Pal_estinian Airlines

6 August 2024

----------------------This section is intended for the Instructor----------------------

Topic	**Mark**
Project Requirements and Modeling	
Correctness of Database mapping	
Functional Dependency and Normalization	
Project Tools	
Project Discussion	
Project Completeness	
Project Output Results or reporting (JasperReport, charts, graphs, etc.)	
Project Administration and Management	
Project Report	
Project Idea	
Project Complexity	
Team work	

Abstract

This report delineates the development, implementation, and evaluation of an advanced airport database system designed to optimize the management of flight schedules, passenger information, and staff records for Palestinian Airline.The primary objective of this system is to enhance operational efficiency througha centralized database that ensures accurate and swift data retrieval. Key features of the system encompass flight information management, passenger records, staff details, and a comprehensive ticketing mechanism. Extensive testing and validation have demonstrated significant improvements in data handling accuracy and operational efficiency. This project addresses existing system limitations, offering a robust, scalable solution for contemporary airport management challenges.

Introduction

The efficient management of vast and complex datasets is paramount in the aviation industry, where operational excellence hinges on the seamless integration of flight, passenger, and staff information. Airports, as intricate ecosystems, require sophisticated database systems to manage the multifaceted processes involved in daily operations. This project focuses on thedesign and implementation of a sophisticated airport database system for Palestinian Airline that aims to centralize and streamline data management, thereby enhancing operational efficiency and minimizing errors.

Requirements

Tables And Entities :

1. Person :

Column Name		Data Type	Description
ID		INT	Unique identifier for a person (Primary Key)
Name	FirstName	VARCHAR	Name of the person. (New Type)
	SecondName	VARCHAR	
	LastName	VARCHAR	
DateOfBirth		Date	The person's date of birth.
Nationality		VARCHAR	The nationality of the person.
PAN_Acc		INT	Pank account Number .
Gender		Char	The gender of the person.
Addsress	StreetName	VARCHAR	Address of the person (New Type)
	City	VARCHAR	
	Counrty	VARCHAR	
Contact	Phone1	INT	Contact details of the person(New Type)
	Phone1	INT	
	Email	VARCHAR	

The Person table contains personal details of individuals, including their unique ID, full name (split into FirstName, SecondName, and LastName), age, date of birth, nationality, PAN account, gender, address (consisting of StreetName, City, and Country), and contact information (including two phone numbers and an email). This table forms the basis for identifying both passengers and employees, ensuring that each individual has a comprehensive profile.

2. Passenger :

Column Name	Data Type	Description
ID	INT	Unique identifier with PassengerID for each passenger.
Passenger_ID	INT	Unique identifier for each passenger.
Passport_Num	INT	Passport number.
PromoCode	INT	Promotional Code Used To Provide A Special Discount from A Normal Fare.
TripCount	INT	Number of trips taken by the passenger.

The Passenger table includes data specific to passengers, with columns such as Passenger_ID (a unique identifier), PNR (Passenger Name Record), passport number (Pass_Num), promotional code (PromoCode), and the number of trips taken (TripCount). Each passenger is linked to a corresponding entry in the Person table through their Passenger_ID, ensuring that personal and travel-specific information is connected.

3. Employee :

Column Name	Data Type	Description
ID	INT	Unique identifier with Emp_ID for each Employee.
Emp_ID	INT	Unique identifier for a employee (Primary Key)
Deparnment _Name	VARCHAR	Department Name
Position	VARCHAR	The position or job title of the employee.
Salary	INT	The salary of the employee.
HireDate	Date	The date when the employee was hired.

The Employee table records information about employees, featuring an Emp_ID (unique identifier), department details (Dep_Name and Dep_Num), position, salary, and hire date. Each employee is also linked to a corresponding entry in the Person table through their Emp_ID, maintaining a connection between their personal details and employment information.

4. Airport：

Column Name		Data Type	Description
Airport_ID		INT	Unique identifier for an Airport (Primary Key)
Name		VARCHAR	Name of the airport.
timezone		VARCHAR	Time in the airport due to Greenwich .
location	Street	VARCHAR	(New Type)
	city	VARCHAR	
	country		

The Airport table contains information about airports, including Airport_ID (unique identifier), name, timezone, and location (comprising City and Country). This table helps in managing airport-specific details and serves as a reference point for flights and airlines operating in different regions.

5. Airline :

Column Name	Data Type	Description
AirLine_ID	INT	Unique identifier for a airline (Primary Key)
Name	VARCHAR	Name of the airline.
Country	VARCHAR	Country where the airline is registered.
CallSing	VARCHAR	The call sign of the airline.
HeadQuorters	VARCHAR	The Office Address At Which A State Agent Has There Primary Work assignment

The Airline table provides details about airlines, with columns such as AirLine_ID (unique identifier), name, country, call sign (CallSign), and headquarters location. This table connects to the Aircraft and Flight tables, associating each airline with its fleet and operations.

6. Aircraft :

Column Name	Data Type	Description
AirCraft_ID	INT	Unique identifier for each aircraft.
AirLine_ID	INT	Identifier linking the aircraft to an airline.
Model	VARCHAR	Model of the aircraft.
Tail_Num	INT	Tail number of the aircraft.
Capacity	INT	Seating capacity of the aircraft. (Derivative Attribute)
ManuFacturer	VARCHAR	Manufacturer of the aircraft.
Class_Details		Types of classes in this aircraft and the number of seats in each class

The Aircraft table stores information about aircraft, including AirCraft_ID (unique identifier), AirLine_ID (linking the aircraft to an airline), model, tail number (Tail_Num), capacity, manufacturer, seats, and class configuration (Class_name). This table connects to the Flight table, detailing which aircraft is used for each flight.

7. Flight :

Column Name	Data Type	Description
Flight_id	INT	Unique identifier for a Flight (Primary Key)
Aircraft_id	INT	Identifier linking the flight to an aircraft.
Acheduled_departure	TimeStamp	Scheduled departure time.
Acheduled_arrival	TimeStamp	Scheduled arrival time.
Actual_departure	TimeStamp	Actual departure time.
Actual_arrival	TimeStamp	Actual Arrival time.
Gate_Num	INT	Gate number for departure.
Distance	INT	Distance of the flight.
Airport_Id	INT	Identifier linking the flight to an airport.
Arr/Dep	CHAR	Indicator if the airport is the arrival or departure airport.
price	INT	Price of the lowest paid flight ticket.
Status	VARCHAR	Current status of the flight (e.g., on time, delayed).

The Flight table encompasses data about flights, with columns such as Flight_ID (unique identifier), Aircraft_ID (linking the flight to an aircraft), scheduled and actual departure and arrival times, gate number (Gate_Num), distance, Airport_ID (indicating the departure or arrival airport), price, and status. This table also links to the Ticket table, indicating which passengers are on each flight.

8. Ticket :

Column Name	Data Type	Description
Ticket_id	INT	Unique identifier for a person (Primary Key)
Flight_id	INT	Identifier linking the ticket to a flight.
passenger_id	INT	Identifier linking the ticket to a passenger.
seat_number	INT	Seat number assigned to the ticket
Booking_date	Date	Ticket Booking date
final_price	INT	Final price paid for the ticket.
Class	VARCHAR	Class of service (e.g., economy, business).
Status	VARCHAR	Current status of the ticket (e.g., booked, checked-in).

The Ticket table records ticket details, including Ticket_ID (unique identifier), Flight_ID (linking the ticket to a flight), Passenger_ID (linking the ticket to a passenger), seat number (seat_number), gate number (gate_num), actual arrival time, final price (final_price), class of service (Class), and status. This table ensures that each passenger's ticket is associated with the correct flight and personal information.

9. Security_Check :

Column Name	Data Type	Description
check_id	INT	Unique identifier for a checking application (Primary Key)
passenger_id	INT	Identifier linking the security check to a passenger.
Emp_ID	INT	Identifier linking the security check to an employee.
Check_Time	Time	Time when the security check was performed.
Status	VARCHAR	Current status of the security check (e.g., cleared, pending).
comments	VARCHAR	Any additional comments or notes about the security check.

The Security_Check table contains data about security checks, including Check_ID (unique identifier), Passenger_ID (linking the check to a passenger), Emp_ID (linking the check to an employee), check time (Check_Time), status, and comments. This table ensures that each security check is recorded and associated with the relevant passenger and employee.

Relationships Between Tables

- Person to Employee and Passenger: Each person can either be an employee or a passenger. The Person table serves as a base for both Employee and Passenger tables, maintaining a one-to-one relationship with both.

- Passenger to Ticket: Each passenger can have multiple tickets, but each ticket is associated with only one passenger, establishing a one-to-many relationship.

- Employee, Passenger to Security_Check: Each security check is performed by an employee and is associated with a passenger, establishing a many-to-one relationship from Security_Check to both Employee and Passenger tables.

- Airport to Flight: Each flight involves two airports (departure and arrival), with my airport being one of them (not adding my airport ID to the flight table) creating a one-to-many relationship between Airport and Flight.

- Airline to Aircraft: Each airline can own multiple aircraft, but each aircraft belongs to one airline, establishing a one-to-many relationship.

- Aircraft to Flight: Each flight is operated by one aircraft, and each aircraft can operate multiple flights over time, creating a one-to-many relationship.

- Flight to Ticket: Each flight can have multiple tickets issued for it, but each ticket is associated with only one flight, establishing a one-to-many relationship.

These relationships ensure that data integrity is maintained, and all relevant information is linked appropriately across the database system, enabling efficient management for airline and airport operations.

Functional Dependencies :-

1. Person :

- P_ID → full_Name, Gender, DateOfBirth, Address, Nationality ,PAN_Acc, Contact
- P_ID → Employee_ID (via " Employee" entity)
- P_ID → Passenger_ID (via " Passenger" entity)

1NF:
It’s in 1NF, because the intersection of every column and record contains only one value .
2NF:
It’s in 2NF, because all the attributes are dependent on the primary key (P_ID) .
3NF:
It’s in 3NF, because there’s no non-primary key column is transitively dependent on the primary key .
BCNF:
It’s in BCNF, because the primary key (P_ID) identify the table , and there’s no other FDs .

2. Employee :

- Emp_ID, P_id → Position, HireDate, DateOfBirth, Deparnment_Name, Salary.

1NF:
It’s in 1NF, because the intersection of every column and record contains only one value .
2NF:
It’s in 2NF, because all the attributes are dependent on the primary key (Emp_ID, P_id) .
3NF:
It’s in 3NF, because there’s no non-primary key column is transitively dependent on the primary key .
BCNF:
It’s in BCNF, because the primary key (Emp_ID, P_id) identify the table , and there’s no other FDs .

3. Passenger :

- Pass_ID, P_id → Passport_Num, TripCount, PromoCode .

1NF:
It’s in 1NF, because the intersection of every column and record contains only one value .
2NF:
It’s in 2NF, because all the attributes are dependent on the primary key (Pass_ID, P_id) .
3NF:
It’s in 3NF, because there’s no non-primary key column is transitively dependent on the primary key .
BCNF:
It’s in BCNF, because the primary key (Pass_ID, P_id) identify the table , and there’s no other FDs .

4. Ticket :

- Ticket_id → flight_id ,passenger_id, seat_number, booking_date ,final_price ,class.

1NF:
It's in 1NF, because the intersection of every column and record contains only one value .
2NF:
It's in 2NF, because all the attributes are dependent on the primary key (Ticket_id) .
3NF:
It's in 3NF, because there's no non-primary key column is transitively dependent on the primary key .
BCNF:
It's in BCNF, because the primary key (Ticket_id) identify the table , and there's no other FDs .

5. Flight :

- Flight_id → Aircraft_id , scheduled_departure , scheduled_arrival , actual_departure , actual_arrival ,gate_num ,distance, airport_id ,Arr/Dep price, status.

1NF:
It's in 1NF, because the intersection of every column and record contains only one value .
2NF:
It's in 2NF, because all the attributes are dependent on the primary key (Flight_id) .
3NF:
It's in 3NF, because there's no non-primary key column is transitively dependent on the primary key .
BCNF:
It's in BCNF, because the primary key (Flight_id) identify the table , and there's no other FDs .

6. Aircraft :

- AirCraft_ID → AirLine_ID ,model, tail_num, Capacity, manuFacturer ,ccomments ,seats ,number.

1NF:
It's in 1NF, because the intersection of every column and record contains only one value .
2NF:
It's in 2NF, because all the attributes are dependent on the primary key (AirCraft_ID) .
3NF:
It's in 3NF, because there's no non-primary key column is transitively dependent on the primary key .
BCNF:
It's in BCNF, because the primary key (AirCraft_ID) identify the table , and there's no other FDs .

7. Airport :

- Airport_ID → Name, timezone , locatin .

1NF:
It's in 1NF, because the intersection of every column and record contains only one value .
2NF:
It's in 2NF, because all the attributes are dependent on the primary key (AirCraft_ID) .
3NF:
It's in 3NF, because there's no non-primary key column is transitively dependent on the primary key .
BCNF:
It's in BCNF, because the primary key (AirCraft_ID) identify the table , and there's no other FDs .

8. Airline :

- AirLine_ID → Name ,Country ,CallSing ,headQuorters .

1NF:
It’s in 1NF, because the intersection of every column and record contains only one value .
2NF:
It’s in 2NF, because all the attributes are dependent on the primary key (AirCraft_ID) .
3NF:
It’s in 3NF, because there’s no non-primary key column is transitively dependent on the primary key .
BCNF:
It’s in BCNF, because the primary key (AirCraft_ID) identify the table , and there’s no other FDs .

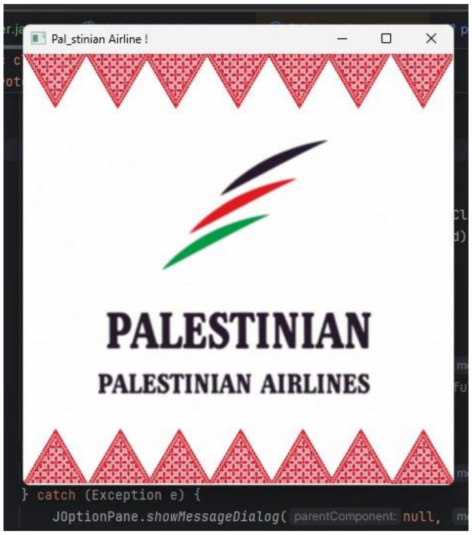
9. Security_Check :

- AirLine_ID → Emp_ID, Passenger_ID, check_time, status ,comments.

