AIRLINE TRAVEL SITE

An airline travel web application using servlet and jsp

Abstract

In the digital age , every bit of information is available to us on the internet ,ranging from entertainment timings like movie timings ,sports timings to work like flight and train schedules .This is a humble attempt a building a flight schedule website using Servlets and Jsp. HTML was also used for front end development.

Amartya Choudhury
JU-BCSE IV
Roll – 001610501026

Internet Technology Lab

Problem Statement:

Implement a web application for “Travel Thru Air” using servlets to support the following two use cases

1. A list of current special deals must appear on the home page. Each special deal must display the departure city, the arrival city, and the cost. These special deals are set up by the marketing department and change during the day, so it can’t be static. Special deals are only good for a limited amount of time.

2. A user may search for flights, given a departure city, time and an arrival city. The results must display the departure city, the arrival city, the total cost, and how many legs the flight will have.

State and explain why and where you have used design patterns.

Design:

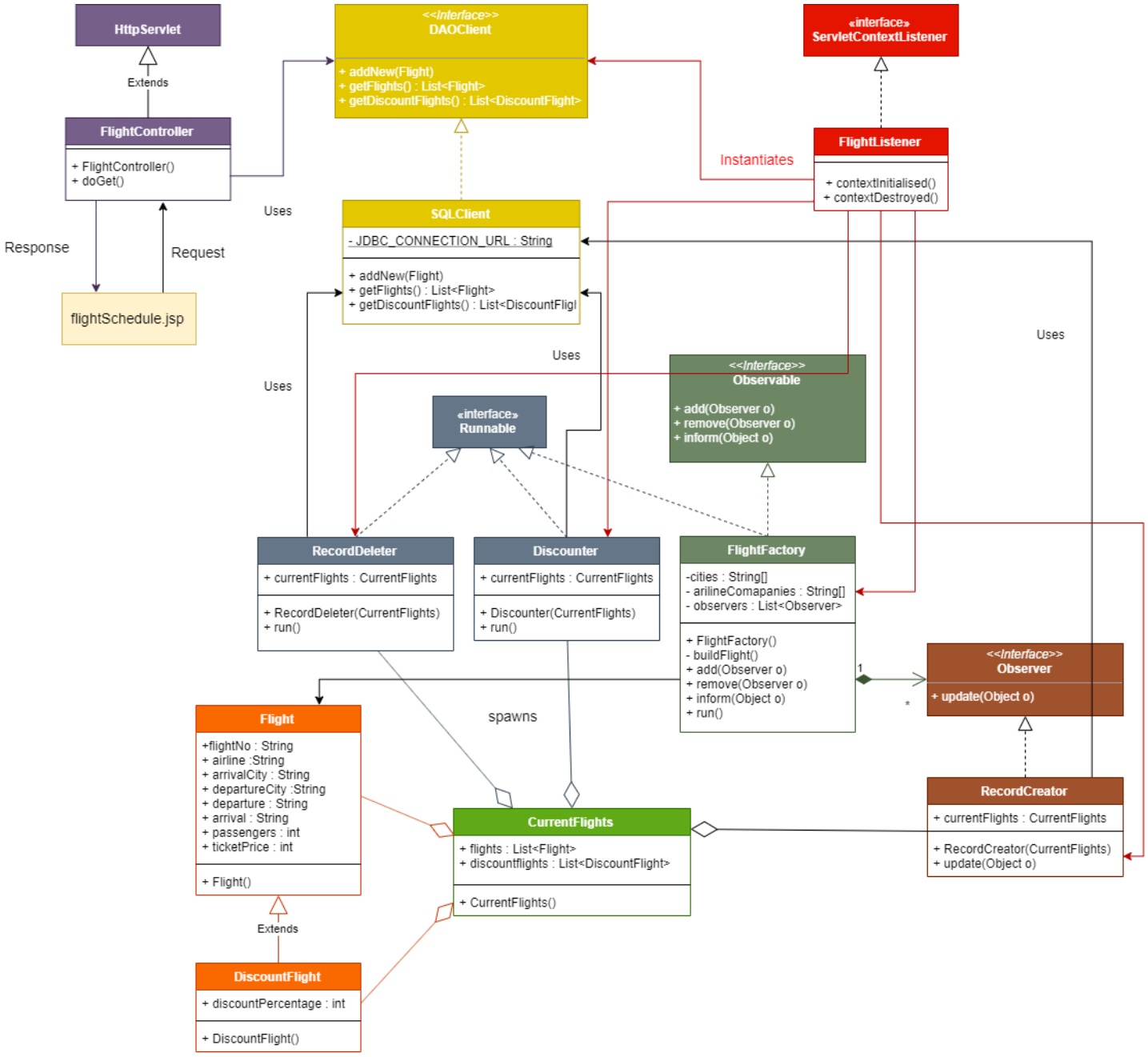


Fig 1 : Class Diagram

- The MVC design pattern is followed .
- flightSchedule.jsp is the view , FlightController.java is the controller and NormalFlights and DiscountFlights is the model to be displayed .
- User submits form given the departure , arrival ,date and airlines company .The controller handles this request and fetches NormalFlight records and discounted flightrecords with the help of the dao (SQLClient) .
- FlightListener implements Servlet context listener and its task is to –
    i. Instatiation of Dao
    ii. Spawning of FlightFactory thread (Observable) and adding an instance of RecordCreator to it (Observer).
    iii. Spawing a RecordDeleter thread
    iv. Spawning a Discounter thread
    v. The RecordCreator , RecordDeleter and the Discounter thread all share an instance of CurrentFlight , which holds all non-discounted and discounted-flights that have not yet started its journey .
- FlightFactory thread creates flights at regular intervals of time (3 seconds) . On flight creation , the update method of a RecordCreator is called , which adds the record to a database and to currentflights as normal flights .
- RecordDeleter scans the list of of normal and discounted currentflights and deletes the flight Records that have already started .The database is also updated .
- Discounter is a thread that runs at 5 minutes interval and discounts flights with a probability of 0.5 .The discounted flights are taken from flights lists and put into discount flight list .The database is updated with this information.

Design Patterns :

- The SQLClientDao has been made a Singleton , since creating a new connection everytime is extremely expensive .

- The RecordCreator “observes” the FlightFactory for new FlightRecords and then stores the flightRecord in database . So , the observer pattern is used here.
- For simulating real flight system , we need to create dummy flight records at regular intervals of time . So we created a FlightFactory whose job is to create flights after a time interval . The factory method was employe here .
