Project 1
COL-362
Airline Management system

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1 Section 1

In this project we have developed a dummy airline management system .which stores and retrieves the data related to the airports, airlines and flights.basically the motivation behind to choose this idea was to develop a system that was visually appealing and easy to use .
There are two types of users in this system :1)Customers and 2)Admin page and admin has given access to modify new flights etc.

2 Section 2

2.1

The primary source of data we have used in this project is 2015 flights library. which can be found on Kaggle. The following is a link to the data set:-
https://www.kaggle.com/miquar/explore-flights-csv-airports-csv-airlines-csv/data?select=flights.csv
We utilised the kaggle dataset specified above and tweaked it to our liking.

2.2

The library list was downloaded from this dataset and cleaned up to remove null values.

2.3

We have removed null values from the dataset. In this dataset we have removed few attributes from the airports table they are latitude and longitude .

As such from flights table we have cleaned Day of week ,Tail number from kaggle and added few attributes to make our project more interesting like departure time, departure delay,distance ,diverted and cancelled attributes .
We have added a new table named customer info which stores the data entered while booking the the flights.

2.4

Table	raw Datasize	clean Datasize	time to load	Noof tuple
airlines	359B	210B	0.300 ms	30
airports	23.87 kB	15.2KB	1.478 ms	648
flights	592MB	319.6MB		
customer info	20kB	10KB	0.675 ms	8

Data statistics

Table	Attributes
airlines	Iata Code, airline
airports	Iata code,airport, city,state,country,latitude,longitude
flights	year,month,day,day of week,airline,flight number,tail number,origin airport,destination airport,sch

List of all Entity and Attributes of raw Data

Table	Attr
airlines	Iata Co
airports	Iata code,airport
flights	year,month,day,airline,flight number,origin airport,destination airport,scheduled$_d$*eparture*, *d*
customer info	cust id,custname,custdob,cut phone,cu

List of all Entity and Attributes of clean Data

3 Section 3

3.1 Users View of the system

- Welcome Page has following 6 options
  - Home
  - Search for flights
  - Search between cities
  - Administrator Access
  - Status of your flight
  - Update your Details

- Search for flights
  This is the search page required to enter Departure Airport and Arrival Airport to search flights between them with date of travel and will give the list of flight ids which are available.

- Search between cities
  This page is to search flights between two cities as two cities can have one or more than one airport with the date of departure and will give the list of flight ids which are available.

- Status of Your Flight
  Here you have to enter arrival and departure airport with date and flight id it will give the status of flight.

- Administrator Access This is the admin page which is used to manage and add details about new flights, airlines, airports and can update the status of flight if it is running late or any info.

- Update your details
  This page is used to update details after adding the credentials for user id and flight id along with departure and arrival of airport with date of flight.

- Book Your Ticket
  Credential required are Departure and arrival airport with date which will give the list of flights where we can select the flight.

- Findflight
  This page will show the list of flights available and we can choose which flight to book with details of scheduled time and arrival time.

- User Details
  This page will open after selecting the flight to book and enter Name, Age, DOB, Phone Number, Email, Password.

- Add Flight
  This page is to add new flights in the database we need to enter Date, Moth, Year, Flight Number, Origin Airport, Destination Airport, Scheduled Departure, Scheduled Time of travel, Distance and Scheduled Arrival which will create an entry in the database for the new flight.

- Add Airport
  This page will add new airport in which information required are as follows Lata Code, Airport, City, State and Country.

- Add Airline
  Here we can add new Airline for which information required is Lata Code and Airline Name and it will be add to the database.

- Update Flight Status
  This page can be accessed under admin page and we can update if flight is delayed or postponed in the real time which will require to update all the details about the flight if it is diverted or cancelled or any delay is there.
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3.2 Special Functionality

- Admin Portal
  From Admin Page you can manage to update flights, airports, airlines, flight status

3.3 List of Queries

1. Search for available Flight from airports
   select airlines.AIRLINE, FLIGHT_NUMBER, ORIGIN_AIRPORT, DESTINATION_AIRPORT, YEAR, MONTH, DAY,SCHEDULED_DEPARTURE, SCHEDULED_ARRIVAL from airlines, flights where airlines.IATA_CODE = flights.AIRLINE AND flights.origin_airport = ' $1' AND flights.destination_airport = ' $1' AND MONTH = $1 AND DAY = $1

2. Search for Flights in Cities
   select airlines.AIRLINE, table1.FLIGHT_NUMBER, table1.ORIGIN_AIRPORT, table1.DESTINATION_AIRPORT, table1.YEAR, table1.MONTH, table1.DAY, table1.SCHEDULED_DEPARTURE, table1.SCHEDULED_ARRIVAL from airlines, (select flights.AIRLINE as AIRLINE, FLIGHT_NUMBER, ORIGIN_AIRPORT, DESTINATION_AIRPORT, YEAR, MONTH, DAY, SCHEDULED_DEPARTURE, SCHEDULED_ARRIVAL from flights, airports as a1, airports as a2 where a1.IATA_CODE = flights.ORIGIN_AIRPORT AND a2.IATA_CODE = flights.DESTINATION_AIRPORT AND a1.city = ' $1' AND a2.city = ' $1' AND MONTH = $1 AND DAY = $1) as table1 where airlines.IATA_CODE = table1.AIRLINE

