Database Management System

CSC 220

Project Submission 03

Train Ticketing System

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BS(CS)-4B

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Project Submission 03

Step by step conversion of relational model till 3NF

Train:

(Without 1NF)

Train ID	Train_Name	Arrival	Departure	Seats_Available	Current Date
107	Bull dog	12:30 pm	1:30 pm	95	31/12/22
102	Yellow cat	1:10 pm	1:45 pm	100	31/12/22
111	Black cat	9:00 am	10:00 am	165	31/12/22
099	Gull	4:30 pm	5:00 pm	189	31/12/22
023	Bison	8:00 am	12:00 pm	200	31/12/22
107	Bull dog	3:45 am	7:00 am	95	31/12/22

Schema:

{Train_ID,Train_Name,Arrival,Departure,Seats_Available,Current Date}

(With 1NF)

TrainNo:

Train ID	Arrival	Departure	Seats_Available
107	12:30 pm	1:30 pm	95
102	1:10 pm	1:45 pm	100
111	9:00 am	10:00 am	165
099	4:30 pm	5:00 pm	189
023	8:00 am	12:00 pm	200
107	3:45 am	7:00 am	95

TrainName:

Train ID	Train_Name	Current Date
107	Bull dog	31/12/22
102	Yellow cat	31/12/22
111	Black cat	31/12/22
099	Gull	31/12/22
023	Bison	31/12/22

Schema:

TrainNo(Train_ID,Arrival,Departure,Seats_Available)

TrainName(Train_ID,Train_Name,Current Date)

(With 2NF)

TrainName:

Train ID	Train_Name	Current Date
107	Bull dog	31/12/22
102	Yellow cat	31/12/22
111	Black cat	31/12/22
099	Gull	31/12/22
023	Bison	31/12/22

TrainNo:

Train ID	Arrival	Seats_Available
107	12:30 pm	95
102	1:10 pm	100
111	9:00 am	165
099	4:30 pm	189
023	8:00 am	200
107	3:45 am	95

TrainArrival:

Arrival	Departure
12:30 pm	1:30 pm
1:10 pm	1:45 pm
9:00 am	10:00 am
4:30 pm	5:00 pm
8:00 am	12:00 pm
3:45 am	7:00 am

Schema:

TrainNa(Train_ID,Train_Name,Current Date)

Trainno(Train_ID,Arrival,Seats_Available)

TrainArr(Arrival,Departure)

(With 3NF)

TrainNo:

Train ID	Train_Name	Current Date
107	Bull dog	31/12/22
102	Yellow cat	31/12/22
111	Black cat	31/12/22
099	Gull	31/12/22
023	Bison	31/12/22

TrainNo:

Train ID	Arrival
107	12:30 pm
102	1:10 pm
111	9:00 am
099	4:30 pm
023	8:00 am
107	3:45 am

TrainArrival:

Arrival	Departure
12:30 pm	1:30 pm
1:10 pm	1:45 pm
9:00 am	10:00 am
4:30 pm	5:00 pm
8:00 am	12:00 pm
3:45 am	7:00 am

TrainDeparture:

Departure	Seats_Available
1:30 pm	95
1:45 pm	100
10:00 am	165
5:00 pm	189
12:00 pm	200
7:00 am	95

Schema:

TrainNa(Train_ID,Train_Name,Current Date)

Trainno(Train_ID,Arrival)

TrainArr(Arrival,Departure)

Traindep(Departure,Seats_Available)

Table Creation Queries

Train Table:

```
CREATE TABLE Train(
 Train_ID int,
 Train_Name varchar(20),
 Arrival DATE,
 Departure DATE,
 Seats_Avaliable varchar(10),
 CurrentDate DATE,
 PRIMARY KEY (Train_ID)
);
```

Users Table:

```
CREATE TABLE Users (
User_ID int,
Password varchar(20),
```

```
First_Name varchar(50),
CNIC varchar(15),
Email varchar(30),
Age int,
City varchar(20),
Address varchar(200),
Last_Name varchar(50),
PRIMARY KEY (User_ID)
);
```

Station Table:

```
CREATE TABLE Station(
station_id int primary key,
name varchar(10),
Arrival_Time DATE,
Train_ID int,
CONSTRAINT FK_Train_ID FOREIGN KEY (Train_ID) REFERENCES
train(Train_ID)
);
```

