

AIRLINE BOOKING SYSTEM

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Overview:

The main purpose of this project is to provide a convenient way to search and book flights for customers. The system provides customers with the facility to book a ticket and cancel a particular reservation. The system provides options for viewing and booking different flights available with different timings for a particular date with the option to look for flights via direct flight, one-stop flight, two-stop flight and also an option to book for a round trip.

Features:

- The system includes a login portal. A user has to be logged in to book flights.
- Users can go through their bookings and also cancel the bookings.
- A particular user can book multiple tickets as per his need.
- A user can search and book multiple tickets for direct flights and indirect flights with up to two stops for a destination.
- Users can also book for a round trip with a 10% discount on total from the price of both tickets combined.
- The prices of the flights automatically fluctuate from the base price based on the number of days between booking and the day of the journey. For example, if the flight has been booked one day before the journey then the price is exactly doubled. The price will not increase if the ticket is booked for 3 months in advance.
- The database has been prepared with actual data of flights, airlines, and airports. The results fetched from the system are fairly accurate as compared with that of popular flight booking websites like MakeMyTrip as seen from the below screenshots of **Patna to Kolkata flights on 25th November**.

ALL DIRECT FLIGHTS					
Flight_no	DepartureTime	ArrivalTime	TOTAL DURATION	PRICE	BOOK
6E 342	18:40	19:45	1 Hours 5 Minutes	6221	<button>submit</button>
6E 634	9:45	10:55	1 Hours 10 Minutes	6345	<button>submit</button>
6E 689	22:35	23:40	1 Hours 5 Minutes	7251	<button>submit</button>
6E 708	13:35	14:40	1 Hours 5 Minutes	7393	<button>submit</button>
6E 7718	18:55	20:30	1 Hours 35 Minutes	6202	<button>submit</button>
G8 762	15:20	16:30	1 Hours 10 Minutes	5797	<button>submit</button>
SG 376	9:55	10:50	0 Hours 55 Minutes	7279	<button>submit</button>

TRIP TYPE
One Way

FROM
Patna, India

TO
Kolkata, India

DEPART
Mon, 25 Nov 2019

RETURN

PASSENGERS & CLASS
1 Adult, Economy

Stops
Departure From Patna
Arrival at Kolkata
Airlines

IndiGo
6E-689

22:35
Patna

01 hr 05 mins
Non stop

23:40
Kolkata

₹ 1,750

BOOK NOW

Zero Cancellation @ ₹ 549
Flight Details

Spicejet
SG-6426

19:55
Patna

01 hr 15 mins
Non stop

21:10
Kolkata

₹ 2,100

BOOK NOW

Zero Cancellation @ ₹ 549
Flight Details

IndiGo
6E-708

13:35
Patna

01 hr 05 mins
Non stop

14:40
Kolkata

₹ 2,337

BOOK NOW

Zero Cancellation @ ₹ 549
Flight Details

IndiGo
6E-634

09:45
Patna

01 hr 10 mins
Non stop

10:55
Kolkata

₹ 2,337

BOOK NOW

Zero Cancellation @ ₹ 549
Flight Details

IndiGo
6E-7718

18:55
Patna

01 hr 35 mins
Non stop

20:30
Kolkata

₹ 2,337

BOOK NOW

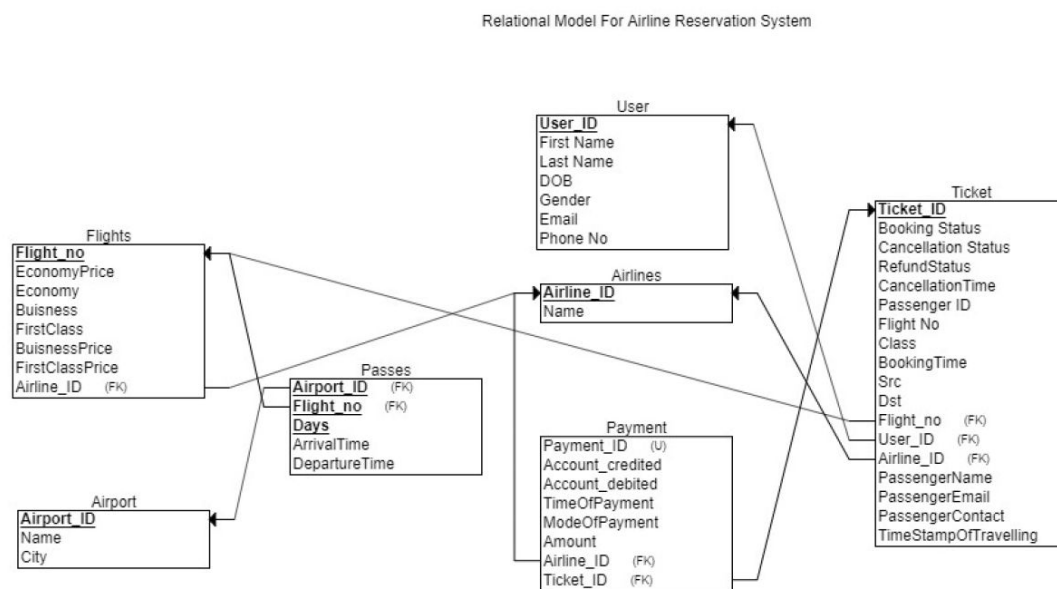
Zero Cancellation @ ₹ 549
Flight Details

