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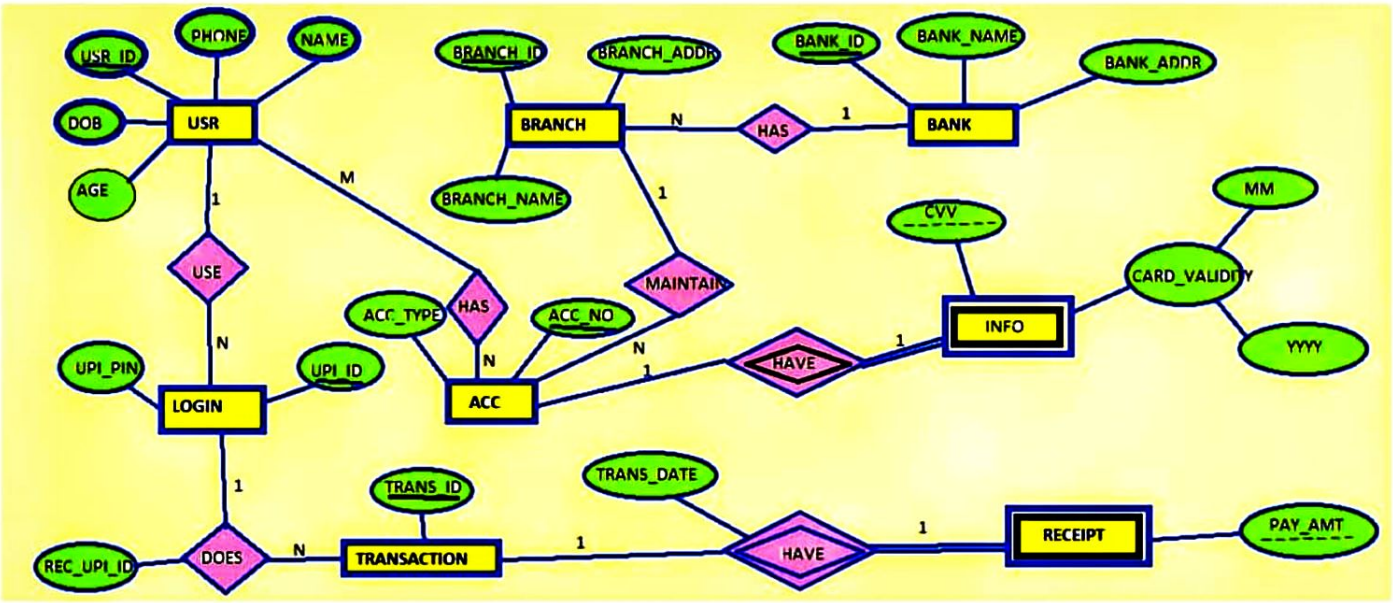
UPI PAYMENT DATABASE SYSTEM

ER-MODEL:-



DESCRIPTION OF ER MODEL:-

We used the concept of UPI payment system to create our own database system. Here we included some of the information to decide the entities and relationships with cardinality.The entities and relations are as follows:-

ENTITIES:-

USR:-

This entity is used for the information of an user who uses the account to do an UPI payment and this entity have attributes named usr_id which acts like a primary key that used to identify each user,name for user name,phone for user phone number and

DOB for date of birth of an user.And the attribute which is age i.e derived attribute will not appear when we convert it into tables because as it can derived from the DOB attribute and it is identified by the dotted eclipse.

BANK:-

This entity is used for the information of the banks and has an attribute called bank_id which is a primary key and used to identify each bank and have the attributes called bank_name for bank's name and bank_addr for bank's address.

BRANCH:-

This entity is used for the information of the branches and this is identified uniquely by branch_id attribute which acts like a primary key and the have remaining attributes branch_name for branch's name and branch_addr for branch's address.

ACC:-

This entity is used for the information of all accounts and the attributes used for this are acc_no which is a primary key and uniquely identifies each account and has another attribute called acc_type for account type.