- Dependency injection was used .The FlightController and other threads do not know which instance of Dao they are using .That has been configured in the flightListener . Also a FlightFactory (an Observable) does not know what are its Observers .It updates them after new flight is created nonetheless.

View :

flightSchedule.jsp

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<%@page import="java.util.List" %>
<%@page import ="com.achoudhury.flightmanagement.*" %>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>TraveThruAir</title>
</head>
<body>
        <h1>Welcome to Travel Thru Air !</h1>
        <h3>Search for Flights :</h3>
        <form action="FlightController" method="get">

                <!--<input name="departure" "type="text" placeholder="City">

                <input name="arrival" "type="text" placeholder="City">-->
                <label>Flying From :</label>
                <select name="departure">
                        <option value="Delhi">Delhi</option>
                        <option value="Kolkata">Kolkata</option>
                        <option value="Bangalore">Bangalore</option>
                </select>
```

```
                <label>Flying To:</label>
                <select name="arrival">
                        <option value="Delhi">Delhi</option>
                        <option value="Kolkata">Kolkata</option>
                        <option value="Bangalore">Bangalore</option>
                </select>
                <label>Airlines:</label>
                <select name="airlines">
                        <option value="Any">Any</option>
                        <option value="Indigo">Indigo</option>
                        <option value="AirAsia">AirAsia</option>
                        <option value="Air India">Air India</option>
                        <option value="GoAir">GoAir</option>
                        <option value="Vistara">Vistara</option>
                </select>
                <label>Departing:</label>
                <input name="date" type="date">
                <button>Search</button>
        </form>
        <h2>Discounts</h2>
        <table border="1">
                <tr>
                <th>Flight Number</th>
                <th>Airline</th>
                <th>Departing</th>
                <th>Arrival</th>
                <th>TicketPrice(Rs.)</th>
                <th>Passengers</th>
                </tr>
                <%
                if(request.getAttribute("discounts") != null){
                        List<DiscountFlight> discountedFlights=
(List<DiscountFlight>)request.getAttribute("discounts");
                        for(DiscountFlight df: discountedFlights){
                                out.print("<tr>");
                                out.print("<td>");
                                out.print(df.flightNo);
                                out.print("</td>");
                                out.print("<td>");
                                out.print(df.airLine);
                                out.print("</td>");
                                out.print("<td>");
                                out.print(df.departure.toString());
                                out.print("</td>");
                                out.print("<td>");
```

