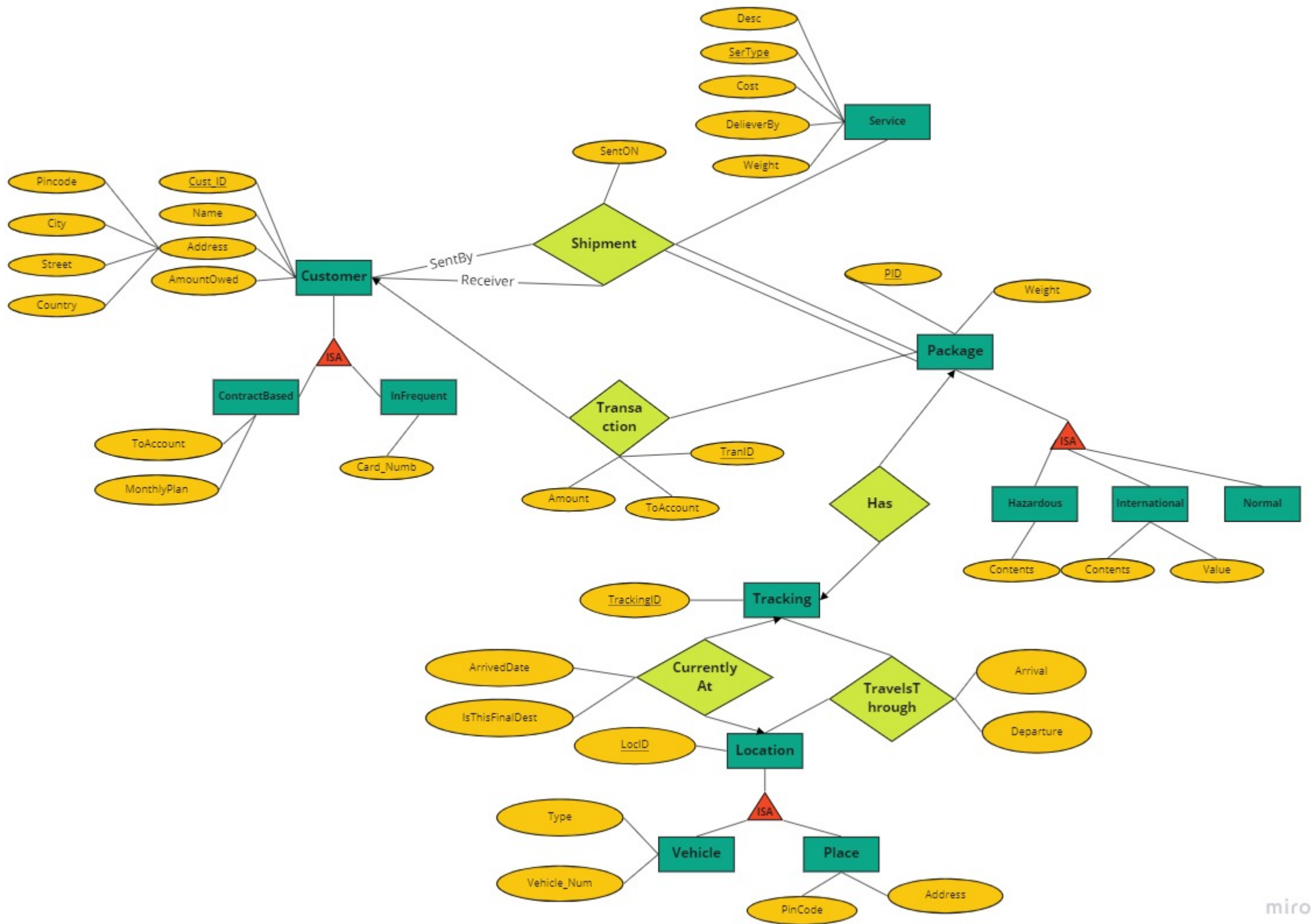


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CS355 Mini Project
Assignment