LOGIN:-

This entity will have the information of the login details of an user to do an UPI payment and have the attributes called upi_id for the UPI id which acts like an username and upi_pin which acts like a password for the username of an user.

INFO:-

This entity is used for extra information of an acc entity have the attributes called cvv and which alone can't be a primary key and this entity is a dependent entity and has another attribute which is a composite attribute which has mm and yyyy attributes which is used as expiry date of a card.

TRANSACTION:-

This entity is used for having the trans_id attribute which is a primary key and used for uniquely identify a transaction.And has a relation having an attribute of rec_upi_id and this is included in the transaction table while converting into table.

RECEIPT:-

This is a dependent entity and have the pay_amt attribute which alone can't work as a primary key and the primary key is attained when we convert the er model into relational model(tables).And the pay_amt is the amount paid and the entity is used as extra information of the transaction entity having 'have' as a relation and this relation has the attribute of trans_date and which is used for the date of transaction and this is included in the receipt entity when we convert er model into relational database i.e tables.

RELATIONALS WITH CARDINALITY:-

BANK AND BRANCH:-

Here we have a relation i.e bank has branch i.e having 1:n cardinality because as we are having each bank can have many branches but each branch belongs to only one bank i.e branch can't belong to two or more banks. So we have the cardinality of 1:n.

BRANCH AND ACC:-

Here we have a relation i.e branch maintain account and cardinality is 1:n i.e as a branch have many accounts but the single account can't belong to many branches.So we have a cardinality of 1:n.

USER AND ACC:-

Here the relation is user has account and the cardinality is m:n as we are having an user can have multiple accounts and we are also having that each account can belong to two users i.e joint account .So we arrive at the condition of m:n cardinality.

ACC AND INFO:-

Here we have an relation i.e account has info and here the info entity is dependent on account entity so we will be having the primary key as a combination of two or more attributes and the cardinality we have is 1:1 as each account has as single info i.e information (cvv,card validity) and the info belong to single account according to our assumptions.So we arrive at the 1:1 cardinality.

USER AND LOGIN:-

The relation is user use to login and the cardinality here is 1:n i.e user can have multiple login accounts but each login account belongs to only one user.These are the assumptions we have made for er model.So we arrive at cardinality of 1:n.

