Proiect la Baze de Date in Economie

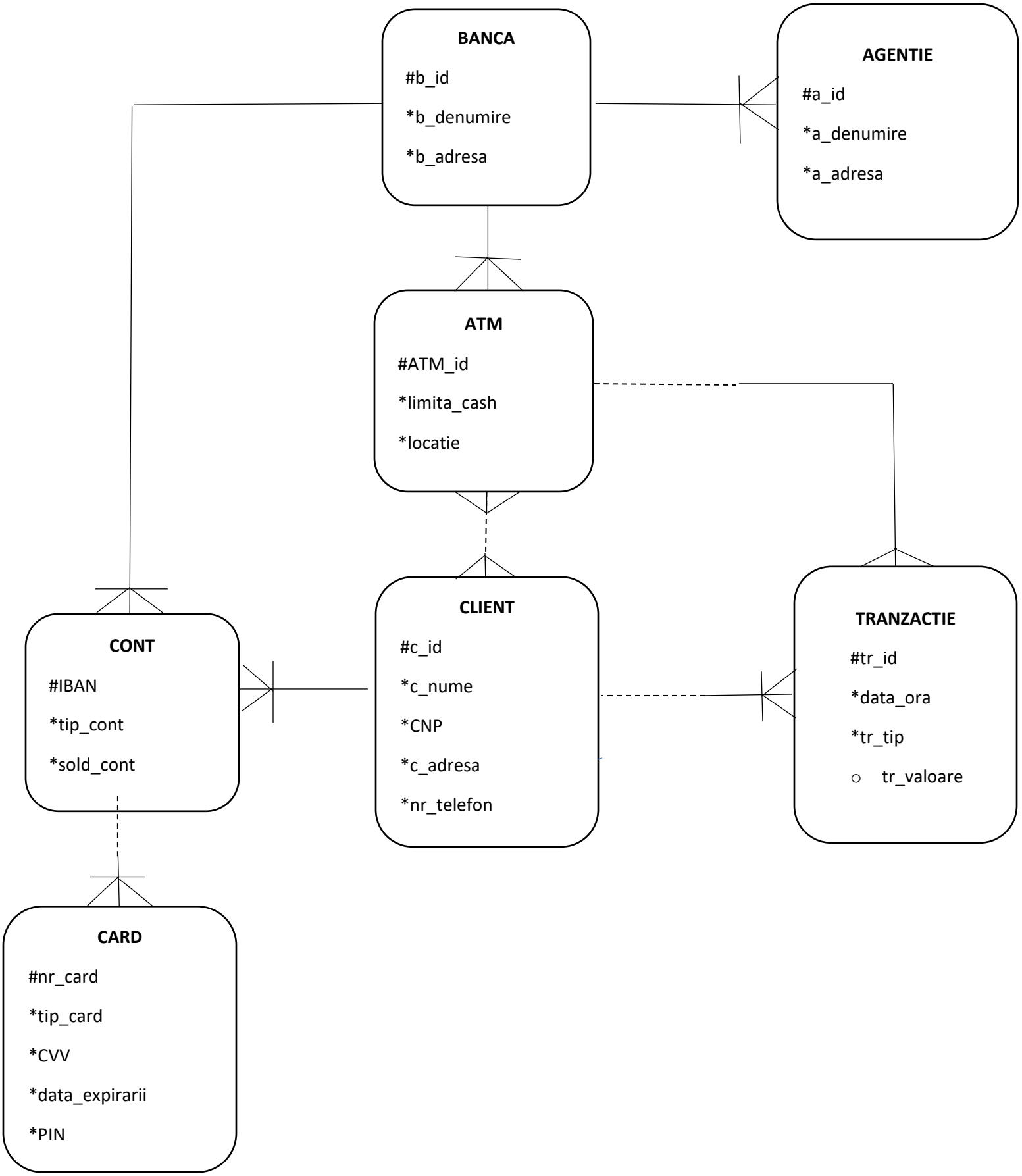
Banci
Bancomat

Danci Anca Denisa
Informatica Economica, an II, grupa III
2020-2021

Scenariu

In cadrul acestei baze de date este surprinsa activitatea bancilor in legatura cu bancomatele.
Fiecare banca are un sediu central de care apartin una sau mai multe agentii din diverse locatii. Tot de banca, apartin si bancomatele care se pot afla si in afara agentiilor. Acestea au o limita de bani cash care se pot retrage zilnic, dar aceasta difera in functie de politica bancii respective. Un bancomat poate opera mai multi clienti, dar de asemenea si un client poate folosi mai multe bancomate. In baza de date retinem date despre client cum ar fi nume, CNP, adresa si numar de telefon. Un client poate efectua una sau mai multe tranzactii la bancomat. Fiecare client detine unul sau mai multe conturi, fie in lei sau euro, acestea identificandu-se prin codul IBAN. Pentru a putea realiza operatiuni in cadrul unui bancomat si nu numai, fiecare cont poate avea unul sau mai multe carduri, insa nu pot exista doua carduri cu acelasi nume de detinator asignate unui singur cont.

Diagrama ERD



Tabele de mapare

BANCI(BCA)			
Tip cheie	**Optionalitate**	**Nume coloana**	**Observatii**
CP	*	b_id	
	*	b_denumire	
	*	b_adresa	

AGENTII(AGE)			
Tip cheie	**Optionalitate**	**Nume coloana**	**Observatii**
CP	*	b_id	Cod unic de identificare a institutiilor bancare BIC (4 caractere)
	*	b_denumire	Denumire banca
	*	b_adresa	Adresa sediu central banca
CS	*	a_banca	Relatia cu Banci(BCA)

ATM			
Tip cheie	**Optionalitate**	**Nume coloana**	**Observatii**
CP	*	ATM_id	
	*	limita_cash	
	*	locatie	
CS	*	ATM_banca	Relatia cu Banci(BCA)

CLIENTI(CET)	

Tip cheie	Optionalitate	Nume coloana	Observatii
CP	*	c_id	
	*	c_nume	
CU	*	CNP	
	*	c_adresa	
	*	nr_telefon	

TRANZACTII(TZE)			
Tip cheie	**Optionalitate**	**Nume coloana**	**Observatii**
CP	*	tr_id	Id tranzactie
	*	data_ora	Data si ora la care s-a finalizat tranzactia
	*	tr_tip	
	○	tr_valoare	Nu intotdeauna poate avea o valoare deoarece la bancomat se pot face si operatiuni care nu reprezinta o suma (de exemplu schimbare pin)
CS	*	tr_client	Relatia cu Clienti(CET)
CS	*	tr_ATM	Relatia cu ATM

CONTURI(COT)			
Tip cheie	**Optionalitate**	**Nume coloana**	**Observatii**
CP	*	IBAN	
	*	tip_cont	Lei/euro
	*	sold_cont	
CS1	*	client_cont	Relatia cu Clienti(CET)
CS2	*	banca_cont	Relatia cu Banci(BCA)

CARDURI(CAD)			
Tip cheie	**Optionalitate**	**Nume coloana**	**Observatii**
CP	*	nr_card	16 caractere
	*	tip_card	Visa/Mastercard/Ominpass
	*	CVV	3 cifre
	*	data_expirarii	
	*	pin	4 cifre
	*	nume_detinator	Pentru acelasi IBAN nu trebuie sa existe 2 carduri cu acelasi nume
CS	*	Card_IBAN	Relatia cu Conturi(COT)

SCHEMA BAZEI DE DATE NORMALIZATA

BANCI

varchar2(4)	varchar2(50)	varchar2(50)
b_id	b_denumire	b_adresa
BTRL	Banca Transilvania	str. G. Barițiu nr.8, Cluj-Napoca
BRDE	BRD	Bd. Ion Mihalache 1-7, sector 1, Bucuresti
RZBR	Raiffaisen	Calea Floreasca, nr. 246C, Bucuresti
INGB	ING	str. Aviator Popișteanu, nr. 54A, București
BUCU	Alpha Bank	Calea Dorobanti, nr. 237B, sector 1, Bucuresti
RNCB	BCR	Calea Victoriei nr. 15, sector 3, București

AGENTIE

number	varchar2(50)	varchar2(50)	varchar2(4)
a_id	a_denumire	a_adresa	a_banca
4	BCR	Strada Fantanele, Nr. 7, Cluj-Na	RNCB
5	BT Ferdinand	Str. Regele Ferdinand nr. 29, Cl	BTRL
7	BRD Farmec	Strada Henri Barbusse nr. 16	BRDE
9	ING Ciparlu	Piata Ciparlu nr. 11, Cluj Napoca	INGB
10	ING Manastur	Str. Bucegi nr. 11A, Cluj Napoca	INGB
1	Alpha Bank M	Strada Fabricii nr. 7, Cluj-Napoc	BUCU
2	Alpha Bank Zo	Strada Louis Pasteur, nr. 79	BUCU
3	BCR	Strada 21 Decembrie, Nr. 16, Cl	RNCB
6	BT Flora	Calea Floresti, Nr. 75, Cluj Napo	BTRL
8	Raiffaisen Bra	Strada Constantin Brancusi, nr.	RZBR

ATM

number	number	varchar2(50)	varchar2(4)
ATM_id	limita_cash	locatie	ATM_banca
4	5000	Strada Henri Barb	BRDE
6	6000	Piata Ciparlu nr. 1	INGB
2	3000	Strada 21 Decemb	RNCB
3	5000	Str. Regele Ferdi	BTRL
1	5000	Strada Fabricii nr.	BUCU
5	5000	Strada Constantir	RZBR

CLIENT

number	varchar2(50)	varchar2(50)	varchar2(12)	varchar2(20)
c_id	c_nume	c_adresa	nr_telefon	CNP
9876541	Timis Iulia	Str. Tulcea nr 3, Cluj-Napoca	756789990	2.90091E+12
1232248	Stecko Daiana	Str. Crinului nr 7, Cluj-Napoca	776843435	2.87062E+12
2436778	Botezan Vlad	Str. Muresului nr 1, Cluj-Napoca	740388093	1.94113E+12
9907211	Marchis Alexandru	Str. Armoniei nr 5, Cluj-Napoca	756786453	5.0006E+12
3445342	Ghilea Georgiana	Str. Fagului nr 17, Cluj-Napoca	722114567	6.01071E+12
6548733	Tise Tudor	Str. Lunii nr 112, Cluj-Napoca	744289556	1.97112E+12

ATM_CLIENT

number	number
cod_ATM	cod_client
1	1232248
1	2436778
1	3445342
1	6548733
1	9876541
1	9907211

TRANZACTIE

number	TIMESTAMP	varchar2(20)	number	number	number
tr_id	data_ora	tr_tip	tr_valoare	tr_client	tr_ATM
1	01-MAY-21 0	retragere numera	500	3445342	1
2	01-MAY-21 0	sold cont	-	3445342	4
3	02-MAY-21 1	depunere numer	250	1232248	5
4	03-MAY-21 0	schimbare pin	-	9876541	1
5	06-MAY-21 0	schimb valutar	450	6548733	6
6	06-MAY-21 0	retragere numera	800	2436778	3
7	10-APR-21 1	depunere numer	950	9907211	2

