Proiect la Baze de Date in Economie

Banci

Bancomat

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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**

**BANCA**

#b\_id

\*b\_denumire

\*b\_adresa

**AGENTIE**

#a\_id

\*a\_denumire

\*a\_adresa

**ATM**

#ATM\_id

\*limita\_cash

\*locatie

**CONT**

#IBAN

\*tip\_cont

\*sold\_cont

**CLIENT**

#c\_id

\*c\_nume

\*CNP

\*c\_adresa

\*nr\_telefon

**TRANZACTIE**

#tr\_id

\*data\_ora

\*tr\_tip

* tr\_valoare

**CARD**

#nr\_card

\*tip\_card

\*CVV

\*data\_expirarii

\*PIN

**M:M**

**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) |

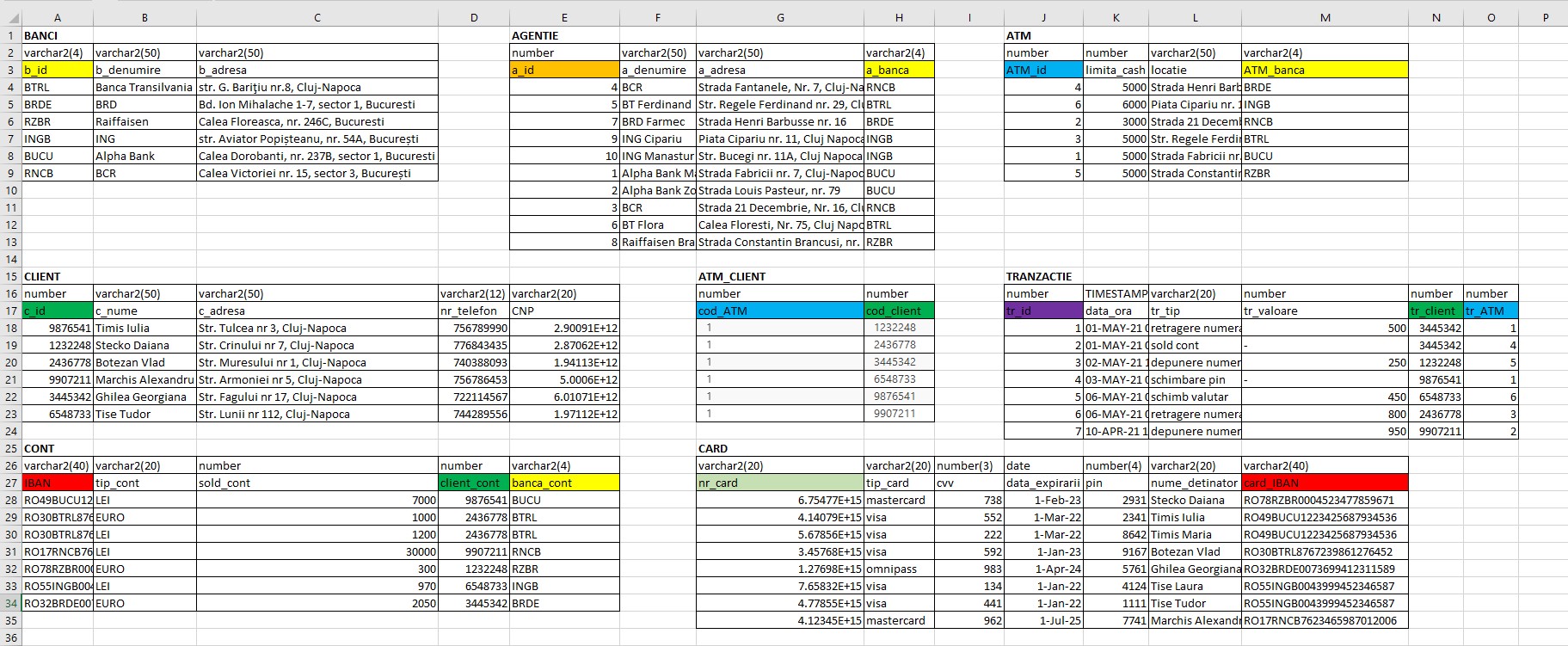
|  |  |  |  |
| --- | --- | --- | --- |
| **ATM** | | |  |
| **Tip cheie** | **Optionalitate** | **Nume coloana** | **Observatii** |
| CP | \* | ATM\_id |  |
|  | \* | limita\_cash |  |
|  | \* | locatie |  |
| CS | \* | ATM\_banca | Relatia cu Banci(BCA) |

|  |  |  |  |
| --- | --- | --- | --- |
| **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**

**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

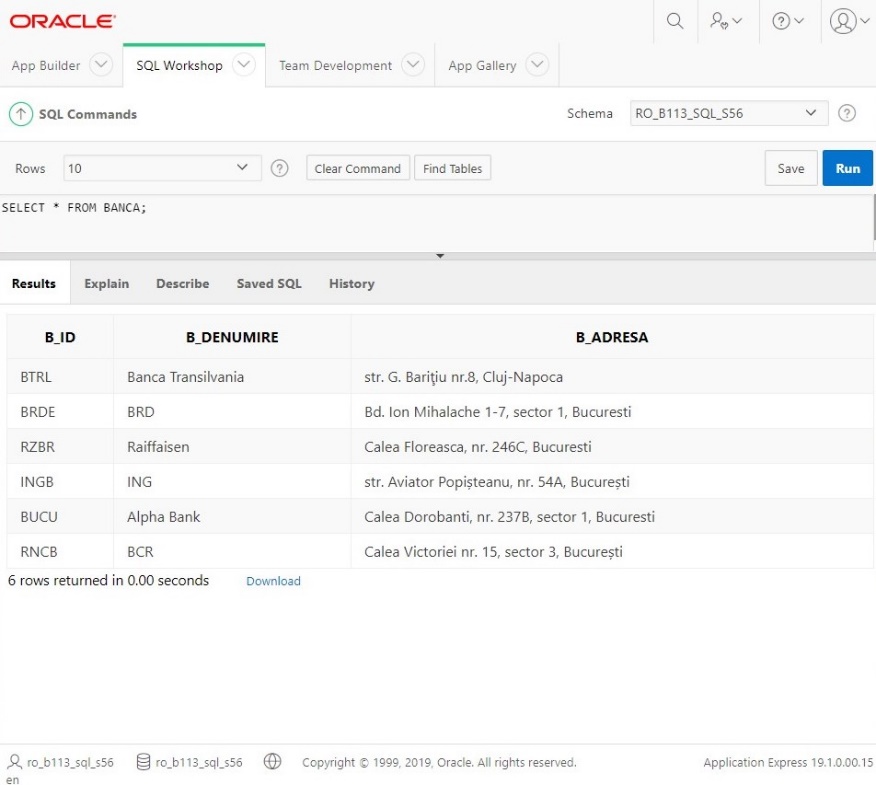
VALUES

('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)

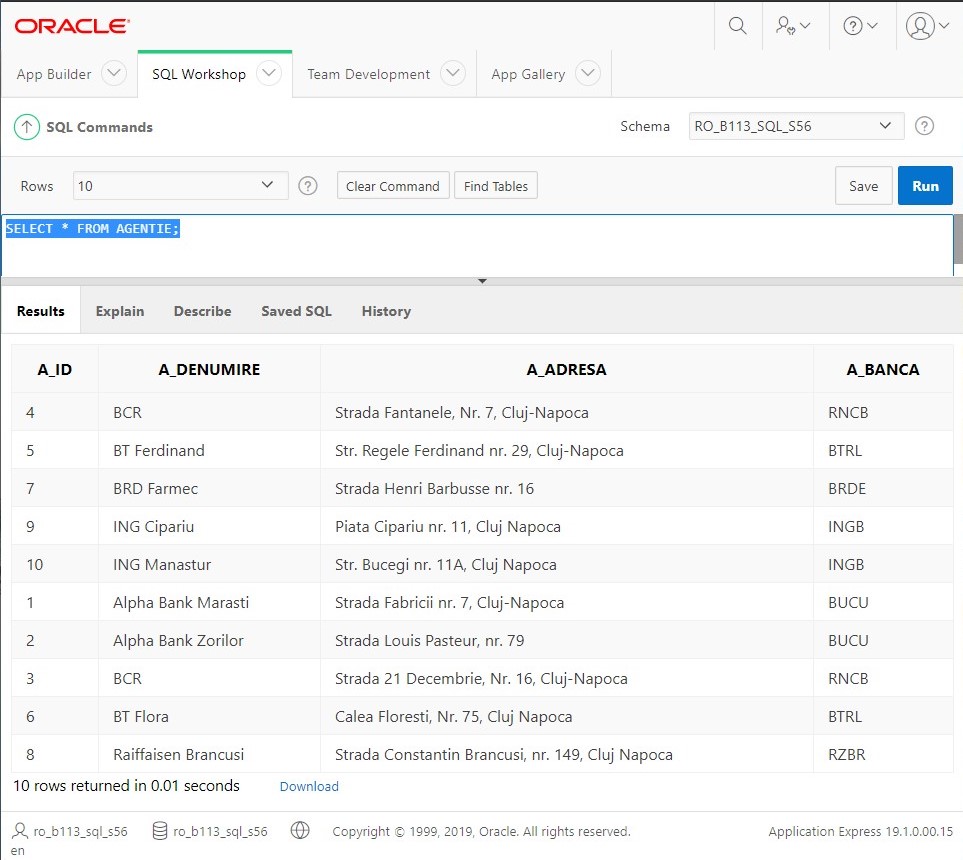
VALUES

('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)