```
                                out.print(df.arrival.toString());
                                out.print("</td>");
                                out.print("<td>");

        out.print("<strike>"+Integer.toString(df.ticketPrice)+"</strike>");
                                out.print(df.ticketPrice*(100-
df.discountPercentage)/100);
                                out.print("</td>");
                                out.print("<td>");
                                out.print(df.passengers);
                                out.print("</td>");
                                out.print("</tr>");
                        }
                }
                %>
        </table>

        <h2>Normal Rate</h2>
        <table border="1">
                <tr>
                <tr>
                <th>Flight Number</th>
                <th>Airline</th>
                <th>Departing</th>
                <th>Arrival</th>
                <th>TicketPrice(Rs.)</th>
                <th>Passengers</th>
                </tr>
                <%
                if(request.getAttribute("normals") != null){
                        List<Flight> flights=
(List<Flight>)request.getAttribute("normals");
                        for(Flight f: flights){
                                out.print("<tr>");
                                out.print("<td>");
                                out.print(f.flightNo);
                                out.print("</td>");
                                out.print("<td>");
                                out.print(f.airLine);
                                out.print("</td>");
                                out.print("<td>");
                                out.print(f.departure.toString());
                                out.print("</td>");
                                out.print("<td>");
                                out.print(f.arrival.toString());
```

```
                                out.print("</td>");
                                out.print("<td>");
                                out.print(f.ticketPrice);
                                out.print("</td>");
                                out.print("<td>");
                                out.print(f.passengers);
                                out.print("</td>");
                                out.print("</tr>");
                        }
                }
                %>      </table>
        </body>
        </html>
```

Flight.java

```
package com.achoudhury.flightmanagement;
import java.util.Date;
public class Flight {
        public String flightNo;
        public String airLine;
        public String departureCity;
        public String arrivalCity;
        public Date departure;
        public Date arrival;
        public int passengers;
        public int ticketPrice;
        Flight(String flightNo,String airLine,String departureCity,String arrivalCity,Date
departure,Date arrival,int passengers,int ticketPrice){
                this.flightNo = flightNo;
                this.airLine =airLine;
                this.departureCity = departureCity;
                this.arrivalCity = arrivalCity;
                this.departure = departure;
                this.arrival = arrival;
                this.passengers = passengers;
                this.ticketPrice = ticketPrice;
        }
}
```

DiscountFlight.java

```
package com.achoudhury.flightmanagement;
```

```
import java.util.Date;

public class DiscountFlight extends Flight {
	public int discountPercentage;
	DiscountFlight(String flightNo, String airLine, String departureCity, String arrivalCity,
Date departure,
			Date arrival, int passengers,int ticketPrice,int discountPercentage) {
		super(flightNo, airLine, departureCity, arrivalCity, departure,
arrival,passengers, ticketPrice);
		this.discountPercentage = discountPercentage;
	}
}
```

FlightFactory.java

```
package com.achoudhury.flightmanagement;
import java.util.Date;
import java.util.Calendar;
import java.util.List;
import java.util.ArrayList;
import java.lang.Math;
public class FlightFactory implements Runnable,Observable{
	String[] cities = {
			"Kolkata","Delhi","Bangalore"} ;
	String[] airlinesCompanies = {
			"Indigo","Air
India","Spicejet","AirAsia","Vistara","GoAir"
	};
	List<Observer> observers;

	FlightFactory(){
	}
	private Flight buildFlight(){
		Flight flight = null;
		try {
			int index1 = (int)( Math.random()*100 ) %
cities.length;

			String temp = cities[index1];
			cities[index1] = cities[cities.length-1];
			cities[cities.length -1] = temp;
```

