DBMS Project On a Metro System

Designed By –

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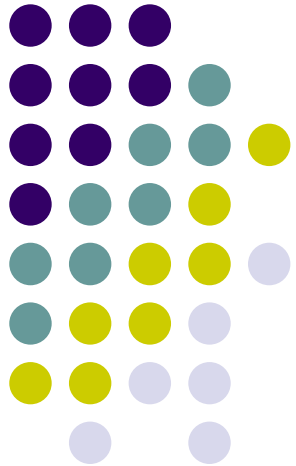
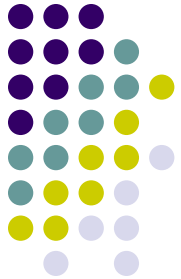
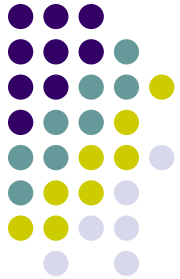


Why do we need a database for a metro system?



- The database can store very large number of trains, train routes, stations and passenger information .
- It is easy to update and delete and insert information with the help of a database.
- Obtaining information is easy and fast.
- It makes it easy to find relationships across schemas.

Problem Statement



The Metro DBMS is designed to tackle the following problems :

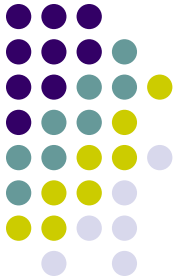
1) Passengers can access their metro card details.

2) Passengers can recharge their metro cards.

3) The system can access details related to the metro stations.

4) The system can calculate fare charges from user input stations.

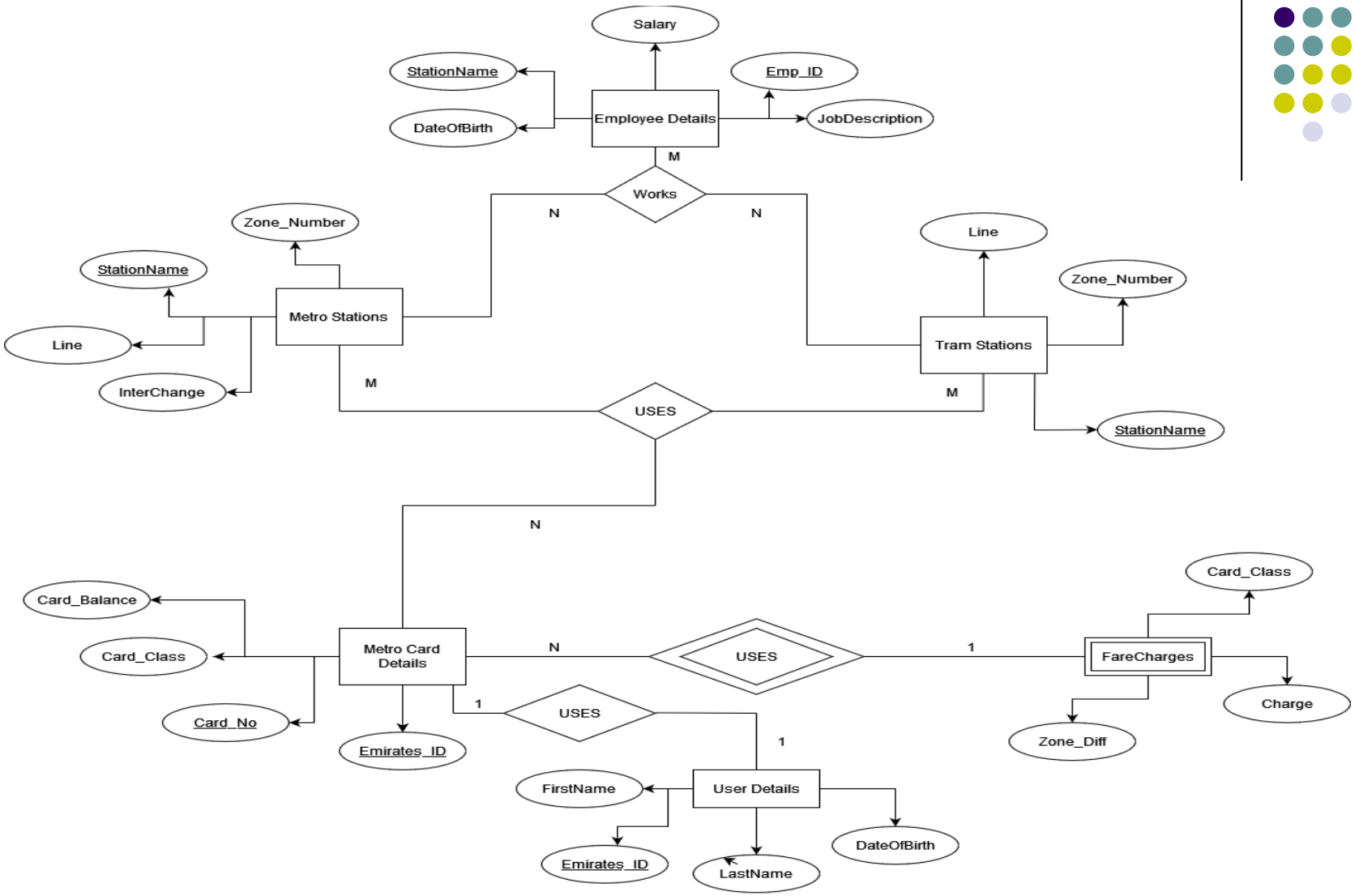
Features of the database



- It holds passenger information.
- It keeps track of current balance

  and allows for updation of balance.
- It calculates fare calculation between two stations.
- It holds the details of the employees working at the stations .