CONT

varchar2(40)	varchar2(20)	number	number	varchar2(4)
IBAN	tip_cont	sold_cont	client_cont	banca_cont
RO49BUCU12	LEI	7000	9876541	BUCU
RO30BTRL876	EURO	1000	2436778	BTRL
RO30BTRL876	LEI	1200	2436778	BTRL
RO17RNCB76	LEI	30000	9907211	RNCB
RO78RZBR000	EURO	300	1232248	RZBR
RO55INGB004	LEI	970	6548733	INGB
RO32BRDE00	EURO	2050	3445342	BRDE

CARD

varchar2(20)	varchar2(20)	number(3)	date	number(4)	varchar2(20)	varchar2(40)
nr_card	tip_card	cvv	data_expirarii	pin	nume_detinator	Card_IBAN
6.75477E+15	mastercard	738	1-Feb-23	2931	Stecko Daiana	RO78RZBR0004523477859671
4.14079E+15	visa	552	1-Mar-22	2341	Timis Iulia	RO49BUCU1223425687934536
5.67856E+15	visa	222	1-Mar-22	8642	Timis Maria	RO49BUCU1223425687934536
3.45768E+15	visa	592	1-Jan-23	9167	Botezan Vlad	RO30BTRL8767239861276452
1.27698E+15	omnipass	983	1-Apr-24	5761	Ghilea Georgiana	RO32BRDE00736999412311589
7.65832E+15	visa	134	1-Jan-22	4124	Tise Laura	RO55INGB0043999452346587
4.77855E+15	visa	441	1-Jan-22	1111	Tise Tudor	RO55INGB0043999452346587
4.12345E+15	mastercard	962	1-Jul-25	7741	Marchis Alexandr	RO17RNCB7623465987012006

CONSTRANGERI LEGATE DE CAMPURI

ALTER TABLE Card

ADD CONSTRAINT nr_card_CK CHECK (LENGTHB(nr_card)=16);

ALTER TABLE Card

```
ADD CONSTRAINT cvv_valid_ck CHECK (cvv between 100 and 999);


ALTER TABLE Card

ADD CONSTRAINT pin_valid_ck CHECK (pin between 1000 and 9999);


ALTER TABLE Client

ADD CONSTRAINT cnp_unique UNIQUE (cnp);
```

CREARE TABELE

- **Creare tabela Banca**

```
CREATE TABLE Banca (
b_id varchar2(4),//cod bic
b_denumire varchar2(50) NOT NULL,
b_adresa varchar2(50)
);
ALTER TABLE Banca
ADD CONSTRAINT Banca_PK PRIMARY KEY (b_id);
```

- **Creare tabela Agentie**

```
CREATE TABLE Agentie (
a_id number,
a_denumire varchar2(50) NOT NULL,
a_adresa varchar2(50),
a_banca varchar2(4) NOT NULL
);
ALTER TABLE Agentie
ADD CONSTRAINT Agentie_PK PRIMARY KEY (a_id);

ALTER TABLE Agentie
ADD CONSTRAINT Agentie_FK
FOREIGN KEY (a_banca)
REFERENCES Banca (b_id);

CREATE SEQUENCE Agentie_seq
START WITH 1
INCREMENT BY 1
NOCACHE
NOCYCLE;
```

```
CREATE OR REPLACE TRIGGER Agentie_trg
BEFORE INSERT ON Agentie
FOR EACH ROW
BEGIN
  SELECT Agentie_seq.NEXTVAL
  INTO   :new.a_id
  FROM   dual;
END;
```

- **Creare tabela ATM**

```
CREATE TABLE ATM (
ATM_id number,
limita_cash number,
locatie varchar2(50),
ATM_banca varchar2(4) NOT NULL
);

ALTER TABLE ATM
ADD CONSTRAINT ATM_PK PRIMARY KEY (ATM_id);

ALTER TABLE ATM
ADD CONSTRAINT ATM_FK
FOREIGN KEY (ATM_banca)
REFERENCES Banca (b_id);

CREATE SEQUENCE ATM_seq
START WITH 1
INCREMENT BY 1
NOCACHE
NOCYCLE;

CREATE OR REPLACE TRIGGER ATM_trg
BEFORE INSERT ON ATM
FOR EACH ROW
BEGIN
  SELECT ATM_seq.NEXTVAL
  INTO   :new.ATM_id
  FROM   dual;
END;
```

- **Creare tabela Client**

```
CREATE TABLE Client (
c_id number,
```

```
c_nume varchar2(50) NOT NULL,
c_adresa varchar2(50) NOT NULL,
nr_telefon varchar2(12) NOT NULL,
CNP varchar2(20) NOT NULL
);
ALTER TABLE Client
ADD CONSTRAINT Client_PK PRIMARY KEY (c_id);

ALTER TABLE Client
ADD CONSTRAINT cnp_unique UNIQUE (cnp);
```

- **Creare tabela Cont**

```
CREATE TABLE Cont (
IBAN varchar2(40),
tip_cont varchar2(20) NOT NULL,
sold_cont number,
client_cont number NOT NULL,
banca_cont varchar2(4) NOT NULL
);
ALTER TABLE Cont
ADD CONSTRAINT Cont_PK PRIMARY KEY (IBAN);



ALTER TABLE Cont
ADD CONSTRAINT Cont_FK1
FOREIGN KEY (client_cont)
REFERENCES Client (c_id);

ALTER TABLE Cont
ADD CONSTRAINT Cont_FK2
FOREIGN KEY (banca_cont)
REFERENCES Banca (b_id);
```

- **Creare tabela Card**

```
CREATE TABLE Card (
nr_card varchar2(20),
tip_card varchar2(20),
cvv number(3) NOT NULL,
data_expirarii date NOT NULL,
pin number(4) NOT NULL,
nume_detinator varchar2(20) NOT NULL,
card_IBAN varchar2(40) NOT NULL
);
```

```
ALTER TABLE Card
ADD CONSTRAINT Card_PK PRIMARY KEY (nr_card);


ALTER TABLE Card
ADD CONSTRAINT Card_FK
FOREIGN KEY (card_iban)
REFERENCES Cont (IBAN);
```

- **Creare tabela Tranzactie**

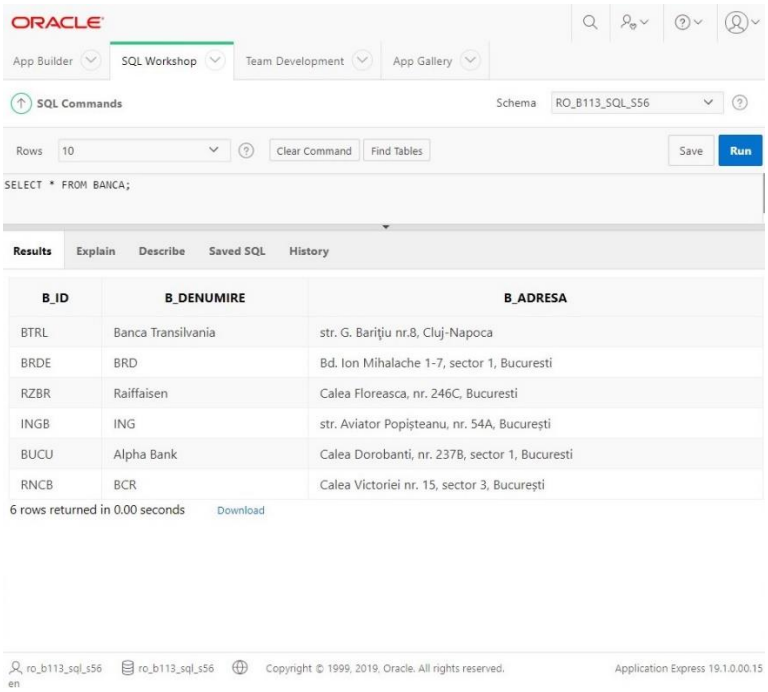
```
CREATE TABLE Tranzactie(
tr_id number,
dat_ora timestamp(0) NOT NULL,
tr_tip varchar2(20),
tr_valoare number,
tr_client number NOT NULL,
tr_atm number NOT NULL
);
ALTER TABLE Tranzactie
ADD CONSTRAINT Tranzactie_PK PRIMARY KEY (tr_id);

ALTER TABLE Tranzactie
ADD CONSTRAINT Tranzactie_FK
FOREIGN KEY (tr_client)
REFERENCES Client (c_id);

ALTER TABLE Tranzactie
ADD CONSTRAINT Tranzactie_ATM_FK
FOREIGN KEY (tr_ATM)
REFERENCES ATM (ATM_id);

CREATE SEQUENCE Tranzactie_seq
START WITH 1
INCREMENT BY 1
NOCACHE
NOCYCLE;

CREATE OR REPLACE TRIGGER Tranzactie_trg
BEFORE INSERT ON Tranzactie
FOR EACH ROW
BEGIN
  SELECT Tranzactie_seq.NEXTVAL
  INTO   :new.tr_id
  FROM   dual;
```

END;

POPULAREA TABELELOR

- **Populare tabela Banca**

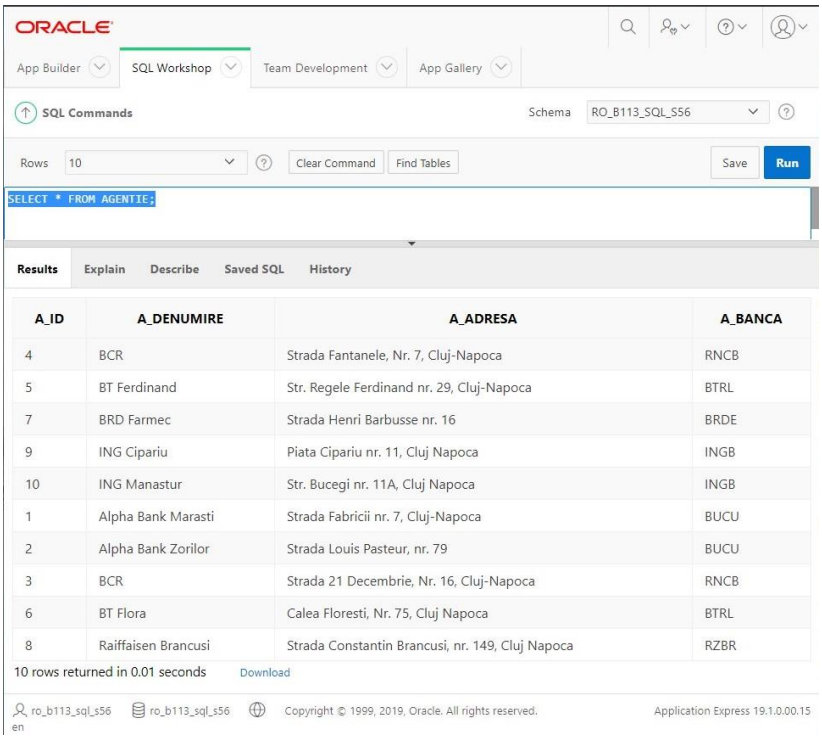
```
INSERT INTO Banca
VALUES
('BUCU', 'Alpha Bank', 'Calea Dorobanti, nr. 237B, sector 1, Bucuresti');
INSERT INTO Banca
VALUES
('RNCB', 'BCR', 'Calea Victoriei nr. 15, sector 3, București');
INSERT INTO Banca
VALUES
('BTRL', 'Banca Transilvania', 'str. G. Bariţiu nr.8, Cluj-Napoca');
INSERT INTO Banca
VALUES
('BRDE', 'BRD', 'Bd. Ion Mihalache 1-7, sector 1, Bucuresti');
INSERT INTO Banca
VALUES
('RZBR', 'Raiffaisen', 'Calea Floreasca, nr. 246C, Bucuresti');
INSERT INTO Banca
VALUES
('INGB', 'ING', 'str. Aviator Popișteanu, nr. 54A, București');
```