```
                        int index2 = (int)( Math.random()*100 ) %
(cities.length -1);
                        String departureCity = cities[cities.length -1 ];
                        String arrivalCity = cities[index2];
                        String airline =
airlinesCompanies[(int)(Math.random()*100)%airlinesCompanies.length];
                        Date timeNow = new Date();
                        Calendar c = Calendar.getInstance();
                        c.setTime(timeNow);
                        c.add(Calendar.DATE,1 +(int)(Math.random()*100)%7);
                        Date departure = c.getTime();
                        System.out.println(departure);
                        c.add(Calendar.HOUR,(int)( Math.random()*100 ) % 24);
                        c.add(Calendar.MINUTE,(int)( Math.random()*100 ) % 24);
                        Date arrival = c.getTime();
                        int passengers = 1 + (int)(Math.random()*1000) % 256;
                        int cost = 2000 + (int)(Math.random()*10000) % 8000;
                        String flightNo ="";
                        flightNo += (char)((int)(Math.random()*26)+65);
                        flightNo += (char)((int)(Math.random()*26)+65);
                        flightNo += " ";
                        flightNo += Integer.toString((int)(1 +
Math.random()*1000));
                        flight = new
Flight(flightNo,airline,departureCity,arrivalCity,departure,arrival,passenger
s,cost);
                }
                catch(Exception e) {
                        e.printStackTrace();
                }
                return flight;
        }
        @Override
        public void add(Observer o) {
                if(observers == null) observers = new ArrayList<Observer>();
                observers.add(o);
        }
        @Override
        public void remove(Observer o) {
                observers.remove(o);
        }
        @Override
        public void inform(Object obj) {
                for(Observer obs : observers) {
                        obs.update(obj);
```

```
                }
        }
        @Override
        public void run() {
                while(true) {
                        Flight flight = buildFlight();
                        inform(flight);
                        try {
                                Thread.sleep(3*1000);
                        } catch (InterruptedException e) {
                                e.printStackTrace();
                        }
                }
        }

}
```

FlightController.java

```
package com.achoudhury.flightmanagement;

import java.io.IOException;
import java.sql.SQLException;

import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import java.util.Date;
import java.util.List;
import java.util.ArrayList;
import java.text.ParseException;
import java.text.SimpleDateFormat ;
@WebServlet("/FlightController")
public class FlightController extends HttpServlet {
        private static final long serialVersionUID = 1L;
    public FlightController() {
    }

        protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
                String departureCity = request.getParameter("departure");
                String arrivalCity = request.getParameter("arrival");
                String date = request.getParameter("date");
                String airlines = request.getParameter("airlines");
```

```
                SimpleDateFormat formatter = new SimpleDateFormat("yyyy-MM-dd");
                try {
                        SQLClient sqlClient = SQLClient.getInstance();
                        Date dt = formatter.parse(date);
                        List<Flight> normalFlights =
sqlClient.getnormalFlights(departureCity,arrivalCity,dt,airlines);
                        List<DiscountFlight> discountFlights =
sqlClient.getdiscountFlights(departureCity,arrivalCity,dt,airlines);
                        request.setAttribute("normals",normalFlights);
                        request.setAttribute("discounts",discountFlights);
                        request.getRequestDispatcher("/flightSchedule.jsp").forward(request,
response);
                }
                catch (SQLException e1) {
                        e1.printStackTrace();
                }
                catch (ParseException e) {
                        e.printStackTrace();
                }
        }

        protected void doPost(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {

                doGet(request, response);
        }
}
```

CurrentFlights.java

```
package com.achoudhury.flightmanagement;

import java.util.ArrayList;
import java.util.List;
import java.util.Vector;
public class CurrentFlights {
        public List<Flight> flights;
        public List<DiscountFlight> discountflights;
        CurrentFlights(){
                flights = new ArrayList<>();
                discountflights = new ArrayList<>();
        }
}
```

Observable.java

```
package com.achoudhury.flightmanagement;

public interface Observable {
	public void add(Observer o);
	public void remove(Observer o);
	public void inform(Object o);
}
```

Observable.java

```
package com.achoudhury.flightmanagement;

public interface Observer {
	public void update(Object o);
}
```

RecordCreator.java

```
package com.achoudhury.flightmanagement;
import java.sql.SQLException;

public class RecordCreator implements Runnable,Observer{
	CurrentFlights currentflights;
	RecordCreator(CurrentFlights currentflights){
	this.currentflights = currentflights;
	}
	public void update(Object o) {
		Flight f = (Flight)o;
		synchronized(currentflights) {
			currentflights.flights.add(f);
			try {
				SQLClient sqlClient = SQLClient.getInstance();
				sqlClient.addnew(f);
				System.out.println("added flight " + f.flightNo);
			}
			catch (SQLException e) {
				e.printStackTrace();
```

```
                        }
                }
        }
        @Override
        public void run() {