ER Diagram



StationName is primary and foreign key in Metro Stations ,Tram Stations and Employee Details
Emirates_ID is a primary key in UserDetails and foreign key in MetroCardDetails
Card_No is a primary key in MetroCardDetails

Schemas

MetroStations (StationName, Zone_Number, Line, Interchange).

TramStations (StationName, Zone_Number, Line).

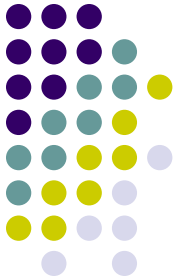
UserDetails (Emirates_ID, Fname, Lname, DOB).

MetroCardDetails (Card_No, Card_Class, Emirates_ID, Card_Balance).

FareCharges (Card_Class, Zone_Diff, Fare_Charge).

EmployeeDetails (Emp_ID, Emp_Name, StationName, Job, DOB, Salary);

Functional Dependencies



MetroStations (StationName, Zone_Number, Line, Interchange)

Station_name -> (Zone_number, Line, Interchange)

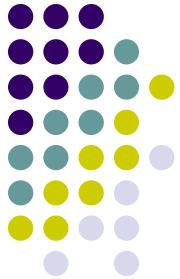
Station_name+ = R

Prime attributes = station_name

Non prime attributes = zone_number, line, interchange

Hence, station_name is the primary key.

Functional Dependencies



TramStations (StationName, Zone_Number, Line)

StationName -> (zone_number, line)

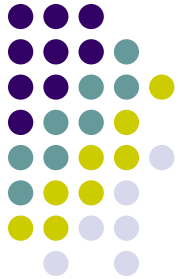
stationName+ = R

Prime attributes = StationName

Non prime attributes = zone_number, line

Hence, StationName is the primary key.

Functional Dependencies



UserDetails (Emirates_ID, Fname, Lname, DOB).

Emirates_ID -> (Fname, Lname, DOB)

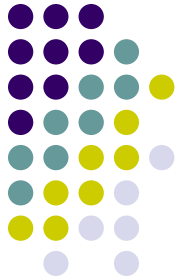
Emirates_ID+ = R

Prime attributes = Emirates_ID

Non prime attributes = Fname, Lname, DOB

Hence, Emirates_ID is the primary key.

Functional Dependencies



MetroCardDetails (Card_No, Card_Class, Emirates_ID, Card_Balance)

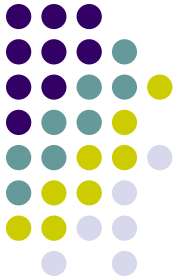
Card_No -> (Card_Class, Emirates_ID, Card_Balance)

Card_No+ = R

Prime attributes = Card_no

Non prime attributes = Card_Class, Emirates_ID, Card_Balance

Functional Dependencies

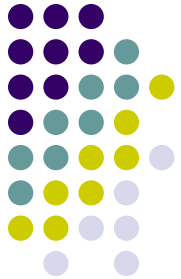


FareCharges (Card_Class, Zone_Diff, Fare_Charge)

(Card_class, zone_Diff) -> (Fare_charge)

Candidate key = (card_class, zone_diff)

Functional Dependencies



EmployeeDetails (Emp_ID, Emp_Name, StationName, Job, DOB, Salary)

Emp_ID -> (Emp_Name, StationName, Job, DOB, Salary)

Emp_ID+ = R

Prime attributes = Emp_ID

Non prime attributes = Emp_name, StationName, Job, DOB, Salary

Emp_ID is primary key.

Normalization

metro_stations

Primary key : metro_station_name

All attributes depend on the metro_station_name, hence the table is in 2NF.

All attributes depend directly on metro_station_name, hence the table is in 3NF.

All determinants (metro_station_name) is Super key, hence the table is in BCNF.

Normalization

tram_stations

Primary key : tram_station_name

All attributes depend on the tram_station_name, hence the table is in 2NF.

All attributes depend directly on tram_station_name, hence the table is in 3NF.

All determinants (tram_station_name) is Super key, hence the table is in BCNF.

Normalization

user_details

Primary key : emirates_id

All attributes depend on the emirates_id, hence the table is in 2NF.

All attributes depend directly on emirates_id, hence the table is in 3NF.

All determinants (emirates_id) is Super key, hence the table is in BCNF.

Normalization

metro_card_details

Primary key : card_no

All attributes depend on the card_no, hence the table is in 2NF.

All attributes depend directly on card_no, hence the table is in 3NF.

All determinants (card_no) is Super key, hence the table is in BCNF.

Normalization

fare_charges

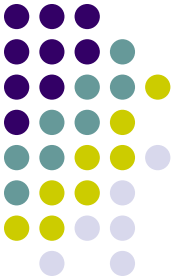
Primary key : card_class

All attributes depend on the card_class, hence the table is in 2NF.

All attributes depend directly on card_class, hence the table is in 3NF.

All determinants (card_class) is Super key, hence the table is in BCNF.

Normalization



employee_details

Primary key : emp_id

All attributes depend on the emp_id, hence the table is in 2NF.

All attributes depend directly on emp_id, hence the table is in 3NF.

All determinants (emp_id) is Super key, hence the table is in BCNF.