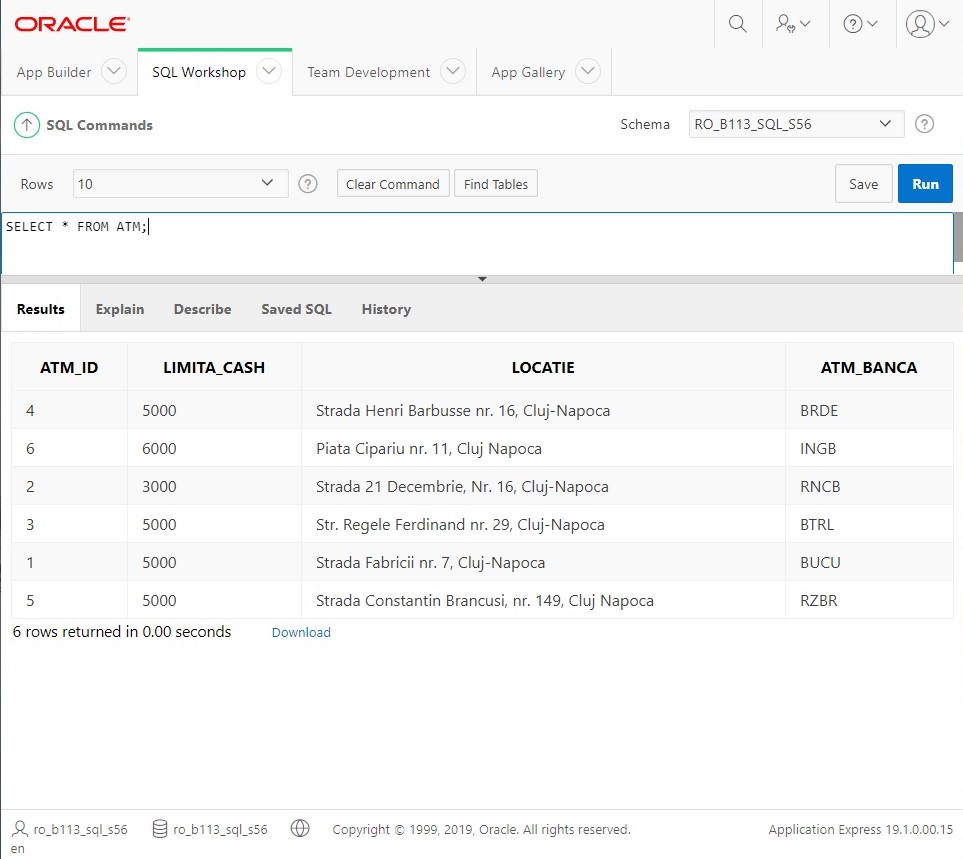
VALUES

(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

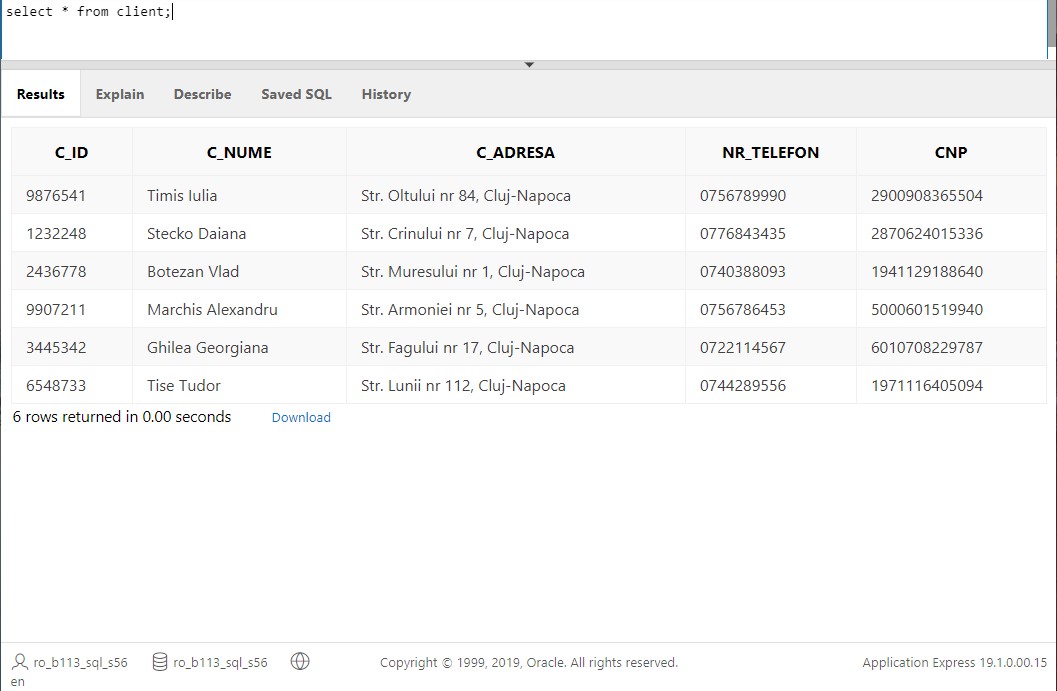
VALUES

(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

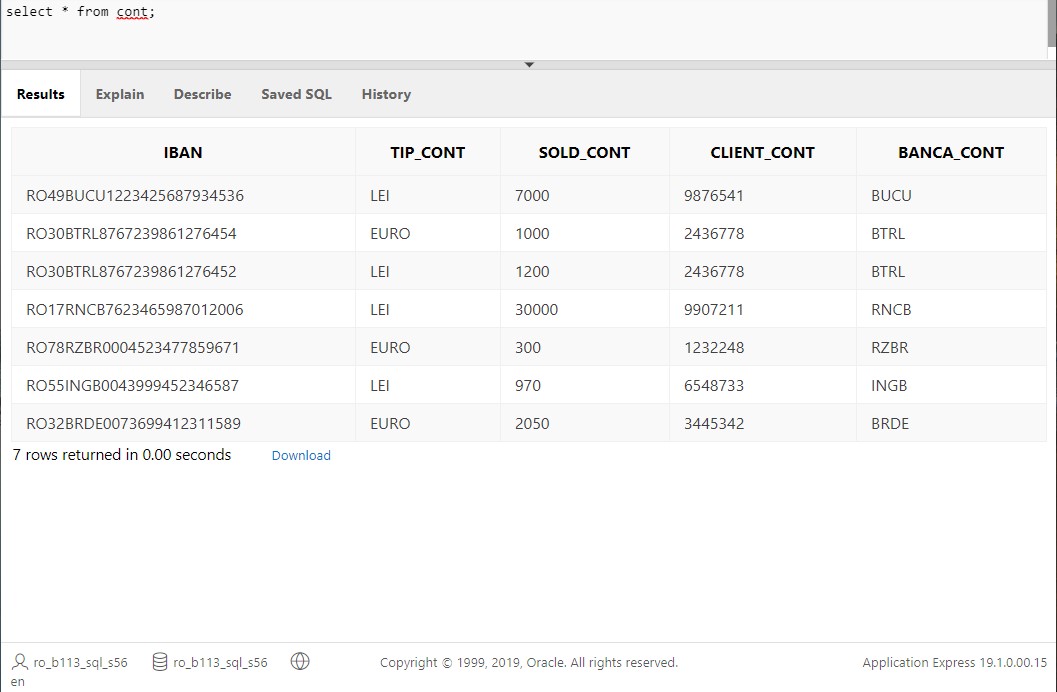
VALUES

('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

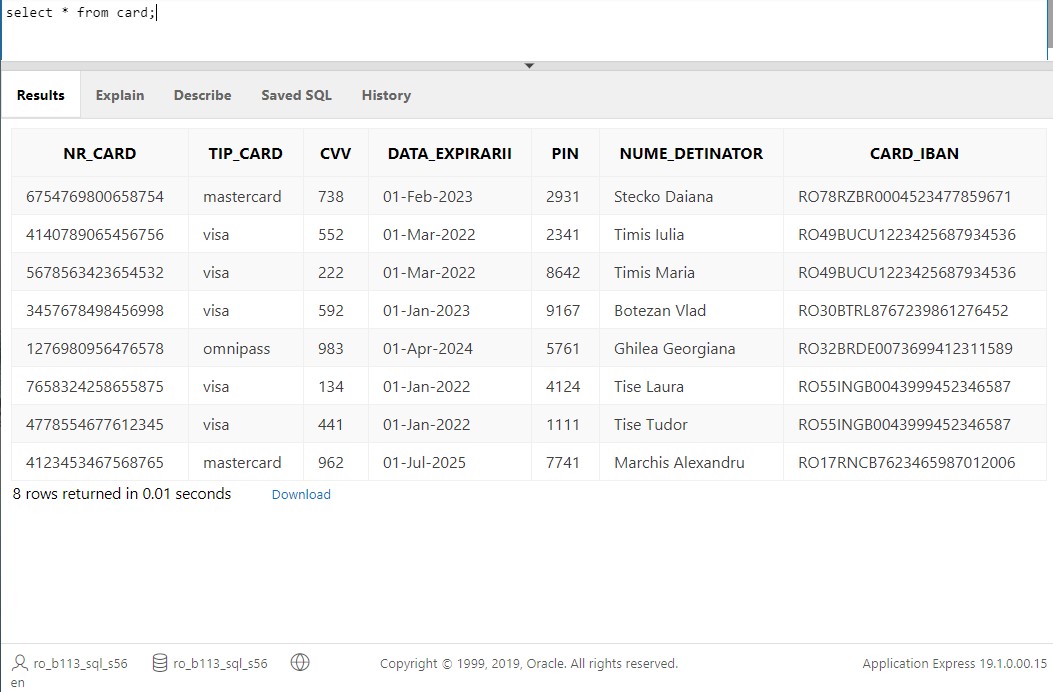
VALUES

('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)