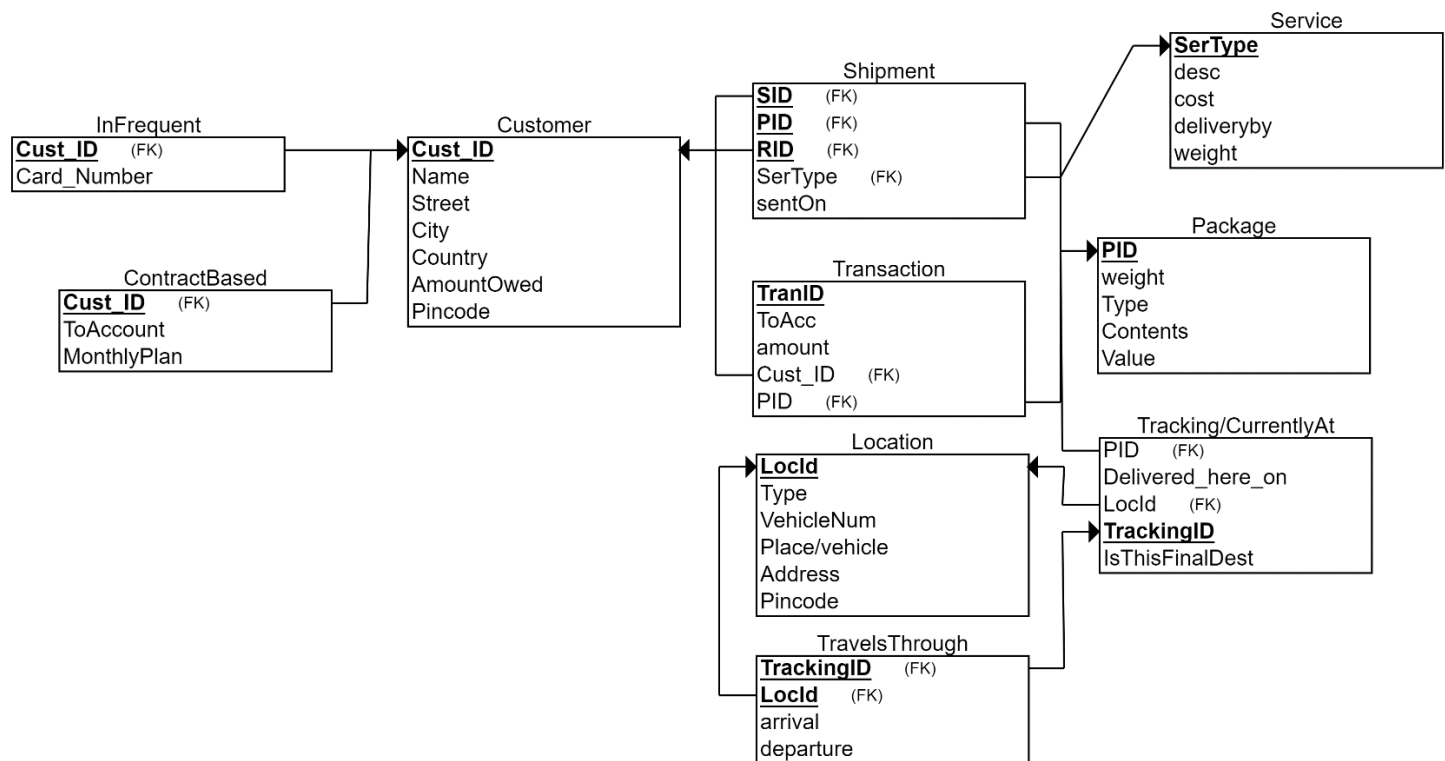
ER Diagram Description –

Entity Sets – customer , package , tracking , location , service .

Subgroups - customer { contract based , infrequent } , package { hazardous , international , normal } , Location { vehicle , place } .

Relations – Shipment , Transaction , Has , CurrentlyAt , travelsThrough .

Relational Schema -



Description –

Customer Table – Basic information of Customers .

ContractBased – Information about contract based customers monthly plan etc .

Infrequent – Card number information etc .

Shipment – Information of who sent what to whom with what service on which date .

Service – Different types of services possible for a delivery.

Package – Basic package information but if type – ‘international’ ask for content and value ,
if type – ‘hazardous’ ask for contents atleast .

Transaction – Which customer did the transaction for what package with how much amount to
whose account .

Tracking – In ER diagram there are two relations Has and CurrentlyAt on Tracking entity set
both are one to one so combine these and entity set and introduce new attribute
Isthisfinaldest – yes or no to tell whether it has reached the end path .

Location – This also had subgroups in ER diagram but can also be formulated as a single
table by combining all the child attributes .

TravelsThrough – Tells the trackingid package has reached which location on what date and
has left that location on what date . Triggered automatically as you update
CurrentlyAt/Tracking table .