Train Status Table:

```
CREATE TABLE TRAIN_STATUS(
Train_ID int Primary key,
ACSL_Seat1 int,
ACSL_Seat2 int ,
ACSL_Seat3 int,
Economy_Seat1 int ,
Economy_Seat2 int,
Economy_Seat3 int,
ACSL_Fare float,
Economy float
);
```

Ticket Table:

```
CREATE TABLE TICKET(
TICKET_ID INT PRIMARY KEY,
User_ID int,
status char,
Train_ID int,
Total_Passengers int,
```

```
CONSTRAINT FK_TrainID FOREIGN KEY(TRAIN_ID)REFERENCES
Train (Train_ID),
CONSTRAINT FK_UserID FOREIGN KEY (User_ID) REFERENCES Users
(User_ID)
);
```

Passenger Table:

```
CREATE TABLE PASSENGER(
PASSENGER_ID INT PRIMARY KEY,
Name varchar(10),
PNR_NO int,
Seat_No VARCHAR(15),
Booked_By varchar(10),
Reservation_Status char,
User_ID int ,
Ticket_ID int,
constraint FK_User_ID_P foreign key (User_ID) references USERS(User_ID),
constraint FK_Ticket_ID_P foreign key (Ticket_ID) references
TICKET(TICKET_ID)
);
```

Starts Table:

```
CREATE TABLE STARTS (
Train_ID int Primary Key,
Station_Id int ,
constraint FK_Train_ID_ST foreign key(Train_ID) references Train(Train_ID),
constraint FK_Station_ID_ST foreign key(Station_Id) references
Station(Station_ID)
);
```

Stops_At Table:

```
CREATE TABLE STOPS_AT(Train_ID int, Station_ID int,CONSTRAINT
FK_Train_ID_STP
foreign key(Train_ID) references Train(Train_ID),
CONSTRAINT FK_Station_ID_STP foreign key(Station_Id) references
Station(Station_ID));
```

Reaches Table:

```
CREATE TABLE REACHES(Train_ID int, Station_ID int,TimeNow
DATE,constraint
FK_Train_ID_Re
foreign key(Train_ID) references Train(Train_ID),
constraint FK_Station_ID_Re foreign key(Station_Id) references
Station(Station_ID));
```

Books Table:

```
CREATE TABLE Books(User_ID int,Ticket_ID,CONSTRAINT
FK_USER_ID_BO
foreign key (User_ID) references USERS(User_ID),
CONSTRAINT FK_Ticket_ID_BO foreign key(Ticket_ID) references
TICKET(TICKET_ID));
```

Cancel Table:

```
CREATE TABLE CANCEL(
User_ID int,
Ticket_ID int,
Passenger_ID int,
constraint FK_USER_ID_CAN foreign key (User_ID) references
USERS(User_ID),
constraint FK_Ticket_ID_CAN foreign key(Ticket_ID) references
TICKET(TICKET_ID),
constraint FK_Passenger_ID_Can foreign key(Passenger_ID) references
passenger
(PASSENGER_ID)
);
```

Source Table:

```
CREATE TABLE SOURCE(
SourceName VARCHAR(10),
STATION_ID INT ,
Ticket_ID int,
constraint FK_Station_ID_Source foreign key(Station_Id) references
Station(Station_ID),
constraint FK_Ticket_ID_Source foreign key(Ticket_ID) references
TICKET(TICKET_ID)
);
```

Destination Table:

```
CREATE TABLE DESTINATION(
DestinationName varchar(10),
STATION_ID INT ,
Ticket_ID int,
constraint FK_Station_ID_Dest foreign key(Station_Id) references
Station(Station_ID),
constraint FK_Ticket_ID_Dest foreign key(Ticket_ID) references
TICKET(TICKET_ID)
);
```

Insertion Queries

Train Table:

```
INSERT INTO Train
VALUES (2, 'Gull', TO_DATE('30/11/22','dd/mm/yy'),
TO_DATE('2/10/22','dd/mm/yy'), '4', TO_DATE('31/12/22','dd/mm/yy'), 107);
```

Users Table:

```
INSERT INTO Users
VALUES (2, 'helloworld', 'Usman', 37405-xxxxxxx-1 , 'xyz123@yahoo.com',
'22', 'Rawalpindi', 'B-29', 'Khan', 102);
```

-- Thank You 😊 --