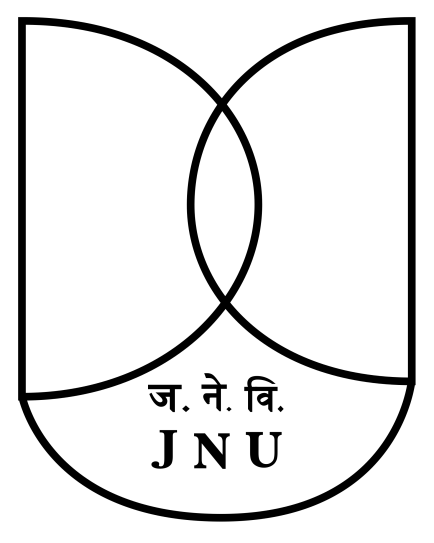
**Database Management System**



Project

on

**Airlines Reservation Database Design**

**Submitted to:- Submitted by:-**

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**Contents:-**

**Introduction**

1. **Purpose and Motivation**

The main purpose of this document is to list the requirements of the Airline Reservation System project. This document also helps us to collect and analyze the ideas gathered for the project. This document will be subject to change, if more requirements are added to the project. This document is mainly prepared to set stage for the design phase of the project. The document being prepared is the first version of vision document for the Airline Reservation System project.

**Entities and their Relevant Attributes**

**Entity List**

1. Aircrafts
2. Route
3. Air\_Fare
4. Flight\_Schedule
5. Discounts
6. Charges
7. Countries
8. State
9. Contact\_Details
10. Passengers
11. Branches
12. Employee
13. Transactions

**Entity structures with relevant Attributes**

**Aircrafts**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Ac\_ID | INT | Field will store unique row number | Primary Key |
| Ac\_Number | Varchar (32) | Aircraft number that identifies the plane | NOT NULL |
| Capacity | INT | Number of seats available | NOT NULL |
| Mfd\_By | Varchar(32) | Manufactured company | NOT NULL |
| Mfd\_On | DATETIME | Manufactured date of aircraft | NOT NULL |

**Route**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Rt\_ID | INT | Stores unique route id | Primary Key |
| Airport | Varchar (32) | From where the flight will take off | NOT NULL |
| Destination | Varchar (32) | Flight Destination | NOT NULL |
| Route Code | Varchar(32) | A unique route code generated using source and destination of flight | NOT NULL  Unique |

**Air\_Fare**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Af\_ID | INT | Stores unique row id | Primary Key |
| Route | INT | Route ID form route table | Foreign Key |
| Fare | Currency | Stores service charge amount | NOT NULL |
| FSC | Currency | Stores fuel surcharge amount | NOT NULL |

**Flight\_Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Fl\_ID | INT | Unique number to identify the flight | Primary Key |
| Flight Date | DATETIME | Date of the flight | NOT NULL |
| Departure | DATETIME | Stores the departure time of the flight |  |
| Arrival | DATETIME | Stores the arrival time of the flight on destination |  |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Aircraft | INT | Aircraft number that will fly, from Aircrafts table | Foreign Key |
| Net\_Fare | INT | To determine total fare of flight, an ID from Air\_Fare table | Foreign Key |

**Discounts**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Di\_ID | INT | Unique row ID | Primary Key |
| Title | Varchar (32) | Label to know discounts | NOT NULL |
| Ammount | INT | Discount ammount in % | NOT NULL |
| Description | Varchar (255) | Discounts remarks and details |  |

**Charges**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Ch\_ID | INT | Unique row ID | Primary\_Key |
| Title | Varchar (32) | Label for charges | NOT NULL |
| Ammount | INT | Ammount of charge in % | NOT NULL |
| Description | Varchar (255) | Description cause of charge |  |

**Countries**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Ct\_ID | INT | Unique row ID | Primary Key |
| Country\_Name | Varchar (32) | Describe the cause of charge | NOT NULL |

**States**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| St\_ID | INT | Unique row ID | Pprimary Key |
| State\_Name | Varchar (32) | Name of the state from where the flight will take off |  |
| Country | INT | Primary Key from Country table | Foreign Key |

**Contact\_Details**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Cn\_ID | INT | Unique row ID | Primary Key |
| Email | Varchar (32) | Email of passenger for transaction | NOT NULL |
| Cell | Varchar (16) | Cell Phone number | NOT NULL |
| Tel | Varchar (16) | Telephone Number |  |
| Street | Varchar (64) | Street address of the passenger | NOT NULL |
| State | INT | Primary key from States table | Foreign Key |