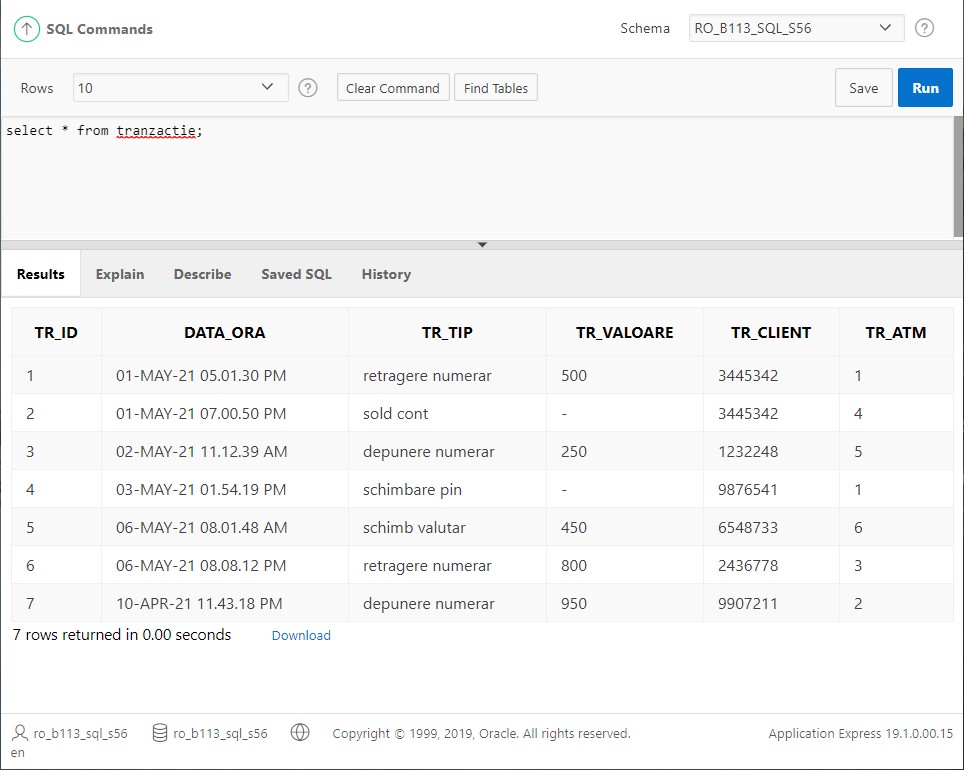
VALUES

(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);

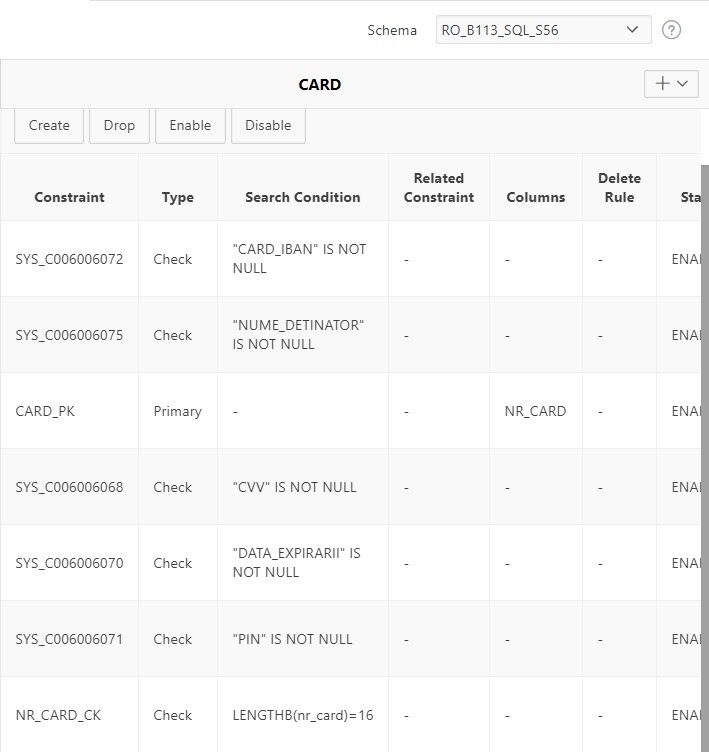
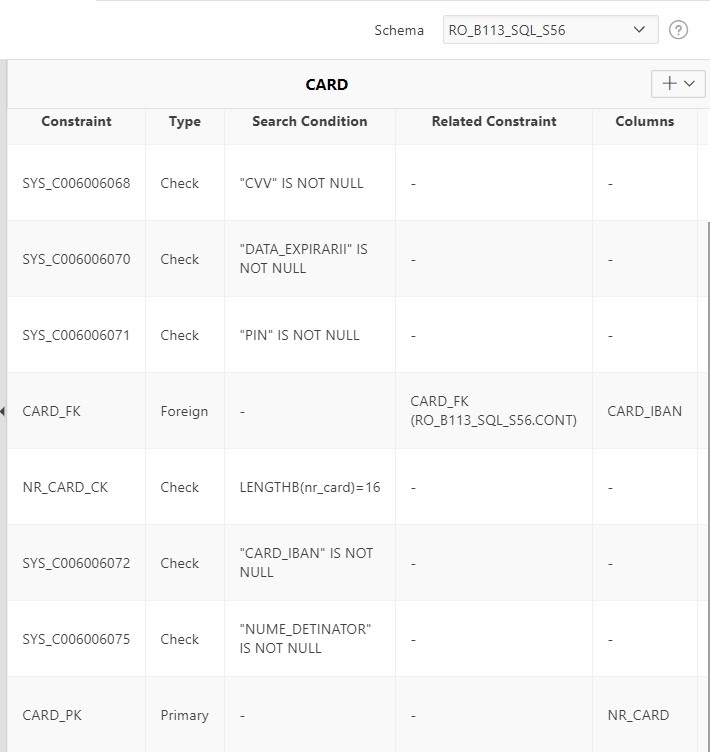


**Modificari de structura**

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

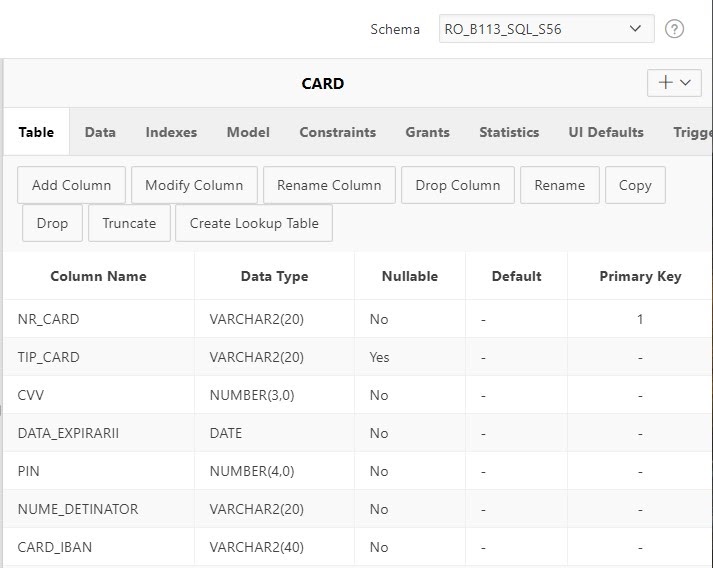
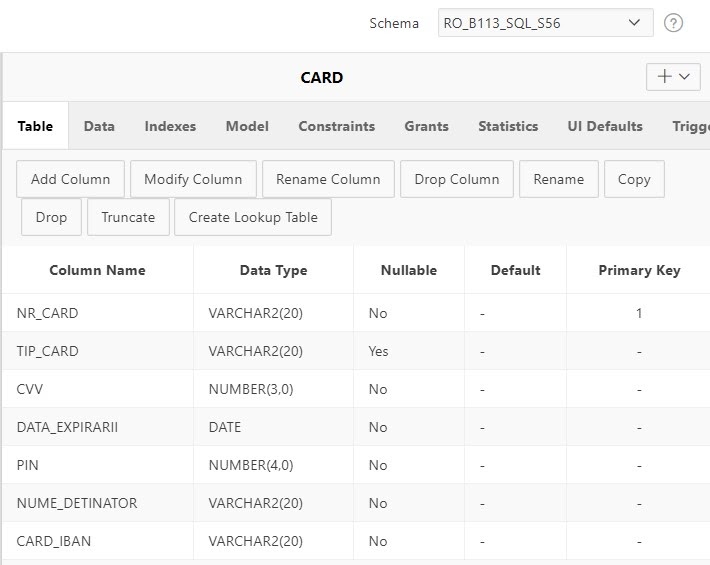
DROP CONSTRAINT Card\_FK;



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;