3. Add Airline
   INSERT INTO airlines (IATA_CODE, AIRLINE) VALUES (' $' , ' $')

4. Add Airport
   INSERT INTO airports (IATA_CODE, AIRPORT, CITY, STATE, COUNTRY) VALUES ((' $', ' $ ' , ' $' '$' ' $')

5. Add Flight
   INSERT INTO flights (YEAR, MONTH, DAY, AIRLINE, FLIGHT_NUMBER, ORIGIN_AIRPORT, DESTINATION_AIRPORT, SCHEDULED_DEPARTURE, DEPARTURE_TIME, DEPARTURE_DELAY, SCHEDULED_TIME, DISTANCE, SCHEDULED_ARRIVAL, DIVERTED, CANCELLED) VALUES ($, $, $, ' $' $, ' $' ' $' $, $, 0, $, $, $, 0, 0)

6. Update Flight
   UPDATE flights SET DEPARTURE_TIME = $, DEPARTURE_DELAY = $, SCHEDULED_TIME = $, SCHEDULED_ARRIVAL = $, DIVERTED = $, CANCELLED = $ WHERE MONTH = $ AND DAY = $ AND FLIGHT_NUMBER = $ AND ORIGIN_AIRPORT = ' $ ' AND DESTINATION_AIRPORT = ' $ '

7. Get Flight Status
   SELECT airline, scheduled_departure, departure_time, departure_delay, diverted, cancelled FROM flights WHERE month = ' $' AND day = ' $' AND flight_number = ' $' AND origin_airport=' $' AND destination_airport=' $'

8. Update Flight
   UPDATE flights SET DEPARTURE_TIME = $, DEPARTURE_DELAY = $, SCHEDULED_TIME = $, SCHEDULED_ARRIVAL = $, DIVERTED = $, CANCELLED = $ WHERE MONTH = $ AND DAY = $ AND FLIGHT_NUMBER = $ AND ORIGIN_AIRPORT = ' $' AND DESTINATION_AIRPORT = ' $'

9. indirect flight
   select table1.firstoa, table1.firstda, table1.secondoa, table1.secondda, table1.firstfn, table1.secondfn, table1.YEAR, table1.MONTH, table1.DAY, airlines.airline, table1.firstsd, table1.firstsa, table1.secondsd, table1.secondsa from airlines,(select a.ORIGIN_AIRPORT as firstoa , a.DESTINATION_AIRPORT as firstda, b.ORIGIN_AIRPORT as secondoa, b.DESTINATION_AIRPORT as secondda,a.FLIGHT_NUMBER as firstfn, b.FLIGHT_NUMBER as secondfn, a.YEAR, a.MONTH, a.DAY, a.AIRLINE as airline, a.SCHEDULED_DEPARTURE as firstsd, a.SCHEDULED_ARRIVAL as firstsa, b.SCHEDULED_DEPARTURE as secondsd, b.SCHEDULED_ARRIVAL as secondsa from flights as a , flights as b where a.destination_airport = b.origin_airport and a.destination_airport <> ' $' and a.YEAR = 2015 AND a.MONTH = $ AND a.DAY = $ and b.YEAR = 2015 AND b.MONTH = $ AND b.DAY = $ and a.AIRLINE=b.AIRLINE and a.origin_airport = ' $' and b.destination_airport = ' $' and a.SCHEDULED_ARRIVAL < b.SCHEDULED_DEPARTURE and a.SCHEDULED_DEPARTURE < b.SCHEDULED_DEPARTURE and a.SCHEDULED_ARRIVAL < b.SCHEDULED_ARRIVAL) as table1 where airlines.IATA_CODE = table1.AIRLINE

10. Update User Info
    UPDATE customer_info SET cust_age = ' $' cust_dob = ' $' cust_phone = ' $' cust_email = ' $' cust_pass = ' $' WHERE cust_id = ' $'

11. get customer info
    SELECT cust_id, cust_name, cust_age, cust_dob, cust_phone, cust_email, cust_pass, cust_flight FROM customer_info WHERE cust_id=' $'

12. Total Customer
    SELECT COUNT(cust_id) FROM customer_info

13. Add Customer Info
    INSERT INTO customer_info VALUES ($, ' $' , ' $' ' $' ' $' ' $' ' $' $, $)

14. Get Available Airlines
    select airlines.AIRLINE, FLIGHT_NUMBER, ORIGIN_AIRPORT, DESTINATION_AIRPORT, YEAR, MONTH, DAY,SCHEDULED_DEPARTURE, SCHEDULED_ARRIVAL from airlines, flights where airlines.IATA_CODE = flights.AIRLINE AND flights.origin_airport = ' $' AND flights.destination_airport = ' $' AND MONTH = $ AND DAY = $ AND airlines.AIRLINE = ' $'

Table for Query Running Time	
Query Number	Average Running Time
1	1.687 ms
2	
3	25.576 ms ms
4	27.214 ms
5	120.168 ms
6	33.061 ms
7	31.422 ms
8	20.701 ms
9	1165.273 ms
10	76.165 ms
11	Time: 0.490 ms
12	Time: 0.796 ms
13	66.557 ms
14	