

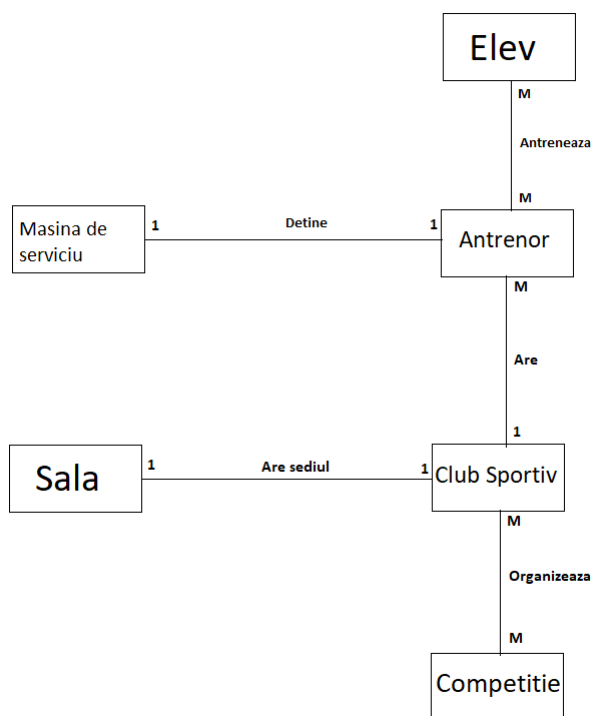
Sisteme de Gestiune a Bazelor de Date

Oanea Șmit Andrei, grupa 331

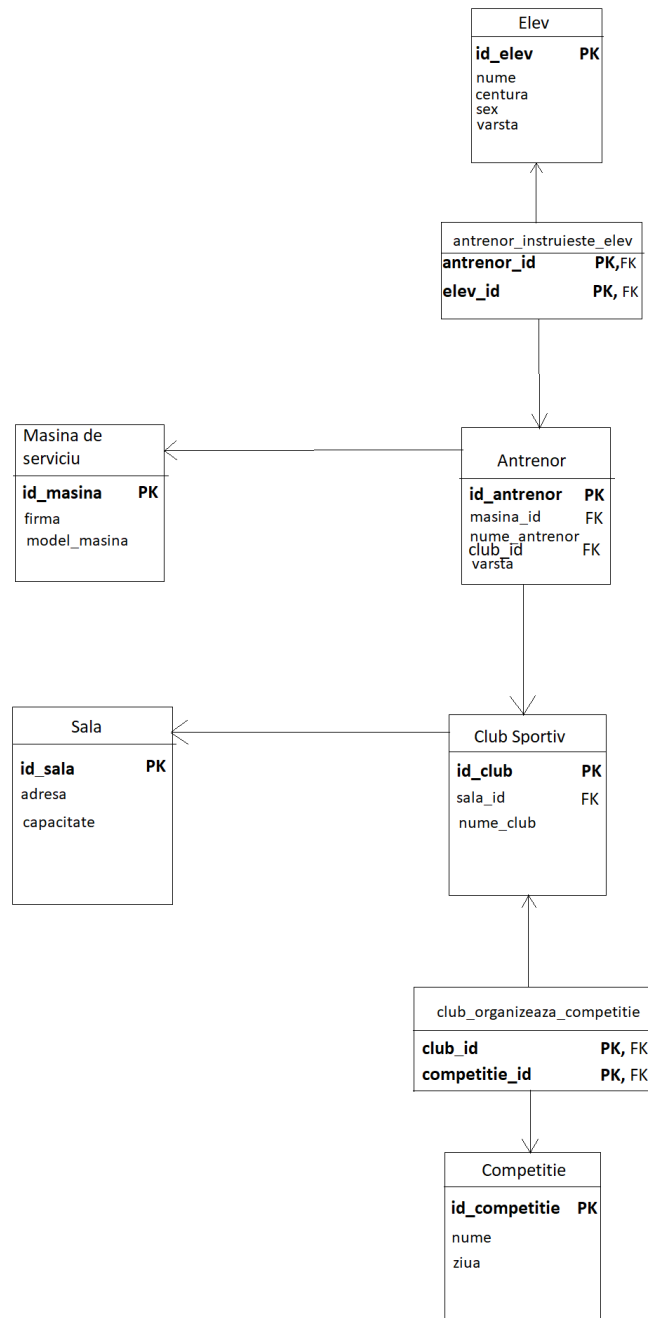
1 Prezentare

Baza de date prezintă ține informații despre Federația Română de Karate tradițional. Sunt trecute cluburi sportive, antrenori, competiții organizate de cluburi. Fiecare antrenor are o mașină de serviciu.