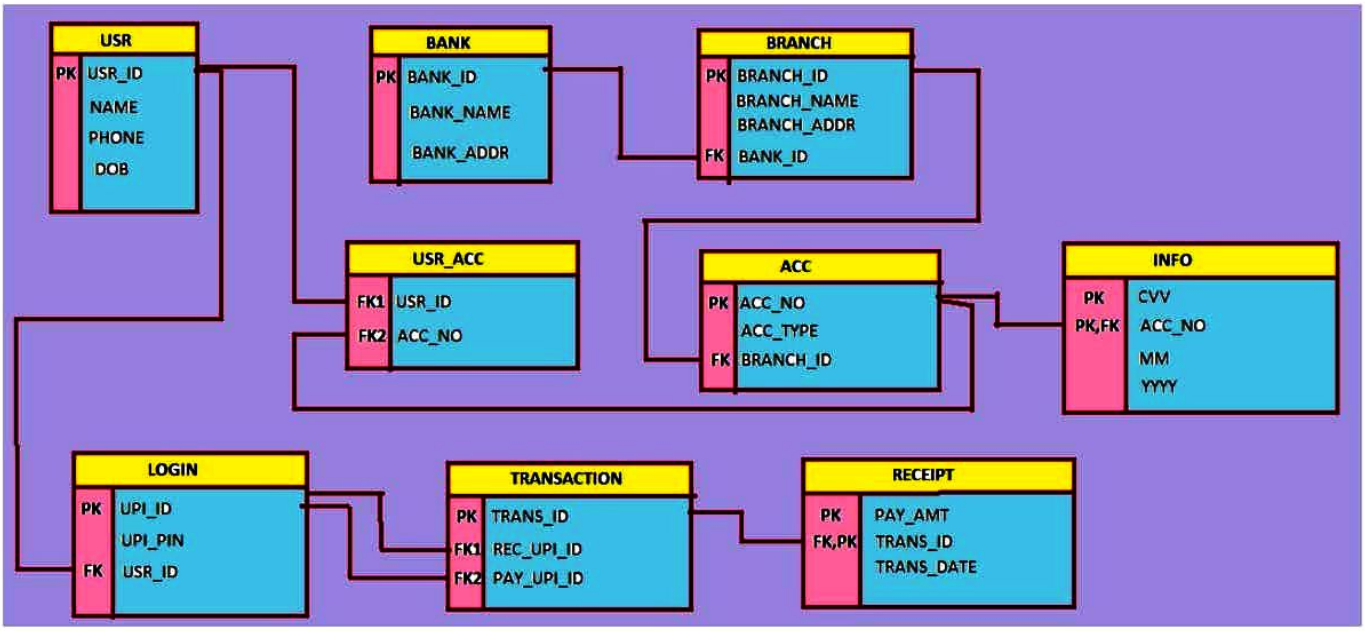
LOGIN AND TRANSACTION:-

Here the relation is login does transaction i.e transaction is done through a certain login account. And the cardinality here is 1:n i.e each login account can do multiple accounts but the single transaction belongs to only one login account. So we arrive at cardinality of 1:n.

TRANSACTION AND RECEIPT:-

Here the relation is transaction have a receipt and the cardinality is 1:1 and the receipt is the dependent entity and have an attribute of trans_date and which will be involved in receipt and here as a transaction will have only one receipt and each receipt will have details of only one transaction.So we arrive at cardinality of 1:1.

ER MODEL TO RELATIONAL MODEL:-



DESCRIPTION OF RELATIONAL MODEL:-

Here er model is converted into relational model by using following conditions:-
All 1:n cardinality relations are converted as follows:- n side table will be having foreign key and this foreign key references primary key of 1 side table.

All dependent entities will have a combinational primary key i.e the dependent entity's primary key and the partial primary key(i.e alone can't be used as a primary key).

And for a m:n cardinality of usr and acc we create a separate table called as usr_acc and will have two attributes which are foreign keys to the primary keys of the two tables i.e usr and acc tables.

All the attributes that are marked to the relation i.e for login-transaction relation and transaction-receipt relation are converted to the transaction and receipt tables respectively.

UPI PAYMENT DATABASE FROM RELATIONAL MODEL:-

USR(USR_ID,NAME,PHONE,DOB);

BANK(BANK_ID,BANK_NAME,BANK_ADDR);

BRANCH(BRANCH_ID,BRANCH_NAME ,BANK_ID,BRANCH_ADDR)

ACC(ACC_NO,ACC_TYPE,BRANCH_ID);

INFO(CVV,MM,YYYY,ACC_NO);

USR_ACC(USR_ID,ACC_NO);

LOGIN(UPI_ID,UPI_PIN,USR_ID);

TRANSACTION(TRANS_ID,PAY_UPI_ID,REC_UPI_ID);

RECEIPT(PAY_AMT,TRANS_ID,TRANS_DATE);

