

AIRLINES RESERVATION SYSTEM

Submitted by:-

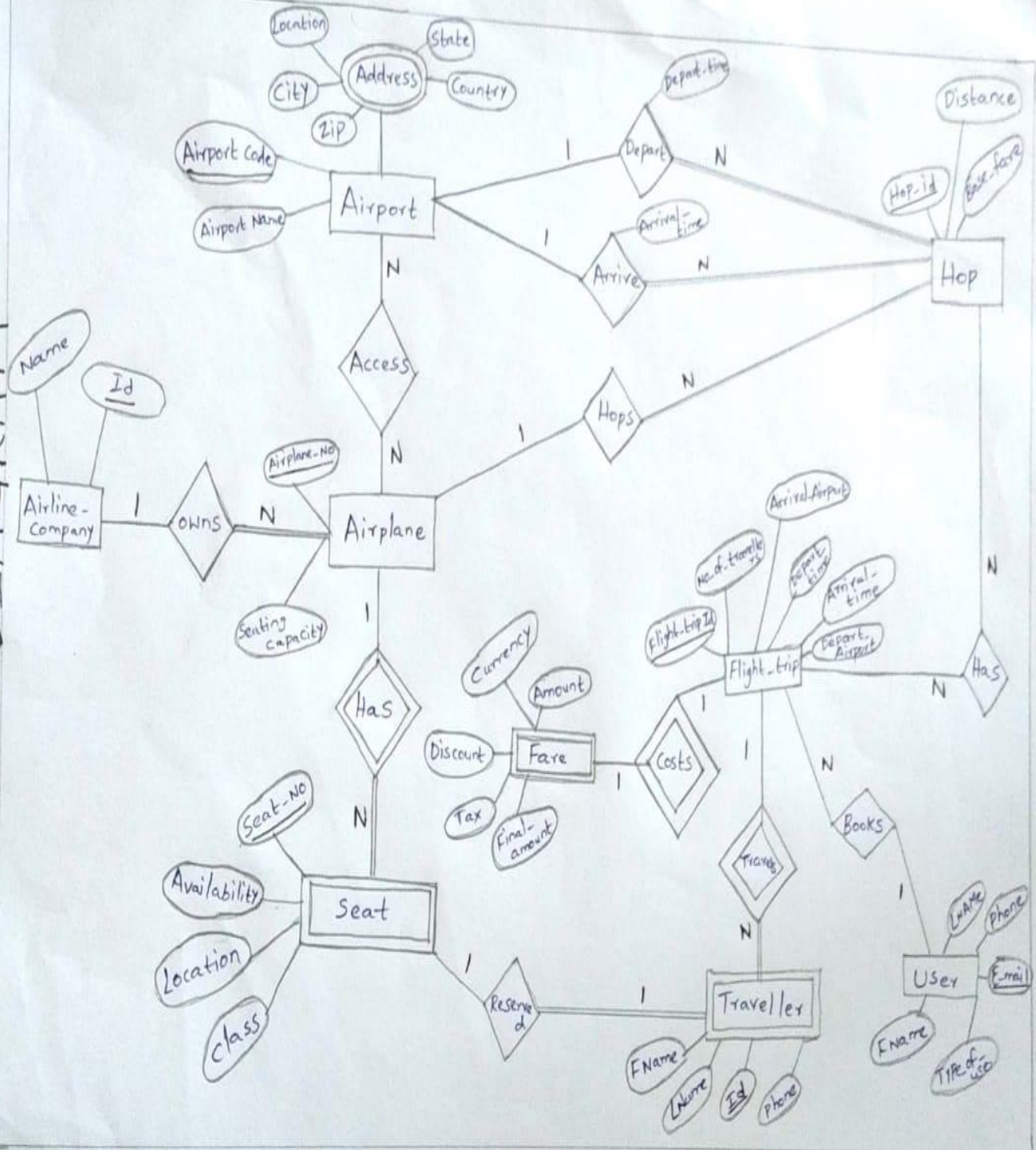
B.Mounika

DBMS Project

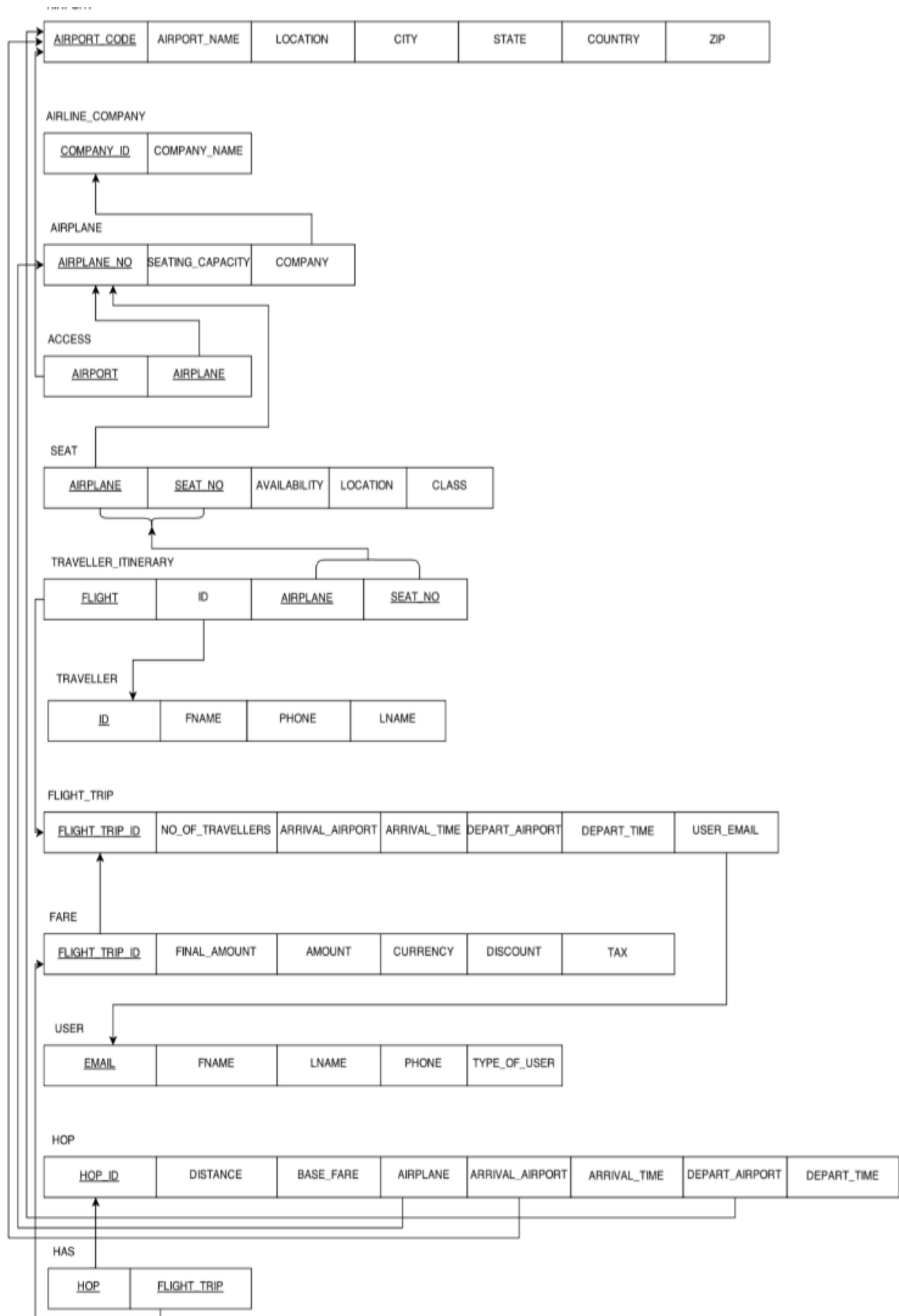
CUTN

ER-DIAGRAM

ER-DIAGRAM



RELATIONAL SCHEMA



TABLES AND NORMALISATION

AIRPORT:

```
CREATE TABLE AIRPORT( AIRPORT_CODE VARCHAR(25), AIRPORT_NAME  
VARCHAR(100) NOT NULL, LOCATION VARCHAR(50) NOT NULL, CITY VARCHAR(50)  
NOT NULL, AP_STATE VARCHAR(50) NOT NULL, COUNTRY VARCHAR(50) NOT  
NULL, ZIP NUMBER NOT NULL, CONSTRAINT AIRPORT_PK PRIMARY KEY  
(AIRPORT_CODE) );
```

```
INSERT ALL INTO AIRPORT VALUES( 'DFW' , 'Dallas/Fort Worth International  
Airport', '3200 E Airfield Dr','Dallas','Texas','USA',75261) INTO AIRPORT VALUES(  
'DAL' , 'Dallas Love Field Airport', '8008 Cedar Springs  
Rd','Dallas','Texas','USA',75235) INTO AIRPORT VALUES( 'RDU' , 'Raleigh-Durham  
International Airport', '2400 John Brantley Blvd,  