- **Populare tabela Agentie**

```
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('Alpha Bank Marasti', 'Strada Fabricii nr. 7, Cluj-Napoca', 'BUCU');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('Alpha Bank Zorilor', 'Strada Louis Pasteur, nr. 79','BUCU');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('BCR', 'Strada 21 Decembrie, Nr. 16, Cluj-Napoca','RNCB');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('BCR', 'Strada Fantanele, Nr. 7, Cluj-Napoca','RNCB');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('BT Ferdinand', 'Str. Regele Ferdinand nr. 29, Cluj-Napoca','BTRL');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('BT Flora', 'Calea Floresti, Nr. 75, Cluj Napoca','BTRL');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('BRD Farmec', 'Strada Henri Barbusse nr. 16','BRDE');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
```

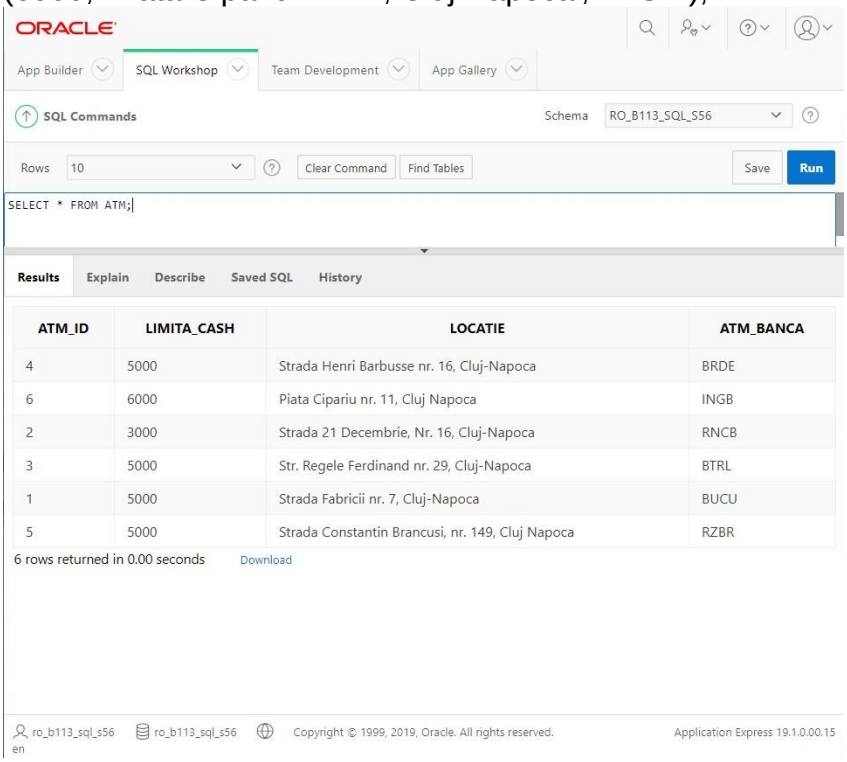
('Raiffaisen Brancusi', 'Strada Constantin Brancusi, nr. 149, Cluj Napoca','RZBR');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('ING Cipariu', 'Piata Cipariu nr. 11, Cluj Napoca','INGB');
INSERT INTO Agentie(a_denumire, a_adresa, a_banca)
VALUES
('ING Manastur', 'Str. Bucegi nr. 11A, Cluj Napoca','INGB');



- **Populare tabela ATM**

INSERT INTO ATM(limita_cash, locatie, ATM_banca)
VALUES
(5000, 'Strada Fabricii nr. 7, Cluj-Napoca', 'BUCU');
INSERT INTO ATM(limita_cash, locatie, ATM_banca)
VALUES
(3000, 'Strada 21 Decembrie, Nr. 16, Cluj-Napoca', 'RNCB');
INSERT INTO ATM(limita_cash, locatie, ATM_banca)
VALUES
(5000, 'Str. Regele Ferdinand nr. 29, Cluj-Napoca', 'BTRL');
INSERT INTO ATM(limita_cash, locatie, ATM_banca)
VALUES
(5000, 'Strada Henri Barbusse nr. 16, Cluj-Napoca', 'BRDE');
INSERT INTO ATM(limita_cash, locatie, ATM_banca)
VALUES
(5000, 'Strada Constantin Brancusi, nr. 149, Cluj Napoca', 'RZBR');

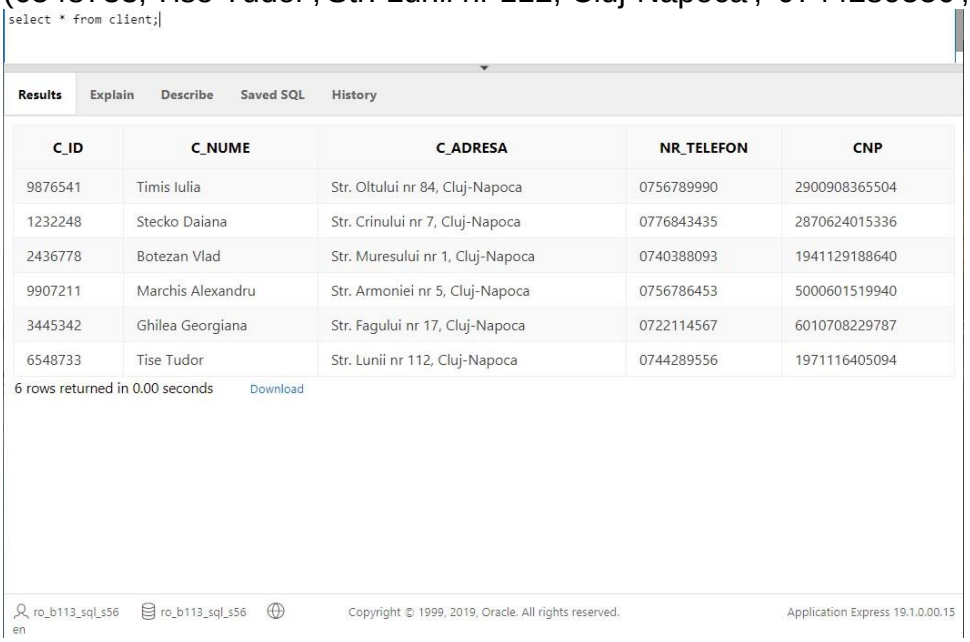
```
INSERT INTO ATM(limita_cash, locatie, ATM_banca)
VALUES
(6000, 'Piata Cipariu nr. 11, Cluj Napoca', 'INGB');
```



- **Populare tabela Client**

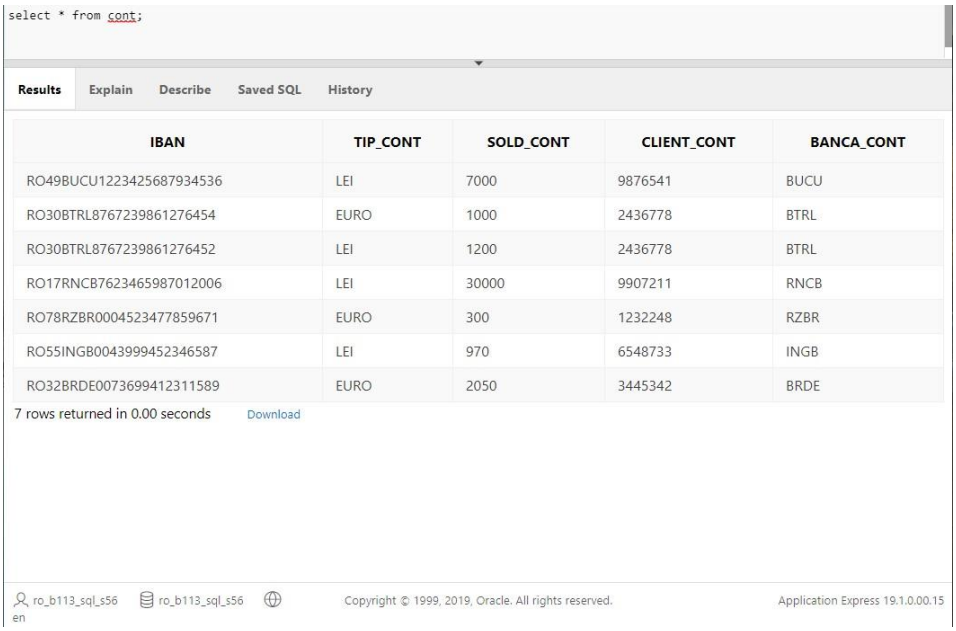
```
INSERT INTO Client
VALUES
(9876541,'Timis Iulia','Str. Oltului nr 84, Cluj-Napoca', '0756789990','2900908365504');
INSERT INTO Client
VALUES
(1232248,'Stecko Daiana','Str. Crinului nr 7, Cluj-Napoca',
'0776843435','2870624015336');
INSERT INTO Client
VALUES
(2436778,'Botezan Vlad','Str. Muresului nr 1, Cluj-Napoca',
'0740388093','1941129188640');
INSERT INTO Client
VALUES
(9907211,'Marchis Alexandru','Str. Armoniei nr 5, Cluj-Napoca',
'0756786453','5000601519940');
INSERT INTO Client
VALUES
(3445342,'Ghilea Georgiana','Str. Fagului nr 17, Cluj-Napoca',
'0722114567','6010708229787');
```

INSERT INTO Client
VALUES
(6548733,'Tise Tudor','Str. Lunii nr 112, Cluj-Napoca', '0744289556','1971116405094');