Attributes

StationName – Tells the name of the station

Zone_Number – Specifies the zone number in which the station is located

Line – Tells if the station is on green, red or orange line.

Interchange – Tells if the station is an interchange station or not.

Emirates_ID – Social security number that the passenger is assigned .

Card_Balance – Tells the current balance of the metro card.

Card_No – Uniquely identifies the metro card.

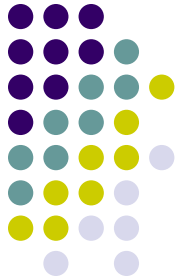
Fname – First Name.

Lname – Last Name.

DOB – Date of Birth.

Card_Class – Tells class of the metro card (Student , Silver, Gold).

Attributes contd ..



Zone_Diff – Tells the difference in zone numbers of two stations (One, Two, More than two).

Fare_Charge - Tells the corresponding fare for zone_diff and card_class.

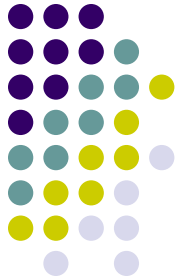
Emp_ID – Uniquely identifies the employee working at a station.

Emp_Name – Name of the employee.

Job – Description of the job.

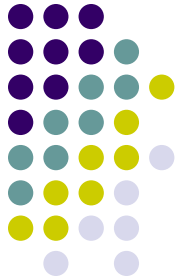
Salary – Tells the salary of the employee.

Relations



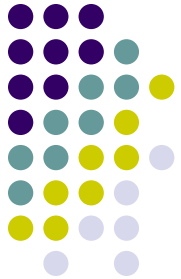
- The relation Works has a M:N relationship with the tables EmployeeDetails, MetroStations, TramStations due to the fact that many employees work in different stations.
- The relation Uses has a M:N relationship with the tables MetroStations, TramStations, MetroCardDetails as many stations have thousands of passengers everyday .
- The second Uses relation has a 1:1 relationship with the tables MetroCardDetails, UserDetails as each user can only have one metro card.
- The third **identifying** relation Uses has a 1:N relationship as each metro card will have to access the FareCharges table to calculate the fare .

Creation of Tables



```
CREATE TABLE MetroStations(
StationName VARCHAR(20),
MetroZoneNumber INTEGER,
MetroLine VARCHAR(20),
InterChange INTEGER,
PRIMARY KEY(StationName) );

CREATE TABLE TramStations(
StationName VARCHAR(20),
TramLine VARCHAR(20),
TramZoneNumber INT,
PRIMARY KEY(StationName) );

CREATE TABLE UserDetails(
EmiratesId INT,
Fname VARCHAR(20),
Lname VARCHAR(20),
Dob DATE,
PRIMARY KEY(EmiratesId));
```

Creation of Tables

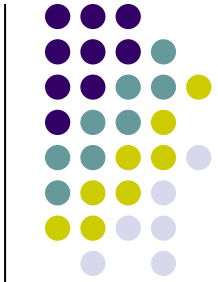


```
CREATE TABLE MetroCardDetails(
EmiratesId INT,
CardBalance FLOAT,
CardClass VARCHAR(10),
CardNo INT,
PRIMARY KEY(CardNo),
FOREIGN KEY(EmiratesId) REFERENCES UserDetails);

CREATE TABLE EmployeeDetails(
EmpId INT,
EmpName VARCHAR(20),
Job VARCHAR(20),
Dob DATE,
Salary FLOAT,
StationName VARCHAR(20),
PRIMARY KEY(EmpId),
FOREIGN KEY(StationName) REFERENCES MetroStations );

CREATE TABLE FareCharges(
CardClass VARCHAR(20),
ZoneDiff VARCHAR(20),
CHARGE FLOAT );
```

INSERTION OF DATA

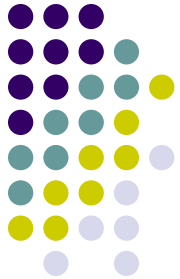
```
INSERT INTO MetroStations VALUES('Expo 2020',1,'Red',0);
INSERT INTO MetroStations VALUES('Danube',1,'Red',0);
INSERT INTO MetroStations VALUES('Dubai Investment',1,'Red',0);
INSERT INTO MetroStations VALUES('UAE Exchange',1,'Red',0);
INSERT INTO MetroStations VALUES('Jumeirah Golf Est',3,'Red',0);
INSERT INTO MetroStations VALUES('Energy',2,'Red',0);
INSERT INTO MetroStations VALUES('Ibn Batutta',2,'Red',0);
INSERT INTO MetroStations VALUES('The Gardens',2,'Red',0);
INSERT INTO MetroStations VALUES('Discovery Gardens',2,'Red',0);
INSERT INTO MetroStations VALUES('Al Furjan',2,'Red',0);
INSERT INTO MetroStations VALUES('Jabal Ali',2,'Red',1);
INSERT INTO MetroStations VALUES('DMCC',2,'Red',0);
INSERT INTO MetroStations VALUES('SOBHA REALTY',2,'Red',0);
INSERT INTO MetroStations VALUES('Al Khail',2,'Red',0);
```

