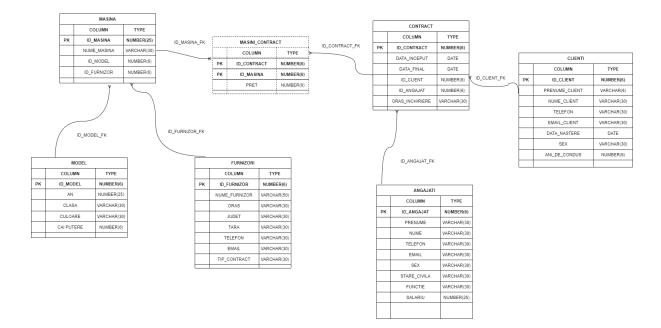
Baza de date companie de inchiriat masini, Mihai Alexandru 243.

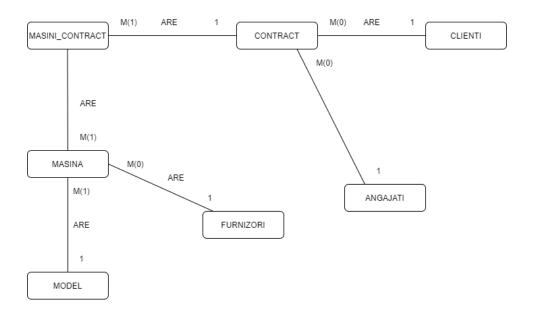
Baza de date este proiectata pentru o companie care se ocupa cu servicii de inchiriat masini.

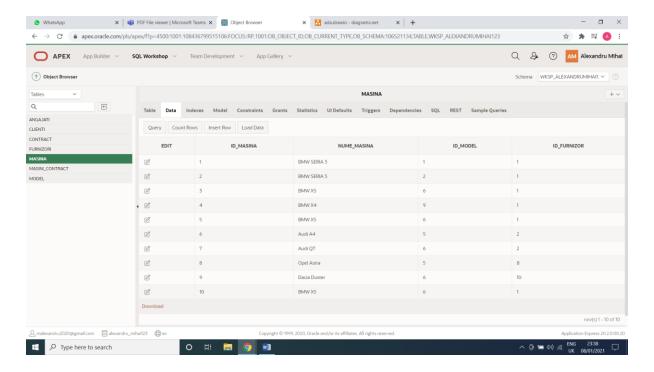
Obiectivele bazei de date sunt :

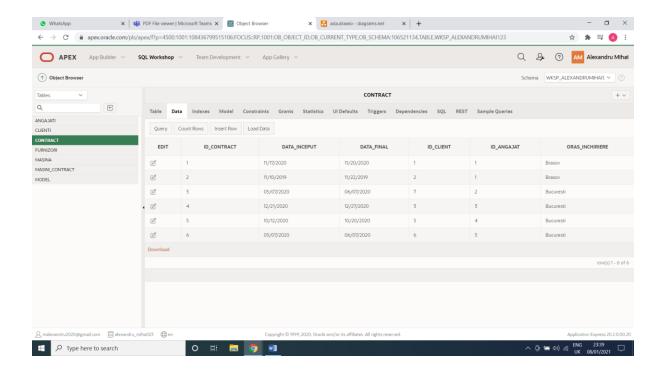
- -Sa creeze o baza de date capabila sa inregistreze un flux mediu de informatii si sa gestioneze aceste informatii in timp util;
- -Sa tina o evidenta completa a companiei de inchiriat masini
- -Sa minimizeze timpul alocat cautarii unor informatii despre inchirierile efectuate;
- -Simplificarea misiunii angajatilor si ,totodata, a clientilor;

Baza de date este formata din 7 tabele aflate in Forma Normala 3.









