Project Description

Dallas Area Road Transport or DART would like one relational database to store the information about their bus transportation system to be able to carry out their work in an organized way. The DART has some major modules such as Bus, Person (Employee and Passenger) and Ticket Sales.

A Person can be an Employee or an A-class Passenger. A person can be both an employee and an A-Class passenger. Details of a person such as Person ID, Name (First, Middle, Last), Address, Gender, Date of Birth (Must be 16 years or older), and Phone number (one person can have more than one phone number) are recorded. The Person ID should have the format “PXXX” where X is a number from 0 to 9. The number of children travelling with an A-Class passenger is stored. A maximum of 5 children can travel with an A-Class Passenger Employee is further classified as Bus Drivers, Staff (Ticket sellers) or Ticket checkers. The start date of the employee is recorded. One bus driver can drive multiple buses and multiple drivers can drive one bus but on different dates. (At a given time in a day, only one driver drives a particular bus). Payment information such as ID, method (cash or card), amount and other information are recorded. Ticket details such as Ticket ID, Bus ID, seat number and price are stored. The staff sells daily tickets to a person and the staff details, ticket details, person details and payment details are stored together.

An A-Star passenger is someone who has some extra privileges than an A-Class passenger. An A-Star Passenger can be an Employee or an A-Class passenger or both. Different passes are issued by DART. An A-Class passenger can buy only one pass in a month but an A-Star Passenger can buy multiple passes in a month. Sometimes promotional discounts are offered on the passes and details such promotion ID and

promotion description are recorded. The Promotional IDs are not unique and cannot be used to identify a promotion in the system.
Each A-Star Passenger is issued a travel card. The travel card details such as card ID, date of issue and other information are stored. A-Star passengers can have guests who travel for free with them four times a month. A Guest log is maintained which stores information such as passenger ID, guest ID, guest SSN, guest name, guest address, and guest contact information. Guest IDs are temporary IDs that a person gets when they travel as a guest of an A-Star passenger. Each guest ID is not unique and cannot be used to identify a guest in the library. Bus details such as Bus Number, License plate number, number of seats and other information are stored. Each route has many bus stops. One bus stop is part of only one route. The route and bus stop details are stored. Each bus is parked in a terminal and the information of the terminal such as Terminal ID, Location, Date and Time are stored. The time table information such as day and start time, end time and intervals (15 min, 20 min, 30 min) are recorded. Values for ‘day’ can be {M,T,W,Th,F,Sat,Sun}. A unique ID in the form of “DTXX” is given to each unique record in the timetable. For example, Day-{M,W}, StartTime- 10:00, EndTime – 20:00, Interval - 15m can have ID DT01 and so on. The information of which bus goes by which route and at what time is all stored together. The status of the bus (On Time, Delayed, or Cancelled) is recorded.

Project Questions

1. Is the ability to model superclass/subclass relationships likely to be important in a transportation system environment such as DART? Why or why not?

Yes it is important as in a transportation system there are many people who may belong to different classes which are subclasses of another class. For example in our system an A Star Passenger will be an A Class Passenger and can also be an Employee. Thus it is important to have a superclass, subclass system.

2. Can you think of 5 more business rules (other than the one explicitly described above) that are likely to be used in a transportation environment? Add your rules to the above requirement to be Implemented.

Some business rules that can be implemented in a transportation environment-

- The Bus_no should start with 3 or 4 digits followed by the reference of the route.
- The payment ID should start from ‘Pay’ followed by digits.
- The passes ID should start from ‘Pass’ followed by digits.
- The promotion ID should start from ‘Prom’ followed by digits.
- Allowable payment methods should be either ‘Cash’ or ‘Card’.

