

מיני פרוייקט בסיסי נתונים

מרכז חוגים – שלב ב

אילה אפטרקוט 213136813 Tmunot1234567@gmail.com

נעמה שוייצר 325447654 Naamasch1@gmail.com

תשפ"ה

תוכן עניינים

2.....	שלב ב : שאלות ואילוצים
2	שאלות ללא פרמטרים
2	שאלות select
6	שאלות delete
8	שאלות update
10.....	שאלות עם פרמטרים
14.....	תנאי אמינות - אילוצים

שלב ב : שאילות ואילוצים

שאילות ללא פרמטרים

שאילות select

שאילתא 1

תיאור: הצגת הסדנאות עם הכי פחות רשומים.

בנוסף, שאילתת עזר: הצגת מספר רשומים לכל סדנא.

הקוד:

```
--select1
--The workshop with the fewest registrants
-- side query: foreach workshop shows its number of participants
SELECT DISTINCT w.WORKSHOP_NAME, g.GROUP_ID, g.AMOUNT
FROM WORKSHOPS w
JOIN SCHEDULER s ON w.WORKSHOP_ID = s.WORKSHOP_ID
JOIN GROUPS_ g ON s.GROUP_ID = g.GROUP_ID
ORDER BY w.WORKSHOP_NAME, g.GROUP_ID;

SELECT w.WORKSHOP_NAME, COALESCE(SUM(g.AMOUNT), 0) AS total_participants
FROM WORKSHOPS w
LEFT JOIN SCHEDULER s ON w.WORKSHOP_ID = s.WORKSHOP_ID
LEFT JOIN GROUPS_ g ON s.GROUP_ID = g.GROUP_ID
GROUP BY w.WORKSHOP_NAME
ORDER BY total_participants DESC;

-- the workshop with the least number of participants
SELECT w.workshop_id, w.WORKSHOP_NAME, COALESCE(SUM(g.AMOUNT), 0) AS total_participants
FROM WORKSHOPS w
LEFT JOIN SCHEDULER s ON w.WORKSHOP_ID = s.WORKSHOP_ID
LEFT JOIN GROUPS_ g ON s.GROUP_ID = g.GROUP_ID
GROUP BY w.WORKSHOP_NAME, w.workshop_id
HAVING COALESCE(SUM(g.AMOUNT), 0) = (
    SELECT COALESCE(MIN(total_participants), 0)
    FROM (
        SELECT COALESCE(SUM(g.AMOUNT), 0) AS total_participants
        FROM WORKSHOPS w
        LEFT JOIN SCHEDULER s ON w.WORKSHOP_ID = s.WORKSHOP_ID
        LEFT JOIN GROUPS_ g ON s.GROUP_ID = g.GROUP_ID
        GROUP BY w.WORKSHOP_NAME
    )
)
ORDER BY total_participants DESC;
```

דוגמת הרצה:

Select workshops		
WORKSHOP_NAME	TOTAL_PARTICIPANTS	
1 Sewing	106	
2 Cooking	55	
3 Zumba	49	
4 Violin	37	
5 Singing	29	
6 Piano	29	
7 Ballet	25	
8 Photography	0	
9 Swimming	0	
10 Guitar	0	
11 Drawing	0	
12 Gardening	0	
13 Baking	0	
14 Judo	0	

הרצת שאלת עזר

WORKSHOP_ID	WORKSHOP_NAME	TOTAL_PARTICIPANTS
1 7	Photography	0
2 12	Swimming	0
3 13	Gardening	0
4 11	Guitar	0
5 4	Baking	0
6 6	Judo	0
7 3	Drawing	0

הרצת השאלתא

שאלתא 2

תיאור: הצגת המורים עם הכי הרבה תלמידים.

הקוד:

```
-- select2
-- select teacher(s) who teaches the most clients

WITH ClientCounts AS (
    SELECT teacher_ID, teacher_fname, teacher_lname, COUNT(DISTINCT client_ID) AS num_clients
    FROM Teachers
    NATURAL JOIN Scheduler
    NATURAL JOIN Groups_
    NATURAL JOIN Participate
    GROUP BY teacher_ID, teacher_fname, teacher_lname
    ORDER BY num_clients DESC
)

SELECT teacher_ID, teacher_fname, teacher_lname, num_clients
FROM ClientCounts
WHERE num_clients = (SELECT MAX(num_clients) FROM ClientCounts);
```

דוגמת הרצה:

TEACHER_ID	TEACHER_FNAME	TEACHER_LNAME	NUM_CLIENTS
1 9	Aaron	Todd	1
2 86	Rosario	Ali	1

שאלתא 3

תיאור: עבור כל מורה, עבור כל סדנא שהמורה מלמד, הצגת מספר התלמידים המשתתפים באותה סדנא אצל אותו מורה.