CREATE TABLE MODEL(ID_MODEL Number(6) Primary key, AN Number(6), CLASA Varchar(30), CULOARE Varchar(30), CAI_PUTERE Number(6)); INSERT INTO MODEL VALUES(1,2012, 'Sedan', 'Alb',200);

INSERT INTO MODEL

INSERT INTO MODEL

INSERT INTO MODEL

VALUES(2,2013,'Sedan','Alb',210);

VALUES(3,2014,'Sedan','Negru',180);

VALUES(4,2020, 'Sedan', 'Alb',160);

```
INSERT INTO MODEL
VALUES(5,2019, 'Sedan', 'Albastru', 170);
INSERT INTO MODEL
VALUES(6,2017, 'Suv', 'Alb',210);
INSERT INTO MODEL
VALUES(7,2011,'Suv','Negru',190);
INSERT INTO MODEL
VALUES(8,2017,'Suv','Negru',200);
INSERT INTO MODEL
VALUES(9,2017,'Coupe','Alb',230);
INSERT INTO MODEL
VALUES(10,2020,'Coupe','Albastru',230);
CREATE TABLE FURNIZORI(
  ID_FURNIZOR Number(6) Primary key,
  NUME_FURNIZOR Varchar(30),
  ORAS Varchar(30),
  TARA Varchar(30),
  TELEFON VARCHAR(30),
  EMAIL Varchar(30),
  TIP_CONTRACT Varchar(30)
);
INSERT INTO FURNIZORI
VALUES(1,'BMW','Alexandria','Romania','587-99-6666','sdgsdg@car.com','Anual');
INSERT INTO FURNIZORI
VALUES(2,'Audi','Munchen','Germania','418-542-9988','sergfe@car.com','Anual');
```

```
INSERT INTO FURNIZORI
VALUES(3,'Mercedes','Roma','Italia','418-542-9988','sergfe@car.com','Anual');
INSERT INTO FURNIZORI
VALUES(4,'Auto','Ontario','Canada','418-542-4654','auto@car.com','Anual');
INSERT INTO FURNIZORI
VALUES(5,'Plus','Londra','Anglia','418-542-5675','plus@car.com','3 ani');
INSERT INTO FURNIZORI
VALUES(6,'abc','Mexico City','Mexico,','4645-542-5675','plus@car.com','2 ani');
INSERT INTO FURNIZORI
VALUES(7,'Reanault','Bern','Distrito Federal','4645-542-567','frh@car.com','2 ani');
INSERT INTO FURNIZORI
VALUES(8,'Opel','Munich','Germania','7655-5454-5657','gdg@car.com','3 ani');
INSERT INTO FURNIZORI
VALUES(9,'Cars','Bucuresti','Romania','071233834','cars@car.com','2 ani');
INSERT INTO FURNIZORI
VALUES(10, 'Dacia', 'Bucuresti', 'Romania', '0712548343', 'Dacia@car.com', 'Anual');
CREATE TABLE MASINA(
  ID_MASINA Number(25) Primary key,
  NUME_MASINA Varchar(30),
  ID_MODEL Number(6) REFERENCES MODEL(ID_MODEL),
  ID_FURNIZOR NUMBER(6) REFERENCES FURNIZORI(ID_FURNIZOR)
);
INSERT INTO MASINA
VALUES(1, BMW SERIA 3',1,1);
INSERT INTO MASINA
VALUES(2,'BMW SERIA 5',2,1);
```

```
INSERT INTO MASINA
VALUES(3,'BMW X5',6,1);
INSERT INTO MASINA
VALUES(4,'BMW X4',9,1);
INSERT INTO MASINA
VALUES(5,'BMW X5',6,1);
INSERT INTO MASINA
VALUES(6,'Audi A4',5,2);
INSERT INTO MASINA
VALUES(7,'Audi Q7',6,2);
INSERT INTO MASINA
VALUES(8,'Opel Astra',5,8);
INSERT INTO MASINA
VALUES(9,'Dacia Duster',6,10);
INSERT INTO MASINA
VALUES(10,'BMW X5',6,1);
CREATE TABLE ANGAJATI(
```

