

DATABASE MANAGEMENT SYSTEM
ITE1003
ASSIGNMENT-1

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1. Creating Tables

TABLE 1: TRAIN

```
create table train(
train_number number(5) primary key, name varchar(20),
source varchar(20), destination varchar(20), start_
time timestamp, reach_time timestamp, travel_time
timestamp, distance number(5), type varchar(20));
```

```
SQL> create table train(
 2 train_number number(5) primary key, name varchar(20),
 3 source varchar(20), destination varchar(20),
 4 start_time timestamp, reach_time timestamp,
 5 travel_time timestamp, distance number(5),
 6 type varchar(20));
```

Table created.

TABLE 2: TRAIN_DAYS-

```
create table train_days(days varchar(20), train_number number(5),
constraint fk1 foreign key(train_number) references
train(train_number));
```

```
SQL> create table train_days(days varchar(20), train_number number(5),
 2 constraint fk1 foreign key(train_number) references
 3 train(train_number));
```

Table created.

TABLE 3:-TICKET-

```

create table ticket(
pnr_no number(10) primary key,
trans_id number(10),from_station varchar(20),
to_station varchar(20),date_of_journey date,
class varchar(20),date_of_booking date, to-
tal_ticket_fare number(5), train_number num-
ber(5),
constraint fk3 foreign key(train_number) refer-
ences train(train_number));

```

```

SQL> create table ticket(
 2 pnr_no number(10) primary key,
 3 trans_id number(10),from_station varchar(20),
 4 to_station varchar(20),date_of_journey date,
 5 class varchar(20),date_of_booking date,
 6 total_ticket_fare number(5),
 7 train_number number(5),
 8 constraint fk3 foreign key(train_number) references
 9 train(train_number));

```

Table created.

TABLE 4 : PASSENGER-

```

create table passenger(
pnr_no number(10),
serialno number(3),
name varchar(20),
age number(2),
reservation_status varchar(20),
primary key(pnr_no,serialno),
constraint fk2 foreign key(pnr_no) references ticket(pnr_no));

```

```

SQL> create table passenger(
 2 pnr_no number(10),
 3 serialno number(3),
 4 name varchar(20),
 5 age number(2),
 6 reservation_status varchar(20),
 7 primary key(pnr_no,serialno),
 8 constraint fk2 foreign key(pnr_no) references ticket(pnr_no));

```

Table created.

TABLE 5 : TRAIN_ROUTE-

```

create table train_route(
train_number number(5),
route_no number(5),
station_code varchar(5),
name varchar(20),
arrival_time timestamp,
depart_time timestamp,
distance number(5),
day varchar(20),
constraint fk5 foreign key(train_number) references train(train_number),
constraint pk2 primary key(train_number,route_no));

```

```

SQL> create table train_route(
2 train_number number(5),
3 route_no number(5),
4 station_code varchar(5),
5 name varchar(20),
6 arrival_time timestamp,
7 depart_time timestamp,
8 distance number(5),
9 day varchar(20),
10 constraint fk5 foreign key(train_number) references train(train_number),
11 constraint pk2 primary key(train_number,route_no));

```

Table created.

TABLE 6:TRAIN_TICKET_FARE-create table

```

train_ticket_fare( train_number
number(5), class1 varchar(20),
base_fare number(4), reserva-
tion_charge number(4), super-
fast_charge number(4), oth-
er_charge number(4),
tatkal_charge number(4), ser-
vice_tax number(4),
constraint fk4 foreign key(train_number)
references train(train_number), constraint
pk3 primary key(train_number));

```

```
SQL> create table train_ticket_fare(
 2  train_number number(5),
 3  class1 varchar(20),
 4  base_fare number(4),
 5  reservation_charge number(4),
 6  superfast_charge number(4),
 7  other_charge number(4),
 8  tatkal_charge number(4),
 9  service_tax number(4),
10  constraint fk4 foreign key(train_number)
11  references train(train_number),
12  constraint pk3 primary key(train_number));
```

Table created.

TABLE 7:CLASS-

```
create table train_class(class varchar(20),train_number number(5),
constraint fk7 foreign key(train_number) references train(train_number));
```

```
SQL> create table train_class(class varchar(20),train_number number(5),
 2  constraint fk7 foreign key(train_number) references
 3  train(train_number));
```

Table created.

