**2ο project Συστήματα Ανάλυσης και Διαχείρισης Δεδομένων**

**Γρηγοριάδου Γεωργία , 3160029**

***Ζήτημα Πρώτο***

***Δημιουργία του πίνακα CardsTransaction.***

```
CREATE TABLE CardsTransactions
(
        pid int,
        pname varchar(50),
        age int,
        gender char(1),
        cardno char(16),
        card_brand varchar(30),
        card_type varchar(20),
        tdate datetime,
        amount decimal(6,2),
        ttc int,
        trans_type varchar(30),
        mcc int,
        merchant_city varchar(50)
);
```

***Εισαγωγή των εγγραφών στον πίνακα CardsTransactions από το αρχείο CardsTransactions.txt.***

```
BULK INSERT CardsTransactions
FROM 'C:\data\CardsTransactions.txt'
WITH (FIRSTROW =2, FIELDTERMINATOR='|', ROWTERMINATOR = '\n');
```

***Δημιουργία του σχήματος.***

```
CREATE TABLE customers(
pid numeric primary key,
pname varchar(50),
age int,
```

```
gender char(1)
);

CREATE TABLE cards(
cardno numeric primary key,
card_brand varchar(30),
card_type varchar(20)
);

CREATE TABLE timeinfo(
tdate datetime primary key,
t_year int,
t_month int,
t_dayofmonth int,
t_hour int,
t_quarter int,
t_week int,
t_dayofyear int,
t_dayofweek int
);

CREATE TABLE city(
mcc numeric primary key,
merchant_city varchar(50)
);

CREATE TABLE transactions(
ttc int,
pid numeric,
cardno numeric,
tdate datetime,
```

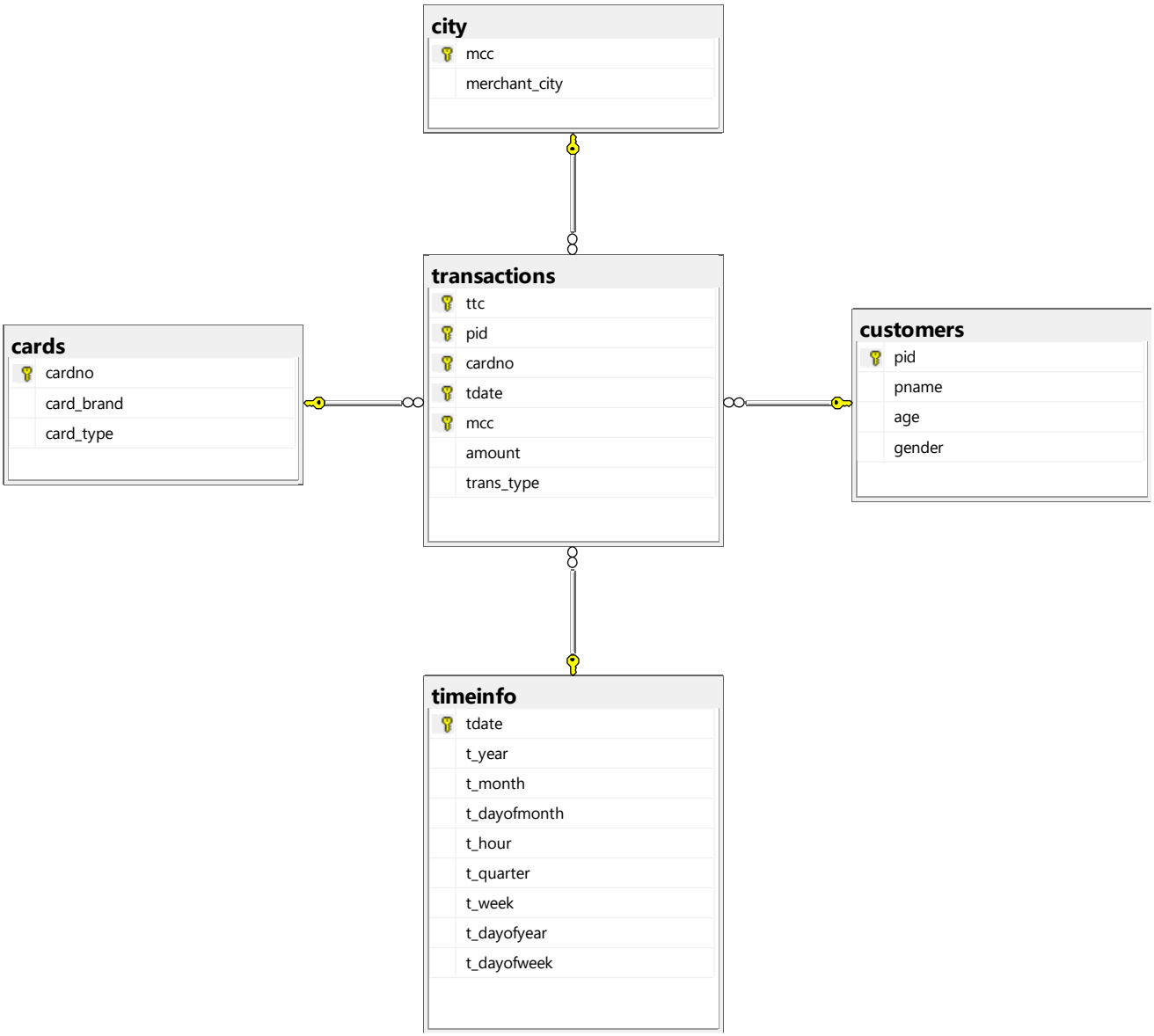
```
mcc numeric,
amount decimal(6,2),
trans_type varchar(30),

primary key(ttc, pid, cardno, tdate, mcc),
foreign key (pid) references customers(pid),
foreign key (cardno) references cards(cardno),
foreign key (tdate) references timeinfo(tdate),
foreign key (mcc) references city(mcc)
);
```

