Create or replace function createTables()

returns void AS

$$

CREATE TABLE Students(sid integer not null,

sname varchar(25),

ssurname varchar(15),

className varchar(25),

age integer,

primary key(sid));

CREATE TABLE Teachers(tid integer not null,

tname varchar(25),

tsurname varchar(15),

age integer,

workExp integer,

headTeacher boolean,

primary key(tid));

CREATE TABLE Courses(cid integer not null,

cname varchar(15),

hours integer,

primary key(cid));

CREATE TABLE Classes(classId integer not null,

className varchar(25),

capacity integer,

primary key(classId));

CREATE TABLE Grades(sid integer not null,

cid integer not null,

grade float not null,

primary key(sid,cid));

CREATE TABLE Schedule(cid integer not null,

tid integer not null,

classId integer not null,

date varchar(25) not null,

classRoomName varchar(15) not null,

primary key(tid, date),

constraint co\_id foreign key(cid) references Courses on delete cascade on update cascade,

constraint te\_id foreign key(tid) references Teachers on delete cascade on update cascade,

constraint cl\_id foreign key(classId) references Classes on delete cascade on update

cascade);

--1

create view vSt as

select C.cname, S.className, avg(G.grade) as vathmos

from Students S, Grades G, Courses C

where S.sid=G.sid and G.cid=C.cid

group by C.cname, S.className

order by C.cname;

--2

create view vTe as

select S.ssurname, S.sname, avg(G.grade)>10 as avg

from Students S, Grades G

where (S.sid=G.sid)

group by S.ssurname, S.sname

order by S.ssurname;

--3

create view vCo as

select C.cname, S.classRoomName, count(C.hours) as hours

from Courses C, Schedule S

where C.cid=S.cid

group by C.cname, S.classRoomName

order by C.cname;

--4

create view vCl as

select C.classId, C.className, count(\*) as hours

from Classes C, Schedule S

where C.classId=S.classId

group by C.className, C.classId

order by C.ClassId desc;

--5

create view vSche as

select S.ssurname, S.sname, avg(G.grade) as avg

from Students S, Grades G

where S.sid=G.sid

group by S.ssurname, S.sname

order by S.ssurname;

--6

create view vQ6 as

select Te.tsurname, Te.tname, count(\*) as count

from Schedule Sc, teachers Te

where Sc.tid=Te.tid

group by Te.tsurname, Te.tname

order by Te.tsurname;

--7

create view vQ7 as

select Sc.classRoomName, Co.cname, Sc.date

from Schedule Sc, Courses Co

where Co.cid=Sc.cid

group by Sc.classRoomName, Co.cname, Sc.date

order by Sc.classRoomName;

--8

create view vQ8 as

select St.className, avg(St.age) as avg, count(St.age) as count

from Students St

group by St.className, St.className

order by St.className;

--9

create view vQ9 as

select Te.tsurname, Te.tname, Co.cname, count(co.hours) as count

from Schedule Sc, Teachers Te, Courses Co

where Sc.tid=Te.tid and Sc.cid=Co.cid

group by Te.tsurname, Te.tname, Co.cname

order by Te.tsurname;

--10

create view vQ10 as

select Sc.date, Cl.className, Cl.classId

from Schedule Sc, Classes Cl

where Sc.classId=Cl.classId

order by Sc.date;

$$ LANGUAGE SQL;

create or replace function dropTables()

returns void AS

$$;

--drop functions of views

drop function showQ1();

drop function showQ2();

drop function showQ3();

drop function showQ4();

drop function showQ5();

drop function showQ6();

drop function showQ7();

drop function showQ8();

drop function showQ9();

drop function showQ10();

--delete views of tables

drop view vSt;

drop view vTe;

drop view vCo;

drop view vCl;

drop view vSche;

drop view vQ6;

drop view vQ7;

drop view vQ8;

drop view vQ9;

drop view vQ10;

--drop tables

DROP TABLE Schedule;

DROP TABLE Grades;

DROP TABLE Classes;

DROP TABLE Courses;

DROP TABLE Teachers;

DROP TABLE Students;

$$ LANGUAGE SQL;

create or replace function insertInto()

returns void AS

$$

insert into Students (sid, sname, ssurname, className, age) values (01, 'Noah', 'Wyatt' , '1h Gymnasiou',

14);

insert into Students (sid, sname, ssurname, className, age) values (02, 'Mack', 'Callaghan', '2h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (03, 'Cataley', 'Grey', '2h Gymnasiou',

15);

insert into Students (sid, sname, ssurname, className, age) values (04, 'Alexandros', 'Tampourakis', '2h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (05, 'Thodoris','Motoulis', '2h

Gymnasiou', 17);

insert into Students (sid, sname, ssurname, className, age) values (06, 'Grhgoris', 'Giannoulidis', '3h

Gymnasiou', 18);

insert into Students (sid, sname, ssurname, className, age) values (07, 'Zorba', 'Bowden', '3h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (08, 'Fwnh', 'Damianidou', '1h

Gymnasiou', 14);

insert into Students (sid, sname, ssurname, className, age) values (09, 'Nina', 'Sousi', '3h Gymnasiou',

16);

insert into Students (sid, sname, ssurname, className, age) values (10, 'Bob', 'Larsen', '1h Gymnasiou',

14);

insert into Students (sid, sname, ssurname, className, age) values (11, 'Katerina', 'Pavlatou', '2h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (12, 'Thanasis', 'Papastavrou', '1h

Gymnasiou', 14);

insert into Students (sid, sname, ssurname, className, age) values (13, 'Vaggelis', 'Vagenas', '2h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (14, 'Stavros', 'Evaggelou', '2h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (15, 'Giannis', 'Karathanasis', '1h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (16, 'Vasilis', 'Apostolou', '1h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (17, 'Katerina', 'Laina', '1h

Gymnasiou', 19);

insert into Students (sid, sname, ssurname, className, age) values (18, 'Evh','Demou', '2h Gymnasiou',

17);

insert into Students (sid, sname, ssurname, className, age) values (19, 'Athanasia', 'Ntela', '1h

