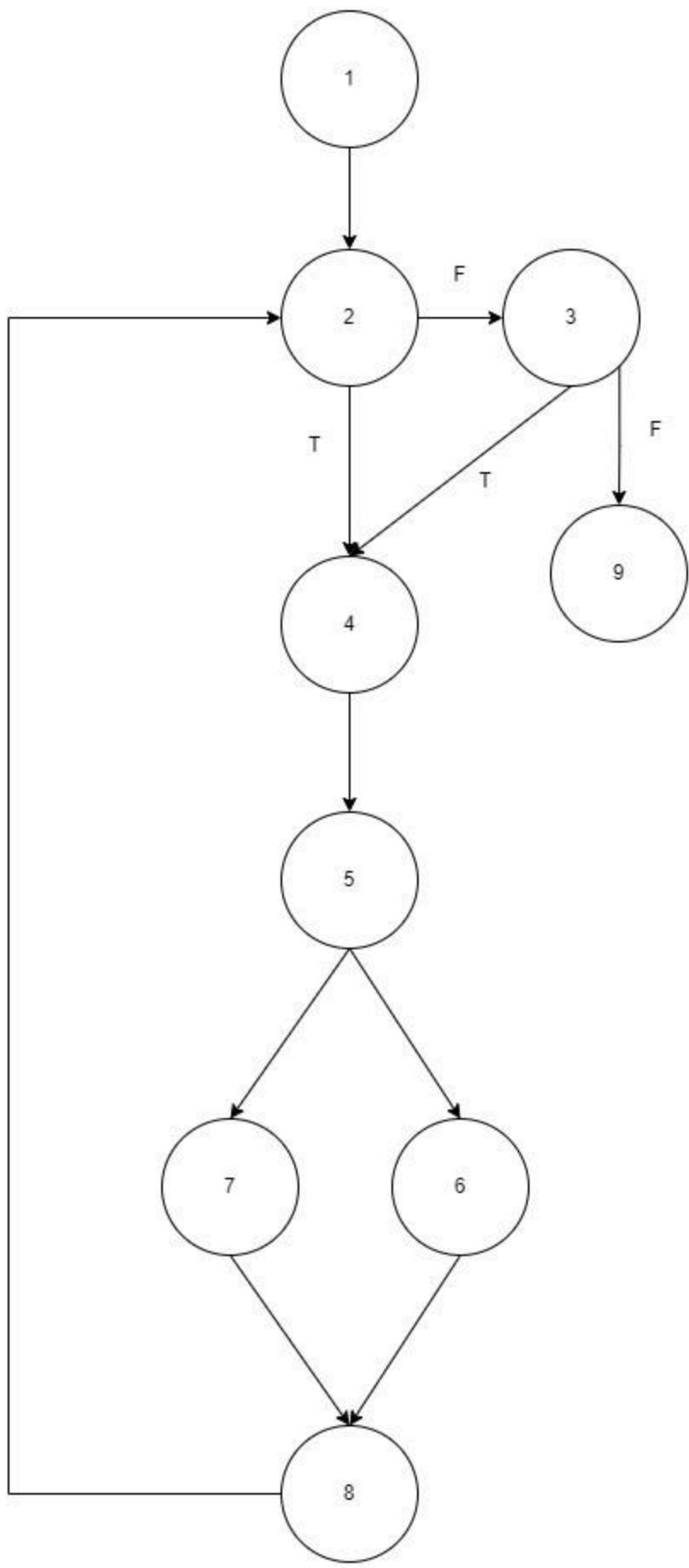
Paths	Assumed Values	Expected Results
1		Time Table successfully displayed

Create User Profile

```
create_user_profile():
    DECLARE employee_number, firstname, lastname, telephone, department, supervisor_firstname AS STRING
    DECLARE supervisor_lastname, password, gender, address AS STRING
    DECLARE multiple_profiles AS BOOL 1
        2                                     3
    DOWHILE employee_number exist in database OR multiple_profiles == True
        WRITE "Add multiple profiles?"
        READ multiple_profiles

        WRITE "Enter Employee Number"
        READ employee_number
        WRITE "Enter firstname"
        READ firstname
        WRITE "Enter lastname"
        READ lastname
        WRITE "Enter Telephone"
        READ telephone
        WRITE "Enter Department"
        READ department
        WRITE "Enter Supervisor First Name"
        READ supervisor_firstname
        WRITE "Enter Supervisor Last Name"
        READ supervisor_lastname
        WRITE "Password"
        READ password
        WRITE "Enter Gender"
        READ gender
        WRITE "Enter Address"
        READ address 4

        IF employee_number exist in database 5
            WRITE "Employee number already exists, try another" 6
        ELSE
            ADD user profile to database 7
        ENDIF 8
    ENDDO 9
```



Region = 4

$$V(G) = (E - N) + 2$$

$$V(G) = (11 - 9) + 2$$

$$V(G) = 4$$

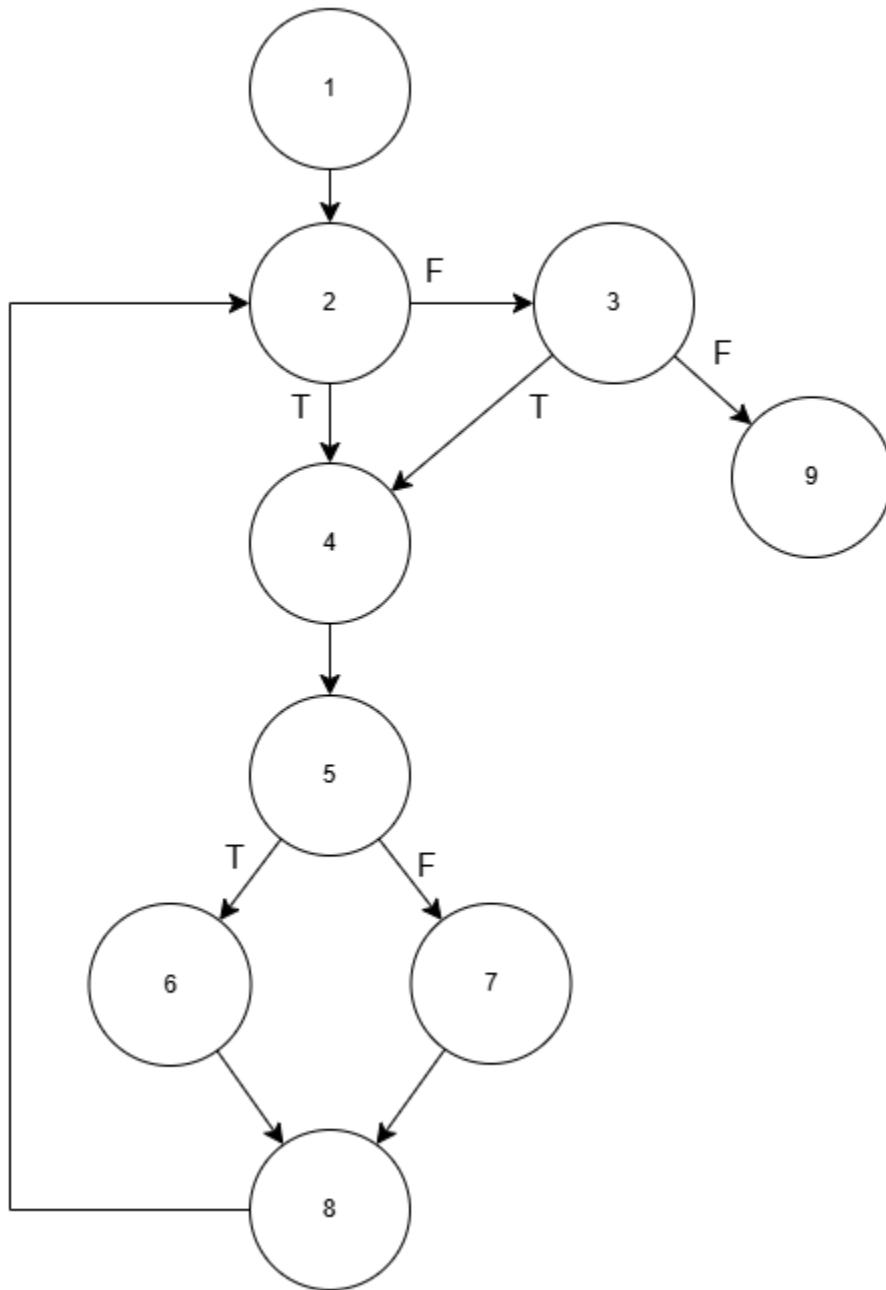
$$V(G) = P + 1$$

$$V(G) = 3 + 1$$

$$V(G) = 4$$

Paths	Assumed Values	Expected Results
1,2,3,4,5,7,8,2,3,9	employee_number = "sallyhenderson" multiple_profiles = True	WRITE "Employee number already exists, try another"
1,2,3,4,5,6,8,2,3,9	employee_number = "samsmith" multiple_profiles = True	ADD user profile to database 7
1,2,4,5,7,8,2,3,9	employee_number = "sallyhenderson" multiple_profiles = False	WRITE "Employee number already exists, try another"
1,2,4,5,6,8,2,3,9	employee_number = "samsmith" multiple_profiles = False	ADD user profile to database 7
1,2,3,9		Function terminates

Update User Account



Region = 4

$$V(G) = (E - N) + 2$$

$$V(G) = (11 - 9) + 2$$

$$V(G) = 4$$

$$V(G) = P + 1$$

$$V(G) = 3 + 1$$

$$V(G) = 4$$

Paths	Assumed Values	Expected Results
1, 2, 4, 5, 6, 8, 2, 3, 9	employee_number = "johndoe" multiple_profiles = False	WRITE "Employee number not exists, try another"
1, 2, 4, 5, 7, 8, 2, 3, 9	employee_number = "sallyhenderson" multiple_profiles = False	UPDATE user profile in database
1, 2, 3, 4, 5, 6, 8, 2, 3, 9	employee_number = "johndoe" multiple_profiles = True employee_number exists in database=False	WRITE "Employee number not exists, try another"
1, 2, 3, 4, 5, 7, 8, 2, 3, 9	employee_number = "sallyhenderson" multiple_profiles = True	UPDATE user profile in database
1, 2, 3, 9	employee_number = "sallyhenderson" multiple_profiles = False	Function terminates.