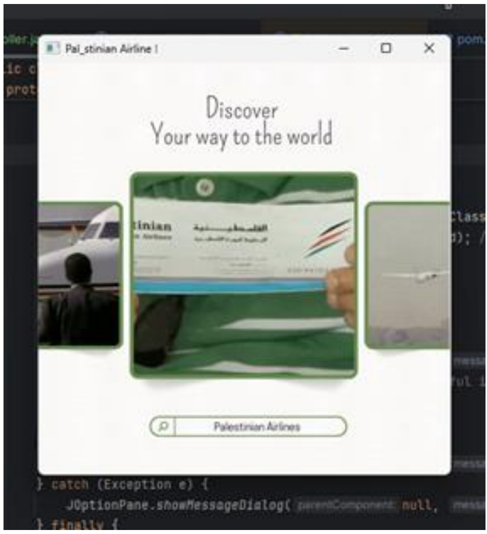
1NF:
It’s in 1NF, because the intersection of every column and record contains only one value .
2NF:
It’s in 2NF, because all the attributes are dependent on the primary key (AirCraft_ID) .
3NF:
It’s in 3NF, because there’s no non-primary key column is transitively dependent on the primary key .
BCNF:
It’s in BCNF, because the primary key (AirCraft_ID) identify the table , and there’s no other FDs .

GUI Discussion :-

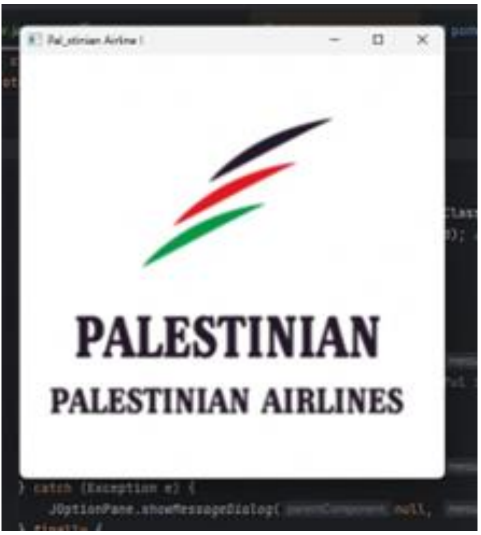
When our program is opened, these screen will appears:



```
} catch (Exception e) {
    JOptionPane.showMessageDialog( parentComponent: null,
```

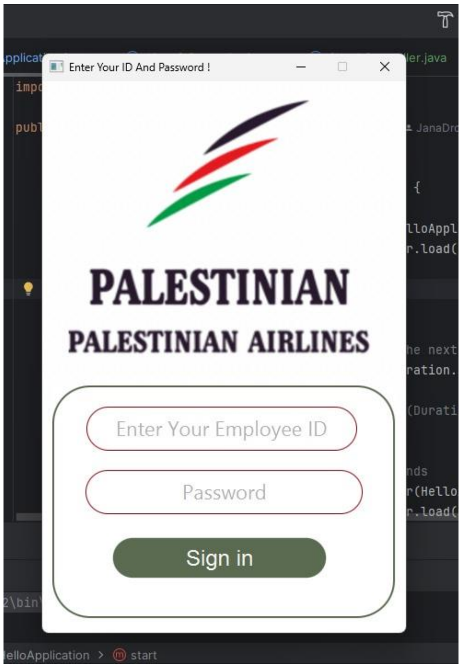


```
} catch (Exception e) {
    JOptionPane.showMessageDialog( parentComponent: null,
} finally {
```

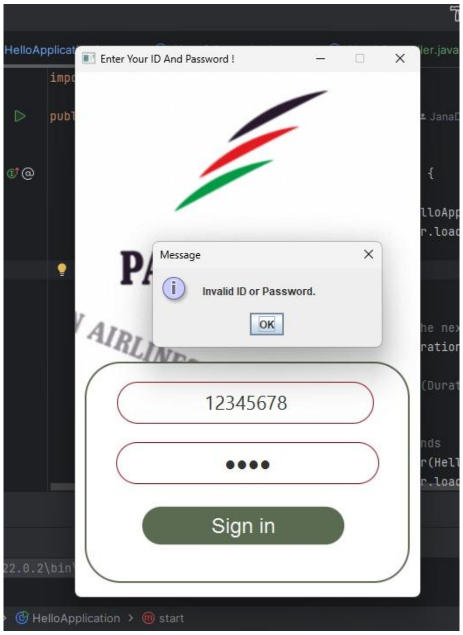


```
} catch (Exception e) {
    JOptionPane.showMessageDialog( parentComponent: null,
} finally {
```

And then the program prompts the employee to enter his ID number and the password.



If the password does not match the employee ID, this screen appears:



Enter Your ID And Password !

Message

Invalid ID or Password.

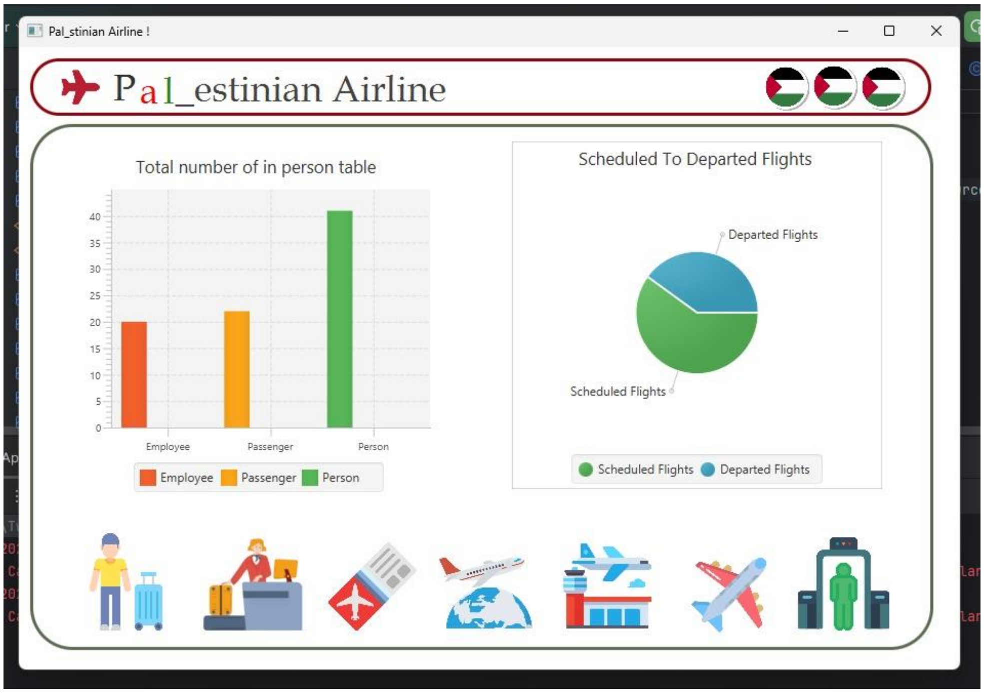
OK

12345678

●●●●

Sign in

If it matches, the main screen appears (This chart on the left shows the number of travelers, the number of employees, and their total, which represents the total number of people in our system and The chart on the right shows the number of scheduled flights and the number of Departed flights and The icons at the button are buttons that, when clicked, open the interface associated with each icon.) :

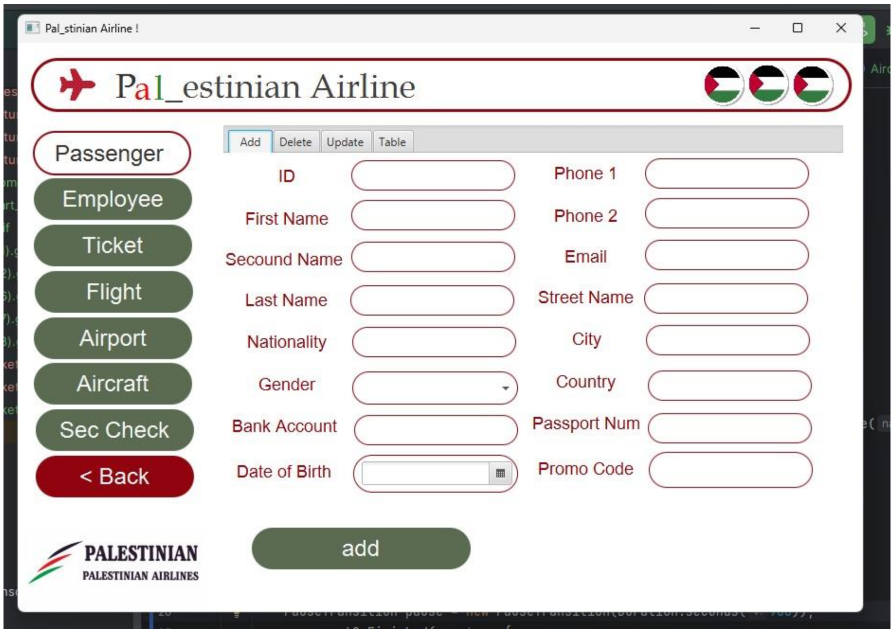


Pal_stinian Airline !

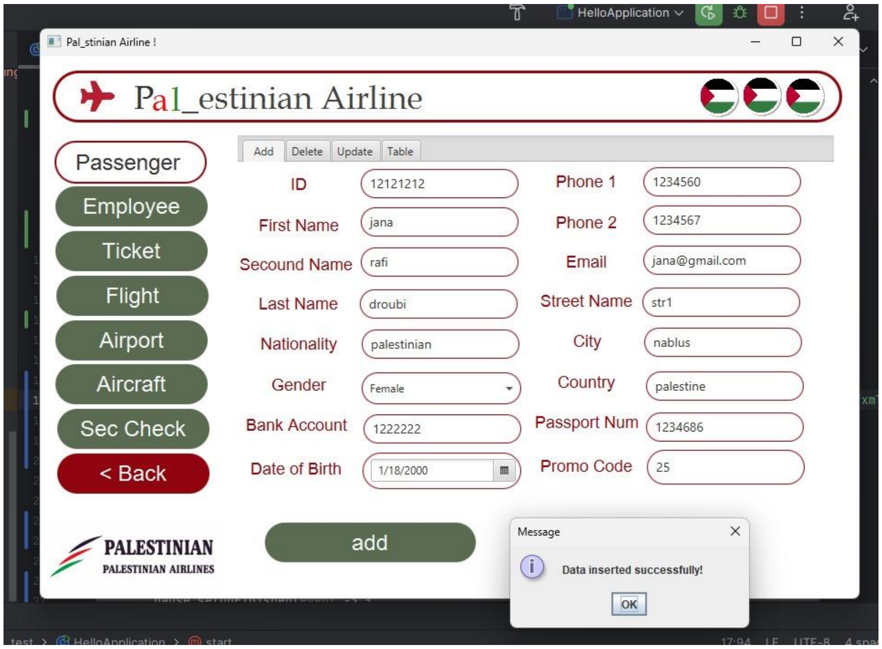
Pal_estinian Airline

Total number of in person table
0
5
10
15
20
25
30
35
40
Employee
Passenger
Person
🟥 Employee 🟧 Passenger 🟩 Person
Scheduled To Departed Flights
Departed Flights
Scheduled Flights
● Scheduled Flights ● Departed Flights

When you click on the icon of Passenger this screen will open:



When you click on tab ADD this screen will open:
*note: Passenger is a child of the person's table (where adding to the person's table can only be done through the Passenger.)

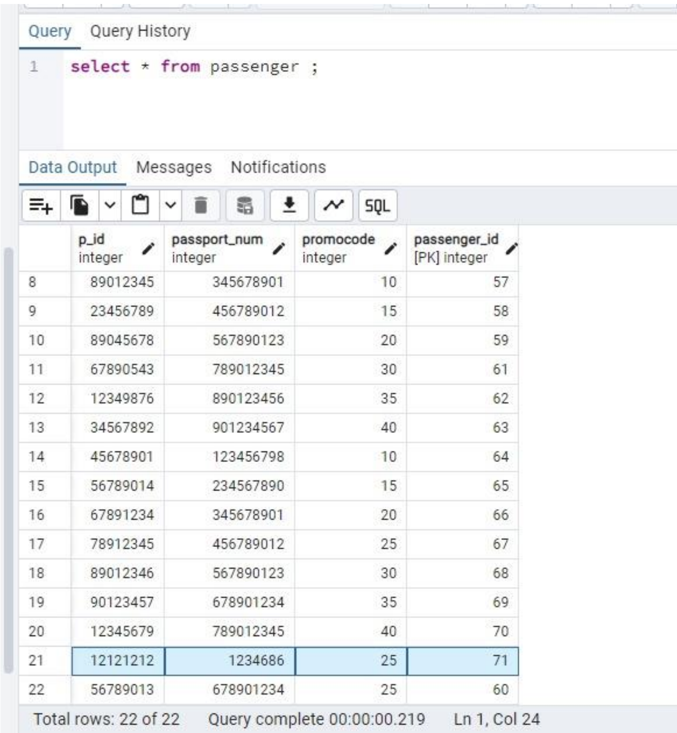


ID	12121212	Phone 1	1234560
First Name	jana	Phone 2	1234567
Secound Name	rafi	Email	jana@gmail.com
Last Name	droubi	Street Name	str1
Nationality	palestinian	City	nablus
Gender	Female	Country	palestine
Bank Account	1222222	Passport Num	1234686
Date of Birth	1/18/2000	Promo Code	25

Message

Data inserted successfully!