Gymnasiou', 19);

insert into Students (sid, sname, ssurname, className, age) values (20, 'Katerina', 'Lolli', '2h Gymnasiou',

15);

insert into Students (sid, sname, ssurname, className, age) values (21, 'Xarhs', 'Lollhs', '1h Gymnasiou',

16);

insert into Students (sid, sname, ssurname, className, age) values (22, 'Apostolis', 'Niarakis', '3h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (23, 'Dimitris', 'Xaskos', '3h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (24, 'Thanasis', 'Kotsoridis', '3h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (25, 'Hlias', 'Kekos', '2h Gymnasiou',

14);

insert into Students (sid, sname, ssurname, className, age) values (26, 'Melina', 'Tzavella', '3h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (27, 'Giannis', 'Zikas', '2h Gymnasiou',

16);

insert into Students (sid, sname, ssurname, className, age) values (28, 'Dimitris', 'Spanos', '1h

Gymnasiou', 14);

insert into Students (sid, sname, ssurname, className, age) values (29, 'Giwrgos', 'Ntagkas', '1h

Gymnasiou', 13);

insert into Students (sid, sname, ssurname, className, age) values (30, 'Antwnhs', 'Gogianos', '2h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (31, 'Giwrgos', 'Simos', '3h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (32, 'Dimitra', 'Simou', '2h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (33, 'Theoxarhs', 'Mparkas', '1h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (34, 'Nikos', 'Siozos', '1h Gymnasiou',

14);

insert into Students (sid, sname, ssurname, className, age) values (35, 'Sofia', 'Thanasia', '2h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (36, 'Gianna', 'Dimitriou', '2h

Gymnasiou', 17);

insert into Students (sid, sname, ssurname, className, age) values (37, 'Eystratia', 'Gkeli', '2h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (38, 'Maria', 'Geki', '1h Gymnasiou',

14);

insert into Students (sid, sname, ssurname, className, age) values (39, 'Maria', 'Mprisimi', '1h

Gymnasiou', 14);

insert into Students (sid, sname, ssurname, className, age) values (40, 'Minas', 'Kapsalis', '3h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (41, 'Periklis', 'Delimitros', '3h

Gymnasiou', 16);

insert into Students (sid, sname, ssurname, className, age) values (42, 'Manthos', 'Koumpos', '3h

Gymnasiou', 17);

insert into Students (sid, sname, ssurname, className, age) values (43, 'Giannis', 'Papastergiou', '1h

Gymnasiou', 15);

insert into Students (sid, sname, ssurname, className, age) values (44, 'Dimitra', 'Sousi', '2h Gymnasiou',

15);

insert into Students (sid, sname, ssurname, className, age) values (45, 'Ivoni', 'Mastora', '2h Gymnasiou',

15);

insert into Students (sid, sname, ssurname, className, age) values (46, 'Athina', 'Lakka', '2h Gymnasiou',

14);

insert into Students (sid, sname, ssurname, className, age) values (47, 'Olga', 'Manola', '3h Gymnasiou',

16);

insert into Students (sid, sname, ssurname, className, age) values (48, 'Ilias', 'Siozos', '1h Gymnasiou',

14);

insert into Students (sid, sname, ssurname, className, age) values (49, 'Nikos', 'Tzourelas', '3h

Gymnasiou', 17);

insert into Students (sid, sname, ssurname, className, age) values (50, 'Vaggelis', 'Apostolakis', '1h

Gymnasiou', 14);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (01,

'Martin','Papadopoulos', 45, 7, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (02, 'Anastasios','Kaliris',

32, 3, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (03, 'Myrto','Alikaki', 28, 1,

false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (04, 'Andy','Kalomiri', 52,

10, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (05, 'Rafail','Edimos', 48,

12, true);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (06, 'Katerina','Dhmhtriou',

34, 6, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (07, 'Euaggelia','Tsiavou',

39, 4,false );

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (08,

'Giannis','Anagnwstou', 49, 14, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (09, 'Byronas','Kanioglou',

58, 16, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (10,

'Nikos','Karakatsopoulos', 61, 20, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (11, 'Fwtini','Miriouni', 60,

24, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (12, 'Eirini','Xarisiadi', 42,

11, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (13, 'Mixalis','Mponias',

48, 10, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (14, 'Hlias','Gkotsis', 57,

17, false);

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values (15, 'Rafail','Ntotis', 31, 3,

false);

insert into Courses (cid, cname, hours) values (101, 'Mathimatika', 4);

insert into Courses (cid, cname, hours) values (102, 'Istoria', 2);

insert into Courses (cid, cname, hours) values (103, 'Fysiki', 2);

insert into Courses (cid, cname, hours) values (104, 'Xhmeia', 1);

insert into Courses (cid, cname, hours) values (105, 'Thriskeutika', 1);

insert into Courses (cid, cname, hours) values (106, 'Geografia', 1);

insert into Courses (cid, cname, hours) values (107, 'Neo.Glwssa', 2);

insert into Courses (cid, cname, hours) values (108, 'Arxaia', 2);

insert into Courses (cid, cname, hours) values (109, 'Viologia', 1);

insert into Classes (classId, className, capacity) values (22,'Kallipos', 25);

insert into Classes (classId, className, capacity) values (31, 'Alexandros', 35);

insert into Classes (classId, className, capacity) values (20, 'Artemis', 50);

insert into Classes (classId, className, capacity) values (28, 'Danai', 10);

insert into Classes (classId, className, capacity) values (25, 'Thaoxaris', 40);