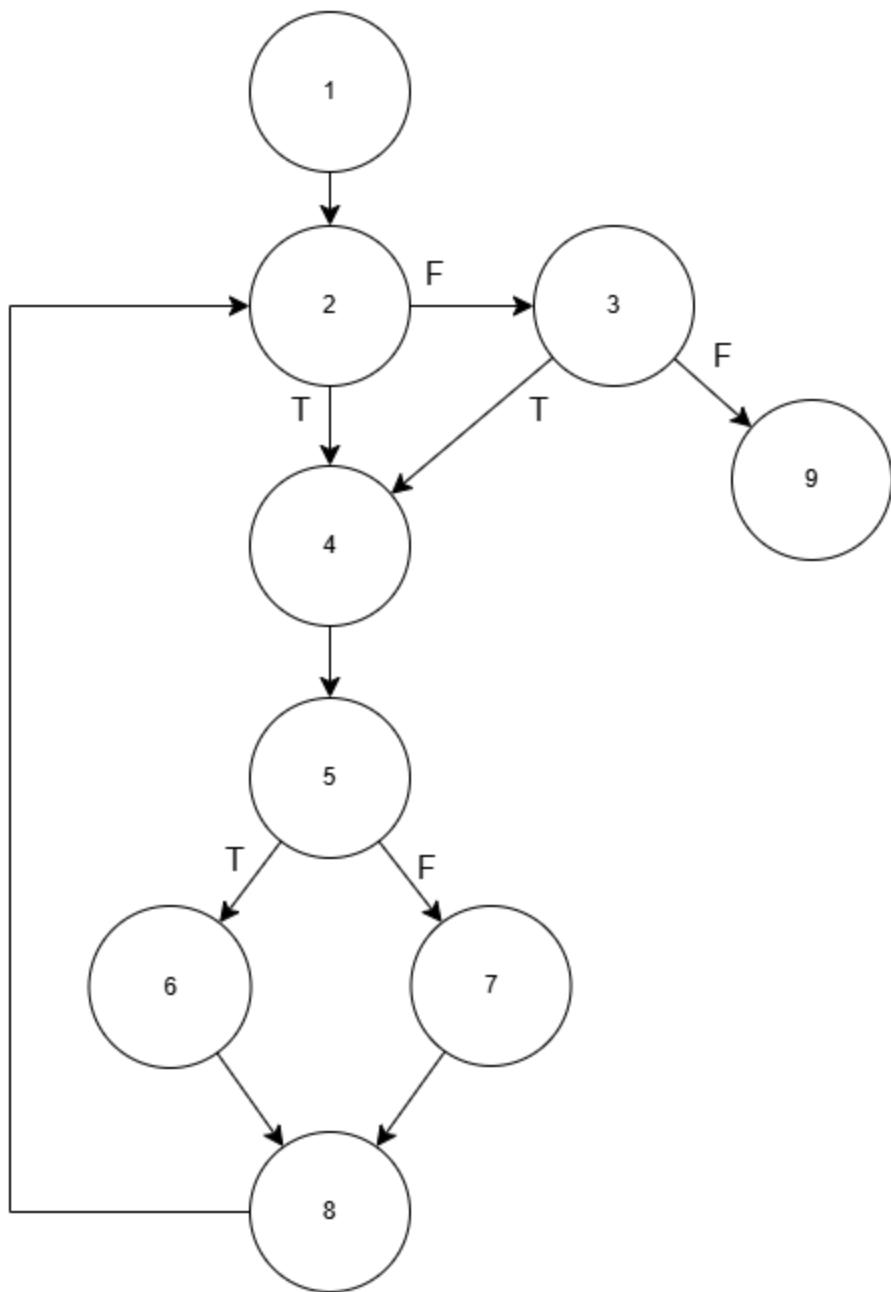
Change User Password

```
change_user_password()
DECLARE employee_number, new_password AS STRING
DECLARE multiple_profiles AS BOOL    1

                2                               3
DOWHILE employee_number not exist in database OR multiple_profiles == True
    WRITE "Change multiple passwords?"
    READ multiple_profiles

    WRITE "Enter employee number"
    READ employee_number
    WRITE "Enter New Password"
    READ new_password      4

    IF employee_number does not exist in database   5
        WRITE "Employee number not exists, try another"    6
    ELSE
        UPDATE user password in database    7
    ENDIF     8
ENDDO      9|
```



Region = 4

$$V(G) = (E - N) + 2$$

$$V(G) = (11 - 9) + 2$$

$$V(G) = 4$$

$$V(G) = P + 1$$

$$V(G) = 3 + 1$$

$$V(G) = 4$$

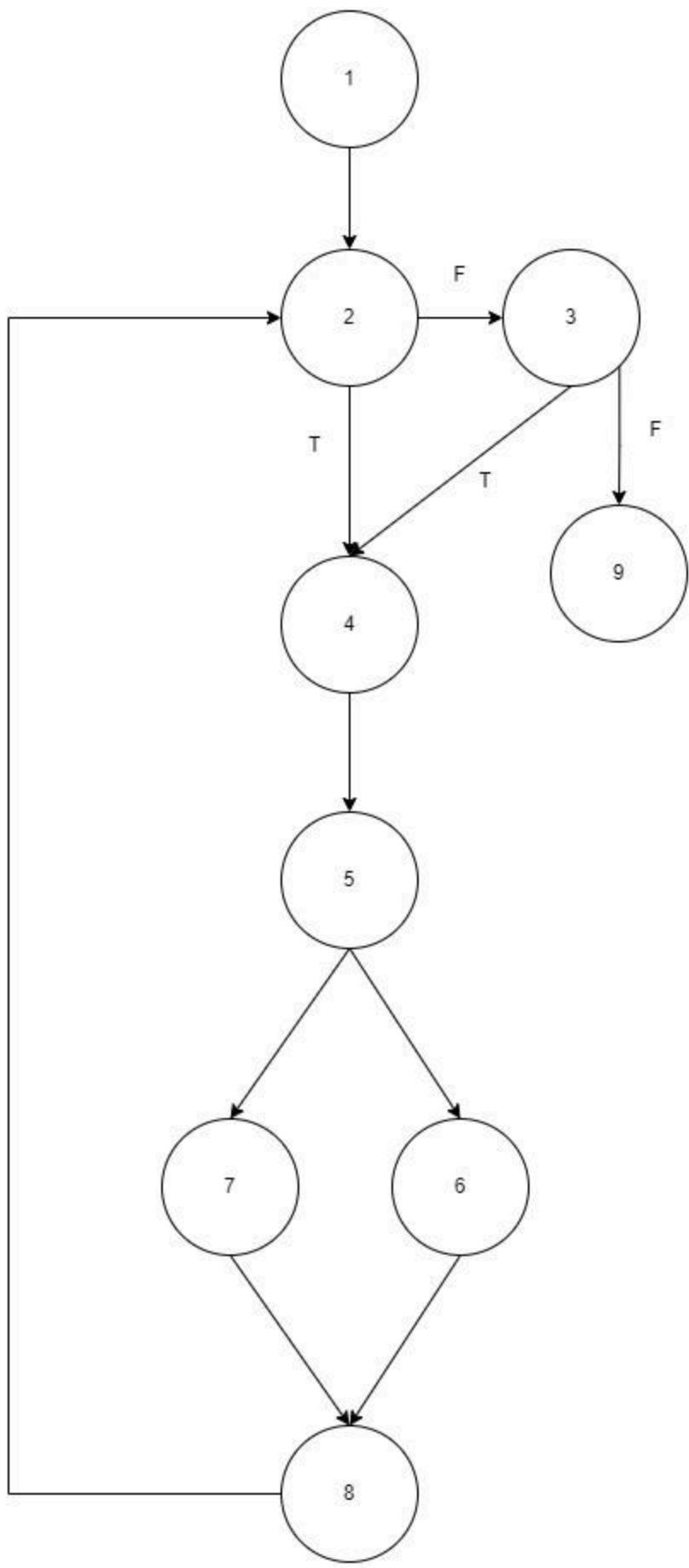
Paths	Assumed Values	Expected Results
1, 2, 4, 5, 6, 8, 2, 3, 9	employee_number = "johndoe" multiple_profiles = False	WRITE "Employee number not exists, try another"
1, 2, 4, 5, 7, 8, 2, 3, 9	employee_number = "sallyhenderson" multiple_profiles = False	UPDATE user password in database
1, 2, 3, 4, 5, 6, 8, 2, 3, 9	employee_number = "johndoe" multiple_profiles = True	WRITE "Employee number not exists, try another"
1, 2, 3, 4, 5, 7, 8, 2, 3, 9	employee_number = "sallyhenderson" multiple_profiles = True	UPDATE user password in database
1, 2, 3, 9		

Delete User Account

```
delete_user_account()
    DECLARE employee_number AS STRING
    DECLARE multiple_profiles AS BOOL 1
        2
    DOWHILE employee_number not exist in database OR multiple_profiles == True
        WRITE "Delete multiple profiles?"
        READ multiple_profiles

        WRITE "Enter employee number"
        READ employee_number 4

        IF employee_number does not exist in database 5
            WRITE "Employee number does not exists" 6
        ELSE
            DELETE user profile in database 7
        ENDIF 8
    ENDDO 9
```



Region = 4

$$V(G) = (E - N) + 2$$

$$V(G) = (11 - 9) + 2$$

$$V(G) = 4$$

$$V(G) = P + 1$$

$$V(G) = 3 + 1$$

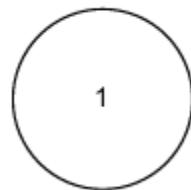
$$V(G) = 4$$

Paths	Assumed Values	Expected Results
1,2,3,4,5,7,8,2,3,9	employee_number = "bobfisher" multiple_profiles = True	WRITE "Employee number does not exists"
1,2,3,4,5,6,8,2,3,9	employee_number = "samsmith" multiple_profiles = True	DELETE user profile in database 7
1,2,4,5,7,8,2,3,9	employee_number = "bobfisher" multiple_profiles = False	DELETE user profile in database 7
1,2,4,5,6,8,2,3,9	employee_number = "samsmith" multiple_profiles = False	WRITE "Employee number does not exists"
1,2,3,9		Function terminates

Display Human Resource details cyclomatic analysis

```
```
 1|
DECLARE firstname, lastname, address, department AS STRING

WRITE firstname
WRITE lastname
WRITE address
WRITE department
```



$$V(G) = (E - N) + 2$$

$$V(G) = (0 - 1) + 2$$

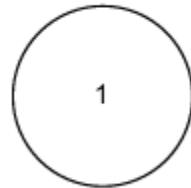
$$V(G) = 1$$

| Paths | Assumed Values                                                                                  | Expected Results                              |
|-------|-------------------------------------------------------------------------------------------------|-----------------------------------------------|
| 1     | firstname= Piggy<br>lastname = Wiggy<br>address =77 Red Hills ave Kingston 12<br>department= HR | Human Resource details successfully displayed |

## Display Dispatcher details cyclomatic analysis

