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**-PROIECT SGBD-**

**CUPRINS:**

[Cerința 1. 3](#_Toc155344151)

[Cerința 2. 3](#_Toc155344152)

[Cerința 3. 4](#_Toc155344153)

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[Cerința 6. 19](#_Toc155344156)

Cerința 1.

Prezentați pe scurt baza de date (utilitatea ei).

**TechFlow** este o afacere specializată în vânzarea de produse IT, cum ar fi componente hardware, accesorii și echipamente IT, prin intermediul magazinelor fizice și a site-ului lor de comerț electronic.

Prin intermediul bazei de date TechFlow, se realizează gestiunea detaliată a produselor, categoriilor de produse, comenzilor , plăților și recenziilor. Aceasta facilitează procesul de vânzare, stocare, gestionare a comenzilor și interacțiune cu clienții. De asemenea, baza de date permite generarea de rapoarte și analize pentru a obține o înțelegere mai profundă a activităților de vânzare și a preferințelor clienților, contribuind astfel la **luarea deciziilor strategice** și la **îmbunătățirea experienței clienților** .

Cerința 2.

****Realizați diagrama entitate-relație (ERD).

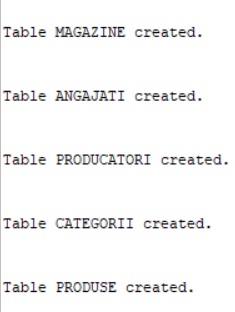
Cerința 3.

Realizați diagrama conceptuală a modelului propus.

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Cerința 4.

Definiți toate tabelele, definind toate constrângerile de integritate necesare (chei primare, cheile externe etc).



-- Cerinta 4

-- Crearea secventei pentru cheile primare.

create sequence secventa\_techflow

start with 1

increment by 1

maxvalue 10000

minvalue 1

nocycle

nocache;

-- 1 tabel MAGAZINE

create table magazine (

id\_magazin number(4),

nume\_magazin varchar2(30) constraint nn\_nume\_magazin not null,

adresa\_magazin varchar2(40) constraint nn\_adresa\_magazin not null,

constraint pk\_id\_magazin primary key(id\_magazin)

);

-- 2 tabel ANGAJATI

create table angajati (

id\_angajat number(4),

nume\_angajat varchar2(50) constraint nn\_nume\_angajat not null,

prenume\_angajat varchar2(50) constraint nn\_prenume\_angajat not null,

email\_angajat varchar2(50),

salariu\_angajat number(10,2) constraint nn\_salariu\_angajat not null,

job\_angajat varchar2(50),

id\_magazin number(4),

constraint pk\_id\_angajat primary key(id\_angajat),

constraint fk\_id\_magazin foreign key(id\_magazin)

references magazine(id\_magazin)

);

-- 3 tabel PRODUCATORI

create table producatori (

id\_producator number(4),

nume\_producator varchar2(50) constraint nn\_nume\_producator not null,

tara\_producator varchar(50),

constraint pk\_id\_producator primary key(id\_producator)

);

-- 4 tabel CATEGORII

create table categorii (

id\_categorie number(4),

nume\_categorie varchar2(50) constraint nn\_nume\_categorie not null,

descriere\_categorie varchar2(200),

constraint pk\_id\_categorie primary key(id\_categorie)

);

-- 5 tabel PRODUSE

create table produse (

id\_produs number(4),

nume\_produs varchar2(50) constraint nn\_nume\_produs not null,

descriere\_produs varchar2(200),

pret\_produs number(10,2),

stoc\_produs number(3),

id\_producator number(4),

id\_categorie number(4),

constraint pk\_id\_produs primary key(id\_produs),

constraint fk\_id\_producator foreign key(id\_producator)

references producatori(id\_producator),

constraint fk\_id\_categorie foreign key(id\_categorie)

references categorii(id\_categorie)

);