ID_ANGAJAT Number(6) Primary key, PRENUME Varchar(50), NUME Varchar(50), TELEFON Varchar(30), EMAIL Varchar(50), SEX Varchar(30), STARE_CIVILA Varchar(30), FUNCTIE Varchar(30),

```
SALARIU Number(25)
);
INSERT INTO ANGAJATI
VALUES(1,'Mihai','Andrei','0723211239','mihai45@ss.com','M','Casatorit','Manager',2000);
INSERT INTO ANGAJATI
VALUES(2,'Christopher','Olsen','0115464564','Olsen@ss.com','M','Casatorit','Relatii Clienti',3000);
INSERT INTO ANGAJATI
VALUES(3,'Elizabeth','Bates','0879979877','Bates@ss.com','F','Casatorita','Relatii Clienti',3500);
INSERT INTO ANGAJATI
VALUES(4, 'Ellen', 'Abel', '0879989237', 'Abel@ss.com', 'F', 'Casatorita', 'Manager', 3500);
INSERT INTO ANGAJATI
VALUES(5,'Jack','Livingston','0879675657','Livingston@ss.com','M','Casatorit','Sales
Manager',20000);
INSERT INTO ANGAJATI
VALUES(6,'Charles','Johnson','0836346647','Johnson@ss.com','M','Casatorit','Relatii Clienti',15000);
INSERT INTO ANGAJATI
VALUES(7,'Winston','Taylor','084564567','Taylor@ss.com','M','Casatorit','Call operator',9000);
INSERT INTO ANGAJATI
VALUES(8, 'Julia', 'Dellinger', '065756567', 'Dellinger@ss.com', 'F', 'Casatorita', 'Manager', 8000);
INSERT INTO ANGAJATI
VALUES(9,'Jennifer','Dilly','068936567','Dilly@ss.com','F','Casatorita','Manager',7000);
INSERT INTO ANGAJATI
VALUES(10, 'Timothy', 'Higgins', '068936567', 'Higgins@ss.com', 'M', 'Casatorita', 'Marketing
Coordinator',15000);
INSERT INTO ANGAJATI
VALUES(11, 'Hermann', 'Susan', '546464554', 'Susan@ss.com', 'M', 'Casatorita', 'Web Designer', 15000);
CREATE TABLE CLIENTI (
```