2 Diagrama Entitate-Relație (ERD)



3 Diagrama Conceptuală



4 Implementarea tabelelor (incluzând constrângeri de integritate)

The screenshot displays the Oracle Live SQL interface, which is a web-based environment for executing SQL queries. The interface is divided into several sections:

- Header:** Includes the Oracle Live SQL logo, a search bar, and user information (smitoanea@gmail.com).
- Left Sidebar:** Contains navigation links for Home, SQL Worksheet, My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library.
- SQL Worksheet:** The main area for writing and executing SQL code. It contains the following code:

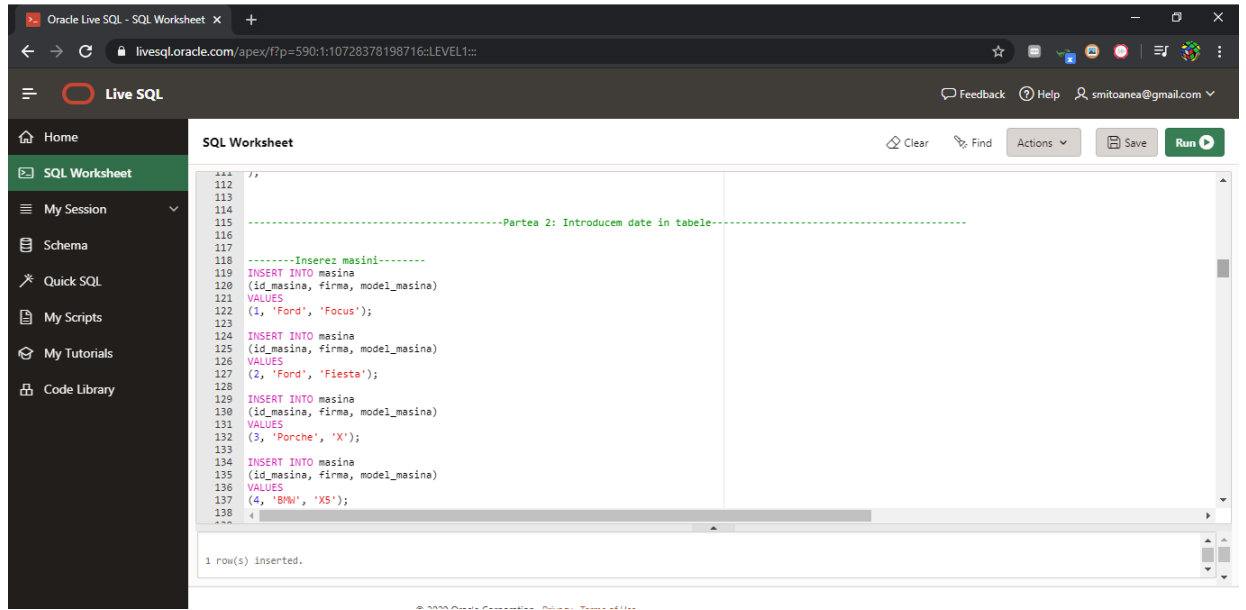
```
6 CREATE TABLE masina
7 (
8   id_masina number(10) PRIMARY KEY,
9   --masina nu are foreign key
10
11   firma varchar2(50) NOT NULL,
12   model_masina varchar2(50) NOT NULL
13 );
14
15
16 CREATE TABLE antrenor
17 (
18   id_antrenor number(10) PRIMARY KEY,
19   masina_id number(10), --foreign key
20
21   nume_antrenor varchar2(50) NOT NULL,
22   varsta number(3) NOT NULL CHECK (varsta < 50 and varsta > 18),
23
24   CONSTRAINT masina_unique UNIQUE (masina_id), --pentru ca avem relatie 1 la 1
25   CONSTRAINT fk_masina
26     FOREIGN KEY (masina_id)
27     REFERENCES masina(id_masina)
28 );
29
30
31 CREATE TABLE sala
32 (
33 
```

The output area below the code shows the results of the execution:

 - Table created.
 - Table created.
 - Table created.
 - Table created.
 - Table created.
 - Table created.
 - Table created.
 - Table created.
 - 1 row(s) inserted.