INSERTION(MANUAL) :-

TABLE TRAIN:-

```
insert into train values(&train_number,'&name','&source',
'&destination','&start_time','&reach_time','&travel_time',&distance
,'&type');
```

```
SQL> insert into train values(&train_number,'&name','&source'
 2  '&destination','&start_time','&reach_time','&travel_time',&distance
 3  , '&type');
Enter value for train_number: 12345
Enter value for name: ABC EXP
Enter value for source: DELHI
old  1: insert into train values(&train_number,'&name','&source',
new  1: insert into train values(12345,'ABC EXP','DELHI',
Enter value for destination: PATNA
Enter value for start_time: 10-AUG-1998 09:12:15
Enter value for reach_time: 10-AUG-1998 11:13:13
Enter value for travel_time: 10-AUG-1998 02:01:13
Enter value for distance: 1000
old  2: '&destination','&start_time','&reach_time','&travel_time',&distance
new  2: 'PATNA','10-AUG-1998 09:12:15','10-AUG-1998 11:13:13','10-AUG-1998 02:01:13',1000
Enter value for type: SPF
old  3: , '&type')
new  3: , 'SPF')

1 row created.
```

TABLE TICKET:-

```
insert into ticket
values ('&pnr_no','&trans_id''&from_station','&to_station','&date
_of_journey','&class','&date_of_booking','&total_ticket_fare,&tra
in_number);
```

```
SQL> insert into ticket values('&pnr_no','&trans_id','&from_station','&to_station','&date_of_journey','&class','&date_of_b
Enter value for pnr_no: 1234567890
Enter value for trans_id: 2345671000
Enter value for from_station: delhi
Enter value for to_station: patna
Enter value for date_of_journey: 10-aug-1998
Enter value for class: ac1
Enter value for date_of_booking: 10-aug-1998
Enter value for total_ticket_fare: 1000
Enter value for train_number: 12345
old  1: insert into ticket values('&pnr_no','&trans_id','&from_station','&to_station','&date_of_journey','&class','&date
new  1: insert into ticket values('1234567890', 2345671000 , 'delhi' , 'patna' , '10-aug-1998' , 'ac1' , '10-aug-1998' , 1000 , 12345)
1 row created.
```

TABLE PASSENGER:-

```
SQL> insert into passenger values (&pnrnno,&serialno,'&name',&age,
 2 '&reservation_status');
Enter value for pnrno: 1234567890
Enter value for serialno: 12
Enter value for name: AKASH
Enter value for age: 20
old  1: insert into passenger values (&pnrnno,&serialno,'&name',&age,
new  1: insert into passenger values (1234567890,12,'AKASH',20,
Enter value for reservation_status: CNF
old  2: '&reservation_status')
new  2: 'CNF')

1 row created.
```

TABLE TRAIN_ROUTE:-

```
SQL> insert into train_route values(&train_number,&route_no,'&station_code','&name','&arrival_time','&depart_time',&distan
Enter value for train_number: 12345
Enter value for route_no: 12
Enter value for station_code: del
Enter value for name: abc exp
Enter value for arrival_time: 10-aug-1998 09:18:17
Enter value for depart_time: 10-aug-1998 11:17:18
Enter value for distance: 1000
Enter value for day: SUNDAY
old  1: insert into train_route values(&train_number,&route_no,'&station_code','&name','&arrival_time','&depart_time',&di
new  1: insert into train_route values(12345,12,'del','abc exp','10-aug-1998 09:18:17','10-aug-1998 11:17:18',1000,'SUNDAY
1 row created.
```

TABLE TRAIN_TICKET_FARE:-

```
SQL> insert into train_ticket_fare values(&train_number,'&class1',&base_fare,&reservation_charge,&superfast_charge,&other_
Enter value for train_number: 12345
Enter value for class1: ac1
Enter value for base_fare: 500
Enter value for reservation_charge: 100
Enter value for superfast_charge: 100
Enter value for other_charge: 100
Enter value for tatkal_charge: 100
Enter value for service_tax: 100
old  1: insert into train_ticket_fare values(&train_number,'&class1',&base_fare,&reservation_charge,&superfast_charge,&ot
new  1: insert into train_ticket_fare values(12345,'ac1',500,100,100,100,100)
1 row created.
```