SQL:-

CREATION OF TABLES:-

```
CREATE TABLE USR(USR_ID INT PRIMARY KEY,NAME VARCHAR2(20),PHONE
INT,DOB DATE);

CREATE TABLE BANK(BANK_ID INT PRIMARY KEY,BANK_NAME
VARCHAR2(20),BANK_ADDR VARCHAR2(20));

CREATE TABLE BRANCH(BRANCH_ID INT PRIMARY KEY,BRANCH_NAME
VARCHAR2(20),BANK_ID INT,
BRANCH_ADDR VARCHAR2(20),
FOREIGN KEY(BANK_ID) REFERENCES BANK(BANK_ID));

CREATE TABLE ACC(ACC_NO INT PRIMARY KEY,ACC_TYPE
VARCHAR2(20),BRANCH_ID INT,
FOREIGN KEY(BRANCH_ID) REFERENCES BRANCH(BRANCH_ID));

CREATE TABLE INFO(CVV INT,MM INT,YYYY INT,ACC_NO INT,
FOREIGN KEY(ACC_NO) REFERENCES ACC(ACC_NO),
PRIMARY KEY(CVV,ACC_NO));

CREATE TABLE USR_ACC(USR_ID INT,ACC_NO,
FOREIGN KEY(USR_ID) REFERENCES USR(USR_ID),
FOREIGN KEY(ACC_NO) REFERENCES ACC(ACC_NO)
);

CREATE TABLE LOGIN(UPI_ID VARCHAR2(20) PRIMARY KEY,
UPI_PIN INT,USR_ID INT,
FOREIGN KEY(USR_ID) REFERENCES USR(USR_ID)
);

CREATE TABLE TRANSACTION(
TRANS_ID INT PRIMARY KEY,PAY_UPI_ID VARCHAR(20),REC_UPI_ID
VARCHAR(20),
FOREIGN KEY(PAY_UPI_ID) REFERENCES LOGIN(UPI_ID),
FOREIGN KEY(REC_UPI_ID) REFERENCES LOGIN(UPI_ID));

CREATE TABLE RECEIPT(PAY_AMT INT,TRANS_ID INT,TRANS_DATE DATE,
FOREIGN KEY(TRANS_ID) REFERENCES TRANSACTION(TRANS_ID),
PRIMARY KEY(PAY_AMT,TRANS_ID));
```

INSERTION OF TABLES:-

USR TABLE:-

```
insert into USR values(1915817892,'vikas',9987658429,'01-12-2001');
insert into USR values(1589644852,'ramesh',6358669720,'01-08-2000');
insert into USR values(1256698457,'ram',9989654832,'25-08-1989');
insert into USR values(1235698865,'naveen',8554769253,'24-09-1999');
insert into USR values(1998575569,'rajesh',9574486777,'12-02-1992');
insert into USR values(1558569568,'sita',9951118123,'04-11-2000');
insert into USR values(1210025483,'sneha',8554288935,'15-07-2003');
insert into USR values(1985567356,'nandan',9954788912,'16-08-1995');
insert into USR values(1558769245,'priya',9447785486,'18-05-2003');
insert into USR values(1225867923,'kiran',8985868789,'23-09-1988');
```

BANK TABLE:-

```
insert into BANK values(191,'yesbank','Banglore');
insert into BANK values(158,'icici','Hyderabad');
insert into BANK values(125,'sbi','Vijayawada');
insert into BANK values(123,'sbi','Chennai');
insert into BANK values(199,'yesbank','Delhi');
insert into BANK values(155,'icici','Vijayawada');
insert into BANK values(121,'sbi','Banglore');
insert into BANK values(198,'yesbank','Hydearabad');
insert into BANK values(122,'sbi','Mumbai');
```

BRANCH TABLE:-

```
insert into BRANCH values(1581,'SBIEASTBNG',191,'EASTBANGLORE');
insert into BRANCH values(8964,'ICICIMADHAPUR',158,'MADHAPUR');
insert into BRANCH values(5669,'SBIBCIRCLEVJD',125,'BENZCIRCLE');
insert into BRANCH values(3569,'SBIKALATHUR',123,'KATANKALATHUR');
insert into BRANCH values(9857,'SBINORTHDLI',199,'NORTHDELHI');
insert into BRANCH values(5856,'ICICICNAGARVJD',155,'CURRENCYNAGAR');
insert into BRANCH values(1002,'SBIEASTBNG',121,'EASTBANGLORE');
insert into BRANCH values(8556,'YESBANKSRNAGARHYD',198,'SRNAGAR');
insert into BRANCH values(5876,'ICICIBCIRCLEVJD',155,'BENZCIRCLE');
insert into BRANCH values(2586,'SBIOLDBMBI',122,'OLDBOMBAY');
```