Morrisville','Raleigh','NC','USA',27560) INTO AIRPORT VALUES( 'CLT' , 'Charlotte Douglas  
International Airport', '5501 R C Josh Birmingham  
Pkwy','Charlotte','NC','USA',28208) INTO AIRPORT VALUES( 'LAX' , 'Los Angeles  
International Airport', '1 World Way','Los Angels','CA','USA',90045)
```

AIRPORT_CODE	AIRPORT_NAME	LOCATION	CITY	AP_STATE	COUNTRY	ZIP
DFW	Dallas worth International Airport	3200 EAirfield Dr	Dallas	Texas	USA	75261
DAL	Dallas Love Field Airport	8008 Cedar Springs Rd	Dallas	Texas	USA	75261
RDU	Raleigh_Durham International Airport	2400 John Brantley Blvd,Morrisville	Raleigh	NC	USA	27560
CLT	Charlotte Douglas International Airport	5501RC Josh Birmingham Pkwy	Raleigh	NC	USA	27560
LAX	Los Angels International Airport	1 world way	Los Angels	CA	USA	90045

After Normalisation:

AIRPORT_CODE	AIRPORT_NAME	LOCATION	ZIP
DFW	Dallas worth International Airport	3200 EAirfield Dr	75261
DAL	Dallas Love Field Airport	8008 Cedar Springs Rd	75235
RDU	Raleigh_Durham International Airport	2400 John Brantley Blvd,Morrisville	27560
CLT	Charlotte Douglas International Airport	5501RC Josh Birmingham Pkwy	28208
LAX	Los Angels International Airport	1 world way	90045

Address table:

ZIP	STATE	COUNTRY	CITY
75261	Texas	USA	Dallas
75235	Texas	USA	Dallas
27560	NC	USA	Raleigh
28208	NC	USA	Charlotte
90045	CA	USA	Los Angels

Now this table is in 4NF

AIRLINE COMPANY:

```
CREATE TABLE AIRLINE_COMPANY( COMPANY_ID VARCHAR(50) ,
COMPANY_NAME VARCHAR(100) NOT NULL, CONSTRAINT COMPANY_PK
PRIMARY KEY (COMPANY_ID) );
```

```
INSERT ALL INTO AIRLINE_COMPANY VALUES( 'AA' , 'American Airlines') INTO
AIRLINE_COMPANY VALUES( 'BA' , 'British Airways') INTO AIRLINE_COMPANY
VALUES( 'EX' , 'Atlantic Airlines') INTO AIRLINE_COMPANY VALUES( 'JET' ,
'JetAirways') INTO AIRLINE_COMPANY VALUES( 'SJ' , 'Spice Jet')
```