Table train_class:-

```
SQL> insert into train_class values('&class' ,&train_number);
Enter value for class: ac1
Enter value for train_number: 12345
old   1: insert into train_class values('&class' ,&train_number)
new   1: insert into train_class values('ac1' ,12345)

1 row created.
```

Table train_days:-

```
SQL> insert into train_days values('&days' ,&train_number);
Enter value for days: sun
Enter value for train_number: 12345
old   1: insert into train_days values('&days' ,&train_number)
new   1: insert into train_days values('sun' ,12345)

1 row created.
```

MANUAL (TRAIN) :-

```
SQL> insert into train values('44567','ADS EXP','CHAPRA','PATNA','10-AUG-1998 09:12:18','10-AUG-1998 11:12:13','10-AUG-1998 12:13:15');
1 row created.
```

MANUAL (TICKET) :-

```
SQL> insert into ticket values('2345678901','3456782000','JHAJHA','PATNA','11-AUG-1999','AC1','10-AUG-1999',1000,14567)
2 ;
1 row created.
```

MANUAL (TRAIN_ROUTE) :-

```
SQL> insert into train_route values('14567','14','jh','cdf','11-AUG-1999 09:11:18','11-AUG-1999 10:12:13',200,'MON');
1 row created.
```

MANUAL (PASSENGER) :-

```
SQL> insert into passenger values('2345678901','123','hemant','19','cnf');
1 row created.
```

Manual (train_ticket_fare) :-

```
SQL> insert into train_ticket_fare values('14567','spf',1000,200,200,200,200,200);
1 row created.
```

Manual (train_class) :-

```
SQL> insert into train_class values('psg','14567');
1 row created.
```

MANUAL (TRAIN_DAYS) :-

```
SQL> insert into train_days values('MON','14567');
1 row created.
```

2. DDL/DML Queries

1.

```
SQL> delete from passenger;
5 rows deleted.
```

2.

```
SQL> rename passenger to passenger_details;
Table renamed.
```

3.

```

SQL> select * from train;
TRAIN_NUMBER NAME          SOURCE      DESTINATION
-----  -----
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE TYPE
12345 ABC EXP          DELHI       PATNA
10-AUG-98 09.12.15.000000 AM
10-AUG-98 11.13.13.000000 AM

TRAIN_NUMBER NAME          SOURCE      DESTINATION
-----  -----
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE TYPE
10-AUG-98 02.01.13.000000 AM
1000 SPF

TRAIN_NUMBER NAME          SOURCE      DESTINATION
-----  -----
START_TIME
REACH_TIME

```

```

TRAVEL_TIME
DISTANCE TYPE
14567 cdf exp          JHAJHA     PATNA
11-AUG-99 02.14.18.000000 AM
11-AUG-99 05.17.12.000000 AM

TRAIN_NUMBER NAME          SOURCE      DESTINATION
-----  -----
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE TYPE
11-AUG-99 03.02.54.000000 AM
500 PSG

TRAIN_NUMBER NAME          SOURCE      DESTINATION
-----  -----
START_TIME
REACH_TIME
TRAVEL_TIME
DISTANCE TYPE
24567 FGA EXP          AJMER     DELHI
10-JUL-91 09.19.11.000000 AM
10-JUL-91 11.21.15.000000 AM

```

TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
10-JUL-91	02.02.04.000000 AM		
	1500 EXP		
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
34567	FRT EXP	FARAKKA	PATNA
10-AUG-98	09.18.17.000000 AM		
10-AUG-98	11.21.43.000000 AM		
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
10-AUG-98	02.03.26.000000 AM		
	350 PSG		
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
44567	ADS EXP	CHAPRA	PATNA
10-AUG-98	09.12.18.000000 AM		
10-AUG-98	11.12.13.000000 AM		
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
10-AUG-98	01.55.55.000000 AM		
	230 PSG		

PNR_NO	SERIALNO	NAME	AGE	RESERVATION_STATUS
1234567890	122	AMRENDRA	66	CNF
2345678901	123	AMRESH	89	CNF
3456789012	124	AMREESH	19	WAI
4567890123	125	AMEESH	79	WAI
5678901234	126	AMISHA	29	WAI