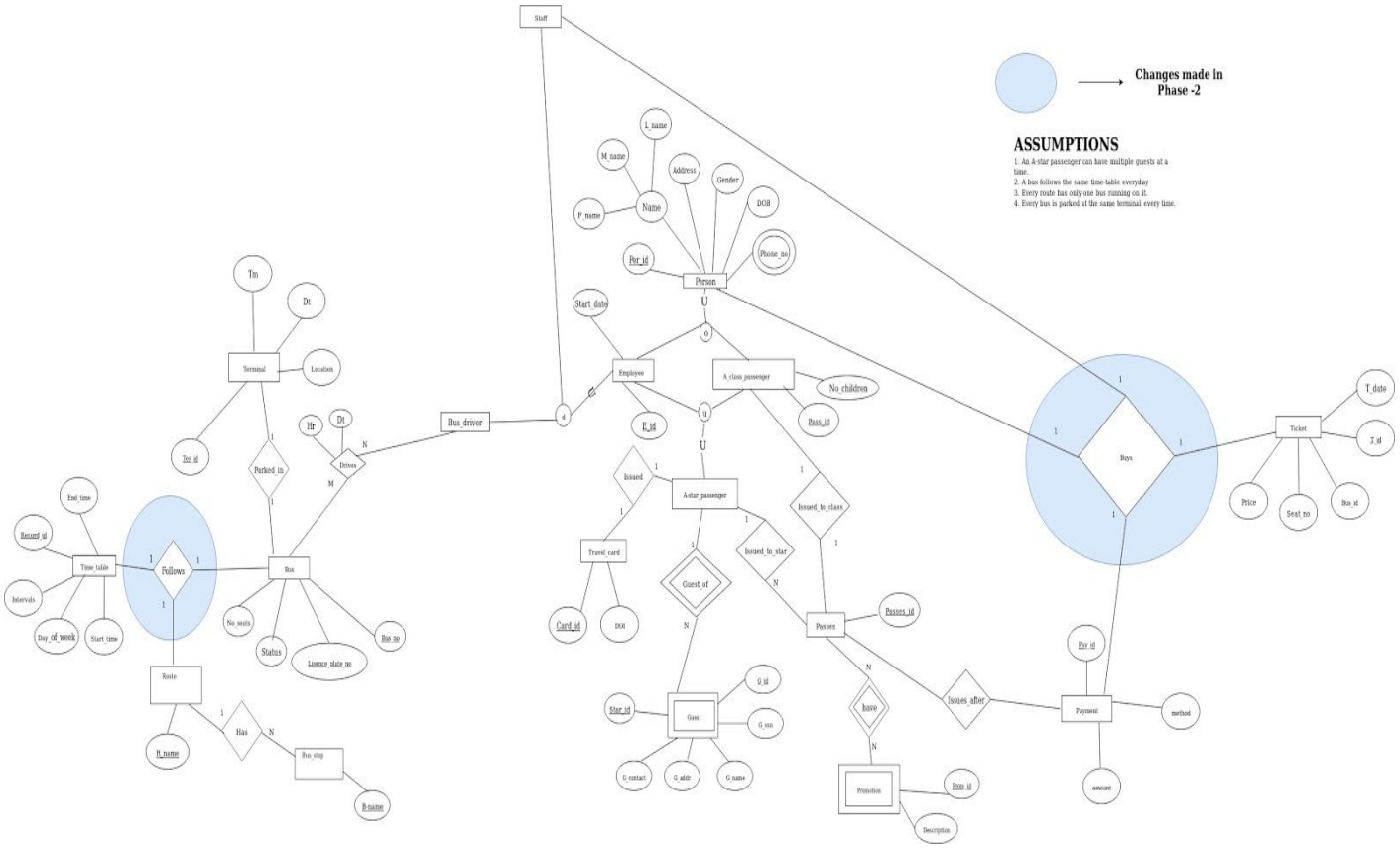
3. Justify using a Relational DBMS like Oracle for this project.

Following are the advantages of RDBMS:

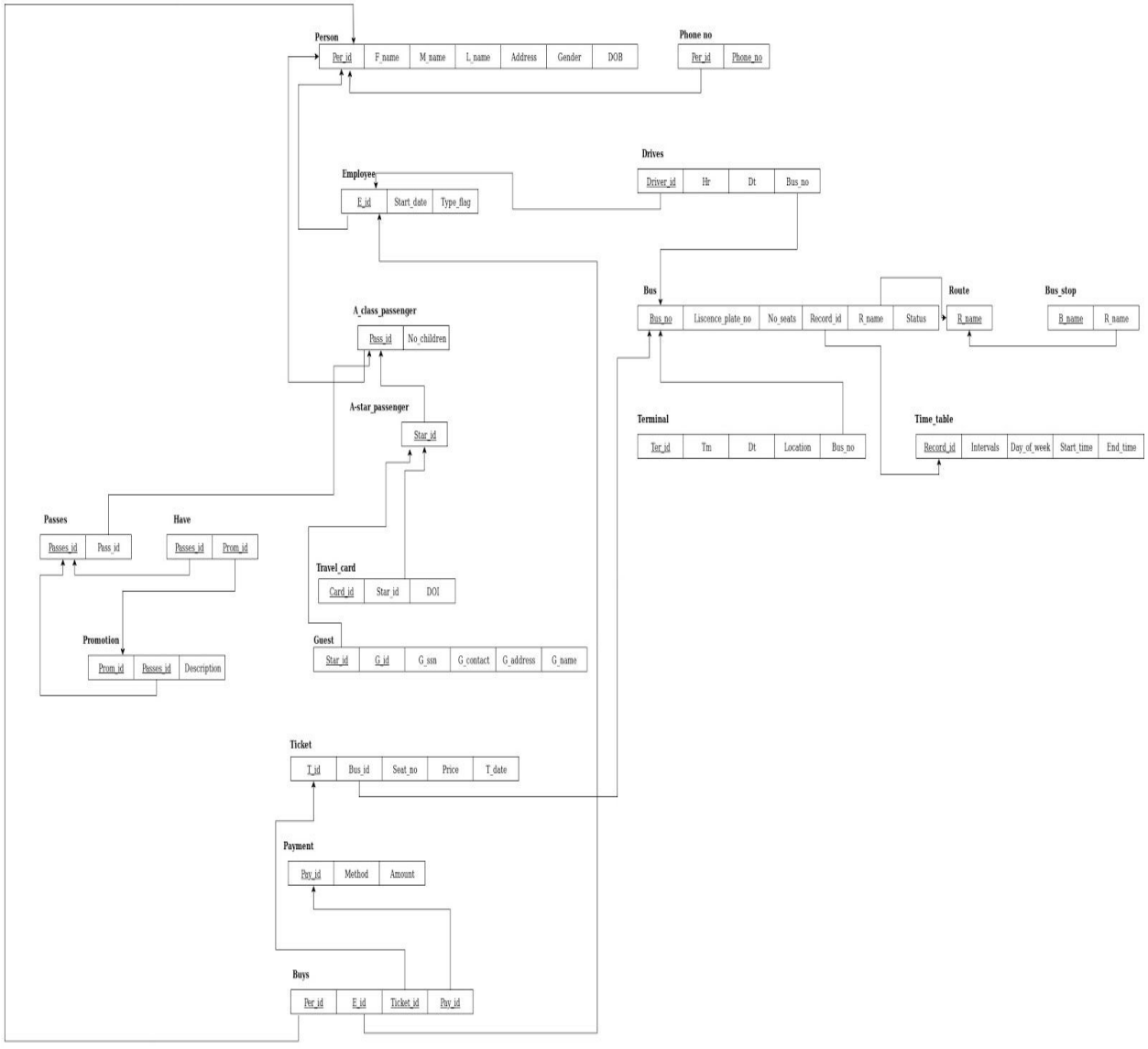
- Easy to write subSELECT and complex queries: Accessing data with complex and subqueries is easy.