And this is the date after adding passenger jana:

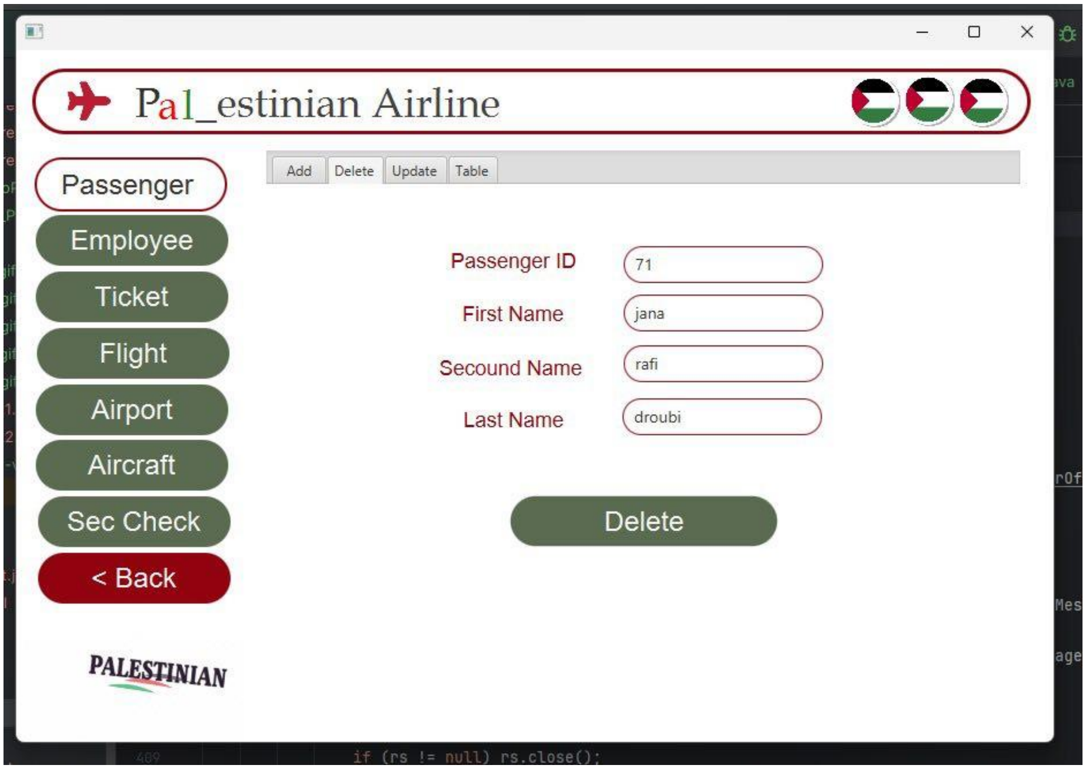


```
select * from passenger ;
```

	p_id integer	passport_num integer	promocode integer	passenger_id [PK] integer
8	89012345	345678901	10	57
9	23456789	456789012	15	58
10	89045678	567890123	20	59
11	67890543	789012345	30	61
12	12349876	890123456	35	62
13	34567892	901234567	40	63
14	45678901	123456798	10	64
15	56789014	234567890	15	65
16	67891234	345678901	20	66
17	78912345	456789012	25	67
18	89012346	567890123	30	68
19	90123457	678901234	35	69
20	12345679	789012345	40	70
21	12121212	1234686	25	71
22	56789013	678901234	25	60

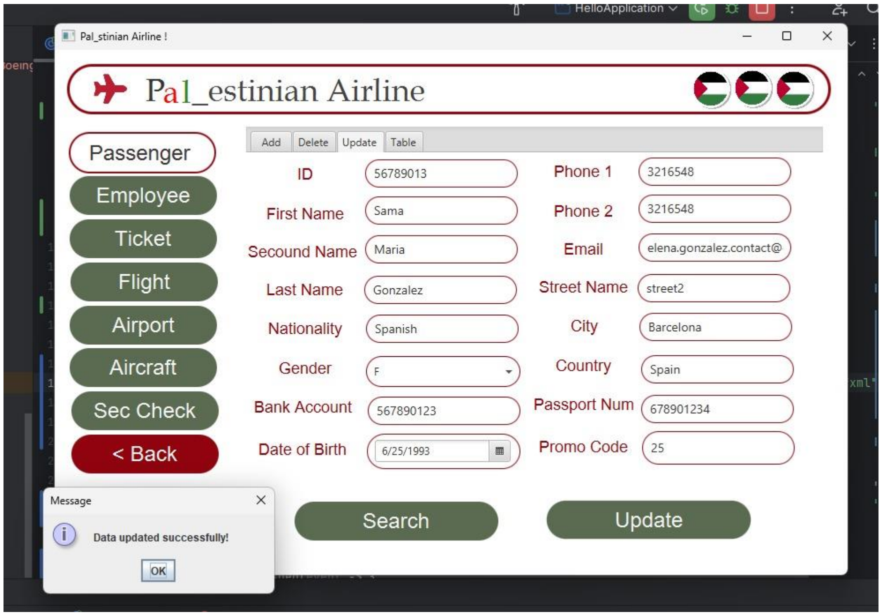
Total rows: 22 of 22 Query complete 00:00:00.219 Ln 1, Col 24

When you click on tab DELETE this screen will open:



Passenger ID	71
First Name	jana
Secound Name	rafi
Last Name	droubi

When you click on tab UPDATE this screen will open:



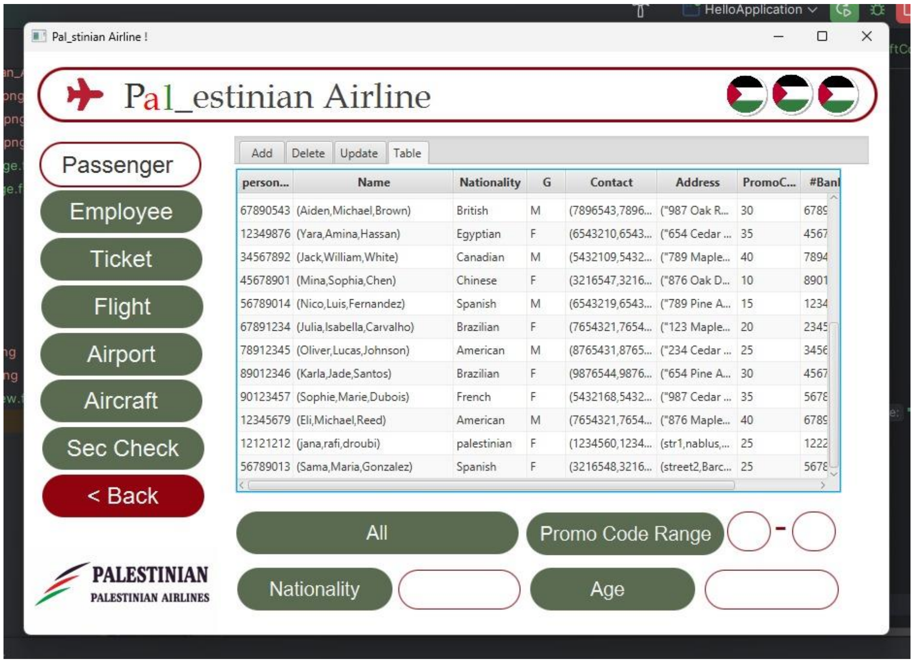
ID	56789013	Phone 1	3216548
First Name	Sama	Phone 2	3216548
Secound Name	Maria	Email	elena.gonzalez.contact@
Last Name	Gonzalez	Street Name	street2
Nationality	Spanish	City	Barcelona
Gender	F	Country	Spain
Bank Account	567890123	Passport Num	678901234
Date of Birth	6/25/1993	Promo Code	25

Message

Data updated successfully!

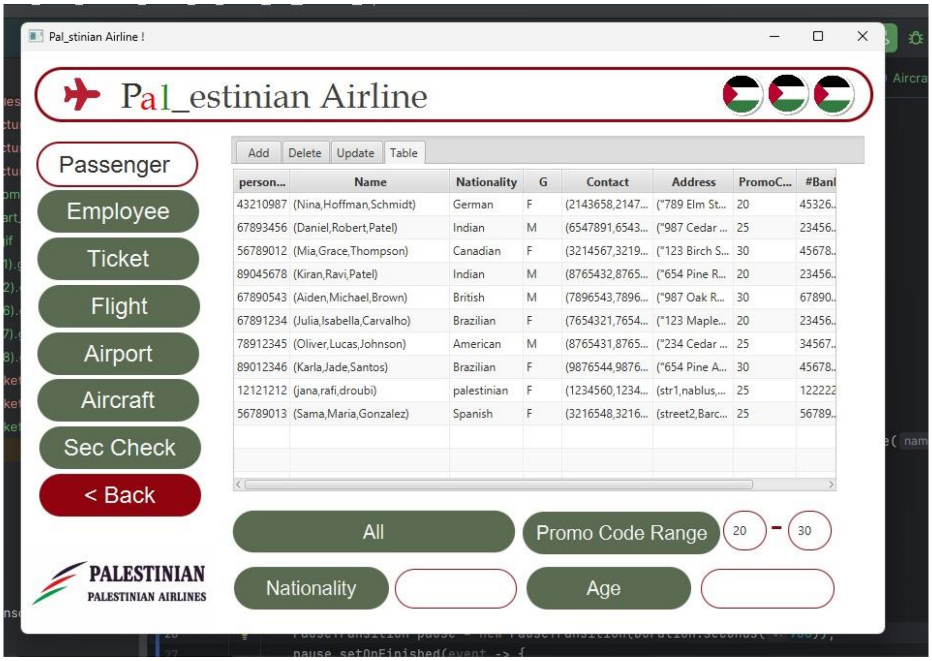
OK

When you click on tab TABLE and click on ALL button (it shows all passenger in our system) this screen will open:



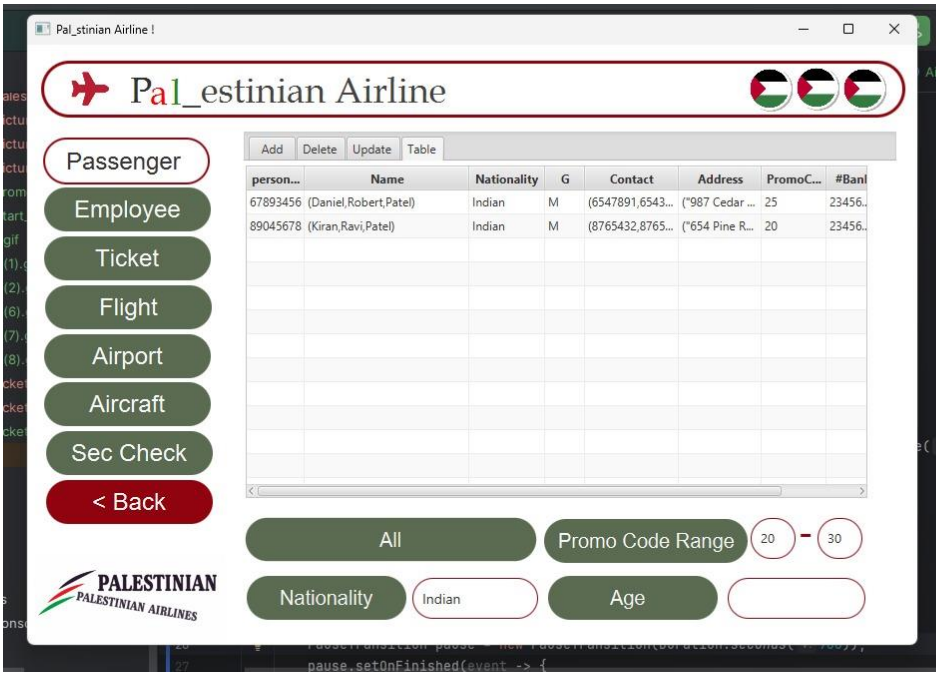
person...	Name	Nationality	G	Contact	Address	PromoC...	#Banl
67890543	(Aiden,Michael,Brown)	British	M	(7896543,7896...	("987 Oak R...	30	6789
12349876	(Yara,Amina,Hassan)	Egyptian	F	(6543210,6543...	("654 Cedar ...	35	4567
34567892	(Jack,William,White)	Canadian	M	(5432109,5432...	("789 Maple...	40	7894
45678901	(Mina,Sophia,Chen)	Chinese	F	(3216547,3216...	("876 Oak D...	10	8901
56789014	(Nico,Luis,Fernandez)	Spanish	M	(6543219,6543...	("789 Pine A...	15	1234
67891234	(Julia,Isabella,Carvalho)	Brazilian	F	(7654321,7654...	("123 Maple...	20	2345
78912345	(Oliver,Lucas,Johnson)	American	M	(8765431,8765...	("234 Cedar ...	25	3456
89012346	(Karla,Jade,Santos)	Brazilian	F	(9876544,9876...	("654 Pine A...	30	4567
90123457	(Sophie,Marie,Dubois)	French	F	(5432168,5432...	("987 Cedar ...	35	5678
12345679	(Eli,Michael,Reed)	American	M	(7654321,7654...	("876 Maple...	40	6789
12121212	(jana,rafi,droubi)	palestinian	F	(1234560,1234...	(str1,nablus,...	25	1222
56789013	(Sama,Maria,Gonzalez)	Spanish	F	(3216548,3216...	(street2,Barc...	25	5678

When you click on tab TABLE and click on Promo Code Range button (it shows all passenger that in entered range in our system) this screen will open:



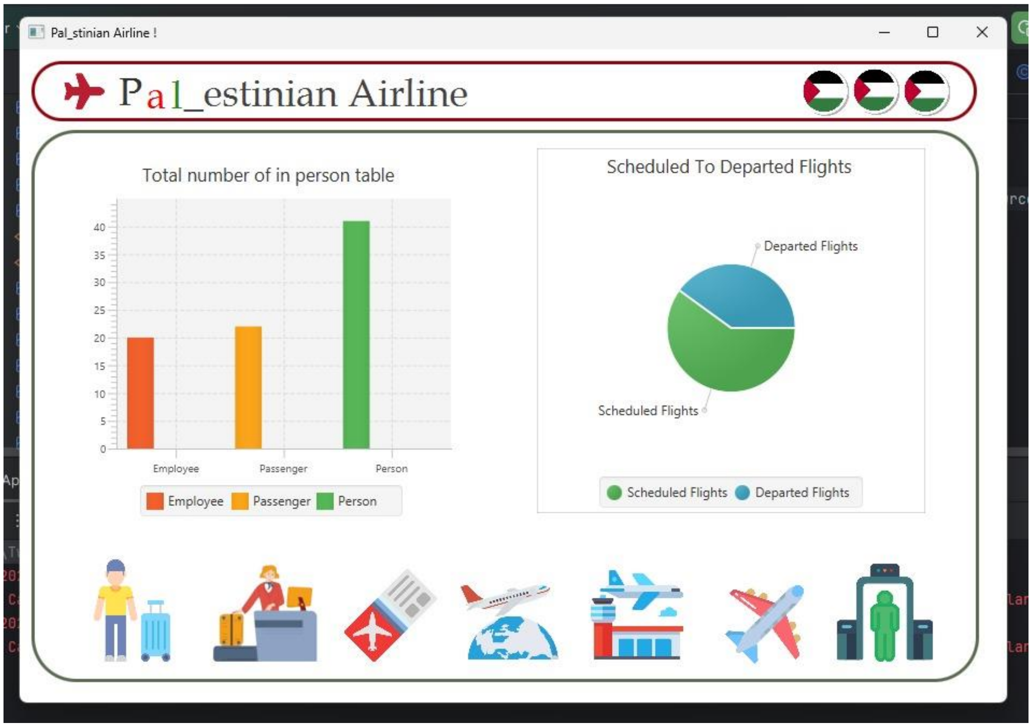
person...	Name	Nationality	G	Contact	Address	PromoC...	#Banl
43210987	(Nina,Hoffman,Schmidt)	German	F	(2143658,2147...	("789 Elm St...	20	45326..
67893456	(Daniel,Robert,Patel)	Indian	M	(6547891,6543...	("987 Cedar ...	25	23456..
56789012	(Mia,Grace,Thompson)	Canadian	F	(3214567,3219...	("123 Birch S...	30	45678..
89045678	(Kiran,Ravi,Patel)	Indian	M	(8765432,8765...	("654 Pine R...	20	23456..
67890543	(Aiden,Michael,Brown)	British	M	(7896543,7896...	("987 Oak R...	30	67890..
67891234	(Julia,Isabella,Carvalho)	Brazilian	F	(7654321,7654...	("123 Maple...	20	23456..
78912345	(Oliver,Lucas,Johnson)	American	M	(8765431,8765...	("234 Cedar ...	25	34567..
89012346	(Karla,Jade,Santos)	Brazilian	F	(9876544,9876...	("654 Pine A...	30	45678..
12121212	(jana,rafi,droubi)	palestinian	F	(1234560,1234...	(str1,nablus,...	25	122222
56789013	(Sama,Maria,Gonzalez)	Spanish	F	(3216548,3216...	(street2,Barc...	25	56789..