INSERTION OF DATA



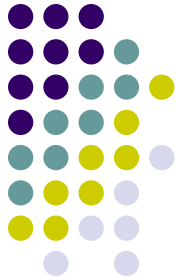
```
INSERT INTO MetroStations VALUES('Dubai Internet City',2,'Red',0);
INSERT INTO MetroStations VALUES('mashreq',2,'Red',0);
INSERT INTO MetroStations VALUES('Mall of the Emirates',2,'Red',0);
INSERT INTO MetroStations VALUES('Equiti',2,'Red',0);
INSERT INTO MetroStations VALUES('Al Safa',2,'Red',0);
INSERT INTO MetroStations VALUES('Business Bay',5,'Red',0);
INSERT INTO MetroStations VALUES('Burj Khalifa',5,'Red',0);
INSERT INTO MetroStations VALUES('Financial Centre',5,'Red',0);
INSERT INTO MetroStations VALUES('Emirates Towers',5,'Red',0);
INSERT INTO MetroStations VALUES('World Trade Centre',5,'Red',0);
INSERT INTO MetroStations VALUES('max',5,'Red',0);
INSERT INTO MetroStations VALUES('ADCB',5,'Red',0);
INSERT INTO MetroStations VALUES('Burjuman',5,'Red-Green',1);
INSERT INTO MetroStations VALUES('Oud Metha',5,'Green',0);
```

INSERTION OF DATA

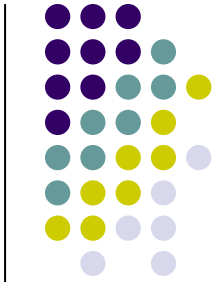


```
INSERT INTO MetroStations VALUES('Dubai Heathcare City',5,'Green',0);
INSERT INTO MetroStations VALUES('Al Jadaf',5,'Green',0);
INSERT INTO MetroStations VALUES('Creek',5,'Green',0);
INSERT INTO MetroStations VALUES('Al Ghubaiba',5,'Green',0);
INSERT INTO MetroStations VALUES('Sharaf DG',5,'Green',0);
INSERT INTO MetroStations VALUES('Al Ras',4,'Green',0);
INSERT INTO MetroStations VALUES('Gold Souq',4,'Green',0);
INSERT INTO MetroStations VALUES('Baniyas Square',4,'Green',0);
INSERT INTO MetroStations VALUES('Union',4,'Red-Green',1);
INSERT INTO MetroStations VALUES('Salah Al Din',4,'Green',0);
INSERT INTO MetroStations VALUES('Abu Baker',4,'Green',0);
INSERT INTO MetroStations VALUES('Abu Hail',4,'Green',0);
INSERT INTO MetroStations VALUES('Al Qiyadah',4,'Green',0);
```

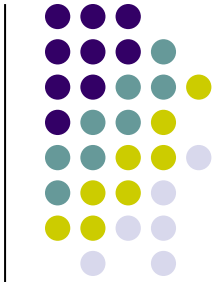
INSERTION OF DATA



```
INSERT INTO MetroStations VALUES('Stadium',4,'Green',0);
INSERT INTO MetroStations VALUES('Al Nahda',4,'Green',0);
INSERT INTO MetroStations VALUES('Dubai Airport',4,'Green',0);
INSERT INTO MetroStations VALUES('Al Qusais',4,'Green',0);
INSERT INTO MetroStations VALUES('Etisalat',4,'Green',0);
INSERT INTO MetroStations VALUES('Al Rigga',4,'Red',0);
INSERT INTO MetroStations VALUES('City Centre Deira',4,'Red',0);
INSERT INTO MetroStations VALUES('GGICO',4,'Red',0);
INSERT INTO MetroStations VALUES('Airport Terminal 1',4,'Red',0);
INSERT INTO MetroStations VALUES('Airport Terminal 3',4,'Red',0);
INSERT INTO MetroStations VALUES('Emirates',4,'Red',0);
INSERT INTO MetroStations VALUES('centrepoint',4,'Red',0);
```



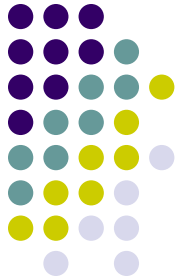
	STATIONNAME	METROZONENUMBER	METROLINE	INTERCHANGE
1	Expo 2020	1	Red	0
2	Danube	1	Red	0
3	UAE Exchange	1	Red	0
4	Dubai Investment	1	Red	0
5	Jumeirah Golf Est	3	Red	0
6	Energy	2	Red	0
7	Ibn Batutta	2	Red	0
8	The Gardens	2	Red	0
9	Discovery Gardens	2	Red	0
10	Al Furjan	2	Red	0
11	Jabal Ali	2	Red	1
12	Dubai Internet City	2	Red	0
13	DMCC	2	Red	0
14	SOBHA REALTY	2	Red	0
15	Al Khail	2	Red	0
16	Mall of the Emirates	2	Red	0
17	mashreq	2	Red	0
18	Equiti	2	Red	0



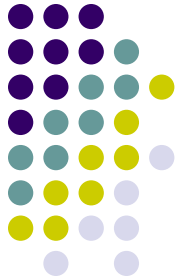
	STATIONNAME	METROZONENUMBER	METROLINE	INTERCHANGE
19	Al Safa	2	Red	0
20	Business Bay	5	Red	0
21	Burj Khalifa	5	Red	0
22	Financial Centre	5	Red	0
23	Emirates Towers	5	Red	0
24	World Trade Centre	5	Red	0
25	max	5	Red	0
26	ADCB	5	Red	0
27	Burjuman	5	Red-Green	1
28	Oud Metha	5	Green	0
29	Dubai Heathcare City	5	Green	0
30	Al Jadaf	5	Green	0
31	Creek	5	Green	0
32	Al Ghubaiba	5	Green	0
33	Sharaf DG	5	Green	0
34	Al Ras	4	Green	0
35	Gold Souq	4	Green	0
36	Baniyas Square	4	Green	0