```
1
DECLARE firstname, lastname, address, department AS STRING

WRITE firstname
WRITE lastname
WRITE address
WRITE department
```



$$V(G) = (E - N) + 2$$

$$V(G) = (0 - 1) + 2$$

$$V(G) = 1$$

| Paths | Assumed Values                                                                                       | Expected Results                          |
|-------|------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 1     | firstname= John<br>lastname = Black<br>address =77 Blue Hills rd Kingston 10<br>department= Dispatch | Dispatcher details successfully displayed |

## Black Box Testing

| Test Scenario ID | Test Scenario                       | Test Data                                                                                | Expected Result                               | Acceptance Criteria                   | Date of Implementation |
|------------------|-------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------|------------------------|
|                  |                                     |                                                                                          |                                               |                                       |                        |
| TsDsp-01         | Test Dispatcher Login Functionality | Employee ID:Bobfisher<br>Password:123                                                    | User should be able to login                  | Successful login                      | 11/14/2024             |
| TsDsp-02         | View employee location              |                                                                                          | User should be able to view employee location | Successfully view Employee's location | 11/14/2024             |
| TsDsp-03         | View driver location                |                                                                                          | User should be able to view driver location   | Successfully view Employee's location | 11/14/2024             |
| TsDsp-04         | View Time Table                     |                                                                                          | User should be able to view time table        | Successfully view Time Table          | 11/14/2024             |
| TsDsp-05         | View employee location              |                                                                                          | User should be able to view employee location | Successfully view Employee's location | 11/14/2024             |
| TsDsp-06         | Create Time Table                   | Bus number: B17<br>Route:hwt to papine<br>Departure time:8:55 am<br>Arrival time:9:25 am | User should be able to create Time table      | Successfully view create Time Table   | 11/14/2024             |

|          |                                         |                                                                                                                                                                                                                                                                                             |                                                    |                                          |            |
|----------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------|------------|
|          |                                         | Driver Name: Mark Allen                                                                                                                                                                                                                                                                     |                                                    |                                          |            |
| TsDsp-06 | Create Multiple Time Tables             | <p>Bus number: B12</p> <p>Route:hwt to papine</p> <p>Departure time:11:55 am</p> <p>Arrival time:12:25 am</p> <p>Driver Name: Dwane Johnson Bus number: ex112</p> <p>Route:hwt to August Town</p> <p>Departure time:11:55 am</p> <p>Arrival time:12:25 am</p> <p>Driver Name: John Reid</p> | User should be able to create Multiple Time tables | Successfully create Multiple Time Tables | 11/14/2024 |
| TsDsp-07 | Test Logout Functionality               |                                                                                                                                                                                                                                                                                             | User should be able to logout successfully         | Successful logout                        | 11/14/2024 |
| TsHR-08  | Test Human Resource Login Functionality | <p>Employee ID:royjenkins</p> <p>Password:123</p>                                                                                                                                                                                                                                           | User should be able to login                       | Successful login                         | 11/14/2024 |

|              |                             |                                                                                                                                                                                                                                                                              |                                                                       |                                           |            |
|--------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------|------------|
| TsHR-0<br>09 | Test Create<br>User profile | Employee ID:peggy<br>First name: Paula<br>Last name: Jackson<br>Telephone:8765548888<br>Department:<br>Operations<br>Supervisor First name:<br>Adrian<br>Supervisor Last name:<br>Smith<br>Password: Default<br>Gender: Female<br>Address:186<br>Somewhere ave<br>Kingston 6 | User should<br>be able to<br>Successfully<br>create a user<br>profile | Successful<br>creation of<br>user profile | 11/14/2024 |
|--------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------|------------|

|              |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                  |                                                        |            |
|--------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------|------------|
| TsHR-0<br>10 | Test Create<br>Multiple User<br>profiles | Employee ID:eh145<br>First name: Orion<br>Last name: Pax<br>Telephone:8765548528<br>Department: Finance<br>Supervisor First name:<br>Cyan<br>Supervisor Last name:<br>Buck<br>Password: Default<br>Gender: Male<br>Address:186 nowhere<br>ave Kingston 3<br>Employee ID:eh145<br>First name: carlos<br>Last name: Mendex<br>Telephone:8764548528<br>Department: IT<br>Supervisor First name:<br>Azul<br>Supervisor Last name:<br>Gonzales<br>Password: Default<br>Gender: Male<br>Address:225 cardboard<br>box ave Kingston 8 | User should<br>be able to<br>Successfully<br>create<br>multiple user<br>profiles | Successful<br>creation of<br>multiple user<br>profiles | 11/14/2024 |
|--------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------|------------|

|              |                             |                                                                                                                                                                                                                                                                                                           |                                                                       |                                          |            |
|--------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------|------------|
| TsHR-0<br>11 | Test Update<br>User profile | Employee ID:tj548<br><br>First name: Lance<br><br>Last name: Jackson<br><br>Telephone:8765512388<br><br>Department:<br>Dispatcher<br><br>Supervisor First name:<br>Nicole<br><br>Supervisor Last name:<br>Reynols<br><br>Password: Default<br><br>Gender: Male<br><br>Address:15 Scotia ave<br>Mandeville | User should<br>be able to<br>Successfully<br>update a user<br>profile | Successfully<br>update a user<br>profile | 11/14/2024 |
|--------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------|------------|

|              |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                  |                                                      |            |
|--------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------|------------|
| TsHR-0<br>10 | Test Update<br>Multiple User<br>profiles | Employee ID:sd458<br>First name: Madeline<br>Last name: Pink<br>Telephone:8768528528<br>Department: Sales<br>Supervisor First name:<br>Norbert<br>Supervisor Last name:<br>Black<br>Password: Default<br>Gender: Female<br>Address:186 rat road<br>ave Kingston 3<br>Employee ID:985ds<br>First name: Ivory<br>Last name: Gaynor<br>Telephone:8764159528<br>Department: IT<br>Supervisor First name:<br>Itadori<br>Supervisor Last name:<br>Williams<br>Password: Default<br>Gender: Female<br>Address:225 reggae<br>blvd ave Kingston 8 | User should<br>be able to<br>Successfully<br>update<br>multiple user<br>profiles | Successful<br>update of<br>multiple user<br>profiles | 11/14/2024 |
|--------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------|------------|

|           |                                     |                                                                                           |                                                                    |                                               |            |
|-----------|-------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------|------------|
| TsHR-011  | Test Change User Password           | Employee ID:hb589<br>New Password:default                                                 | User should be able to Successfully Change User Password           | Successful Change of User Password            | 11/14/2024 |
| TsHR-012  | Test Change Multiple User Passwords | Employee ID:hb589<br>New Password:default<br>Employee ID:asv892<br>New Password:defaulted | User should be able to Successfully Change Multiple User Passwords | Successful Change of Multiple User Passwords  | 11/14/2024 |
| TsHR-013  | Test Change Multiple User Passwords | Employee ID:hb589<br>New Password:default<br>Employee ID:asv892<br>New Password:defaulted | User should be able to Successfully Change Multiple User Passwords | Successful Change of Multiple User Passwords  | 11/14/2024 |
| TsHR-014  | Test Delete User Account            | Employee ID: rg482                                                                        | User should be able to Successfully Delete User Account            | Successful Deletion of User Account           | 11/14/2024 |
| TsHR-015  | Test Delete Multiple User Accounts  | Employee ID: rg482<br>Employee ID: ng178                                                  | User should be able to Successfully Delete Multiple User Accounts  | Successful Deletion of Multiple User Accounts | 11/14/2024 |
| TsHR-016  | Test Logout Functionality           |                                                                                           | User should be able to logout successfully                         | Successful logout                             | 11/14/2024 |
| TsEmp-017 | Test Human Resource                 | EmployeeID: sallyhenderson                                                                | User should be able to                                             | Successful login                              | 11/14/2024 |

|           | Login Functionality                     | Password:123                                                   | login successfully                                       |                                   |            |
|-----------|-----------------------------------------|----------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|------------|
| TsEmp-018 | Test Change Password Functionality      | Old Password: 123<br>New Password: 321<br>Verify Password: 321 | User should be able to change password successfully      | Successful password change        | 11/14/2024 |
| TsEmp-018 | Test Reserve Seat Functionality         | Bus Id: B123<br>Seat: 7                                        | User should be able to reserve a seat successfully       | Successful seat reservation       | 11/14/2024 |
| TsEmp-019 | Test view driver location Functionality |                                                                | User should be able to view driver location successfully | Successfully View driver location | 11/14/2024 |
| TsEmp-020 | Test view Timetable Functionality       |                                                                | User should be able to view the Timetable successfully   | Successfully View Timetable       | 11/14/2024 |
| TsEmp-021 | Test Logout Functionality               |                                                                | User should be able to logout successfully               | Successful logout                 | 11/14/2024 |

## Bibliography

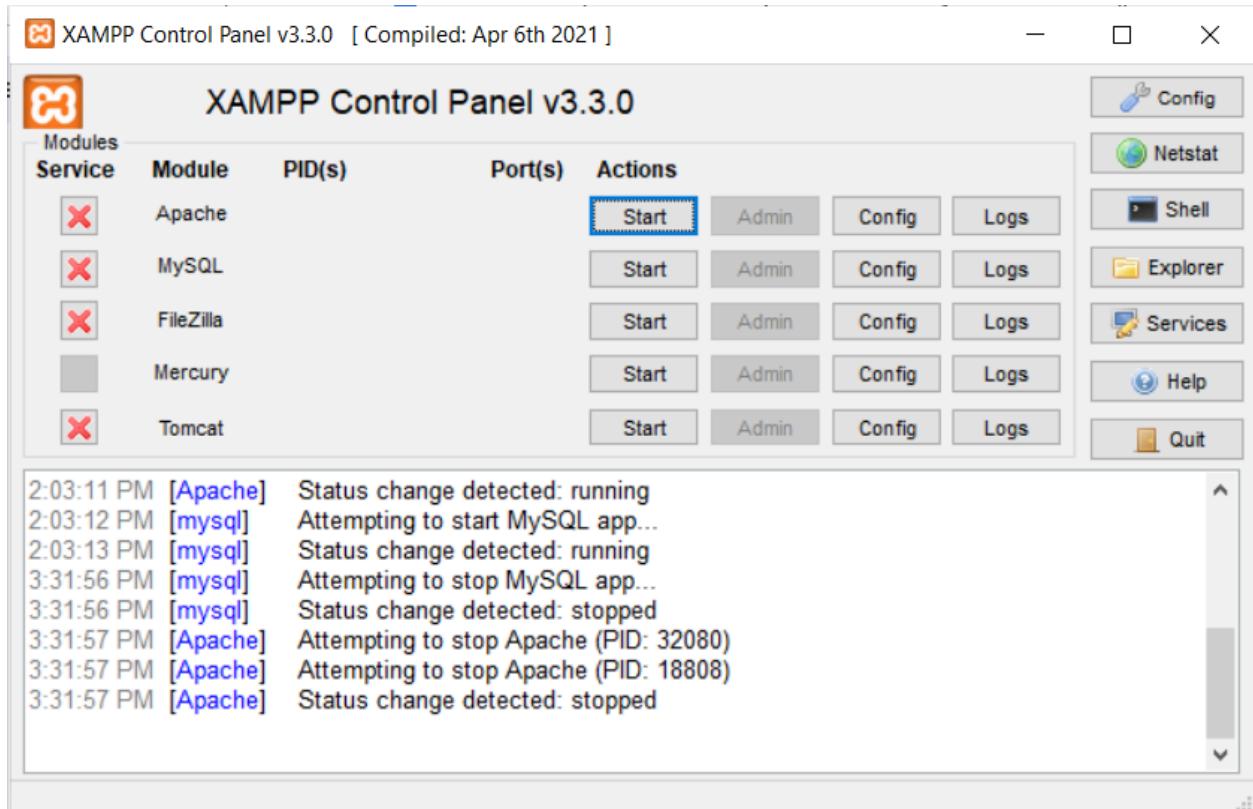
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## Appendices

Application that links the database to the IDE



## Database user interface

The screenshot shows the phpMyAdmin interface on a Windows desktop. The browser title bar reads "localhost/phpmyadmin/index.php?route=/&route=%2F". The top navigation bar includes links for Databases, SQL, Status, User accounts, Import, Export, Settings, Replication, Variables,Charsets, Engines, and Plugins.

**General settings:**

- Change password
- Server connection collation: utf8mb4\_unicode\_ci
- More settings

**Appearance settings:**

- Language: English
- Theme: pmahomme
- View all

**Database server:**

- Server: 127.0.0.1 via TCP/IP
- Server type: MariaDB
- Server connection: SSL is not being used
- Server version: 10.4.32-MariaDB - mariadb.org binary distribution
- Protocol version: 10
- User: root@localhost
- Server charset: UTF-8 Unicode (utf8mb4)

**Web server:**

- Apache/2.4.58 (Win64) OpenSSL/3.1.3 PHP/8.2.12
- Database client version: libmysql - mysqldnd 8.2.12
- PHP extension: mysqli curl mbstring
- PHP version: 8.2.12

**phpMyAdmin:**

- Version information: 5.2.1 (up to date)
- Documentation
- Official Homepage
- Contribute
- Get support
- List of changes
- License

**Console:**

## Programme Manual

### Timetable (Dispatcher)