(מורה יוצג עם נתונים מתאימים גם במקרה ומעביר 0 סדנאות.)

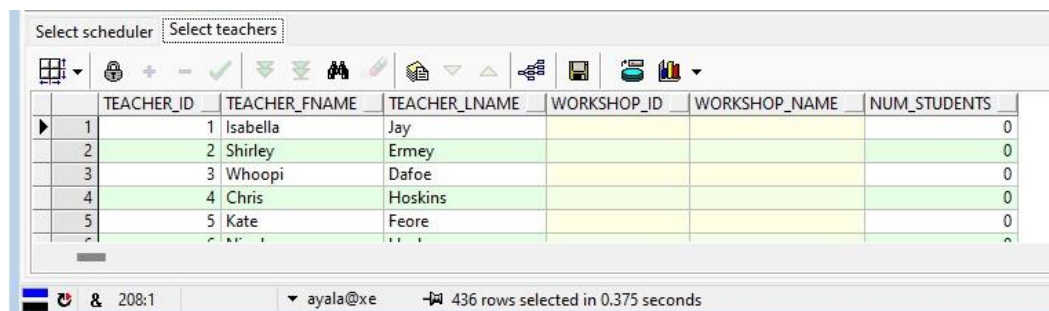
הקוד:

```
-- select3
-- foreach workshop - returns the number of students for each teacher for each workshop

-- all schedules
select *
from scheduler natural join groups_
order by teacher_id,
workshop_ID;

-- select query
SELECT T.teacher_ID, T.teacher_fname, T.teacher_lname, W.workshop_ID,
       W.workshop_name, COALESCE(SUM(G.amount), 0) AS num_students
FROM Teachers T
LEFT JOIN Scheduler S ON T.teacher_ID = S.teacher_ID
LEFT JOIN Workshops W ON S.workshop_ID = W.workshop_ID
LEFT JOIN Groups_ G ON S.group_ID = G.group_ID
GROUP BY T.teacher_ID, T.teacher_fname, T.teacher_lname,
         W.workshop_ID, W.workshop_name
ORDER BY T.teacher_ID, W.workshop_ID;
```

דוגמת הרצה:



	TEACHER_ID	TEACHER_FNAME	TEACHER_LNAME	WORKSHOP_ID	WORKSHOP_NAME	NUM_STUDENTS
1	1	Isabella	Jay			0
2	2	Shirley	Erney			0
3	3	Whoopi	Dafoe			0
4	4	Chris	Hoskins			0
5	5	Kate	Feore			0

הרצת השאלתא

שאלתא 4

תיאור: עבור כל סדנא, הצגת המורים המקבלים משכורת מעל הממוצע בין כל המורים של אותה סדנא.

הקוד:

```
-- select4
-- select the teacher(s) who gets above average with in the other teachers of each workshop

WITH WorkshopAvgSalary AS (
  SELECT te.workshop_ID, AVG(t.teacher_salary) AS avg_salary
  FROM Teach te
  JOIN Teachers t ON te.teacher_ID = t.teacher_ID
  GROUP BY te.workshop_ID
)

SELECT te.workshop_ID, w.workshop_name, was.avg_salary, t.teacher_id,
       t.teacher_fname, t.teacher_lname, t.teacher_salary
FROM Teach te
JOIN Workshops w ON te.workshop_id = w.workshop_id           -- each workshop and its teachers
JOIN WorkshopAvgSalary was ON te.workshop_id = was.workshop_ID -- for workshop name
JOIN Teachers t ON te.teacher_id = t.teacher_id              -- for workshop avg salary
WHERE t.teacher_salary > was.avg_salary;                      -- for teachers name and salary
```

דוגמת הרצה:

	WORKSHOP_ID	WORKSHOP_NAME	AVG_SALARY	TEACHER_ID	TEACHER_FNAME	TEACHER_LNAME	TEACHER_SALARY
1	1	Zumba	27.8333333333333	86	Rosario	Ali	167
2	1	Zumba	27.8333333333333	195	Alfie	Sorvino	167
3	2	Cooking	52.5	86	Rosario	Ali	167
4	2	Cooking	52.5	212	Jason	Davison	304
5	2	Cooking	52.5	272	Sinead	Holeman	237
6	2	Cooking	52.5	431	Giovanni	Vince	237
7	3	Drawing	6.81818181818182	361	Miguel	Rourke	150
8	4	Baking	27.7368421052632	277	Peter	Oldman	377

8 rows selected in 0.031 seconds (more...)