- **Populare tabela Cont**

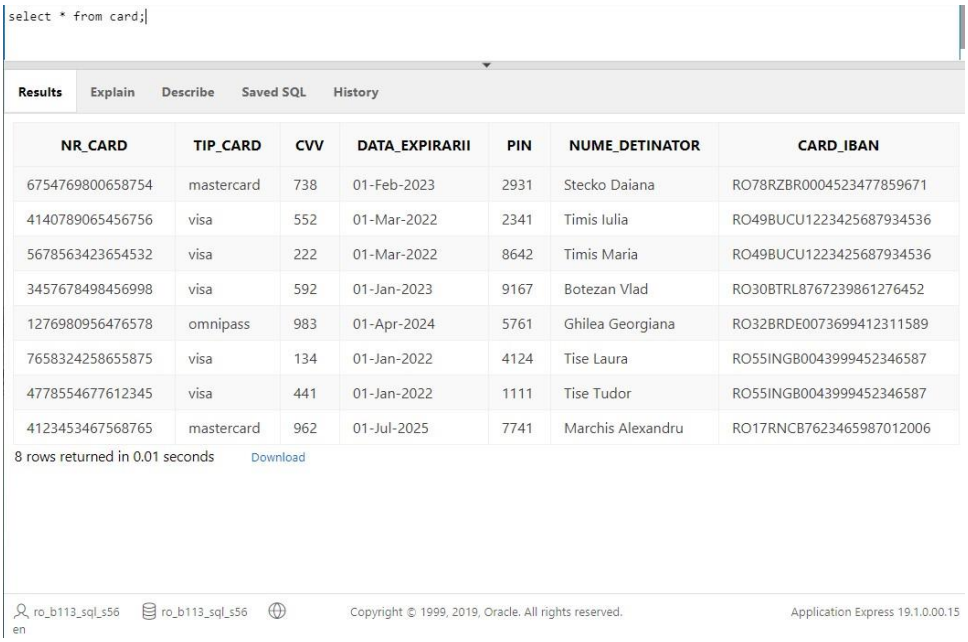
INSERT INTO CONT
VALUES
('RO49BUCU1223425687934536','LEI','7000','9876541','BUCU');
INSERT INTO CONT
VALUES
('RO30BTRL8767239861276454','EURO','1000','2436778','BTRL');
INSERT INTO CONT
VALUES
('RO30BTRL8767239861276452','LEI','1200','2436778','BTRL');
INSERT INTO CONT
VALUES
('RO17RNCB7623465987012006','LEI','30000','9907211','RNCB');
INSERT INTO CONT
VALUES
('RO78RZBR0004523477859671','EURO','300','1232248','RZBR');
INSERT INTO CONT
VALUES
('RO55INGB0043999452346587','LEI','970','6548733','INGB');
INSERT INTO CONT
VALUES
('RO32BRDE0073699412311589','EURO','2050','3445342','BRDE');



- **Populare tabela Card**

INSERT INTO CARD
VALUES
('4140789065456756','visa','552', to_date('03/22', 'MM/YY'), 2341,'Timis Iulia','RO49BUCU1223425687934536');
INSERT INTO CARD
VALUES
('5678563423654532','visa','222', to_date('03/22', 'MM/YY'), 8642,'Timis Maria','RO49BUCU1223425687934536');
INSERT INTO CARD
VALUES
('3457678498456998','visa','592', to_date('01/23', 'MM/YY'), 9167,'Botezan Vlad','RO30BTRL8767239861276452');
INSERT INTO CARD
VALUES
('1276980956476578','omnipass','983', to_date('04/24', 'MM/YY'), 5761,'Ghilea Georgiana','RO32BRDE0073699412311589');
INSERT INTO CARD
VALUES
('7658324258655875','visa','134', to_date('01/22', 'MM/YY'), 4124,'Tise Laura','RO55INGB0043999452346587');
INSERT INTO CARD
VALUES
('4778554677612345','visa','441', to_date('01/22', 'MM/YY'), 1111,'Tise Tudor','RO55INGB0043999452346587');
INSERT INTO CARD

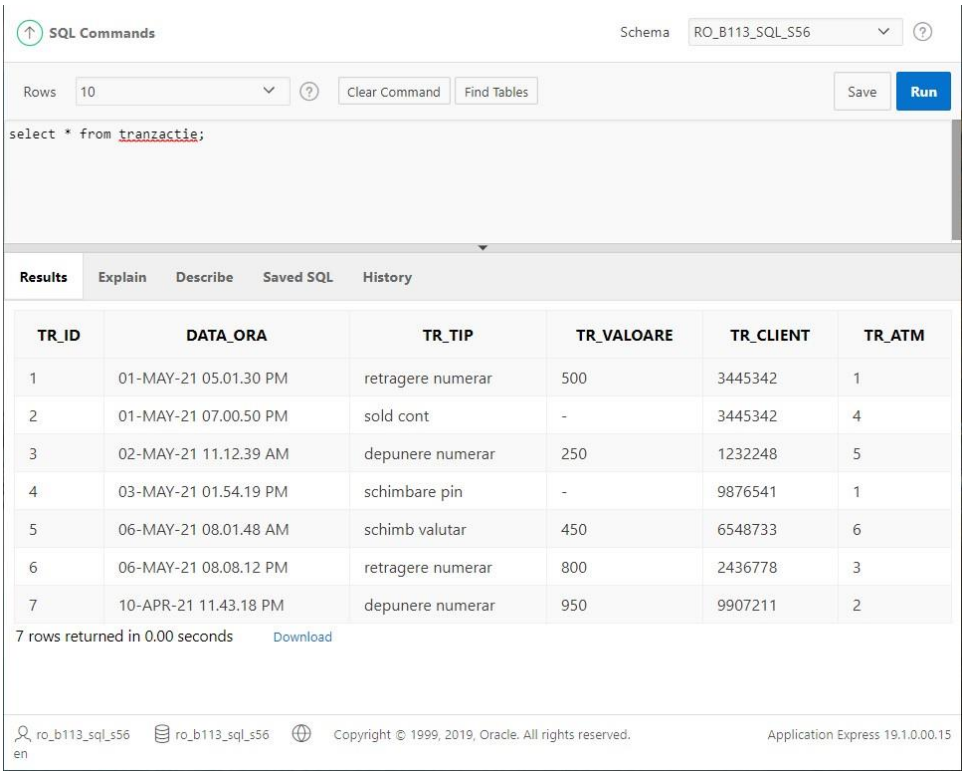
VALUES
('6754769800658754','mastercard','738', to_date('02/23', 'MM/YY'), 2931,'Stecko Daiana','RO78RZBR0004523477859671');
INSERT INTO CARD
VALUES
('4123453467568765','mastercard','962', to_date('07/25', 'MM/YY'), 7741,'Marchis Alexandru','RO17RNCB7623465987012006');



- **Populare tabela Tranzactie**

INSERT INTO Tranzactie(data_ora, tr_tip, tr_valoare, tr_client, tr_ATM)
VALUES
(TIMESTAMP'2021-05-01 17:01:30','retragere numerar', 500,3445342, 1);
INSERT INTO Tranzactie(data_ora, tr_tip, tr_valoare, tr_client, tr_ATM)
VALUES
(TIMESTAMP'2021-05-01 19:00:50','sold cont', NULL, 3445342, 4);
INSERT INTO Tranzactie(data_ora, tr_tip, tr_valoare, tr_client, tr_ATM)
VALUES
(TIMESTAMP'2021-05-02 11:12:39','depunere numerar', 250, 1232248, 5);
INSERT INTO Tranzactie(data_ora, tr_tip, tr_valoare, tr_client, tr_ATM)
VALUES
(TIMESTAMP'2021-05-03 13:54:19','schimbare pin', NULL, 9876541, 1);
INSERT INTO Tranzactie(data_ora, tr_tip, tr_valoare, tr_client, tr_ATM)
VALUES
(TIMESTAMP'2021-05-06 08:01:48','schimb valutar', 450, 6548733, 6);
INSERT INTO Tranzactie(data_ora, tr_tip, tr_valoare, tr_client, tr_ATM)
VALUES

(TIMESTAMP'2021-05-06 20:08:12','retragere numerar', 800, 2436778, 3);
INSERT INTO Tranzactie(data_ora, tr_tip, tr_valoare, tr_client, tr_ATM)
VALUES
(TIMESTAMP'2021-04-10 23:43:18','depunere numerar', 950, 9907211, 2);



Modificari de structura

1.Am sters constrangerea de cheie straina din tabela Card pentru a putea modifica nr de caractere alocat pentru campul card_IBAN.

ALTER TABLE Card
DROP CONSTRAINT Card_FK;

Schema RO_B113_SQL_S56

CARD

Constraint	Type	Search Condition	Related Constraint	Columns
SYS_C006006068	Check	"CVV" IS NOT NULL	-	-
SYS_C006006070	Check	"DATA_EXPIRARII" IS NOT NULL	-	-
SYS_C006006071	Check	"PIN" IS NOT NULL	-	-
CARD_FK	Foreign	-	CARD_FK (RO_B113_SQL_S56.CONT)	CARD_IBAN
NR_CARD_CK	Check	LENGTHB(nr_card)=16	-	-
SYS_C006006072	Check	"CARD_IBAN" IS NOT NULL	-	-
SYS_C006006075	Check	"NUME_DETINATOR" IS NOT NULL	-	-
CARD_PK	Primary	-	-	NR_CARD