- Limits redundancy and replication of the data : Redundant entries can be restricted with constraints as we did in project.
- Provides better physical data independence.
- Offers logical database independence i.e. data can be viewed in different ways by the different users.
- Data manipulation can be done easily with queries.
- Multiple users can access the database which is not possible in DBMS.

EERD


Staff
Changes made in Phase -2
ASSUMPTIONS
1. An A-star passenger can have multiple guests at a time.
2. A bus follows the same time-table everyday
3. Every route has only one bus running on it.
4. Every bus is parked at the same terminal every time.
L_name
M_name
F_name
Name
Address
Gender
DOB
Phone_no
Per_id
Person
Start_date
Employee
A class passenger
No_children
Pass_id
Bus_driver
E_id
Issued
A-star passenger
Issued_to_class
Issued_to_star
Travel_card
Card_id
DOI
Guest of
Guest
G_id
Star_id
G_name
G_addr
G_contact
Passes
Passes_id
Have
Promotion
Prom_id
Description
Issues_after
Payment
Pay_id
method
amount
Buys
Ticket
T_date
T_id
Price
Seat_no
Bus_id
Tm
Dt
Terminal
Location
Ter_id
Parked_in
Hr
Dt
Drives
Bus
No_seats
Status
Licence_plate_no
Bus_no
Time_table
End_time
Record_id
Intervals
Day_of_week
Start_time
Follows
Route
R_name
Has
Bus_stop
B_name

Relational Diagram



Functional dependencies

Person

Per_id	F_name	M_name	L_name	Address	Gender	DOB

Per_id -> F_name, M_name, L_name, Address, Gender, DOB

Phone no

Per_id	Phone_no

Employee

E_id	Start_date	Type_flag

E_id -> Start_date, Type

Drives

Driver_id	Hr	Dt	Bus_no

Driver_id - > Hours, Date, Bus_no

A_class_passenger

Pass_id	No_children

Pass_id -> No_children

Bus

Bus_no	Liscence_plate_no	No_seats	Record_id	R_name	Status

Bus_no -> No_seats, Record_id, R_name, Status
Liscence_plate_no -> No_seats, Record_id, R_name, Status
Bus_no -> Liscence_plate_no
Liscence_plate_no -> Bus_no

Route

R_name

Bus_stop

B_name	R_name

B_name -> R_name

A_star_passenger

Star_id	Pass_id	E_id

Star_id -> Pass_id, E_id

Terminal

Ter_id	Tm	Dt	Location	Bus_no

Ter_id - > Tm, Dt, Location, Bus_no

Time_table

Record_id	Intervals	Day_of week	Start_time	End_time

Recorded_id -> Intervals, Day_of week, Start_time, End_time

Passes

Passes_id	Star_id

Passes_id -> Star_id

Have

Passes_id	Prom_id

Promotion

Prom_id	Passes_id	Description

Prom_id, Passes_id -> Description

Buys

Per_id	E_id	Ticket_id	Pay_id

Travel_card

Card_id	Star_id	DOI

Card_id -> Star_id
Star_id -> Card_id

Ticket

T_id	Bus_id	Seat_no	T_date	Price

T_id -> Bus_id, Seat_no, Price

Guest

Star_id	G_id	G_ssn	G_contact	G_address	G_name

Star_id, G_id -> G_ssn, G_contact, G_address, G_name
G_ssn ->G_contact, G_address, G_name

Payment

Pay_id	Method	Amount

Pay_id -> Method, Amount

NORMALIZATION:
Second FD is violating 3NF form. So Lets step by step solve it and transform it into 3NF form.

Step 1:
Decomposition:-
Star_id,G_id->G_ssn
Star_id,G_id->G_contact
Star_id,G_id->G_address
Star_id,G_id->G_name
G_ssn->G_contact
G_ssn->G_address
G_ssn->G_name

Step 2:
Skipping this step because there is no unnecessary attribute.

Step 3:
Deleting unnecessary FDs.

Star_id,G_id->G_ssn
G_ssn->G_contact
G_ssn->G_address
G_ssn->G_name

Synthesizing 3NF:

Star_id,G_id->G_ssn
G_ssn->G_contact,G_address,G_name

Guest_2

Star_id	G_id	G_ssn

Guest_1

G_ssn	G_contact	G_address	G_name

SQL Queries

Create table Queries

```
create table Person(
Per_id varchar(4) PRIMARY KEY,
F_name varchar(20),
M_name varchar(20),
L_name varchar(20),
Address varchar(255),
Gender char(10),
DOB date
);


create table Phone_no(
Per_id varchar(4),
Phone_no varchar(10),
Primary key(Per_id, Phone_no),
foreign key (Per_id) references Person(Per_id),
CHECK ( Regexp_like(per_id, 'P[0-9][0-9][0-9]'));

);

create table Employee(
E_id varchar(4) PRIMARY KEY,
Start_date date,
Type_flag varchar(10),
foreign key(E_id) references Person(Per_id),
CHECK ( Regexp_like(E_id, 'P[0-9][0-9][0-9]'));

);


create table A_class_passenger(
Pass_id varchar(4) Primary Key,
No_children integer,
foreign key(Pass_id) references Person(Per_id),
CHECK ( Regexp_like(pass_id, 'P[0-9][0-9][0-9]'))
);
```

```
create table A_star_passenger(
Star_id varchar(4) PRIMARY KEY,
Foreign key(STAR_id) references A_CLASS_PASSENGER(Pass_id),
 CHECK ( Regexp_like(star_id,'P[0-9][0-9][0-9]'));

);


create table Route(
R_name varchar(10)Primary key
);

create table Time_table(
Record_id varchar(10)Primary key,
Intervals varchar(5),
Day_of_week varchar(15),
Start_time varchar(20),
End_time varchar(20),
CHECK ( Regexp_like(Record_id , 'DT[0-9][0-9]'))
);

Create table Bus_stop(
B_name varchar(10),
R_name varchar(10),
Primary key (B_name,R_name),
Foreign key(R_name) references Route(R_name)
);

Create table Bus(
Bus_no varchar(10),
Liscence_plate_no varchar(10),
No_seats int,
Record_id varchar(10),
R_name varchar(10),
Status varchar(10),
PRIMARY KEY (Bus_no,Record_id),
Foreign key(R_name) references Route(R_name),
Foreign key(Record_id) references Time_table(Record_id),
CHECK ( Regexp_like(Record_id , 'DT[0-9][0-9]'))

);
```

```
Create table Drives(
Driver_id varchar(4),
Hr int(2),
Dt date,
Bus_no varchar(10),
Primary key (driver_id,bus_no),
Foreign key(Driver_id) references Employee(E_id),
Foreign key(Bus_no) references Bus(Bus_no),
CHECK ( Regexp_like(driver_id, 'P[0-9][0-9][0-9]'))
);

Create table Terminal(
Ter_id varchar(10) PRIMARY KEY,
Tm varchar(10),
Dt date,
Location varchar(10),
Bus_no varchar(10),
Foreign key (Bus_no) references Bus(Bus_no)
);



Create table Passes(
Passes_id varchar(10) PRIMARY KEY,
Pass_id varchar(10),
Foreign key(Pass_id) references A_class_passenger(Pass_id),
CHECK ( Regexp_like(pass_id, 'P[0-9][0-9][0-9]'))
);

Create table Promotion(
Prom_id varchar(10) PRIMARY KEY,
Passes_id varchar(10) ,
Description varchar(50),
Foreign key(Passes_id) references Passes(Passes_id)
);

Create table Have(
Passes_id varchar(10),
Prom_id VARCHAR(10),
PRIMARY KEY(Passes_id, Prom_id),
Foreign key(Passes_id) references Passes(Passes_id),
```

```
Foreign key(Prom_id) references Promotion(Prom_id)
);

Create table Travel_card(
Card_no varchar(10) PRIMARY KEY,
Star_id varchar(4),
DOI date,
Foreign key(Star_id) references A_star_passenger(Star_id),
Check ( Regexp_like(star_id, 'P[0-9][0-9][0-9]'))
);


Create table Guest_1(
G_ssn varchar(10) PRIMARY KEY,
G_contact varchar(10),
G_address varchar(10),
G_name varchar(10),
);


Create table Guest_2(
Star_id varchar(10),
G_id varchar(10),
G_ssn varchar(10),
PRIMARY KEY(Star_id, G_id),
Foreign key(Star_id) references A_star_passenger(Star_id),
Foreign key (G_ssn) references Guest_1(G_ssn),
CHECK ( Regexp_like(star_id, 'P[0-9][0-9][0-9]'))
);

Create table Ticket(
T_id varchar(10) PRIMARY KEY,
Bus_id varchar(10),
Seat_no varchar(10),
Price int,
T_date date
);

Create table Payment(
Pay_id varchar(10) PRIMARY KEY,
Method varchar(20),
Amount int
);
```

```
Create table Buys(
Per_id varchar(10),
E_id varchar(10),
Ticket_id varchar(10),
Pay_id varchar(10),
FOREIGN KEY(Per_id) references Person(Per_id),
FOREIGN KEY(E_id) references Employee(E_id),
FOREIGN KEY(Ticket_id) references Ticket(T_id),
FOREIGN KEY(Pay_id) references Payment(Pay_id),
CHECK ( Regexp_like(E_id, 'P[0-9][0-9][0-9]')),
CHECK ( Regexp_like(per_id, 'P[0-9][0-9][0-9]'))
);
```