#DBMS mini-project

mysql -uroot -p

1.

create database project ;
use project ;

2.

```
create table customer (  
  cust_id int ,  
  name varchar(30) ,  
  street varchar(30) ,  
  city varchar(30) ,  
  country varchar(20) ,  
  Amountowed int ,  
  Pincode int ,  
  constraint cust_id_pk0 primary key (cust_id)) ;
```

```
create table InFrequent (  
  cust_id int ,  
  card_number varchar(30) ,  
  constraint cust_id_pk1 primary key(cust_id) ,  
  constraint cust_id_fk1 foreign key (cust_id) references customer (cust_id)) ;
```

```
create table contractbased (  
  cust_id int ,  
  ToAccount varchar(30) ,  
  MonthlyPlan int ,  
  constraint cust_id_pk2 primary key(cust_id) ,  
  constraint cust_id_fk2 foreign key(cust_id) references customer (cust_id)) ;
```

```
create table Package (  
  pid int ,  
  weight int ,  
  type char(1) Not NULL check (type = 'N' OR type = 'T' OR type = 'H') ,  
  contents varchar(30) ,  
  value int ,  
  constraint pid_pk0 primary key (pid)) ;
```

```
create table Location (  
  LocID int ,  
  placeORvehicle varchar(30) ,  
  vehiclenum varchar(30) ,  
  Address varchar(30) ,  
  pincode int ,  
  type varchar(30) ,  
  constraint locid_pk0 primary key (LocID)) ;
```

```
create table Service (  
  SerType int ,  
  description varchar(30) ,  
  cost int ,  
  deliveryby int ,
```

```
weight int ,
constraint sertype_pk0 primary key (SerType) ) ;
```

```
create table Shipment (
sertype int ,
sid int ,
rid int ,
pid int ,
sentAt date ,
constraint pk_shipment primary key (sid , rid , pid) ,
constraint sid_fkship foreign key (sid) references customer (cust_id) ,
constraint rid_fkship foreign key (rid) references customer (cust_id) ,
constraint sertype_fkship foreign key (sertype) references service (sertype) ,
constraint pid_fkship foreign key (pid) references Package (pid) ) ;
```

```
create table Transaction (
TransId int ,
ToAcc varchar(30) ,
amount int ,
cust_id int,
pid int ,
constraint transId_pk1 primary key (TransId) ,
constraint pid_fkTrans foreign key (pid) references Package (pid) ,
constraint cust_id_fkTrans foreign key (cust_id) references customer (cust_id) ) ;
```

```
create table Tracking (
Trackingid int ,
pid int ,
Arrivedon date ,
locid int ,
isthisfinaldest char(1) not null check (isthisfinaldest = 'Y' or isthisfinaldest = 'N') ,
constraint trackingid_pk0 primary key (Trackingid) ,
constraint pid_fkTracking foreign key (pid) references Package (pid) ,
constraint locid_fkTracking foreign key (locid) references Location (locid)) ;
```

```
create table travelsthrough (
Trackingid int ,
LocID int ,
arrival date ,
departure date ,
constraint locid_trackingid_pk_travelsthu primary key (Trackingid,locid) ,
constraint trackingid_fktravelsthu foreign key (Trackingid) references Tracking (trackingid) ,
constraint locid_fktravelsthu foreign key (locid) references Location (locid) ) ;
```

3.

//Trigger to check if package is Hazardous or International then corresponding items should not be null //

delimiter \$\$

```
create trigger before_package_insert
before insert
on package
for each row
begin
```

```

if new.type = 'I' then
  if new.contents is NULL or new.value is NULL then
    signal sqlstate '45000'
    set message_text = 'International Package requires contents and value .' ;
  end if ;
end if ;

if new.type = 'H' then
  if new.contents is NULL then
    signal sqlstate '45001'
    set message_text = 'Hazardous material requires contents stated properly .' ;
  end if ;
end if ;
end$$

```

delimiter ;

//Trigger for inserting values in TravelThrough as first Value pops in //

delimiter \$\$

```

create trigger after_tracking_insert
after insert
on tracking
for each row
begin
  insert into TravelsThrough (trackingid , locid , arrival) values
  (new.trackingid , new.locid , new.arrivedon) ;
end$$

```

delimiter ;