***Εισαγωγή και διάσπαση των δεδομένων απ' τον πίνακα CardsTransactions στο σχήμα.***

```
INSERT INTO customers
        SELECT DISTINCT pid, pname, age, gender
                FROM CardsTransactions;

INSERT INTO cards
        SELECT DISTINCT cardno, card_brand, card_type
                FROM CardsTransactions;

SET DATEFIRST 1;
INSERT INTO timeinfo
        SELECT DISTINCT tdate, datepart(year, tdate), datepart(month, tdate),
        datepart(day,tdate),datepart(hour, tdate),
        datepart(quarter,tdate), datepart(week,tdate),
        datepart(dayofyear,tdate),datepart(dw,tdate)
                FROM CardsTransactions;

INSERT INTO city
        SELECT DISTINCT mcc, merchant_city
                FROM CardsTransactions;
```

```
INSERT INTO transactions
    SELECT ttc, pid, cardno, tdate, mcc, SUM(amount), trans_type
        FROM CardsTransactions
            GROUP BY ttc, pid, cardno, tdate, mcc, trans_type;
```

***Διάγραμμα της Βάσης***.



***Ζήτημα Δεύτερο***

1)

```
select merchant_city, sum(amount) as total_amount
from city, transactions
where city.mcc = transactions.mcc
group by merchant_city
order by merchant_city
```

2)

```
select t_year, gender, sum(amount) as total_amount
from timeinfo, transactions, customers
where customers.pid=transactions.pid and transactions.tdate=timeinfo.tdate
group by t_year, gender
order by t_year desc
```

3)

```
select card_brand,card_type , count(ttc) as numberOfTransactions, sum(amount) as
total_amount
from transactions , cards
where transactions.cardno=cards.cardno
group by card_brand, card_type
```

4)

```
select trans_type,  t_quarter, sum(amount) as total_amount_2019
from transactions , cards , timeinfo
where transactions.cardno=cards.cardno and transactions.tdate=timeinfo.tdate
and timeinfo.t_year=2019
group by rollup (trans_type,t_quarter)
```

5)

```
select sum(amount) as total_amount, t_year , gender, age
from customers, cards, timeinfo, transactions
where customers.pid=transactions.pid and
cards.cardno=transactions.cardno and
```

```
timeinfo.tdate=transactions.tdate and
trans_type = 'Online Transaction'
group by rollup(t_year, gender,age)
order by t_year, gender,age
```

***Ζήτημα Τρίτο***

1)
```
select count(ttc) as numberOftransactions, t_year, card_brand, gender
from customers, transactions, timeinfo, cards
where timeinfo.tdate=transactions.tdate and
customers.pid=transactions.pid and
cards.cardno=transactions.cardno
group by cube (t_year, card_brand, gender)
```

2)
```
SET NUMERIC_ROUNDABORT OFF;
SET ANSI_PADDING, ANSI_WARNINGS, CONCAT_NULL_YIELDS_NULL, ARITHABORT,
QUOTED_IDENTIFIER, ANSI_NULLS ON;
IF OBJECT_ID ('view1', 'view') IS NOT NULL
DROP VIEW view1 ;
go
create view view1
with schemabinding as
select count_big(*) as numberOftransactions, [ti].t_year, [ca].card_brand, [c].gender
from dbo.customers[c], dbo.transactions[t], dbo.timeinfo[ti], dbo.cards[ca]
where [ti].tdate=[t].tdate and
[c].pid=[t].pid and
[ca].cardno=[t].cardno
group by  [ti].t_year,[ca].card_brand, [c].gender
go
create unique clustered index idx1 on view1(t_year, card_brand, gender)
go
```

```
GROUP BY NONE

select sum(numberOftransactions) from view1

GROUP BY T_YEAR

select sum(numberOftransactions), t_year from view1

group by t_year

GROUP BY CARD_BRAND

select sum(numberOftransactions), card_brand from view1

group by card_brand

GROUP BY GENDER

select sum(numberOftransactions), gender from view1

group by gender

GROUP BY T_YEAR, CARD_BRAND

select sum(numberOftransactions), t_year, card_brand from view1

group by  t_year, card_brand

GROUP BY T_YEAR, GENDER

select sum(numberOftransactions), t_year, gender from view1

group by  t_year, gender

GROUP BY CARD_BRAND, GENDER

select sum(numberOftransactions), card_brand, gender from view1

group by   card_brand, gender
```