-- 6 tabel PRODUSE\_MAGAZINE

create table produse\_magazine (

id\_produs number(4),

id\_magazin number(4),

constraint pk\_id\_produs\_id\_magazin primary key(id\_produs,id\_magazin),

constraint fk\_id\_produs\_pm foreign key(id\_produs)

references produse(id\_produs),

constraint fk\_id\_magazin\_pm foreign key(id\_magazin)

references magazine(id\_magazin)

);

-- 7 tabel PLATI

create table plati (

id\_plata number(4),

total\_plata number(10,2) constraint nn\_total\_plata not null,

tip\_plata varchar2(50) constraint nn\_tip\_plata not null,

constraint pk\_id\_plata primary key(id\_plata)

);

-- 8 tabel TRANSPORT

create table transport (

id\_transport number(4),

firma\_transport varchar2(50) constraint nn\_firma\_transport not null,

cost\_transport number(10,2) constraint nn\_cost\_transport not null,

constraint pk\_id\_transport primary key (id\_transport)

);

-- 9 tabel CLIENTI

create table clienti (

id\_client number(4),

nume\_client varchar2(50),

prenume\_client varchar2(50),

email\_client varchar2(35),

telefon\_client varchar2(20),

data\_inregistrare date,

constraint pk\_id\_client primary key (id\_client)

);

-- 10 tabel COMENZI

create table comenzi (

id\_comanda number(4),

data\_plasare date,

status\_comanda varchar2(50),

id\_client number(4),

id\_plata number(4),

id\_transport number(4),

constraint pk\_id\_comanda primary key (id\_comanda),

constraint fk\_id\_client foreign key (id\_client)

references clienti(id\_client),

constraint fk\_id\_plata foreign key (id\_plata)

references plati(id\_plata),

constraint fk\_id\_transport foreign key (id\_transport)

references transport(id\_transport)

);

-- 11 tabel PRODUSE\_COMENZI

create table produse\_comenzi (

id\_produs number(4),

id\_comanda number(4),

constraint pk\_id\_produs\_id\_comanda primary key(id\_produs,id\_comanda),

constraint fk\_id\_produs\_pc foreign key(id\_produs)

references produse(id\_produs),

constraint fk\_id\_comanda\_pc foreign key(id\_comanda)

references comenzi(id\_comanda)

);

-- 12 tabel WISHLIST

create table wishlist (

id\_wishlist number(4),

data\_adaugare date,

id\_client number(4),

constraint pk\_id\_wishlist primary key (id\_wishlist),

constraint fk\_id\_client\_wl foreign key (id\_client)

references clienti(id\_client)

);

-- 13 tabel PRODUSE\_WISHLIST

create table produse\_wishlist (

id\_produs number(4),

id\_wishlist number(4),

constraint pk\_id\_produs\_id\_wishlist primary key(id\_produs,id\_wishlist),

constraint fk\_id\_produs\_pw foreign key(id\_produs)

references produse(id\_produs),

constraint fk\_id\_wishlist\_pw foreign key(id\_wishlist)

references wishlist(id\_wishlist)

);

-- 14 tabel RECENZII

create table recenzii (

id\_recenzie number(4),

nota\_recenzie number(2,1),

id\_client number(4),

id\_produs number(4),

constraint pk\_id\_recenzie primary key (id\_recenzie),

constraint fk\_id\_client\_rz foreign key (id\_client)

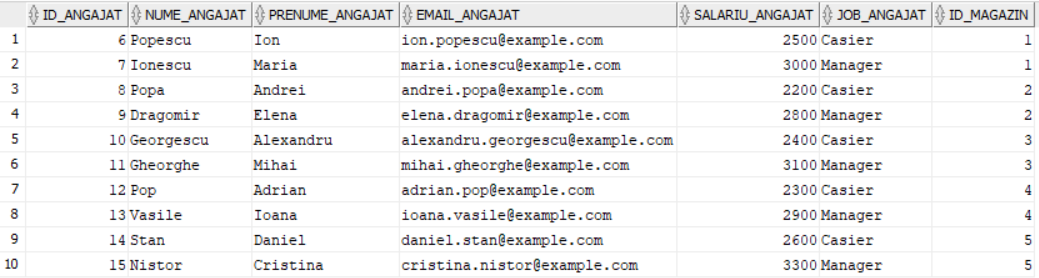
references clienti(id\_client),

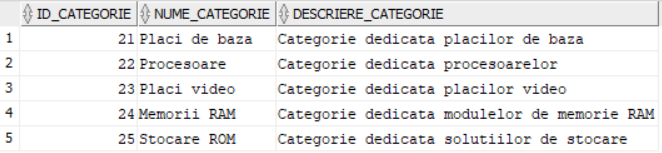
constraint fk\_id\_produs\_rz foreign key (id\_produs)