הרצת השאלתא

שאלות delete

שאלת 1

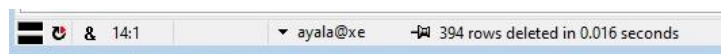
תיאור: מחיקת מורים המלמדים סדנאות שאינן בתחום שלהם.

הקוד:

```
--delete1
--delete every schedule of a teacher who teach a workshop he's not allowed to teach
--shows the problematic schedules
select scheduler.*
from scheduler
where scheduler.workshop_id not in (
select teach.workshop_id
from teach
where teach.teacher_id = scheduler.teacher_id);

-- delete query
delete from scheduler
where scheduler.workshop_id not in (
select teach.workshop_id
from teach
where teach.teacher_id = scheduler.teacher_id);
```

דוגמת הרצה:



הרצת שאלת המחיקה

	SC_TIME	SC_DAY	SCHEDULER_ID	GROUP_ID	WORKSHOP_ID	ROOM_ID	TEACHER_ID
1	16	1	2	2	2	9	9
2	21	7	3	3	3	2	10
3	20	1	4	4	4	7	7
4	20	5	6	6	6	3	4
5	13	2	7	7	7	3	6
6	19	5	8	8	8	3	3
7	22	2	10	10	10	10	8
8	20	3	11	255	8	39	374
9	22	7	12	222	12	68	307
10	22	2	13	431	3	37	251
11	15	6	15	499	1	274	265
12	20	2	16	13	5	415	342
13	13	3	17	234	14	42	404
14	18	3	18	9	11	510	185
15	21	1	19	68	11	44	361
16	21	5	20	320	10	400	323

הרצת SELECT לפני הרצת שאלת המחיקה

	SC_TIME	SC_DAY	SCHEDULER_ID	GROUP_ID	WORKSHOP_ID	ROOM_ID	TEACHER_ID
--	---------	--------	--------------	----------	-------------	---------	------------

הרצת SELECT אחרי הרצת שאלת המחיקה

שאלתא 2

תיאור: מחיקת משתתפים מקבוצה עבור תלמידים שאינם בטווח הגיל של אותה קבוצה.

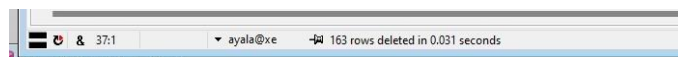
הקוד:

```
--delete2
-- DELETE participations where clients do not match the group's age criteria
-- client age
create view client_age as (
  select c.client_id, extract(year from numtoyminterval(months_between(trunc(sysdate),c.birthday),'month')) age
  from clients c);

-- select all participations where clients do not match the group's age criteria
select *
from age_group
natural join (select g.group_id, g.age_id from groups_ g)
natural join participate
natural join client_age
where age < minage or age > maxage;

-- delete query
delete from participate p
where exists (
  select *
  from (select ag.age_id, ag.minage, ag.maxage from age_group ag)
  natural join (select g.group_id, g.age_id from groups_ g)
  natural join participate
  natural join client_age
  where (age < minage or age > maxage) and p.client_id = client_ID and p.group_id = group_ID
);
```

דוגמת הרצה:



הרצת שאילתת המחיקה

	CLIENT_ID	GROUP_ID	AGE_ID	MINAGE	MAXAGE	DESCRIPT	AGE
1	1	1	3	13	17	Teens	59
2	2	2	3	13	17	Teens	85
3	1447	2	3	13	17	Teens	43
4	3	3	3	13	17	Teens	47
5	378	3	3	13	17	Teens	76
6	4	4	1	3	5	Toddlers	44
7	268	4	1	3	5	Toddlers	69
8	5	5	4	18	60	Adults	81
9	1151	5	4	18	60	Adults	6
10	6	6	2	6	12	Kids	36
11	199	6	2	6	12	Kids	29
12	350	6	2	6	12	Kids	52
13	7	7	2	6	12	Kids	95
14	8	8	5	60	120	Pensioners	34
15	10	10	3	13	17	Teens	32
16	1146	11	2	6	12	Kids	56

הרצת SELECT לפני הרצת שאילתת המחיקה

	CLIENT_ID	GROUP_ID	AGE_ID	MINAGE	MAXAGE	DESCRIPT	AGE
--	-----------	----------	--------	--------	--------	----------	-----

הרצת SELECT אחרי הרצת שאילתת המחיקה

שאלות update

שאלת 1

תיאור: עידכון תשלום הלקוח בהתאם לקורסים שמשותף בהם.