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insert into Grades(sid,cid,grade) values (1, 103, 17.3);

insert into Grades(sid,cid,grade) values (1, 106, 18);

insert into Grades(sid,cid,grade) values (1, 102, 13);

insert into Grades(sid,cid,grade) values (1, 101, 10);

insert into Grades(sid,cid,grade) values (1, 107, 14);

insert into Grades(sid,cid,grade) values (1, 105, 20);

insert into Grades(sid,cid,grade) values (1, 109, 15);

insert into Grades(sid,cid,grade) values (1, 104, 17);

insert into Grades(sid,cid,grade) values (8, 103, 17);

insert into Grades(sid,cid,grade) values (8, 106, 18);

insert into Grades(sid,cid,grade) values (8, 102, 19);

insert into Grades(sid,cid,grade) values (8, 101, 17);

insert into Grades(sid,cid,grade) values (8, 107, 18);

insert into Grades(sid,cid,grade) values (8, 105, 20);

insert into Grades(sid,cid,grade) values (8, 109, 18);

insert into Grades(sid,cid,grade) values (8, 104, 20);

insert into Grades(sid,cid,grade) values (10, 103, 15);

insert into Grades(sid,cid,grade) values (10, 106, 14);

insert into Grades(sid,cid,grade) values (10, 102, 13);

insert into Grades(sid,cid,grade) values (10, 101, 10);

insert into Grades(sid,cid,grade) values (10, 107, 9);

insert into Grades(sid,cid,grade) values (10, 105, 14);

insert into Grades(sid,cid,grade) values (10, 109, 11);

insert into Grades(sid,cid,grade) values (10, 104, 12);

insert into Grades(sid,cid,grade) values (12, 103, 19);

insert into Grades(sid,cid,grade) values (12, 106, 16);

insert into Grades(sid,cid,grade) values (12, 102, 13);

insert into Grades(sid,cid,grade) values (12, 101, 15);

insert into Grades(sid,cid,grade) values (12, 107, 20);

insert into Grades(sid,cid,grade) values (12, 105, 15);

insert into Grades(sid,cid,grade) values (12, 109, 13);

insert into Grades(sid,cid,grade) values (12, 104, 14);

insert into Grades(sid,cid,grade) values (15, 103, 19);

insert into Grades(sid,cid,grade) values (15, 106, 20);

insert into Grades(sid,cid,grade) values (15, 102, 20);

insert into Grades(sid,cid,grade) values (15, 101, 20);

insert into Grades(sid,cid,grade) values (15, 107, 19.9);

insert into Grades(sid,cid,grade) values (15, 105, 20);

insert into Grades(sid,cid,grade) values (15, 109, 18.9);

insert into Grades(sid,cid,grade) values (15, 104, 17.9);

insert into Grades(sid,cid,grade) values (16, 103, 10);

insert into Grades(sid,cid,grade) values (16, 106, 9);

insert into Grades(sid,cid,grade) values (16, 102, 8);

insert into Grades(sid,cid,grade) values (16, 101, 6);

insert into Grades(sid,cid,grade) values (16, 107, 9);

insert into Grades(sid,cid,grade) values (16, 105, 10);

insert into Grades(sid,cid,grade) values (16, 109, 11);

insert into Grades(sid,cid,grade) values (16, 104, 12);

insert into Grades(sid,cid,grade) values (17, 103, 15);

insert into Grades(sid,cid,grade) values (17, 106, 14);

insert into Grades(sid,cid,grade) values (17, 102, 13);

insert into Grades(sid,cid,grade) values (17, 101, 10);

insert into Grades(sid,cid,grade) values (17, 107, 16);

insert into Grades(sid,cid,grade) values (17, 105, 14);

insert into Grades(sid,cid,grade) values (17, 109, 16);

insert into Grades(sid,cid,grade) values (17, 104, 15);

insert into Grades(sid,cid,grade) values (19, 103, 20);

insert into Grades(sid,cid,grade) values (19, 106, 20);

insert into Grades(sid,cid,grade) values (19, 102, 20);

insert into Grades(sid,cid,grade) values (19, 101, 20);

insert into Grades(sid,cid,grade) values (19, 107, 18);

insert into Grades(sid,cid,grade) values (19, 105, 19);

insert into Grades(sid,cid,grade) values (19, 109, 16.5);

insert into Grades(sid,cid,grade) values (19, 104, 13);

insert into Grades(sid,cid,grade) values (21, 103, 18);

insert into Grades(sid,cid,grade) values (21, 106, 17);

insert into Grades(sid,cid,grade) values (21, 102, 16);

insert into Grades(sid,cid,grade) values (21, 101, 15);

insert into Grades(sid,cid,grade) values (21, 107, 19);

insert into Grades(sid,cid,grade) values (21, 105, 14);

insert into Grades(sid,cid,grade) values (21, 109, 13);

insert into Grades(sid,cid,grade) values (21, 104, 15);

insert into Grades(sid,cid,grade) values (28, 103, 18.5);

insert into Grades(sid,cid,grade) values (28, 106, 17.5);

insert into Grades(sid,cid,grade) values (28, 102, 16);

insert into Grades(sid,cid,grade) values (28, 101, 15.2);

insert into Grades(sid,cid,grade) values (28, 107, 19.3);

insert into Grades(sid,cid,grade) values (28, 105, 14.6);

insert into Grades(sid,cid,grade) values (28, 109, 13.2);

insert into Grades(sid,cid,grade) values (28, 104, 15.6);

insert into Grades(sid,cid,grade) values (29, 103, 20);

insert into Grades(sid,cid,grade) values (29, 106, 17);

insert into Grades(sid,cid,grade) values (29, 102, 16);

insert into Grades(sid,cid,grade) values (29, 101, 20);

insert into Grades(sid,cid,grade) values (29, 107, 19);

insert into Grades(sid,cid,grade) values (29, 105, 20);

insert into Grades(sid,cid,grade) values (29, 109, 13);

insert into Grades(sid,cid,grade) values (29, 104, 18);

insert into Grades(sid,cid,grade) values (33, 103, 18);

insert into Grades(sid,cid,grade) values (33, 106, 17);

insert into Grades(sid,cid,grade) values (33, 102, 20);

insert into Grades(sid,cid,grade) values (33, 101, 16);

insert into Grades(sid,cid,grade) values (33, 107, 19);

insert into Grades(sid,cid,grade) values (33, 105, 12);

insert into Grades(sid,cid,grade) values (33, 109, 13);