```
 /// Adds a new bus route to the timetable based on the input in the text fields.
 ///
 /// If the input is valid, it will display a snackbar saying "Processing Data" and
 /// then execute the SQL query to insert the new bus route into the database.
 ///
 /// If the checkbox is checked, it will then clear the text fields.
 ///
 /// If the checkbox is not checked, it will then close the dialog and go back to
 /// the previous screen.
 void add() async {
 if (_formKey.currentState!.validate()) {
 final processingSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Processing Data')),
);

 await processingSnackBar.closed;

 await DbConnection.dbPort.execute(
 "INSERT INTO bus_schedule(bus_number, route, departure_time, arrival_time, driver_name) values('${busNumberController
!.text}', '${routeController!.text}', '${departureTimeController!.text}', '${arrivalTimeController!.text}', '${
driverNameController!.text}')");

 if (!mounted) return;

 final successSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Route added to timetable successfully')),
);

 if (isSwitched) {
 setState(() {
 busNumberController!.text = '';
 routeController!.text = '';
 departureTimeController!.text = '';
 arrivalTimeController!.text = '';
 driverNameController!.text = '';
 });
 } else {
 await successSnackBar.closed;
 if (!mounted) return;
 Navigator.pop(context);
 }
 }
 }
}
```

```

Reserve Seat (Employee)

 /**
 * Selects a seat for the employee on a specified bus route.
 */
 /**
 * This function checks if both a bus route and a seat number are selected.
 * If both are selected, it displays a success snackbar and updates or inserts
 * the reserved seat information into the database for the current employee.
 * If either is not selected, it displays a failure snackbar prompting the
 * user to select a bus route and seat number. After processing, it navigates
 * back to the previous screen unless the widget is no longer mounted.
 */
 void select() async {
 if (selectedBusValue.isNotEmpty && selectedSeat != 0) {
 final successfulSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Successfully selected seat')),
);
 }

 var busRoute = await DbConnection.dbPort.execute(
 "SELECT * FROM reserved_seats where employee_id = '${userInfo['employee_number']}';");

 if (busRoute.rows.isEmpty) {
 await DbConnection.dbPort.execute(
 "INSERT INTO reserved_seats(employee_id ,bus_number, seat_number) VALUES('${userInfo['employee_number']}', '$selectedBusValue', $selectedSeat);");
 } else {
 await DbConnection.dbPort.execute(
 "UPDATE reserved_seats SET seat_number = $selectedSeat, bus_number = '$selectedBusValue' WHERE employee_id = '${userInfo['employee_number']}';");
 }

 await successfulSnackBar.closed;
 if (!mounted) return;
 Navigator.pop(context);
 } else {
 final failedSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(
 content: Text('Please select bus route and seat number')),
);
 await failedSnackBar.closed;
 if (!mounted) return;
 }
}

 /**
 * Gets the bus route information for a given bus number from the database.
 */
 /**
 * The given bus number is used to query the database for the bus route
 * information. If there is no bus route with the given number, it returns
 * null. Otherwise, it returns the bus route information.
 */
Future<ResultSetRow> busRoute(String busNumber) async {
 var busRoute = await DbConnection.dbPort
 .execute("SELECT * FROM bus_schedule where bus_number = '$busNumber';");

 return busRoute.rows.first;
}

```

```
 /// Retrieves the available seats for a specific bus number.
 ///
 /// This function queries the database for reserved seats on the specified
 /// bus number. It initializes the `seats` list with seat numbers from 1 to 40
 /// and removes any seats that are already reserved based on the query result.
 /// The remaining seat numbers in the list are considered available.
 void availableSeats(String busNumber) async {
 var availableSeats = await DbConnection.dbPort.execute(
 "SELECT * FROM reserved_seats where bus_number = '$busNumber';");

 seats.clear();

 for (int i = 1; i <= 40; i++) {
 seats.add(i);
 }

 if (availableSeats.rows.isNotEmpty) {
 for (ResultSetRow element in availableSeats.rows) {
 if (seats.contains(int.parse(element['seat_number']!))) {
 seats.remove(int.parse(element['seat_number']!));
 }
 }
 }
 }
}
```

```
View Timetable (Employee)
```
body: SingleChildScrollView(
  child: Column(
    mainAxisAlignment: MainAxisAlignment.start,
    children: [
      DataTable(
        columns: const <DataColumn>[
          DataColumn(
            label: Text("Bus Number"),
          ),
          DataColumn(
            label: Text("Route"),
          ),
          DataColumn(
            label: Text("Departure Time"),
          ),
          DataColumn(
            label: Text("Arrival Time"),
          ),
          DataColumn(
            label: Text("Driver Name"),
          ),
        ],
        rows: snapshot.data!.rows
          .map(
            (row) => DataRow(
              cells: <DataCell>[
                DataCell(Text(row.assoc()['bus_number']!)),
                DataCell(Text(row.assoc()['route']!)),
                DataCell(Text(row.assoc()['departure_time']!)),
                DataCell(Text(row.assoc()['arrival_time']!)),
                DataCell(Text(row.assoc()['driver_name']!)),
              ],
            ),
          )
          .toList(),
        ],
      ),
    ],
),
```
```

Fetch the bus schedule from the database then display it in a table format.

### Change Password (HR Manager)

```
/// Submits the change password request for an HR manager.
///
/// This function validates the form inputs, shows a "Processing Data"
/// snackbar, and updates the user's password in the database if the
/// validation is successful. If the operation is successful, it shows
/// a "Password updated successfully" snackbar. Depending on the state
/// of `isSwitched`, it either clears the text fields or navigates back
/// to the previous screen. If the widget is no longer mounted at
/// any point, it aborts further operations.
void submit() async {
 if (_formKey.currentState!.validate()) {
 final processingSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Processing Data')));
 }

 await processingSnackBar.closed;

 await DbConnection.dbPort.execute(
 "update users set password = '${newPasswordController!.text}' where employee_number = '${employeeNumberController!.text}'");

 if (!mounted) return;

 final successSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Password updated successfully')));
}

await successSnackBar.closed;
if (!mounted) return;

if (isSwitched) {
 setState(() {
 employeeNumberController!.text = "";
 newPasswordController!.text = "";
 });
} else {
 if (!mounted) return;
 Navigator.pop(context);
}
}
```

```
Create User Profile (HR Manager)
```

```
 /// Submits the create profile request for an HR manager.
 ///
 /// If the input is valid, it will display a "Processing Data" snackbar
 /// and then execute the SQL query to insert the new user into the
 /// database. If the operation is successful, it will show a "Profile
 /// created successfully" snackbar. Depending on the state of `isSwitched`,
 /// it will either clear the text fields or navigate back to the previous
 /// screen.
 void submit() async {
 if (_formKey.currentState!.validate()) {
 final processingSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Processing Data')),
);

 await processingSnackBar.closed;

 await DbConnection.dbPort.execute("""INSERT INTO
 users(
 employee_number,
 firstname,
 lastname,
 telephone,
 department,
 supervisor_firstname,
 supervisor_lastname,
 password,
 gender,
 address
)
 VALUES(
 '${employeeNumberController!.text}',
 '${firstNameController!.text}',
 '${lastNameController!.text}',
 '${telephoneController!.text}',
 '$department',
 '${supervisorFirstNameController!.text}',
 '${supervisorLastNameController!.text}',
 '${passwordController!.text}',
 '${genderController!.text}',
 '${addressController!.text}'
);
 """);
 }
 }
```

```
if (!mounted) return;

final successSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Profile created successfully')),
);

await successSnackBar.closed;

if (isSwitched) {
 setState(() {
 employeeNumberController!.text = "";
 firstNameController!.text = "";
 lastNameController!.text = "";
 telephoneController!.text = "";
 department = "";
 supervisorFirstNameController!.text = "";
 supervisorLastNameController = TextEditingController();
 passwordController!.text = "";
 genderController!.text = "";
 addressController!.text = "";
 });
} else {
 if (!mounted) return;
 Navigator.pop(context);
}
}
```

Delete User Profile (HR Manager)

```
/// Submits the request to delete a user account.
///
/// This function validates the form and retrieves the user information
/// from the provided snapshot. If the user is found, it displays a
/// confirmation dialog with the user's details. Upon confirmation,
/// it deletes the user account from the database and shows
/// a success snackbar. If the `isSwitched` flag is true, it clears the
/// employee number field; otherwise, it navigates back to the previous
/// screen.
void submit(AsyncSnapshot<IResultSet> snapshot, BuildContext context) {
 if (_formKey.currentState!.validate()) {
 ResultSetRow user = snapshot.data!.rows.firstWhere((element) {
 return element.assoc()['employee_number'] ==
 employeeNumberController!.text;
 });

 showDialog(
 context: context,
 builder: (BuildContext context) {
 return AlertDialog(
 title: const Text(
 "Confirm Delete",
 style: TextStyle(
 fontSize: 26,
 fontWeight: FontWeight.bold,
),
),
 content: SizedBox(
 width: MediaQuery.of(context).size.width / 2,
 height: MediaQuery.of(context).size.height / 2,
 child: Column(
 children: [
 const Text(
 "Are you sure you want to delete the account?\n",
 style: TextStyle(
 fontSize: 24,
 fontWeight: FontWeight.bold,
),
),
 Text(
 "Name: ${user.assoc()['firstname']}! ${user.assoc()['lastname']}!",
 style: const TextStyle(
 fontSize: 24,
 fontWeight: FontWeight.bold,
),
),
],
),
),
);
 },
);
 }
}
```