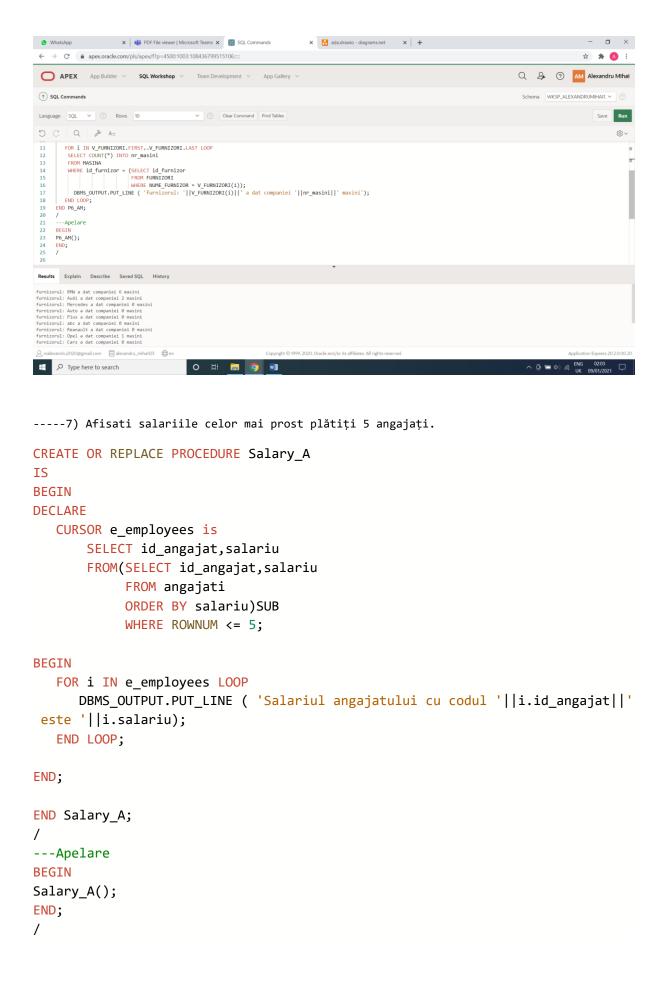
ID CLIENT NUMBER(6) Primary key,

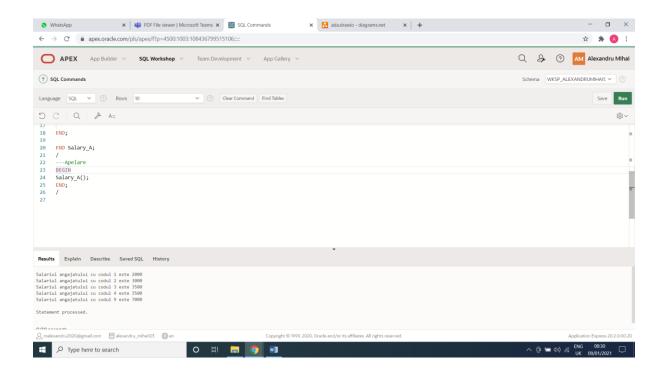
```
PRENUME_CLIENT VARCHAR(30),
  NUME_CLIENT VARCHAR(30),
  TELEFON VARCHAR(30),
  EMAIL_CLIENT VARCHAR(30),
  DATA_NASTERE DATE,
  SEX VARCHAR(30),
  ANI DE CONDUS NUMBER(6)
 );
INSERT INTO CLIENTI
VALUES(1,'Mihai','Daniel','0723218479','mihai@ss.com',TO_DATE('17/12/1997',
'DD/MM/YYYY'),'M',2);
INSERT INTO CLIENTI
VALUES(2,'Vlascenco','Daniel','0723256779','Daniel@ss.com',TO_DATE('18/11/1996',
'DD/MM/YYYY'),'M',4);
INSERT INTO CLIENTI
VALUES(3,'Lex','De Haan','5151234569','De Haan@ss.com',TO DATE('17/05/1991',
'DD/MM/YYYY'),'M',2);
INSERT INTO CLIENTI
VALUES(4, 'Valli', 'Pataballa', '5158899069', 'Pataballa@ss.com', TO_DATE('02/05/1989',
'DD/MM/YYYY'),'M',8);
INSERT INTO CLIENTI
VALUES(5, 'Laura', 'Bissot', '0722334478', 'Laura@ss.com', TO DATE('22/04/1988',
'DD/MM/YYYY'), 'F',5);
INSERT INTO CLIENTI
VALUES(6, 'Mozhe', 'Atkinson', '0777334478', 'Atkinson@ss.com', TO_DATE('24/09/1981',
'DD/MM/YYYY'),'M',5);
INSERT INTO CLIENTI
VALUES(7,'John','Seo','0875436785','Seo@ss.com',TO_DATE('24/08/2000', 'DD/MM/YYYY'),'M',2);
INSERT INTO CLIENTI
VALUES(8, John', 'Russell', '7765325678', 'Russell@ss.com', TO_DATE('01/01/1999',
'DD/MM/YYYY'),'M',2);
INSERT INTO CLIENTI
```

```
VALUES(9,'Alberto','Errazuriz','5567879667','Errazuriz@ss.com',TO_DATE('01/06/1999',
'DD/MM/YYYY'),'M',2);
INSERT INTO CLIENTI
VALUES(10, 'Peter', 'Tucker', '1876354678', 'Tucker@ss.com', TO DATE('01/05/1988',
'DD/MM/YYYY'),'M',7);
CREATE TABLE CONTRACT(
  ID_CONTRACT Number(6) Primary key,
  DATA_INCEPUT DATE,
  DATA_FINAL DATE,
  ID CLIENT Number(6) REFERENCES CLIENTI(ID CLIENT),
  ID ANGAJAT Number(6) REFERENCES ANGAJATI(ID ANGAJAT),
  ORAS INCHIRIERE Varchar(30)
);
INSERT INTO CONTRACT
VALUES(1,TO_DATE('17/11/2020', 'DD/MM/YYYY'),TO_DATE('20/11/2020',
'DD/MM/YYYY'),1,1,'Brasov');
INSERT INTO CONTRACT
VALUES(2,TO_DATE('10/11/2019', 'DD/MM/YYYY'),TO_DATE('22/11/2019',
'DD/MM/YYYY'),2,1,'Brasov');
INSERT INTO CONTRACT
VALUES(3,TO_DATE('07/05/2020', 'DD/MM/YYYY'),TO_DATE('07/06/2020',
'DD/MM/YYYY'),7,2,'Bucuresti');
INSERT INTO CONTRACT
VALUES(4,TO_DATE('21/12/2020', 'DD/MM/YYYY'),TO_DATE('27/12/2020',
'DD/MM/YYYY'),3,3,'Bucuresti');
INSERT INTO CONTRACT
```

```
VALUES(5,TO_DATE('12/10/2020', 'DD/MM/YYYY'),TO_DATE('20/10/2020',
'DD/MM/YYYY'),5,4,'Bucuresti');
INSERT INTO CONTRACT
VALUES(6,TO_DATE('07/05/2020', 'DD/MM/YYYY'),TO_DATE('07/06/2020',
'DD/MM/YYYY'),6,5,'Bucuresti');
CREATE TABLE MASINI_CONTRACT(
ID_MASINA Number(6),
ID_CONTRACT Number(6),
PRET Number(10),
CONSTRAINT MASINI_CONTRACT_ID PRIMARY KEY (ID_MASINA, ID_CONTRACT)
);
ALTER TABLE MASINI CONTRACT
ADD FOREIGN KEY (ID_MASINA) REFERENCES MASINA(ID_MASINA);
ALTER TABLE MASINI CONTRACT
ADD FOREIGN KEY (ID_CONTRACT) REFERENCES CONTRACT(ID_CONTRACT);
INSERT INTO MASINI CONTRACT
VALUES(1,1,100);
INSERT INTO MASINI_CONTRACT
VALUES(2,2,200);
INSERT INTO MASINI_CONTRACT
VALUES(3,3,400);
INSERT INTO MASINI_CONTRACT
VALUES(1,4,250);
INSERT INTO MASINI_CONTRACT
VALUES(5,5,350);
INSERT INTO MASINI_CONTRACT
VALUES(1,6,400);
INSERT INTO MASINI CONTRACT
```

```
VALUES(5,2,200);
INSERT INTO MASINI_CONTRACT
VALUES(7,5,350);
INSERT INTO MASINI_CONTRACT
VALUES(4,3,300);
INSERT INTO MASINI_CONTRACT
VALUES(9,6,200);
INSERT INTO MASINI_CONTRACT
VALUES(9,5,300);
INSERT INTO MASINI_CONTRACT
VALUES(4,4,250);
----6) Afisati numarul de masini primite de la fiecare furnizor.
CREATE OR REPLACE PROCEDURE P6 AM
IS
   TYPE tablou imbricat is TABLE OF FURNIZORI.nume furnizor%TYPE;
   V_FURNIZORI tablou_imbricat := tablou_imbricat();
   nr_masini Number(4);
BEGIN
    SELECT nume_furnizor
    BULK COLLECT INTO V_FURNIZORI
    FROM FURNIZORI;
   FOR i IN V_FURNIZORI.FIRST..V_FURNIZORI.LAST LOOP
    SELECT COUNT(*) INTO nr_masini
    FROM MASINA
    WHERE id_furnizor = (SELECT id_furnizor
                          FROM FURNIZORI
                          WHERE NUME FURNIZOR = V FURNIZORI(i));
      DBMS_OUTPUT.PUT_LINE ( 'furnizorul: '||V_FURNIZORI(i)||' a dat companiei
 '||nr_masini||' masini');
   END LOOP;
END P6_AM;
/
---Apelare
BEGIN
P6_AM();
END;
```