The interface also includes a footer with Oracle branding and version information (Live SQL 20.2.1, running Oracle Database 19c Enterprise Edition - 19.5.0.0.0).

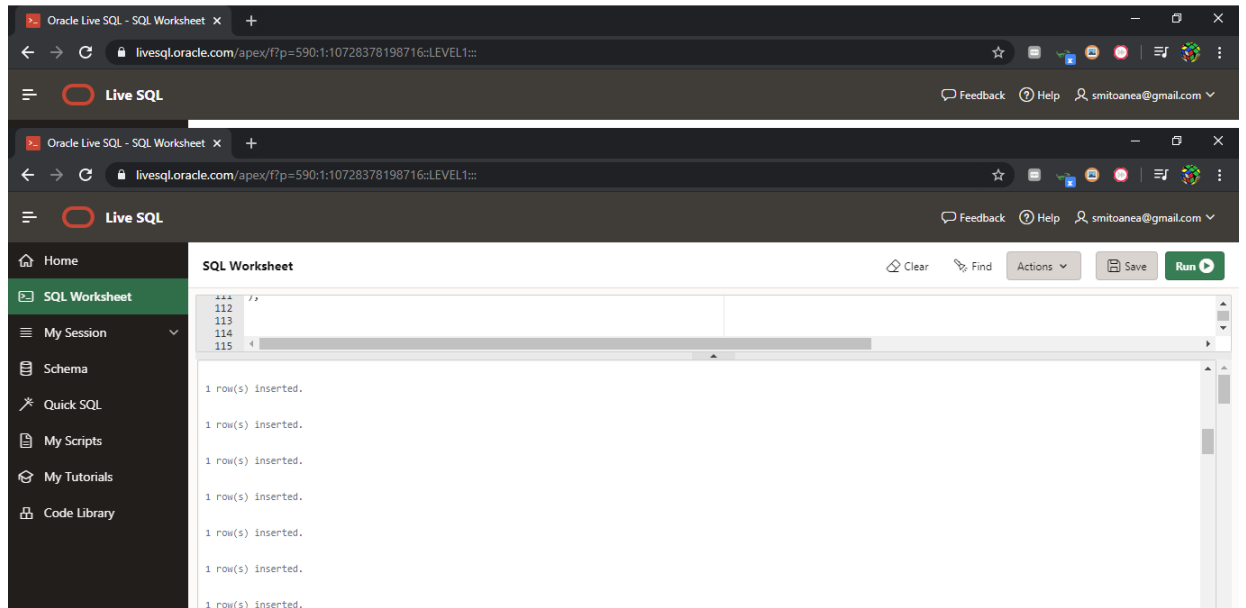
5 Popularea tabelelor cu date



The screenshot shows the Oracle Live SQL interface. The left sidebar contains navigation links: Home, SQL Worksheet (selected), My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library. The main area is titled "SQL Worksheet" and contains the following SQL code:

```
112 --
113
114 -----Partea 2: Introducem date in tabel-----
115
116 -----Inserem masini-----
117
118 INSERT INTO masina
119 (id_masina, firma, model_masina)
120 VALUES
121 (1, 'Ford', 'Focus');
122
123
124 INSERT INTO masina
125 (id_masina, firma, model_masina)
126 VALUES
127 (2, 'Ford', 'Fiesta');
128
129 INSERT INTO masina
130 (id_masina, firma, model_masina)
131 VALUES
132 (3, 'Porsche', 'X');
133
134 INSERT INTO masina
135 (id_masina, firma, model_masina)
136 VALUES
137 (4, 'BMW', 'XS');
138
```

Below the code editor, the output shows "1 row(s) inserted."