```

),
),
Text(
 "Address: ${user.assoc()['address']!}",
 style: const TextStyle(
 fontSize: 24,
 fontWeight: FontWeight.bold,
),
),
Text(
 "Telephone: ${user.assoc()['telephone']!}",
 style: const TextStyle(
 fontSize: 24,
 fontWeight: FontWeight.bold,
),
),
Text(
 "Department: ${user.assoc()['department']!}",
 style: const TextStyle(
 fontSize: 24,
 fontWeight: FontWeight.bold,
),
),
],
),
),
),
actions: <Widget>[
 TextButton(
 child: const Text(
 'Cancel',
 style: TextStyle(
 fontSize: 24,
 fontWeight: FontWeight.bold,
),
),
 onPressed: () {
 Navigator.of(context).pop();
 },
),
 TextButton(
 child: const Text(
 'Confirm',
 style: TextStyle(
 fontSize: 24,
 fontWeight: FontWeight.bold,
),
),
 onPressed: () async {
 // Navigator.of(context).pop();

 final processingSnackBar =
 ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Processing Data')),
);
 await processingSnackBar.closed;

 await DbConnection.dbPort.execute(
 "DELETE FROM users WHERE employee_number = '${employeeNumberController!.text}'");
 },
),
]
);

```

```
if (!mounted) return;

final successSnackBar =
 ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(
 content: Text('Account deleted successfully'))),
);

await successSnackBar.closed;

if (isSwitched) {
 setState(() {
 employeeNumberController!.text = "";
 });
} else {
 if (!mounted) return;
 Navigator.pop(context);
 Navigator.pop(context);
}
},
),
],
);
},
);
}
}
```

```
Update User Profile (HR manager)
```

```
 /// Submits the update profile request for an HR manager.
 ///
 /// If the input is valid, it will display a "Processing Data" snackbar
 /// and then execute the SQL query to update the user's information in the
 /// database. If the operation is successful, it will show a "Profile Updated
 /// successfully" snackbar. Depending on the state of `isSwitched`, it will
 /// either clear the text fields or navigate back to the previous screen.
 void submit() async {
 if (_formKey.currentState!.validate()) {
 final processingSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Processing Data')),
);

 await processingSnackBar.closed;

 await DbConnection.dbPort.execute("""
 UPDATE users SET
 employee_number = '${employeeNumberController!.text}',
 firstname = '${firstNameController!.text}',
 lastname = '${lastNameController!.text}',
 telephone = '${telephoneController!.text}',
 department = '$department',
 supervisor_firstname = '${supervisorFirstNameController!.text}',
 supervisor_lastname = '${supervisorLastNameController!.text}',
 password = '${passwordController!.text}',
 gender = '${genderController!.text}',
 address = '${addressController!.text}'
 WHERE employee_number = '${employeeNumberController!.text}';
 """);

 if (!mounted) return;

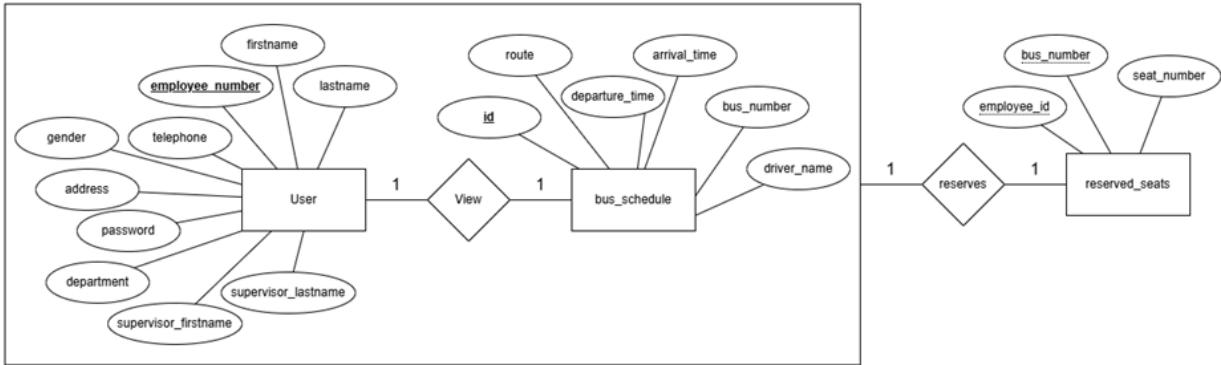
 final successSnackBar = ScaffoldMessenger.of(context).showSnackBar(
 const SnackBar(content: Text('Profile Updated successfully')),
);