//Trigger for inserting values in TravelThrough as updated location of Package //

delimiter \$\$

```

create trigger before_tracking_update
before update
on tracking
for each row
begin
  update TravelsThrough set departure = new.arrivedon where trackingid = old.trackingid and locid = old.locid;
  insert into TravelsThrough (trackingid , locid , arrival) values
  (old.trackingid , new.locid , new.arrivedon );
end$$

```

delimiter ;

//Trigger for inserting into location as a new customer's address is inserted //

delimiter \$\$

```

create trigger after_customer_insert
after insert
on customer
for each row
begin
declare x int ;
declare tot int ;
select count(*) into x from location where location.address = new.city and location.pincode = new.pincode ;
select count(*) into tot from location ;

if x < 1 then
insert into location (locid , placeorvehicle, address , pincode , type)
values (tot + 1 , 'Place' , new.city , new.pincode , 'cust_add') ;
end if ;

end$$

delimiter ;

```

//As soon as shipment/order is placed insert in tracking and generate a new tracking id //

```

delimiter $$

```

```

create trigger after_shipment_insert
after insert
on shipment
for each row
begin
declare cit varchar(30) ;
declare pin int ;
declare li int ;
declare ti int ;
select city into cit from customer where cust_id = new.sid ;
select pincode into pin from customer where cust_id = new.sid ;
select locid into li from location where address=cit and pincode=pin ;
select 999*new.pid + 37 into ti ;
insert into Tracking values (ti , new.pid , new.sentAt , li , 'N') ;

end$$

```

```

delimiter ;

```

4.

//Fill the Tables with Values //

```

insert into customer values
(1,"samrath" , 'curo highstreet' , 'jalandhar' , 'india' , 10 , 12345) ,
(2,"anmol" , 'rakshant' , 'jalandhar' , 'india' , 20 , 12332) ,
(3,"ashwin" , 'fig' , 'jaipur' , 'india' , 40 , 45325) ,
(4,"aryan" , 'fig' , 'jaipur' , 'india' , 100 , 45325) ,
(5,"aparsh" , 'fig' , 'jaipur' , 'india' , 440 , 45325) ,
(6,"radhika" , 'rakshant' , 'jalandhar' , 'india' , 1000 , 12332) ,
(7,"Amazon" , 'turn' , 'bangalore' , 'india' , 2000000 , 54078) ,
(8,"Ram&Sons" , 'turn' , 'bangalore' , 'india' , 700000 , 54078) ,
(9,"sincCo." , 'turn' , 'bangalore' , 'india' , 700000 , 54078) ,

```



```
(10,"mohan" , 'curo highstreet' , 'jalandhar' , 'india' , 1000 , 12332) ,
(11,"amit" , 'rakshant' , 'jalandhar' , 'india' , 2001 , 12332) ,
(12,"prabh" , 'mk ng' , 'patna' , 'india' , 100 , 87874) ,
(13,"ram" , 'mk ng' , 'patna' , 'india' , 200 , 87874) ,
(14,"sundar" , 'ganga rd' , 'kanpur' , 'india' , 780 , 45879) ,
(15,"satya" , 'ganga rd' , 'kanpur' , 'india' , 20 , 45879) ;
```

insert into contractbased values

```
(1 , '2345678910' , 100000) ,
(7 , '8878458910' , 1000000) ,
(8 , '2347412510' , 900000) ,
(9 , '2374169010' , 800000) ,
(15 , '1345678910' , 200000) ;
```

insert into infrequent values

```
(2, '1009876543') ,
(3, '17498741543') ,
(4, '14512586143') ,
(5, '17582236543') ,
(6, '142255888543') ,
(10, '100952147523') ,
(11, '10024214423') ,
(12, '557741876543') ,
(13, '552147876543') ,
(14, '77819876543') ;
```

insert into package values

```
(1,1,'N' , '-' , NULL),
(2,10,'N','-' , NULL),
(3,11,'N' , '-' , NULL),
(4,21,'N' , '-' , NULL),
(5,11,'N' , '-' , NULL),
(6,17,'N' , '-' , NULL),
(7,18,'N' , '-' , NULL),
(8,140,'N' , '-' , NULL),
(9,150,'H' , 'hcl',NULL),
(10,100,'H','acid',NULL),
(11,158,'H','liquor',NULL),
(12,41,'H','nails',NULL),
(13,71,'H','cosmetic',NULL),
(14,91,'H','acid',NULL),
(15,178,'H','methali',NULL),
(16,7,'T' , 'lap' , 143222),
(17,8,'T' , 'sofa' , 12212),
(18,71,'T' , 'dinner set' , 20000),
(19,7,'T' , 'jacket' , 988),
(20,15,'T' , 'mobile' , 87687),
(21,16,'T' , 'watch' , 76543),
(22,14,'T' , 'lap' , 187626),
(23,11,'T' , 'watch' , 87662),
(24,13,'T' , 'lap' , 98765),
(25,13,'T' , 'lap' , 876546) ;
```