        }
}
```

RecordDeleter.java

```
package com.achoudhury.flightmanagement;

import java.sql.SQLException;
import java.util.Date;
import java.util.Iterator;
public class RecordDeleter implements Runnable{
        CurrentFlights currentFlights;
        RecordDeleter(CurrentFlights currentflights){
                this.currentFlights = currentflights;
        }
        @Override
        public void run() {
                try{
                        SQLClient sqlclient= SQLClient.getInstance();
                        sqlclient.removeCompletedFlights(new Date());
                }
                catch(SQLException e) {
                        e.printStackTrace();
                }
                while(true) {
                        try {
                        SQLClient sqlClient = SQLClient.getInstance();

                                Date timeNow = new Date();
                                synchronized(currentFlights){
                                        for(Iterator<Flight> itr =
currentFlights.flights.iterator();itr.hasNext();) {
                                                Flight flight  = itr.next();
                                                if(timeNow.after(flight.departure)) {
                                                        sqlClient.removeflight(flight.flightNo);
                                                        itr.remove();
                                                        System.out.println("Deleted record for
flight" + flight.flightNo);
                                                }
                                        }
                                        for(Iterator<DiscountFlight> itr =
currentFlights.discountflights.iterator();itr.hasNext();) {
```

```
                                        DiscountFlight df = itr.next();
                                        if(timeNow.after(df.departure)){
                                                sqlClient.removeflight(df.flightNo);
                                                itr.remove();
                                                System.out.println("Deleted record for
flight" + df.flightNo);
                                        }
                                    }
                                }
                        }
                        catch (SQLException e) {
                                e.printStackTrace();
                        }
                }

        }
}
```

Discounter.java

```
package com.achoudhury.flightmanagement;

import java.sql.SQLException;
import java.util.Iterator;
import java.lang.Math;
public class Discounter implements Runnable{
        CurrentFlights currentflights;
        Discounter(CurrentFlights currentflights){
                this.currentflights = currentflights;
        }
        @Override
        public void run() {
                while(true) {
                                try {
                                SQLClient sqlClient = SQLClient.getInstance();
                                synchronized(currentflights) {
                                        for(Iterator<Flight> itr =
currentflights.flights.iterator();itr.hasNext();) {
                                        int random = (int)(Math.random()*100);
                                        Flight flight = itr.next();
                                        if(random < 50) {
                                                itr.remove();
                                                DiscountFlight df = new
DiscountFlight(flight.flightNo,flight.airLine,flight.departureCity,flight.arrivalCity,flight.departu
re,flight.arrival,flight.passengers,flight.ticketPrice,(int)(Math.random()*100)+1);
                                                currentflights.discountflights.add(df);

        sqlClient.discount(df.flightNo,df.discountPercentage);
                                                System.out.println("discounted flight " +
```

```
df.flightNo);
                                        }
                                    }
                                }
                                Thread.sleep(5*60*1000);
                                }
                                catch (SQLException e) {
                                    e.printStackTrace();
                                }
                                catch (InterruptedException e) {
                                    e.printStackTrace();
                                }
                        }

                }
}
```

FlightListener.java

```
@WebListener
public class FlightListener implements ServletContextListener {

    /**
     * Default constructor.
     */
    public FlightListener() {
        // TODO Auto-generated constructor stub
    }

    public void contextDestroyed(ServletContextEvent arg0)  {
         // TODO Auto-generated method stub
    }

         /**
     * @see ServletContextListener#contextInitialized(ServletContextEvent)
     */
    public void contextInitialized(ServletContextEvent arg0)  {
         // TODO Auto-generated method stub
          CurrentFlights currentflights = new CurrentFlights();
          FlightFactory factory = new FlightFactory();
          RecordCreator rc = new RecordCreator(currentflights);
          factory.add(rc);
          Thread flightProduction = new Thread(factory);
          flightProduction.start();
          Thread recordDeleter = new Thread(new RecordDeleter(currentflights));
          recordDeleter.start();
```

```
        Thread recordCreator = new Thread(rc);
        recordCreator.start();
        Thread discounter = new Thread(new Discounter(currentflights));
        discounter.start();
        System.out.println("all threads started");