Challenges:

- The major challenge was to create a good database design that should be able to capture every information without redundancy and should be consistent.
- Extracting data with utmost accuracy was also challenging.
- One of the major challenges was to introduce searching for flights with two stops in between and to make the searching fast as much as possible. The query was taking a very long time.

Overcoming Challenges:-

- The relational model for appropriate database design has been attached below:



- Data has been extracted and compiled from various sources.
- The query for searching and booking flights can be found below. We also introduced **indexing** to significantly boost the speed of loading of the results.

```

224 $sql = "SELECT DISTINCT t1.Airport_ID_Src as Start_Airport,t1.Flight_no as
    • Start_Flight_no,t1.DepartureTime as Start_DepartureTime,t1.ArrivalTime as First_Stop_ArrivalTime,
    • t1.Airport_ID_Dst as First_Stop_Airport, t2.Flight_no as First_Stop_Flight_No, t2.DepartureTime as
    • First_Stop_DepartureTime, t2.ArrivalTime as Second_Stop_ArrivalTime, t2.Airport_ID_Dst as
    • Second_Stop_Airport, t3.Flight_no as Second_Stop_Flight_No, t3.DepartureTime as
    • Second_Stop_DepartureTime , t3.ArrivalTime as Final_ArrivalTime ,t3.Airport_ID_Dst as Final_Airport
    • from Passes as t1, Passes as t2, Passes as t3 where
225 t1.Airport_ID_Src = '$Airport_Id_Src'
226 && t1.Airport_ID_Dst = t2.Airport_ID_Src
227 && t2.Airport_ID_Dst = t3.Airport_ID_Src
228 && t3.Airport_ID_Dst = '$Airport_Id_Dst'
229 &&
    • isAvailable(t1.Flight_no,t1.ArrivalTime,t1.DepartureTime,'$Class',convert('$Date_of_travelling',date),$N
    • o_of_Seats)>0
230 &&
    • isAvailable(t2.Flight_no,t2.ArrivalTime,t2.DepartureTime,'$Class',convert('$Date_of_travelling',date),$N
    • o_of_Seats)>0
231 &&
    • isAvailable(t3.Flight_no,t3.ArrivalTime,t3.DepartureTime,'$Class',convert('$Date_of_travelling',date),$N
    • o_of_Seats)>0
232 && Position('$day_number' in t1.DepartureDays) && Position('$day_number' in t1.ArrivalDays)
233 && Position('$day_number' in t2.DepartureDays) && Position('$day_number' in t1.DepartureDays)
234 && Position('$day_number' in t3.DepartureDays) && Position('$day_number' in t3.DepartureDays)
235 && convert(t2.DepartureTime,time)< convert(t2.ArrivalTime,time)
236 && convert(t1.ArrivalTime,time) < convert(t2.DepartureTime,time)
237 && convert(t2.ArrivalTime,time) < convert(t3.DepartureTime,time)
238 && convert(t1.DepartureTime,time) < convert(t1.ArrivalTime,time)
239 && convert(t3.DepartureTime,time) < convert(t3.ArrivalTime,time)
240 ORDER BY (TIME_TO_SEC(TIMEDIFF(t1.ArrivalTime, t1.DepartureTime))
241 +TIME_TO_SEC(TIMEDIFF(t2.DepartureTime, t1.ArrivalTime))
242 +TIME_TO_SEC(TIMEDIFF(t2.ArrivalTime, t2.DepartureTime))
243 +TIME_TO_SEC(TIMEDIFF(t3.DepartureTime, t2.ArrivalTime))
244 +TIME_TO_SEC(TIMEDIFF(t3.ArrivalTime, t3.DepartureTime))) limit 100";

```

Learning Outcome:

This project has enabled both of us to further grasp the concept of managing databases. We have used the concepts of SQL functions, indexing and various other concepts in the project.