IIT PALAKKAD

Airport Management and Ticketing System

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Contents

1 INDRODUCTION

Airport Management and Ticketing System Airport Management and Ticketing database system is implemented in MySQL primarily deals management of employees working for in airports, passengers, airlines, flights, airports, tickets.Basically Backend of project is done in mariadb using MySql language,front end in HTML,CSS and connection between front end and backend using php.

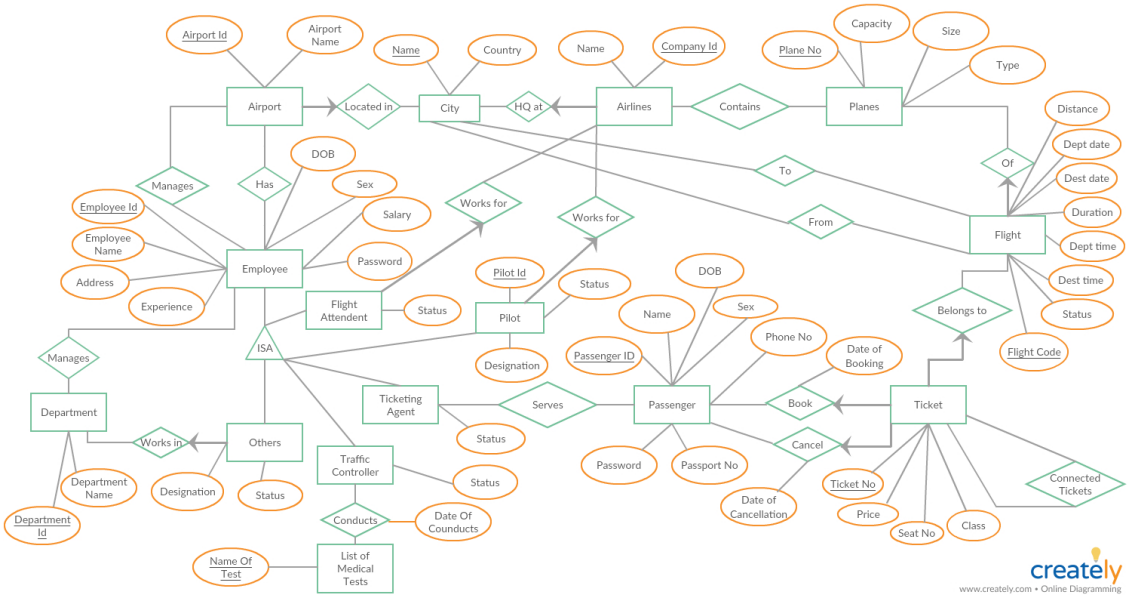
2 Design of Database

Here is the Brief introduction to Database and Basic Requirement Analysis.

2.1 Requirement Analysis

1. We have employees working in different Airports.
2. An Employee can be Ticketing Agent,Traffic Controller,Department Manager,Airport Manager,Pilot,Flight Attendant.
3. Each employee can work only in one department.
4. Departments in an Airport like Security,Immigration,Aviation Service,Public Relations etc..
5. The database system has the data of all commercial service airports.
6. International airlines operating through various countries across the world have their HQ located in cities.
7. Planes belonging to Airlines Company.
8. Passengers who want to book or cancel Tickets.
9. Flights travelling from city to City.

2.2 ERD Diagram



3 Tables and Relations between Them:

Here are few main Tables used in Database and their description is given in the below table.

Table Name(Entity)	Description(Attributes)
Airport	AirportID(IATA Code),Airport Name
Employee	Employee ID, Name, Address, Sex, Experience, Dob, Salary, password
Passenger	Passenger Id, passport number(UNIQUE), Personal Details
Ticket	Ticket No, Price, Seat No, Class
Flight	Flight Code, Duration, Distance, Departure date and time, Destination time and date, status of Flight
Airplane	Airplane Number,Capacity,Size
Airlines	Airlines Id(IATA Code), Airline Name
City	City ID,Name, Country
Medical test	Names of few medical tests related to employees.

3.1 Relation between Tables

1. Employees are related to Airport in which they work
2. An Employee can be Manager,Airport Manger,Pilot,FLight Attendant, Traffic Controller, Ticket Agent.
3. Ticket Agent Serves Passengers in booking and cancelling Tickets.
4. Tickets and Passengers are related by Booked_Tickets and Cancelled_Tickets Tables.
5. A Passenger can book connected tickets for two flights.
6. Relation between Tickets and Flights gives details about which ticket belongs to which flight.
7. relation between flight and city (from city1 to city 2).
8. Airlines have HQ located in city.
9. Airports belonging to City.
10. Employees linked to their Departments.
11. Pilots and FLight_Attendants are related to airline company.