insert into Grades(sid,cid,grade) values (33, 104, 19);

insert into Grades(sid,cid,grade) values (34, 103, 20);

insert into Grades(sid,cid,grade) values (34, 106, 17);

insert into Grades(sid,cid,grade) values (34, 102, 16);

insert into Grades(sid,cid,grade) values (34, 101, 19);

insert into Grades(sid,cid,grade) values (34, 107, 19);

insert into Grades(sid,cid,grade) values (34, 105, 16.6);

insert into Grades(sid,cid,grade) values (34, 109, 13);

insert into Grades(sid,cid,grade) values (34, 104, 15);

insert into Grades(sid,cid,grade) values (38, 103, 18.8);

insert into Grades(sid,cid,grade) values (38, 106, 17.7);

insert into Grades(sid,cid,grade) values (38, 102, 16);

insert into Grades(sid,cid,grade) values (38, 101, 19);

insert into Grades(sid,cid,grade) values (38, 107, 19);

insert into Grades(sid,cid,grade) values (38, 105, 16.6);

insert into Grades(sid,cid,grade) values (38, 109, 13);

insert into Grades(sid,cid,grade) values (38, 104, 15);

insert into Grades(sid,cid,grade) values (39, 103, 20);

insert into Grades(sid,cid,grade) values (39, 106, 17.2);

insert into Grades(sid,cid,grade) values (39, 102, 16.3);

insert into Grades(sid,cid,grade) values (39, 101, 19.8);

insert into Grades(sid,cid,grade) values (39, 107, 19);

insert into Grades(sid,cid,grade) values (39, 105, 13.6);

insert into Grades(sid,cid,grade) values (39, 109, 13);

insert into Grades(sid,cid,grade) values (39, 104, 15);

insert into Grades(sid,cid,grade) values (43, 103, 25);

insert into Grades(sid,cid,grade) values (43, 106, 10);

insert into Grades(sid,cid,grade) values (43, 102, 9);

insert into Grades(sid,cid,grade) values (43, 101, 9.8);

insert into Grades(sid,cid,grade) values (43, 107, 9);

insert into Grades(sid,cid,grade) values (43, 105, 3);

insert into Grades(sid,cid,grade) values (43, 109, 5);

insert into Grades(sid,cid,grade) values (43, 104, 6);

insert into Grades(sid,cid,grade) values (48, 103, 3);

insert into Grades(sid,cid,grade) values (48, 106, 7.2);

insert into Grades(sid,cid,grade) values (48, 102, 6.3);

insert into Grades(sid,cid,grade) values (48, 101, 9.8);

insert into Grades(sid,cid,grade) values (48, 107, 9);

insert into Grades(sid,cid,grade) values (48, 105, 3.6);

insert into Grades(sid,cid,grade) values (48, 109, 3);

insert into Grades(sid,cid,grade) values (48, 104, 5);

insert into Grades(sid,cid,grade) values (50, 103, 20);

insert into Grades(sid,cid,grade) values (50, 106, 20);

insert into Grades(sid,cid,grade) values (50, 102, 19.9);

insert into Grades(sid,cid,grade) values (50, 101, 19.8);

insert into Grades(sid,cid,grade) values (50, 107, 19);

insert into Grades(sid,cid,grade) values (50, 105, 18.6);

insert into Grades(sid,cid,grade) values (50, 109, 17);

insert into Grades(sid,cid,grade) values (50, 104, 18);

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insert into Grades(sid,cid,grade) values (2, 108, 16);

insert into Grades(sid,cid,grade) values (2, 103, 19);

insert into Grades(sid,cid,grade) values (2, 106, 15);

insert into Grades(sid,cid,grade) values (2, 102, 19.8);

insert into Grades(sid,cid,grade) values (2, 101, 16);

insert into Grades(sid,cid,grade) values (2, 107, 18.6);

insert into Grades(sid,cid,grade) values (2, 105, 17);

insert into Grades(sid,cid,grade) values (2, 109, 16);

insert into Grades(sid,cid,grade) values (2, 104, 18);

insert into Grades(sid,cid,grade) values (3, 108, 19);

insert into Grades(sid,cid,grade) values (3, 103, 15);

insert into Grades(sid,cid,grade) values (3, 106, 18);

insert into Grades(sid,cid,grade) values (3, 102, 19.8);

insert into Grades(sid,cid,grade) values (3, 101, 16);

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insert into Grades(sid,cid,grade) values (46, 104, 18);

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insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 08, 31, 'Monday 08:15:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 03, 20, 'Monday 08:15:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 04, 28, 'Monday 09:05:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 09, 25, 'Monday 09:05:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 06, 22, 'Monday 09:05:00', '2h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 10, 31, 'Monday 10:00:00', '1h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 11, 20, 'Monday 10:00:00', '2h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 07, 28, 'Monday 10:00:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 05, 25, 'Monday 10:55:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 12, 22, 'Monday 10:55:00', '1h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 01, 31, 'Monday 10:55:00', '2h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 02, 20, 'Monday 11:50:00', '2h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 13, 28, 'Monday 11:50:00', '1h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 14, 22, 'Monday 12:40:00', '2h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 08, 25, 'Monday 13:25:00', '2h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 02, 22, 'Monday 13:25:00', '1h

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insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 01, 31, 'Tuesday 08:15:00', '1h

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Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 10, 20, 'Wednesday 08:15:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 11, 28, 'Wednesday 08:15:00',

'2h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 07, 25, 'Wednesday 08:15:00',

'1h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 01, 22, 'Wednesday 09:05:00',

'2h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 12, 31, 'Wednesday 09:05:00',

'1h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 02, 20, 'Wednesday 09:05:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 03, 28, 'Wednesday 10:00:00',

'1h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 13, 25, 'Wednesday 10:00:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 04, 22, 'Wednesday 10:00:00',

'2h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 14, 31, 'Wednesday 10:55:00',

'1h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 15, 20, 'Wednesday 10:55:00',

'2h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 05, 28, 'Wednesday 10:55:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 06, 25, 'Wednesday 11:50:00',