ACC TABLE:-

```
insert into ACC values(5817892,'savings',1581);
insert into ACC values(9644852,'FD',8964);
insert into ACC values(6698457,'FD',5669);
insert into ACC values(5698865,'savings',3569);
insert into ACC values(8575569,'FD',9857);
insert into ACC values(8569568,'savings',5856);
insert into ACC values(0025483,'FD',1002);
insert into ACC values(5567356,'savings',8556);
insert into ACC values(8769245,'savings',5876);
insert into ACC values(5867923,'FD',2586);
```

INFO TABLE:-

```
insert into INFO values(847,12,2024,5817892);
insert into INFO values(108,10,2022,9644852);
insert into INFO values(653,06,2022,6698457);
insert into INFO values(897,11,2021,5698865);
insert into INFO values(667,09,2023,8575569);
insert into INFO values(256,10,2021,8569568);
insert into INFO values(859,02,2023,0025483);
insert into INFO values(189,04,2023,5567356);
insert into INFO values(225,03,2023,8769245);
insert into INFO values(699,07,2022,5867923);
```

USR_ACC TABLE:-

```
insert into USR_ACC values(1915817892,5817892);
insert into USR_ACC values(1589644852,9644852);
insert into USR_ACC values(1256698457,6698457);
insert into USR_ACC values(1235698865,5698865);
insert into USR_ACC values(1998575569,8575569);
insert into USR_ACC values(1558569568,8569568);
insert into USR_ACC values(1210025483,0025483);
insert into USR_ACC values(1985567356,5567356);
insert into USR_ACC values(1558769245,8769245);
insert into USR_ACC values(1225867923,5867923);
```

LOGIN TABLE:-

```
insert into LOGIN values('vikas01@okicici',202120,1915817892);
insert into LOGIN values('ramesh@ybl',2025,1589644852);
insert into LOGIN values('ram21@okicici',965542,1256698457);
insert into LOGIN values('naveen34@oksbi',586497,1235698865);
insert into LOGIN values('rajesh@ybl',7448,1998575569);
insert into LOGIN values('sita@oksbi',085732,1558569568);
insert into LOGIN values('sneha@oksbi',256345,1210025483);
insert into LOGIN values('nandan@okicici',564564,1985567356);
insert into LOGIN values('priya@ybl',319045,1558769245);
insert into LOGIN values('kiran@ybl',665986,1225867923);
```

TRANSACTION TABLE:-

```
insert into TRANSACTION values(21202025,'vikas01@okicici','ramesh@ybl');
insert into TRANSACTION values(20256497,'ramesh@ybl','naveen34@oksbi');
insert into TRANSACTION values(55425732,'ram21@okicici','sita@oksbi');
insert into TRANSACTION values(64975986,'naveen34@oksbi','kiran@ybl');
insert into TRANSACTION values(74484564,'rajesh@ybl','nandan@okicici');
insert into TRANSACTION values(75329045,'sita@oksbi','priya@ybl');
insert into TRANSACTION values(63452025,'sneha@oksbi','vikas01@okicici');
insert into TRANSACTION values(45645542,'nandan@okicici','ram21@okicici');
insert into TRANSACTION values(90455986,'priya@ybl','kiran@ybl');
insert into TRANSACTION values(59869045,'kiran@ybl','priya@ybl');
insert into TRANSACTION values(21209045,'vikas01@okicici','priya@ybl');
insert into TRANSACTION values(20255986,'ramesh@ybl','kiran@ybl');
insert into TRANSACTION values(45647448,'nandan@okicici','rajesh@ybl');
insert into TRANSACTION values(55426345,'ram21@okicici','sneha@oksbi');
insert into TRANSACTION values(57324564,'sita@oksbi','naveen34@oksbi');
```