Few Constraints in our Dataset:
An Employee can work in only one Airport.He can do only one type of job.
Each department has only one manger.

4 Triggers and Function:

Triggers are procedural code that are executed in response to certain events on tables or views in Database.

Trigger Name	Triggered when	Triggered on	Job of Trigger
Check_Employee	Before INSERT	Employee	Check whether Employees DOB valid,
Check_City	Before INSERT	City	Check whether city with same name and country with different primary key(city id).
Check Airplane	Before INSERT	Airplane	Check if Capacity of Airplane is negative
Check_Flight_Dest	Before INSERT	Destination_Flight	Check whether the flight travelling to that city has airport
Check_FlightSrc	Before INSERT	Source_Flight	Check whether the flight travelling from that city has airport
Check_airport_manager	Before INSERT	Airport_Manager	Check whether he is an Employee of that Airport

5 Procedures

A stored procedure in DBMS is sub routine a vailable to application that access a relational database systems(RDBMS).

Procedure Name:-Parameters

Get_Ticket_Flight:-flight_code
Lists all the Passengers names and their ticket numbers,seat numbers,class for that flight

Get_workers:- Airlines Code
Lists all workers working for That Company

inc_salary:- l , h factor that salaries should be affected
Employees having salary less than 50000 have their salary multiplied by 'l' rest by 'h'

Add_Employee:- Employee ID,job type,designation,name other personal de-

tails
Inserts into Employee and related Tables based on Job Type.

Get_Flight:- From city name(city1), To city name(city2),Date of journey
Lists all the flights directly from city1 to city2 on given date of journey.If there are no Flights gives a message to "connected Flights".

Get_flight_connected:- From city name(city1), To city name(city2), Date of journey
List of two Flights : one from city1 to city3 on given date and other from city3 to city2 and corresponding dates of the flights.

Book_Ticket_oneway:- Flight_code,passenger id,class,connected tickets(if so enter such ticket num else enter 0)
Books Tickets for given Flight if available else prints respective message.Inserts values into tables like Ticket,Booked_tickets,Ticket_Flight.

Cancel_Ticket:- Ticket_no,passenger id
Check whether given ticket and passenger id matches in Booked_Tickets table and deletes tickets from Booked_Tickets table and inserts into cancelled_Tickets Table only if Ticket is for future flights else prints message that Tickets is already used.

Delay_Flight:- flight_code,destination_date,destination_time(expected)
Updates the Flight Table.Check whether are there any connected tickets to tickets it this flight.Check whether new expected destination time and date are effecting them,if so book new tickets for them (if possible).

Cancel_Flight:- flight_code
Deletes flight from Database.Books Tickets to all Passengers(possible) on same date.Preference is given to Passengers who booked their tickets first.

Add_flight:- Flight_code,plane_number,from city(city1),to city(city2),flight details like date and time
Check whether plane_number has some other flight during scheduled time if not Inserts data into Flight,Source_flight.Destination_Flight,Airplane_Flight Tables

crew_scheduler:- Schedules The Airport staff.

The status of them changes between(0,1,2) just like 0:Ready for shift,1:Doing Job,2:just completed Shift

6 Events And Roles

Events:
inc_experince
Increases Employees experience by 1 year on every 1 year.
Roles:

1. Public_usr: Can see details of airports and their Location
2. Employye_usr: Can see only his Details (we failed to do this).
3. Airlines_Manager:Can monitor airlines and their HQ location airplanes
4. Airport_Manager:Can monitor all employees in that airport
5. Ticket_agent_usr:Books ,Cancels tickets for Passenger.
6. Passenger_usr:Check his ticket details,check flights he/she need.
7. Flight_manager:Update,Inserts,deletes flights
8. Crew_scheduler:Schedules crew.

7 Front End

Front of Database is built using HTML and CSS.Here are screen-shots of front end of Database.We failed to make connection between front-end and back-end.
Login Page:

Passenger Page:

Check Flight

From: To:

Date of Journey: dd/mm/yyyy

Submit

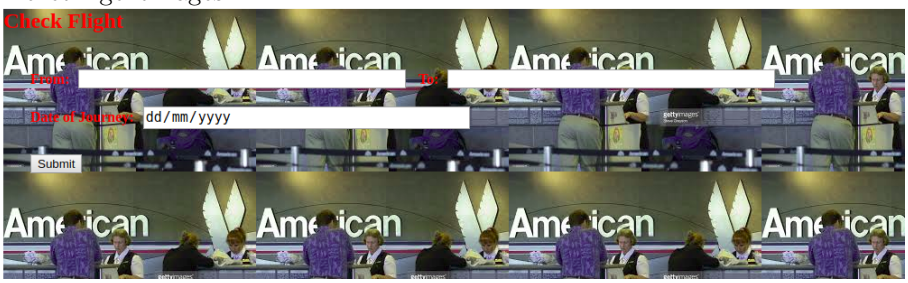
Personal Details

Personal Details

Booked Tickets

Cancelled Tickets

Ticket Agent Pages:



BOOK Ticket

flight code: class:

passenger id : connected ticket no:

Book

Cancel Ticket

Ticket number:

passenger id :

Cancel

8 Team Contribution

Siddhardha SST: Requirement Analysis, Design of ERD, created Tables, Triggers, Procedures, Events, Roles, Inserting Data into Databse, Testing Database.