37	Union	4	Red-Green	1
38	Salah Al Din	4	Green	0
39	Abu Baker	4	Green	0
40	Abu Hail	4	Green	0
41	Al Qiyadah	4	Green	0
42	Stadium	4	Green	0
43	Al Nahda	4	Green	0
44	Dubai Airport	4	Green	0
45	Al Qusais	4	Green	0
46	Etisalat	4	Green	0
47	Al Rigga	4	Red	0
48	City Centre Deira	4	Red	0
49	GGICO	4	Red	0
50	Airport Terminal 1	4	Red	0
51	Airport Terminal 3	4	Red	0
52	Emirates	4	Red	0
53	centrepoint	4	Red	0

INSERTION OF DATA

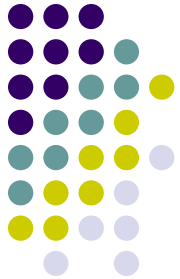


```
INSERT INTO TramStations VALUES('Jumeirah Lakes Tower','Orange',2);
INSERT INTO TramStations VALUES('Dubai Marina','Orange',2);
INSERT INTO TramStations VALUES('Marina Towers','Orange',2);
INSERT INTO TramStations VALUES('Mina Seyahi','Orange',2);
INSERT INTO TramStations VALUES('Media City','Orange',2);
INSERT INTO TramStations VALUES('Palm Jumeirah','Orange',2);
INSERT INTO TramStations VALUES('Knowledge Village','Orange',2);
INSERT INTO TramStations VALUES('Al Sufouh','Orange',2);
INSERT INTO TramStations VALUES('Dubai Marina Mall','Orange',2);
INSERT INTO TramStations VALUES('JBR 1','Orange',2);
INSERT INTO TramStations VALUES('JBR 2','Orange',2);
```

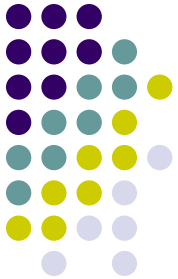


	STATIONNAME	TRAMLINE	TRAMZONENUMBER
1	Jumeiarh Lakes Tower	Orange	2
2	Dubai Marina	Orange	2
3	Marina Towers	Orange	2
4	Mina Seyahi	Orange	2
5	Media City	Orange	2
6	Palm Jumeirah	Orange	2
7	Knowledge Village	Orange	2
8	Al Sufouh	Orange	2
9	Dubai Marina Mall	Orange	2
10	JBR 1	Orange	2
11	JBR 2	Orange	2

INSERTION OF DATA

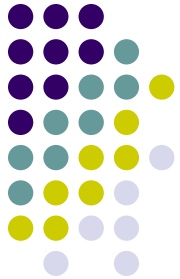


```
INSERT INTO FareCharges VALUES('Gold','Same',6);
INSERT INTO FareCharges VALUES('Gold','Adjacent',10);
INSERT INTO FareCharges VALUES('Gold','More Than 2',15);
INSERT INTO FareCharges VALUES('Silver','Same',3);
INSERT INTO FareCharges VALUES('Silver','Adjacent',5);
INSERT INTO FareCharges VALUES('Silver','More Than 2',7.5);
INSERT INTO FareCharges VALUES('Student','Same',1.5);
INSERT INTO FareCharges VALUES('Student','Adjacent',2.5);
INSERT INTO FareCharges VALUES('Student','More Than
2',3.75);
```

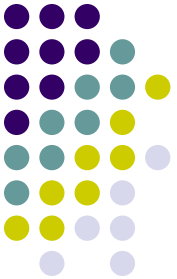


	CARDCLASS	ZONEDIFF	CHARGE
1	Gold	Same	6
2	Gold	Adjacent	10
3	Gold	More Than 2	15
4	Silver	Same	3
5	Silver	Adjacent	5
6	Silver	More Than 2	7.5
7	Student	Same	1.5
8	Student	Adjacent	2.5
9	Student	More Than 2	3.75

INSERTION OF DATA

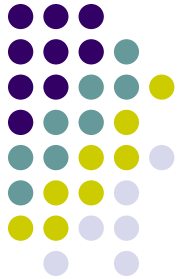


```
INSERT INTO UserDetails VALUES(207151,'Nithish','Krishna','21-DEC-2002');
INSERT INTO UserDetails VALUES(207208,'Antony','Thoppil','28-JUN-2002');
INSERT INTO UserDetails VALUES(207254,'Pramukh','Koushik','27-SEP-2002');
INSERT INTO UserDetails VALUES(207162,'Rithik','Marudappa','04-JUN-2002');
INSERT INTO UserDetails VALUES(207166,'Karthik','Bommaraju','21-DEC-2002');
INSERT INTO UserDetails VALUES(207245,'Morampudi','Sathwika','21-DEC-2002');
INSERT INTO UserDetails VALUES(207138,'Lakshaya','Jalan','25-JUN-2003');
INSERT INTO UserDetails VALUES(207124,'Divya','Soni','14-JUN-2002');
INSERT INTO UserDetails VALUES(207131,'Isaiah','Kuruvilla','04-MAY-2002');
INSERT INTO UserDetails VALUES(207263,'Rohit','Vamsi','29-APR-2002');
```