When you click on tab TABLE and click on Nationality and Promo Code Range button (it shows all passenger that in entered range and nationality in our system) this screen will open:

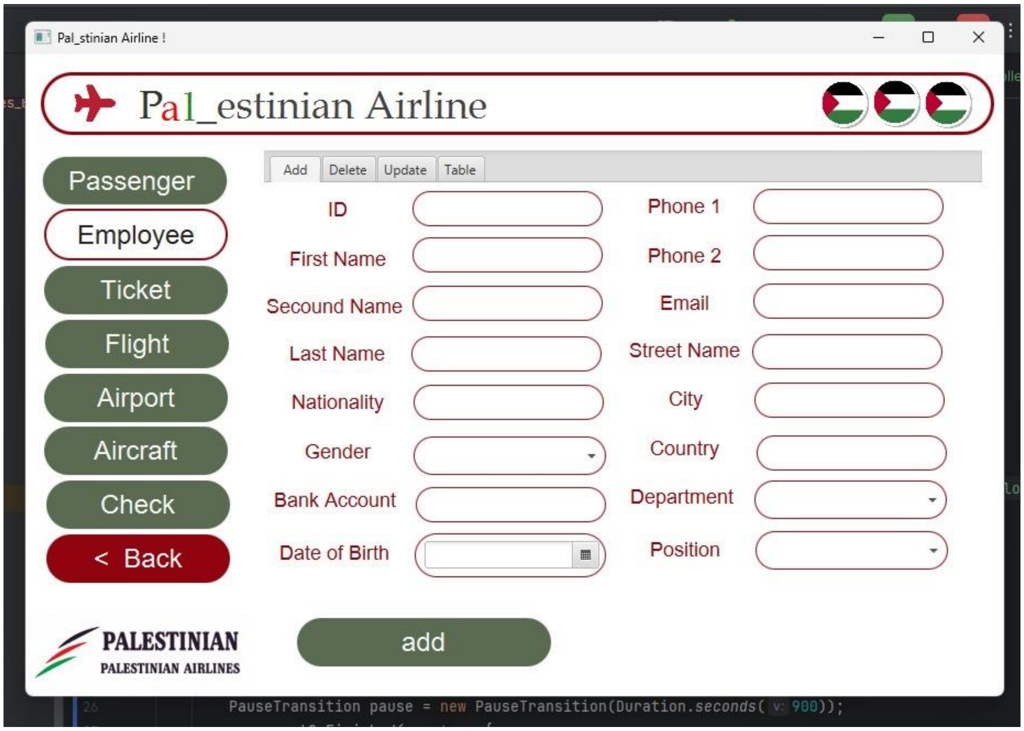


person...	Name	Nationality	G	Contact	Address	PromoC...	#Banl
67893456	(Daniel,Robert,Patel)	Indian	M	(6547891,6543...	("987 Cedar ...	25	23456..
89045678	(Kiran,Ravi,Patel)	Indian	M	(8765432,8765...	("654 Pine R...	20	23456..

When we click on back it will return to main screen:

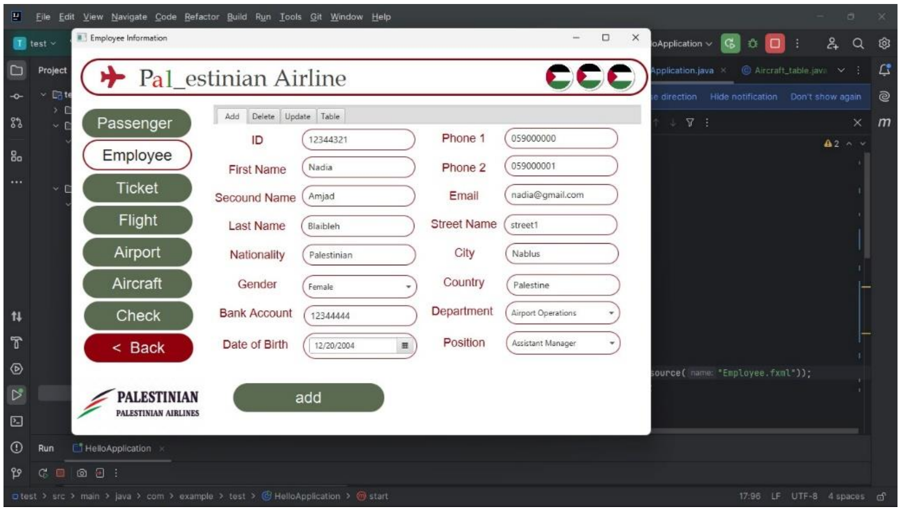

Pal_stinian Airline !
Pal_estinian Airline
Total number of in person table
40
35
30
25
20
15
10
5
0
Employee
Passenger
Person
🟥 Employee 🟧 Passenger 🟩 Person
Scheduled To Departed Flights
Departed Flights
Scheduled Flights
● Scheduled Flights ● Departed Flights

When you click on the icon of Employee table this screen will open:



```
PauseTransition pause = new PauseTransition(Duration.seconds( v: 900));
```

When you click on tab ADD this screen will open:
*note: Employee is a child of the person's table (where adding to the person's table can only be done through the Employee.)

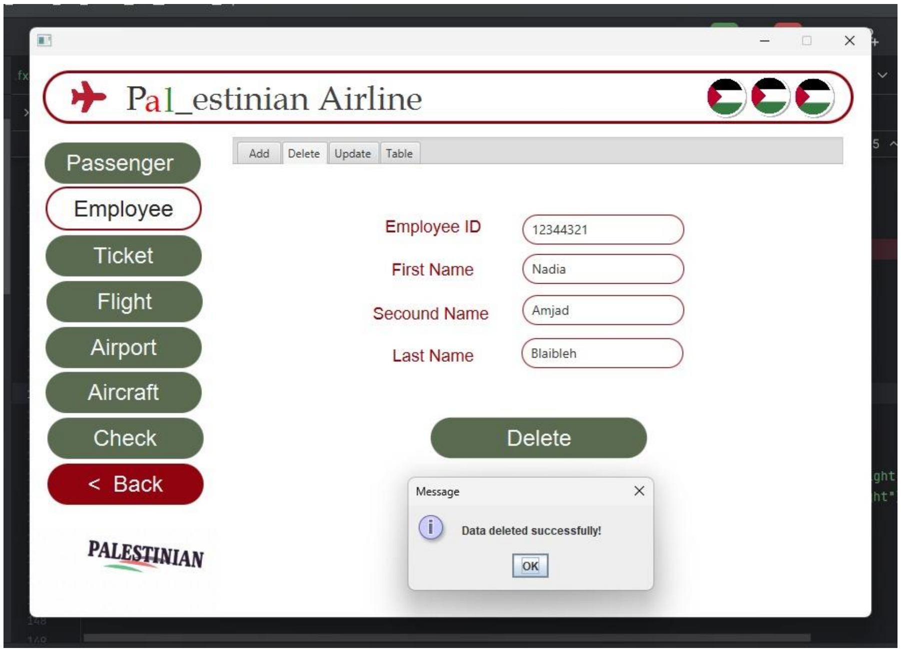

File Edit View Navigate Code Refactor Build Run Tools Git Window Help
Passenger
Employee
Ticket
Flight
Airport
Aircraft
Check
< Back
Add
Delete
Update
Table
add
PALESTINIAN
PALESTINIAN AIRLINES
Run
HelloApplication
test > src > main > java > com > example > test > HelloApplication > start

Employee Information

Pa1_estinian Airline

ID: 12344321
First Name: Nadia
Secound Name: Amjad
Last Name: Blaibleh
Nationality: Palestinian
Gender: Female
Bank Account: 12344444
Date of Birth: 12/20/2004
Phone 1: 059000000
Phone 2: 059000001
Email: nadia@gmail.com
Street Name: street1
City: Nablus
Country: Palestine
Department: Airport Operations
Position: Assistant Manager

When you click on tab DELETE this screen will open:



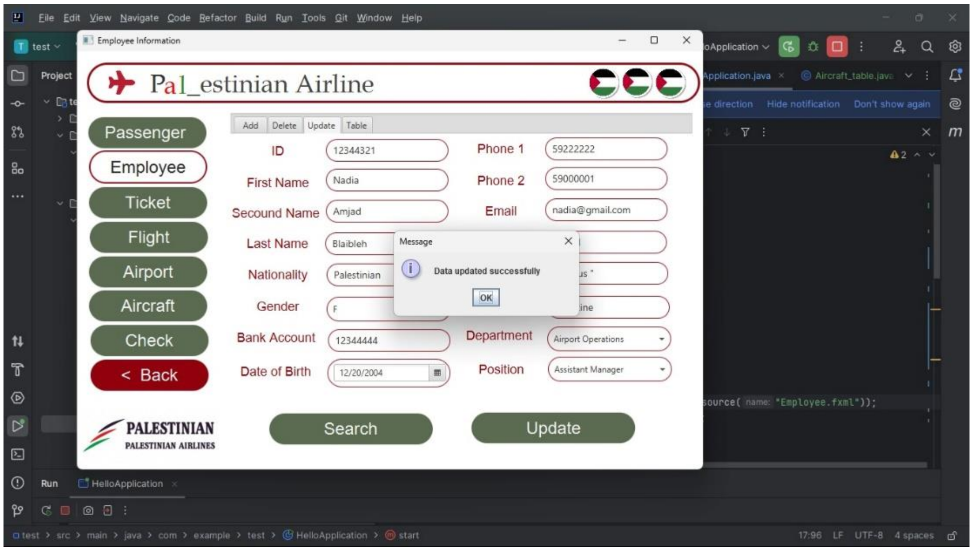
Pa1_estinian Airline

Employee ID: 12344321
First Name: Nadia
Secound Name: Amjad
Last Name: Blaibleh

Message

Data deleted successfully!

When you click on tab UPDATE this screen will open:



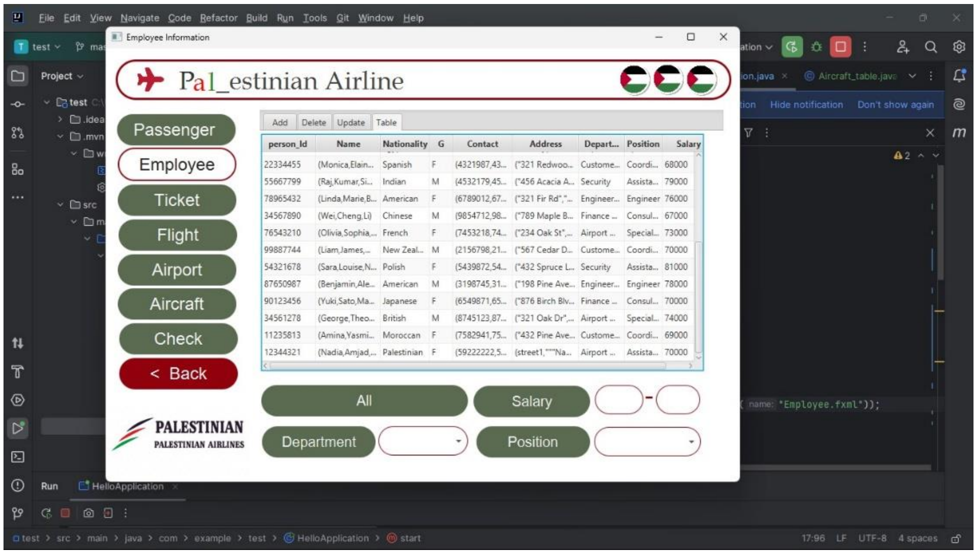
ID	12344321	Phone 1	59222222
First Name	Nadia	Phone 2	59000001
Secound Name	Amjad	Email	nadia@gmail.com
Last Name	Blaibleh		
Nationality	Palestinian		us "
Gender	F		ine
Bank Account	12344444	Department	Airport Operations
Date of Birth	12/20/2004	Position	Assistant Manager