    }

}
```

SQLClient.java

```
package com.achoudhury.flightmanagement;
import java.sql.*;
import java.util.Date;
import java.util.List;
import java.util.ArrayList;
public class SQLClient {
        private static SQLClient instance;
        private Connection connection;
        private static final String JDBC_CONNECTION_URL
="jdbc:sqlserver://localhost\\MSSQLSERVER:60768;databaseName=travelThruAir;us
er=achoudhury98;password=1234";
    private static final String INSERT_NEW_RECORD = " INSERT INTO flights
VALUES(?,?,?,?,?,?,?,?,'False',NULL)";
    private static final String GET_NORMAL_FLIGHT_RECORDS = "SELECT * FROM
flights WHERE departure_city=? AND arrival_city=? AND CAST(departure AS Date)
= ? AND discount='False'";
    private static final String GET_DISCOUNT_FLIGHT_RECORDS = "SELECT * FROM
flights WHERE departure_city=? AND arrival_city=? AND CAST(departure AS Date)
= ? AND discount='True'";
    private static final String GET_NORMAL_FLIGHT_RECORDS_FILTER_AIRLINES =
"SELECT * FROM flights WHERE departure_city=? AND arrival_city=? AND
CAST(departure AS Date) = ? AND airline = ? AND discount='False'";
    private static final String GET_DISCOUNT_FLIGHT_RECORDS_FILTER_AIRLINES =
"SELECT * FROM flights WHERE departure_city=? AND arrival_city=? AND
CAST(departure AS Date) = ? AND airline = ? AND discount='True'";
    private static final String REMOVE_FLIGHT_RECORD = "DELETE FROM flights
WHERE flight_no = ?";
    private static final String DISCOUNT_FLIGHT_RECORD ="UPDATE flights SET
discount_percentage = ? , discount='True' WHERE flight_no=?";
```

```
        private static final String REMOVE_COMPLETED_FLIGHTS = "DELETE FROM
flights WHERE departure < ?";
    private SQLClient() throws SQLException{
                        try {

        Class.forName("com.microsoft.sqlserver.jdbc.SQLServerDriver");
                                this.connection =
DriverManager.getConnection(JDBC_CONNECTION_URL);
                         }
                         catch (ClassNotFoundException e) {
                                e.printStackTrace();
                        }

        }
        public Connection getConnection() {
                return this.connection;
        }
        public static SQLClient getInstance() throws SQLException{
                if(instance == null || instance.connection.isClosed()) {
                        instance = new SQLClient();
                }
                return instance;
        }

        public void addnew(Flight f) throws SQLException{
                Connection conn= this.getConnection();
                PreparedStatement p =
conn.prepareStatement(INSERT_NEW_RECORD);
                p.setString(1, f.flightNo);
                p.setString(2, f.airLine);
                p.setString(3, f.departureCity);
                p.setString(4, f.arrivalCity);
                p.setTimestamp(5, new
java.sql.Timestamp(f.departure.getTime()));
                p.setTimestamp(6, new
java.sql.Timestamp(f.arrival.getTime()));
                p.setInt(7,f.passengers);
                p.setInt(8,f.ticketPrice);
                p.executeUpdate();
                p.close();
        }

        public List<DiscountFlight> getdiscountFlights(String departure,String
arrival,Date dt,String airlines) throws SQLException{
                List<DiscountFlight> discountFlights = null;
```

```
                Connection conn = this.getConnection();
                PreparedStatement p;
                if(airlines.equals("Any")) {
                        p = conn.prepareStatement(GET_DISCOUNT_FLIGHT_RECORDS);
                        p.setString(1,departure);
                        p.setString(2,arrival);
                        p.setDate(3,new java.sql.Date(dt.getTime()));
                }
                else {
                p =
conn.prepareStatement(GET_DISCOUNT_FLIGHT_RECORDS_FILTER_AIRLINES);
                p.setString(1,departure);
                p.setString(2,arrival);
                p.setDate(3,new java.sql.Date(dt.getTime()));
                p.setString(4, airlines);
                }
                ResultSet rs = p.executeQuery();
                while(rs.next()) {
                        if(discountFlights == null) discountFlights = new
ArrayList<>();
                        discountFlights.add(new
DiscountFlight(rs.getString(1),rs.getString(2),rs.getString(3),rs.getString(4
),new Date(rs.getTimestamp(5).getTime()),
                                        new
Date(rs.getTimestamp(6).getTime()),rs.getInt(7),rs.getInt(8),rs.getInt(10)));
                }
                return discountFlights;
        }

        public List<Flight> getnormalFlights(String departure,String
arrival,Date dt,String airlines) throws SQLException{
                List<Flight> flights = null;
                Connection conn = this.getConnection();
                PreparedStatement p;
                if(airlines.equals("Any")) {
                        p = conn.prepareStatement(GET_NORMAL_FLIGHT_RECORDS);
                        p.setString(1,departure);
                        p.setString(2,arrival);
                        p.setDate(3,new java.sql.Date(dt.getTime()));
                }
                else {
                p =
conn.prepareStatement(GET_NORMAL_FLIGHT_RECORDS_FILTER_AIRLINES);
                p.setString(1,departure);
                p.setString(2,arrival);
```