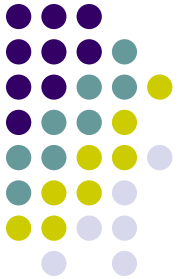


	EMIRATESID	FNAME	LNAME	DOB
1	207151	Nithish	Krishna	21-DEC-02
2	207208	Antony	Thoppil	28-JUN-02
3	207254	Pramukh	Koushik	27-SEP-02
4	207162	Rithik	Marudappa	04-JUN-02
5	207166	Karthik	Bommaraju	21-DEC-02
6	207245	Morampudi	Sathwika	21-DEC-02
7	207138	Lakshaya	Jalan	25-JUN-03
8	207124	Divya	Soni	14-JUN-02
9	207263	Rohit	Vamsi	29-APR-02
10	207131	Isaiah	Kuruvilla	04-MAY-02

INSERTION OF DATA

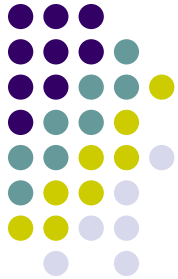


```
INSERT INTO MetroCardDetails VALUES(207151,100,'Silver',234);
INSERT INTO MetroCardDetails VALUES(207208,100,'Silver',156);
INSERT INTO MetroCardDetails VALUES(207254,100,'Gold',873);
INSERT INTO MetroCardDetails VALUES(207162,100,'Silver',901);
INSERT INTO MetroCardDetails VALUES(207166,200,'Student',583);
INSERT INTO MetroCardDetails VALUES(207245,160,'Gold',349);
INSERT INTO MetroCardDetails VALUES(207138,30,'Silver',428);
INSERT INTO MetroCardDetails VALUES(207124,120,'Student',761);
INSERT INTO MetroCardDetails VALUES(207131,100,'Silver',654);
INSERT INTO MetroCardDetails VALUES(207263,140,'Silver',1045);
```



	EMIRATESID	CARDBALANCE	CARDCLASS	CARDNO
1	207151	100	Silver	234
2	207208	100	Silver	156
3	207254	100	Gold	873
4	207162	100	Silver	901
5	207166	200	Student	583
6	207245	160	Gold	349
7	207138	30	Silver	428
8	207124	116.25	Student	761
9	207131	100	Silver	654
10	207263	140	Silver	1045

INSERTION OF DATA

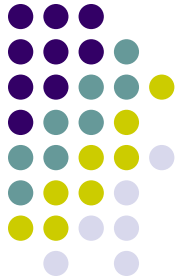


INSERT INTO EmployeeDetails VALUES(2011,'Pinoy','Manager','01-JAN-1978','10000','ADCB');

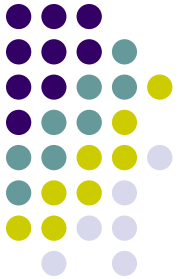
INSERT INTO EmployeeDetails VALUES(3043,'Jack Baur','Security Head','02-FEB-1979','15000','Al Ghubaiba');

INSERT INTO EmployeeDetails VALUES(6078,'John Xina','Manager','03-MAR-1978','10000','Burjuman');

INSERT INTO EmployeeDetails VALUES(7254,'Bill Cosby','Manager','06-JUN-1980','10000','mashreq');

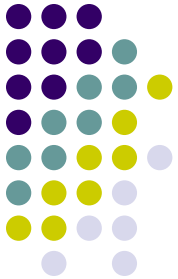


	EMPID	EMPNAME	JOB	DOB	SALARY	STATIONNAME
1	2011	Pinoy	Manager	01-JAN-78	10000	ADCB
2	3043	Jack Baur	Security Head	02-FEB-79	15000	Al Ghubaiba
3	6078	John Xina	Manager	03-MAR-78	10000	Burjuman
4	7254	Bill Cosby	Manager	06-JUN-80	10000	mashreq

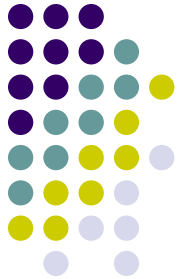


QUERIES

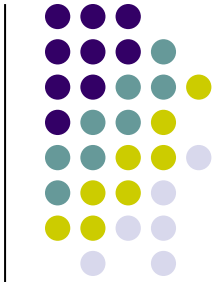
Create a system where the user inputs the names of two stations and his/her card number , with the system printing the cost of the fare and updating the card balance



```
SET SERVEROUTPUT ON;
DECLARE
   station1 MetroStations.StationName%type;
   station2 MetroStations.StationName%type;
   z1 MetroStations.MetroZoneNumber%type;
   z2 MetroStations.MetroZoneNumber%type;
   charge float;
   diff int;
   card_no int;
   card_class varchar(20);
   card_balance float;
BEGIN
   station1 := '&station1';
   station2 := '&station2';

   select MetroZoneNumber into z1 from MetroStations where StationName = station1;
   select MetroZoneNumber into z2 from MetroStations where StationName = station2;
   card_no := '&CardNo';
   select CardClass,CardBalance into card_class,card_balance from MetroCardDetails where
CardNo = card_no;
   diff := ABS(z1 - z2);
```