Schema RO_B113_SQL_S56

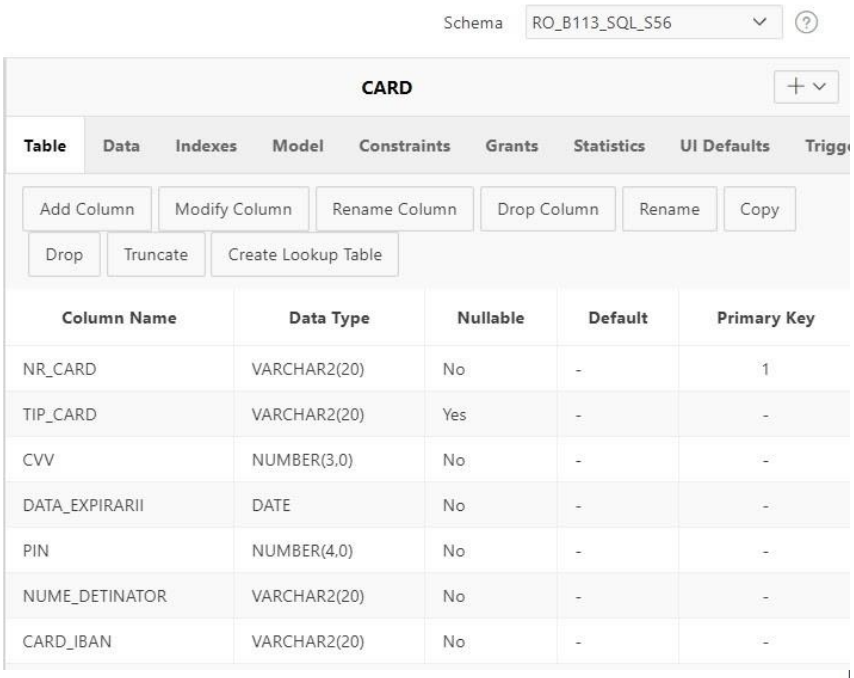
CARD

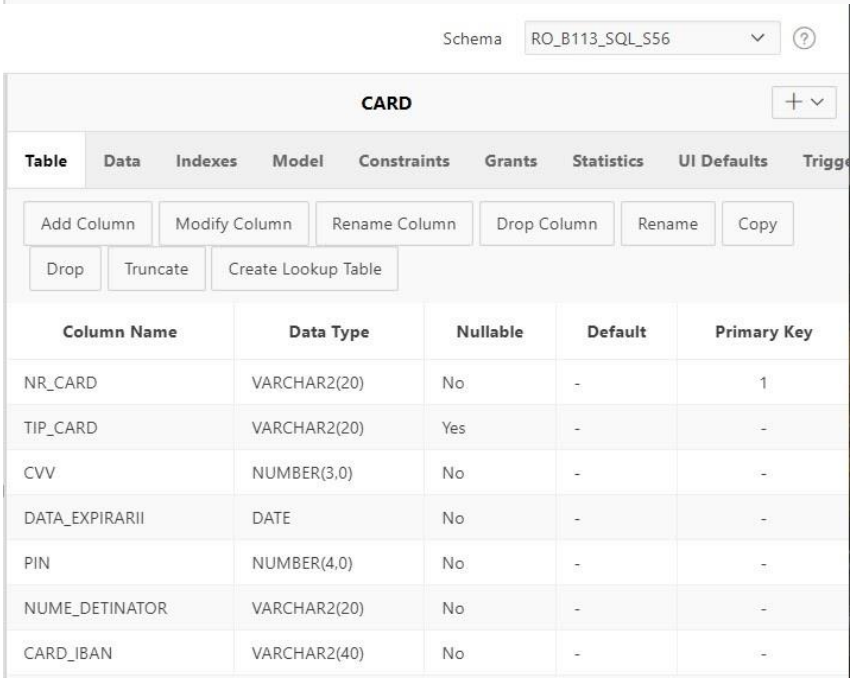
Create Drop Enable Disable

Constraint	Type	Search Condition	Related Constraint	Columns	Delete Rule	Sta
SYS_C006006072	Check	"CARD_IBAN" IS NOT NULL	-	-	-	ENA
SYS_C006006075	Check	"NUME_DETINATOR" IS NOT NULL	-	-	-	ENA
CARD_PK	Primary	-	-	NR_CARD	-	ENA
SYS_C006006068	Check	"CVV" IS NOT NULL	-	-	-	ENA
SYS_C006006070	Check	"DATA_EXPIRARII" IS NOT NULL	-	-	-	ENA
SYS_C006006071	Check	"PIN" IS NOT NULL	-	-	-	ENA
NR_CARD_CK	Check	LENGTHB(nr_card)=16	-	-	-	ENA

2.Am modificat nr de caractere alocat pentru campul card_IBAN din VARCHAR2(20) in VARCHAR2(40).

```
ALTER TABLE Card
MODIFY card_IBAN VARCHAR2(40);
```





3.La crearea tabelei Tranzactie am omis campul tr_tip.

ALTER TABLE Card
ADD tr_tip number constraint;

4.Am dezactivat constrangerea de tip check din tabela Cont.

ALTER TABLE Card

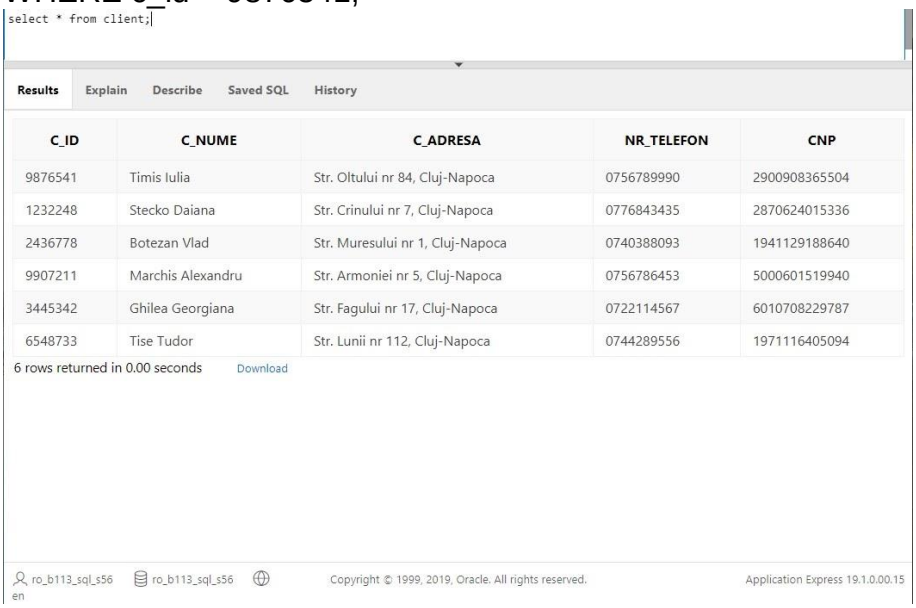
DISABLE CONSTRAINT NR_CARD_CK;

NR_CARD_CK	Check	LENGTHB(nr_card)=16	-	-	-	ENABLED	05/17/2021 02:37:02 PM
NR_CARD_CK	Check	LENGTHB(nr_card)=16	-	-	-	DISABLED	05/18/2021 06:43:27 PM

Modificari de continut

1.Se modifica adresa clientului cu codul 9876541 din ‘Str. Oltului 84, Cluj-Napoca’ in ‘Str. Tulcea nr 3, Cluj-Napoca'.

```
UPDATE Client
SET c_adresa = 'Str. Tulcea nr 3, Cluj-Napoca'
WHERE c_id = 9876541;
```



```
UPDATE Client
SET c_adresa = 'Str. Tulcea nr 3, Cluj-Napoca'
WHERE c_id = 9876541;
```

Results | Explain | Describe | Saved SQL | History

C_ID	C_NUME	C_ADRESA	NR_TELEFON	CNP
9876541	Timis Iulia	Str. Tulcea nr 3, Cluj-Napoca	0756789990	2900908365504
1232248	Stecko Daiana	Str. Crinului nr 7, Cluj-Napoca	0776843435	2870624015336
2436778	Botezan Vlad	Str. Muresului nr 1, Cluj-Napoca	0740388093	1941129188640
9907211	Marchis Alexandru	Str. Armoniei nr 5, Cluj-Napoca	0756786453	5000601519940
3445342	Ghilea Georgiana	Str. Fagului nr 17, Cluj-Napoca	0722114567	6010708229787
6548733	Tise Tudor	Str. Lunii nr 112, Cluj-Napoca	0744289556	1971116405094

6 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

2. Se sterg tranzactiile cu valoare mai mica decat 300.

DELETE FROM Tranzactie
WHERE tr_valoare<300;

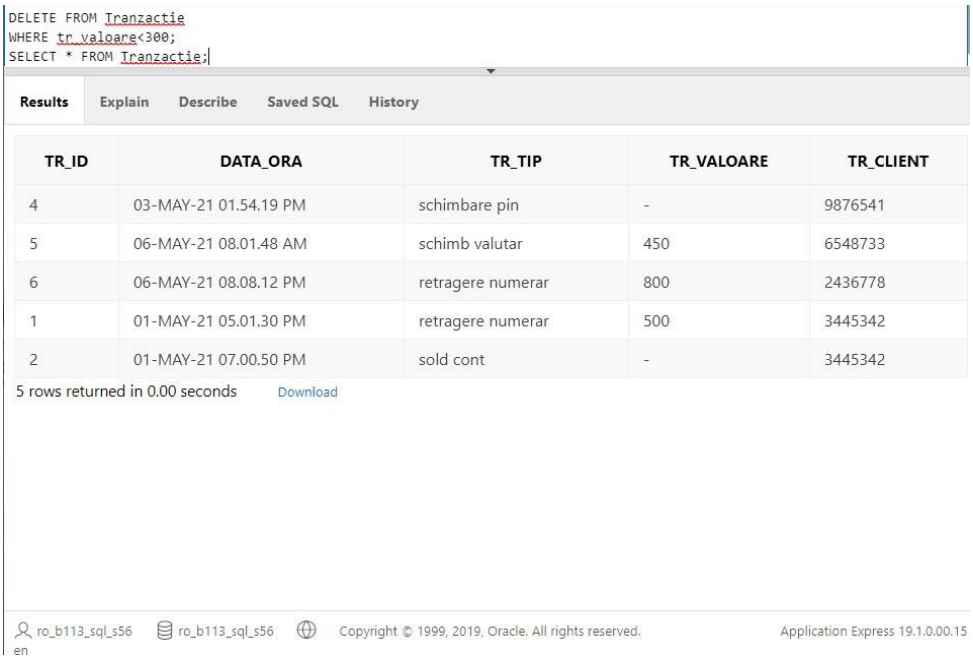
```
select * from tranzactie;
```

Results | Explain | Describe | Saved SQL | History

TR_ID	DATA_ORA	TR_TIP	TR_VALOARE	TR_CLIENT
3	02-MAY-21 11.12.39 AM	depunere numerar	250	1232248
4	03-MAY-21 01.54.19 PM	schimbare pin	-	9876541
5	06-MAY-21 08.01.48 AM	schimb valutar	450	6548733
6	06-MAY-21 08.08.12 PM	retragere numerar	800	2436778
1	01-MAY-21 05.01.30 PM	retragere numerar	500	3445342
2	01-MAY-21 07.00.50 PM	sold cont	-	3445342

6 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en



```
DELETE FROM Tranzactie
WHERE tr_valoare<300;
SELECT * FROM Tranzactie;
```

Results | Explain | Describe | Saved SQL | History

TR_ID	DATA_ORA	TR_TIP	TR_VALOARE	TR_CLIENT
4	03-MAY-21 01.54.19 PM	schimbare pin	-	9876541
5	06-MAY-21 08.01.48 AM	schimb valutar	450	6548733
6	06-MAY-21 08.08.12 PM	retragere numerar	800	2436778
1	01-MAY-21 05.01.30 PM	retragere numerar	500	3445342
2	01-MAY-21 07.00.50 PM	sold cont	-	3445342

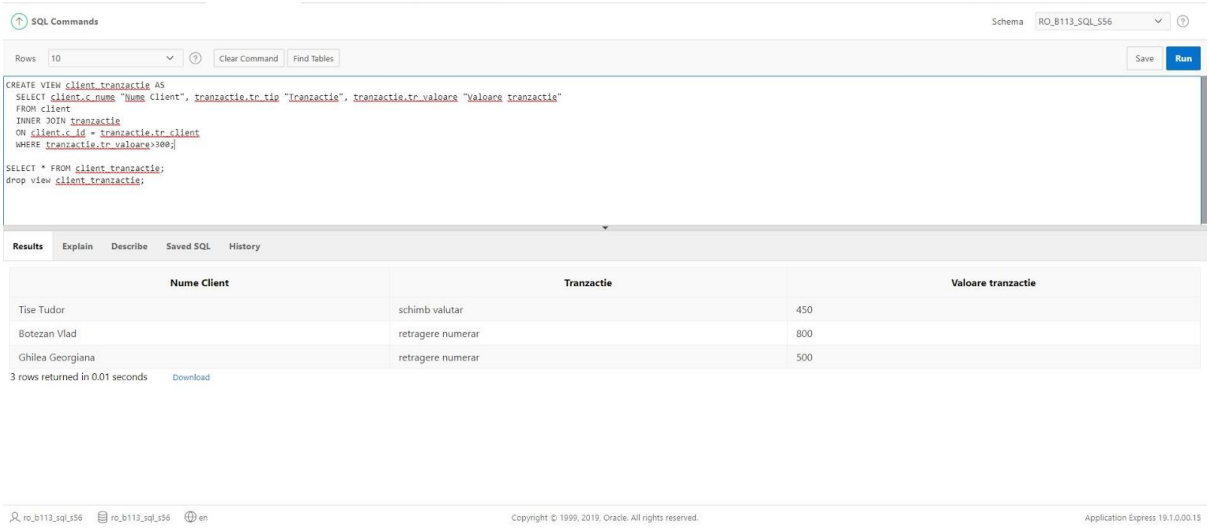
5 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