```
                p.setDate(3,new java.sql.Date(dt.getTime()));
                p.setString(4, airlines);
                }
                ResultSet rs = p.executeQuery();
                while(rs.next()) {
                        if(flights == null) flights = new ArrayList<>();
                        flights.add(new
Flight(rs.getString(1),rs.getString(2),rs.getString(3),rs.getString(4),new
Date(rs.getTimestamp(5).getTime()),
                                                new
Date(rs.getTimestamp(6).getTime()),rs.getInt(7),rs.getInt(8)));
                }
                p.close();
                return flights;
        }
        public void removeflight(String flight_no) throws SQLException{
                Connection conn = this.getConnection();
                PreparedStatement p =
conn.prepareStatement(REMOVE_FLIGHT_RECORD);
                p.setString(1, flight_no);
                p.executeUpdate();
                p.close();
                return;
        }
        public void removeCompletedFlights(Date dt) throws SQLException{
                Connection conn = this.getConnection();
                PreparedStatement p =
conn.prepareStatement(REMOVE_COMPLETED_FLIGHTS);
                p.setTimestamp(1, new java.sql.Timestamp(dt.getTime()));
                System.out.println("removed "+ p.executeUpdate() + "
outstanding records");

                p.close();
                return;
        }
        public void discount(String flight_no,int discountPercentage) throws
SQLException{
                Connection conn = this.getConnection();
                PreparedStatement p =
conn.prepareStatement(DISCOUNT_FLIGHT_RECORD);
                p.setString(2, flight_no);
                p.setInt(1, discountPercentage);
                p.executeUpdate();
                p.close();
                return;
```