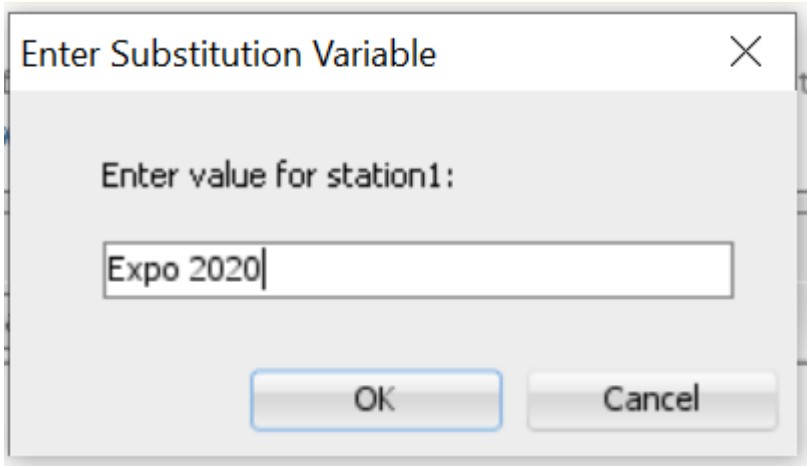


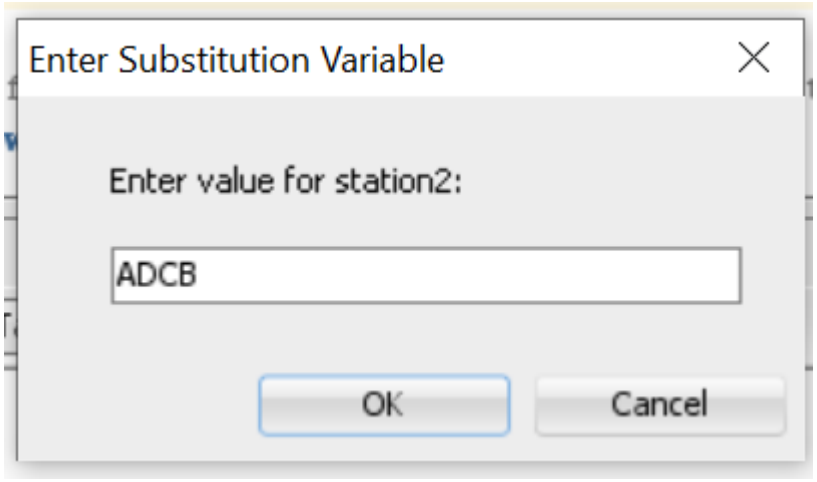
```
if diff = 0 then
        select CHARGE into charge from FareCharges where CardClass =
card_class and ZoneDiff = 'Same';
    elsif diff = 1 then
        select CHARGE into charge from FareCharges where CardClass =
card_class and ZoneDiff = 'Adjacent';
    else
        select CHARGE into charge from FareCharges where CardClass =
card_class and ZoneDiff = 'More Than 2';
    end if;
    dbms_output.put_line('Cost of fare : '||charge);
    if card_balance < 7.5 then
        dbms_output.put_line('Your card has low balance');
    else
        update MetroCardDetails
        set CardBalance = CardBalance - charge
        where CardNo = card_no;
    end if;
END;
```

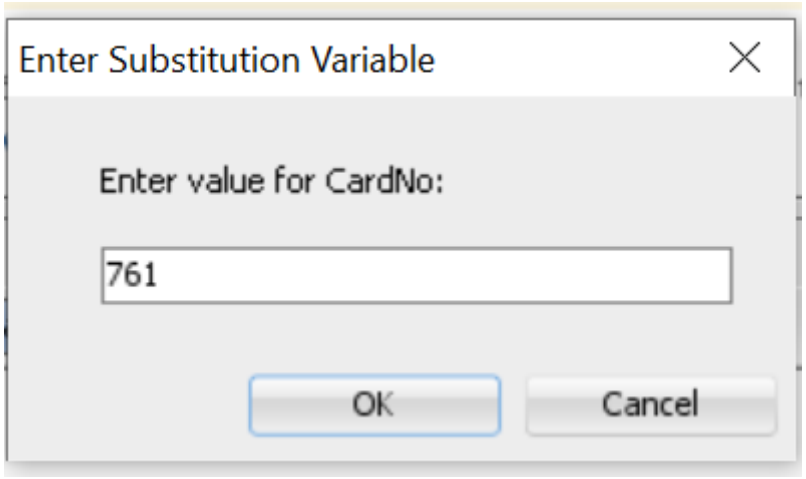


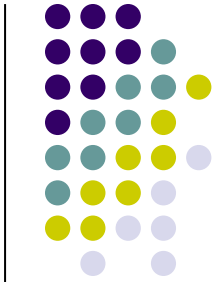
	EMIRATESID	CARDBALANCE	CARDCLASS	CARDNO
1	207151	100	Silver	234
2	207208	100	Silver	156
3	207254	100	Gold	873
4	207162	100	Silver	901
5	207166	200	Student	583
6	207245	160	Gold	349
7	207138	30	Silver	428
8	207124	116.25	Student	761
9	207131	100	Silver	654
10	207263	140	Silver	1045

Before running PL/SQL script.


Enter Substitution Variable
Enter value for station1:
Expo 2020
OK
Cancel


Enter Substitution Variable
Enter value for station2:
ADCB
OK
Cancel

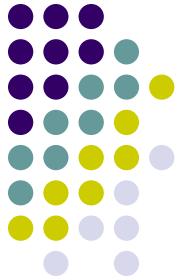

Enter Substitution Variable
Enter value for CardNo:
761
OK
Cancel



	EMIRATESID	CARDBALANCE	CARDCLASS	CARDNO
1	207151	100	Silver	234
2	207208	100	Silver	156
3	207254	100	Gold	873
4	207162	100	Silver	901
5	207166	200	Student	583
6	207245	160	Gold	349
7	207138	30	Silver	428
8	207124	112.5	Student	761
9	207131	100	Silver	654
10	207263	140	Silver	1045

After running PL/SQL script.