The screenshot shows the Oracle Live SQL interface after executing the SQL code. The left sidebar is the same as in the previous screenshot. The main area is titled "SQL Worksheet" and shows the execution results of the SQL code:

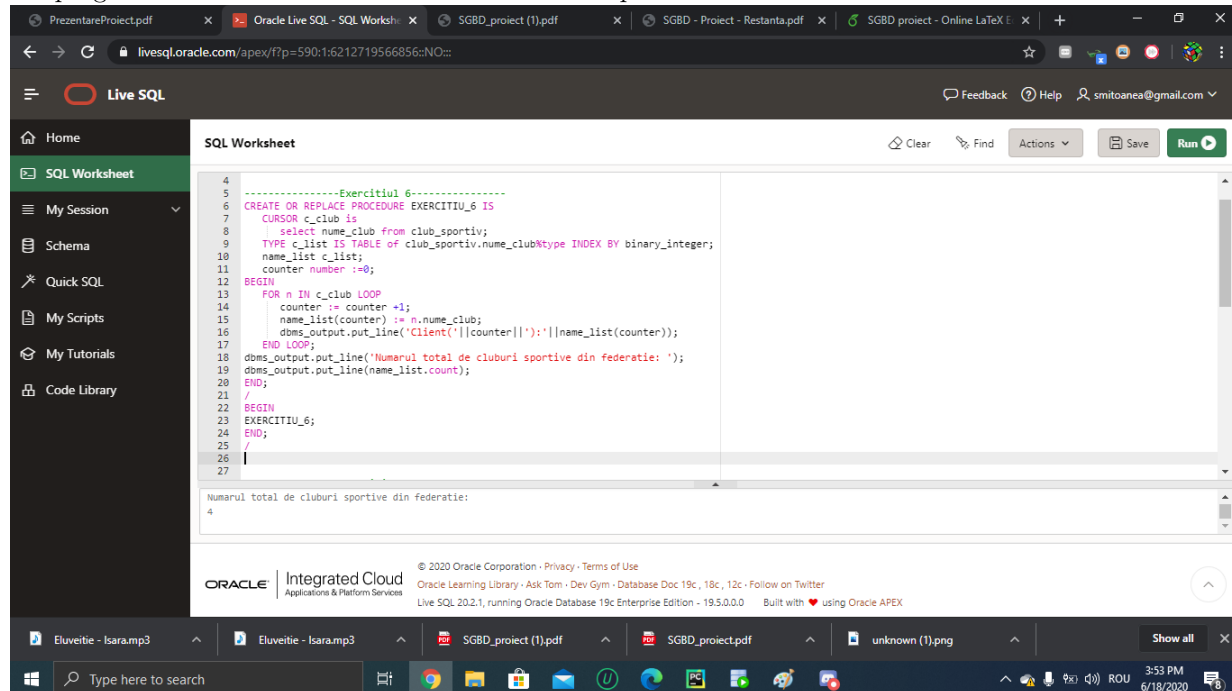
```
112 --
113
114 -----Partea 2: Introducem date in tabel-----
115
```

Below the code editor, the output shows the results of the insert statements:

```
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.
1 row(s) inserted.
```

6 Subprogram stocat care utilizează un tip de colecție studiat

Subprogram care afișează numărul total de cluburi sportive din federație:



The screenshot displays the Oracle Live SQL interface. The left sidebar contains navigation options: Home, SQL Worksheet (selected), My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library. The main area is the SQL Worksheet, which contains the following PL/SQL code:

```
4 -----Exercițiul 6-----
5 CREATE OR REPLACE PROCEDURE EXERCITIUL_6 IS
6   CURSOR c_club IS
7     select nume_club from club_sportiv;
8   TYPE c_list IS TABLE OF club_sportiv.nume_club%TYPE INDEX BY binary_integer;
9   name_list c_list;
10  counter number :=0;
11
12 BEGIN
13   FOR n IN c_club LOOP
14     counter := counter +1;
15     name_list(counter) := n.nume_club;
16     dbms_output.put_line('Client'||counter||':'||name_list(counter));
17   END LOOP;
18   dbms_output.put_line('Numarul total de cluburi sportive din federatie: ');
19   dbms_output.put_line(name_list.count);
20 END;
21 /
22 BEGIN
23   EXERCITIUL_6;
24 END;
25 /
26
27
```

