**UNIVERSITATEA DIN CRAIOVA**

**FACULTATEA DE AUTOMATICĂ, CALCULATOARE ȘI ELECTRONICĂ**

**SPECIALIZAREA: INGINERIE SOFTWARE**

**MASTER, ANUL1**

**Topici avansate în baze de date**

Masterand,

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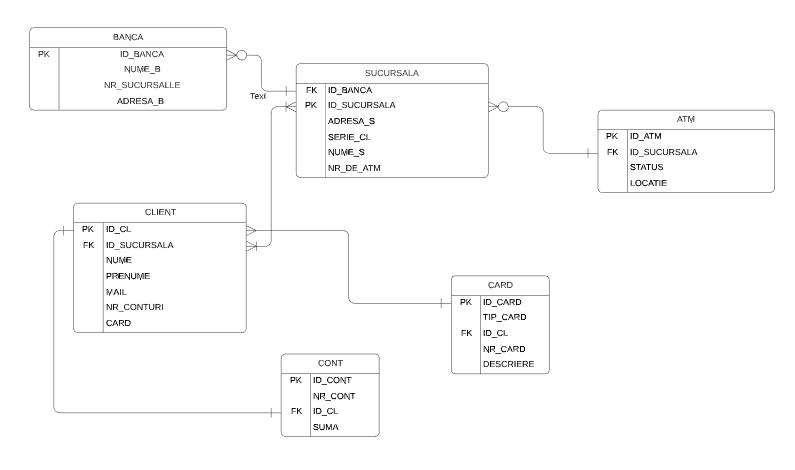
Profesor dr. ing.,

Liana Stănescu

1. Tema aleasă

8) Să se creeze o bază de date care să ţină evidenţa băncilor. Fiecare bancă are un nume, o adresă şi un număr de sucursale. Fiecare sucursală are un nume, o adresă, un număr de ATMuri şi o serie de clienţi. ATM-urile au o locaţie şi un status (operaţional, neoperaţional). Fiecare client are nume prenume, adresă, email şi un număr de conturi, fiecare având o număr şi conţinând o sumă. Fiecare client poate avea sau nu card. Fiecare card are un tip, un număr şi o descriere.

2. Modelul relațional



3. Modelul entitate-legătură

A

ATM

SUCURSALA

BANCA

B

C

CLIENT

D

E

CONT

CARD

4.Crearea bazei de date și a tabelelor

1. BANCA

CREATE TABLE "BANCA"

( "ID\_BANCA" NUMBER,

"ADRESA\_B" VARCHAR2(100),

"NUME\_B" VARCHAR2(50),

"NR\_SUCURSALE" NUMBER,

CONSTRAINT "BANCA\_PK" PRIMARY KEY ("ID\_BANCA") ENABLE

) ;

CREATE OR REPLACE TRIGGER "BI\_BANCA"

before insert on "BANCA"

for each row

begin

if :NEW."ID\_BANCA" is null then

select "BANCA\_SEQ".nextval into :NEW."ID\_BANCA" from dual;

end if;

end;

/

ALTER TRIGGER "BI\_BANCA" ENABLE;

2. SUCURSALA

CREATE TABLE "SUCURSALA"

( "ID\_BANCA" NUMBER,

"ID\_SUCURSALA" NUMBER,

"ADRESA\_S" VARCHAR2(100),

"SERIE\_CL" NUMBER,

"NUME\_S" VARCHAR2(70),

"NR\_DE\_ATM" NUMBER,

CONSTRAINT "SUCURSALA\_PK" PRIMARY KEY ("ID\_SUCURSALA") ENABLE

) ;ALTER TABLE "SUCURSALA" ADD CONSTRAINT "SUCURSALA\_FK" FOREIGN KEY ("ID\_BANCA")

REFERENCES "BANCA" ("ID\_BANCA") ON DELETE CASCADE ENABLE;