Constraints

```
ALTER TABLE Bus ADD CONSTRAINT  LP_Number unique(Liscence_plate_no);

ALTER TABLE A_class_passenger ADD CONSTRAINT max_children CHECK (No_children<6);

 ALTER TABLE Person ADD CONSTRAINT person_id CHECK ( Regexp_like (per_id,
'P[0-9][0-9][0-9]'));


ALTER TABLE  Passes ADD CONSTRAINT passengers_id CHECK ( Regexp_like(pass_id,
'P[0-9][0-9][0-9]'));

ALTER TABLE Time_table ADD CONSTRAINT Record_id_check CHECK (
Regexp_like(Record_id , 'DT[0-9][0-9]'));

ALTER TABLE Phone_no ADD CONSTRAINT p_id CHECK ( Regexp_like(per_id,
'P[0-9][0-9][0-9]'));

ALTER TABLE Buys ADD CONSTRAINT pe_id CHECK ( Regexp_like(per_id,
'P[0-9][0-9][0-9]'));

ALTER TABLE Buys ADD CONSTRAINT employee_id CHECK ( Regexp_like(E_id,
'P[0-9][0-9][0-9]'));

ALTER TABLE Employee ADD CONSTRAINT emp_id CHECK ( Regexp_like(E_id,
'P[0-9][0-9][0-9]'));
```

```
ALTER TABLE A_Star_passenger ADD CONSTRAINT empl_id CHECK ( Regexp_like(E_id,
'P[0-9][0-9][0-9]'));

ALTER TABLE A_Star_passenger ADD CONSTRAINT starpassen_id CHECK (
Regexp_like(star_id,'P[0-9][0-9][0-9]'));

ALTER TABLE A_Star_passenger ADD CONSTRAINT passen_id CHECK( Regexp_like
(pass_id,'P[0-9][0-9][0-9]'));


ALTER TABLE Guest_2 ADD CONSTRAINT starpass_id CHECK ( Regexp_like(star_id,
'P[0-9][0-9][0-9]'));


ALTER TABLE Travel_card ADD CONSTRAINT starpasseng_id CHECK ( Regexp_like(star_id,
'P[0-9][0-9][0-9]'));
ALTER TABLE A_class_passenger ADD CONSTRAINT pas_id CHECK ( Regexp_like(pass_id,
'P[0-9][0-9][0-9]'));

ALTER TABLE Person ADD CONSTRAINT age_check CHECK(((DATEDIFF(DOB,sysdate())))
> =16) ;
```

Create view querries

1) create or replace view top_a_star_passenger as (SELECT Person.Per_id, Person.F_name, Person.M_name, Person.L_name, Travel_card.DOI FROM Person JOIN Travel_card ON Person.Per_id = Travel_card.Star_id WHERE Person.Per_id IN (select star_id from a_star_passenger where star_id in(SELECT Per_id FROM Buys WHERE Ticket_id IN(SELECT T_id FROM Ticket WHERE DATEDIFF(sysdate(),T_date)<=365) GROUP BY Per_id HAVING Count(*)>=2)));(DONE VIEW)

2)CREATE OR REPLACE VIEW popular_bus as (SELECT x.bus_id,max(B_count) from (SELECT bus_id,COUNT(Bus_id) AS B_count FROM Ticket WHERE (DATEDIFF(sysdate(),T_date)<=730) Group by bus_id) as x);

3)CREATE OR REPLACE VIEW Top_dc_bus AS(select bus.bus_no,bus.Liscence_plate_no,bus.status, ticket.T_date from bus JOIN ticket ON Bus. Bus_no = Ticket.Bus_id where (bus.status='Delayed' or bus.status='Cancelled') And (DATEDIFF(sysdate(),ticket.T_date)<=30));

4) CREATE OR REPLACE VIEW Potential_a_star_passenger AS (SELECT distinct Person.Per_id, Person.F_name, Person.M_name, Person.L_name, Phone_no.Phone_no FROM Person JOIN Buys ON Person.Per_id = Buys.Per_id JOIN Phone_no ON Person.Per_id = Phone_no.Per_id WHERE Person.Per_id IN (SELECT per_id from (SELECT Per_id,Count(ticket_id) as y FROM Buys WHERE Ticket_id IN(SELECT T_id FROM Ticket WHERE DATEDIFF(sysdate(),T_date)<=60) group by per_id) as x where y>=3));

SELECT Person.Per_id, Person.F_name, Person.M_name, Person.L_name, Phone_no.Phone_no FROM Person JOIN Buys ON Person.Per_id = Buys.Per_id JOIN Phone_no ON Person.Per_id = Phone_no.Per_id WHERE Person.Per_id IN (SELECT per_id from (SELECT Per_id,Count(ticket_id) as y FROM Buys WHERE Ticket_id IN(SELECT T_id FROM Ticket WHERE DATEDIFF(sysdate(),T_date)<=60) group by per_id) as x where y>=3);

5) CREATE OR REPLACE VIEW Top_employee AS (SELECT F_name, M_name, L_name, Address, Gender, DOB FROM Person WHERE Per_id IN (SELECT E_id FROM Employee WHERE E_id IN (SELECT E_id FROM Buys WHERE Ticket_id IN(SELECT T_id FROM Ticket WHERE DATEDIFF(sysdate(),T_date)<=30))));

SQL Queries

1) SELECT Person.F_name, Person.M_name,Person.L_name, Employee.Type_flag FROM Person JOIN Employee ON Person.Per_id = Employee.E_id;

2) SELECT F_name, M_name, L_Name from Person WHERE Per_id IN(SELECT Employee.E_id FROM Employee JOIN A_class_passenger ON Employee.E_id = A_class_passenger.Pass_id);

3) select avg(t_cnt) from(select count(ticket_id) as t_cnt from buys,top_a_star_passenger where buys.Per_id=top_a_star_passenger.per_id group by buys.per_id) as x LIMIT 5; (Done Output)

4) SELECT Bus_id,R_name from Popular_bus;(Done Output)