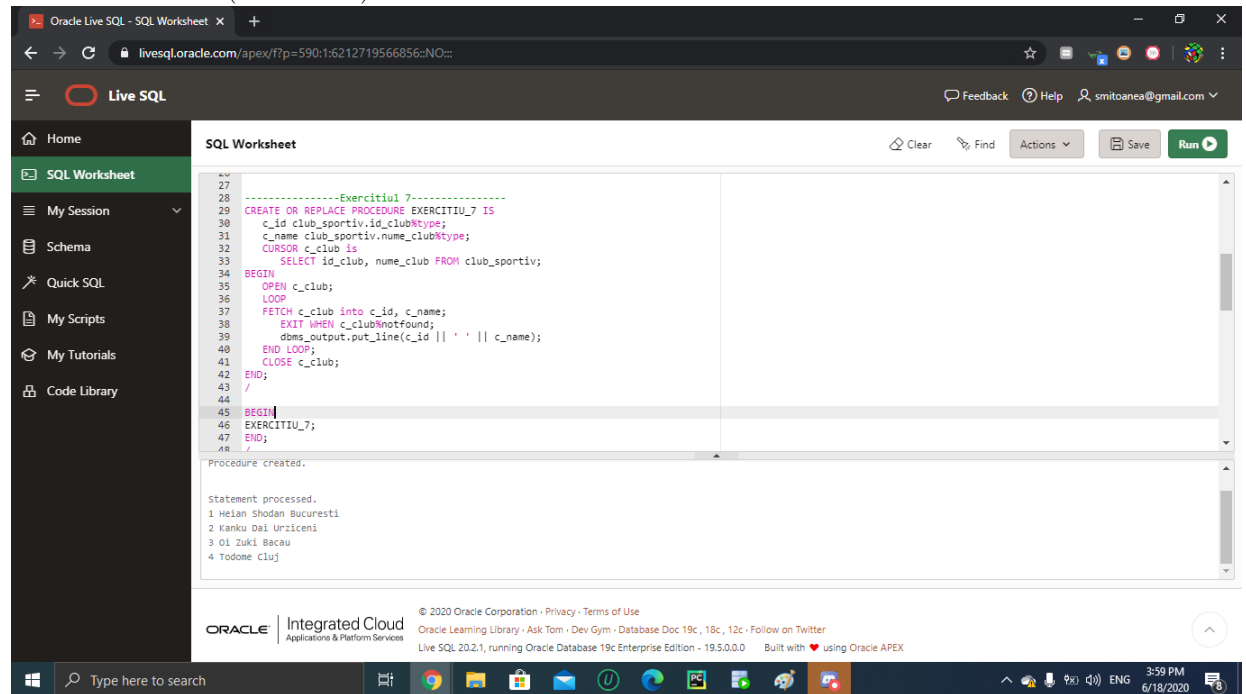
The output of the procedure is displayed below the code:

```
Numarul total de cluburi sportive din federatie:
4
```

The footer of the interface shows the Oracle logo, Integrated Cloud Applications & Platform Services, and copyright information: © 2020 Oracle Corporation. It also mentions the version: Live SQL 20.2.1, running Oracle Database 19c Enterprise Edition - 19.5.0.0.0. The bottom taskbar shows the Windows operating system with various application icons and the system clock indicating 3:53 PM on 6/18/2020.

7 Subprogram stocat care utilizează un tip de cursor studiat

Afisarea cluburilor(id + nume)



The screenshot shows the Oracle Live SQL interface. On the left is a navigation menu with options: Home, SQL Worksheet (selected), My Session, Schema, Quick SQL, My Scripts, My Tutorials, and Code Library. The main area is titled 'SQL Worksheet' and contains a PL/SQL procedure named 'EXERCITIUL_7'. The procedure is designed to iterate through a cursor of sports clubs and print their IDs and names. The code is as follows:

```
27  
28 -----Exercitiul 7-----  
29 CREATE OR REPLACE PROCEDURE EXERCITIUL_7 IS  
30   c_id club_sportiv.id_club%type;  
31   c_name club_sportiv.nume_club%type;  
32   CURSOR c_club IS  
33     SELECT id_club, nume_club FROM club_sportiv;  
34 BEGIN  
35   OPEN c_club;  
36   LOOP  
37     FETCH c_club INTO c_id, c_name;  
38     EXIT WHEN c_club%NOTFOUND;  
39     dbms_output.put_line(c_id || ' ' || c_name);  
40   END LOOP;  
41   CLOSE c_club;  
42 END;  
43 /  
44  
45 BEGIN  
46   EXERCITIUL_7;  
47 END;  
48 /
```