**Passengers**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Ps\_ID | INT | Unique row ID | Primary key |
| Name | Varchar (32) | Passenger’s Name | NOT NULL |
| Address | Varchar (64) | Passenger’s Address | NOT NULL |
| Age | INT | Passenger’s Age | NOT NULL |
| Nationality | Varchar (16) | Nationality of the passenger | NOT NULL |
| Contacts | INT | Contact\_ID from contact details table | Foreign Key |

**Branches**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Br\_ID | INT | Unique ID for each branches | Priamary Key |
| Centre | Varchar (16) | Branch Title | NOT NULL |
| Address | Varchar (16) | Address of the branch | NOT NULL |
| State | INT | State\_ID from State Table | Foreign Key |

**Employees**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Emp\_ID | INT | Unique number to identify employee. Unique on entire database | Primary Key |
| Name | Varchar (32) | Name of the employee | NOT NULL |
| Address | Varchar (64) | Address of the employee | NOT NULL |
| Branch | INT | Associated Branch\_ID from Branches | Foreign Key |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Designation | Varchar (32) | Working duty position | NOT NULL |
| Email | Varchar (32) | Email ID of the employee | NOT NULL |
| Tel | Varchar (16) | Contact Telephone number |  |

**Transactions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Data Type** | **Descriptions** | **Constraints** |
| Ts\_ID | INT | Unique row ID | Primary Key |
| Booking\_Date | DATETIME | Keeps the booking date | NOT NULL |
| Departure\_Date | DATETIME | Keeps the departure date | NOT NULL |
| Passenger | INT | Transaction creator passengers Row\_ID to associate booking/ cancellation, Payments etc. | Foreign Key |
| Flight | INT | Flight number, a primary key from flight\_schedule to determine flight details | Foreign Key |
| Type | BIT | Reservation/ Cancellation | NOT NULL |
| Employee | INT | Reservation agent, a Row\_ID from employee who helps the passengers | Foreign Key |
| Charges | INT | If transaction is cancellation charges may apply as per business rule | NOT NULL |
| Discount | INT | Discount based on scheme | NOT NULL |
| Total | INT | Calculated actual payable cost | NOT NULL |

**Primary keys and Foreign keys**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SN** | **Table** | **Primary Key** | **Foreign Key** | |
| **Column** | **References** |
| 1 | Aircrafts | Ac\_ID |  |  |
| 2 | Route | Rt\_ID |  |  |
| 3 | Airfare | Af\_ID | Route | Route.Rt\_ID |
| 4 | Flight\_Schedule | Fl\_ID | Aircraft | Aircrafts.Ac\_ID |
| Netfare | Airfare.Af\_ID |
| 5 | Discounts | Di\_ID |  |  |
| 6 | Charges | Ch\_ID |  |  |
| 7 | Countries | Ct\_ID |  |  |
| 8 | State | St\_ID | Country | Countries.Ct\_ID |
| 9 | Contact\_Details | Cn\_ID | State | State.St\_ID |
| 10 | Passengers | Ps\_ID | Contacts | Contact\_Details.Cn\_ID |
| 11 | Branches | Br\_ID | State | State.St\_ID |
| 12 | Employees | Emp\_ID | Branch | Branches.Br\_ID |
| 13 | Transactions | Ts\_ID | Passenger | Passengers.Ps\_ID |
| Flight | Flight\_Schedule.Fl\_ID |
| Employee | Employees.Emp\_ID |

**Cardinality**

Cardinality notation using Chen Style

M=Many; N=0,1,2,..

|  |  |  |
| --- | --- | --- |
| **SN** | **Entities** | **Cardinality** |
| **1** | Aircrafts & Flight\_Schedules | 1:M |
| **2** | Route & Air\_Fare | 1:1 |
| **3** | Air\_Fare & Flight\_Schedule | 1:M |
| **4** | Discount & Transactions | N:1 |
| **5** | Countries & State | 1:M |
| **6** | Charges & Transactions | N:1 |
| **7** | State & Branches | 1:M |
| **8** | Contact\_Details & State | M:1 |
| **9** | Passengers & Contact\_Details | 1:1 |
| **10** | Passengers & Transactions | 1:1 |
| **11** | Branches & Employees | 1:M |
| **12** | Employees & Transactions | 1:M |
| **13** | Transactions and Flight\_Schedules | M:1 |

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