5) SELECT distinct Bus_no FROM Top_dc_bus WHERE Bus_no IN(SELECT Bus_no FROM Top_dc_bus WHERE (SELECT COUNT(Bus_no) FROM Top_dc_bus WHERE Status= 'cancelled' AND DATEDIFF(sysdate(),T_date)<=30)>=3);

6) SELECT COUNT(T_id) FROM Ticket GROUP BY Bus_id;

7)SELECT distinct Person.Per_id, Person.F_name, Person.M_name, Person.L_name FROM Person JOIN Drives ON Person.Per_id = Drives.Driver_id WHERE Drives.Driver_id IN(SELECT driver_id FROM(SELECT driver_id,Dt, COUNT(Dt) as y FROM Drives WHERE DATEDIFF(sysdate(),Dt)<=7) as x WHERE y=7);

8)
SELECT COUNT(Per_id) FROM Buys WHERE Ticket_id IN (SELECT T_id FROM Ticket WHERE Bus_id IN(SELECT Bus_no from Popular_bus));

9) SELECT * FROM Ticket WHERE T_date > (SELECT MAX(Start_date) FROM Employee);

10) SELECT F_name, M_name, L_name FROM Person WHERE Per_id IN(SELECT E_id FROM Employee WHERE E_id IN(SELECT Travel_card.Star_id FROM Travel_card JOIN Employee ON Travel_card.Star_id = Employee.E_id WHERE DATEDIFF(Travel_card.DOI, Employee.Start_date)<=30));

11) SELECT R_name FROM Bus_stop GROUP BY R_name HAVING COUNT(B_name)= (SELECT MAX(Stop_count) FROM (SELECT R_name,COUNT(B_name) AS Stop_count FROM Bus_stop GROUP BY R_name)as x);

12) SELECT F_name, M_name, L_name FROM Person WHERE Per_id IN(SELECT Star_id FROM Travel_card WHERE DATEDIFF(sysdate(),DOI)>5);

13) SELECT T_id, Bus_id, Seat_no, Price, T_date FROM Ticket WHERE T_id IN(SELECT Ticket_id FROM Buys WHERE Per_id IN (SELECT Per_id FROM Potential_a_star_passenger));

Table Entries:

Person:

Insert into Person Values('P111', 'Johny','Noone','English','Richardson, Texas ','Male', '10-Nov-1997');

Insert into Person Values('P222','Mary','Brown','Jane','Dallas, Texas', 'Female', '1997-08-08');

Insert into Person Values('P333', 'James','James','Bond','Garland, Texas' ,'Male', '1990-02-28');

Insert into Person Values('P444', 'Patrick','Detective','Jane','Plano, Texas','Male', '1993-08-22');

Insert into Person Values('P555', 'Katie','Bayer','Smith','Richardson, Texas', 'Female', '1986-11-11');

Insert into Person Values('P666', 'White','Haha','Walker','Sadashiv Peth, Texas','Male', '1988-01-01');

Insert into Person Values('P777', 'Barbara','Benson','Davidson','Allen, Texas', 'Female','1973-11-11');

Insert into Person Values('P888', 'John','KnowNothing','Snow','Richardson, Texas','Male', '1997-03-21');

Insert into Person Values('P999', 'Arya','NoName','Stark','Irving, Texas', 'Female', '1996-01-11');

Insert into Person Values('P101', 'Kimble','Yo','Cho','Plano, Texas','Male', '1995-05-21');

Insert into Person Values('P102', 'Sansa','NoName','Stark','Plano, Texas', 'Female', '1976-10-11');

Insert into Person Values('P103', 'TuTuTu','Tu','Meri','Irving, Texas','Male',

'1994-06-12');

Insert into Person Values('P104', 'John','Hustle','Cena','Dallas, Texas','Male',
'1977-05-12');

Insert into Person Values('P105', 'Black','White','Widow','Plano, Texas', 'Female',
'1991-07-14');

Insert into Person Values('P106', 'Avenger','Doctor','Strange','Allen, Texas','Male',
'1988-07-12');

Insert into Person Values('P107', 'Avenger','Captain','America','Plano, Texas','Male',
'1997-07-12');

insert into Time_table values ('DT01','15m','M,W,F','08:00:00','23:00:00');
insert into Time_table values ('DT02','20m','T,Th,Sat','08:00:00','23:00:00');
insert into Time_table values ('DT03','25m','M,T,W,Th,F','08:00:00','23:00:00');
insert into Time_table values ('DT04','20m','M,T,W,Th,F,S,Su','08:00:00','23:00:00');
insert into Time_table values ('DT05','25m','M,W,,F','08:00:00','23:00:00');
insert into Time_table values ('DT06','10m','T,Th,Sat','08:00:00','23:00:00');
insert into Time_table values ('DT07','15m','M,T,W,Th,F','08:00:00','23:00:00');
insert into Time_table values ('DT08','30m','M,T,W,Th,F,S,Su','08:00:00','23:00:00');
insert into Time_table values ('DT09','05m','M,T,W','08:00:00','23:00:00');
insert into Time_table values ('DT10','25m','W,Th,F','08:00:00','23:00:00');
insert into Time_table values ('DT11','10m','M,T,W','06:00:00','00:00:00');

insert into Bus_stop values('Ashwood','Meandering');
insert into Bus_stop values('Chatham','Meandering');
insert into Bus_stop values('Palencia','Frankford');
insert into Bus_stop values('Pearl','Frankford');
insert into Bus_stop values('Estates_w','Frankford');
insert into Bus_stop values('Marquis','East');
insert into Bus_stop values('Estates_E','East');
insert into Bus_stop values('Prairee','East');
insert into Bus_stop values('Pradera','East');