----8) Functie care sa obtina numarul total de masini inchiriate de un client al carui cod (id) este specificat.

```
CREATE OR REPLACE FUNCTION f8 AM
    (id_c CLIENTI.id_client%TYPE DEFAULT '1')
    RETURN NUMBER IS nr Number(6);
    exceptie EXCEPTION;
   NR_CLIENTI NUMBER(6);
BEGIN
    SELECT COUNT (*) INTO NR_CLIENTI
    FROM CLIENTI
    WHERE ID_CLIENT = ID_C;
IF NR_CLIENTI = 0 THEN RAISE exceptie;
END IF;
    SELECT count(*) INTO nr
    FROM CLIENTI a JOIN CONTRACT c
    ON a.id_client = c.id_client
    JOIN MASINI_CONTRACT M
    ON c.id_contract = m.id_contract
   WHERE a.id_client=id_c;
RETURN nr;
EXCEPTION
WHEN exceptie THEN
RAISE_APPLICATION_ERROR(-20000,
```

```
'Nu exista clienti cu codul dat');
RAISE APPLICATION ERROR(-20002, 'Alta eroare!');
END f8 AM;
BEGIN
DBMS_OUTPUT.PUT_LINE(f8_AM(2));
END;

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20 EXCEPTION
 20 EXCEPTION

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21 NATISE APPLICATION_ERROR(-20000,

23 'Nu exista clienti cu codul dat');

24 RAISE_APPLICATION_ERROR(-20002, 'Alta eroarel');

EHD f8_AM;
 28 BEGIN 29 DBMS_OUTPUT.PUT_LINE(f8_AM(2));
30 END;
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    SQL Commands

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20 EXCEPTION

WHEN exceptie THEN

RAISE_APPLICATION_ERROR(-20000,

31 "Nu exista clienti cu codul dat');

RAISE_APPLICATION_ERROR(-20002, 'Alta eroarel');

END f8_AM;

27

28

BECT!
  28 BEGIN
29 DBMS_OUTPUT.PUT_LINE(f8_AM(99));
30 END;
 Results Explain Describe Saved SQL History
                                                            ORA-20000: Nu exista clienti cu codul dat
ORA-06512: at "MKSP_ALEXANDRUMIHAII23.FS_AM", line 22
ORA-065212: at line 2
ORA-065212: at "SYS.DBMS_SQL", line 1721

    BEGIN
    DBMS_OUTPUT.PUT_LINE(f8_AM(99));
    END;

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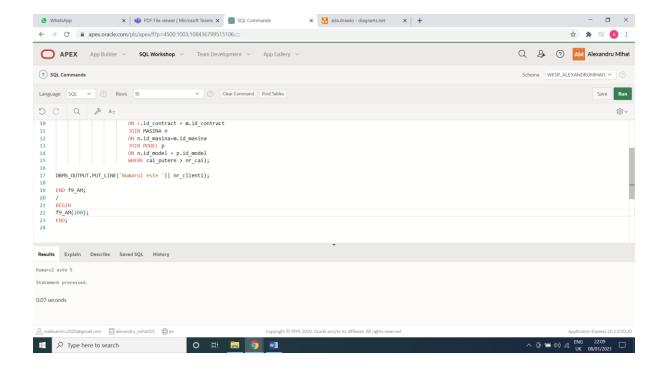
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----9) Afisati numarul clientilor care au inchiriat masini cu numarul de cai putere mai mare decat un numar specificat.