Message

Data updated successfully

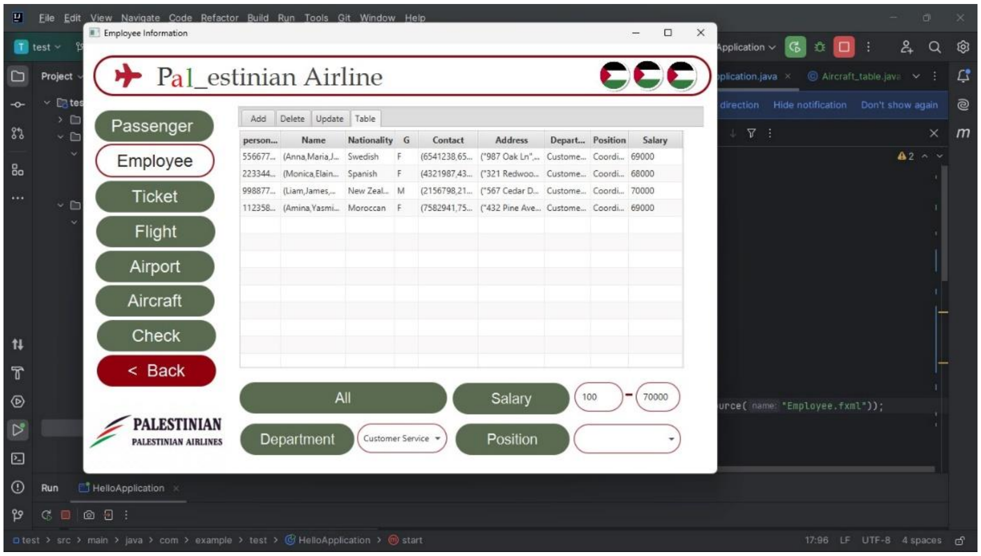
OK

When you click on tab TABLE and click on ALL button (it shows all employee in our system) this screen will open:



person_Id	Name	Nationality	G	Contact	Address	Depart...	Position	Salary
22334455	(Monica,Elain...	Spanish	F	(4321987,43...	("321 Redwoo...	Custome...	Coordi...	68000
55667799	(Raj,Kumar,Si...	Indian	M	(4532179,45...	("456 Acacia A...	Security	Assista...	79000
78965432	(Linda,Marie,B...	American	F	(6789012,67...	("321 Fir Rd","...	Engineer...	Engineer	76000
34567890	(Wei,Cheng,Li)	Chinese	M	(9854712,98...	("789 Maple B...	Finance ...	Consul...	67000
76543210	(Olivia,Sophia,...	French	F	(7453218,74...	("234 Oak St",...	Airport ...	Special...	73000
99887744	(Liam,James,...	New Zeal...	M	(2156798,21...	("567 Cedar D...	Custome...	Coordi...	70000
54321678	(Sara,Louise,N...	Polish	F	(5439872,54...	("432 Spruce L...	Security	Assista...	81000
87650987	(Benjamin,Ale...	American	M	(3198745,31...	("198 Pine Ave...	Engineer...	Engineer	78000
90123456	(Yuki,Sato,Ma...	Japanese	F	(6549871,65...	("876 Birch Blv...	Finance ...	Consul...	70000
34561278	(George,Theo...	British	M	(8745123,87...	("321 Oak Dr",...	Airport ...	Special...	74000
11235813	(Amina,Yasmi...	Moroccan	F	(7582941,75...	("432 Pine Ave...	Custome...	Coordi...	69000
12344321	(Nadia,Amjad,...	Palestinian	F	(59222222,5...	(street1,""""Na...	Airport ...	Assista...	70000

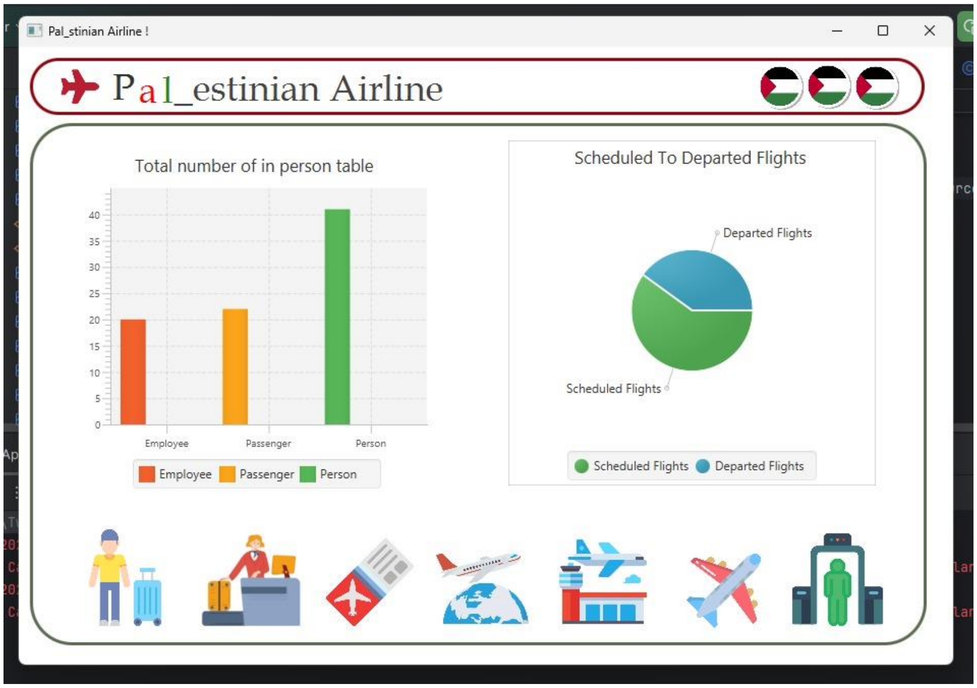
When you click on tab TABLE and click on SALARY and DEPARTMENT button (it shows all employee that in entered range in our system) this screen will open:



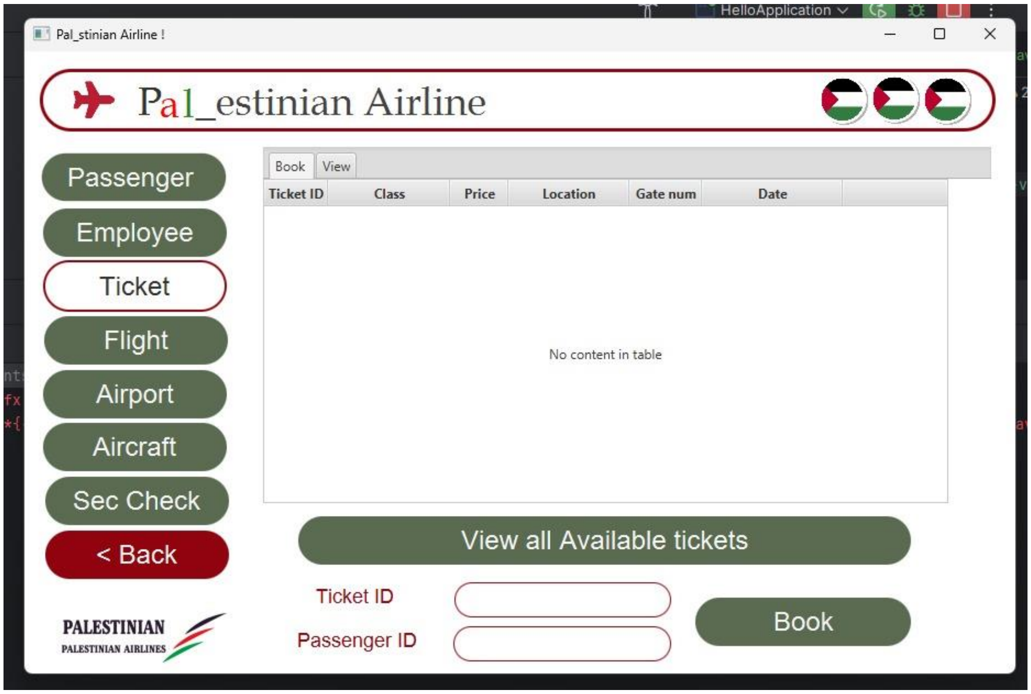
person...	Name	Nationality	G	Contact	Address	Depart...	Position	Salary
556677...	(Anna,Maria,J...	Swedish	F	(6541238,65...	("987 Oak Ln",...	Custome...	Coordi...	69000
223344...	(Monica,Elain...	Spanish	F	(4321987,43...	("321 Redwoo...	Custome...	Coordi...	68000
998877...	(Liam,James,...	New Zeal...	M	(2156798,21...	("567 Cedar D...	Custome...	Coordi...	70000
112358...	(Amina,Yasmi...	Moroccan	F	(7582941,75...	("432 Pine Ave...	Custome...	Coordi...	69000

```
urce( name: "Employee.fxml"));
```

When we click on back it will return to main screen:


Pal_stinian Airline !
Pa1_estinian Airline
Total number of in person table
40
35
30
25
20
15
10
5
0
Employee
Passenger
Person
🟥 Employee 🟧 Passenger 🟩 Person
Scheduled To Departed Flights
Departed Flights
Scheduled Flights
● Scheduled Flights ● Departed Flights

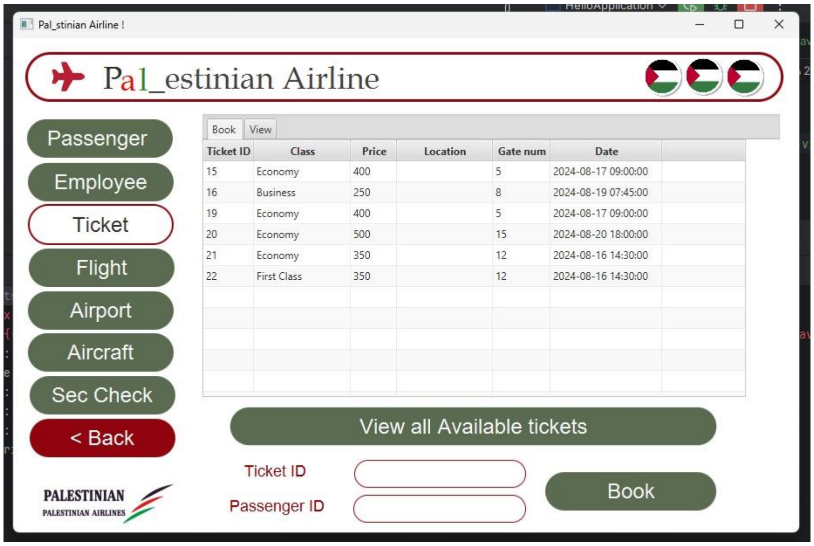
When you click on the icon of Ticket table this screen will open:



Ticket ID	Class	Price	Location	Gate num	Date

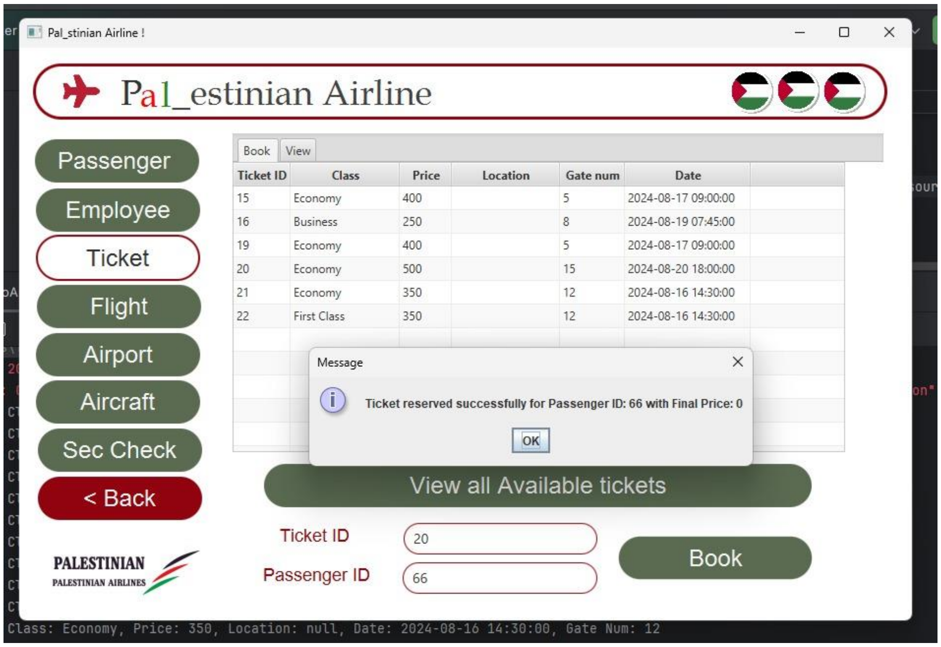
No content in table

When you click on tab BOOK and on button View All Available Tickets this screen will open (it shows not booked tickets):



Ticket ID	Class	Price	Location	Gate num	Date
15	Economy	400		5	2024-08-17 09:00:00
16	Business	250		8	2024-08-19 07:45:00
19	Economy	400		5	2024-08-17 09:00:00
20	Economy	500		15	2024-08-20 18:00:00
21	Economy	350		12	2024-08-16 14:30:00
22	First Class	350		12	2024-08-16 14:30:00

When you enter passenger id and tickets id and click on button BOOK this screen will open (it calculate the final price in passenger depending on this equation final price = price – (price*promocode /100) and if the of ticket is Business it doubles the price but and if the of ticket is First Class The price quadruples):



Ticket ID	Class	Price	Location	Gate num	Date
15	Economy	400		5	2024-08-17 09:00:00
16	Business	250		8	2024-08-19 07:45:00
19	Economy	400		5	2024-08-17 09:00:00
20	Economy	500		15	2024-08-20 18:00:00
21	Economy	350		12	2024-08-16 14:30:00
22	First Class	350		12	2024-08-16 14:30:00

Message

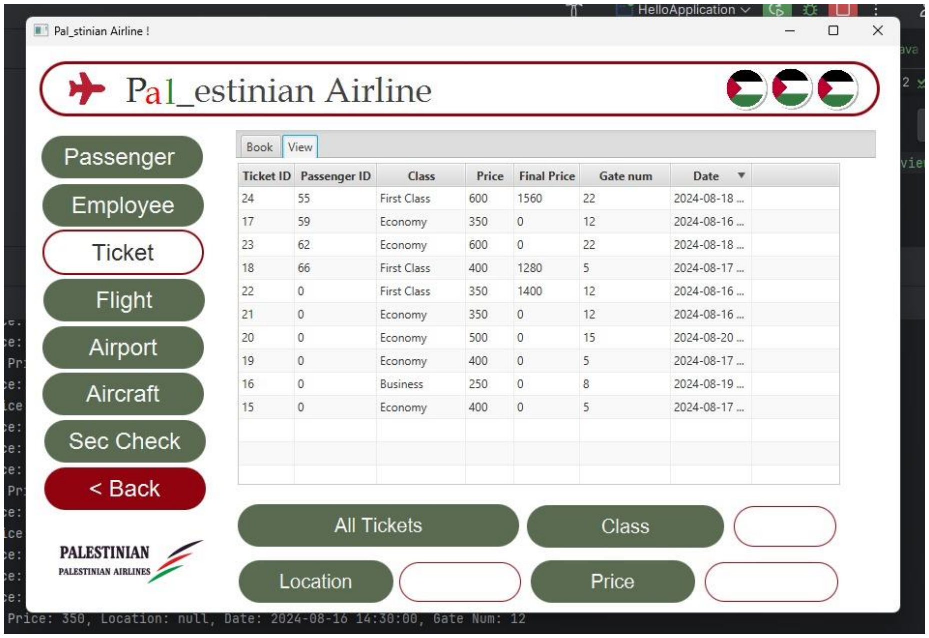
Ticket reserved successfully for Passenger ID: 66 with Final Price: 0