```
        }
}
```

Output:

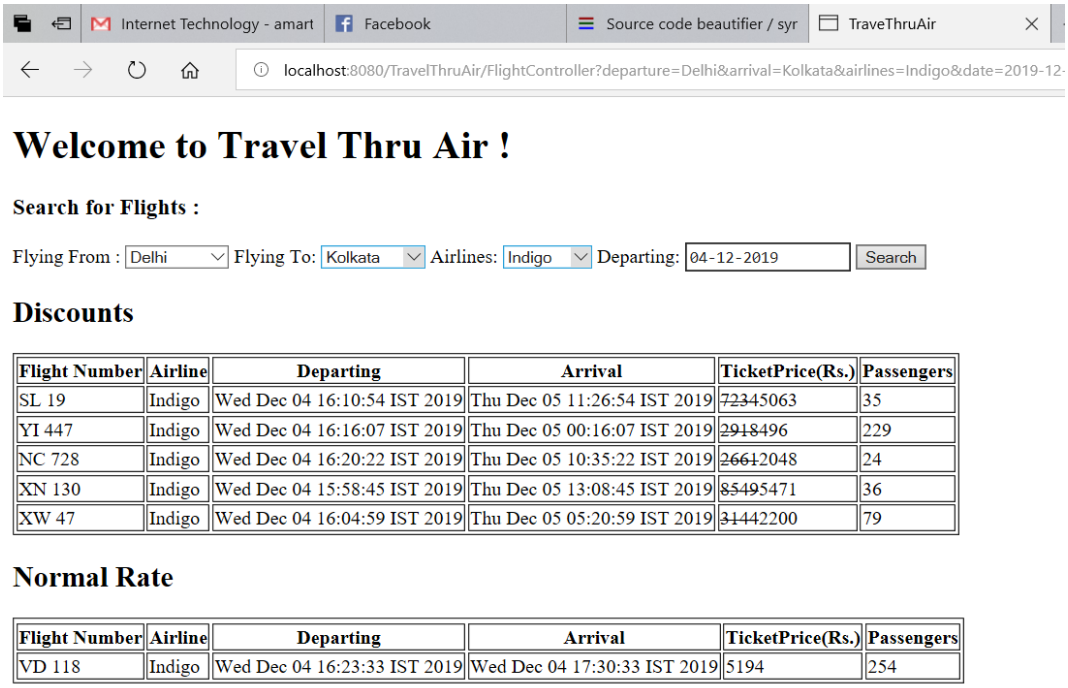
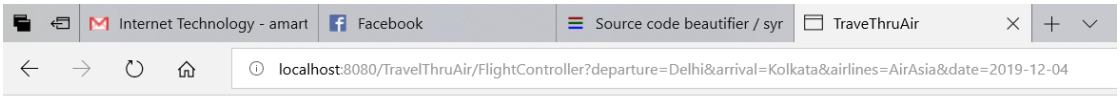


Fig 1A: Flight search demo



Welcome to Travel Thru Air !

Search for Flights :

Flying From : Delhi Flying To: Kolkata Airlines: AirAsia Departing: 04-12-2019 Search

Discounts

Flight Number	Airline	Departing	Arrival	TicketPrice(Rs.)	Passengers
NM 9	AirAsia	Wed Dec 04 16:15:17 IST 2019	Thu Dec 05 15:30:17 IST 2019	~~3273~~2454	110
ZR 860	AirAsia	Wed Dec 04 15:57:23 IST 2019	Wed Dec 04 23:07:23 IST 2019	~~3135~~501	134

Normal Rate

Flight Number	Airline	Departing	Arrival	TicketPrice(Rs.)	Passengers
AK 931	AirAsia	Wed Dec 04 16:09:21 IST 2019	Thu Dec 05 02:15:21 IST 2019	2197	80

Fig 1B: Flight search demo

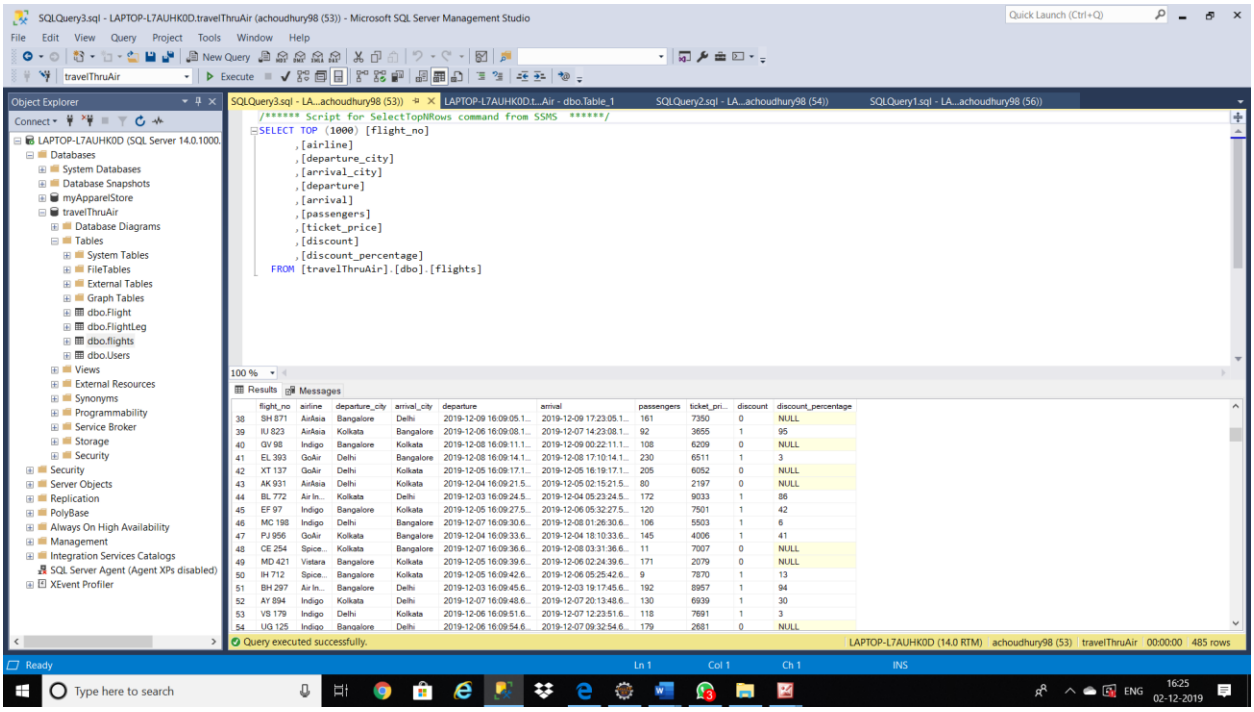


Fig 2 : Flight table

References:

1. Head First Servlet JSP
2. Telusko Video lectures
3. https://www.javatpoint.com/servlet-tutorial