//create a procedure for inserting in Normal package values

```

delimiter $$
create procedure fillpackage()
begin
declare x int ;
set x = 27 ;
while x <= 100 do
insert into package (pid , weight , type) values
(x,round(rand()*999)+1,'N') ;
set x = x + 1 ;
end while ;

```

```

end$$

```

```

delimiter ;

```

```

insert into service values
(1,'international' , 4000 , 1 , 10) ,
(2,'international' , 2000 , 2 , 100) ,
(3,'international' , 800 , 5 , 40) ,
(4,'international' , 200 , 7 , 70) ,
(5,'international' , 40 , 10 , 80) ,
(6,'national' , 2000 , 1 , 10) ,
(7,'national' , 1000 , 2 , 100) ,
(8,'national' , 500 , 5 , 40) ,
(9,'national' , 150 , 7 , 70) ,
(10,'national' , 70 , 10 , 80) ;

```

```

//create a procedure for filling shipment table //
delimiter $$

```

```

create procedure fillshipment()
begin
declare x int ;
declare a int ;
declare b int ;
declare c int ;
declare v int ;
declare dt date ;
set dt = "2017-01-01" ;
set x = 1 ;
while x <= 100 do
set x = x + 1 ;
set dt = date_add(dt , interval 12 day) ;
set a = round(rand()*9)+1 ;
set b = round(rand() * 14)+1 ;
set c = round(rand() * 14) +1;
insert into shipment values (a,b,c,x-1,dt) ;
end while ;
end$$

```

```

delimiter ;
call fillshipment() ;

```

```
//fill into location vehicles , warehouses ;
```

```
insert into location values
```

```
(1000,'vehicle','1721','- ',NULL,'Truck') ,  
(1001,'vehicle','UK1788','- ',NULL,'Airplane') ,  
(1002,'vehicle','KJ1211','- ',NULL,'Ship') ,  
(1003,'vehicle','LM8121','- ',NULL,'Truck') ,  
(1004,'vehicle','9721','- ',NULL,'Truck') ,  
(1005,'place','- ','Kanpur',100,'Warehouse') ,  
(1006,'place','- ','bombay',120,'Seaport') ,  
(1007,'place','- ','delhi',140,'Warehouse') ,  
(1008,'place','- ','kolkata',160,'port') ,  
(1009,'place','- ','hyderabad',180,'Warehouse') ;
```

```
//create a procedure for filling into transaction //
```

```
insert into transaction (transid , cust_id , pid) select pid * 999 + 97 , sid , pid from shipment ;
```

```
update transaction set toacc = round(rand()*999999999) ;
```

```
update transaction set amount = round(rand()*50000) ;
```

```
//fill Tracking Table
```

```
update tracking set locid = 1000 , arrivedon = curdate() where trackingid > 70000 ;
```

```
update tracking set locid = 1000 , arrivedon = '2020-06-08' where trackingid > 50000 and trackingid < 70000 ;
```

```
update tracking set locid = 1001 , arrivedon = '2020-08-08' where trackingid > 50000 and trackingid < 70000 ;
```

```
update tracking set locid = 1 , arrivedon = '2020-08-09' , isthisfinaldest='Y' where trackingid = 99937 ;
```

```
#5.
```

```
//Answering Queries
```

5.1

```
select cust_id , name from customer where cust_id in (  
select sid from shipment where pid in (  
select pid from tracking where locid in (  
select locid from location where vehiclenum = '1721')))) ;
```

Output =

```
+-----+-----+  
| cust_id | name |  
+-----+-----+  
| 1 | samrath |  
| 2 | anmol |  
| 3 | ashwin |  
| 4 | aryan |  
| 5 | aparsh |  
| 6 | radhika |  
| 7 | Amazon |  
| 8 | Ram&Sons |  
| 9 | sincCo. |  
| 10 | mohan |  
| 11 | amit |  
| 12 | prabh |  
| 13 | ram |  
| 14 | sundar |
```