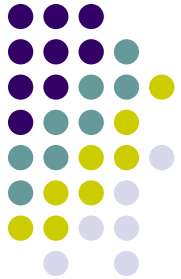
Retrieve information of all stations which are interchange stations



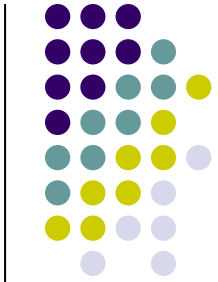
```
select StationName, MetroLine, MetroZoneNumber
from MetroStations where InterChange = 1;
```

	STATIONNAME	METROLINE	METROZONENUMBER
1	Jabal Ali	Red	2
2	Burjuman	Red-Green	5
3	Union	Red-Green	4

Top Up Metro Card



```
SET SERVEROUTPUT ON;
DECLARE
    card_no MetroCardDetails.CardNo%type;
    top_up float;
    card_balance float;
BEGIN
    card_no := '&CardNo';
    select CardBalance into card_balance from MetroCardDetails where CardNo =
card_no;
    top_up := '&TopUp';
    dbms_output.put_line('Your current balance : '||card_balance);
    update MetroCardDetails
    set CardBalance = CardBalance + top_up
    where CardNo = card_no;
END;
```



	EMIRATESID	CARDBALANCE	CARDCLASS	CARDNO
1	207151	100	Silver	234
2	207208	100	Silver	156
3	207254	100	Gold	873
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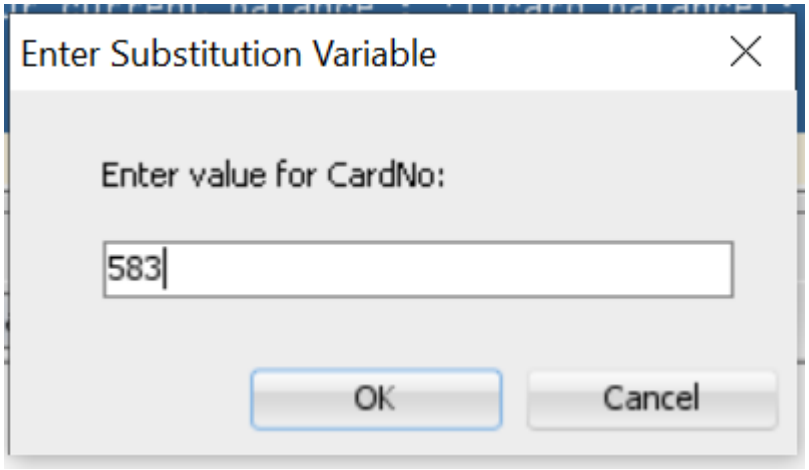
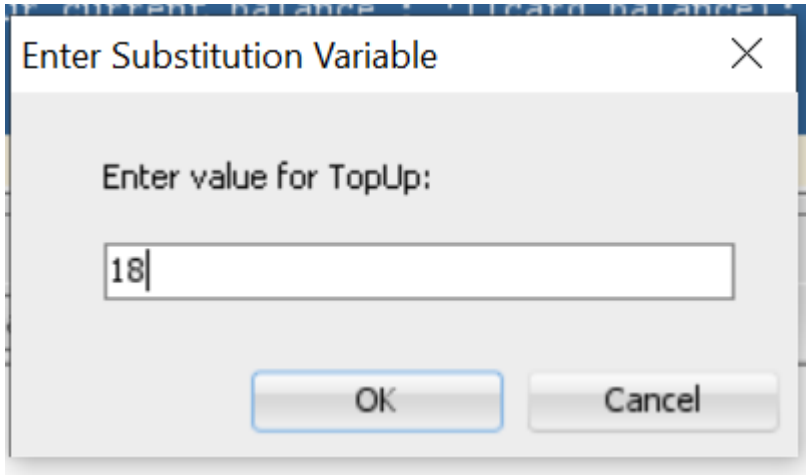
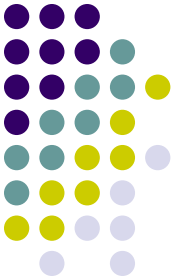
7	207138	30	Silver	428
8	207124	112.5	Student	761
9	207131	100	Silver	654
10	207263	140	Silver	1045

Before running PL/SQL script.


Enter Substitution Variable
Enter value for CardNo:
583
OK
Cancel

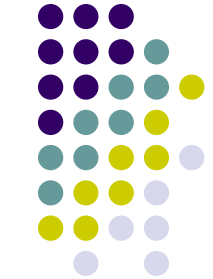

Enter Substitution Variable
Enter value for TopUp:
18
OK
Cancel



	EMIRATESID	CARDBALANCE	CARDCLASS	CARDNO
1	207151	100	Silver	234
2	207208	100	Silver	156
3	207254	100	Gold	873
4	207162	100	Silver	901
5	207166	218	Student	583
6	207245	160	Gold	349
7	207138	30	Silver	428
8	207124	112.5	Student	761
9	207131	100	Silver	654
10	207263	140	Silver	1045

After running PL/SQL script.

Future Improvements



- Add a feature for train scheduling .
- Add features for bus travels .
- Add triggers to maintain balance .

Thank You