'1h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 08, 22, 'Wednesday 11:50:00',

'2h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 07, 31, 'Wednesday 11:50:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 01, 20, 'Wednesday 12:40:00',

'2h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 09, 28, 'Wednesday 12:40:00',

'1h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 02, 25, 'Wednesday 12:40:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 10, 22, 'Wednesday 13:25:00',

'1h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 11, 31, 'Wednesday 13:25:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 03, 20, 'Wednesday 13:25:00',

'2h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 04, 28, 'Wednesday 08:15:00',

'3h Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 12, 25, 'Thursday 08:15:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 05, 22, 'Thursday 08:15:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 06, 31, 'Thursday 09:05:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 13, 20, 'Thursday 09:05:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 07, 28, 'Thursday 09:05:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 14, 25, 'Thursday 10:00:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 15, 22, 'Thursday 10:00:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 01, 31, 'Thursday 10:00:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 02, 20, 'Thursday 10:55:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 08, 28, 'Thursday 10:55:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 03, 25, 'Thursday 10:55:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 04, 22, 'Thursday 11:50:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 09, 31, 'Thursday 11:50:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 05, 20, 'Thursday 11:50:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 10, 28, 'Thursday 12:40:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 11, 25, 'Thursday 12:40:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 06, 22, 'Thursday 12:40:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 07, 31, 'Thursday 13:25:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 12, 20, 'Thursday 13:25:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 01, 28, 'Thursday 13:25:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 02, 25, 'Friday 08:15:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 13, 22, 'Friday 08:15:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 03, 31, 'Friday 08:15:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 14, 20, 'Friday 09:05:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 15, 28, 'Friday 09:05:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 04, 25, 'Friday 09:05:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 05, 22, 'Friday 10:00:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 08, 31, 'Friday 10:00:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 06, 20, 'Friday 10:00:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 07, 28, 'Friday 10:55:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 09, 25, 'Friday 10:55:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 01, 22, 'Friday 10:55:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (107, 10, 31, 'Friday 11:50:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (108, 11, 20, 'Friday 11:50:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (109, 02, 28, 'Friday 11:50:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (101, 03, 25, 'Friday 12:40:00', '1h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (102, 12, 22, 'Friday 12:40:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (103, 04, 31, 'Friday 12:40:00', '3h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (104, 05, 20, 'Friday 13:25:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (105, 13, 28, 'Friday 13:25:00', '2h

Gymnasiou');

insert into Schedule (cid, tid, classId, date, classRoomName) values (106, 06, 25, 'Friday 13:25:00', '3h

Gymnasiou');

$$ LANGUAGE SQL;

create or replace function addCo(p1 in integer, p2 in varchar, p3 in integer)

returns void AS

$$

insert into Courses (cid, cname, hours) values ($1, $2, $3);

$$ LANGUAGE SQL;

create or replace function addSt(p1 in integer, p2 in varchar, p3 in varchar, p4 in varchar, p5 in integer)

returns void AS

$$

insert into Students (sid, sname, ssurname, className, age) values ($1, $2, $3, $4, $5);

$$ LANGUAGE SQL;

create or replace function addTe(p1 in integer, p2 in varchar, p3 in varchar, p4 in integer, p5 in integer, p6

in boolean)

returns void AS

$$

insert into Teachers (tid, tname, tsurname, age, workExp, headTeacher) values ($1, $2, $3, $4, $5,

$6);

$$ LANGUAGE SQL;

create or replace function addGr(p1 in integer, p2 in integer, p3 in float)

returns void AS

$$

insert into Grades (sid, cid, grade) values ($1, $2, $3);

$$ LANGUAGE SQL;

create or replace function addSce(p1 in integer, p2 in integer, p3 in integer, p4 in varchar, p5 in varchar)

returns void AS

$$

insert into Schedule (cid, tid, classId, date, classRoomName) values ($1, $2, $3, $4, $5);

$$ LANGUAGE SQL;

create or replace function delTe(p1 in integer, p2 in varchar, p3 in varchar, p4 in integer, p5 in integer, p6

in boolean)

returns void AS

$$

delete

from Teachers T

where T.tid = $1 and T.tname = $2 and T.tsurname = $3 and T.age = $4

and T.workExp = $5 and T.HeadTeacher = $6;

$$ LANGUAGE SQL;

create or replace function delSt(p1 in integer, p2 in varchar, p3 in varchar, p4 in varchar, p5 in integer)

returns void AS

$$

delete

from Students

where sid = $1 and sname = $2 and ssurname = $3 and className = $4

and age = $5;

$$ LANGUAGE SQL;

create or replace function delCo(p1 in integer, p2 in varchar, p3 in integer)

returns void AS

$$

delete from Courses C

where C.cid = $1 and C.cname = $2 and C.hours = $3;

$$ LANGUAGE SQL;

create or replace function delGr(p1 in integer, p2 in integer, p3 in float)

returns void AS

$$

delete

from Grades

where sid = $1 and cid = $2 and grade = $3

$$ LANGUAGE SQL;

create or replace function delSce(p1 in integer, p2 in integer, p3 in integer, p4 in varchar, p5 in varchar)

returns void AS

$$

delete from Schedule S

where S.cid = $1 and S.tid = $2

and S.classId = $3 and S.date = $4 and S.classRoomName = $5;

$$ LANGUAGE SQL;

create or replace function updTe(p2 in varchar, p3 in varchar, p4 in integer, p5 in integer, p6 in boolean,

p1 in integer)

returns void AS

$$

update Teachers

set tname = $1, tsurname = $2, age = $3, workExp = $4, HeadTeacher = $5

where tid = $6;

$$ LANGUAGE SQL;

create or replace function updSt(p2 in varchar, p3 in varchar, p4 in varchar, p5 in integer, p1 in integer)

returns void AS

$$

update Students

set sname = $1, ssurname = $2, classname = $3, age = $4

where sid = $5;

$$ LANGUAGE SQL;

create or replace function updGr(p1 in integer, p2 in float, p3 in integer)

returns void AS

$$

update Grades

set grade = $1

where sid = $2 and cid = $3;

$$ LANGUAGE SQL;

create or replace function updSce(p1 in integer, p3 in integer, p5 in varchar, p2 in integer, p4 in varchar)

returns void AS

$$

update Schedule

set cid = $1, classId = $2, classRoomName = $3

where tid = $4 and date = $5;

$$ LANGUAGE SQL;

create or replace function updCl(p2 in varchar, p3 in integer, p1 in integer)

returns void AS

$$

update Classes

set className = $1, capacity = $2

where classId = $3;

$$ LANGUAGE SQL;

create or replace function updCo(p2 in varchar, p3 in integer, p1 in integer)

returns void AS

$$

update Courses

set cName = $1, hours = $2

where cId = $3;

$$ LANGUAGE SQL;