Vederi

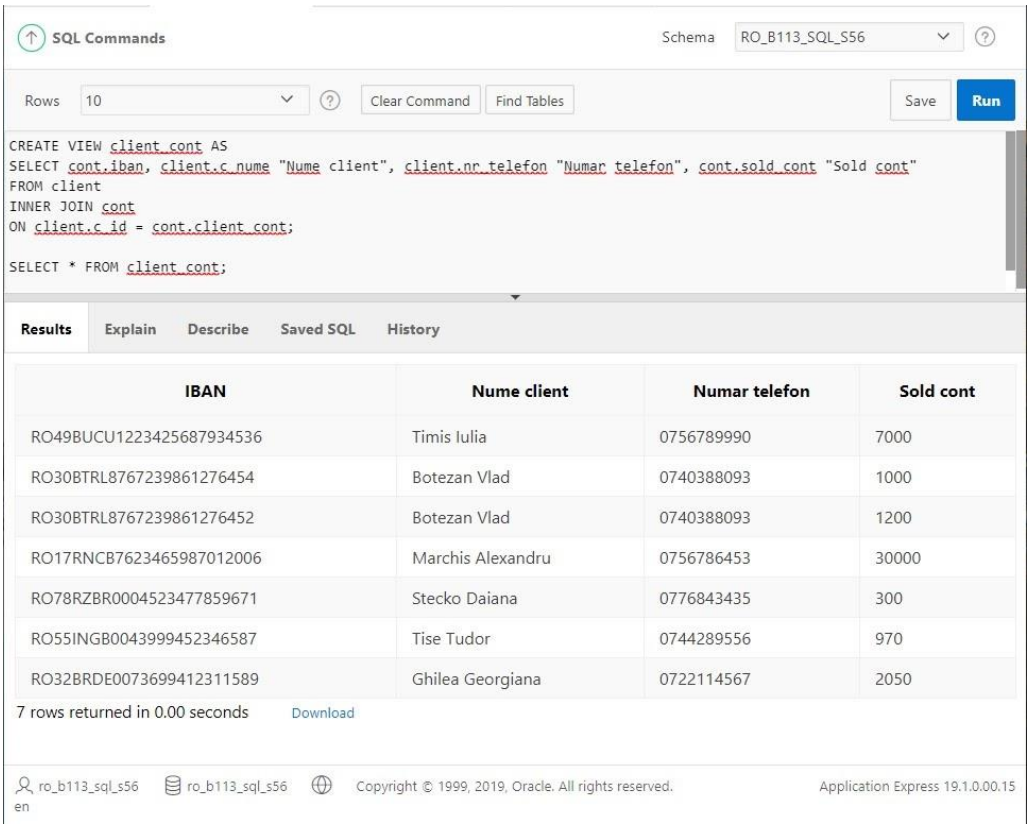
1.O vedere care contine numele clientului si tipul tranzactiei efectuate pentru clientii care au efectuat o tranzactie mai mare de 300.

```
CREATE VIEW client_tranzactie AS
SELECT client.c_nume "Nume Client", tranzactie.tr_tip "Tranzactie",
tranzactie.tr_valoare "Valoare tranzactie"
FROM client
INNER JOIN tranzactie
ON client.c_id = tranzactie.tr_client
WHERE tranzactie.tr_valoare>300;

SELECT * FROM client_tranzactie;
```



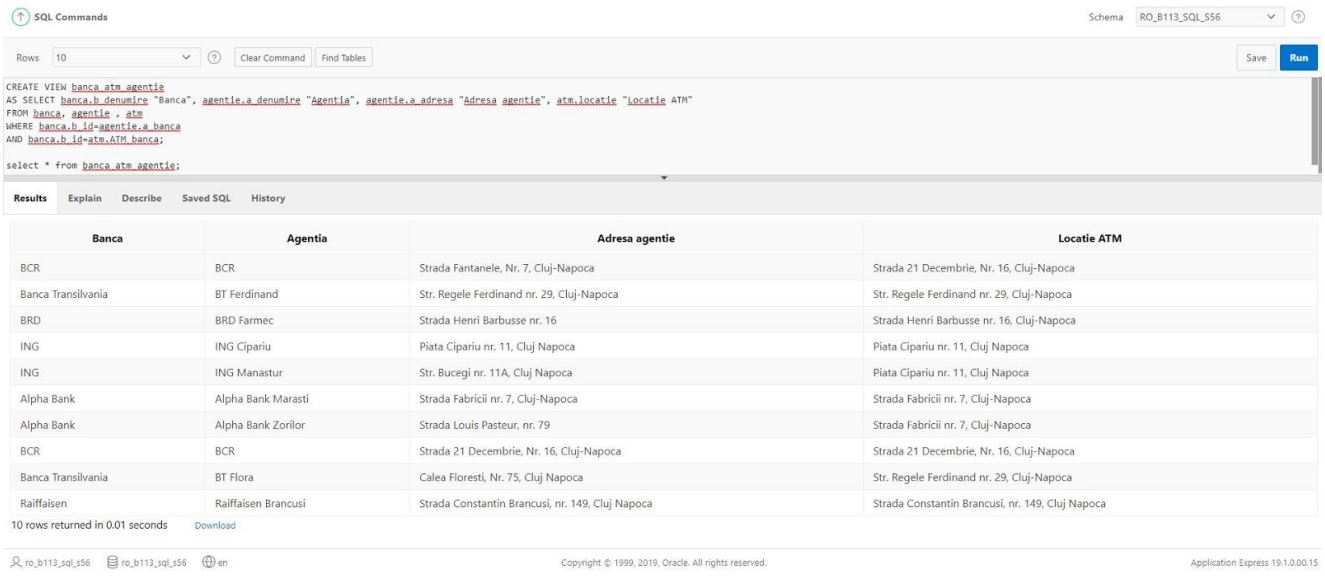
2.O vedere care contine toate conturile, soldul si detalii despre titularii acestora.

```
CREATE VIEW client_cont AS
SELECT cont.iban, client.c_nume "Nume client", client.nr_telefon "Numar telefon",
cont.sold_cont "Sold cont"
FROM client
INNER JOIN cont
ON client.c_id = cont.client_cont;

SELECT * FROM client_cont;
```



3.O vedere care contine numele bancii, numele si adresa agentiilor si locatia atm-urilor.

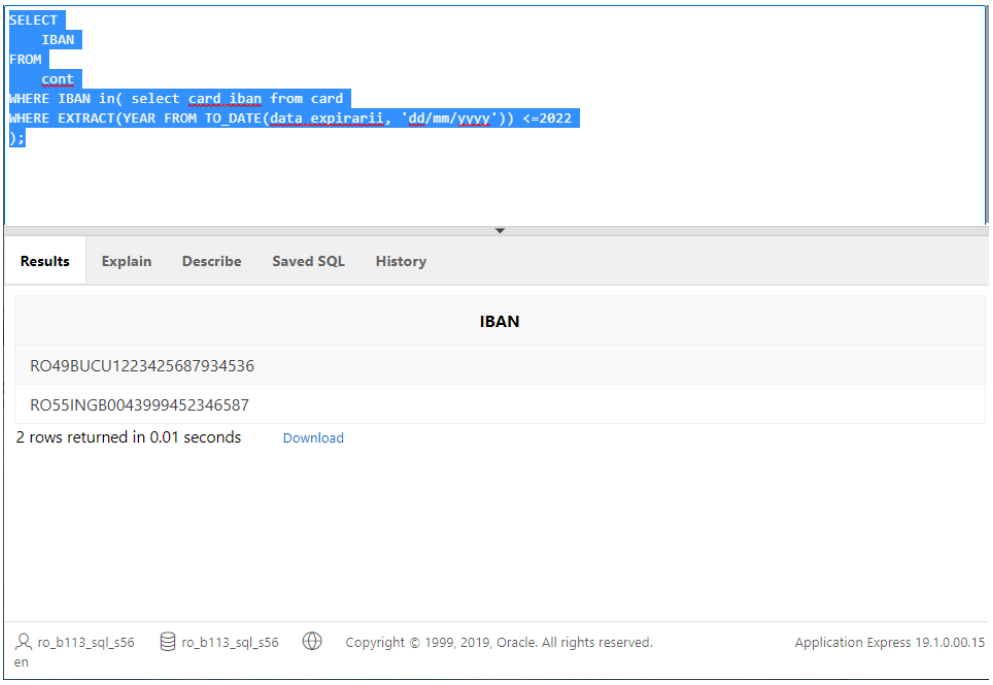
```
CREATE VIEW banca_atm_agentie
AS SELECT banca.b_denumire "Banca", agentie.a_denumire "Agentia",
agentie.a_adresa "Adresa agentie", atm.locatie "Locatie ATM"
FROM banca, agentie , atm
WHERE banca.b_id=agentie.a_banca
AND banca.b_id=atm.ATM_banca;

SELECT * from banca_atm_agentie;
```



Interogari

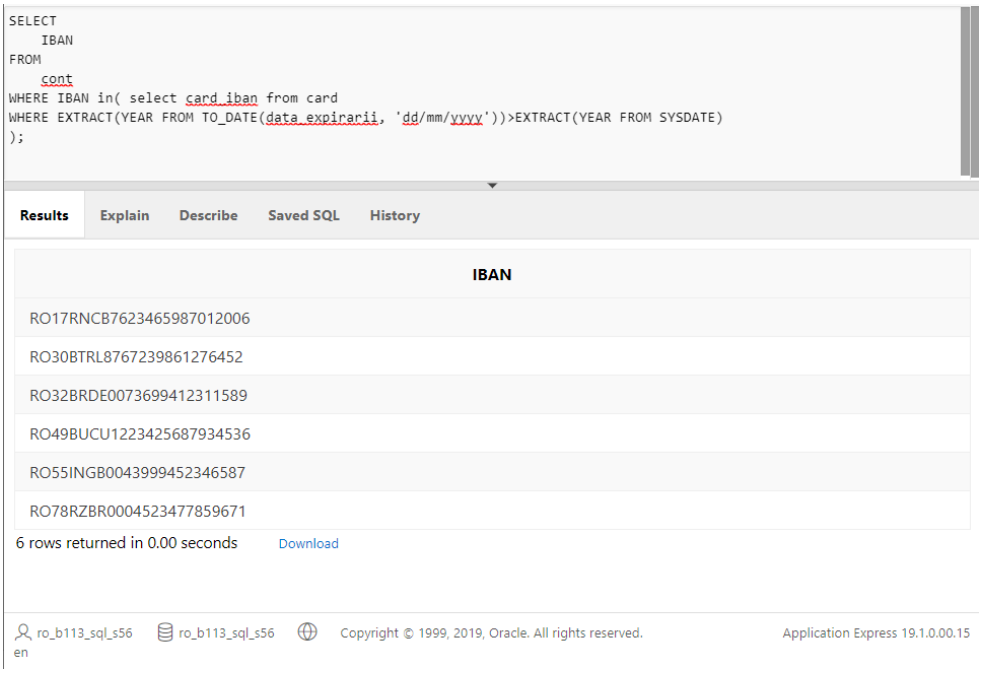
1.Contul IBAN al clientilor care au cardul cu data expirarii pana in anul 2022 inclusiv.

```
SELECT
    IBAN
FROM
    cont
WHERE IBAN in( select card_iban from card
WHERE EXTRACT(YEAR FROM TO_DATE(data_expirarii, 'dd/mm/yyyy')) <=2022
);
```