COMPANY_ID	COMPANY_NAME
AA	American Airlines
BA	British Airways
EX	Atlantic Airlines
JET	JetAirways
SJ	Spice Jet

This table is in BCNF

AIRPLANE:

CREATE TABLE AIRPLANE(AIRPLANE_NO VARCHAR(25) , SEATING_CAPACITY int NOT NULL, COMPANY VARCHAR(50) NOT NULL, CONSTRAINT AIRPLANE_PK PRIMARY KEY (AIRPLANE_NO), CONSTRAINT PLANE_COMPANY_FK FOREIGN KEY (COMPANY) REFERENCES AIRLINE_COMPANY(COMPANY_ID));

INSERT ALL INTO AIRPLANE VALUES('AA751' , 40, 'AA') INTO AIRPLANE VALUES('AA851' , 60, 'AA') INTO AIRPLANE VALUES('EX100' , 40, 'EX') INTO AIRPLANE VALUES('JET785' , 60, 'JET') INTO AIRPLANE VALUES('BA747' , 40, 'BA')

ARPLANE_NO	SEATING_CAPACITY	COMPANY
AA751	40	AA
AA851	60	AA
EX100	40	EX
JET785	60	JET
BA747	40	BA

This table is in BCNF

ACCESS:

CREATE TABLE PLANE_PORT_ACCESS(AIRPORT VARCHAR(25) NOT NULL, AIRPLANE VARCHAR(25) NOT NULL, CONSTRAINT ACCESS_PK PRIMARY KEY (AIRPORT,AIRPLANE), CONSTRAINT ACCESS_PORT_FK FOREIGN KEY (AIRPORT) REFERENCES AIRPORT(AIRPORT_CODE) ON DELETE CASCADE, CONSTRAINT ACCESS_PLANE_FK FOREIGN KEY(AIRPLANE) REFERENCES AIRPLANE(AIRPLANE_NO) ON DELETE CASCADE);

INSERT ALL INTO PLANE_PORT_ACCESS VALUES('DFW','AA751') INTO PLANE_PORT_ACCESS VALUES('RDU','AA752') INTO PLANE_PORT_ACCESS VALUES('CLT','AA753') INTO PLANE_PORT_ACCESS VALUES('DFW','AA851') INTO PLANE_PORT_ACCESS VALUES('CLT','AA851')

This table is in BCNF

AIRPORT	AIRPLANE
DFW	AA751
RDU	AA752
CLT	AA753

DFW	AA851
CLT	AA851

SEAT:

CREATE TABLE SEAT(AIRPLANE VARCHAR(25) NOT NULL, SEAT_NO VARCHAR(5) NOT NULL, AVAILABILITY VARCHAR(10) DEFAULT 'TRUE', LOCATION VARCHAR(25) NOT NULL, SEAT_CLASS VARCHAR(25) NOT NULL, CONSTRAINT SEAT_PK PRIMARY KEY (AIRPLANE,SEAT_NO), CONSTRAINT SEAT_PLANE_FK FOREIGN KEY (AIRPLANE) REFERENCES AIRPLANE(AIRPLANE_NO));

INSERT ALL INTO SEAT VALUES('AA751','A23','TRUE','WINDOW','ECONOMIC') INTO SEAT VALUES('AA752' ,'A24','TRUE','FRONT','ECONOMIC') INTO SEAT VALUES('AA753' ,'A25','TRUE','WINDOW','ECONOMIC') INTO SEAT VALUES('AA851' ,'A23','TRUE','SIDE','ECONOMIC') INTO SEAT VALUES('AA851' ,'A24','TRUE','SIDE','ECONOMIC')