CREATE TABLE st\_audit(

operation char(1) not null,

stamp timestamp not null primary key,

userid varchar(20) not null,

sid integer not null,

sname varchar(25) not null,

ssurname varchar(15) not null,

className varchar(25) not null,

age integer

);

CREATE OR REPLACE FUNCTION

process\_st\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO st\_audit

SELECT 'D', now(), user, OLD.\*;

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO

st\_audit SELECT 'U', now(), user, NEW.\*;

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO

st\_audit SELECT 'I', now(), user, NEW.\*;

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER st\_audit

AFTER INSERT OR UPDATE OR DELETE ON Students

FOR EACH ROW EXECUTE PROCEDURE process\_st\_audit();

CREATE TABLE te\_audit(

operation char(1) not null,

stamp timestamp not null primary key,

userid varchar(20) not null,

tid integer not null,

tname varchar(25) not null,

tsurname varchar(15) not null,

age integer,

workExp integer,

headTeacher boolean

);

CREATE OR REPLACE FUNCTION process\_te\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO te\_audit

SELECT 'D', now(), user, OLD.\*;

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO

te\_audit SELECT 'U', now(), user, NEW.\*;

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO

te\_audit SELECT 'I', now(), user, NEW.\*;

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER te\_audit

AFTER INSERT OR UPDATE OR DELETE ON Teachers

FOR EACH ROW EXECUTE PROCEDURE process\_te\_audit();

CREATE TABLE co\_audit(

operation char(1) not null,

stamp timestamp not null primary key,

userid varchar(20) not null,

cid integer not null,

cname varchar(15) not null,

hours integer

);

CREATE OR REPLACE FUNCTION process\_co\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO co\_audit

SELECT 'D', now(), user, OLD.\*;

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO

co\_audit SELECT 'U', now(), user, NEW.\*;

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO

co\_audit SELECT 'I', now(), user, NEW.\*;

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER co\_audit

AFTER INSERT OR UPDATE OR DELETE ON Courses

FOR EACH ROW EXECUTE PROCEDURE process\_co\_audit();

CREATE TABLE cl\_audit(

operation char(1) not null,

stamp timestamp not null primary key,

userid varchar(20) not null,

classId integer not null,

className varchar(25) not null,

capacity integer

);

CREATE OR REPLACE FUNCTION process\_cl\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO cl\_audit

SELECT 'D', now(), user, OLD.\*;

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO

cl\_audit SELECT 'U', now(), user, NEW.\*;

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO

cl\_audit SELECT 'I', now(), user, NEW.\*;

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER cl\_audit

AFTER INSERT OR UPDATE OR DELETE ON Classes

FOR EACH ROW EXECUTE PROCEDURE process\_cl\_audit();

CREATE TABLE schedule\_audit(

operation char(1) not null,

stamp timestamp not null primary key,

userid varchar(20) not null,

cid integer not null,

tid integer not null,

classId integer not null,

date varchar(25) not null,

classRoomName varchar(15) not null

);

CREATE OR REPLACE FUNCTION process\_schedule\_audit()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO schedule\_audit

SELECT 'D', now(), user, OLD.\*;

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO

schedule\_audit SELECT 'U', now(), user, NEW.\*;

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO

schedule\_audit SELECT 'I', now(), user, NEW.\*;

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER schedule\_audit

AFTER INSERT OR UPDATE OR DELETE ON Schedule

FOR EACH ROW EXECUTE PROCEDURE process\_schedule\_audit();

CREATE OR REPLACE FUNCTION st\_stamp () RETURNS TRIGGER AS $$

BEGIN

IF ((NEW.sid < 0) OR (NEW.sid isNULL)) THEN

RAISE EXCEPTION 'Id cannot has invalid value';

END IF;

IF (NEW.sname ISNULL) THEN

RAISE EXCEPTION 'Name cannot be NULL value';

END IF;

IF (NEW.ssurname ISNULL) THEN

RAISE EXCEPTION 'Surname cannot be NULL value';

END IF;

IF (NEW.className ISNULL) THEN

RAISE EXCEPTION 'Class name cannot be NULL value';

END IF;

--for age

IF ((NEW.age < 0) OR (NEW.age isNULL)) THEN

RAISE EXCEPTION '% cannot has invalid age', NEW.ssurname;

END IF;

RETURN NEW;

END;

$$ LANGUAGE 'plpgsql';

CREATE TRIGGER st\_stamp BEFORE INSERT OR UPDATE ON Students

FOR EACH ROW EXECUTE PROCEDURE st\_stamp();

delete from Students where sid = 101 and sname='' and ssurname='aa' and className = '1h gymnasiou'

and age=10

insert into Students(ssurname, className) values ('kegeroglou', '1h Gymnasiou');

drop trigger st\_stamp on Teachers

CREATE OR REPLACE FUNCTION te\_stamp () RETURNS TRIGGER AS $$

BEGIN

IF ((NEW.tid < 0) OR (NEW.tid ISNULL)) THEN

RAISE EXCEPTION 'Id cannot has invalid value';

END IF;

IF (NEW.tname ISNULL) THEN

RAISE EXCEPTION 'Name cannot be NULL value';

END IF;

IF (NEW.tsurname ISNULL) THEN

RAISE EXCEPTION 'Surname cannot be NULL value';