5.

```
SQL> select * from train;
```

TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
12345 ABC EXP		DELHI	PATNA
10-AUG-98 09.12.15.000000 AM			
10-AUG-98 11.13.13.000000 AM			
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
10-AUG-98 02.01.13.000000 AM			
1000 SPF			
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			

TRAVEL_TIME

DISTANCE TYPE

14567 cdf exp
11-AUG-99 02.14.18.000000 AM
11-AUG-99 05.17.12.000000 AM

JHAJHA

PATNA

TRAIN_NUMBER NAME

SOURCE

DESTINATION

START_TIME

REACH_TIME

TRAVEL_TIME

DISTANCE TYPE

11-AUG-99 03.02.54.000000 AM
500 PSG

TRAIN_NUMBER NAME

SOURCE

DESTINATION

START_TIME

REACH_TIME

TRAVEL_TIME

DISTANCE TYPE

24567 FGA EXP
10-JUL-91 09.19.11.000000 AM
10-JUL-91 11.21.15.000000 AM

AJMER

DELHI

TRAIN_NUMBER NAME

SOURCE

DESTINATION

START_TIME

REACH_TIME

TRAVEL_TIME

DISTANCE TYPE

10-JUL-91 02.02.04.000000 AM
1500 EXP

TRAIN_NUMBER NAME

SOURCE

DESTINATION

START_TIME

REACH_TIME

TRAVEL_TIME

DISTANCE TYPE

34567 FRT EXP
10-AUG-98 09.18.17.000000 AM
10-AUG-98 11.21.43.000000 AM

FARAKKA

PATNA

TRAIN_NUMBER NAME

SOURCE

DESTINATION

START_TIME

REACH_TIME

TRAVEL_TIME

```
TRAVEL_TIME
-----
DISTANCE TYPE
-----
10-AUG-98 02.03.26.000000 AM
    350 PSG

TRAIN_NUMBER NAME           SOURCE          DESTINATION
-----
START_TIME
-----
REACH_TIME
-----
TRAVEL_TIME
-----
DISTANCE TYPE
-----
    44567 ADS EXP          CHAPRA         PATNA
10-AUG-98 09.12.18.000000 AM
10-AUG-98 11.12.13.000000 AM

TRAIN_NUMBER NAME           SOURCE          DESTINATION
-----
START_TIME
-----
REACH_TIME
-----
TRAVEL_TIME
-----
DISTANCE TYPE
-----
10-AUG-98 01.55.55.000000 AM
    230 PSG
```

6.

```
SQL> select age from passenger_details where age>60;

      AGE
-----
       66
       89
       79
```

7.

```
SQL> select source from train where source like 'M%' union select destination from train where source like 'M%';
no rows selected
```

8.

```
SQL> select * from train where train_number between 12000 and 14000;
```

TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
12345 ABC EXP		DELHI	PATNA
10-AUG-98 09.12.15.000000 AM			
10-AUG-98 11.13.13.000000 AM			

TRAIN_NUMBER	NAME	SOURCE	DESTINATION
START_TIME			
REACH_TIME			
TRAVEL_TIME			
DISTANCE	TYPE		
10-AUG-98 02.01.13.000000 AM			
1000 SPF			

9.

```
SQL> update train_ticket_fare set superfast_charge=0  
  2 where superfast_charge is NULL;  
2 rows updated.
```

10.

```
SQL> select * from passenger  
  2 where reservation_status!= 'CNF';  
  


| PNRNO1 | SERIALNO | NAME   | AGE | RESERVATION_STATUS |
|--------|----------|--------|-----|--------------------|
| 711092 | 15       | adarsh | 30  | RAC                |
| 710911 | 17       | bhawin | 61  | WAIT               |
| 729110 | 16       | akash  | 25  | WAIT               |

  
SQL>
```

11.

```
SQL> select base_fare from train_ticket_fare  
  2 where class1='1A' or class1='2A' or class1='3A';  
  


| BASE_FARE |
|-----------|
| 2500      |
| 2000      |
| 1700      |


```

12.

```
SQL> select * from ticket
  2  where trans_id is null;

  PNR_NO  TRANS_ID FROM_STATION          TO_STATION
CLASS
  701091           Chennai            Mumbai
1A               3000             12201 13-SEP-18 11-AUG-18
```