insert into Route values ('East');
insert into Route values ('Frankford');

```
insert into Route values ('Meandering');

INSERT INTO EMPLOYEE values ('P333','2016-01-01','Checker');
INSERT INTO EMPLOYEE values ('P111',2014-01-01','Driver');
INSERT INTO EMPLOYEE values ('P222','2015-01-01','Staff');

INSERT INTO EMPLOYEE values ('P444','2017-01-01','Driver');
INSERT INTO EMPLOYEE values ('P555','2018-01-01','Staff');

insert into Phone_no values ('P107','1234321098');
insert into Phone_no values('P888','1234567890');
insert into Phone_no values('P222','1234567891');
insert into Phone_no values('P333','1234567892');
insert into Phone_no values('P444','1234567893');
insert into Phone_no values('P555','1234567894');
insert into Phone_no values('P666','1234567895');
insert into Phone_no values('P777','1234567896');
insert into Phone_no values('P999','1234567897');
insert into Phone_no values('P101','1234567898');
insert into Phone_no values('P102','1234567899');
insert into Phone_no values('P103','1234567800');
insert into Phone_no values('P104','1234567801');
insert into Phone_no values('P105','1234567802');
insert into Phone_no values('P106','1234567803');


insert into Bus values('883East','TX123',50,'DT01','East','Cancelled'');
insert into Bus values('8832East','TX124',50,'DT02','East','Cancelled');
insert into Bus values('8833Frank','TX125',50,'DT03','Frankford','Delayed');
insert into Bus values('883Frank','TX126',50,'DT04','Frankford','Delayed');
insert into Bus values('8833Meand','TX127',50,'DT05','Meandering','OnTime');
insert into Bus values('883Meand','TX128',50,'DT06','Meandering','Ontime');
 insert into Bus values('883Meand','TX129',50,'DT07','Meandering','Ontime');
insert into Bus values('8832East','TX130',50,'DT08','East','Cancelled');
insert into Bus values('883Meand','TX131',50,'DT09','Meandering','Ontime');
insert into Bus values('8832East','TX132',50,'DT10','East','Cancelled');
insert into Bus values('451Extra','TX133',50,'DT11','Meandering'','Ontime');

insert into ticket VALUES('T1','883East','1',20,'2019-11-10');
insert into ticket VALUES('T10','8832East','2',30,'2019-11-20');
insert into ticket VALUES('T3','883Frank','3',33,'2019-11-30');
insert into ticket VALUES('T4','8833Frank','4',21,'2019-01-10');
insert into ticket VALUES('T5','883Meand','5',50,'2014-11-10');
```

```
insert into ticket VALUES('T6','8833Meand','6',12,'2015-11-10');
insert into ticket VALUES('T7','883East','7',32,'2019-10-10');
insert into ticket VALUES('T11','8832East','8',54,'2019-11-10');
insert into ticket VALUES('T9','883Frank','9',23,'2019-11-20');
insert into ticket VALUES('T0','883Meand','10',31,'2014-11-10');

insert into buys values ('P666','P222','T1','Pay1');
insert into buys values ('P666','P222','T2','Pay2');
insert into buys values ('P666','P222','T3','Pay3');
insert into buys values ('P107','P222','T4','Pay5');
insert into buys values ('P107','P222','T5','Pay4');
insert into buys values ('P107','P555','T6','Pay6');
insert into buys values ('P104','P555','T7','Pay7');
insert into buys values ('P104','P555','T8','Pay8');
insert into buys values ('P104','P555','T9','Pay9');
insert into buys values ('P107','P222','T0','Pay0');




insert into A_class_Passenger values('P666',2);
insert into  A_class_Passenger values('P777',0);
insert into A_class_Passenger values('P888',1);
insert into A_class_Passenger values('P999',3);
insert into A_class_Passenger values('P101',2);
insert into A_class_Passenger values('P102',2);
insert into A_class_Passenger values('P103',1);
insert into A_class_Passenger values('P104',3);
insert into A_class_Passenger values('P105',4);
insert into A_class_Passenger values('P107',5);
insert into A_class_Passenger values('P111',2);
insert into A_class_Passenger values('P222',3);
insert into A_class_Passenger values('P333',4);


insert into A_STAR_PASSENGER values('P666');
insert into A_STAR_PASSENGER values('P101');
insert into A_STAR_PASSENGER values('P888');
insert into A_STAR_PASSENGER values('P107');
insert into A_STAR_PASSENGER values('P103');
insert into A_STAR_PASSENGER values('P111');
insert into A_STAR_PASSENGER values('P222');
insert into A_STAR_PASSENGER values('P333');
```

```
insert into Travel_card values ('C11','P111','2012-01-20');
insert into Travel_card values ('C12','P222','2015-01-20');
insert into Travel_card values ('C13','P333','2019-01-20');
insert into Travel_card values ('C14','P101','2014-01-20');
insert into Travel_card values ('C15','P103','2013-01-20');
insert into Travel_card values ('C16','P107','2014-01-20');
insert into Travel_card values ('C17','P666','2016-01-20');
insert into Travel_card values ('C18','P888','2017-01-20');

insert into Guest_1 values('S12345','123454321','Dallas','John');
insert into Guest_1 values('S123456','123454322','Richard','Sansa');
insert into Guest_1 values('S123457','123454323','Plano','Maisie');
insert into Guest_1 values('S123458','123454324','Dallas','Yo');
insert into Guest_1 values('S123459','123454325','Richard','jack');
insert into Guest_1 values('S123450','123454326','Plano','wanda');