```
CREATE OR REPLACE PROCEDURE f9 AM
(nr_cai MODEL.cai_putere%TYPE DEFAULT 100)
IS nr_clienti Number(6);
BEGIN
    SELECT COUNT (*) INTO nr_clienti
    FROM clienti
    WHERE ID_CLIENT IN (SELECT ID_CLIENT
                           FROM CONTRACT C
                            JOIN MASINI_CONTRACT m
                            ON c.id_contract = m.id_contract
                            JOIN MASINA n
                            ON n.id_masina=m.id_masina
                            JOIN MODEL p
                            ON n.id_model = p.id_model
                            WHERE cai_putere > nr_cai);
DBMS_OUTPUT.PUT_LINE('Numarul este '|| nr_clienti);
END f9_AM;
/
BEGIN
f9_AM(200);
END;
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    SQL Commands

                                                                          Schema WKSP_ALEXANDRUMIHAIT. ~
             JOIN MASINA n
ON n.id_masina=m.id_masina
             ON n.id_model = p.id_model
WHERE cai_putere > nr_cai);
  DBMS_OUTPUT.PUT_LINE('Numarul este '|| nr_clienti);
END f9_AM;
Results Explain Describe Saved SQL History
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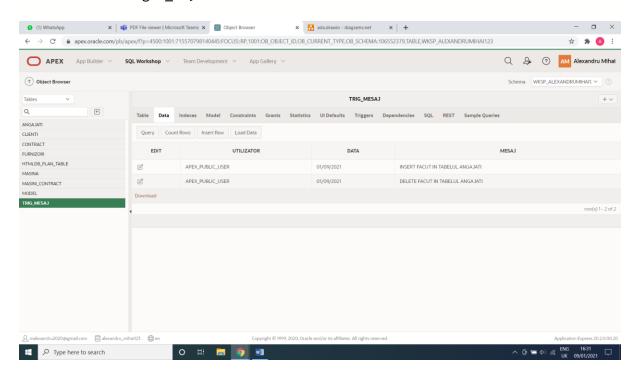