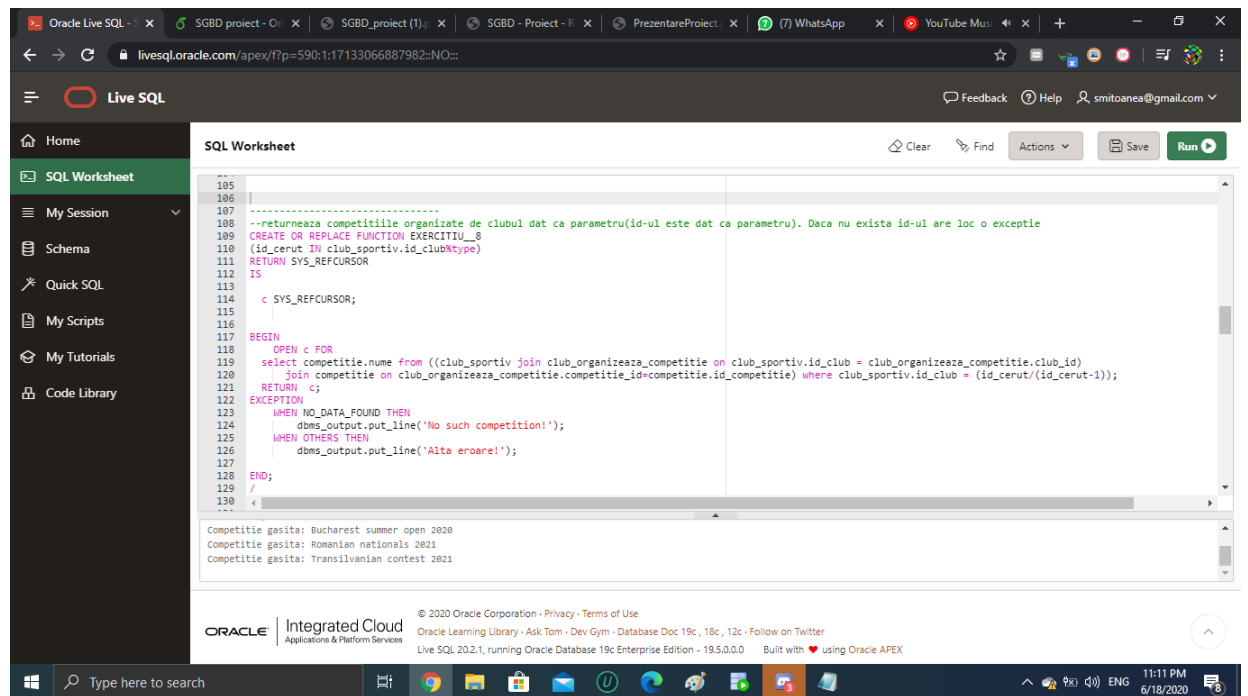
Below the code editor, the execution results are displayed:

```
Procedure created.  
  
Statement processed.  
1 Heian Shodan Bucuresti  
2 Kanku Dai Urziceni  
3 Oi Zuki Bacau  
4 Todome Cluj
```

The bottom of the interface shows the Oracle logo, 'Integrated Cloud Applications & Platform Services', and copyright information for 2020. The system status bar at the very bottom indicates 'Live SQL 20.2.1, running Oracle Database 19c Enterprise Edition - 19.5.0.0.0' and the date '6/18/2020'.

8 Subprogram stocat de tip funcție care utilizează 3 dintre tabelele definite

Funtie ce returneaza competitieile organizate de clubul dat ca parametru(id-ul este dat ca parametru):



9 Un subprogram stocat de tip procedură care să utilizeze 5 tabele

Subprogramul afiseaza daca un elev a participat la o singura competitie. Daca a participat la 0 sau la mai multe, se intra pe una din exceptii.


```
157 -----Exercitiul 9-----
158 --returnez competitia la care a participat acest elev
159 CREATE OR REPLACE PROCEDURE EXERCITIUL_9
160 (id_elev_cerut elev.id_elev%TYPE)
161 IS
162     v_competitii_returnate competitie.nume%TYPE;
163 BEGIN
164     select competitie.nume into v_competitii_returnate from (((club_sportiv join club_organizeaza_competitie on club_sportiv.id_club = club_organizeaza_competitie.id_club)
165     join competitie on club_organizeaza_competitie.competitie_id=competitie.id_competitie) join antrenor on antrenor.club_id=club_sportiv.id_club)
166     join antrenor_instruieste_elev on antrenor_instruieste_elev.antrenor_id=antrenor.id_antrenor)
167     join elev on antrenor_instruieste_elev.elev_id=elev.id_elev
168     where elev.id_elev = id_elev_cerut;
169
170 DBMS_OUTPUT.PUT_LINE('Elevul a participat la competitia: ' || v_competitii_returnate);
171
172 EXCEPTION
173 WHEN NO_DATA_FOUND THEN
174     DBMS_OUTPUT.PUT_LINE(' ' || chr(13) || chr(10) || 'Nu exista competitii la care elevul sa fi participat.');
```