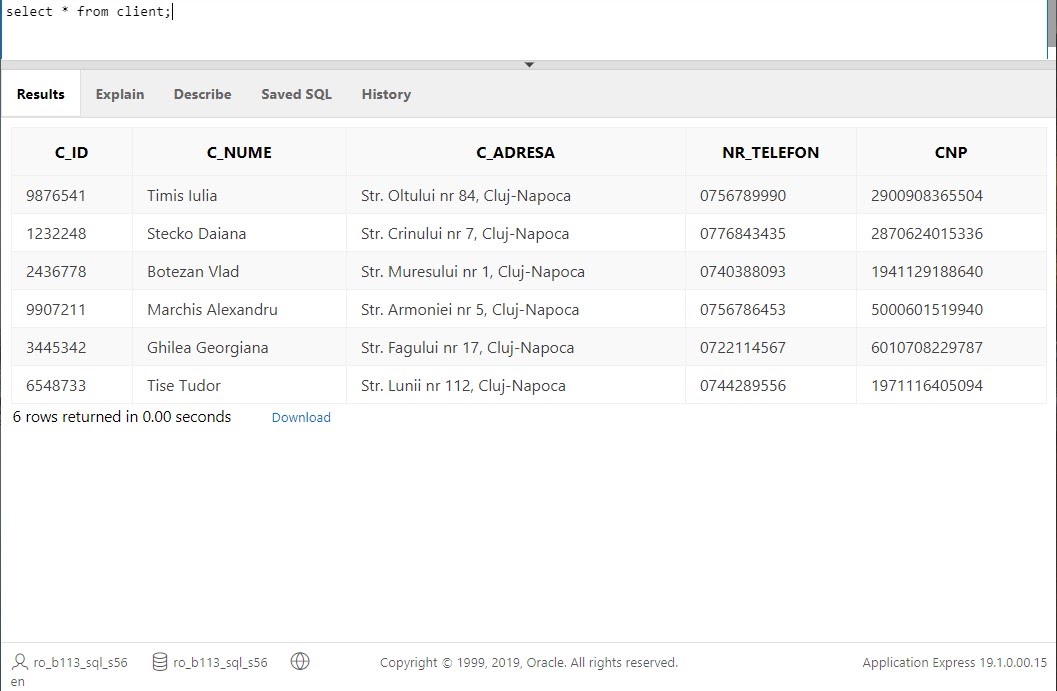


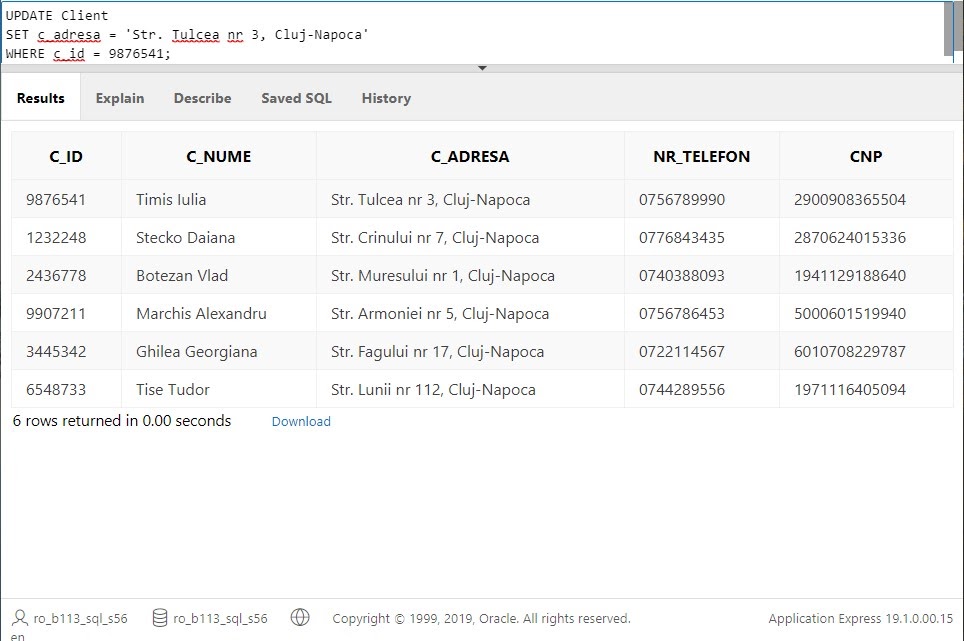
**Modificari de continut**

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'

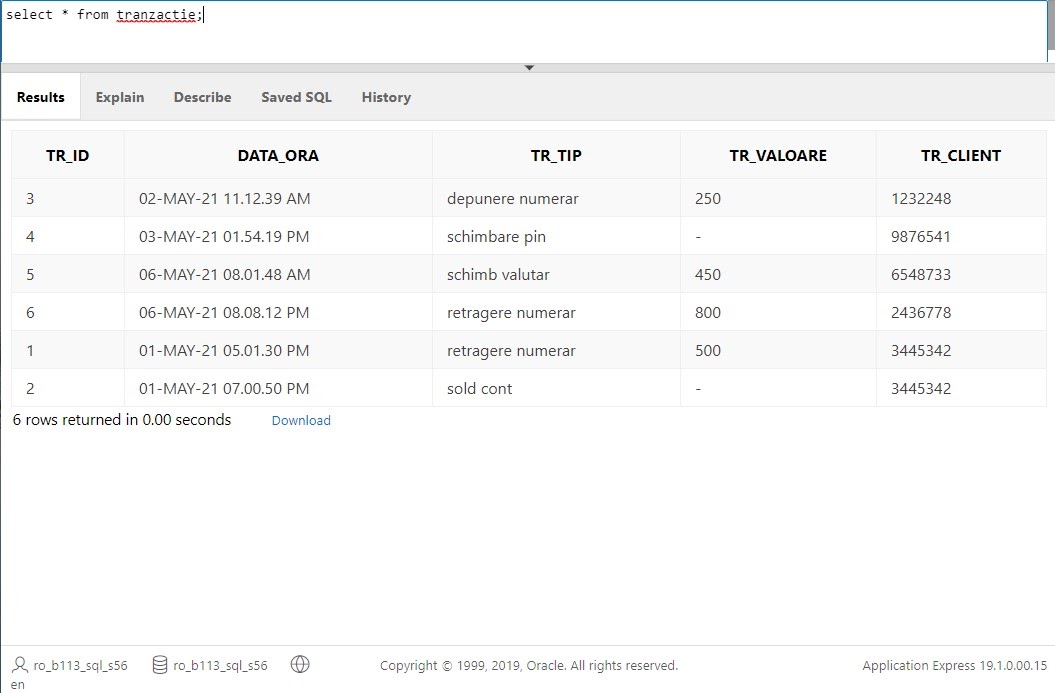
WHERE c\_id = 9876541; 

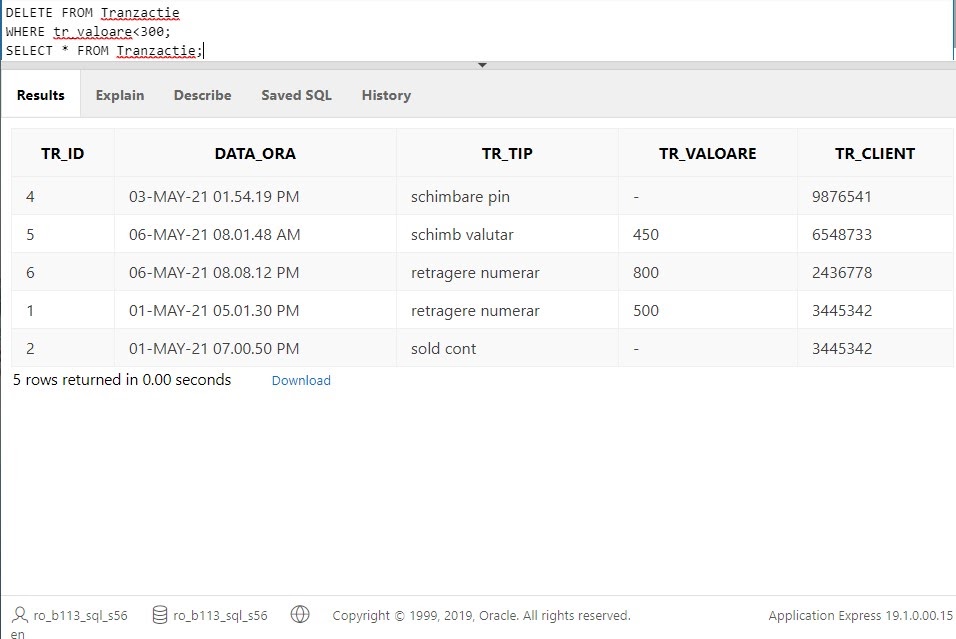


2. Se sterg tranzactiile cu valoare mai mica decat 300.

DELETE FROM Tranzactie

WHERE tr\_valoare<300;