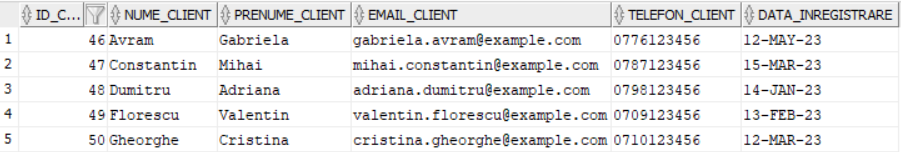
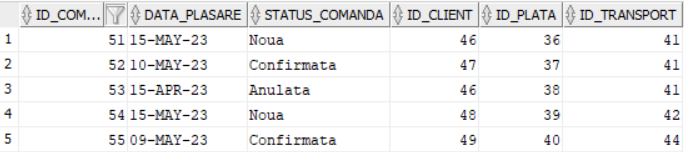
references produse(id\_produs)

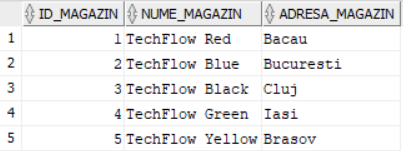
);

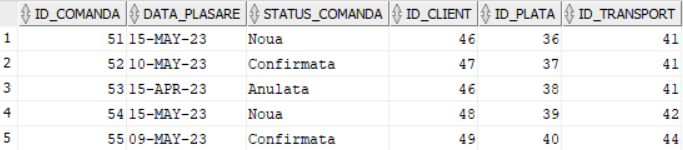
Cerința 5.

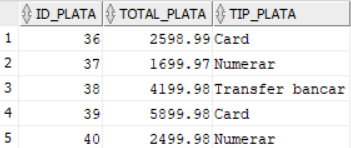
Adăugați informații coerente în tabelele create.

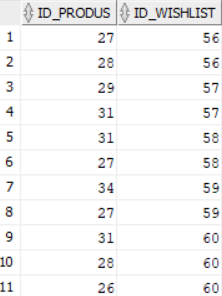
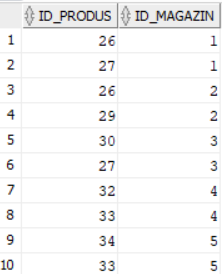
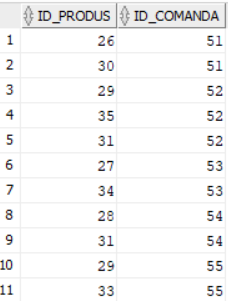


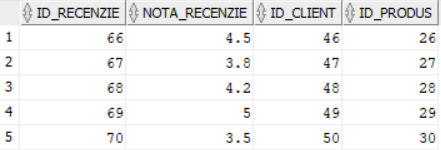
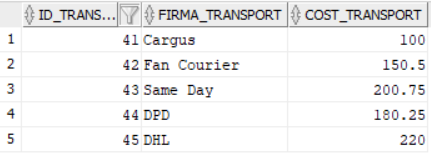


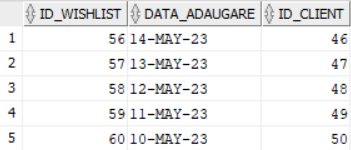












-- 1 tabel MAGAZINE

insert into magazine

values (secventa\_techflow.nextval, 'TechFlow Red', 'Bacau');

insert into magazine

values (secventa\_techflow.nextval, 'TechFlow Blue', 'Bucuresti');

insert into magazine

values (secventa\_techflow.nextval, 'TechFlow Black', 'Cluj');

insert into magazine

values (secventa\_techflow.nextval, 'TechFlow Green', 'Iasi');

insert into magazine

values (secventa\_techflow.nextval, 'TechFlow Yellow', 'Brasov');

select \* from magazine;