Vishwajeet Kawale:ERD, Procedures for inserting data into Paasnger, Airlines, Airplanes, Inserting Data to Database.

9 Results

Add_Flight
For adding Flight to Database we need to insert data into 4 tables.So instead of writing 4 MySQL commands each time,we wrote a procedure that will check the conditions and enter the data to 4 tables (Flight, Airplane_Flight, Source_Flight, Destination_Flight)
Example : Inserting Flight with Flight_code = 1005

```
MariaDB [pr2]> select  * from Flight$
+-------------+----------+----------+----------------+-----------------+---------+---------------+-----------------+
| flight_code | duration | distance | departure_time | destination_time | status  | departure_date | destination_date |
+-------------+----------+----------+----------------+-----------------+---------+---------------+-----------------+
|        1001 |    24.50 |     1000 | 17:00:00       | 10:11:01        | on-time | 2018-03-20     | 2018-03-24       |
|        1002 |    20.18 |      800 | 09:40:00       | 05:58:00        | on-time | 2018-03-24     | 2018-03-25       |
|        1003 |    35.50 |     1800 | 00:00:13       | 11:50:43        | on-time | 2018-03-14     | 2018-03-15       |
|        1004 |    25.00 |     1000 | 12:16:00       | 13:16:21        | on-time | 2018-03-18     | 2018-03-19       |
|        1006 |    20.00 |       20 | 12:00:01       | 14:00:01        | on-time | 2018-03-20     | 2018-03-21       |
+-------------+----------+----------+----------------+-----------------+---------+---------------+-----------------+
5 rows in set (0.00 sec)

MariaDB [pr2]> CALL Add_Flight(1005,30,50,'10:00:00','11:00:00','on-time','2018-04-07','2018-04-07','1','2','AM-107')$
Query OK, 1 row affected (0.60 sec)

MariaDB [pr2]> select  * from Flight$
+-------------+----------+----------+----------------+-----------------+---------+---------------+-----------------+
| flight_code | duration | distance | departure_time | destination_time | status  | departure_date | destination_date |
+-------------+----------+----------+----------------+-----------------+---------+---------------+-----------------+
|        1001 |    24.50 |     1000 | 17:00:00       | 10:11:01        | on-time | 2018-03-20     | 2018-03-24       |
|        1002 |    20.18 |      800 | 09:40:00       | 05:58:00        | on-time | 2018-03-24     | 2018-03-25       |
|        1003 |    35.50 |     1800 | 00:00:13       | 11:50:43        | on-time | 2018-03-14     | 2018-03-15       |
|        1004 |    25.00 |     1000 | 12:16:00       | 13:16:21        | on-time | 2018-03-18     | 2018-03-19       |
|        1005 |    30.00 |       50 | 10:00:00       | 11:00:00        | on-time | 2018-04-07     | 2018-04-07       |
|        1006 |    20.00 |       20 | 12:00:01       | 14:00:01        | on-time | 2018-03-20     | 2018-03-21       |
+-------------+----------+----------+----------------+-----------------+---------+---------------+-----------------+
6 rows in set (0.00 sec)
```

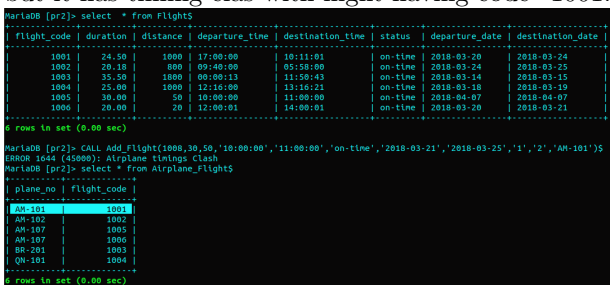
```
+-------------+----------+----------+------------
6 rows in set (0.00 sec)

MariaDB [pr2]> select  * from Airplane_Flight$
+----------+-------------+
| plane_no | flight_code |
+----------+-------------+
| AM-101   |        1001 |
| AM-102   |        1002 |
| AM-107   |        1005 |
| AM-107   |        1006 |
| BR-201   |        1003 |
| QN-101   |        1004 |
+----------+-------------+
6 rows in set (0.00 sec)

MariaDB [pr2]> select * from Destination_Flight$
+-------------+---------+
| flight_code | city_id |
+-------------+---------+
|        1001 |       1 |
|        1003 |       2 |
|        1005 |       2 |
|        1006 |       2 |
|        1002 |       3 |
|        1004 |       3 |
+-------------+---------+
6 rows in set (0.00 sec)
```

Crew Scheduler
Schedules the crew (0 to 1 to 2 to 0....).