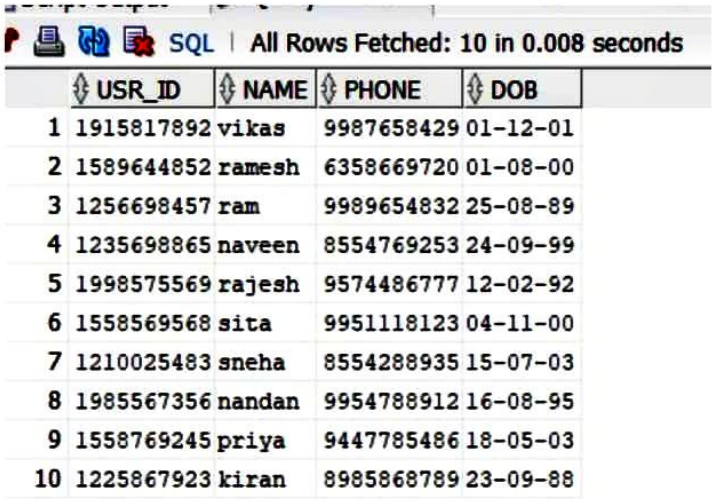
RECEIPT TABLE:-

```
insert into RECEIPT values(200,21202025,'01-02-2020');
insert into RECEIPT values(5000,20256497,'15-12-2021');
insert into RECEIPT values(325,55425732,'16-10-2019');
insert into RECEIPT values(4689,64975986,'18-07-2020');
insert into RECEIPT values(5,74484564,'06-03-2021');
insert into RECEIPT values(60,75329045,'15-08-2021');
insert into RECEIPT values(149,63452025,'01-06-2020');
```

```
insert into RECEIPT values(266,45645542,'02-10-2021');
insert into RECEIPT values(20000,90455986,'14-11-2020');
insert into RECEIPT values(302,59869045,'05-09-2019');
insert into RECEIPT values(66,21209045,'14-04-2021');
insert into RECEIPT values(143,20255986,'14-02-2021');
insert into RECEIPT values(420,45647448,'16-06-2020');
insert into RECEIPT values(798,55426345,'18-05-2021');
insert into RECEIPT values(100,57324564,'23-11-2019');
```

TABLES IN SQL:-

USR TABLE:-



SQL | All Rows Fetched: 10 in 0.008 seconds

	USR_ID	NAME	PHONE	DOB
1	1915817892	vikas	9987658429	01-12-01
2	1589644852	ramesh	6358669720	01-08-00
3	1256698457	ram	9989654832	25-08-89
4	1235698865	naveen	8554769253	24-09-99
5	1998575569	rajesh	9574486777	12-02-92
6	1558569568	sita	9951118123	04-11-00
7	1210025483	sneha	8554288935	15-07-03
8	1985567356	nandan	9954788912	16-08-95
9	1558769245	priya	9447785486	18-05-03
10	1225867923	kiran	8985868789	23-09-88

BANK TABLE:-

SQL | All Rows Fetched: 9 in 0.004 seconds

	BANK_ID	BANK_NAME	BANK_ADDR
1	191	yesbank	Banglore
2	158	icici	Hyderabad
3	125	sbi	Vijayawada
4	123	sbi	Chennai
5	199	yesbank	Delhi
6	155	icici	Vijayawada
7	121	sbi	Banglore
8	198	yesbank	Hydearabad
9	122	sbi	Mumbai

BRANCH TABLE:-

SQL | All Rows Fetched: 10 in 0.003 seconds

	BRANCH_ID	BRANCH_NAME	BANK_ID	BRANCH_ADDR
1	1581	SBIEASTBNG	191	EASTBANGLORE
2	8964	ICICIMADHAPUR	158	MADHAPUR
3	5669	SBIBCIRCLEVJD	125	BENZCIRCLE
4	3569	SBIKALATHUR	123	KATANKALATHUR
5	9857	SBINORTHDLI	199	NORTHDELHI
6	5856	ICICICNAGARVJD	155	CURRENCYNAGAR
7	1002	SBIEASTBNG	121	EASTBANGLORE
8	8556	YESBANKSRNAGARHYD	198	SRNAGAR
9	5876	ICICIBCIRCLEVJD	155	BENZCIRCLE
10	2586	SBIOLDBMBI	122	OLDBOMBAY