-- 2 tabel ANGAJATI

insert into angajati

values (secventa\_techflow.nextval, 'Popescu', 'Ion', 'ion.popescu@example.com', 2500.00, 'Casier', 1);

insert into angajati

values (secventa\_techflow.nextval, 'Ionescu', 'Maria', 'maria.ionescu@example.com', 3000.00, 'Manager', 1);

insert into angajati

values (secventa\_techflow.nextval, 'Popa', 'Andrei', 'andrei.popa@example.com', 2200.00, 'Casier', 2);

insert into angajati

values (secventa\_techflow.nextval, 'Dragomir', 'Elena', 'elena.dragomir@example.com', 2800.00, 'Manager', 2);

insert into angajati

values (secventa\_techflow.nextval, 'Georgescu', 'Alexandru', 'alexandru.georgescu@example.com', 2400.00, 'Casier', 3);

insert into angajati

values (secventa\_techflow.nextval, 'Gheorghe', 'Mihai', 'mihai.gheorghe@example.com', 3100.00, 'Manager', 3);

insert into angajati

values (secventa\_techflow.nextval, 'Pop', 'Adrian', 'adrian.pop@example.com', 2300.00, 'Casier', 4);

insert into angajati

values (secventa\_techflow.nextval, 'Vasile', 'Ioana', 'ioana.vasile@example.com', 2900.00, 'Manager', 4);

insert into angajati

values (secventa\_techflow.nextval, 'Stan', 'Daniel', 'daniel.stan@example.com', 2600.00, 'Casier', 5);

insert into angajati

values (secventa\_techflow.nextval, 'Nistor', 'Cristina', 'cristina.nistor@example.com', 3300.00, 'Manager', 5);

select \* from angajati;

-- 3 tabel PRODUCATORI (inserare explicita)

insert into producatori (id\_producator, nume\_producator, tara\_producator)

values (secventa\_techflow.nextval, 'Stentor', 'Romania');

insert into producatori (id\_producator, nume\_producator, tara\_producator)

values (secventa\_techflow.nextval, 'PC Master', 'Germania');

insert into producatori (id\_producator, nume\_producator, tara\_producator)

values (secventa\_techflow.nextval, 'HardwareCO', 'Franta');

insert into producatori (id\_producator, nume\_producator, tara\_producator)

values (secventa\_techflow.nextval, 'VideoMaster', 'Italia');

insert into producatori (id\_producator, nume\_producator, tara\_producator)

values (secventa\_techflow.nextval, 'SiSoft', 'Spania');

select \* from producatori;

-- 4 tabel CATEGORII

insert into categorii

values (secventa\_techflow.nextval, 'Placi de baza', 'Categorie dedicata placilor de baza');

insert into categorii

values (secventa\_techflow.nextval, 'Procesoare', 'Categorie dedicata procesoarelor');

insert into categorii

values (secventa\_techflow.nextval, 'Placi video', 'Categorie dedicata placilor video');

insert into categorii

values (secventa\_techflow.nextval, 'Memorii RAM', 'Categorie dedicata modulelor de memorie RAM');

insert into categorii

values (secventa\_techflow.nextval, 'Stocare ROM', 'Categorie dedicata solutiilor de stocare');

select \* from categorii;