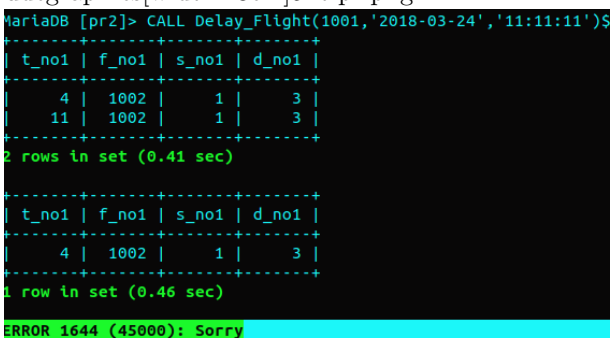
```
MariaDB [pr2]> select * from Ticket_Agent$
+----------+--------+
| agent_id | status |
+----------+--------+
|        2 | 0      |
|       13 | 0      |
|       28 | 0      |
+----------+--------+
3 rows in set (0.00 sec)

MariaDB [pr2]> CALL crew_scheduler$
Query OK, 0 rows affected (0.13 sec)

MariaDB [pr2]> select * from Ticket_Agent$
+----------+--------+
| agent_id | status |
+----------+--------+
|        2 | 2      |
|       13 | 2      |
|       28 | 2      |
+----------+--------+
3 rows in set (0.00 sec)
```

Add_Flight
When we try to add flight with plane that is having some other flight during

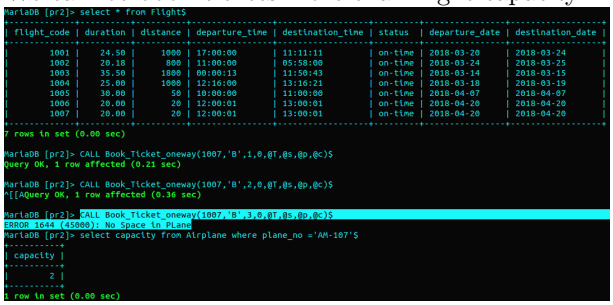
that time it should not accept that.
Example: I tried to insert flight with code=1008 having plane_no='AM-101' but it has timing clas with flight having code=1001.



Delay_flight
When there is delay in Flight all the people who have connected tickets should be booked new tickets for some other plane (cancelling connected tickets booked by them).If no plane is available "Sorry" message.
udegraphics[width=8cm]5.it pripng



Plane capacity
We cannot book tickets more than flight capacity.



```
MariaDB [pr2]> CALL Book_Ticket_oneway(1002,'B',3,0,@t,@s,@p,@c)$
Query OK, 1 row affected (0.19 sec)

MariaDB [pr2]> select * from Ticket_Flight$
+-----------+-------------+
| ticket_no | flight_code |
+-----------+-------------+
|         1 |        1001 |
|         3 |        1001 |
|         2 |        1002 |
|         4 |        1002 |
|        11 |        1002 |
|        12 |        1002 |
|         5 |        1004 |
|         6 |        1004 |
+-----------+-------------+
8 rows in set (0.00 sec)

MariaDB [pr2]> select * from Booked_Tickets$
+-----------+--------------+
| ticket_no | passenger_id |
+-----------+--------------+
|         1 |            1 |
|         9 |            1 |
|        11 |            1 |
|         2 |            2 |
|        10 |            2 |
|         3 |            3 |
|        12 |            3 |
|         5 |            4 |
|         6 |            5 |
+-----------+--------------+
9 rows in set (0.00 sec)
```

10 Future Improvements:

Cancel Flight procedure can be corrected.Few roles that have problem can be corrected.Flights will be linked with Airports.Cargo Flights can be added.Prices of Ticket will be changed on basis of no tickets available and no days left to journey.Airport Terminals can be added.Pilots and Flight attendants can be connected to Flights(their duty).

11 Backlog:

Few faults in our Database system are :
Flights are linked with cities but not with airports.
Cancel flight procedure has some Fault.
Employee and Passenger should be able to see only their details not other employee and passenger details.

12 References

Thanks to MySQL Reference Manual and Tutorials Point.
Thanks to A.Vinay for providing draft Latex for Report.