Ticket ID: 20

Passenger ID: 66

```
Class: Economy, Price: 350, Location: null, Date: 2024-08-16 14:30:00, Gate Num: 12
```

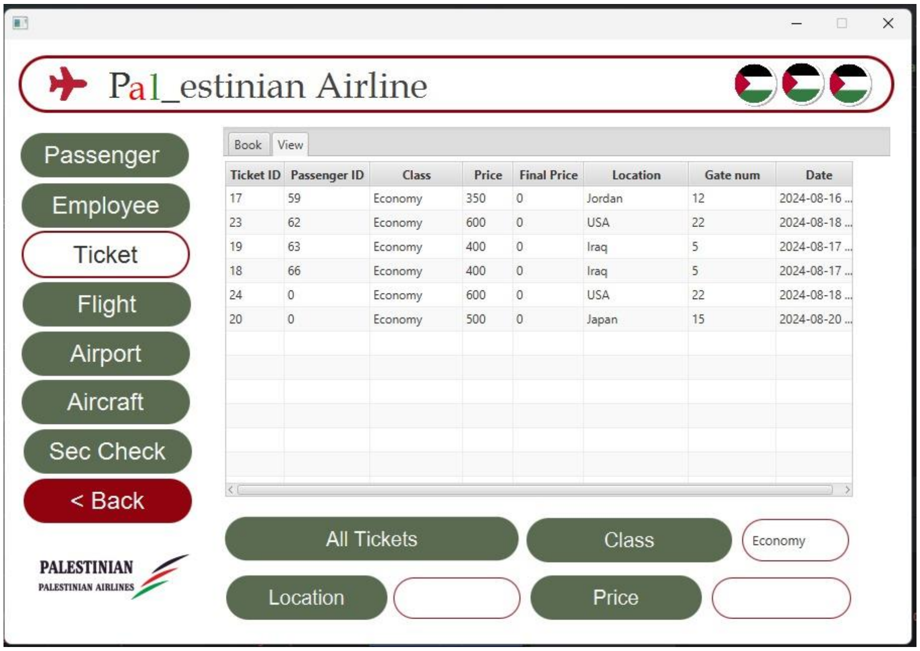
When you click on tab VIEW and click on ALL button (it shows all ticket in our system) this screen will open:
*note:final price is calculated implicitly depending on the promocode for each passenger and the type of class chosen.



Ticket ID	Passenger ID	Class	Price	Final Price	Gate num	Date
24	55	First Class	600	1560	22	2024-08-18 ...
17	59	Economy	350	0	12	2024-08-16 ...
23	62	Economy	600	0	22	2024-08-18 ...
18	66	First Class	400	1280	5	2024-08-17 ...
22	0	First Class	350	1400	12	2024-08-16 ...
21	0	Economy	350	0	12	2024-08-16 ...
20	0	Economy	500	0	15	2024-08-20 ...
19	0	Economy	400	0	5	2024-08-17 ...
16	0	Business	250	0	8	2024-08-19 ...
15	0	Economy	400	0	5	2024-08-17 ...

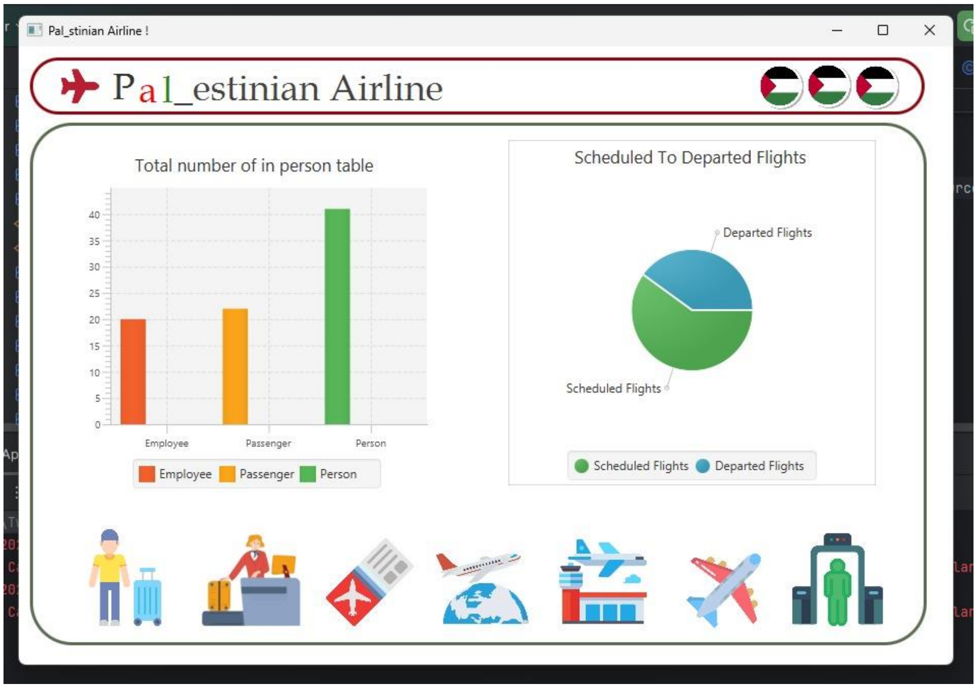
```
Price: 350, Location: null, Date: 2024-08-16 14:30:00, Gate Num: 12
```

When you click on tab VIEW and click on Class button (it shows all Economy ticket in our system) this screen will open:

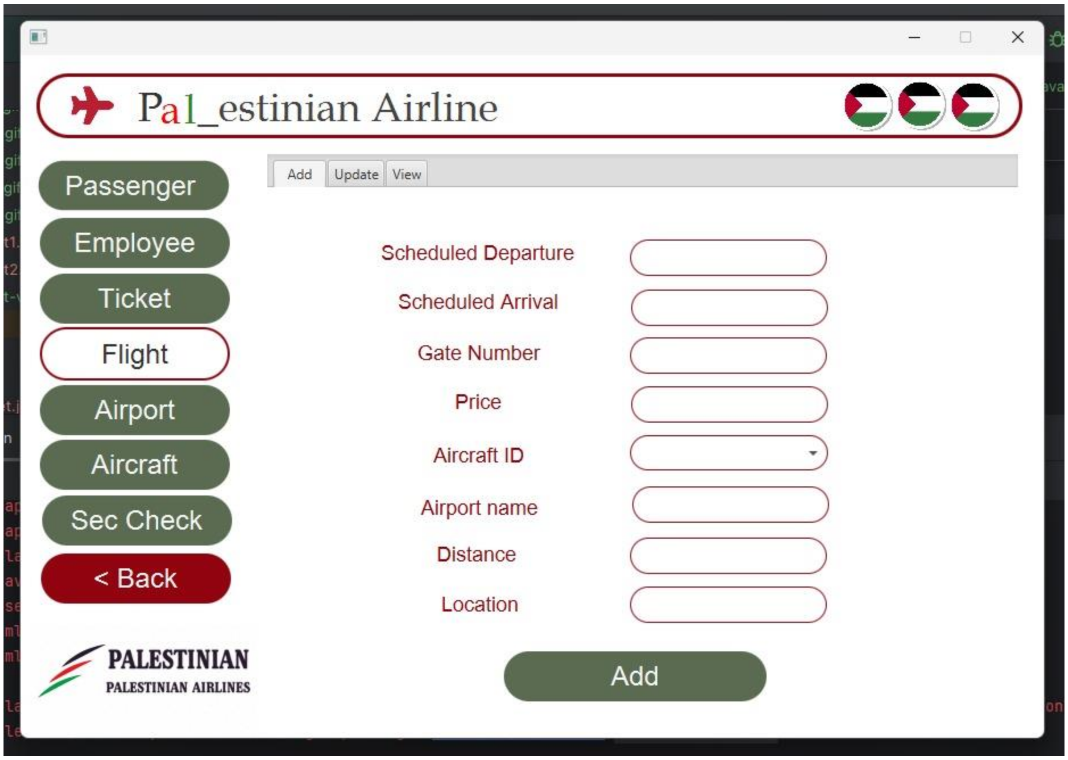


Ticket ID	Passenger ID	Class	Price	Final Price	Location	Gate num	Date
17	59	Economy	350	0	Jordan	12	2024-08-16 ...
23	62	Economy	600	0	USA	22	2024-08-18 ...
19	63	Economy	400	0	Iraq	5	2024-08-17 ...
18	66	Economy	400	0	Iraq	5	2024-08-17 ...
24	0	Economy	600	0	USA	22	2024-08-18 ...
20	0	Economy	500	0	Japan	15	2024-08-20 ...

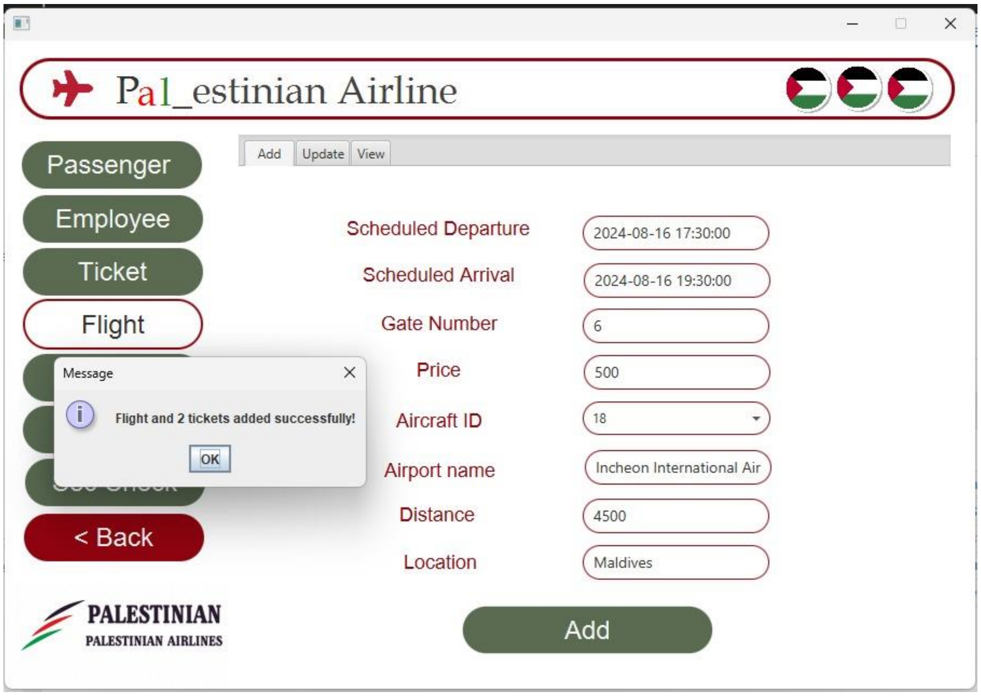
When we click on back it will return to main screen:


Pal_stinian Airline !
Pal_estinian Airline
Total number of in person table
40
35
30
25
20
15
10
5
0
Employee
Passenger
Person
🟥 Employee 🟧 Passenger 🟩 Person
Scheduled To Departed Flights
Departed Flights
Scheduled Flights
● Scheduled Flights ● Departed Flights

When you click on the icon of Fight table this screen will open:



When you click on tab ADD this screen will open:
*note: when you add flight the system take the number of seats of aircraft and creates tickets in this quantity.

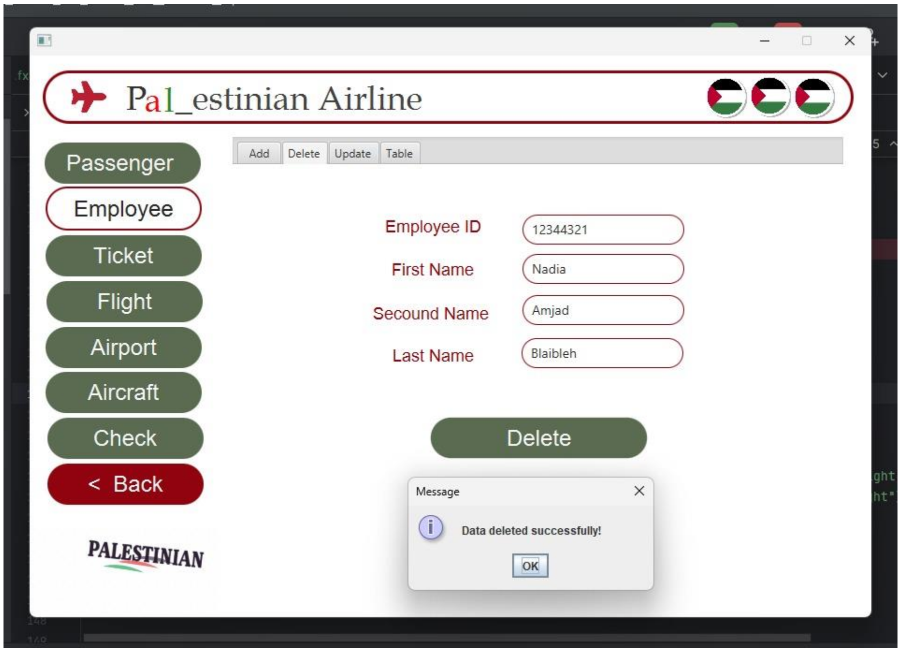


Scheduled Departure 2024-08-16 17:30:00
Scheduled Arrival 2024-08-16 19:30:00
Gate Number 6
Price 500
Aircraft ID 18
Airport name Incheon International Air
Distance 4500
Location Maldives

Message
Flight and 2 tickets added successfully!
OK

This the database in postgres in ticket table after adding

When you click on tab DELETE this screen will open:



Employee ID: 12344321

First Name: Nadia

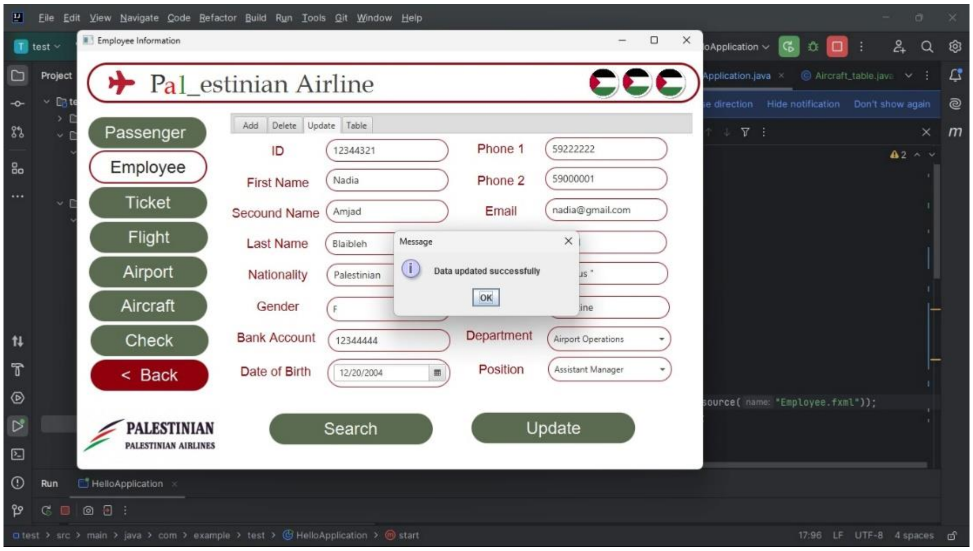
Secound Name: Amjad

Last Name: Blaibleh

Message

Data deleted successfully!