**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"

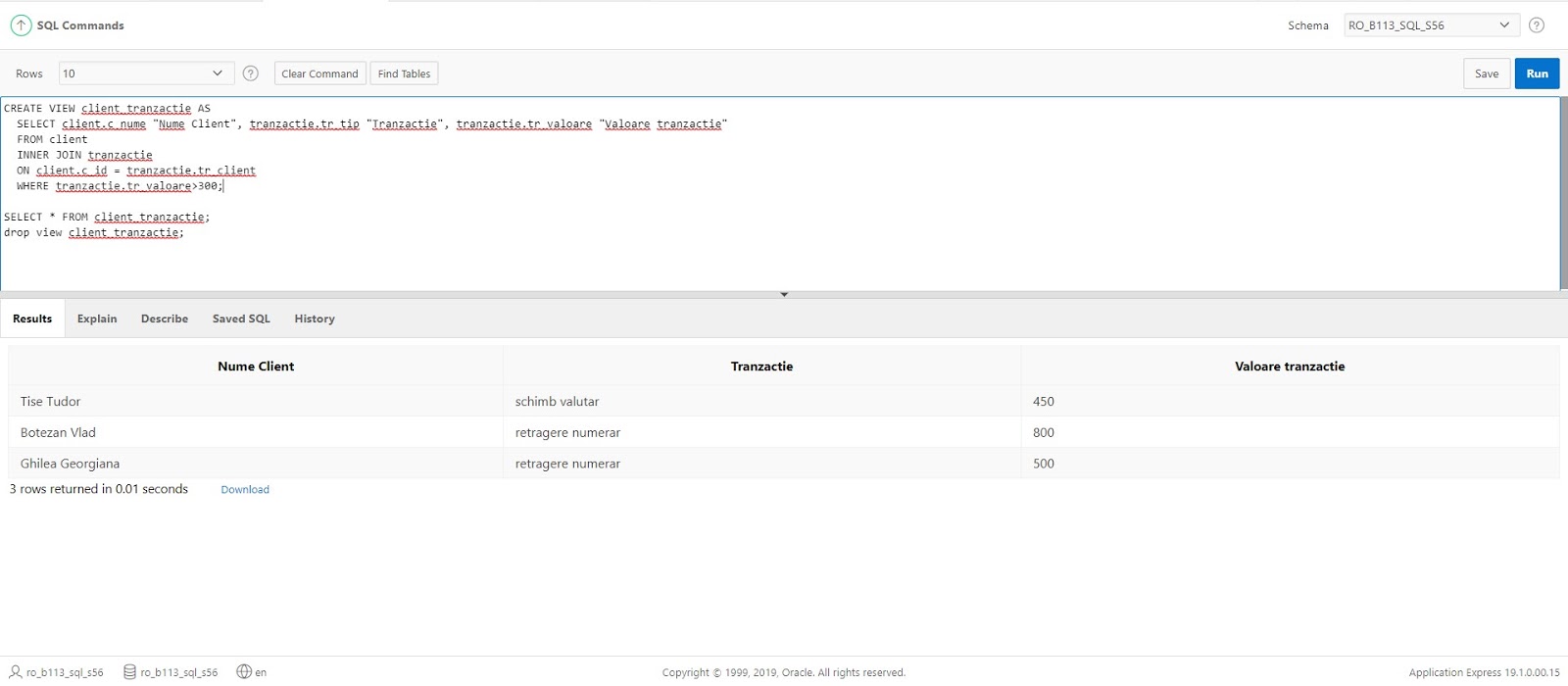
FROM client

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

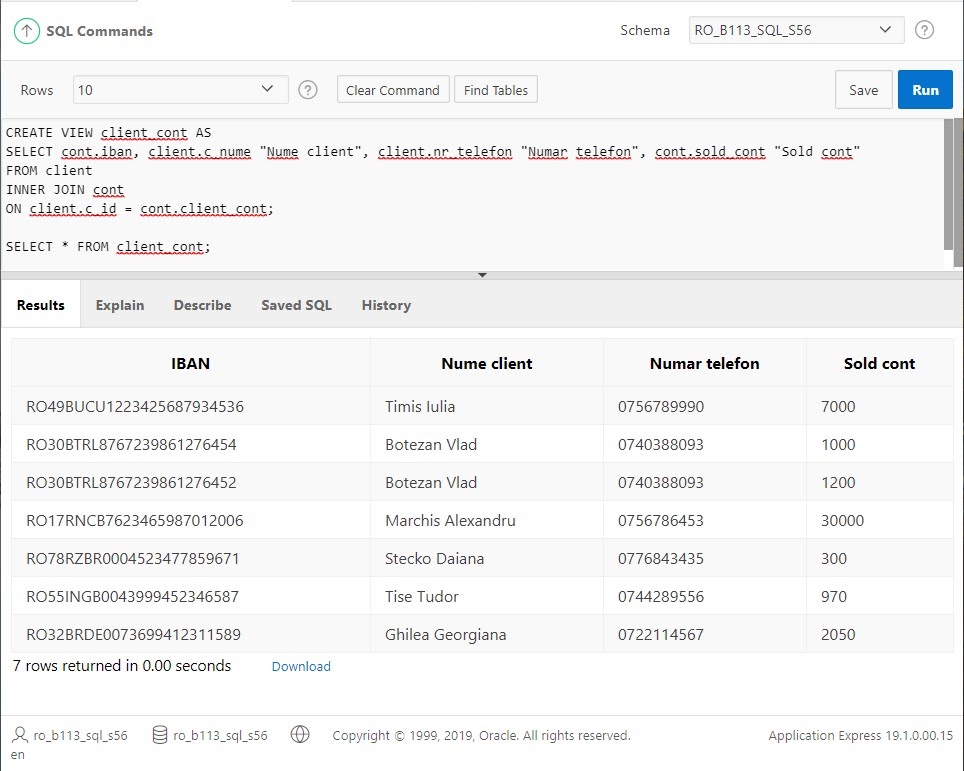
SELECT cont.iban, client.c\_nume "Nume client", client.nr\_telefon "Numar telefon", cont.sold\_cont "Sold cont"

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

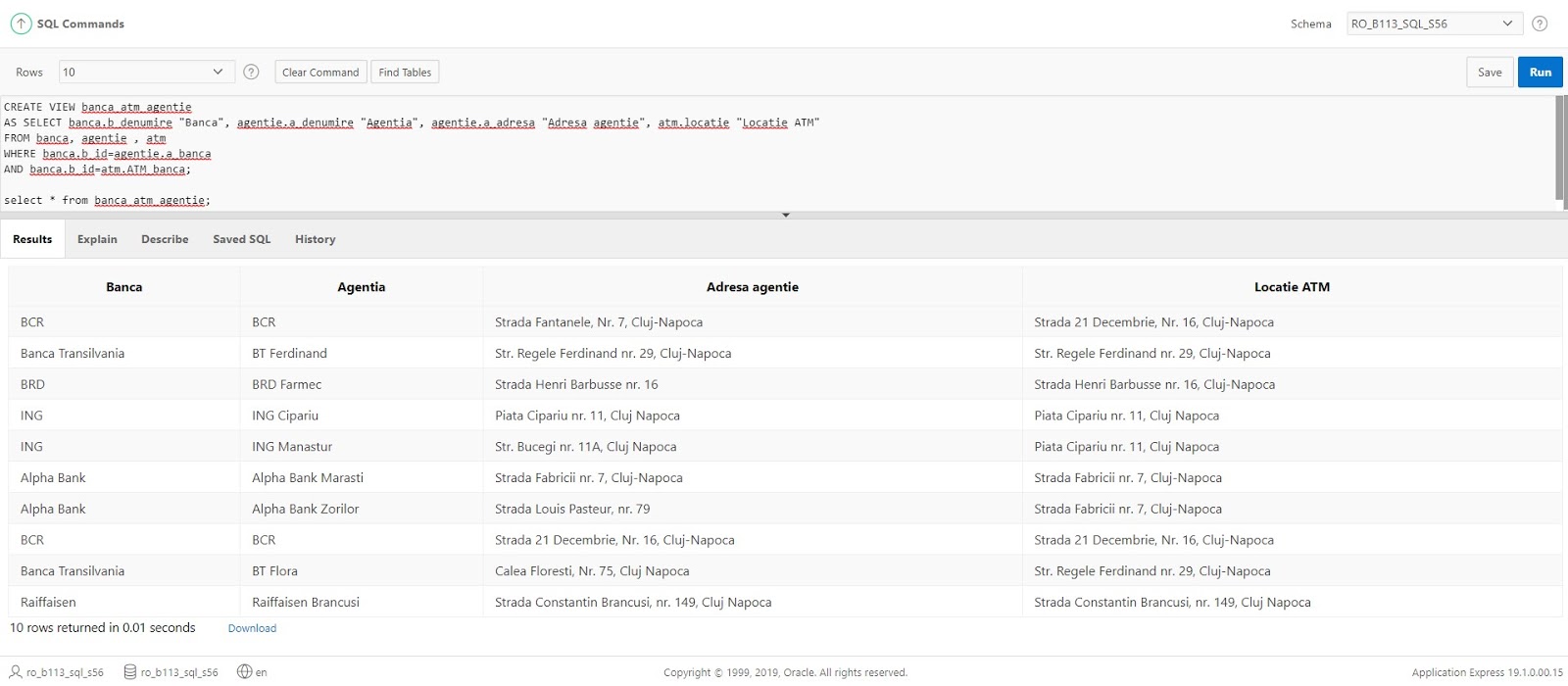
AS SELECT banca.b\_denumire "Banca", agentie.a\_denumire "Agentia", agentie.a\_adresa "Adresa agentie", atm.locatie "Locatie ATM"