AIRPLANE	SEAT_NO	AVAILABILITY	LOCATION	SEAT_CLASS
AA751	A23	TRUE	WINDOW	ECONOMIC
AA752	A24	TRUE	FRONT	ECONOMIC
AA753	A25	TRUE	WINDOW	ECONOMIC
AA851	A23	TRUE	SIDE	ECONOMIC
AA851	A24	TRUE	SIDE	ECONOMIC

After Normalisation:

AIRPLANE	SEAT_NO
AA751	A23
AA751	A24
AA751	A25
AA851	A23
AA851	A24

SEAT_NO	AVAILABILITY	LOCATION	SEAT_CLASS
A23	TRUE	WINDOW	ECONOMIC
A24	TRUE	FRONT	ECONOMIC
A25	TRUE	WINDOW	ECONOMIC
A23	TRUE	SIDE	ECONOMIC
A24	TRUE	SIDE	ECONOMIC

This table is in 3NF

USER:

```
CREATE TABLE END_USER ( EMAIL VARCHAR(25) , FNAME VARCHAR(25) NOT  
NULL, LNAME VARCHAR(25) NOT NULL, PHONE INT , TYPE_OF_USER
```

```
VARCHAR(25) NOT NULL,USER_ID VARCHAR(10), CONSTRAINT USER_PK PRIMARY  
KEY (USER_ID) );
```

```
INSERT ALL INTO END_USER VALUES
```

```
('kunal.jagdish@gmail.com','Kunal','Arora',4694529484,'NORMAL','U101' ) INTO  
END_USER VALUES
```

```
('kxa142230@utdallas.edu','kxal','Arora',4694526784,'NORMAL' , 'U102') INTO  
END_USER VALUES
```

```
('shobhit@gmail.com','Shobhit','Agrawal',4694527474,'NORMAL' , 'U103') INTO  
END_USER VALUES ('indervirsingh@gmail.com'
```

```
, 'Indervir','Singh',4694528585,'NORMAL' , 'U104') INTO END_USER VALUES ( '  
bala@yahoo.com ' , 'Bala','Yadav',4694529595,'AGENT','U105')
```

EMAIL	FNAME	LNAME	PHONE	TYPE_OF_USER	User_ID
Kunal.jagdish@gmail.com	Kunal	Aurora	4694529484	NORMAL	U101
kxa142230@utdallas.edu	Kxal	Aurora	4694526784	NORMAL	U102
shobhit@gmail.com	Shobit	Agarwal	4694527474	NORMAL	U103
indervirsingh@gmail.com	Indervir	Singh	4694528585	NORMAL	U104
bala@yahoo.com	Bala	Yadav	4694529595	AGENT	U105

User_ID	PHONE
U101	4657894451
U102	4567321894
U103	4231789326
U104	4678912390
U105	4312893421

This table is in 3NF

FLIGHT_TRIP:

```
CREATE TABLE FLIGHT_TRIP( FLIGHT_ID VARCHAR(15) , NO_OF_TRAVELLERS INT
NOT NULL, ARR_AIRPORT VARCHAR(25) NOT NULL, ARR_TIME DATETIME NOT
NULL, DEP_AIRPORT VARCHAR(25) NOT NULL, DEP_TIME DATETIME NOT NULL,
USER_EMAIL VARCHAR(25) NOT NULL, CONSTRAINT FLIGHT_TRIP_PK PRIMARY
KEY (FLIGHT_ID), CONSTRAINT FLGHT_TRIP_USER_FK FOREIGN KEY (USER_EMAIL)
REFERENCES END_USER(EMAIL) );
```

```
INSERT ALL INTO FLIGHT_TRIP VALUES('kunish17dec',1,'RDU',
'2014/12/27:12:00:00AM','DFW', '2014/12/26:12:00:00AM','U101' )INTO
FLIGHT_TRIP VALUES('kuniaa741',2,'RDU', '2014/12/27:12:00:00AM','DAL',
'2014/12/26:12:00:00AM','U102' ) INTO FLIGHT_TRIP
```

```
VALUES('inder17dec',3,'RDU', '2014/12/27:12:00:00AM'
,'DFW','2014/12/26:12:00:00AM','U103' ) INTO FLIGHT_TRIP
VALUES('shoaga17dec',4,'RDU', '2014/12/27:12:00:00AM','DFW',
'2014/12/26:12:00:00AM','U104' ) INTO FLIGHT_TRIP
VALUES('bala17dec',5,'DFW', 2014/12/27:12:00:00AM', LAX',
'2014/12/26:12:00:00AM','U105' )
```