END IF;

--for age

IF ((NEW.age < 0) OR (NEW.age ISNULL)) THEN

RAISE EXCEPTION '% cannot has invalid age', NEW.tsurname;

END IF;

IF ((NEW.workExp < 0) OR (NEW.workExp ISNULL)) THEN

RAISE EXCEPTION '% cannot has invalid work expierience value', NEW.tsurname;

END IF;

IF (NEW.headTeacher ISNULL) THEN

RAISE EXCEPTION 'Head teacher cannot be NULL value';

END IF;

RETURN NEW;

END;

$$ LANGUAGE 'plpgsql';

CREATE TRIGGER te\_stamp BEFORE INSERT OR UPDATE ON Teachers

FOR EACH ROW EXECUTE PROCEDURE te\_stamp();

CREATE OR REPLACE FUNCTION co\_stamp () RETURNS TRIGGER AS $$

BEGIN

IF ((NEW.cid < 0) OR (NEW.cid ISNULL)) THEN

RAISE EXCEPTION 'Id cannot has invalid value';

END IF;

IF ((select Length(NEW.cname)) < 1) THEN

RAISE EXCEPTION 'Name cannot be NULL value';

END IF;

--for age

IF ((NEW.hours < 0) OR (NEW.hours ISNULL)) THEN

RAISE EXCEPTION '% cannot has invalid age', NEW.cname;

END IF;

RETURN NEW;

END;

$$ LANGUAGE 'plpgsql';

CREATE TRIGGER co\_stamp BEFORE INSERT OR UPDATE ON Courses

FOR EACH ROW EXECUTE PROCEDURE co\_stamp();

CREATE OR REPLACE FUNCTION co\_stamp () RETURNS TRIGGER AS $$

BEGIN

IF ((NEW.cid < 0) OR (NEW.cid ISNULL)) THEN

RAISE EXCEPTION 'Id cannot has invalid value';

END IF;

IF (NEW.cname ISNULL) THEN

RAISE EXCEPTION 'Name cannot be NULL value';

END IF;

IF ((NEW.hours < 0) OR (NEW.hours ISNULL)) THEN

RAISE EXCEPTION '% cannot has invalid hours', NEW.cname;

END IF;

RETURN NEW;

END;

$$ LANGUAGE 'plpgsql';

CREATE TRIGGER co\_stamp BEFORE INSERT OR UPDATE OR DELETE ON Courses

FOR EACH ROW EXECUTE PROCEDURE co\_stamp();

CREATE OR REPLACE FUNCTION cl\_stamp () RETURNS TRIGGER AS $$

BEGIN

IF ((NEW.classId < 0) OR (NEW.classId isNULL)) THEN

RAISE EXCEPTION 'Id cannot has invalid value';

END IF;

IF (NEW.className ISNULL) THEN

RAISE EXCEPTION 'Name cannot be NULL value';

END IF;

IF ((NEW.capacity < 0) OR (NEW.capacity isNULL)) THEN

RAISE EXCEPTION '% cannot has invalid capacity', NEW.className;

END IF;

RETURN NEW;

END;

$$ LANGUAGE 'plpgsql';

CREATE TRIGGER cl\_stamp BEFORE INSERT OR UPDATE ON Classes

FOR EACH ROW EXECUTE PROCEDURE cl\_stamp();

CREATE OR REPLACE FUNCTION schedule\_stamp () RETURNS TRIGGER AS $$

BEGIN

IF ((NEW.cid < 0) OR (NEW.cid isNULL)) THEN

RAISE EXCEPTION 'Id for courses cannot has invalid value';

END IF;

IF ((NEW.tid < 0) OR (NEW.tid isNULL)) THEN

RAISE EXCEPTION 'Id for teacher cannot has invalid value';

END IF;

IF ((NEW.classId < 0) OR (NEW.classId isNULL)) THEN

RAISE EXCEPTION 'Id for class cannot has invalid value';

END IF;

IF (NEW.date ISNULL) THEN

RAISE EXCEPTION 'Date cannot be NULL value';

END IF;

IF (NEW. classRoomName ISNULL) THEN

RAISE EXCEPTION 'ClassRoom name cannot has invalid value';

END IF;

RETURN NEW;

END;

$$ LANGUAGE 'plpgsql';

CREATE TRIGGER schedule\_stamp BEFORE INSERT OR UPDATE ON Schedule

FOR EACH ROW EXECUTE PROCEDURE schedule\_stamp();

CREATE TABLE audit(

operation char(1) not null,

stamp timestamp not null primary key,

userid varchar(20) not null,

id integer not null,

name varchar(25) not null

);

CREATE OR REPLACE FUNCTION process\_st\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO audit SELECT 'D', now(), user, OLD.sid, 'Pupil';

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO audit SELECT 'U', now(), user, NEW.sid, 'Pupil';

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO audit SELECT 'I', now(), user, NEW.sid, 'Pupil';

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER audit

AFTER INSERT OR UPDATE OR DELETE ON Students

FOR EACH ROW EXECUTE PROCEDURE process\_st\_audit();

CREATE OR REPLACE FUNCTION process\_te\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO audit SELECT 'D', now(), user, OLD.tid, 'Professor';

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO audit SELECT 'U', now(), user, NEW.tid, 'Professor';

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO audit SELECT 'I', now(), user, NEW.tid, 'Professor';

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER audit

AFTER INSERT OR UPDATE OR DELETE ON Teachers

FOR EACH ROW EXECUTE PROCEDURE process\_te\_audit();

CREATE OR REPLACE FUNCTION process\_co\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO audit SELECT 'D', now(), user, OLD.cid, 'Lesson';

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO audit SELECT 'U', now(), user, NEW.cid, 'Lesson';

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO audit SELECT 'I', now(), user, NEW.cid, 'Lesson';

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER audit

AFTER INSERT OR UPDATE OR DELETE ON Courses

FOR EACH ROW EXECUTE PROCEDURE process\_co\_audit();