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

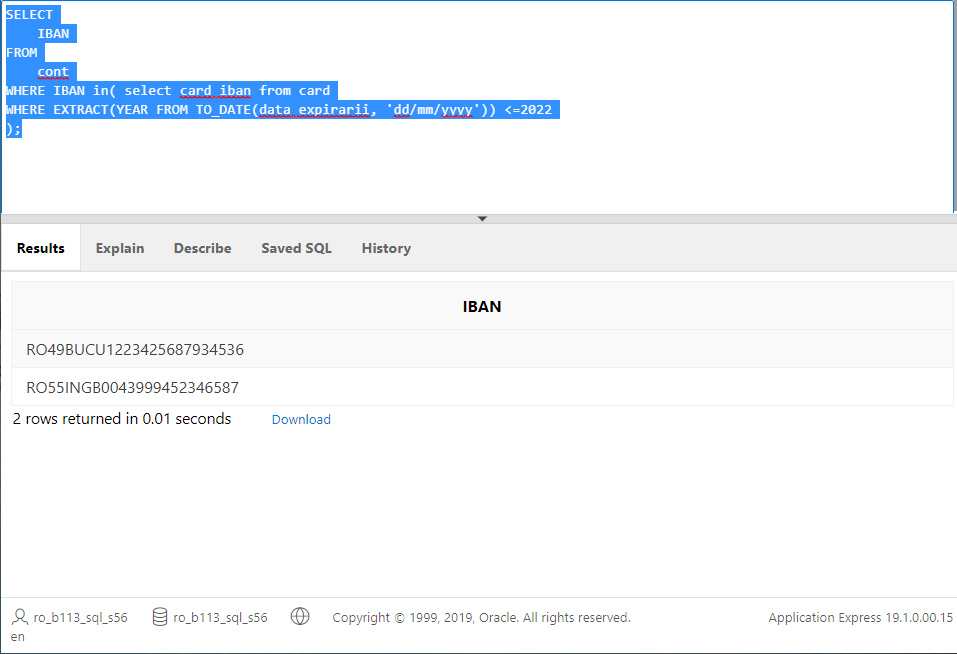
FROM

    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

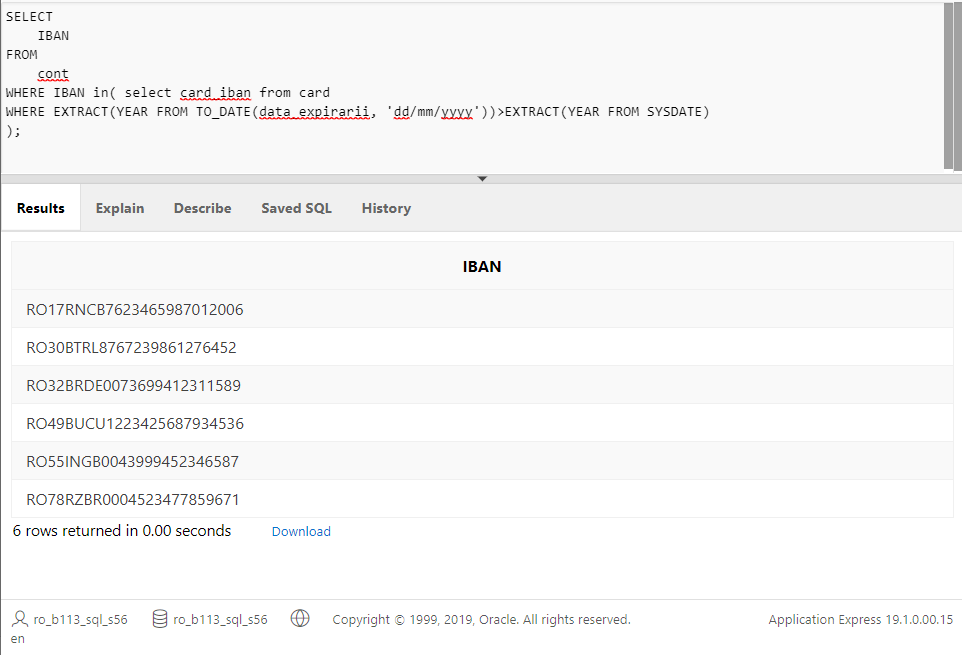
FROM

    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

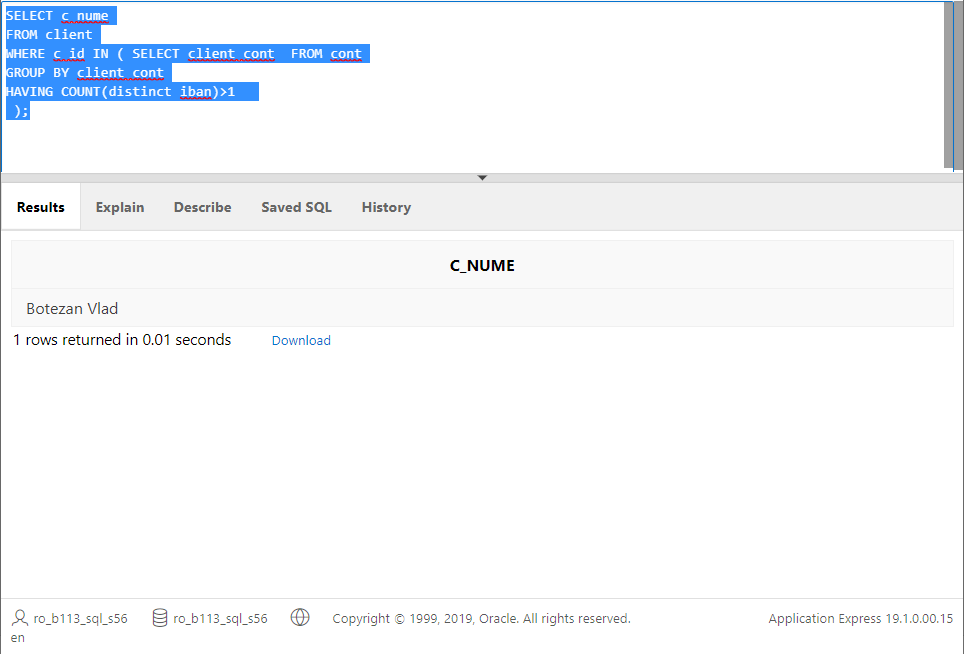
FROM client

WHERE c\_id IN ( SELECT client\_cont  FROM cont

GROUP BY client\_cont

HAVING COUNT(distinct iban)>1

 );



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

SELECT iban

FROM cont

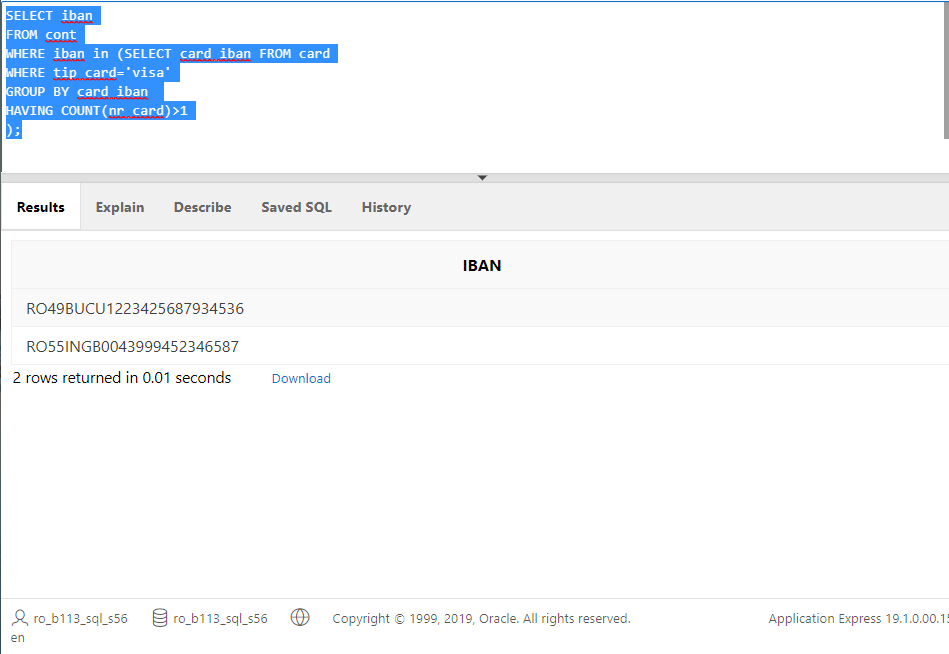
WHERE iban in (SELECT card\_iban FROM card

WHERE tip\_card='visa'

GROUP BY card\_iban

HAVING COUNT(nr\_card)>1

);



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

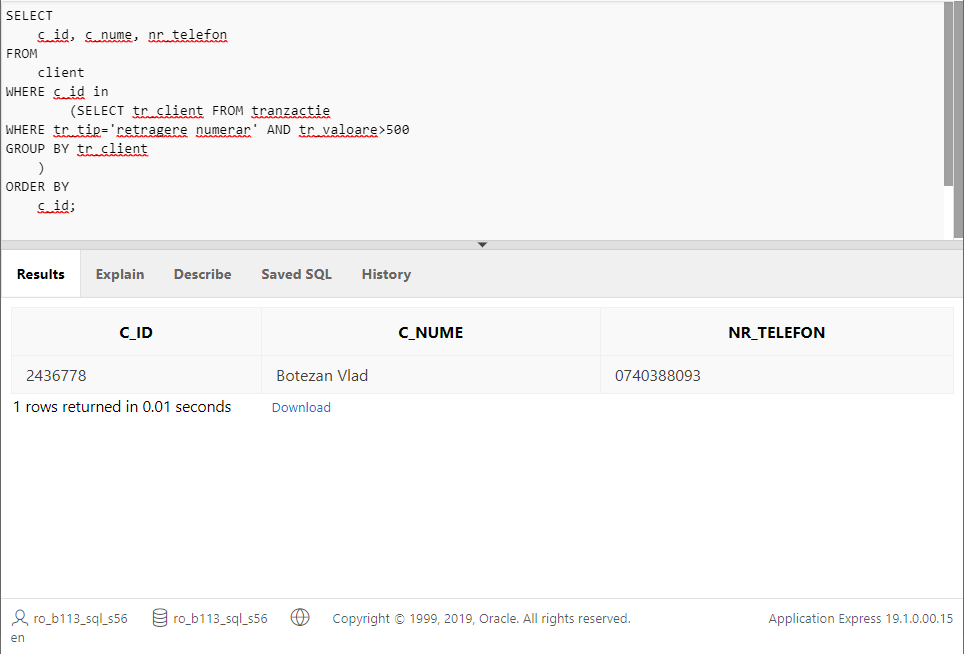
WHERE tr\_tip='retragere numerar' AND tr\_valoare>500

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)