FLIGHT_ID	NO_OF_TRAVELLERS	ARR_AIRPORT	ARR_TIME	DEP_AIRPORT	DEP-TIME	USER_ID
kunish17dec	1	RDU	2014/11/27:12:00:00AM	DFW	2014/11/26:12:00:00PM	U101
kuniaa741	2	RDU	2014/12/28:12:00:00AM	DAL	'2014/12/25:7:00:00AM	U102
inder17dec	3	RDU	2014/2/27:14:00:00AM	DFW	2014/2/26:15:00:00PM	U103
shoaga17dec	4	RDU	2014/2/8:2:00:00PM	DFW	2014/1/6:2:40:00AM	U104
bala17dec	5	DFW	2014/3/16:12:00:00PM	LAX	2014/3/15:18:00:00AM	U105

This table is in 3NF

After Normalisation:

FLIGHT_ID	User_ID
Kunish17dec	U101
Kuniaa741	U102
Inder17dec	U103
Shoaga17dec	U104
Bala17dec	U105

FLIGHT_ID	NO_OF_TRAVELLERS	ARR_AIRPORT	ARR_TIME	DEP_AIRPORT	DEP_TIME
Kunish17dec	1	RDU	2014/11/27:12:00:00AM	DFW	2014/11/26:12:00:00PM
Kuniaa741	2	RDU	2014/12/28:12:00:00AM	DAL	'2014/12/25:7:00:00AM
Inder17dec	3	RDU	2014/2/27:14:00:00AM	DFW	2014/2/26:5:00:00PM
Shoaga17dec	4	RDU	2014/2/8:2:20:00PM	DFW	2014/1/6:2:40:00AM
Bala17dec	5	DFW	2014/3/16:12:00:00PM	LAX	2014/3/15:18:00:00AM

HOP:

```
CREATE TABLE HOP(HOP_ID VARCHAR(15) ,
DIST DECIMAL(7,2) NOT NULL,
BASE_FARE DECIMAL(9,2) NOT NULL,
AIRPLANE VARCHAR(25) NOT NULL,
ARR_AIRPORT VARCHAR(25) NOT NULL,
ARR_TIME DATETIME NOT NULL,
DEP_AIRPORT VARCHAR(25) NOT NULL,
DEP_TIME DATETIME NOT NULL,
CONSTRAINT HOP_PK PRIMARY KEY (HOP_ID),
CONSTRAINT HOP_APLNE_FK FOREIGN KEY (AIRPLANE)
REFERENCES AIRPLANE(AIRPLANE_NO),
CONSTRAINT
HOP_ARVL_ARPRT_FK
FOREIGN KEY(ARR_AIRPORT)REFERENCES
AIRPORT(AIRPORT_CODE),
CONSTRAINT HOP_DRPT_ARPRT_FK FOREIGN
KEY(DEP_AIRPORT) REFERENCES
AIRPORT(AIRPORT_CODE));
```