When you click on tab UPDATE this screen will open:



ID: 12344321

First Name: Nadia

Secound Name: Amjad

Last Name: Blaibleh

Nationality: Palestinian

Gender: F

Bank Account: 12344444

Date of Birth: 12/20/2004

Phone 1: 59222222

Phone 2: 59000001

Email: nadia@gmail.com

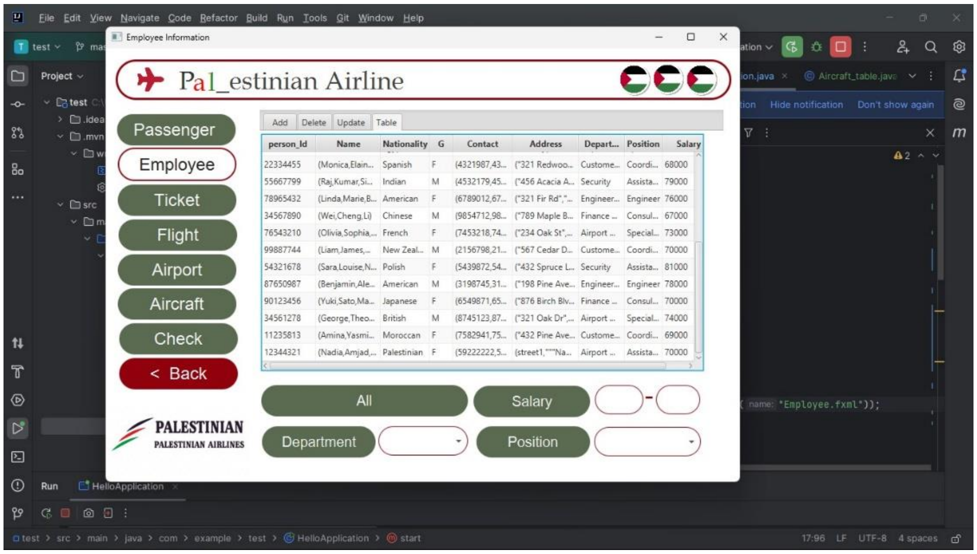
Department: Airport Operations

Position: Assistant Manager

Message

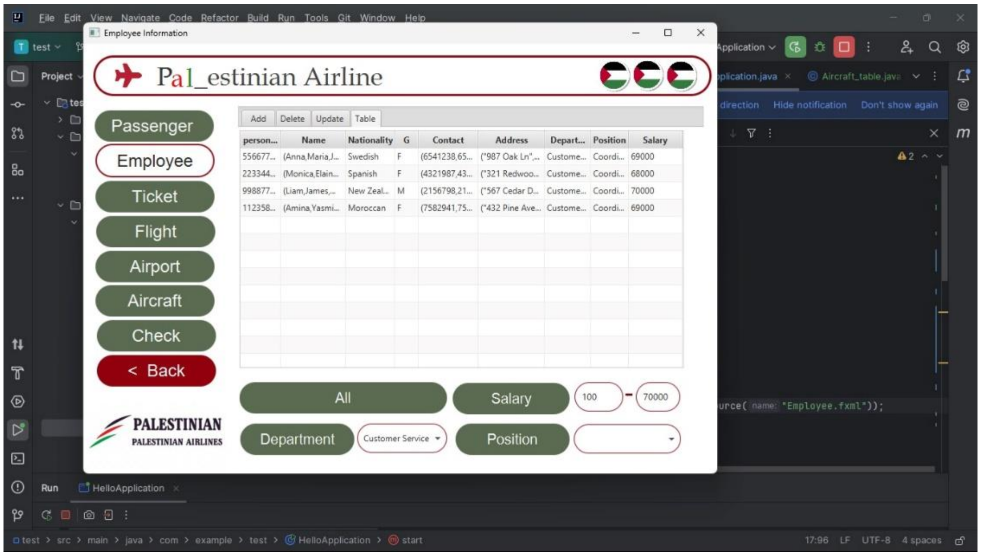
Data updated successfully

When you click on tab TABLE and click on ALL button (it shows all employee in our system) this screen will open:



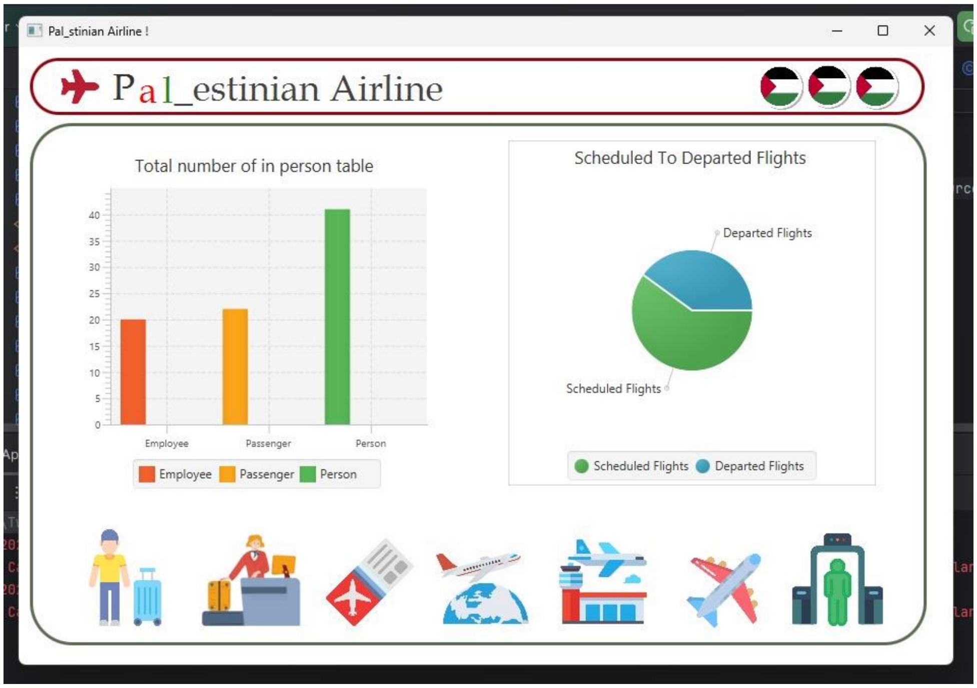
person_Id	Name	Nationality	G	Contact	Address	Depart...	Position	Salary
22334455	(Monica,Elain...	Spanish	F	(4321987,43...	("321 Redwoo...	Custome...	Coordi...	68000
55667799	(Raj,Kumar,Si...	Indian	M	(4532179,45...	("456 Acacia A...	Security	Assista...	79000
78965432	(Linda,Marie,B...	American	F	(6789012,67...	("321 Fir Rd","...	Engineer...	Engineer	76000
34567890	(Wei,Cheng,Li)	Chinese	M	(9854712,98...	("789 Maple B...	Finance ...	Consul...	67000
76543210	(Olivia,Sophia,...	French	F	(7453218,74...	("234 Oak St",...	Airport ...	Special...	73000
99887744	(Liam,James,...	New Zeal...	M	(2156798,21...	("567 Cedar D...	Custome...	Coordi...	70000
54321678	(Sara,Louise,N...	Polish	F	(5439872,54...	("432 Spruce L...	Security	Assista...	81000
87650987	(Benjamin,Ale...	American	M	(3198745,31...	("198 Pine Ave...	Engineer...	Engineer	78000
90123456	(Yuki,Sato,Ma...	Japanese	F	(6549871,65...	("876 Birch Blv...	Finance ...	Consul...	70000
34561278	(George,Theo...	British	M	(8745123,87...	("321 Oak Dr",...	Airport ...	Special...	74000
11235813	(Amina,Yasmi...	Moroccan	F	(7582941,75...	("432 Pine Ave...	Custome...	Coordi...	69000
12344321	(Nadia,Amjad,...	Palestinian	F	(59222222,5...	(street1,""""Na...	Airport ...	Assista...	70000

When you click on tab TABLE and click on SALARY and DEPARTMENT button (it shows all employee that in entered range in our system) this screen will open:

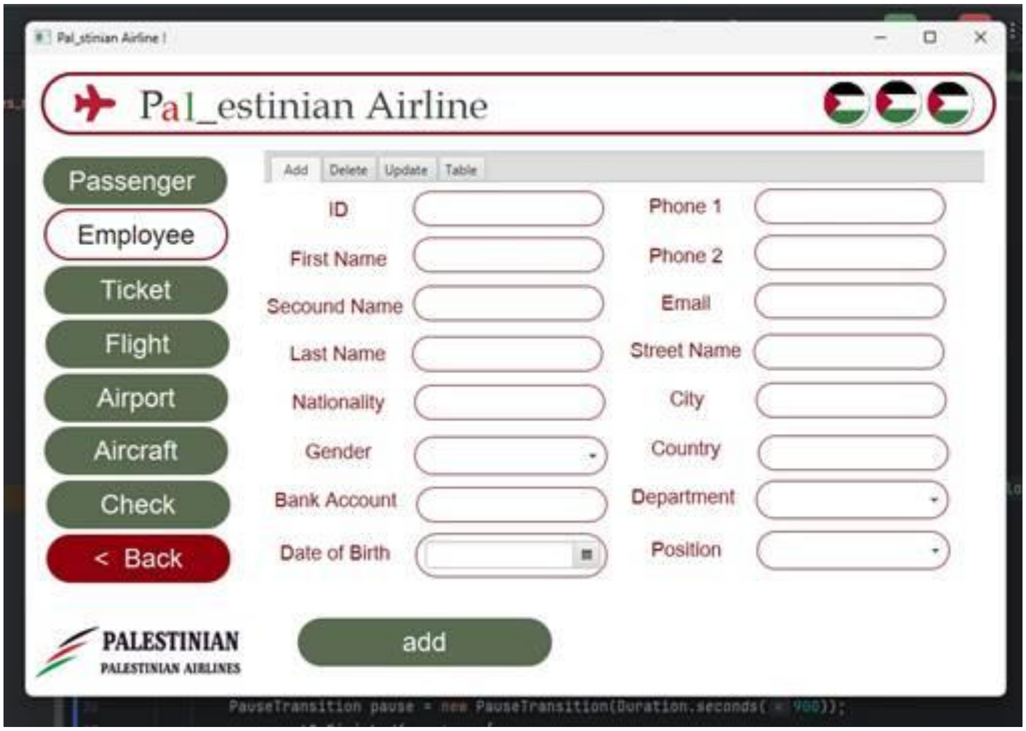


person...	Name	Nationality	G	Contact	Address	Depart...	Position	Salary
556677...	(Anna,Maria,J...	Swedish	F	(6541238,65...	("987 Oak Ln",...	Custome...	Coordi...	69000
223344...	(Monica,Elain...	Spanish	F	(4321987,43...	("321 Redwoo...	Custome...	Coordi...	68000
998877...	(Liam,James,...	New Zeal...	M	(2156798,21...	("567 Cedar D...	Custome...	Coordi...	70000
112358...	(Amina,Yasmi...	Moroccan	F	(7582941,75...	("432 Pine Ave...	Custome...	Coordi...	69000

When we click on back it will return to main screen:

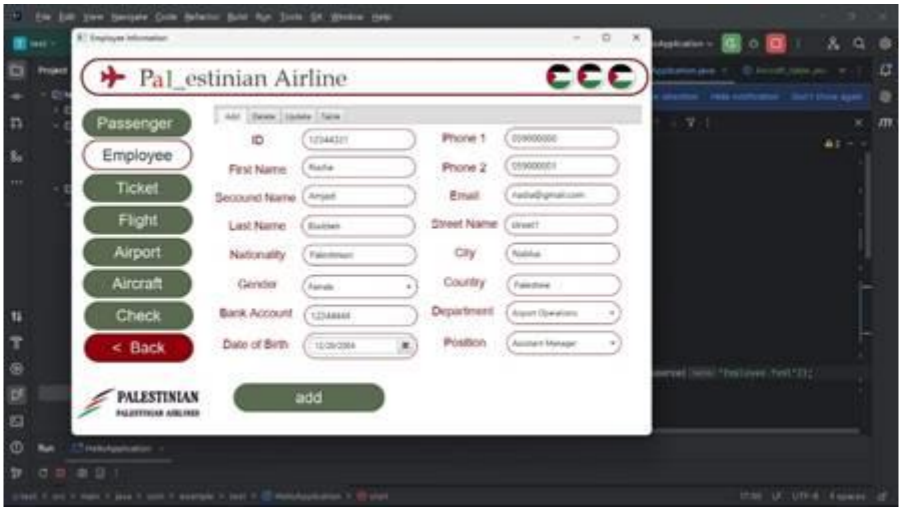

Pal_stinian Airline !
Pal_estinian Airline
Total number of in person table
40
35
30
25
20
15
10
5
0
Employee
Passenger
Person
🟥 Employee 🟧 Passenger 🟩 Person
Scheduled To Departed Flights
Departed Flights
Scheduled Flights
● Scheduled Flights ● Departed Flights

When you click on the icon of Airport table this screen will open:



```
PauseTransition pause = new PauseTransition(Duration.seconds( 900));
```

When you click on tab ADD this screen will open:
*note: Employee is a child of the person's table (where adding to the person's table can only be done through the Employee.)