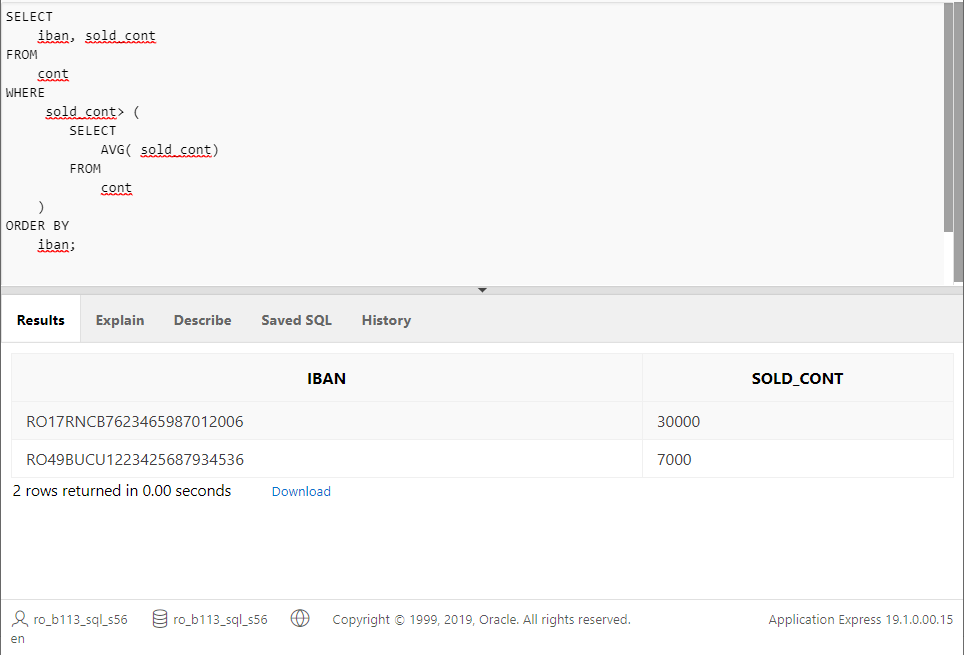
        FROM

            cont

    )

ORDER BY

    iban;



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

SELECT

    IBAN, sold\_cont

FROM

    cont

WHERE

    sold\_cont = (

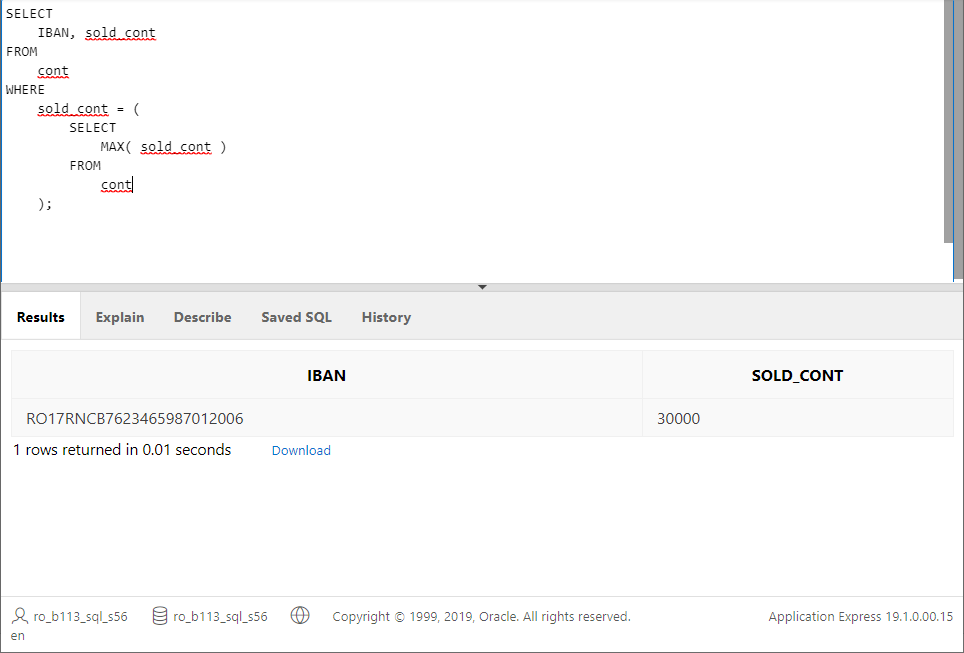
        SELECT

            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 = (

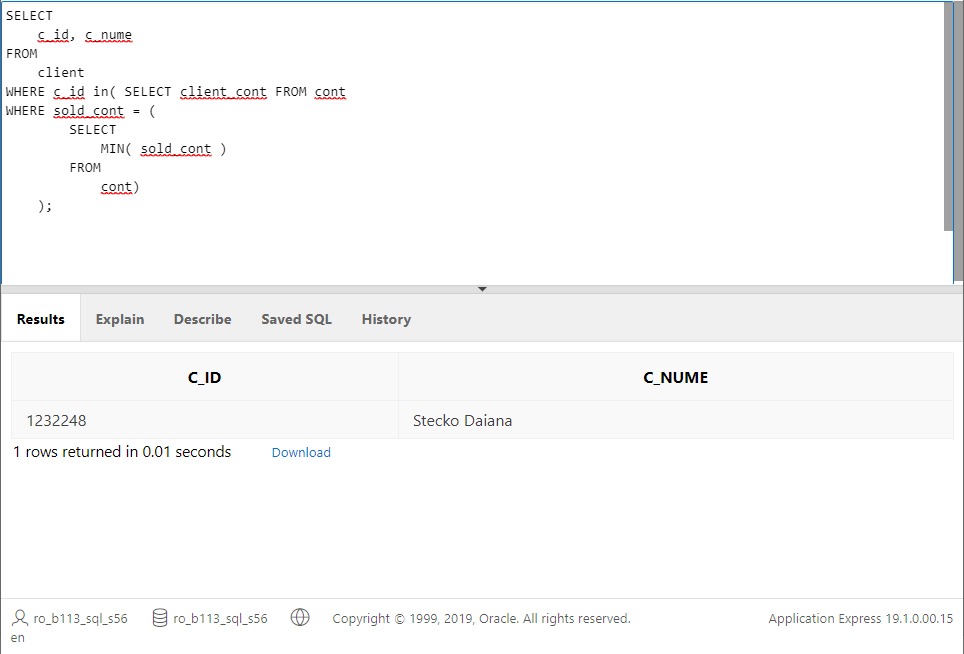
        SELECT

            MIN( sold\_cont )

        FROM

            cont)

    );



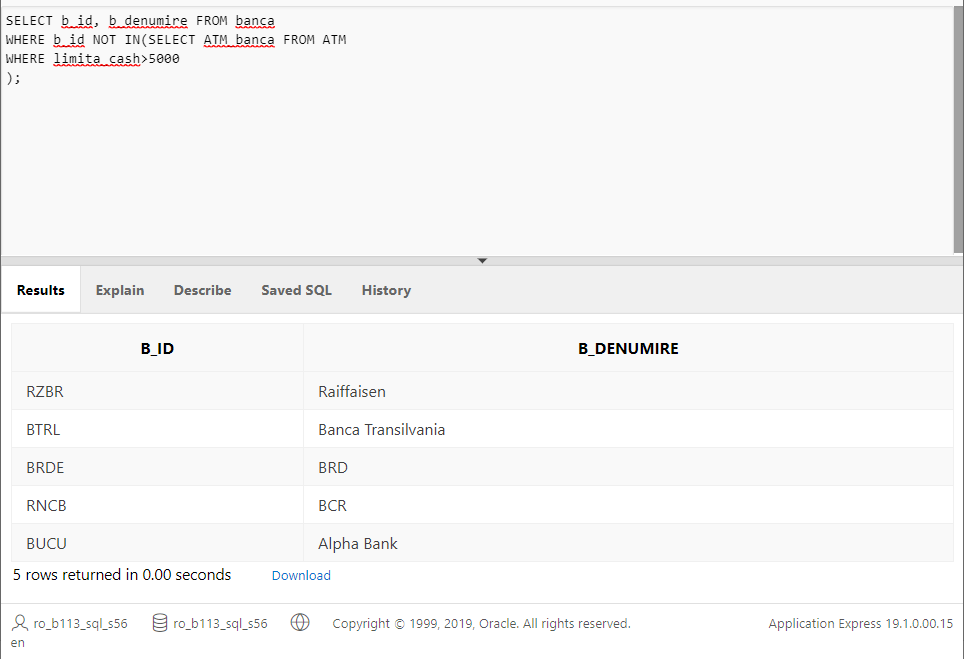
9. Denumirea bancilor care au ATM care nu are limita mai mare de 5000.

SELECT b\_id, b\_denumire FROM banca

WHERE b\_id NOT IN(SELECT ATM\_banca FROM ATM

WHERE limita\_cash>5000

);



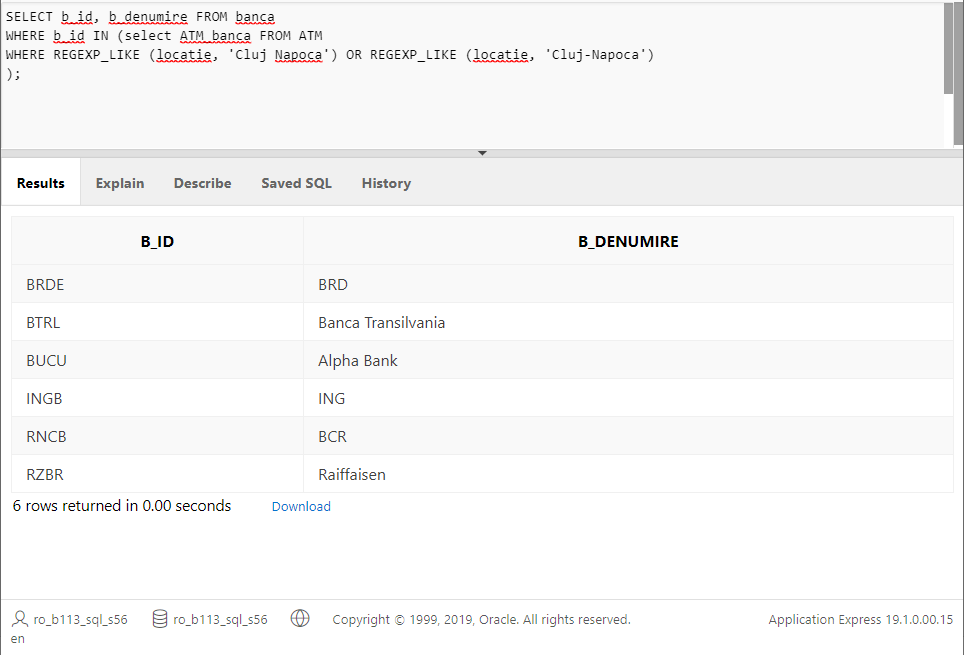
10. Denumirea bancilor care au ATM uri in Cluj-Napoca.