CREATE OR REPLACE TRIGGER "BI\_SUCURSALA"

before insert on "SUCURSALA"

for each row

begin

if :NEW."ID\_SUCURSALA" is null then

select "SUCURSALA\_SEQ".nextval into :NEW."ID\_SUCURSALA" from dual;

end if;

end;

/

ALTER TRIGGER "BI\_SUCURSALA" ENABLE;

3. ATM

CREATE TABLE "ATM"

( "ID\_ATM" NUMBER,

"ID\_SUCURSALA" NUMBER,

"STATUS" VARCHAR2(20),

"LOCATIE" VARCHAR2(100),

CONSTRAINT "ATM\_PK" PRIMARY KEY ("ID\_ATM") ENABLE

) ;ALTER TABLE "ATM" ADD CONSTRAINT "ATM\_FK" FOREIGN KEY ("ID\_SUCURSALA")

REFERENCES "SUCURSALA" ("ID\_SUCURSALA") ENABLE;

CREATE OR REPLACE TRIGGER "BI\_ATM"

before insert on "ATM"

for each row

begin

if :NEW."ID\_ATM" is null then

select "ATM\_SEQ".nextval into :NEW."ID\_ATM" from dual;

end if;

end;

/

ALTER TRIGGER "BI\_ATM" ENABLE;

4.CLIENT

CREATE TABLE "CLIENT"

( "ID\_CL" NUMBER,

"ID\_SUCURSALA" NUMBER,

"NUME" VARCHAR2(50),

"PRENUME" VARCHAR2(50),

"MAIL" VARCHAR2(20),

"NR\_CONTURI" NUMBER,

"CARD" VARCHAR2(5),

CONSTRAINT "CLIENT\_PK" PRIMARY KEY ("ID\_CL") ENABLE

) ;ALTER TABLE "CLIENT" ADD CONSTRAINT "CLIENT\_FK" FOREIGN KEY ("ID\_SUCURSALA")

REFERENCES "SUCURSALA" ("ID\_SUCURSALA") ENABLE;

CREATE OR REPLACE TRIGGER "BI\_CLIENT"

before insert on "CLIENT"

for each row

begin

if :NEW."ID\_CL" is null then

select "CLIENTI1\_SEQ".nextval into :NEW."ID\_CL" from dual;

end if;

end;

/

ALTER TRIGGER "BI\_CLIENT" ENABLE;

5.CONT

CREATE TABLE "CONT"

( "ID\_CONT" NUMBER,

"NR\_CONT" NUMBER,

"ID\_CL" NUMBER,

"SUMA" VARCHAR2(14),

CONSTRAINT "CONT\_PK" PRIMARY KEY ("ID\_CONT") ENABLE

) ;ALTER TABLE "CONT" ADD CONSTRAINT "CONT\_FK2" FOREIGN KEY ("ID\_CL")

REFERENCES "CLIENTI" ("ID\_CL") ENABLE;

CREATE OR REPLACE TRIGGER "BI\_CONT"

before insert on "CONT"

for each row

begin

if :NEW."ID\_CONT" is null then

select "CONT\_SEQ".nextval into :NEW."ID\_CONT" from dual;

end if;

end;

/

ALTER TRIGGER "BI\_CONT" ENABLE;

6.CARD

CREATE TABLE "CARD"

( "ID\_CARD" NUMBER,

"TIP\_CARD" VARCHAR2(20),

"ID\_CL" NUMBER,

"NR\_CARD" NUMBER,

"DESCRIERE" VARCHAR2(60),

CONSTRAINT "CARD\_PK" PRIMARY KEY ("ID\_CARD") ENABLE

) ;ALTER TABLE "CARD" ADD CONSTRAINT "CARD\_CON" FOREIGN KEY ("ID\_CL")

REFERENCES "CLIENT" ("ID\_CL") ENABLE;