13.

```
SQL> update passenger set serialno='&10' where pnrno1='&701091'
  2 ;
Enter value for 10: 21
Enter value for 701091: 701091
old    1: update passenger set serialno='&10' where pnrno1='&701091'
new    1: update passenger set serialno='21' where pnrno1='701091'

1 row updated.

SQL> select * from passenger;
  PNRNO1  SERIALNO NAME          AGE RESERVATION_STATUS
  701091      21 ashish        20 CNF
  711092      15 adarsh        30 RAC
  710911      17 bhawin        61 WAIT
  729110      16 akash         25 WAIT
```

14.

```
SQL> select name from train where source='Chennai' and destination='Mumbai' and
name not like '%Chennai' or name not like '%Mumbai';
NAME
GT
Awadh
MyssExp
Rajdhani
Ltt
```

15.

SQL> select * from train,train_days where train.train_number=train_days.train_number and train_days.days='Thursday';			
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
DISTANCE	TYPE		
START_TIME			
REACH_TIME			
TRAVEL_TIME	DAYS	TRAIN_NUMBER6	
12202 MyssExp	Mumbai	Myssore	
1500 Expr			
10-AUG-18 08.05.00.000000 AM			
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
DISTANCE	TYPE		
START_TIME			
REACH_TIME			
TRAVEL_TIME	DAYS	TRAIN_NUMBER6	
12-AUG-18 08.05.00.000000 AM			
48hrs	Thursday	12202	
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
DISTANCE	TYPE		
START_TIME			
REACH_TIME			
TRAVEL_TIME	DAYS	TRAIN_NUMBER6	
12205 Ltt	jaipur	Patna	
3000 Expr			
05-DEC-18 08.05.00.000000 AM			
TRAIN_NUMBER	NAME	SOURCE	DESTINATION
DISTANCE	TYPE		
START_TIME			
REACH_TIME			
TRAVEL_TIME	DAYS	TRAIN_NUMBER6	
07-DEC-18 07.05.00.000000 AM			
47hrs	Thursday	12205	

3.

ALTER TABLE TICKET ADD CONSTRAINT FK FOREIGN KEY(TRAIN_NUMBER) REFERENCES TRAIN(TRAIN_NUMBER);

ALTER TABLE TRAIN_DAYS ADD CONSTRAINT FK FOREIGN KEY(TRAIN_NUMBER) REFERENCES TRAIN(TRAIN_NUMBER);

ALTER TABLE TRAIN_CLASS ADD CONSTRAINT FK FOREIGN KEY(TRAIN_NUMBER) REFERENCES TRAIN(TRAIN_NUMBER);

```
ALTER TABLE TRAIN_ROUTE ADD CONSTRAINT FK FOREIGN  
KEY(TRAIN_NUMBER) REFERENCES TRAIN(TRAIN_NUMBER);
```

```
ALTER TABLE TRAIN_TICKET_FARE ADD CONSTRAINT FK FOREIGN  
KEY(TRAIN_NUMBER) REFERENCES TRAIN(TRAIN_NUMBER);
```

ALREADY ADDED FOREIGN KEYS

```
SQL> ALTER TABLE train ADD CONSTRAINT chk CHECK (train_number>=10001 and train_number<=99999);  
Table altered.
```

1.

2.

3. (1)

```
SQL> Alter table train_route drop (depart_time);  
Table altered.
```

(2)

```
SQL> Alter table train_route drop (arrival_time);  
Table altered.
```

(3)

```
SQL> UPDATE TRAIN_ROUTE SET ARRIVAL_TIME=NULL;  
4 rows updated.  
SQL> ALTER TABLE TRAIN_ROUTE MODIFY ARRIVAL_TIME DATE;  
Table altered.
```

```
SQL> UPDATE TRAIN_ROUTE SET DEPART_TIME=NULL;  
4 rows updated.  
SQL> ALTER TABLE TRAIN_ROUTE MODIFY DEPART_TIME DATE;  
Table altered.
```

```

4. insert into (arrival_time,depart_time) train_route
   values ('2018-04-12','2018-04-13');
   ALTER TABLE train_class ADD CONSTRAINT chk1 CHECK (class
in(1A, 2A, 3A, SL, C));
   ALTER TABLE ticket ADD CONSTRAINT chk1 CHECK (class
in(1A, 2A, 3A, SL, C));

```

```

SQL> ALTER TABLE train_class ADD CONSTRAINT chk4 CHECK (class='1A' or class='2A'
or class='3A' or class='SL' or class='C');
Table altered.