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')

);



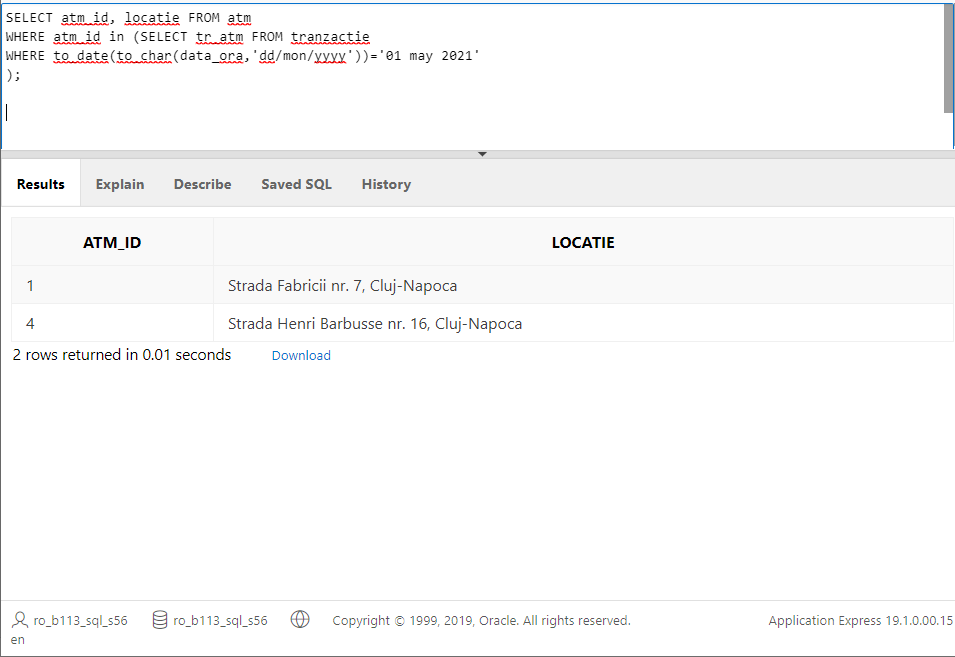
11.Locatiile ATM urilor la care au fost efectuate tranzactiile din 01/05/2021.

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'

);



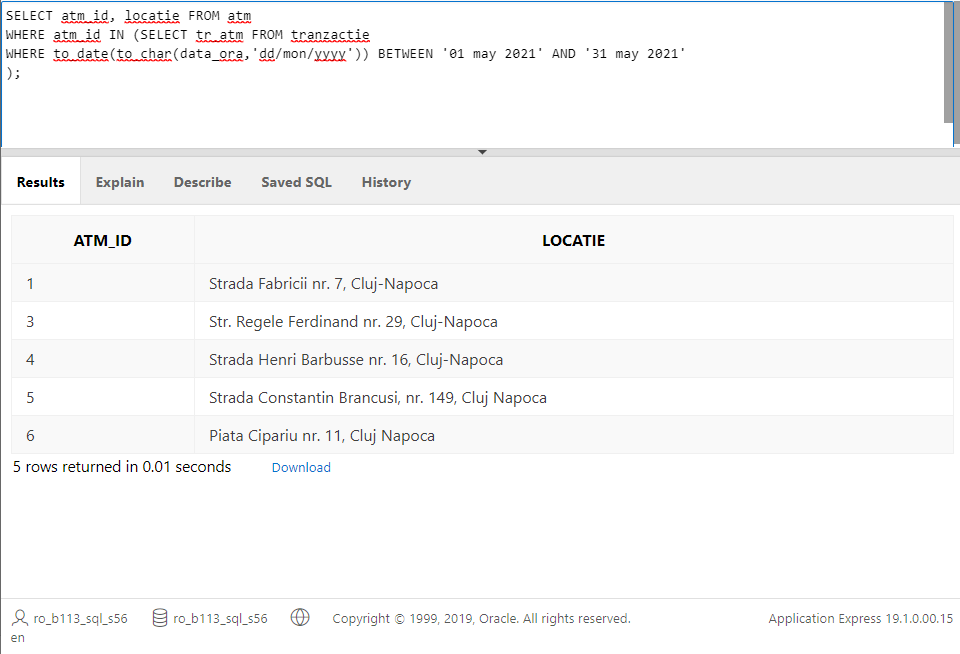
12.Locatiile ATM urilor la care au fost efectuate tranzactiile din intervalul 01/05/2021-31/05/2021.

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'

);



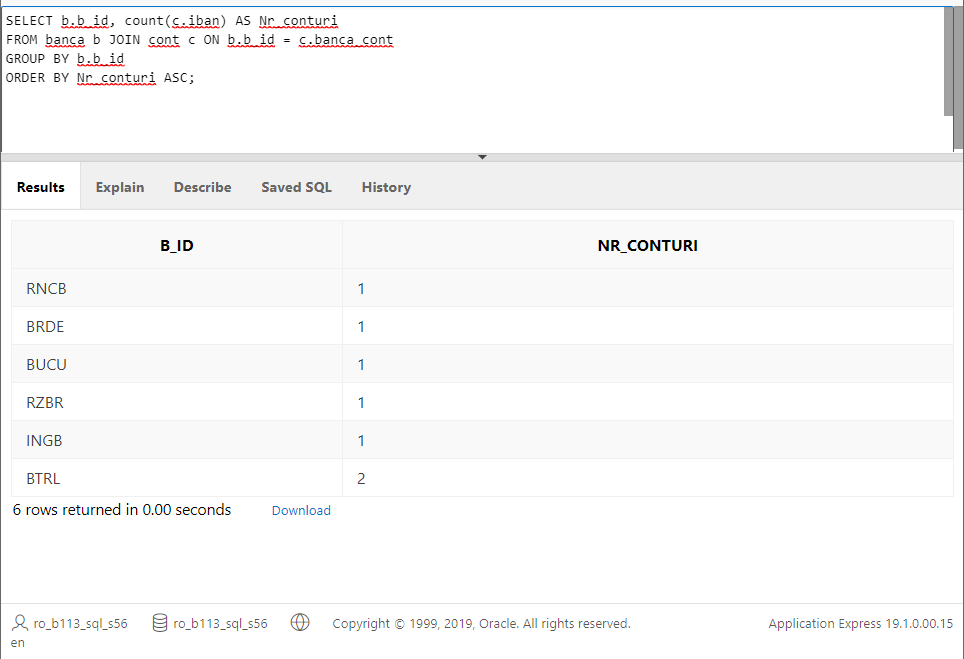
13.Bancile ordonate crescator dupa nr de conturi deschise.

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;



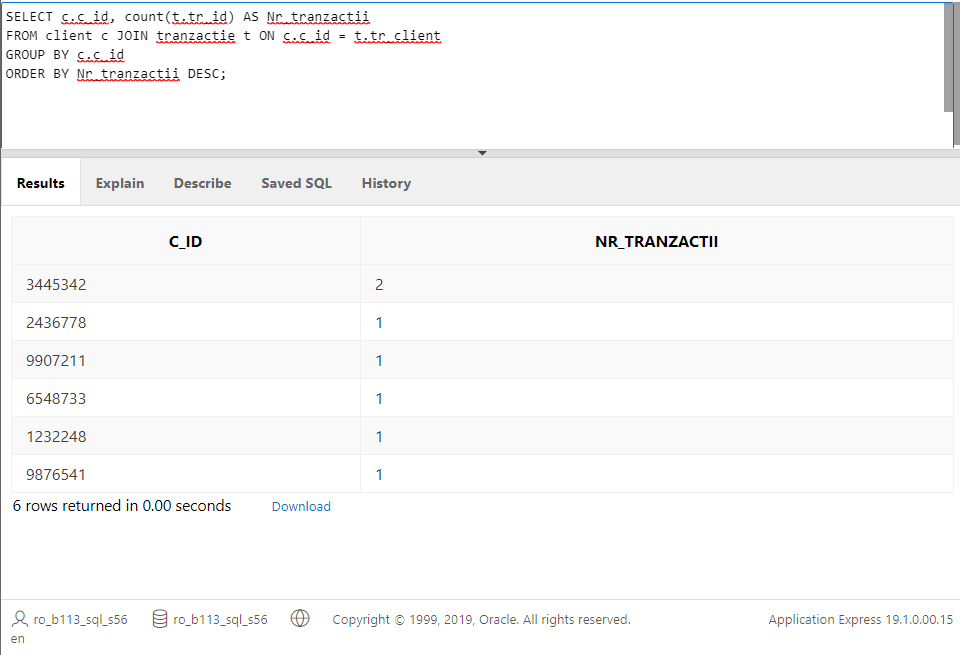
14.Clientii ordonati descrescator dupa nr de tranzactii efectuate.

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;



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');

`