CREATE OR REPLACE FUNCTION process\_cl\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'UPDATE') THEN

INSERT INTO audit SELECT 'U', now(), user, NEW.classId, 'classRoom';

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER audit

AFTER UPDATE ON Classes

FOR EACH ROW EXECUTE PROCEDURE process\_cl\_audit();

CREATE OR REPLACE FUNCTION process\_gr\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO audit SELECT 'D', now(), user, OLD.sid, 'Vathmos';

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO audit SELECT 'U', now(), user, NEW.sid, 'Vathmos';

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO audit SELECT 'I', now(), user, NEW.sid, 'Vathmos';

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER audit

AFTER INSERT OR UPDATE OR DELETE ON Grades

FOR EACH ROW EXECUTE PROCEDURE process\_gr\_audit();

CREATE OR REPLACE FUNCTION process\_sche\_audit ()

RETURNS TRIGGER AS $$

BEGIN

IF (TG\_OP = 'DELETE') THEN

INSERT INTO audit SELECT 'D', now(), user, OLD.classId, 'Calendar(id of classRoom)';

RETURN OLD;

ELSIF (TG\_OP = 'UPDATE') THEN

INSERT INTO audit SELECT 'U', now(), user, NEW.classId, 'Calendar(id of classRoom)';

RETURN NEW;

ELSIF (TG\_OP = 'INSERT') THEN

INSERT INTO audit SELECT 'I', now(), user, NEW.classId, 'Calendar(id of classRoom)';

RETURN NEW;

END IF;

RETURN NULL;

END;

$$

LANGUAGE plpgsql;

CREATE TRIGGER audit

AFTER INSERT OR UPDATE OR DELETE ON Schedule

FOR EACH ROW EXECUTE PROCEDURE process\_sche\_audit();

CREATE OR REPLACE FUNCTION logFile() RETURNS SETOF iee2019067.audit AS $$

SELECT \* FROM iee2019067.audit ORDER BY stamp;

$$ LANGUAGE sql;

{1}

CREATE OR REPLACE FUNCTION showQ1() RETURNS SETOF vSt AS $$

SELECT \* FROM vSt ORDER BY sid;

$$ LANGUAGE sql;

create view vSt as

select C.cname, S.className, avg(G.grade) as vathmos

from Students S, Grades G, Courses C

where S.sid=G.sid and G.cid=C.cid

group by C.cname, S.className

order by C.cname

{2}

CREATE OR REPLACE FUNCTION showQ2() RETURNS SETOF vTe AS $$

SELECT \* FROM vTe;

$$ LANGUAGE sql;

create view vTe as

select S.ssurname, S.sname, avg(G.grade)>10 as avg

from Students S, Grades G

where (S.sid=G.sid)

group by S.ssurname, S.sname

order by S.ssurname

{3}

CREATE OR REPLACE FUNCTION showQ3() RETURNS SETOF vCo AS $$

SELECT \* FROM vCo;

$$ LANGUAGE sql;

create view vCo as

select C.cname, S.classRoomName, count(C.hours) as hours

from Courses C, Schedule S

where C.cid=S.cid

group by C.cname, S.classRoomName

order by C.cname

{4}

CREATE OR REPLACE FUNCTION showQ4() RETURNS SETOF vCl AS $$

SELECT \* FROM vCl;

$$ LANGUAGE sql;

create view vCl as

select C.classId, C.className, count(\*) as hours

from Classes C, Schedule S

where C.classId=S.classId

group by C.className, C.classId

order by C.ClassId desc

{5}

CREATE OR REPLACE FUNCTION showQ5() RETURNS SETOF vSche AS $$

SELECT \* FROM vSche;

$$ LANGUAGE sql;

create view vSche as

select S.ssurname, S.sname, avg(G.grade) as avg

from Students S, Grades G

where S.sid=G.sid

group by S.ssurname, S.sname

order by S.ssurname

{6}

CREATE OR REPLACE FUNCTION showQ6() RETURNS SETOF vQ6 AS $$

SELECT \* FROM vQ6;

$$ LANGUAGE sql;

create view vQ6 as

select Te.tsurname, Te.tname, count(\*) as count

from Schedule Sc, teachers Te

where Sc.tid=Te.tid

group by Te.tsurname, Te.tname

order by Te.tsurname

{7}

CREATE OR REPLACE FUNCTION showQ7() RETURNS SETOF vQ7 AS $$

SELECT \* FROM vQ7;

$$ LANGUAGE sql;

create view vQ7 as

select Sc.classRoomName, Co.cname, Sc.date

from Schedule Sc, Courses Co

where Co.cid=Sc.cid

group by Sc.classRoomName, Co.cname, Sc.date

order by Sc.classRoomName

{8}

CREATE OR REPLACE FUNCTION showQ8() RETURNS SETOF vQ8 AS $$

SELECT \* FROM vQ8;

$$ LANGUAGE sql;

create view vQ8 as

select St.className, avg(St.age) as avg, count(St.age) as count

from Students St

group by St.className, St.className

order by St.className

{9}

CREATE OR REPLACE FUNCTION showQ9() RETURNS SETOF vQ9 AS $$

SELECT \* FROM vQ9;

$$ LANGUAGE sql;

create view vQ9 as

select Te.tsurname, Te.tname, Co.cname, count(co.hours) as count

from Schedule Sc, Teachers Te, Courses Co

where Sc.tid=Te.tid and Sc.cid=Co.cid

group by Te.tsurname, Te.tname, Co.cname

order by Te.tsurname

{10}

CREATE OR REPLACE FUNCTION showQ10() RETURNS SETOF vQ10 AS $$

SELECT \* FROM vQ10;

$$ LANGUAGE sql;

create view vQ10 as

select Sc.date, Cl.className, Cl.classId

from Schedule Sc, Classes Cl

where Sc.classId=Cl.classId

order by Sc.date

CREATE OR REPLACE FUNCTION search1(p1 in varchar) RETURNS SETOF Students AS

$$

select \* from Students

where ssurname = $1;

$$ LANGUAGE sql;