insert into Guest_1 values('S123400','123454327','Dallas','Flower');
insert into Guest_1 values('S123401','123454328','Dallas','ha');

insert into Guest_2 values('P101','G1','S12345');
insert into Guest_2 values('P103','G2','S123456');
insert into Guest_2 values('P107','G3','S123457');
insert into Guest_2 values('P111','G4','S123458');
insert into Guest_2 values('P222','G5','S123459');
insert into Guest_2 values('P333','G6','S123450');
insert into Guest_2 values('P888','G7','S123400');
insert into Guest_2 values('P666','G8','S123401');

insert into Passes values('Pass1','P103');
insert into Passes values('Pass2','P104');
insert into Passes values('Pass3','P105');
insert into Passes values('Pass4','P107');
insert into Passes values('Pass5','P111');
insert into Passes values('Pass6','P222');
insert into Passes values('Pass7','P333');
insert into Passes values('Pass8','P666');
insert into Passes values('Pass9','P777');
insert into Passes values('Pass0','P888');
insert into Passes values('Pass11','P999');
insert into Passes values('Pass12','P101');
insert into Passes values('Pass13','P102');
```

```
insert into promotion values('Prom1','Pass1','20% OFF');
insert into promotion values('Prom2','Pass2','2 ticket free');
insert into promotion values('Prom3','Pass3','60% OFF');
insert into promotion values('Prom4','Pass4','Next ride free');
insert into promotion values('Prom5','Pass5','Better luck next time');
insert into promotion values('Prom6','Pass6','Cashback 1$');
insert into promotion values('Prom7','Pass1','20% OFF');
insert into promotion values('Prom8','Pass2','2 ticket free');
insert into promotion values('Prom9','Pass3','60% OFF');
insert into promotion values('Prom0','Pass4','Next ride free');
insert into promotion values('Prom11','Pass7','Better luck next time');
insert into promotion values('Prom12','Pass9','Cashback 1$');

insert into have values('Pass1','Prom1');
insert into have values('Pass2','Prom2');
insert into have values('Pass3','Prom3');
insert into have values('Pass4','Prom4');
insert into have values('Pass5','Prom5');
insert into have values('Pass6','Prom6');
insert into have values('Pass1','Prom7');
insert into have values('Pass2','Prom8');
insert into have values('Pass3','Prom9');
insert into have values('Pass4','Prom0');
insert into have values('Pass7','Prom11');
insert into have values('Pass9','Prom12');



insert into Payment values('Pay1','Card',20);
insert into Payment values('Pay2','Cash',30);
insert into Payment values('Pay3','Card',33);
insert into Payment values('Pay4','Cash',50);
insert into Payment values('Pay5','Card',21);
insert into Payment values('Pay6','Cash',12);
insert into Payment values('Pay7','Card',32);
insert into Payment values('Pay8','Cash',54);
insert into Payment values('Pay9','Card',23);
insert into Payment values('Pay0','Cash',31);



insert into Terminal Values('T001','22:00:00','2019-11-01','Visitor','883Frank');
```

```
insert into Terminal Values('T002','06:00:00','2018-01-01','Frankford','883Frank');
insert into Terminal Values('T003','12:00:00','2017-12-10','Frankford','8833Frank');
insert into Terminal Values('T004','16:00:00','2019-11-25','Visitor','8833Frank');
insert into Terminal Values('T005','22:00:00','2019-11-01','Visitor','883Meand');
insert into Terminal Values('T006','06:00:00','2018-01-01','Meandering','883Meand');
insert into Terminal Values('T007','12:00:00','2017-12-10','Meandering','8833Meand');
insert into Terminal Values('T008','16:00:00','2019-11-25','Visitor','8833Meand');
insert into Terminal Values('T009','22:00:00','22:00:00','2019-11-01','Visitor','883East');
insert into Terminal Values('T010','06:00:00','2018-01-01','Station','883East');
insert into Terminal Values('T011''12:00:00',,'2017-12-10','Station','8832East');
insert into Terminal Values('T012','16:00:00','2019-11-25','Visitor','8832East');


Insert into drives values('P111','6','2019-11-24','8833Frank');
Insert into drives values('P111','6','2019-11-25','883East');
Insert into drives values('P111','6','2019-11-26','8832East');
Insert into drives values('P111','6','2019-11-27','883Frank');
Insert into drives values('P111','6','2019-11-28','8833Meand');
Insert into drives values('P111','6','2019-11-29','883Meand');
Insert into drives values('P111','6','2019-11-30','8833Frank');
Insert into drives values('P444','6','2019-10-21','8833Frank');
Insert into drives values('P444','6','2019-10-25','8833Frank');
Insert into drives values('P444','6','2019-10-28','8833Frank');


insert into buys values ('P666','P222','T1','Pay1');
insert into buys values ('P777','P222','T2','Pay2');
insert into buys values ('P888','P222','T3','Pay3');
insert into buys values ('P999','P222','T4','Pay5');
insert into buys values ('P103','P555','T5','Pay4');
insert into buys values ('P103','P555','T6','Pay6');
insert into buys values ('P103','P555','T7','Pay7');
insert into buys values ('P103','P555','T8','Pay8');
insert into buys values ('P103','P555','T9','Pay9');
insert into buys values ('P103','P222','T0','Pay0');
```