CREATE OR REPLACE TRIGGER "BI\_CARD"

before insert on "CARD"

for each row

begin

if :NEW."ID\_CARD" is null then

select "CARD\_SEQ".nextval into :NEW."ID\_CARD" from dual;

end if;

end;

/

ALTER TRIGGER "BI\_CARD" ENABLE;

5.Interogări

1. SELECT \* from Banca order by nume\_b

2. SELECT \* FROM CARD WHERE TIP\_CARD='Visa Classic'

3. SELECT \* FROM CONT order by suma

4. SELECT \*FROM ATM WHERE STATUS='neoperational' ORDER BY LOCATIE

5. SELECT NUME, PRENUME FROM CLIENT ORDER BY ID\_CL

6. Inserarea datelor în tabele

BANCA

INSERT INTO BANCA VALUES (1,’BRD - Groupe Societe Generale S.A’, 20, ‘Bucuresti, bd. Ion Mihalache nr.1-7, sector 1’);

INSERT INTO BANCA VALUES (2, BCR- BANCA COMERCIALA ROMANA S.A.’, 15 ,‘Bucuresti, Calea Plevnei, nr. 159, Business Garden Bucharest, clădirea A, etaj 6, sector 6’);

INSERT INTO BANCA VALUES (3, RAIFFEISEN BANK SA’, 17, ‘Bucuresti, Calea Floreasca nr.246 C, Cladirea Sky Tower, etajele 2-7, sector 1’);

INSERT INTO BANCA VALUES (4, UNICREDIT BANK S.A.’, 11, ‘Bucuresti, Bdul. Expozitiei nr.1F, sector 1’);

INSERT INTO BANCA VALUES (5, BANCA ROMÂNEASCÃ S.A’, 13, ‘Bucuresti, str. George Constantinescu, nr.3, Cladirea BoC, etajele 2 si 3, Sectorul 2’);

INSERT INTO BANCA VALUES (6,’ BANCA TRANSILVANIA S.A.’, 9, ‘Cluj-Napoca, str. George Baritiu nr.8’);

SUCURSALA

INSERT INTO SUCURSALA VALUES (5, 25 ’ Craiova, Calea Bucuresti, Bl. A23-A24, parter ‘,68554, ‘Craiova Piata Centrala’, 1);

INSERT INTO SUCURSALA VALUES (1, 21 ’ Craiova, Brazda Lui Novac, Bl. C8B, Judet Dolj ‘, 68554, ‘Craiova Piata Centrala’, 1);

INSERT INTO SUCURSALA VALUES (2, 22 ’ Strada Tudor Vladimirescu nr.26, Calafat ‘,6587, ‘Craiova Piata Centrala’, 1);

INSERT INTO SUCURSALA VALUES (6, 23 ’ Str. A.I.Cuza Nr. 4, bl 150 AP Femina, Parter, CRAIOVA, Dolj’ , 987, ‘Craiova Piata Centrala’, 1);

INSERT INTO SUCURSALA VALUES (3, 24 ‘Strada Sf. Dumitru, loc. Craiova, jud. Dolj’ , 44475, ‘Craiova Piata Centrala’, 1);

INSERT INTO SUCURSALA VALUES (4, 26 ’ CALEA BUCURESTI, N2-N3, 200617 CRAIOVA ‘ , 628, ‘Craiova Piata Centrala’, 1);

ATM

INSERT INTO ATM VALUES (6, 23, ‘neoperational’ , ’ Str. A.I.Cuza Nr. 4, bl 150 AP Femina, Parter, CRAIOVA, Dolj’);

INSERT INTO ATM VALUES (2 , 26 ’ ‘operational’ ,’CALEA BUCURESTI, N2-N3, 200617 CRAIOVA ‘);

INSERT INTO ATM VALUES (1, 24, ‘operational ‘ , ‘Strada Sf. Dumitru, loc. Craiova, jud. Dolj’);

INSERT INTO ATM VALUES (3, 21 , ‘operational ‘’ Craiova, Brazda Lui Novac, Bl. C8B, Judet Dolj ‘);