-- 5 tabel PRODUSE

insert into produse

values (secventa\_techflow.nextval, 'ASUS ROG Strix X570-E Gaming', 'Placă de bază ATX pentru gaming, compatibilă cu procesoare AMD Ryzen', 1599.99, 10, 16, 21);

insert into produse

values (secventa\_techflow.nextval, 'Intel Core i9-10900K', 'Procesor Intel de ultimă generație cu 10 nuclee și 20 fire de execuție', 2899.99, 5, 16, 22);

insert into produse

values (secventa\_techflow.nextval, 'NVIDIA GeForce RTX 3080', 'Placă video high-end pentru gaming, cu 10 GB memorie GDDR6X', 5299.99, 3, 17, 23);

insert into produse

values (secventa\_techflow.nextval, 'Corsair Vengeance RGB Pro', 'Modul de memorie DDR4 cu iluminare RGB și capacitate de 16 GB', 699.99, 20, 17, 24);

insert into produse

values (secventa\_techflow.nextval, 'Samsung 970 EVO Plus', 'Solid State Drive NVMe cu capacitate de 1 TB și viteză de transfer ridicată', 999.99, 8, 17, 25);

insert into produse

VALUES (secventa\_techflow.nextval, 'MSI B450 TOMAHAWK MAX', 'Placă de bază ATX pentru procesoare AMD Ryzen, suportă memorie DDR4', 599.99, 15, 18, 21);

insert into produse

VALUES (secventa\_techflow.nextval, 'AMD Ryzen 7 5800X', 'Procesor AMD cu 8 nuclee și 16 fire de execuție, frecvență de bază 3.8 GHz', 1999.99, 7, 18, 22);

insert into produse

VALUES (secventa\_techflow.nextval, 'Gigabyte GeForce GTX 1660 SUPER OC', 'Placă video performantă pentru gaming, 6 GB memorie GDDR6', 1799.99, 10, 19, 23);

insert into produse

VALUES (secventa\_techflow.nextval, 'RAM Kingston HyperX Fury RGB', 'Modul de memorie DDR4 cu iluminare RGB și capacitate de 32 GB', 1299.99, 12, 19, 24);

insert into produse

VALUES (secventa\_techflow.nextval, 'SSD Western Digital Blue', 'Solid State Drive SATA cu capacitate de 500 GB și viteză de transfer mare', 399.99, 25, 20, 25);

select \* from produse;

-- 6 tabel PRODUSE\_MAGAZINE

-- Magazinul - TechFlow Red

-- Produs - ASUS ROG Strix X570-E Gaming

insert into produse\_magazine

values (26, 1);

-- Produs - Intel Core i9-10900K

insert into produse\_magazine

values (27, 1);

-- Magazinul - TechFlow Blue

-- Produs - ASUS ROG Strix X570-E Gaming

insert into produse\_magazine

values (26,2);

-- Produs - Corsair Vengeance RGB Pro

insert into produse\_magazine

values (29,2);

-- Magazinul - TechFlow Black

-- Produs - Samsung 970 EVO Plus

insert into produse\_magazine

values (30,3);

-- Produs - Intel Core i9-10900K

insert into produse\_magazine

values (27,3);

-- Magazinul - TechFlow Green

-- Produs - AMD Ryzen 7 5800X

insert into produse\_magazine

values (32,4);

-- Produs - Gigabyte GeForce GTX 1660 SUPER OC

insert into produse\_magazine

values (33,4);

-- Magazinul - TechFlow Yellow

-- Produs - RAM Kingston HyperX Fury RGB

insert into produse\_magazine

values (34,5);

-- Produs - Gigabyte GeForce GTX 1660 SUPER OC

insert into produse\_magazine

values (33,5);

select \* from produse\_magazine;

-- 7 tabel PLATI

-- total\_plata id\_produs : 26 + 30

insert into plati (id\_plata, total\_plata, tip\_plata)

values (secventa\_techflow.nextval, 2598.99, 'Card');

-- total\_plata id\_produs : 29 + 35 + 31

insert into plati (id\_plata, total\_plata, tip\_plata)

values (secventa\_techflow.nextval, 1699.97, 'Numerar');

-- total\_plata id\_produs : 27 + 34

insert into plati (id\_plata, total\_plata, tip\_plata)

values (secventa\_techflow.nextval, 4199.98, 'Transfer bancar');

-- total\_plata id\_produs : 28 + 31

insert into plati (id\_plata, total\_plata, tip\_plata)

values (secventa\_techflow.nextval, 5899.98, 'Card');