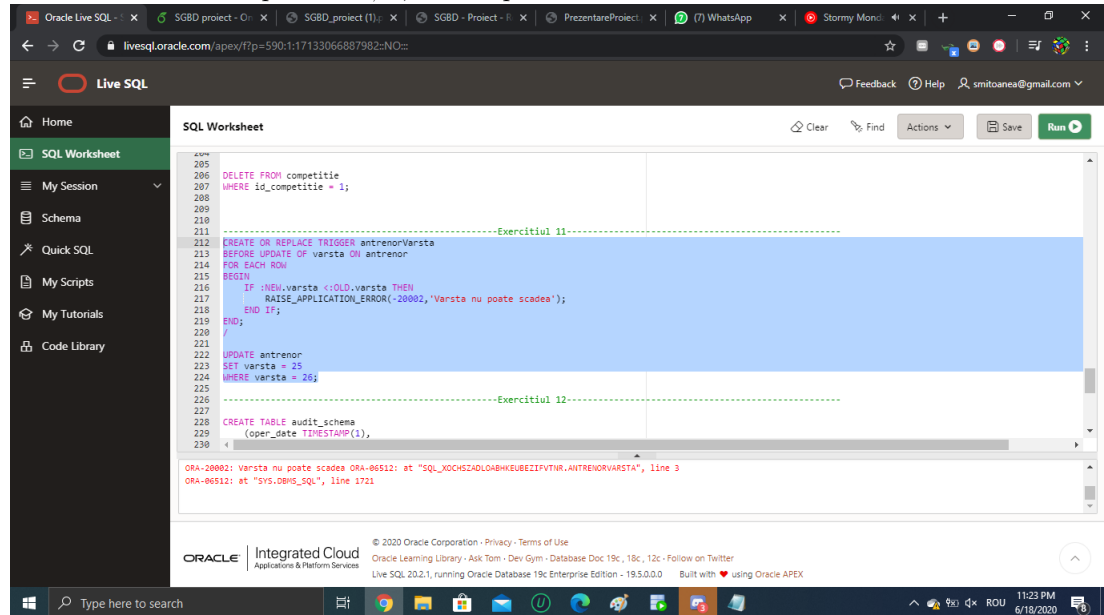
10 Trigger de tip LMD la nivel de comandă

Tabela competitie poate fi modificată doar în zilele de Luni:

```
187 -----Exercitiul 10-----
188 CREATE OR REPLACE TRIGGER trigger_modificare_competitii
189 BEFORE INSERT OR DELETE OR UPDATE ON competitie
190 IS
191 --DECLARE
192 --v_zi VARCHAR2;
193 BEGIN
194 --SELECT TO_CHAR(date '1982-03-09', 'DAY') day into v_zi FROM dual;
195 IF (TO_CHAR(SYSDATE, 'DAY') <> 'MONDAY')
196 THEN
197     RAISE_APPLICATION_ERROR(-20001, 'Sunt permise operatii asupra competitiei doar in zilele de Luni.');
```

11 Trigger de tip LMD la nivel de linie

Varsta unui antrenor poate crește, dar nu poate scădea:



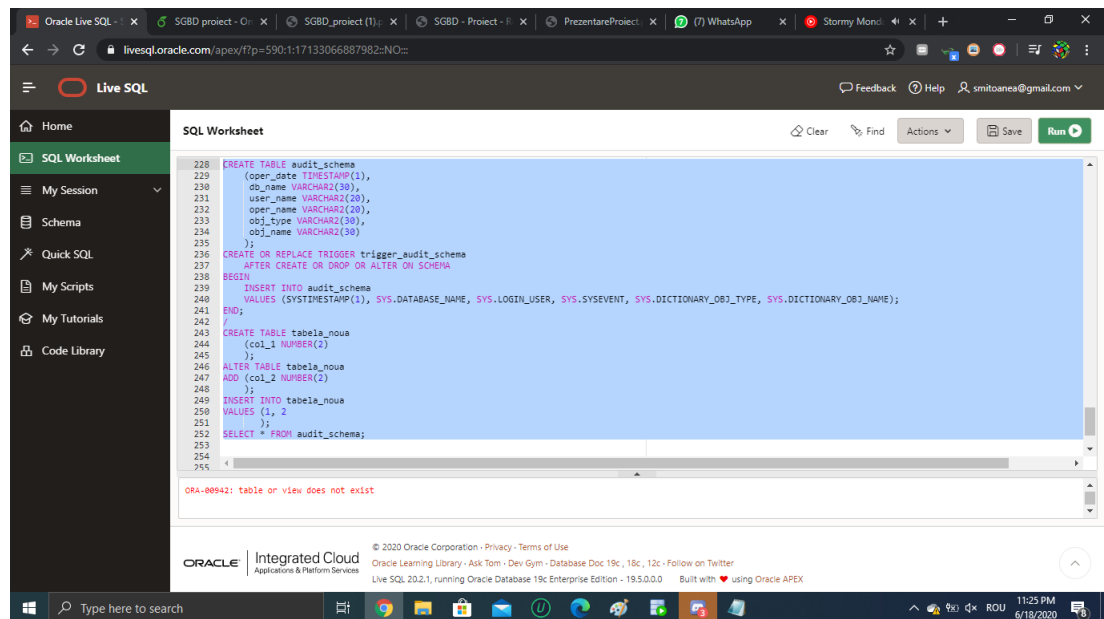
The screenshot shows the Oracle Live SQL interface. The SQL Worksheet contains the following code:

```
205 DELETE FROM competitie
206 WHERE id_competitie = 1;
207
208
209
210
211 -----Exercitiul 11-----
212 CREATE OR REPLACE TRIGGER antrenorVarsta
213 BEFORE UPDATE OF varsta ON antrenor
214 FOR EACH ROW
215 BEGIN
216     IF :NEW.varsta < :OLD.varsta THEN
217         RAISE_APPLICATION_ERROR(-20002, 'Varsta nu poate scadea');
218     END IF;
219 END;
220 /
221
222 UPDATE antrenor
223 SET varsta = 25
224 WHERE varsta = 26;
225
226 -----Exercitiul 12-----
227
228 CREATE TABLE audit_schema
229 (oper_date TIMESTAMP(1),
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
```

At the bottom of the worksheet, the following error messages are displayed:

```
ORA-20002: Varsta nu poate scadea ORA-06512: at "SQL_XCH$ZADLOABHKEUBZIFVTR.ANTRONORVARSTA", line 3
ORA-06512: at "SYS.DBMS_SQL", line 1721
```

12 Trigger de tip LDD



The screenshot shows the Oracle Live SQL interface. The SQL Worksheet contains the following code:

```
228 CREATE TABLE audit_schema
229 (oper_date TIMESTAMP(1),
230   ob_name VARCHAR2(30),
231   user_name VARCHAR2(20),
232   oper_name VARCHAR2(20),
233   obj_type VARCHAR2(30),
234   obj_name VARCHAR2(30)
235 );
236
237 CREATE OR REPLACE TRIGGER trigger_audit_schema
238 AFTER CREATE OR DROP OR ALTER ON SCHEMA
239 BEGIN
240     INSERT INTO audit_schema
241     VALUES (SYSTIMESTAMP(1), SYS.DATABASE_NAME, SYS.LOGIN_USER, SYS.SYSEVENT, SYS.DICTIONARY_OBJ_TYPE, SYS.DICTIONARY_OBJ_NAME);
242 END;
243 /
244 CREATE TABLE tabela_noua
245 (col_1 NUMBER(2)
246 );
247 ALTER TABLE tabela_noua
248 ADD (col_2 NUMBER(2)
249 );
250 INSERT INTO tabela_noua
251 VALUES (1, 2
252 );
253 SELECT * FROM audit_schema;
254
255
```

At the bottom of the worksheet, the following error message is displayed:

```
ORA-00942: table or view does not exist
```