INSERT INTO ATM VALUES (4 , 22, ‘operational ‘ ’ Strada Tudor Vladimirescu nr.26, Calafat’);

INSERT INTO ATM VALUES (5, 25, ‘neoperational’ ’ Craiova, Calea Bucuresti, Bl. A23-A24, parter’);

CLIENT

INSERT INTO CLIENT VALUES (1, 21, ‘Popescu’, ’ Maria’ ,‘popescu.maria@yahoo.com’, 1, ‘da’);

INSERT INTO CLIENT VALUES (2, 22, ‘Vladimir’, ’ Ecaterina’ ,‘ ecaterina87@yahoo.com’, 1, ‘da’);

INSERT INTO CLIENT VALUES (5, 24, ‘Popovici’, ’ Roxana-Maria’ ,‘roxanamaria@yahoo.com’, 1, ‘da’);

INSERT INTO CLIENT VALUES (6, 26, ‘Mirunescu’, ’ Alexandru-Ciprian’ ,‘popescu.maria@yahoo.com’, 1, ‘da’);

INSERT INTO CLIENT VALUES (3, 23, ‘Ionescu’, ’ Daniel’ ,‘ionescudan@gmail.com’, 1, ‘da’);

INSERT INTO CLIENT VALUES (4, 24, ‘Pasarin’, ’ Cosmina’ ,‘ pasarin.cosmina@gmail.com’, 1, ‘da’);

CONT

INSERT INTO CONT VALUES (111, 547, 1, ’3000-RON’);

INSERT INTO CONT VALUES (333, 52, 3, ’548-RON’);

INSERT INTO CONT VALUES (222, 987, 2, ’ 7820-RON’);

INSERT INTO CONT VALUES (444, 214, 4, ’ 9580-RON’);

INSERT INTO CONT VALUES (555, 65, 5, ’ 2000-RON’);

INSERT INTO CONT VALUES (666, 21, 6, ’ 3658-RON’);

CARD

INSERT INTO CARD VALUES (6584, ’MASTERCARD / VISA’, 1 , 54 ‘debit’);

INSERT INTO CARD VALUES (3545, ‘VISA Clasic’, 2 , 648 ‘debit’);

INSERT INTO CARD VALUES (6358, ’MasterCard’, 4 , 58 ‘debit’);

INSERT INTO CARD VALUES (2446, ‘MasterCard’, 5 , 11 ‘debit’);

INSERT INTO CARD VALUES (987, ‘Visa Classic ’, 6 , 284 ‘debit’);

INSERT INTO CARD VALUES (2478, ‘MasterCard’, 3 , 2 ‘debit’);

7.Obiect

CREATE TYPE client\_typ AS OBJECT

( ID\_CL NUMBER,

ID\_SUCURSALA NUMBER,

NUME VARCHAR2(50),

PRENUME VARCHAR2(50),

MAIL VARCHAR2(20),

NR\_CONTURI NUMBER,

CARD VARCHAR2(5),

MAP MEMBER FUNCTION get\_ID\_CL RETURN NUMBER,

MEMBER PROCEDURE display\_details ( SELF IN OUT NOCOPY

client\_typ ));

CREATE TYPE BODY client\_typ AS

MAP MEMBER FUNCTION get\_ID\_CL RETURN NUMBER IS

BEGIN

RETURN ID\_CL;

END;

MEMBER PROCEDURE display\_details ( SELF IN OUT NOCOPY

client\_typ ) IS

BEGIN

-- use the PUT\_LINE procedure of the DBMS\_OUTPUT package to

display details

DBMS\_OUTPUT.PUT\_LINE(TO\_CHAR(ID\_CL) || ' ' || NUME

|| ' ' || PRENUME);

DBMS\_OUTPUT.PUT\_LINE(MAIL || ' ' || NR\_CONTURI || ' ' || CARD);

END; END;