-- total\_plata id\_produs : 29 + 33

insert into plati (id\_plata, total\_plata, tip\_plata)

values (secventa\_techflow.nextval, 2499.98, 'Numerar');

select \* from plati;

-- 8 tabel TRANSPORT

insert into transport

values (secventa\_techflow.nextval, 'Cargus', 100.00);

insert into transport

values (secventa\_techflow.nextval, 'Fan Courier', 150.50);

insert into transport

values (secventa\_techflow.nextval, 'Same Day', 200.75);

insert into transport

values (secventa\_techflow.nextval, 'DPD', 180.25);

insert into transport

values (secventa\_techflow.nextval, 'DHL', 220.00);

select \* from transport;

-- 9 tabel CLIENTI

insert into clienti

VALUES (secventa\_techflow.nextval, 'Avram', 'Gabriela', 'gabriela.avram@example.com', '0776123456', TO\_DATE('2023-05-12', 'YYYY-MM-DD'));

insert into clienti

VALUES (secventa\_techflow.nextval, 'Constantin', 'Mihai', 'mihai.constantin@example.com', '0787123456', TO\_DATE('2023-03-15', 'YYYY-MM-DD'));

insert into clienti

VALUES (secventa\_techflow.nextval, 'Dumitru', 'Adriana', 'adriana.dumitru@example.com', '0798123456', TO\_DATE('2023-01-14', 'YYYY-MM-DD'));

insert into clienti

VALUES (secventa\_techflow.nextval, 'Florescu', 'Valentin', 'valentin.florescu@example.com', '0709123456', TO\_DATE('2023-02-13', 'YYYY-MM-DD'));

insert into clienti

VALUES (secventa\_techflow.nextval, 'Gheorghe', 'Cristina', 'cristina.gheorghe@example.com', '0710123456', TO\_DATE('2023-03-12', 'YYYY-MM-DD'));

select \* from clienti;

-- 10 tabel COMENZI

insert into comenzi

values (secventa\_techflow.nextval, to\_date('2023-05-15', 'YYYY-MM-DD'), 'Noua', 46, 36, 41);

insert into comenzi

values (secventa\_techflow.nextval, to\_date('2023-05-10', 'YYYY-MM-DD'), 'Confirmata', 47, 37, 41);

insert into comenzi

values (secventa\_techflow.nextval, to\_date('2023-04-15', 'YYYY-MM-DD'), 'Anulata', 46, 38, 41);

insert into comenzi

values (secventa\_techflow.nextval, to\_date('2023-05-15', 'YYYY-MM-DD'), 'Noua', 48, 39, 42);

insert into comenzi

values (secventa\_techflow.nextval, to\_date('2023-05-09', 'YYYY-MM-DD'), 'Confirmata', 49, 40, 44);

select \* from comenzi;

-- 11 tabel PRODUSE\_COMENZI

insert into produse\_comenzi

values (26,51);

insert into produse\_comenzi

values (30,51);

insert into produse\_comenzi

values (29,52);

insert into produse\_comenzi

values (35,52);

insert into produse\_comenzi

values (31,52);

insert into produse\_comenzi

values (27,53);

insert into produse\_comenzi

values (34,53);

insert into produse\_comenzi

values (28,54);

insert into produse\_comenzi

values (31,54);

insert into produse\_comenzi

values (29,55);

insert into produse\_comenzi

values (33,55);

select \* from produse\_comenzi;

-- 12 tabel WISHLIST

insert into wishlist

values (secventa\_techflow.nextval, to\_date('2023-05-14', 'YYYY-MM-DD'), 46);

insert into wishlist

values (secventa\_techflow.nextval, to\_date('2023-05-13', 'YYYY-MM-DD'), 47);

insert into wishlist

values (secventa\_techflow.nextval, to\_date('2023-05-12', 'YYYY-MM-DD'), 48);

insert into wishlist

values (secventa\_techflow.nextval, to\_date('2023-05-11', 'YYYY-MM-DD'), 49);

insert into wishlist

values (secventa\_techflow.nextval, to\_date('2023-05-10', 'YYYY-MM-DD'), 50);

select \* from wishlist;

