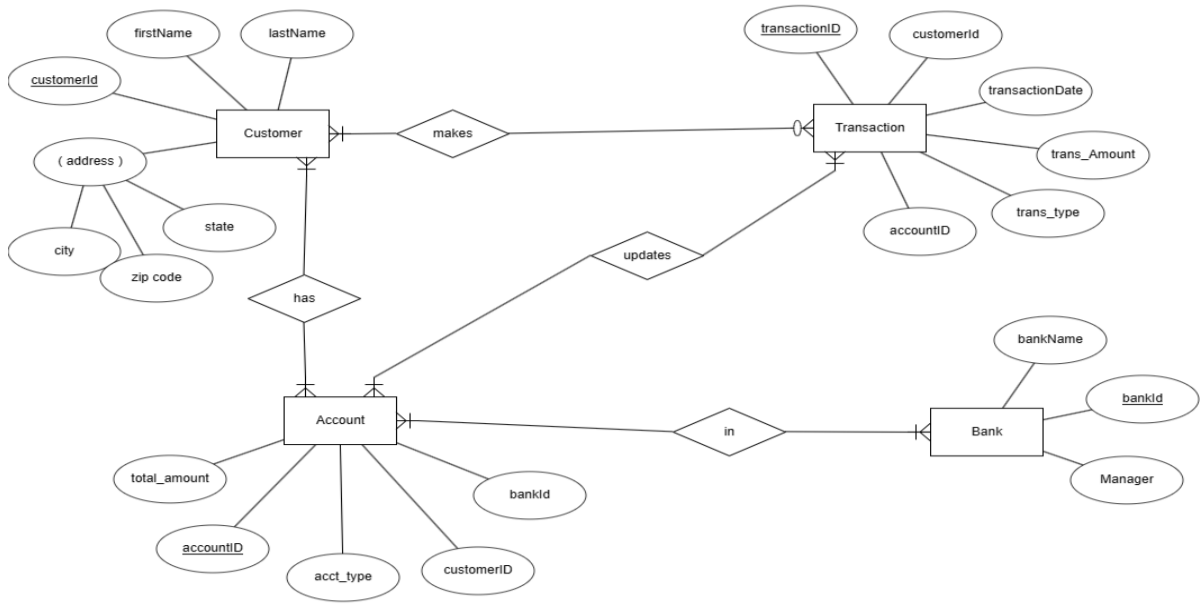
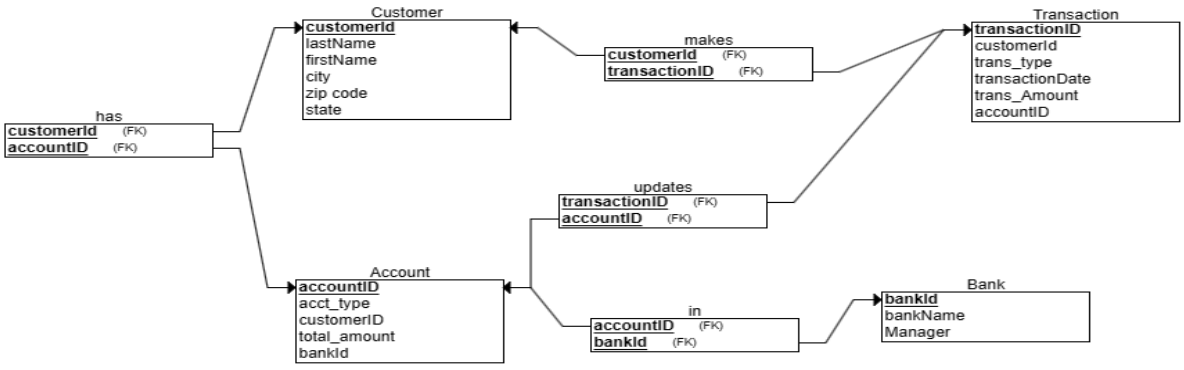
NAME: **PAVANI BADAM**

PROJECT: **TRANSACTION MANAGEMENT SYSTEM**

1) ER diagram for this database using the ERDPlus software.



2) Schema for this database with proper field types and sizes.