```

5. Alter table train_route modify distance not NULL;

```

SQL> ALTER TABLE TRAIN_ROUTE MODIFY DISTANCE NOT NULL;
Table altered.

```

4 .

1

```

SQL> SELECT* FROM PASSENGER_DETAILS,TICKET WHERE PASSENGER_DETAILS.PNRNO=TICKET.
PNRNO AND DATE_OF_JOURNEY=<SELECT TO_DATE<SYSDATE+30,'DD-MM-YY'> FROM DUAL>;

```

PNRNO	SERIAL_NO	NAME	AGE	RES	PNRNO	
TRANSACTIONID	FROM	TO_S	DATE_OF_J	DATE_OF_B	TOTAL_TICKET_FARE	TRAIN_NUMBER
1987 54718GHFE	99 AGC	DHRUU LKW	20-OCT-18	06-JAN-18	89 2090	CON 1987 100089

```

SQL>

```

2

```

SQL> SELECT UPPER(NAME) FROM TRAIN;

```

UPPER(NAME)
INTERCITY
JANTAEXPRESS
CHATTISHGARH
TOOFAN
BIJLI
TAMILNADU

```

6 rows selected.

SQL>

```

3

```
SQL> SELECT LPAD(NAME,5,'*') FROM PASSENGER_DETAILS;
```

```
LPAD<
```

```
DHRUV  
GIRIS  
AKASH  
*ANUJ  
ARVAI  
HEERA
```

```
6 rows selected.
```

```
SQL>
```

4

```
SQL> SELECT REPLACE(STATION_CODE,'K','M') FROM TRAIN_ROUTE;
```

```
REPL
```

```
NDLS  
LMW  
AGC  
MAS  
ACN
```

```
SQL>
```

5

```
SQL> select translate(class1,'LC','POT') from train_ticket_fare;
```

```
TRANSLATE<CLASS1,'LC
```

```
SP  
SP  
2A  
3A  
1A  
PO
```

```
6 rows selected.
```

6

NA

7

NA

8

```
SQL> ALTER TABLE TRAIN_ROUTE ADD(HALT_INTERVAL DAY TO SECOND);
```

Table altered.

```
07 AUGUST      TWENTY EIGHTEEN  
07 MAY        TWENTY EIGHTEEN  
07 MARCH      TWENTY EIGHTEEN  
01 DECEMBER    TWENTY EIGHTEEN  
01 AUGUST      TWENTY EIGHTEEN
```

7 rows selected.

9

```
SQL> SELECT MAX(TOTAL_TICKET_FARE) FROM TICKET;
```

```
MAX(TOTAL_TICKET_FARE)  
-----  
7991
```

10

```
SQL> SELECT AVG(AGE) FROM PASSENGER_DETAILS;
```

```
AVG(AGE)  
-----  
49
```

```
SQL>
```

11

```
SQL> SELECT MAX(LENGTH(NAME)) FROM TRAIN_ROUTE;
```

```
MAX(LENGTH(NAME))  
-----  
12
```

12

```
SQL> SELECT ROUND(TOTAL_TICKET_FARE) FROM TICKET;
```

```
ROUND(TOTAL_TICKET_FARE)  
-----  
0  
0  
5001  
5080  
7080  
7991  
780
```

7 rows selected.

ALTERNATE QUERIES

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Railway Reservation System -(Redesigning IRCTC database)

Train(train Number, name, source, destination,start_time, reach_time, travelttime, distance, class, days, type)

Ticket(PNRNo, Transactionid, from_station, To_station, date_of_journey, class date_of_booking, total_ticket_fare, train number)

Passenger(PNR No, Serial no, Name, Age, Reservation_status)

Train_Route(Train_No, route_no, station_code, name, arrival_time, depart_time, distance, day)

Train_Ticket_fare(Train_No, class, base_fare, reservation_charge, superfast_charge, other_charge, tatkal_charge, service_tax)