10) ---- Definiti un declansator care sa introduca in tabelul TRIG_MESAJ un mesaj dupa ce in tabelul angajati a fost facuta o operatiune de tip LMD.

```
CREATE TABLE TRIG_MESAJ
(utilizator VARCHAR(30),
data DATE,
MESAJ VARCHAR(40));
DROP TABLE TRIG_MESAJ;
CREATE OR REPLACE TRIGGER trig10 AM
AFTER INSERT OR UPDATE OR DELETE ON ANGAJATI
BEGIN
    IF INSERTING THEN
        INSERT INTO TRIG_MESAJ
            VALUES (SYS.LOGIN_USER, SYSDATE, 'INSERT FACUT IN TABELUL ANGAJATI'
);
    ELSIF UPDATING THEN
        INSERT INTO TRIG MESAJ
            VALUES (SYS.LOGIN USER, SYSDATE, 'UPDATE FACUT IN TABELUL ANGAJATI'
);
    ELSIF DELETING THEN
        INSERT INTO TRIG MESAJ
            VALUES (SYS.LOGIN USER, SYSDATE, 'DELETE FACUT IN TABELUL ANGAJATI'
);
END IF;
END;
/
INSERT INTO ANGAJATI
```

VALUES(16, 'AA', 'FF', '0879F979877', 'SD@ss.com', 'F', 'Casatorita', 'Relatii Client i', 3500);

DROP TRIGGER trig10_AM;



11) Definiți un declanșator prin care să nu se permita modificarea cailor putere ai unui model de masina.

```
CREATE OR REPLACE TRIGGER trig11_AM

BEFORE UPDATE OF cai_putere ON model

FOR EACH ROW

BEGIN

IF (:NEW.cai_putere > :OLD.cai_putere) THEN

RAISE_APPLICATION_ERROR(-20002, 'Puterea masinii nu poate fi modificata');

ELSIF (:NEW.cai_putere < :OLD.cai_putere) THEN

RAISE_APPLICATION_ERROR(-20002, 'Puterea masinii nu poate fi modificata');

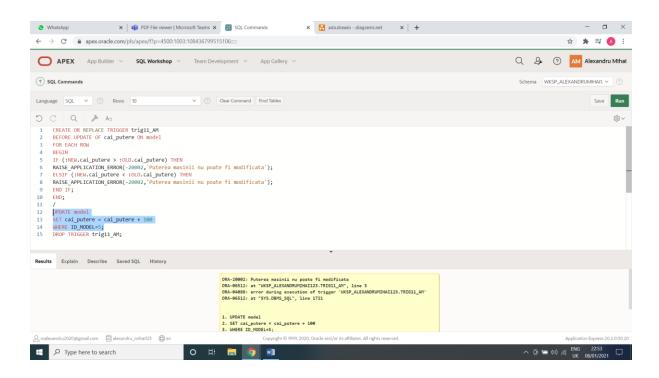
END IF;

END;

/

UPDATE model
```

```
SET cai_putere = cai_putere + 100
WHERE ID_MODEL=100;
DROP TRIGGER trig11_AM;
```



12) Definiți un declanșator care sa interzica o actiune de tip Drop sau Alter asupra schemei.

```
CREATE OR REPLACE TRIGGER trig12_AM

BEFORE DROP OR ALTER ON SCHEMA

BEGIN

RAISE_APPLICATION_ERROR (-20000, 'Cannot drop or alter object on schema');

END;

/

CREATE INDEX ind_AM ON ANGAJATI(nume);

DROP INDEX ind_AM;

DROP TRIGGER trig12_AM;
```