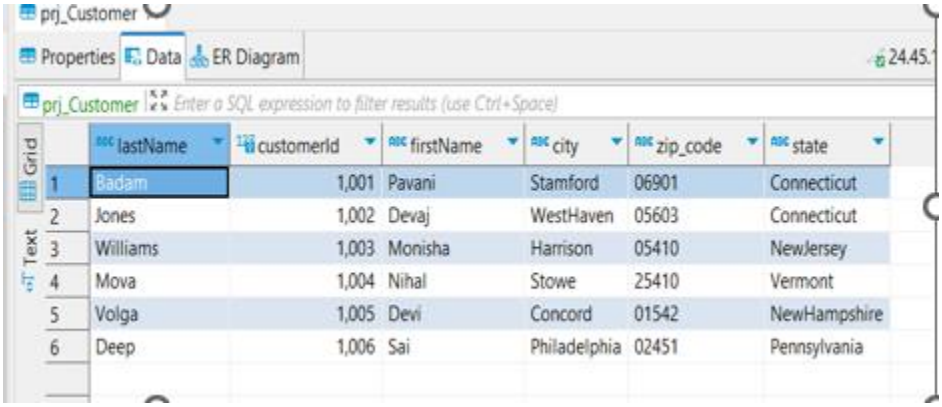
3) SQL code using the schema

```
CREATE TABLE Customer
(
 lastName VARCHAR(40) NOT NULL,
 customerId INT NOT NULL,
 firstName VARCHAR(40) NOT NULL,
```

```
 city VARCHAR(20) NOT NULL,
 zip_code CHAR(5) NOT NULL,
 state VARCHAR(30) NOT NULL,
 PRIMARY KEY (customerId)
);

CREATE TABLE Transaction
(
 transactionID INT NOT NULL,
 customerId INT NOT NULL,
 trans_type VARCHAR(10) NOT NULL,
 transactionDate DATE NOT NULL,
 trans_Amount FLOAT NOT NULL,
 accountID VARCHAR(10) NOT NULL,
 PRIMARY KEY (transactionID)
);

CREATE TABLE Account
(
 acct_type VARCHAR(20) NOT NULL,
 customerID INT NOT NULL,
 accountID VARCHAR(10) NOT NULL,
 bankId VARCHAR(10) NOT NULL,
 total_amount FLOAT NOT NULL,
 PRIMARY KEY (accountID)
);

CREATE TABLE Bank
(
 bankName VARCHAR(40) NOT NULL,
 bankId VARCHAR(10) NOT NULL,
 Manager VARCHAR(30) NOT NULL,
 PRIMARY KEY (bankId)
);

CREATE TABLE has
(
 customerId INT NOT NULL,
 accountID VARCHAR(10) NOT NULL,
 PRIMARY KEY (customerId, accountID),
 FOREIGN KEY (customerId) REFERENCES Customer(customerId),
 FOREIGN KEY (accountID) REFERENCES Account(accountID)
);

CREATE TABLE makes
(
 customerId INT NOT NULL,
 transactionID INT NOT NULL,
 PRIMARY KEY (customerId, transactionID),
 FOREIGN KEY (customerId) REFERENCES Customer(customerId),
 FOREIGN KEY (transactionID) REFERENCES Transaction(transactionID)
```

```
);

CREATE TABLE in
(
 accountID VARCHAR(10) NOT NULL,
 bankId VARCHAR(10) NOT NULL,
 PRIMARY KEY (accountID, bankId),
 FOREIGN KEY (accountID) REFERENCES Account(accountID),
 FOREIGN KEY (bankId) REFERENCES Bank(bankId)
);

CREATE TABLE updates
(
 transactionID INT NOT NULL,
 accountID VARCHAR(10) NOT NULL,
 PRIMARY KEY (transactionID, accountID),
 FOREIGN KEY (transactionID) REFERENCES Transaction(transactionID),
 FOREIGN KEY (accountID) REFERENCES Account(accountID)
);
```

4) 6 imaginary records in each table for testing purposes using DBeaver.