+-----+-----+

5.2

```
select cust_id , name from customer where cust_id in (
select rid from shipment where pid in (
select pid from tracking where locid in (
select locid from location where vehiclenum = '1721')));
```

Output =

+-----+-----+

cust_id	name
2	anmol
3	ashwin
4	aryan
5	aparsh
6	radhika
7	Amazon
8	Ram&Sons
9	sincCo.
10	mohan
11	amit
12	prabh
13	ram
14	sundar
15	satya

+-----+-----+

5.3

```
select trackingid from travelsthrough where locid in (select locid from location where vehiclenum = '1721') order by
departure desc limit 1 ;
```

Output =

+-----+

trackingid

+-----+

99937

+-----+

5.4

```
select * from customer where cust_id in (
select sid from shipment where abs(datediff(sentat , curdate())) <= 365 group by sid having count(pid) = (
select max(x) from (select count(pid) as x from shipment where abs(datediff(sentat , curdate()))<= 365 group by si
d) as t ));
```

Output =

+-----+-----+-----+-----+-----+-----+

cust_id	name	street	city	country	Amountowed	Pincode
---------	------	--------	------	---------	------------	---------

+-----+-----+-----+-----+-----+-----+

8	Ram&Sons	turn	bangalore	india	700000	54078
---	----------	------	-----------	-------	--------	-------

9	sincCo.	turn	bangalore	india	700000	54078
---	---------	------	-----------	-------	--------	-------

+-----+-----+-----+-----+-----+-----+

5.5

```
select * from customer where cust_id in (
select sid from shipment natural join transaction where abs(datediff(sentat , curdate())) <= 365 and amount = (
select max(amount) from shipment natural join transaction where abs(datediff(sentat , curdate())) <= 365 )) ;
```

Output =

cust_id	name	street	city	country	Amountowed	Pincode
9	sincCo.	turn	bangalore	india	700000	54078

5.6

```
select street from customer group by street having count(cust_id) = (
select max(x) from (select count(cust_id) as x from customer group by street) as t) ;
```

Output =

street
rakshant
fig
turn

5.7

```
select * from package where pid in (
select shipment.pid from shipment , service , tracking where
shipment.pid = tracking.pid and shipment.sertype = service.sertype and adddate(shipment.sentat , interval service.d
eliveryby day) > tracking.arrivedon and
isthisfinaldest = 'Y' ) ;
```

Output =

Empty set

5.8

```
select * from customer where cust_id = 5 ;
```

Output =

cust_id	name	street	city	country	Amountowed	Pincode
5	aparsh	fig	jaipur	india	440	45325

5.9

```
select sertype as type , description as locality , cost as perkg_cost , deliveryby as DeliverWithinDays , weight as wt f
rom service ;
```

output =

type	locality	perkg_cost	DeliverWithinDays	wt
1	international	4000	1	10
2	international	2000	2	100

3	international	800	5	40
4	international	200	7	70
5	international	40	10	80
6	national	2000	1	10
7	national	1000	2	100
8	national	500	5	40
9	national	150	7	70
10	national	70	10	80

+-----+-----+-----+-----+-----+

5.10

```
select t1.name , t2.name , package.pid , sentat , shipment.sertype , (cost * package.weight) as Totalcost
from customer as t1 , customer as t2 , package , shipment , service where
t1.cust_id = shipment.sid and t2.cust_id = shipment.rid and package.pid = shipment.pid and shipment.sertype = ser
vice.sertype ;
```