2.Contul IBAN al clientilor care au cardul cu data expirari dupa anul curent .

```
SELECT
   IBAN
FROM
   cont
WHERE IBAN in( select card_iban from card
WHERE EXTRACT(YEAR FROM TO_DATE(data_expirarii, 'dd/mm/yyyy'))>EXTRACT(YEAR
FROM SYSDATE)
);
```



3.Nume clienti care au mai mult de un cont deschis.

```
SELECT c_nume
FROM client
WHERE c_id IN ( SELECT client_cont  FROM cont
GROUP BY client_cont
HAVING COUNT(distinct iban)>1
 );
```

```
SELECT c_nume
FROM client
WHERE c_id IN ( SELECT client_cont  FROM cont
GROUP BY client_cont
HAVING COUNT(distinct iban)>1
 );
```

Results | Explain | Describe | Saved SQL | History

C_NUME
Botezan Vlad

1 rows returned in 0.01 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

4. IBAN ul conturilor cu cel putin 2 carduri visa.

```
SELECT iban
FROM cont
WHERE iban in (SELECT card_iban FROM card
WHERE tip_card='visa'
GROUP BY card_iban
HAVING COUNT(nr_card)>1
);
```

```
SELECT iban
FROM cont
WHERE iban in (SELECT card_iban FROM card
WHERE tip_card='visa'
GROUP BY card_iban
HAVING COUNT(nr_card)>1
);
```

Results | Explain | Describe | Saved SQL | History

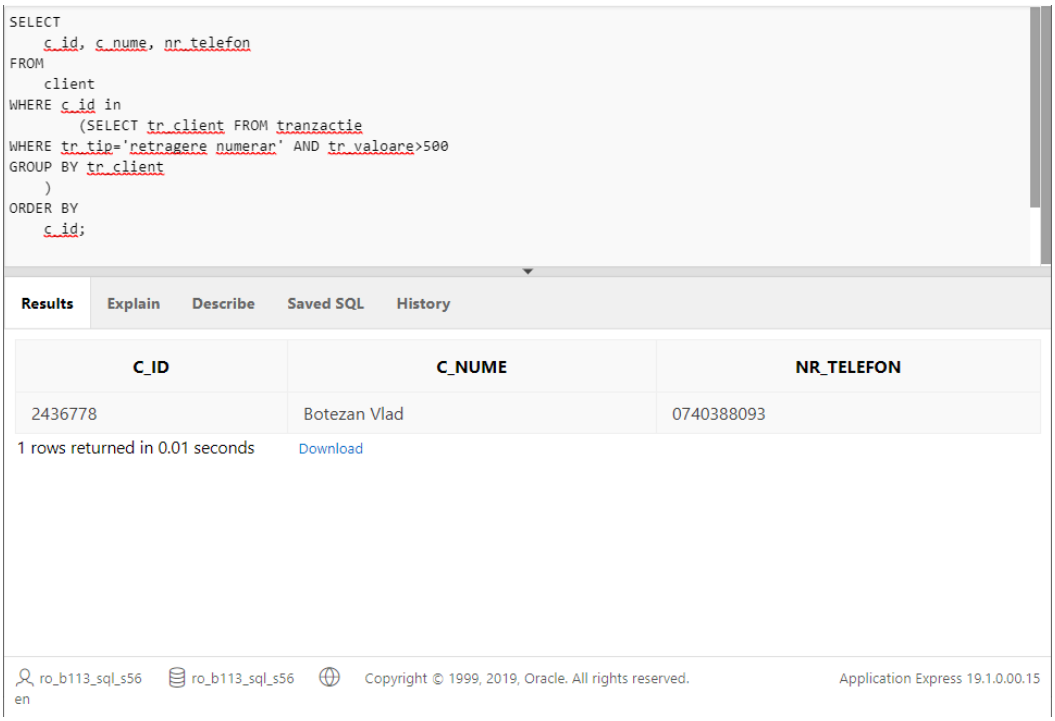
IBAN
RO49BUCU1223425687934536
RO55INGB0043999452346587

2 rows returned in 0.01 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.1
en

5.Nr de telefon si numele clientilor care au facut o retragere mai mare de 500.

```
SELECT
    c_id, c_nume, nr_telefon
FROM
    client
WHERE c_id in
        (SELECT tr_client FROM tranzactie
WHERE tr_tip='retragere numerar' AND tr_valoare>500
GROUP BY tr_client
    )
ORDER BY
    c_id;
```



6. IBAN urile conturilor si soldul acestora pentru conturile care au soldul mai mare decat media de pe coloana.

```
SELECT
    iban, sold_cont
FROM
    cont
WHERE
     sold_cont> (
        SELECT
            AVG( sold_cont)
        FROM
```

```
        cont
    )
ORDER BY
    iban;
```

```
SELECT
    iban, sold_cont
FROM
    cont
WHERE
     sold_cont> (
        SELECT
            AVG( sold_cont)
        FROM
            cont
    )
ORDER BY
    iban;
```

Results | Explain | Describe | Saved SQL | History

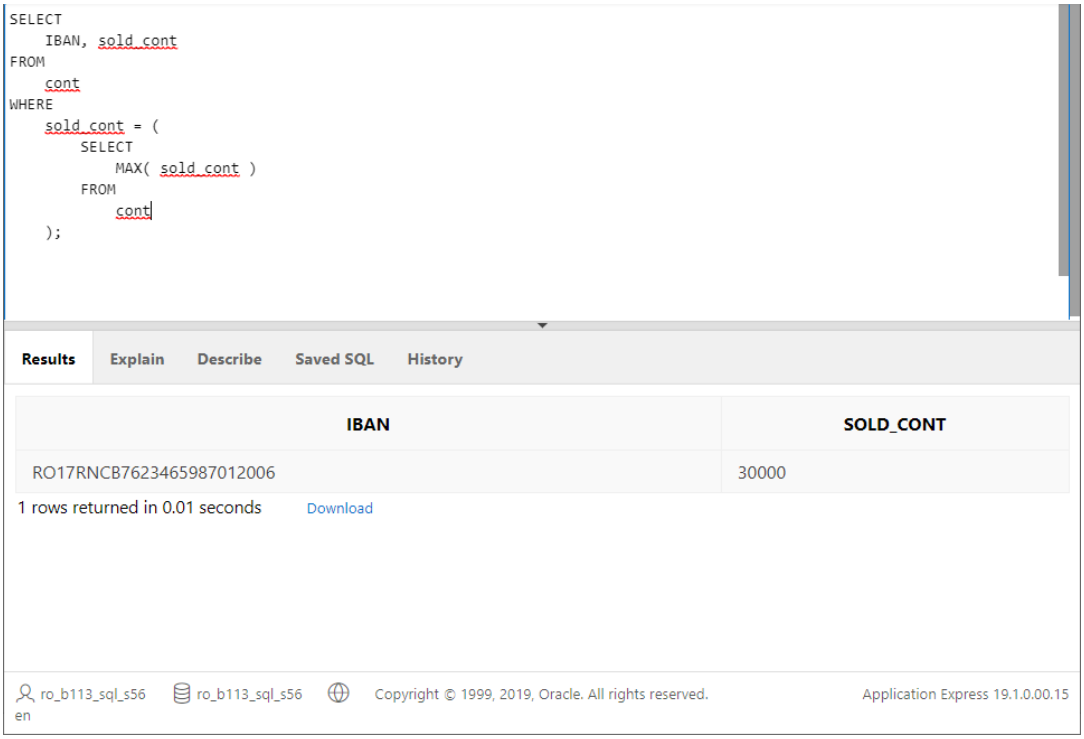
IBAN	SOLD_CONT
RO17RNCB7623465987012006	30000
RO49BUCU1223425687934536	7000

2 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

7. IBAN si soldul pentru contul cu cel mai mare sold disponibil.

```
SELECT
    IBAN, sold_cont
FROM
    cont
WHERE
    sold_cont = (
        SELECT
            MAX( sold_cont )
        FROM
            cont
    );
```



8. Nume client care are cel mai mic sold disponibil.

```
SELECT
   c_id, c_nume
FROM
   client
WHERE c_id in( SELECT client_cont FROM cont
WHERE sold_cont = (
       SELECT
          MIN( sold_cont )
       FROM
          cont)
   );
```

```
SELECT
    c_id, c_nume
FROM
    client
WHERE c_id in( SELECT client_cont FROM cont
WHERE sold_cont = (
        SELECT
            MIN( sold_cont )
        FROM
            cont)
    );
```

Results | Explain | Describe | Saved SQL | History

C_ID	C_NUME
1232248	Stecko Daiana

1 rows returned in 0.01 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

9. Denumirea bancilor care au ATM care nu are limita mai mare de 5000.

SELECT b_id, b_denumire FROM banca
WHERE b_id NOT IN(SELECT ATM_banca FROM ATM
WHERE limita_cash>5000
);

```
SELECT b_id, b_denumire FROM banca
WHERE b_id NOT IN(SELECT ATM_banca FROM ATM
WHERE limita_cash>5000
);
```