 await successSnackBar.closed;
```

```
 if (isSwitched) {
 setState(() {
 employeeNumberController!.text = "";
 firstNameController!.text = "";
 lastNameController!.text = "";
 telephoneController!.text = "";
 department = "";
 supervisorFirstNameController!.text = "";
 supervisorLastNameController = TextEditingController();
 passwordController!.text = "";
 genderController!.text = "";
 addressController!.text = "";
 });
 } else {
 if (!mounted) return;
 Navigator.pop(context);
 }
 }
}
```

## Database Design

### Database structure



The ER Diagram illustrates the data model for the ACE Express Bus Reservation System. It depicts the entities (User, Bus\_Schedule, Bus, Reserves) and their relationships. Users can view bus schedules and reserve seats on specific buses. Each bus has a unique bus number and can be reserved by multiple users. The system tracks reserved seats for each bus. Additionally, the diagram includes attributes for entities like User's personal information, Bus\_Schedule's departure/arrival times, and Bus's driver name. This ER Diagram provides a clear visual representation of the system's data structure and how the entities interact.

### External File Structure (if any)

No external file structure was utilized within the ACE Express Bus Reservation System.

### Global Data (if any)

The userInfo variable was used globally throughout the program to store and access user information. userInfo was used to perform functional requirements within the system. Such as, querying information from the database along with validation.

## **User Manual**

### **Implementation Method**

The Agile methodology was employed in the implementation of the Ace Express Pick-Up service system, chosen for its flexibility and iterative approach. Agile methodology allowed the team to deliver functional features in stages, receive user feedback, and make quick adjustments based on real-world usage. This iterative process ensured that each user group's requirements such as drivers, dispatchers, HR managers, and employees were continuously refined and met effectively. Unlike traditional methods, Agile supported ongoing improvements, making it ideal for a dynamic, user-centered project like this.

### **Training methods employed**

Dispatchers were trained to oversee transportation schedules, ensuring efficient and uninterrupted operations. Their responsibilities included viewing existing timetables and creating new schedules for various routes. Training focused on equipping them with the skills needed to access, monitor, and update transportation timetables seamlessly within the system, optimizing route management and operational efficiency.

Employees were trained to interact with the system for a more user-friendly commuting experience. Their roles involved selecting seats for reserved trips, viewing real-time bus locations, and accessing transportation schedules to plan commutes. The training emphasized mastering the features needed for booking management, schedule viewing, and bus tracking, ensuring convenience and effective use of the system.

HR Managers received comprehensive training to manage employee accounts within the system. Their roles included creating profiles for new employees and updating employee

information, managing passwords to enhance system security, and deleting accounts as necessary. The training aimed to develop their proficiency in user onboarding, account maintenance, and secure off-boarding processes, ensuring smooth transitions and data integrity.

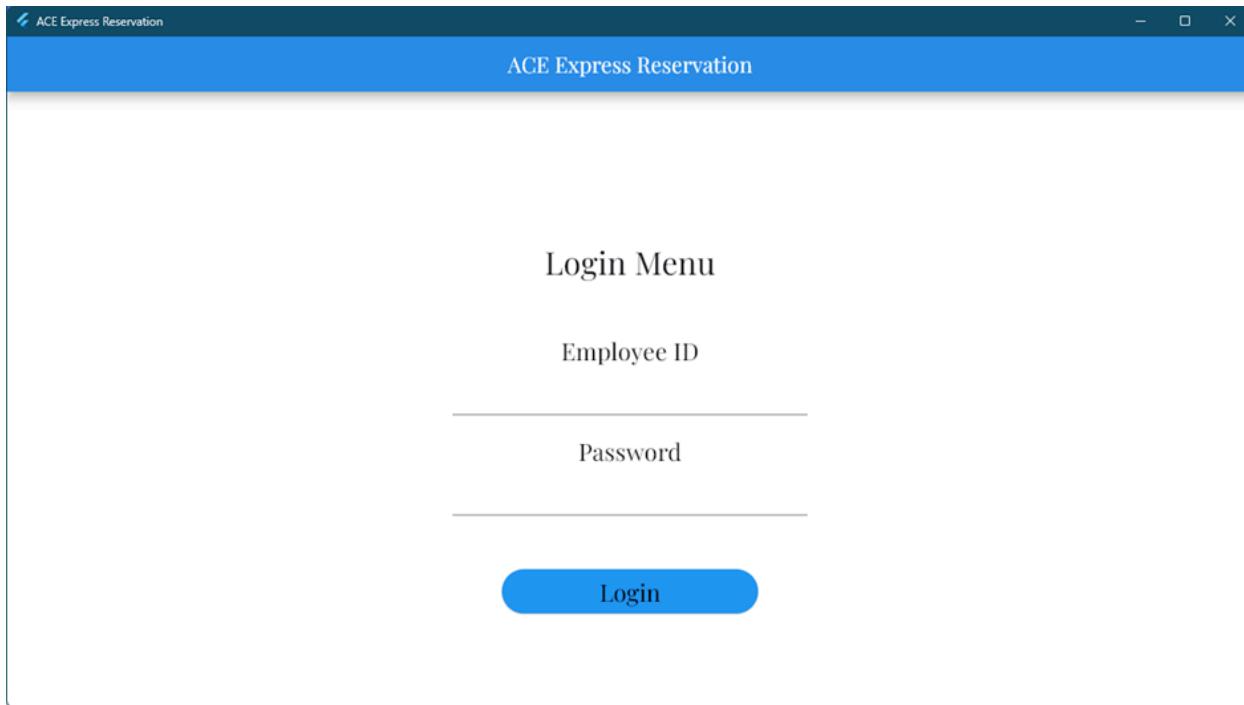
The training was conducted by external paid trainers, chosen for their ability to tailor training to specific user roles. Participants were provided with user manuals and detailed documentation, serving as reliable resources for task execution and reinforcing the skills acquired during the training sessions.

### **ACE Express Reservation Application User Manual**

This user manual provides a step-by-step guide for employees to log into the **ACE Express Reservation** system, a bus reservation application.

#### **Login Overview**

The login page serves as the gateway to the application, where employees must authenticate themselves by entering their credentials. Here's how to navigate and use the login menu effectively.



## Elements of the Login Page

### 1. Application Name (ACE Express Reservation)

- Located at the top of the screen in a blue header.
- Confirms that you are using the official ACE Express Reservation system.

### 2. Login Menu

- The login menu is centred on the screen, containing two input fields and a login button.
- Input fields:
  - **Employee ID:** A unique identifier assigned to each employee.
  - **Password:** The employee's secure password.
- **Login Button:** Located below the input fields, this button submits the entered credentials for verification.

## **Step-by-Step Login Instructions**

### **1. Launch the Application**

- Open the ACE Express Reservation system on your computer.

### **2. Enter Employee ID**

- Click on the input field labeled **Employee ID**.
- Type your assigned employee ID. Ensure there are no spaces or errors.

### **3. Enter Password**

- Click on the input field labeled **Password**.
- Type your password carefully. Passwords are case-sensitive, so ensure correct capitalization.

### **4. Login**

- Once both fields are filled, click the **Login** button to proceed. This will send your credentials for authentication.
- If successful, you will be redirected to the dashboard to manage bus reservations.
- If login fails, verify the employee ID and password for correctness and try again.

## **Troubleshooting Login Issues**

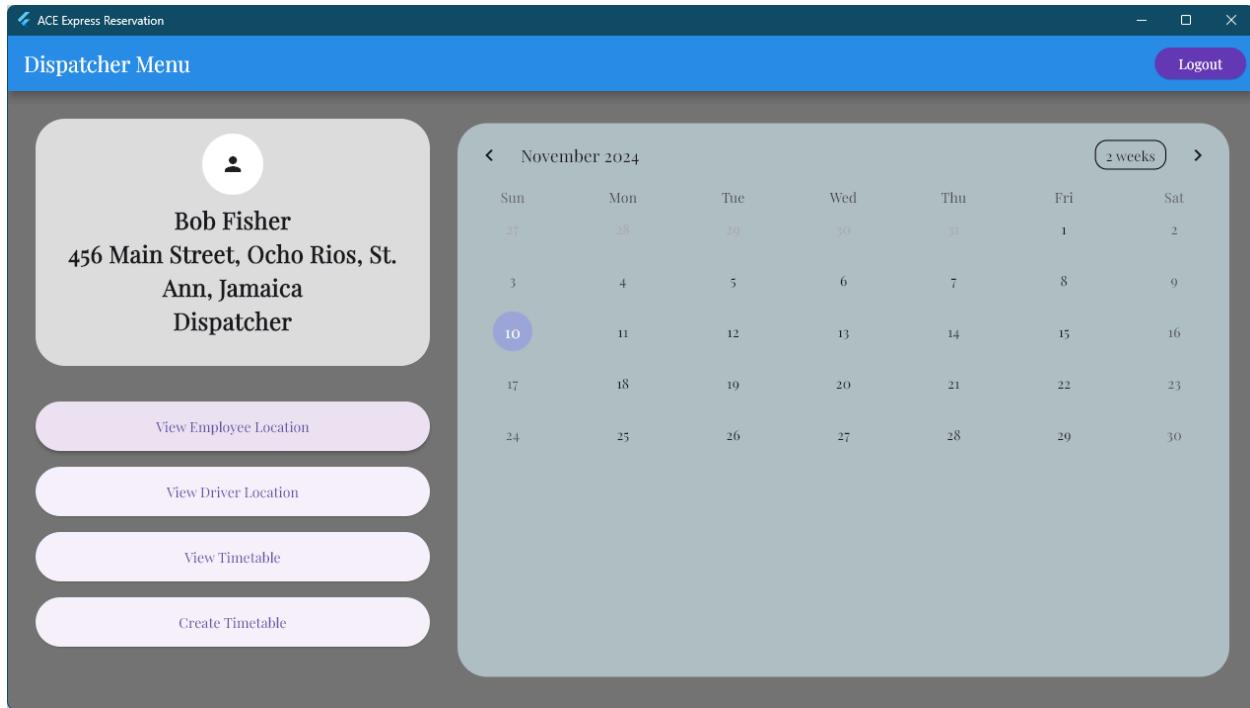
### **• Forgot employee ID or password?**

- Contact the human resources department for assistance.

By following these instructions, you can successfully log into the ACE Express Reservation application and manage bus reservations.

## Dispatcher Overview

The Dispatcher Menu is the main interface for dispatchers to manage various bus reservation functions. It displays information and provides access to key features.



## Elements of the Dispatcher Menu

### Header:

- Application Name: ACE Express Reservation
- User Information: Displays the dispatcher's name, address, and role.
- Logout Button: Allows the dispatcher to log out of the system.

### Calendar:

- Displays the current month and allows navigation to previous and next months.
- Shows days of the week (Sun, Mon, Tue, Wed, Thu, Fri, Sat).
- Highlights the current date.

## **Menu Options:**

- View Employee Location: Accesses a map view showing the real-time locations of employees.
- View Driver Location: Accesses a map view showing the real-time locations of drivers.
- View Timetable: Displays the current bus timetable, including routes, departure/arrival times, and driver assignments.
- Create Timetable: Allows dispatchers to create new bus schedules.

## **How to Use the Dispatcher Menu**

1. View Employee Location: Click the "View Employee Location" button to see a map displaying the current locations of employees.
2. View Driver Location: Click the "View Driver Location" button to see a map displaying the current locations of drivers.
3. View Timetable: Click the "View Timetable" button to view the current bus schedule.
4. Create Timetable: Click the "Create Timetable" button to create new bus schedules.

The screenshot shows a software window titled "ACE Express Reservation". The main title bar says "ACE Express Reservation" and the sub-title bar says "Create Timetable Entry". On the right side of the sub-title bar is a toggle switch labeled "Add Multiple Timetable Entries?". The main content area is titled "Add Route Schedule to Timetable". It contains five input fields with asterisks: "Bus Number\*", "Route\*", "Departure Time\*", "Arrival Time\*", and "Driver Name\*". Below these fields is a blue "Add" button. The background of the window is light pink.

If the entered “Bus number” exists within the system. The user will be prompted to enter another bus number which is available. As shown in the figure 1.1

The screenshot shows a software interface titled "ACE Express Reservation" with a blue header bar containing a back arrow and the text "Create Timetable Entry". Below the header, there is a form titled "Add Route Schedule to Timetable". The "Bus Number\*" field contains "B123", and the "Route\*" field contains "HWT to Spanish Town". A red error message "Bus Number already exists, try another" is displayed below the bus number input field.

Figure 1.1

It should also be noted that “Departure Time” and “Arrival Time” must be entered using the required format; otherwise, an input value will be displayed to the user as shown in figure 1.2.

The screenshot shows a software interface with two input fields for time. The "Departure Time\*" field has "9 AM" entered and displays a red error message: "Please enter a valid departure time. Format: HH:MM AM/PM". The "Arrival Time\*" field has "12 PM" entered and displays a red error message: "Please enter a valid arrival time. Format: HH:MM AM/PM".