Output =

name	name	pid	sentat	sertype	Totalcost
ram	ashwin	1	2017-01-13	4	200
ashwin	aparsh	2	2017-01-25	2	20000
anmol	Amazon	3	2017-02-06	10	770
Amazon	aparsh	4	2017-02-18	9	3150
samrath	mohan	5	2017-03-02	3	8800
satya	satya	6	2017-03-14	10	1190
ashwin	amit	7	2017-03-26	1	72000
ram	sincCo.	8	2017-04-07	3	112000
Ram&Sons	samrath	9	2017-04-19	5	6000
anmol	sincCo.	10	2017-05-01	7	100000
sundar	samrath	11	2017-05-13	6	316000
Amazon	aparsh	12	2017-05-25	4	8200
ashwin	ashwin	13	2017-06-06	3	56800
prabh	aparsh	14	2017-06-18	3	72800
Amazon	anmol	15	2017-06-30	2	356000
ashwin	ashwin	16	2017-07-12	9	1050
sincCo.	Ram&Sons	17	2017-07-24	5	320
aparsh	mohan	18	2017-08-05	10	4970
ram	ram	19	2017-08-17	2	14000
Ram&Sons	sundar	20	2017-08-29	8	7500
ram	samrath	21	2017-09-10	2	32000
ashwin	Ram&Sons	22	2017-09-22	5	560
ashwin	aparsh	23	2017-10-04	2	22000
aparsh	Amazon	24	2017-10-16	1	52000
anmol	Amazon	25	2017-10-28	3	10400
ashwin	aryan	26	2017-11-09	9	47400
ram	prabh	27	2017-11-21	5	11040
ashwin	sundar	28	2017-12-03	4	48800
sundar	aryan	29	2017-12-15	2	782000
amit	mohan	30	2017-12-27	3	178400
aparsh	sincCo.	31	2018-01-08	3	751200
ram	sundar	32	2018-01-20	2	62000
sundar	anmol	33	2018-02-01	2	670000
ram	radhika	34	2018-02-13	6	1162000

prabh	mohan	35	2018-02-25	4	180400	
sundar	amit	36	2018-03-09	10	53690	
Amazon	anmol	37	2018-03-21	7	127000	
ashwin	Ram&Sons	38	2018-04-02	2	660000	
ram	ashwin	39	2018-04-14	2	546000	
ram	aparsh	40	2018-04-26	2	740000	
prabh	ram	41	2018-05-08	8	16500	
ram	mohan	42	2018-05-20	9	8100	
sundar	ram	43	2018-06-01	6	340000	
prabh	amit	44	2018-06-13	7	686000	
amit	radhika	45	2018-06-25	4	184200	
aparsh	sincCo.	46	2018-07-07	7	546000	
radhika	aparsh	47	2018-07-19	8	483500	
sundar	mohan	48	2018-07-31	4	39800	
mohan	prabh	49	2018-08-12	6	186000	
prabh	radhika	50	2018-08-24	8	431000	
anmol	ashwin	51	2018-09-05	5	1480	
Ram&Sons	Ram&Sons	52	2018-09-17	4	119000	
anmol	mohan	53	2018-09-29	9	129750	
samrath	anmol	54	2018-10-11	10	37940	
ashwin	anmol	55	2018-10-23	3	91200	
radhika	prabh	56	2018-11-04	7	941000	
anmol	radhika	57	2018-11-16	7	365000	
aparsh	radhika	58	2018-11-28	7	2000	
ram	radhika	59	2018-12-10	10	63910	
sincCo.	mohan	60	2018-12-22	2	1120000	
prabh	prabh	61	2019-01-03	4	12400	
anmol	Amazon	62	2019-01-15	7	626000	
amit	aryan	63	2019-01-27	8	473500	
anmol	sincCo.	64	2019-02-08	10	59920	
ram	mohan	65	2019-02-20	5	17600	
prabh	mohan	66	2019-03-04	8	315500	
sundar	sincCo.	67	2019-03-16	10	58520	
Ram&Sons	prabh	68	2019-03-28	3	228000	
ram	prabh	69	2019-04-09	5	36640	
Ram&Sons	ram	70	2019-04-21	6	1456000	
Amazon	radhika	71	2019-05-03	6	1780000	
sincCo.	aryan	72	2019-05-15	6	534000	
Amazon	prabh	73	2019-05-27	5	26480	
amit	satya	74	2019-06-08	8	254000	
radhika	aparsh	75	2019-06-20	9	83100	
aryan	prabh	76	2019-07-02	5	9800	
radhika	prabh	77	2019-07-14	4	112600	
radhika	mohan	78	2019-07-26	8	39000	
prabh	Ram&Sons	79	2019-08-07	2	1400000	
aparsh	ram	80	2019-08-19	2	536000	
ashwin	ashwin	81	2019-08-31	6	480000	
radhika	sincCo.	82	2019-09-12	4	78400	
ram	Ram&Sons	83	2019-09-24	9	36150	
samrath	Amazon	84	2019-10-06	9	3900	
aparsh	anmol	85	2019-10-18	2	814000	
sundar	radhika	86	2019-10-30	5	38200	
mohan	sincCo.	87	2019-11-11	9	83550	
Ram&Sons	ram	88	2019-11-23	9	137400	