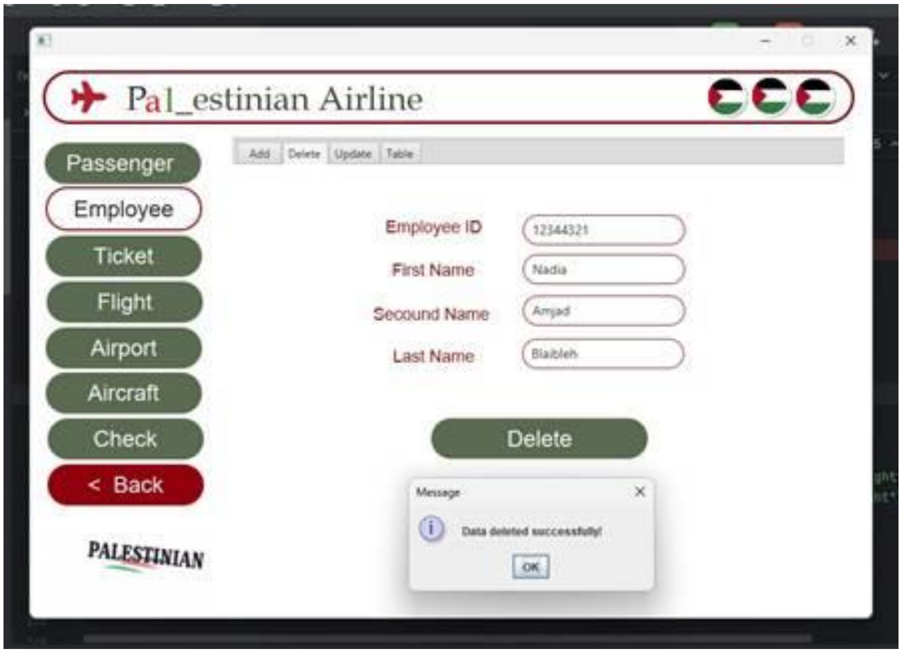


Employee Information

Pal_estinian Airline

ID: 12344321
First Name: Nadia
Secound Name: Amjad
Last Name: Blaibleh
Nationality: Palestinian
Gender: Female
Bank Account: 12344444
Date of Birth: 12/26/2004
Phone 1: 059000000
Phone 2: 059000001
Email: nadia@gmail.com
Street Name: street1
City: Nablus
Country: Palestine
Department: Airport Operations
Position: Assistant Manager

When you click on tab DELETE this screen will open:



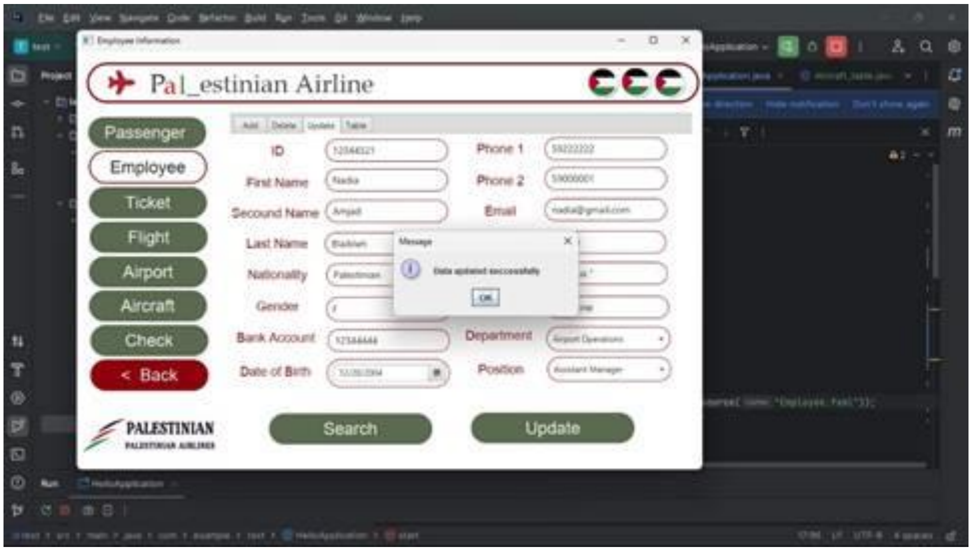
Pal_estinian Airline

Employee ID: 12344321
First Name: Nadia
Secound Name: Amjad
Last Name: Blaibleh

Message

Data deleted successfully!

When you click on tab UPDATE this screen will open:



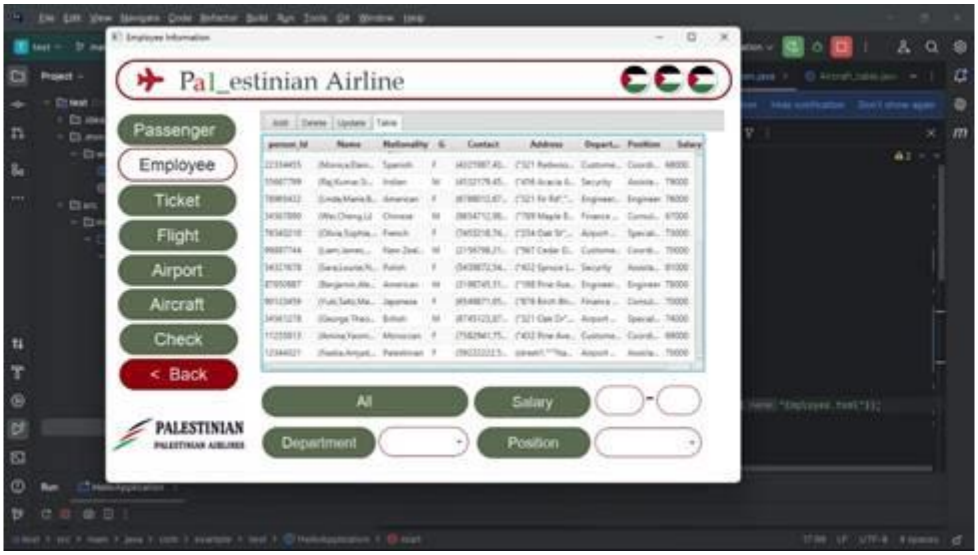
ID	12344321	Phone 1	59222222
First Name	Nadia	Phone 2	59000001
Secound Name	Amjad	Email	nadia@gmail.com
Last Name	Badran		
Nationality	Palestinian		
Gender	F		
Bank Account	12344444	Department	Airport Operations
Date of Birth	12/28/2004	Position	Assistant Manager

Message

Data updated successfully

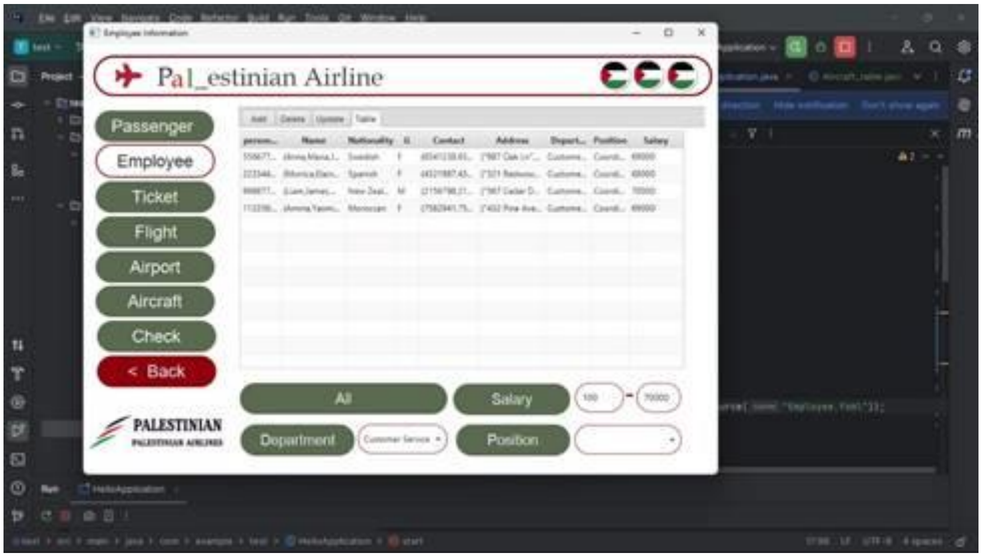
OK

When you click on tab TABLE and click on ALL button (it shows all employee in our system) this screen will open:



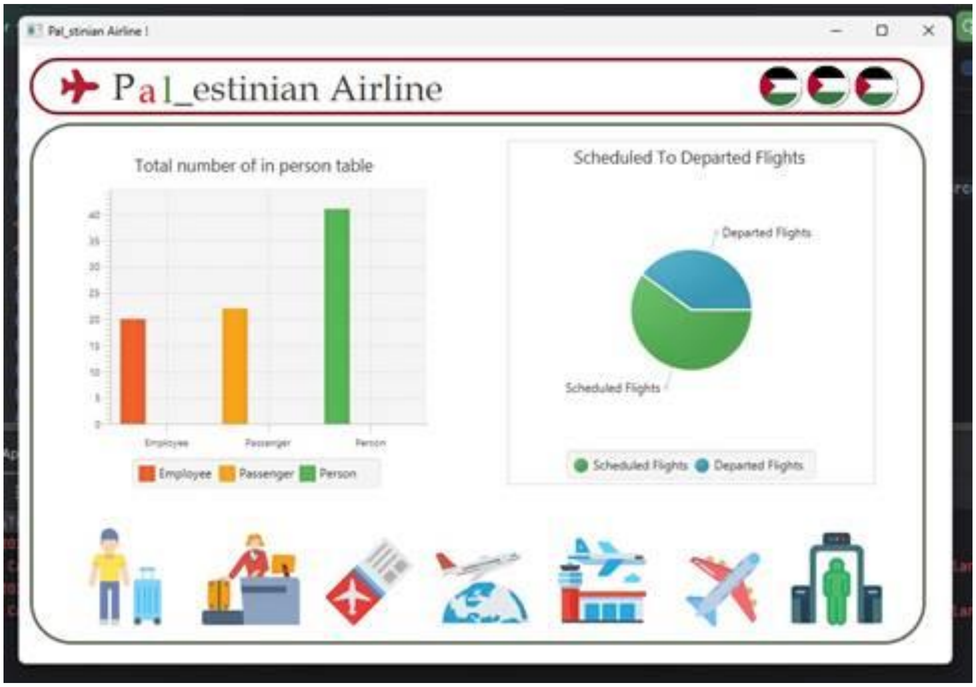
person_Id	Name	Nationality	G.	Contact	Address	Depart...	Position	Salary
22334455	[Monica,Dani...	Spanish	F	[4027987,45...	["321 Redwoo...	Custome...	Coordi...	68000
55667788	[Raj,Kumar,S...	Indian	M	[4532179,45...	["456 Acacia A...	Security	Assista...	79000
78985432	[Linda,Maria,B...	American	F	[8788012,87...	["321 Fir Rd","...	Engineer...	Engineer	78000
34567890	[Wei,Cheng,Li]	Chinese	M	[9854712,98...	["789 Maple B...	Finance ...	Consul...	67000
76543210	[Olivia,Sophia,...	French	F	[7453218,74...	["234 Oak St",...	Airport ...	Speciali...	73000
99887744	[Liam,James,...	New Zeal...	M	[2156798,21...	["567 Cedar D...	Custome...	Coordi...	70000
34327678	[Sara,Louise,N...	Polish	F	[5439872,54...	["432 Spruce L...	Security	Assista...	81000
87950987	[Benjamin,Ale...	American	M	[2198745,31...	["198 Pine Ave...	Engineer...	Engineer	79000
90123459	[Yuki,Sato,Ma...	Japanese	F	[6548871,65...	["876 Birch Bl...	Finance ...	Consul...	70000
34561278	[George,Theo...	British	M	[8745123,87...	["321 Oak Dr",...	Airport ...	Speciali...	74000
11223813	[Amina,Yasmi...	Moroccan	F	[7582941,75...	["432 Pine Ave...	Custome...	Coordi...	88000
12344321	[Nadia,Amjad,...	Palestinian	F	[5922222,5...	[street1,"Na...	Airport ...	Assista...	70000

When you click on tab TABLE and click on SALARY and DEPARTMENT button (it shows all employee that in entered range in our system) this screen will open:



person...	Name	Nationality	G	Contact	Address	Depart...	Position	Salary
556677...	{Anna,Maria,I...	Swedish	F	4654123.63...	["987 Oak Ln"...	Custome...	Coordi...	69000
223344...	{Monica,Elen...	Spanish	F	4432188743...	["321 Redwo...	Custome...	Coordi...	68000
888877...	{Liam,James,...	New Zeal...	M	2156798.21...	["987 Cedar D...	Custome...	Coordi...	70000
112233...	{Amina,Yasmi...	Moroccan	F	7562941.75...	["432 Pine Ave...	Custome...	Coordi...	69000

When we click on back it will return to main screen:


Pal_stinian Airline !
Pal_estinian Airline
Total number of in person table
40
35
30
25
20
15
10
5
0
Employee
Passenger
Person
🟥 Employee 🟧 Passenger 🟩 Person
Scheduled To Departed Flights
Departed Flights
Scheduled Flights
● Scheduled Flights ● Departed Flights

Conclusion :-

In our project, we aimed to enhance the efficiency of airport operations by developing a comprehensive database system. This system streamlines the interaction between airport employees and various operational processes through advanced technology and application features. By implementing this database, we have made it easier for staff to manage and process flight information, passenger details, and other critical data.

References :-

IntelliJ IDEA Community Edition.
JavaFX & Scene Builder.
PostgreSQL 16.
pgAdmin.
pgJDBC 42.7.3.
Scene Builder.
Jaspersoft Studio.
Just a color picker.
Stack overflow .
GeeksforGeeks
Of course we also used You tube and these are the most channels we learnt from :
Bro code .
Marco Codes .
Jaspersoft Embedded BI.
Random code .