Figure 1.2

If all the information has been entered correctly. Then the user will be prompted that the timetable entry was successful. As shown in figure 1.3 then the user will be returned to the dispatch menu screen. If “Add Multiple Timetable Entries” was not selected shown in the top right corner.

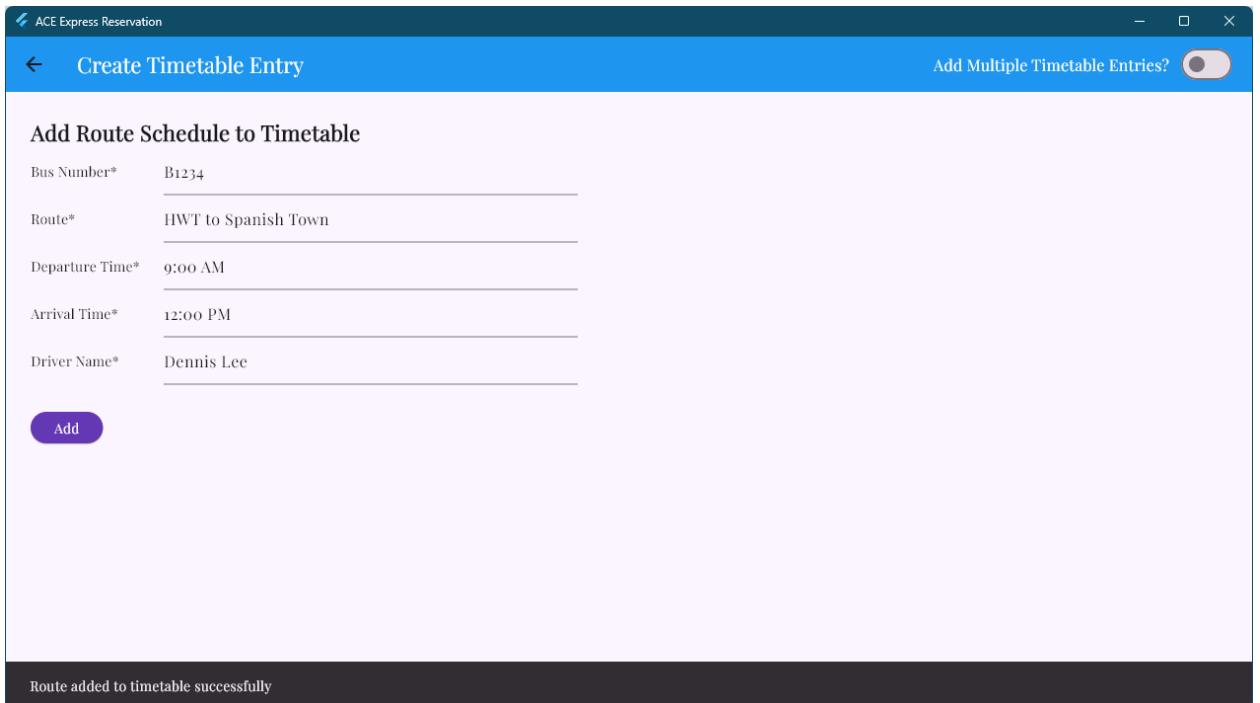


Figure 1.3

5. Logout: Click the "Logout" button to log out of the system. Which is displayed in the top right corner on the dispatcher menu.

## Employee Overview

The Employee Menu is the main interface for employees to access various bus reservation functions. It displays essential information and provides access to key features. The Employee Menu is the centre hub, and clients of ACE Express Reservation can reserve seats, view driver locations, and view the timetable. As shown in figure 1.4.

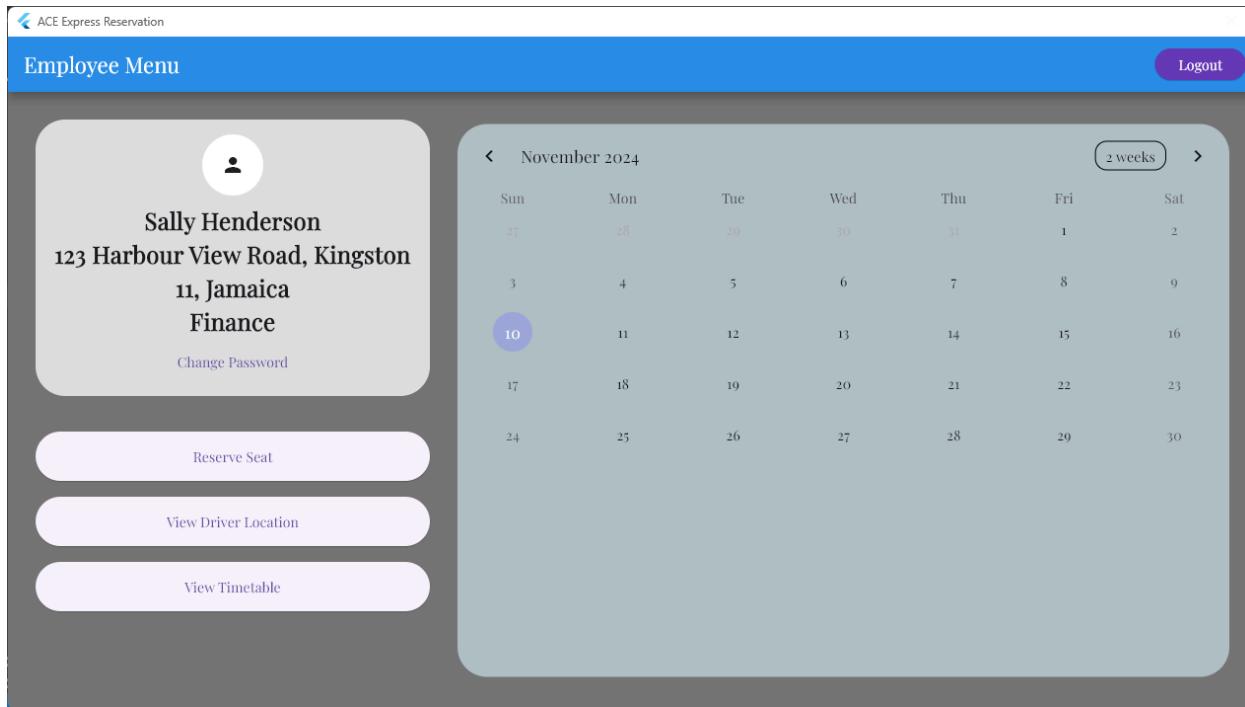


Figure 1.4

## Elements of the Employee Menu

### Header:

- Application Name: ACE Express Reservation
- User Information: Displays the employee's name, address, and department.
- Logout Button: Allows the employee to log out of the system.

### Calendar:

- Displays the current month and allows navigation to previous and next months.
- Shows days of the week (Sun, Mon, Tue, Wed, Thu, Fri, Sat).
- Highlights the current date.

### Menu Options:

- Change Password: Allows employees to change their password.

- Reserve Seat: Enables employees to reserve seats on buses.
- View Driver Location: Accesses a map view showing the real-time locations of drivers.
- View Timetable: Displays the current bus timetable, including routes, departure/arrival times, and driver assignments.

Similarly, to the Dispatcher Menu. The User Interface remains consistent to maintain a seamless user experience. Not only to our clients but also to our staff and external stakeholders.

## How to Use the Employee Menu

1. Change Password: Click the "Change Password" button to update your password. Follow the on-screen instructions to enter your old password and create a new one.

Ensure that you enter your current password correctly. Otherwise, the system will prompt the user that the password entered is incorrect. As shown in Figure 1.5 below:

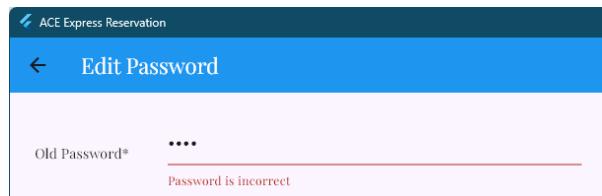


Figure 1.5

The system prompts the user to enter their new password a second time. This ensures that the user wants to change their password. If the new password and the verify password does not match. Then the system will notify the user that the passwords are different and will not update the user password until the issue is resolved. As shown below:

|                         |      |
|-------------------------|------|
| Old Password*           | ***  |
| New Password*           | ***  |
| Verify Password*        | **** |
| Password does not match |      |

2. **Reserve Seat:** Click the "Reserve Seat" button to reserve a seat on a bus. Follow the on-screen instructions to select a route, date, and time.

ACE Express Reservation

**Reserve Seat**

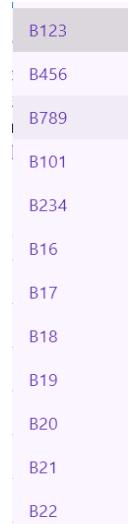
Reserve Bus: [B123](#)

Bus Route: Company A to City Center  
Departure Time: 08:00 AM  
Arrival Time: 09:30 AM  
Driver: John Doe

Reserve Seat: [4](#)

| Bus Number | Route                          | Departure Time | Arrival Time | Driver Name  |
|------------|--------------------------------|----------------|--------------|--------------|
| B123       | Company A to City Center       | 08:00 AM       | 09:30 AM     | John Doe     |
| B456       | Company B to Suburb X          | 09:15 AM       | 10:45 AM     | Jane Smith   |
| B789       | Industrial Park to Downtown    | 11:00 AM       | 12:15 PM     | Mike Johnson |
| B101       | University District to Airport | 01:30 PM       | 03:00 PM     | Emily Davis  |
| B234       | Residential Area to Hospital   | 04:45 PM       | 05:30 PM     | David Lee    |
| B16        | Tech Park to City Center       | 5:30 PM        | 6:00 PM      | Sarah Miller |
| B17        | Downtown to Airport            | 6:45 PM        | 7:30 PM      | David Lee    |

The system fetches available buses from the database then prompts the user to select from a dropdown menu. As shown below:



After, the system displays various information about the selected bus such as: Bus Route, Departure Time, Arrival Time, Driver Name, and the seats available on the selected bus, along with an overview of the current schedule. As shown below:

ACE Express Reservation

← Reserve Seat Select

Reserve Bus: B123

Bus Route: Company A to City Center  
Departure Time: 08:00 AM  
Arrival Time: 09:30 AM  
Driver: John Doe

Reserve Seat: 4

| Bus Number | Route                          | Departure Time | Arrival Time | Driver Name  |
|------------|--------------------------------|----------------|--------------|--------------|
| B123       | Company A to City Center       | 08:00 AM       | 09:30 AM     | John Doe     |
| B456       | Company B to Suburb X          | 09:15 AM       | 10:45 AM     | Jane Smith   |
| B789       | Industrial Park to Downtown    | 11:00 AM       | 12:15 PM     | Mike Johnson |
| B101       | University District to Airport | 01:30 PM       | 03:00 PM     | Emily Davis  |
| B234       | Residential Area to Hospital   | 04:45 PM       | 05:30 PM     | David Lee    |
| B16        | Tech Park to City Center       | 05:30 PM       | 06:00 PM     | Sarah Miller |
| B17        | Downtown to Airport            | 06:45 PM       | 07:30 PM     | David Lee    |

Once the bus number and seat has been selected. The system will process that information then confirm that the seat has been reserved on the selected bus. As shown below:

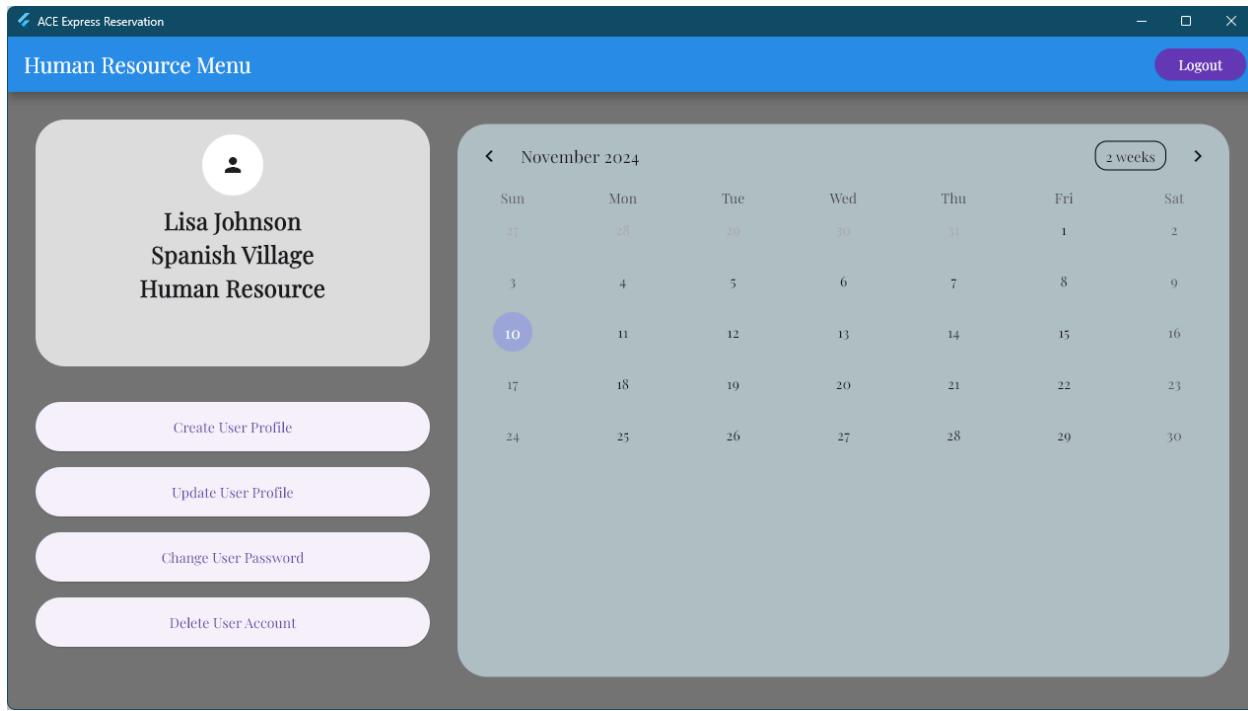
The screenshot shows a software window titled "ACE Express Reservation". The main title bar says "Reserve Seat". On the right, there is a "Select" button. Below the title bar, it says "Reserve Bus: B123". Underneath, it displays bus route details: "Bus Route: Company A to City Center", "Departure Time: 08:00 AM", "Arrival Time: 09:30 AM", and "Driver: John Doe". Below these details, it says "Reserve Seat: 4". A table follows, listing seven bus routes with their respective numbers, routes, departure times, arrival times, and drivers. The last row of the table is highlighted in grey. At the bottom of the window, a dark bar contains the text "Successfully selected seat".

| Bus Number | Route                          | Departure Time | Arrival Time | Driver Name  |
|------------|--------------------------------|----------------|--------------|--------------|
| B123       | Company A to City Center       | 08:00 AM       | 09:30 AM     | John Doe     |
| B456       | Company B to Suburb X          | 09:15 AM       | 10:45 AM     | Jane Smith   |
| B789       | Industrial Park to Downtown    | 11:00 AM       | 12:15 PM     | Mike Johnson |
| B101       | University District to Airport | 01:30 PM       | 03:00 PM     | Emily Davis  |
| B234       | Residential Area to Hospital   | 04:45 PM       | 05:30 PM     | David Lee    |
| B16        | Tech Park to City Center       | 5:30 PM        | 6:00 PM      | Sarah Miller |

3. **View Driver Location:** Click the "View Driver Location" button to see a map displaying the current locations of drivers.
4. **View Timetable:** Click the "View Timetable" button to view the current bus schedule.
5. **Logout:** Click the "Logout" button to log out of the system.

## Human Resource Overview

The Human Resource Menu is the main interface for human resource personnel to manage user accounts within the ACE Express Reservation system. It displays essential information and provides access to key features.



## Elements of the Human Resource Menu

How to create a user profile

**Create User Profile:** Click the "Create User Profile" button to create a new user account. Follow the on-screen instructions to input the user's information, such as name, address, telephone, and assign a department.

A screenshot of the "Create User Profile" form. The title bar says "Create User Profile". The form fields include: Employee Number\* (text input), First Name\* (text input), Last Name\* (text input), Telephone\* (text input), Department\* (dropdown menu), Supervisor First Name\* (text input), Supervisor Last Name\* (text input), Password\* (text input), Gender\* (text input), and Address\* (text input). At the bottom is a "Submit" button.

How to update user profile

1. **Update User Profile:** Click the "Update User Profile" button to modify an existing user profile. Enter the user you want to update and follow the on-screen instructions to make changes to their information.