INSERT ALL
 INTO HOP VALUES
 ('AX7458',600,200,'AA751','RDU','2014/12/27:12:00:00AM','DFW','2014/12/26:12:00:00AM')
 INTO HOP VALUES
 ('AX7459',600,200,'AA851','RDU','2014/12/27:12:00:00AM','DAL','2014/12/26:12:00:00AM')
 INTO HOP VALUES
 ('AX7460',600,200,'AA751','RDU','2014/12/27:12:00:00AM','LAX','2014/12/26:12:00:00AM')
 INTO HOP VALUES
 ('AX7461',600,200,'AA751','RDU','2014/12/27:12:00:00AM','CLT','2014/12/26:12:00:00AM')
 INTO HOP VALUES
 ('AX7462',600,200,'AA751','DFW','2014/12/27:12:00:00AM','CLT','2014/12/26:12:00:00AM')

HO P_ID	DI ST	BASE_ FARE	AIRP LANE	ARR_AI RPORT	ARR_ DATE	ARR_ TIME	DEP_AI RPORT	DEP_ DATE	DEP_T IME
AX7 458	60 0	200	AA75 1	RDU	2014/ 12/27	12:00: 00AM	DFW	2014/ 12/26	12:00: 00AM
AX7 459	60 0	200	AA85 1	RDU	2014/ 12/27	12:00: 00AM	DAL	2014/ 12/26	12:00: 00AM
AX7 460	60 0	200	AA75 1	RDU	2014/ 12/27	12:00: 00AM	LAX	2014/ 12/26	12:00: 00AM
AX7 461	60 0	200	AA75 1	RDU	2014/ 12/27	12:00: 00AM	CLT	2014/ 12/26	12:00: 00AM
AX7 462	60 0	200	AA75 1	DFW	2014/ 12/27	12:00: 00AM	CLT	2014/ 12/26	12:00: 00AM

This table is in 2NF

SQL QUERIES

1. Display the details from airport table where zip=75261

Ans : Select * from airport where zip=75261;

O/P:

AIRPORT_CODE	AIRPORT_NAME	LOCATION	CITY	STATE	COUNTRY	ZIP
DFW	Dallas worth international airport	3200EArtfield Dr	Dallas	Texas	USA	75261
DAL	Dallas Love Field International Airport	8008 Cedar springs Rd	Dallas	Texas	USA	75261

2. Display details from airport which is located in 'Los Angeles'

Ans: Select * from airport a , address c where a.zip=c.zip and city='Los Angeles';

O/P:

AIRPORT_CODE	AIRPORT_NAME	LOCATION	CITY	STATE	COUNTRY	ZIP
LAX	Los Angeles international arp	1world way	Los Angeles	CA	USA	90045

3. Display the details of company 'Jet Airways'

Ans: Select * from company where company_name='Jet Airways';

O/P:

COMPANY_ID	COMPANY_NAME
JET	Jet Airways

4. Display the details of seat 'A24'

Ans : Select * from seat where seat_no='A24';

O/P:

AIRPLANE	SEAT_NO	AVAILABILITY	LOCATION	SEAT_CLASS
AA751	A24	TRUE	WINDOW	ECONOMIC
AA851	A24	TRUE	SIDE	ECONOMIC

5.Display airport from access table airplane number is also in seat table

Ans: Select Airport from Access a,Seat s where s.airplane=a.airplane;

O/P:

AIRPORT
DFW
CLT

6. Display the details of the ‘Agent’ user

Ans: Select * from user where type_of_user='Agent';

O/P:

EMAIL	FNAME	LNAME	PHONE	TYPE_OF_USER	USER_ID
bala@yahoo.com	Bala	Yadav	4694529595	AGENT	U105

7.Display the list from flight_trip group by Arr_time

Ans: Select * from flight_trip GROUP BY(Arr_time)= 2014/12/27:12:00:00AM

O/P:

FLIGHT_ID	NO_OF_TRAVELLERS	ARR_AIRPORT	ARR_TIME	DEP_AIRPORT	DEP_TIME	USER_ID
kunish 17dec	1	RDU	2014/12/27:12:00:00AM	DFW	2014/11/26:12:00:00AM	U101
bala17 dec	5	DFW	2014/3/16:12:00:00AM	LAX	2014/3/15:18:00:00AM	U105

-----*Thank you*-----