Ques 1a. Create all the tables specified above. Make underlined columns as primary key.(use number, number(m,n), varchar(n), date, time, timestamp datatypes appropriately) (Low Level)

```
create or replace type classes as varray(6) of varchar(10)
```

```
/
```

```
create or replace type days_of_run as varray(7) of varchar(10) /
```

```
create table train(train_no char(5) primary key, name varchar(20), source varchar(20), destination varchar(20), start_time timestamp(0), reach_time timestamp(0), travel_time interval day to second, distance number(4), class classes, days days_of_run, t_type varchar(10));
```

```
create table Ticket( PNRNo char(11) primary key, Transactionid char(10), from_station varchar(20), To_station varchar(20), date_of_journey date, class varchar(10), date_of_booking date, total_ticket_fare number(5), train_number references train)
```

```
create table passenger(pnr_no references ticket, serial_no number(2), name varchar(20), age number(3), reservation_status varchar(10), constraint psng_pk primary key(pnr_no, serial_no));
```

```
create table train_route(train_no constraint tr_fk references train, route_no number(1), station_code char(3), name varchar(20), arrival_time timestamp(0), depart_time timestamp(0), distance number(4), day number(1), constraint tr_pk primary key(train_no, route_no));
```

```
create table train_ticket_fare(train_no constraint tf_fk references train, class varchar(10), base_fare number(3), reservation_charge number(3), superfast_charge
```

number(3), other_charge number(3), tatkal_charge number(3), service_tax number(3), constraint tf_pk primary key(train_no, class));

Ques 1b. Insert atleast 5 rows to each table. (Check www.irctc.co.in website for actual data)

- 1. Use Interactive insertion for inserting rows to the table.**
- 2. Use ADT(varray) for class and days column in Train table.**

insert into train values('&train_no','&name','&source','&destination', &start_time, &reach_time, &travel_time, &distance, &class, &days, '&t_type');

Enter value for train_no: 12345

Enter value for name: Mumbai Rajdhani Exp

Enter value for source: Mumbai

Enter value for destination: New Delhi

Enter value for start_time: to_timestamp('16:55', 'hh24:mi')

Enter value for reach_time: to_timestamp('10:00', 'hh24:mi')

Enter value for travel_time: null

Enter value for distance: 1500

Enter value for class: classes('1A', '2A', '3A', NULL, NULL, NULL)

Enter value for days: daya_of_run('Mon', null, 'Wed', null, 'Fri', null, null)

Enter value for t_type: Superfast

old 1: insert into train values('&train_no','&name','&source','&destination', &start_time, &reach_time, &travel_time, &distance, &class, &days, '&t_type')

new 1: insert into train values('12345','Mumbai Rajdhani Exp','Mumbai','New Delhi', to_timestamp('16:55', 'hh24:mi'), to_timestamp('10:00', 'hh24:mi'), null, 1500, classes('1A', '2A', '3A', NULL, NULL, NULL), daya_of_run('Mon', null, 'Wed', null, 'Fri', null, null), 'Superfast')

Ques 2. Write simple DDL/DML Queries to (Low Level)

1. Remove all the rows from Passenger table permanently.

delete from passenger;

2. Change the name of the Passenger table to Passenger_Details.

rename passenger to Passenger_Details;

3. List all train details.

select * from train;

4. List all passenger details.

select * from passenger;

5. Give a list of trains in ascending order of number.

select * from train order by train_number asc;

6. List the senior citizen passengers details.

select * from passenger where age>60;

7. List the station names where code starts with 'M'.

select source from train where source like 'M%' union select destination from train where destination like 'M%';

8. List the trains details within a range of numbers.

select * from train where train_number between 12000 and 14000;

9. Change the super fast charge value in train fare as zero , if it is null.

update train_ticket_fare set superfast_charge=0 where superfast_charge is NULL;

10. List the passenger names whose tickets are not confirmed.

select * from passenger where reservation_status!=‘confirmed’;

11. List the base_fare of all AC coaches available in each train.

select base_fare from train_ticket_fare where class='1A' or class='2A' or class='3A';

12. Find the ticket details where transaction id is not known.

select * from ticket where transaction_id is null;

13. Use Interactive updation for updating the seat no for particular PNR NO.

update passenger set serial_no='&10' where pnr_no='&701091';

14. Find the train names that are from Chennai to Mumbai, but do not have the source or destination in its name.

select name from train where source='Chennai' and destination='Mumbai' and name not like '%Chennai' or name not like '%Mumbai';