	lastName	customerId	firstName	city	zip_code	state
1	Badam	1,001	Pavani	Stamford	06901	Connecticut
2	Jones	1,002	Devaj	WestHaven	05603	Connecticut
3	Williams	1,003	Monisha	Harrison	05410	NewJersey
4	Mova	1,004	Nihal	Stowe	25410	Vermont
5	Volga	1,005	Devi	Concord	01542	NewHampshire
6	Deep	1,006	Sai	Philadelphia	02451	Pennsylvania

5) Using two or three tables inner joined, a query that includes aggregation (e.g. AVG, SUM, etc.) with GROUP BY. Paste the code below.

```
# Write a query to find total transaction amount by each customer with their
firstname, lastname, customerId and accountID

SELECT pc.customerId, pc.firstName , pc.lastName ,
   sum(pt.trans_Amount) as transaction_amount ,
   pa.accountID
from prj_Customer pc
inner join prj_Transaction pt on pc.customerId = pt.customerId
inner join prj_Account pa on pt.accountID  = pa.accountID
group by pc.customerId  ;
```

SELECT pc.customerId, pc.firstName , pc.lastNa | Enter a SQL expression to filter results (use Ctrl+Space)

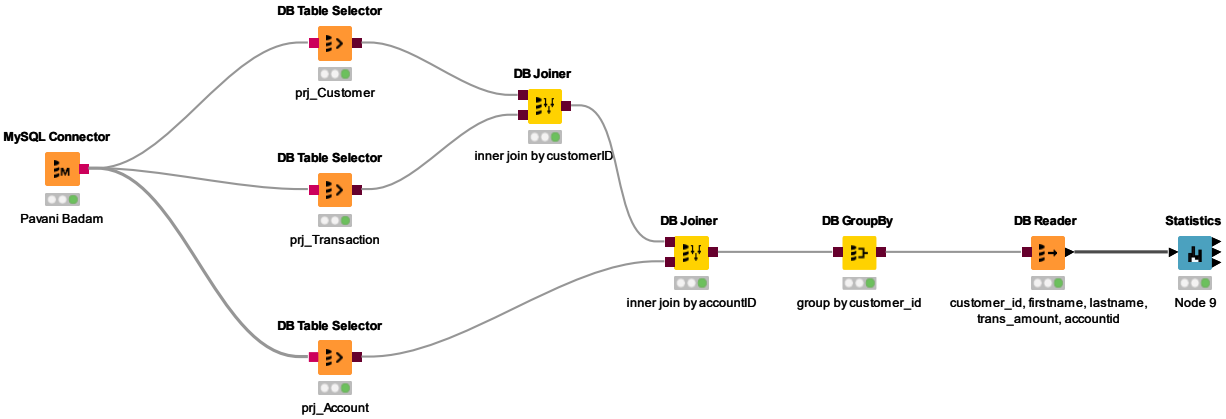
Grid | Text

	customerId	firstName	lastName	transaction_amount	accountID
1	1,001	Pavani	Badam	2,000	32154
2	1,004	Nihal	Mova	3,500	65822
3	1,005	Devi	Volga	950	75451

6) Same using R code

```
library(Rcpp)
library(RMariaDB)

con1 <- dbConnect(RMariaDB::MariaDB(),
                  host = "xxxxxxx",
                  port = xxxx,
                  user = "pavani",
                  password = "xxxxxx",
                  dbname="transaction "
)



query =
"
SELECT pc.customerId, pc.firstName , pc.lastName ,
            sum(pt.trans_Amount) as transaction_amount ,
            pa.accountID
from prj_Customer pc
inner join prj_Transaction pt on pc.customerId = pt.customerId
inner join prj_Account pa on pt.accountID  = pa.accountID
group by pc.customerId
"

res = dbGetQuery(con1, query)
View(res)
dbDisconnect(con1)
```

7) In KNIME, connect the same tables and inner join them. Finished the workflow with a statistics node showing basic descriptive statistics. Copied and pasted a picture of the entire workflow below.


MySQL Connector
Pavani Badam
DB Table Selector
prj_Customer
DB Table Selector
prj_Transaction
DB Table Selector
prj_Account
DB Joiner
inner join by customerID
DB Joiner
inner join by accountID
DB GroupBy
group by customer_id
DB Reader
customer_id, firstname, lastname, trans_amount, accountid
Statistics
Node 9