ACC TABLE:-

Script Output | Query Result

SQL | All Rows Fetched: 10 in 0.002 seconds

	ACC_NO	ACC_TYPE	BRANCH_ID
1	5817892	savings	1581
2	9644852	FD	8964
3	6698457	FD	5669
4	5698865	savings	3569
5	8575569	FD	9857
6	8569568	savings	5856
7	25483	FD	1002
8	5567356	savings	8556
9	8769245	savings	5876
10	5867923	FD	2586

INFO TABLE:-

SQL | All Rows Fetched: 10 in 0.003 seconds

	CVV	MM	YYYY	ACC_NO
1	847	12	2024	5817892
2	108	10	2022	9644852
3	653	6	2022	6698457
4	897	11	2021	5698865
5	667	9	2023	8575569
6	256	10	2021	8569568
7	859	2	2023	25483
8	189	4	2023	5567356
9	225	3	2023	8769245
10	699	7	2022	5867923

USR_ACC TABLE:-

SQL | All Rows Fetched: 10 in 0.004 seconds

	USR_ID	ACC_NO
1	1915817892	5817892
2	1589644852	9644852
3	1256698457	6698457
4	1235698865	5698865
5	1998575569	8575569
6	1558569568	8569568
7	1210025483	25483
8	1985567356	5567356
9	1558769245	8769245
10	1225867923	5867923

LOGIN TABLE:-

Script Output × | Query Result ×

SQL | All Rows Fetched: 10 in 0.002 seconds

	UPI_ID	UPI_PIN	USR_ID
1	vikas01@okicici	202120	1915817892
2	ramesh@ybl	2025	1589644852
3	ram21@okicici	965542	1256698457
4	naveen34@oksbi	586497	1235698865
5	rajesh@ybl	7448	1998575569
6	sita@oksbi	85732	1558569568
7	sneha@oksbi	256345	1210025483
8	nandan@okicici	564564	1985567356
9	priya@ybl	319045	1558769245
10	kiran@ybl	665986	1225867923

TRANSACTION TABLE:-

SQL | All Rows Fetched: 15 in 0.006 seconds

	TRANS_ID	PAY_UPI_ID	REC_UPI_ID
1	21202025	vikas01@okicici	ramesh@ybl
2	20256497	ramesh@ybl	naveen34@oksbi
3	55425732	ram21@okicici	sita@oksbi
4	64975986	naveen34@oksbi	kiran@ybl
5	74484564	rajesh@ybl	nandan@okicici
6	75329045	sita@oksbi	priya@ybl
7	63452025	sneha@oksbi	vikas01@okicici
8	45645542	nandan@okicici	ram21@okicici
9	90455986	priya@ybl	kiran@ybl
10	59869045	kiran@ybl	priya@ybl
11	21209045	vikas01@okicici	priya@ybl
12	20255986	ramesh@ybl	kiran@ybl
13	45647448	nandan@okicici	rajesh@ybl
14	55426345	ram21@okicici	sneha@oksbi
15	57324564	sita@oksbi	naveen34@oksbi

RECEIPT TABLE:-

SQL | All Rows Fetched: 15 in 0.005 seconds

	PAY_AMT	TRANS_ID	TRANS_DATE
1	200	21202025	01-02-20
2	5000	20256497	15-12-21
3	325	55425732	16-10-19
4	4689	64975986	18-07-20
5	5	74484564	06-03-21
6	60	75329045	15-08-21
7	149	63452025	01-06-20
8	266	45645542	02-10-21
9	20000	90455986	14-11-20
10	302	59869045	05-09-19
11	66	21209045	14-04-21
12	143	20255986	14-02-21
13	420	45647448	16-06-20
14	798	55426345	18-05-21
15	100	57324564	23-11-19