-- 13 tabel PRODUSE\_WISHLIST

insert into produse\_wishlist

values (27,56);

insert into produse\_wishlist

values (28,56);

insert into produse\_wishlist

values (29,57);

insert into produse\_wishlist

values (31,57);

insert into produse\_wishlist

values (31,58);

insert into produse\_wishlist

values (27,58);

insert into produse\_wishlist

values (34,59);

insert into produse\_wishlist

values (27,59);

insert into produse\_wishlist

values (31,60);

insert into produse\_wishlist

values (28,60);

insert into produse\_wishlist

values (26,60);

select \* from produse\_wishlist;

-- 14 tabel RECENZII

insert into recenzii

values (secventa\_techflow.nextval, 4.5, 46, 26);

insert into recenzii

values (secventa\_techflow.nextval, 3.8, 47, 27);

insert into recenzii

values (secventa\_techflow.nextval, 4.2, 48, 28);

insert into recenzii

values (secventa\_techflow.nextval, 5.0, 49, 29);

insert into recenzii

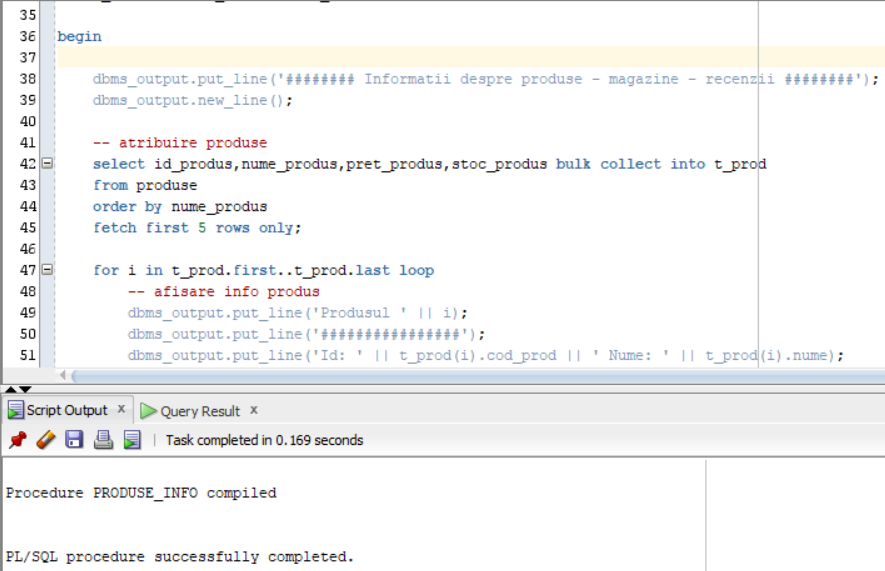
values (secventa\_techflow.nextval, 3.5, 50, 30);

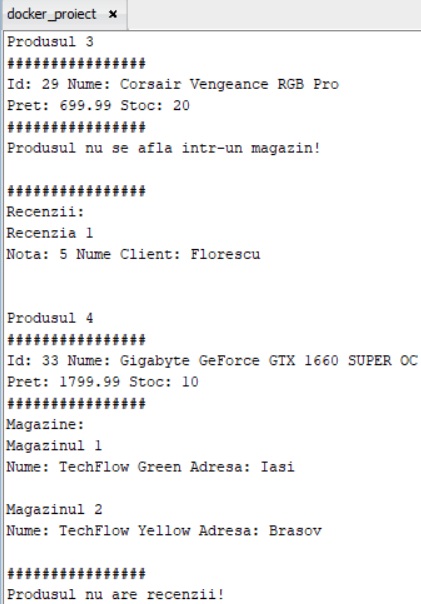
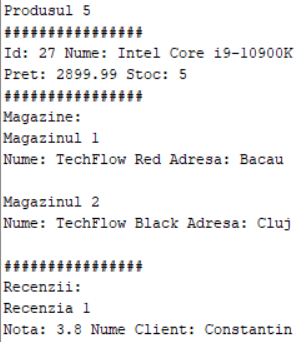
select \* from recenzii;

Cerința 6.