15. Find the train details that are on Thursday(Use the ADT column created).

select * from train where days='Thursday';

Ques 3. Create (Alter table to add constraint) the necessary foreign keys by identifying the relationships in the table. (Middle Level)

ALTER TABLE TICKET ADD CONSTRAINT FK FOREIGN KEY(TRAIN_NUMBER) REFERENCES TRAIN(TRAIN_NUMBER);

ALTER TABLE TRAIN_DAYS ADD CONSTRAINT FK FOREIGN KEY(TRAIN_NUMBER) REFERENCES TRAIN(TRAIN_NUMBER);

```
ALTER TABLE TRAIN_CLASS ADD CONSTRAINT FK
FOREIGN KEY(TRAIN_NUMBER) REFERENCES
TRAIN(TRAIN_NUMBER);
```

```
ALTER TABLE TRAIN_ROUTE ADD CONSTRAINT FK FOR-
EIGN KEY(TRAIN_NUMBER) REFERENCES
TRAIN(TRAIN_NUMBER);
```

```
ALTER TABLE TRAIN_TICKET_FARE ADD CONSTRAINT FK FOR-
EIGN KEY(TRAIN_NUMBER) REFERENCES
TRAIN(TRAIN_NUMBER);
```

1. Add a suitable constraint to train table to always have train no in the range 10001 to 99999.

```
alter table train add constraint chk check(train_number>=10001 and
train_number<=99999);
```

2. Add a suitable constraint for the column of station name, so that does not take duplicates.

```
alter table train add constraint trn_unq1 unique(source); alter table train add constraint
trn_unq2 unique(destination);
```

3. Change the data type of arrival time, depart time (date -> timestamp or timestamp to date), and do the necessary process for updating the table with new values.

```
alter table train modify start_time date;
alter table train modify reach_time date;
alter table train modify start_time timestamp(0);
alter table train modify reach_time timestamp(0);
```

4. Add a suitable constraint for the class column that it should take values only as 1A, 2A, 3A, SL, C.

```
alter table ticket add constraint tkt_chk1 check(class in('1A', '2A', '3A', 'S2', 'C'));
```

5. Add a not null constraint for the column distance in train_route.

```
alter table train_route modify distance constraint trn_rt_nn not null;
```

Ques 4. Use SQL PLUS functions to : (Low Level)

1. Find the passengers whose date of journey is one month from today.

```
select name from passenger, ticket where passenger.pnr_no = ticket.pnrno and
date_of_journey=(add_months(sysdate,1));
```

2. Print the train names in upper case.

```
select upper(Name) from train;
```

3. Print the passenger names with left padding character.

select lpad<name,5,'*> from passenger;

4. Print the station codes replacing K with M.

select replace <station_code,'K','M'> from train_route;

5. Translate all the LC in class column (Train_Ticket_fare) to POT and display.

select translate<class,'LC','POT'> from train_ticket_fare;

6. Display the fare details of all trains, if any value is ZERO, print as NULL value.

select train_no, class, null if (base_fare,0,null) "base fare" from train_ticket_fare;

9. Display the pnrno and transaction id, if transaction id is null, print 'not generated'.

select prnno,nvl(transaction_id,'not_generated') "T_id" from ticket;

8. Print the date_of_journey in the format '27th November 2010'.

select to_char(date_of_journey, 'ddth Month yyyy') from ticket;

9. Find the maximum fare (total fare).

select max<total_fare> from ticket;

10. Find the average age of passengers in one ticket.

select avg(age) from passengers;

11. Find the maximum length of station name available in the database.

select max<length<name>> from train_route;

12. Print the fare amount of the passengers as rounded value.

select round<total_ticket_fare> from ticket;

13. Add the column halt time to train route.

alter table train_route add halt_time interval day to second;

14. Update values to it from arrival time and depart time.

High Level:

update train_route set halt_time=departuretime-arrivaltime;

commit;

15. Update values to arrival time and depart time using conversion functions.

update train_route set departtime=departtime+to_dsinterval('000 00:15:00'), set arrivaltime=arrivaltime+to_dsinterval('000 00:15:00')

16. Display the arrival time, depart time in the format HH:MI (24 hours and minutes).

```
select to_char(arrivaltime,'hh:mi') "Atime", teacher(departuretime,'hh:mi')"Dtime"  
from train_route;
```