The screenshot shows a window titled 'ACE Express Reservation' with a blue header bar containing the title and a 'Update Multiple Profiles?' toggle switch. The main area is titled 'Update User Profile'. It contains several input fields: 'Employee Number\*' with a text input field; 'First Name\*' and 'Last Name\*' with text input fields; 'Telephone\*' with a text input field; 'Department\*' with a dropdown menu; 'Supervisor First Name\*' and 'Supervisor Last Name\*' with text input fields; 'Password\*' with a text input field; 'Gender\*' with a text input field; and 'Address\*' with a text input field. A 'Submit' button is located at the bottom left of the form area.

This section will guide you through the process of creating a new user profile in the ACE Express Reservation system.

### Step-by-Step Guide

- [Create User Profile]
  - **Employee Number:** Enter the unique employee number assigned to the new user. The employee number entered must be unique and one that does not exist already in the system. Otherwise the system will notify the user as shown below.

|                  |                                                            |
|------------------|------------------------------------------------------------|
| Employee Number* | royjenkins                                                 |
|                  | <hr/>                                                      |
|                  | <small>Employee number already exists, try another</small> |
| First Name*      | Roy                                                        |
|                  | <hr/>                                                      |
| Last Name*       | Jenkins                                                    |
|                  | <hr/>                                                      |

- [Update User Profile]
  - **Employee Number:** Enter an existing employee number to update information stored about that user in the system. The employee number entered must be unique and one that already exists in the system. Otherwise the system will notify the user as shown below.

|                  |                                                |
|------------------|------------------------------------------------|
| Employee Number* | sandrabrown                                    |
|                  | <hr/>                                          |
|                  | <small>Employee number does not exists</small> |
| First Name*      | Sandra                                         |
|                  | <hr/>                                          |
| Last Name*       | Brown                                          |
|                  | <hr/>                                          |

- **First Name:** Enter the user's first name.
- **Last Name:** Enter the user's last name.
- **Telephone:** Enter the user's contact phone number.

Telephone numbers should be entered using the format as shown here; [+1 XXX-XXX-XXXX] else the system prompts the user likewise.

A screenshot of a user interface showing a telephone input field. The field is labeled "Telephone\*" and contains the text "123 4567". Below the field, a red error message reads "Please enter a valid phone number. Format: +1 XXX-XXX-XXXX".

- **Department:** Select the appropriate department from the dropdown menu.
- **Supervisor First Name:** Enter the first name of the user's supervisor.
- **Supervisor Last Name:** Enter the last name of the user's supervisor.
- **Password:** Set a strong password for the new user. Ensure it meets the system's password complexity requirements.
- **Gender:** Select the user's gender from the options provided.
- **Address:** Enter the user's complete address.
- **Add Multiple Profiles (Optional):**
  - **[Create User Profile]**
    - i. If you need to create multiple profiles simultaneously, toggle the "Add Multiple Profiles" switch to the "On" position.
    - ii. This will enable you to enter information for multiple users by clearing the fields when a user has been added to the system successfully.
  - **[Update User Profile]**
    - i. If you need to create multiple profiles simultaneously, toggle the "Update Multiple Profiles" switch to the "On" position.
    - ii. This will enable you to enter information for multiple users by clearing the fields when a user has been updated in the system successfully.

- **Submit:**
  - Once you have entered all the required information, click the "Submit" button.
  - The system will process the information and create the new user profile(s) for the created user profile.
  - The system will process the information and update user profile(s) for the updated user profile.

#### **Additional Tips:**

- Ensure that all mandatory fields are filled accurately.
  - Double-check the entered information to avoid errors.
  - Set strong and unique passwords for each user to enhance security.
  - If you encounter any issues, contact the system administrator for assistance.
2. **Change User Password:** Click the "Change User Password" button to reset a user's password. Enter the user whose password you want to change and follow the on-screen instructions to set a new password.

## How to Change user password

The screenshot shows a web-based application window titled "ACE Express Reservation". The main title bar says "Change User Password". On the right side of the title bar is a toggle switch labeled "Change Multiple Passwords?". The main content area contains two input fields: "Employee Number\*" and "New Password\*". Below these fields is a blue "Submit" button.

### 1. Enter User Information:

- **Employee Number:** Enter the employee number of the user whose password you want to change.
- Likewise, the employee number should exist in the system that you desire to change; otherwise, the system will prompt the user as shown below:

The screenshot shows a user interface for changing a password. It includes fields for 'Employee Number\*' (containing 'sandrabrown') and 'New Password\*' (containing '\*\*\*'). A red error message 'Employee number does not exists' is displayed below the employee number field. A blue 'Submit' button is located at the bottom left.

Employee Number\* sandrabrown

Employee number does not exists

New Password\* \*\*\*

Submit

**2. Set New Password:**

- **New Password:** Enter a new, strong password for the user. Ensure it meets the system's password complexity requirements.

**3. Change Multiple Passwords (Optional):**

- If you need to change passwords for multiple users, toggle the "Change Multiple Passwords" switch to the "On" position.
- This will allow you to enter a list of employee numbers and a new password to be applied to all of them.

**4. Submit:**

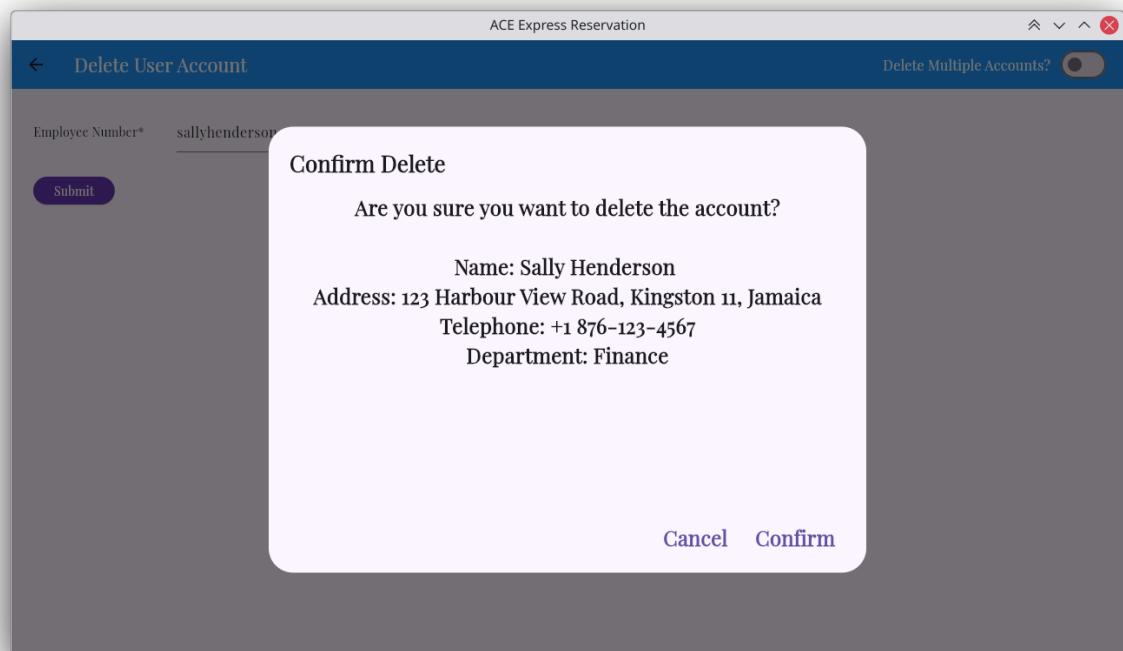
- Once you have entered the necessary information, click the "Submit" button.
- The system will process the request and update the user's password.

**Additional Tips:**

- Ensure that you enter the correct employee number.
- Set strong and unique passwords for each user to enhance security.
- If you need to change passwords for a large number of users, consider using the "Change Multiple Passwords" feature.

## How to Delete User Account

The screenshot shows a web browser window titled "ACE Express Reservation". The main header bar is blue with the text "Delete User Account" and a back arrow icon. On the right side of the header, there is a toggle switch labeled "Delete Multiple Accounts?" and some window control icons (minimize, maximize, close). The main content area has a light gray background. It contains a label "Employee Number\*" followed by a text input field containing "sallyhendersop". Below the input field is a blue "Submit" button.



- **Employee Number:** Enter the employee number of the user whose account you want to delete.
  - A dialogue box will pop up with name, address telephone number and department of the individual whose account should be deleted
  - Once the information of the individual whose account should be deleted is correct, select "confirm" and the user will be deleted.
- **Delete Multiple Accounts (Optional):**
  - If you need to delete multiple accounts, toggle the "Delete Multiple Accounts" switch to the "On" position.
  - A dialogue box will pop up with name, address telephone number and department of the individual whose account should be deleted
  - Once the information of the individual whose account should be deleted is correct select “confirm” and the user will be deleted.
  - This will clear the employee number field once the information has been processed.

### 3. Submit:

- Once you have entered the necessary information, click the "Submit" button.
- The system will process the request and delete the user account(s).

### **Important Considerations:**

- #### 4. Irreversibility:
- Deleting a user account is an irreversible action. Once deleted, the account and its associated data cannot be recovered.

5. **Data Retention:** Before deleting an account, ensure that any necessary data has been backed up or transferred.
6. **System Security:** Deleting unnecessary accounts helps maintain system security and prevents unauthorized access.

How to logout

7. **Logout:** Click the "Logout" button to log out of the system.