Formulați în limbaj natural o problemă pe care să o rezolvați folosind un subprogram stocat independent care să utilizeze toate cele 3 tipuri de colecții studiate. Apelați subprogramul.

Pentru primele 5 produse (varray) in ordine alfabetica dupa nume sa se afiseze codul, numele, pretul, stocul, in ce magazine se afla (t indexat) si recenziile lasate de clienti (t imbr).



create or replace procedure produse\_info as

-- varray de record-uri pentru produse

type prod\_rec is record (

cod\_prod produse.id\_produs%type,

nume produse.nume\_produs%type,

pret produse.pret\_produs%type,

stoc produse.stoc\_produs%type

);

type prod\_vec is varray(5) of prod\_rec;

t\_prod prod\_vec := prod\_vec();

-- tablou indexat pentru magazine

type mag\_rec is record (

nume magazine.nume\_magazin%type,

adresa magazine.adresa\_magazin%type

);

type mag\_ind is table of mag\_rec index by binary\_integer;

t\_mag mag\_ind;

-- tablou imbricat pentru recenzii

type recenzii\_rec is record (

nota recenzii.nota\_recenzie%type,

nume\_client clienti.nume\_client%type

);

type rec\_imbr is table of recenzii\_rec;

t\_recenzii rec\_imbr := rec\_imbr();

begin

dbms\_output.put\_line('######## Informatii despre produse - magazine - recenzii ########');

dbms\_output.new\_line();

-- atribuire produse

select id\_produs,nume\_produs,pret\_produs,stoc\_produs bulk collect into t\_prod

from produse

order by nume\_produs

fetch first 5 rows only;

for i in t\_prod.first..t\_prod.last loop

-- afisare info produs

dbms\_output.put\_line('Produsul ' || i);

dbms\_output.put\_line('################');

dbms\_output.put\_line('Id: ' || t\_prod(i).cod\_prod || ' Nume: ' || t\_prod(i).nume);

dbms\_output.put\_line('Pret: ' || t\_prod(i).pret || ' Stoc: ' || t\_prod(i).stoc);

dbms\_output.put\_line('################');

-- atribuire magazine

select m.nume\_magazin,m.adresa\_magazin bulk collect into t\_mag

from magazine m

join produse\_magazine pm on (m.id\_magazin = pm.id\_magazin)

where pm.id\_produs = t\_prod(i).cod\_prod;

-- afisare info magazin

if t\_mag.count = 0 then

dbms\_output.put\_line('Produsul nu se afla intr-un magazin!');

dbms\_output.new\_line;

else

dbms\_output.put\_line('Magazine: ');

for j in t\_mag.first..t\_mag.last loop

dbms\_output.put\_line('Magazinul ' || j);

dbms\_output.put\_line('Nume: ' || t\_mag(j).nume || ' Adresa: ' || t\_mag(j).adresa);

dbms\_output.new\_line();

end loop;

end if;

dbms\_output.put\_line('################');

-- atribuire recenzii

select r.nota\_recenzie,c.nume\_client bulk collect into t\_recenzii

from recenzii r

join clienti c on (r.id\_client = c.id\_client)

where r.id\_produs = t\_prod(i).cod\_prod;

-- afisare recenzii

if t\_recenzii.count = 0 then

dbms\_output.put\_line('Produsul nu are recenzii!');

dbms\_output.new\_line;

else

dbms\_output.put\_line('Recenzii: ');

for k in t\_recenzii.first..t\_recenzii.last loop

dbms\_output.put\_line('Recenzia ' || k);

dbms\_output.put\_line('Nota: ' || t\_recenzii(k).nota || ' Nume Client: ' || t\_recenzii(k).nume\_client);

dbms\_output.new\_line();

end loop;

end if;

dbms\_output.new\_line();

end loop;

end produse\_info;

/

execute produse\_info;