Results | Explain | Describe | Saved SQL | History

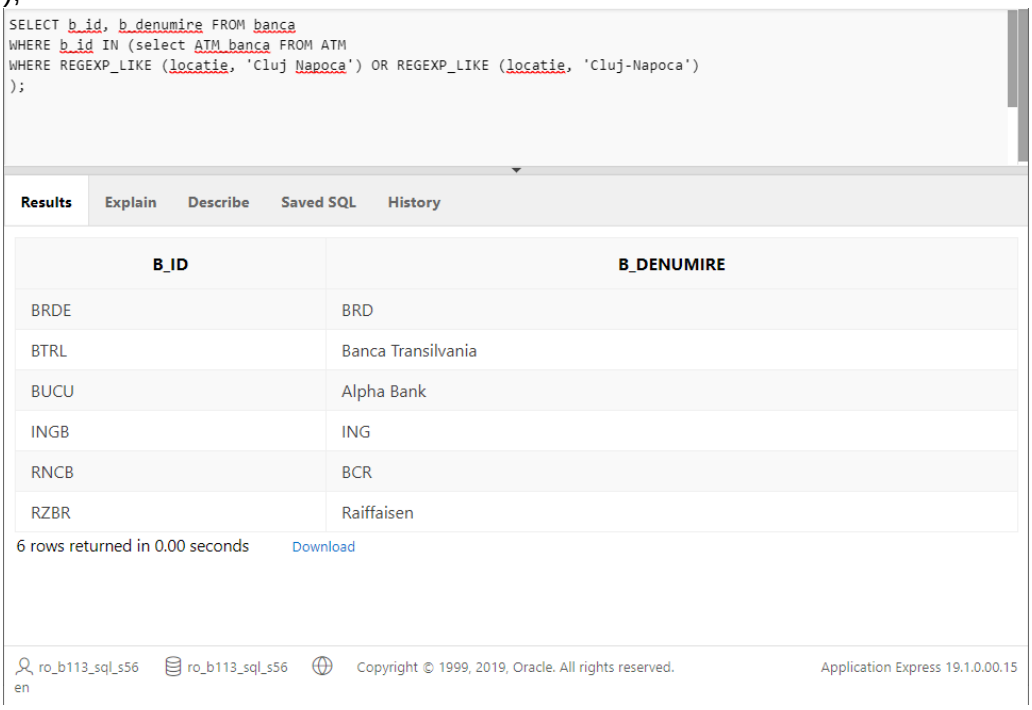
B_ID	B_DENUMIRE
RZBR	Raiffaisen
BTRL	Banca Transilvania
BRDE	BRD
RNCB	BCR
BUCU	Alpha Bank

5 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

10. Denumirea bancilor care au ATM uri in Cluj-Napoca.

```
SELECT b_id, b_denumire FROM banca
WHERE b_id IN (select ATM_banca FROM ATM
WHERE REGEXP_LIKE (locatie, 'Cluj Napoca') OR REGEXP_LIKE (locatie, 'Cluj-Napoca')
);
```



```
SELECT b_id, b_denumire FROM banca
WHERE b_id IN (select ATM_banca FROM ATM
WHERE REGEXP_LIKE (locatie, 'Cluj Napoca') OR REGEXP_LIKE (locatie, 'Cluj-Napoca')
);
```

Results | Explain | Describe | Saved SQL | History

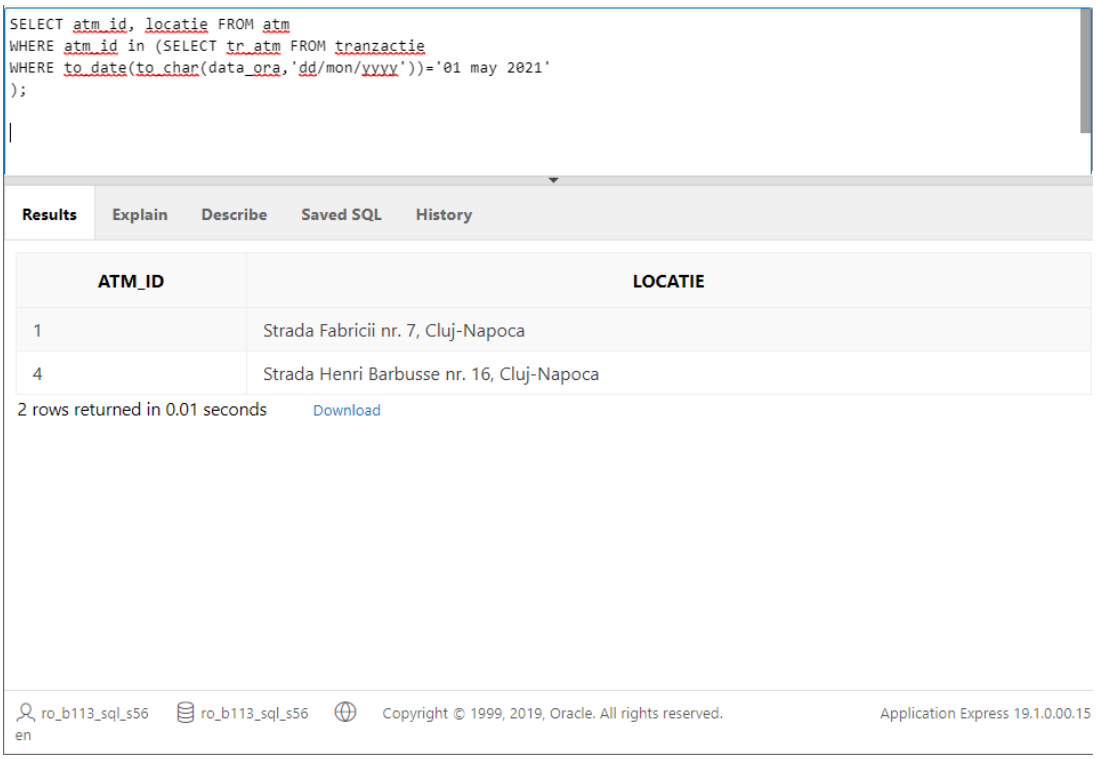
B_ID	B_DENUMIRE
BRDE	BRD
BTRL	Banca Transilvania
BUCU	Alpha Bank
INGB	ING
RNCB	BCR
RZBR	Raiffaisen

6 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

11.Locatiile ATM urilor la care au fost efectuate tranzactiile din 01/05/2021.

```
SELECT atm_id, locatie FROM atm
WHERE atm_id in (SELECT tr_atm FROM tranzactie
WHERE to_date(to_char(data_ora,'dd/mon/yyyy'))='01 may 2021'
);
```



12.Locatiile ATM urilor la care au fost efectuate tranzactiile din intervalul 01/05/2021-31/05/2021.

SELECT atm_id, locatie FROM atm
WHERE atm_id IN (SELECT tr_atm FROM tranzactie
WHERE to_date(to_char(data_ora,'dd/mon/yyyy')) BETWEEN '01 may 2021' AND '31 may 2021'
);

```
SELECT atm_id, locatie FROM atm
WHERE atm_id IN (SELECT tr_atm FROM tranzactie
WHERE to_date(to_char(data_ora,'dd/mon/yyyy')) BETWEEN '01 may 2021' AND '31 may 2021'
);
```

Results | Explain | Describe | Saved SQL | History

ATM_ID	LOCATIE
1	Strada Fabricii nr. 7, Cluj-Napoca
3	Str. Regele Ferdinand nr. 29, Cluj-Napoca
4	Strada Henri Barbusse nr. 16, Cluj-Napoca
5	Strada Constantin Brancusi, nr. 149, Cluj Napoca
6	Piata Cipariu nr. 11, Cluj Napoca

5 rows returned in 0.01 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

13.Bancile ordonate crescator dupa nr de conturi deschise.

SELECT b.b_id, count(c.iban) AS Nr_conturi
FROM banca b JOIN cont c ON b.b_id = c.banca_cont
GROUP BY b.b_id
ORDER BY Nr_conturi ASC;

```
SELECT b.b_id, count(c.iban) AS Nr_conturi
FROM banca b JOIN cont c ON b.b_id = c.banca_cont
GROUP BY b.b_id
ORDER BY Nr_conturi ASC;
```

Results | Explain | Describe | Saved SQL | History

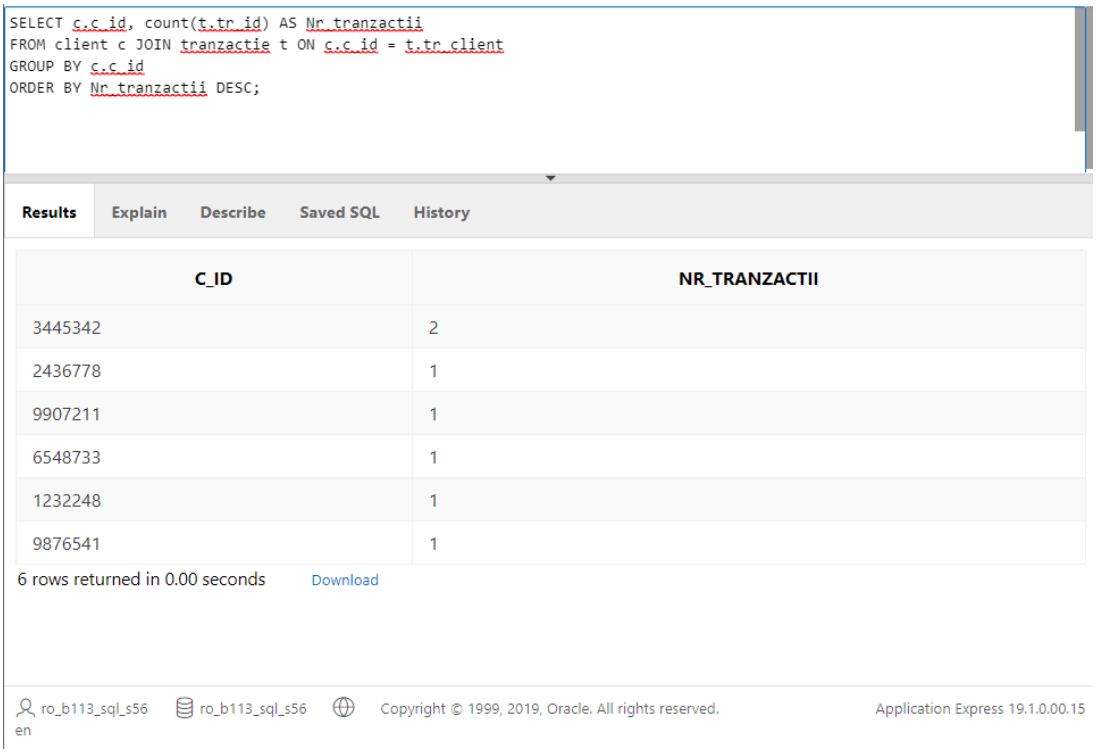
B_ID	NR_CONTURI
RNCB	1
BRDE	1
BUCU	1
RZBR	1
INGB	1
BTRL	2

6 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

14.Clientii ordonati descrescator dupa nr de tranzactii efectuate.

```
SELECT c.c_id, count(t.tr_id) AS Nr_tranzactii
FROM client c JOIN tranzactie t ON c.c_id = t.tr_client
GROUP BY c.c_id
ORDER BY Nr_tranzactii DESC;
```



Results | Explain | Describe | Saved SQL | History

C_ID	NR_TRANZACTII
3445342	2
2436778	1
9907211	1
6548733	1
1232248	1
9876541	1

6 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en

15. Nume clienti care au efectuat un alt tip de tranzactie decat retragere si depunere numerar.

```
SELECT c_nume FROM client
WHERE c_id IN (SELECT tr_client FROM tranzactie
WHERE tr_tip<>'retragere numerar' AND tr_tip<>'depunere numerar');
```

```
SELECT c_nume FROM client
WHERE c_id IN (SELECT tr_client FROM tranzactie
WHERE tr_tip<>'retragere numerar' AND tr_tip<>'depunere numerar');
```

Results | Explain | Describe | Saved SQL | History

C_NUME
Ghilea Georgiana
Timis Iulia
Tise Tudor

3 rows returned in 0.00 seconds Download

ro_b113_sql_s56 ro_b113_sql_s56 Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.1.0.00.15
en