הקוד:

```
--update1
--update each client's payment according to the cost of the workshops they take
--(but not according to the number of times they are scheduled for the same workshop)

--foreach client - shows its calculated payment
SELECT c.client_ID, COALESCE(wp.total_price, 0) AS calculated_total_price, c.client_payment AS currnt_payment
FROM Clients c
LEFT JOIN (SELECT p.client_ID, SUM(w.workshop_price) AS total_price
FROM participate p
JOIN (SELECT DISTINCT group_id, workshop_id
FROM scheduler) s ON s.group_id = p.group_id
JOIN (SELECT DISTINCT workshop_id, workshop_price
FROM Workshops) w ON w.workshop_ID = s.workshop_id
GROUP BY p.client_ID
) wp ON wp.client_ID = c.client_ID
ORDER BY c.client_ID;

--update query
UPDATE Clients c
SET client_payment = COALESCE((
SELECT SUM(w.workshop_price)
FROM clients ck
left JOIN participate p on ck.client_id = p.client_id
left JOIN (SELECT DISTINCT group_id, workshop_id
FROM scheduler) s ON s.group_id = p.group_id
left JOIN (SELECT DISTINCT workshop_id, workshop_price
FROM Workshops) w ON w.workshop_ID = s.workshop_id
WHERE p.client_ID = c.client_ID
GROUP BY ck.client_ID
), 0);
```

דוגמת הרצה:

הרצת שאלת העידכון

	CLIENT_ID	CALCULATED_TOTAL_PRICE	CURRNT_PAYMENT
1	1	0	201
2	2	0	222
3	3	0	362
4	4	0	332
5	5	0	335
6	6	0	182
7	7	0	257
8	8	0	299
9	9	151	273
10	10	0	391
11	11	0	223
12	13	0	306
13	14	0	165
14	15	0	331
15	16	0	206
16	17	0	334

הרצת SELECT לפני הרצת שאלת העידכון

	CLIENT_ID	CALCULATED_TOTAL_PRICE	CURRNT_PAYMENT
1	1	0	0
2	2	0	0
3	3	0	0
4	4	0	0
5	5	0	0
6	6	0	0
7	7	0	0
8	8	0	0
9	9	151	151
10	10	0	0
11	11	0	0
12	13	0	0
13	14	0	0
14	15	0	0
15	16	0	0
16	17	0	0

הרצת SELECT אחרי הרצת שאלת העידכון

שאלת 2

תיאור: עידכון תשלום מורה בהתאם לקורסים שמעביר.

הקוד:

```
--update2
--update teacher salary to the correct number
SELECT sc.teacher_ID, (t.teacher_fname || ' ' || t.teacher_lname) AS full_name,
       t.teacher_salary AS current_salary, SUM(w.workshop_price) AS correct_salary
FROM Scheduler sc
JOIN Workshops w ON sc.workshop_ID = w.workshop_ID
JOIN Teachers t ON sc.teacher_id = t.teacher_id
GROUP BY sc.teacher_ID, t.teacher_fname, t.teacher_lname, t.teacher_salary;

-- update teacher salary to the correct number
CREATE VIEW SalaryUpdate AS (
  SELECT sc.teacher_ID, SUM(w.workshop_price) AS new_salary
  FROM Scheduler sc
  JOIN Workshops w ON sc.workshop_ID = w.workshop_ID
  GROUP BY sc.teacher_ID
);

--update query
UPDATE Teachers t
SET t.teacher_salary = (
  SELECT su.new_salary
  FROM SalaryUpdate su
  WHERE su.teacher_ID = t.teacher_ID
)
WHERE t.teacher_ID IN (
  SELECT su.teacher_ID
  FROM SalaryUpdate su
);

UPDATE Teachers t
SET t.teacher_salary = 0
WHERE t.teacher_ID NOT IN (
  SELECT su.teacher_ID
  FROM SalaryUpdate su
);
```

דוגמת הרצה:

ayala@xe 165 rows updated in 0.016 seconds

הרצת שאלות העידכון

	TEACHER_ID	FULL_NAME	CURRENT_SALARY	CORRECT_SALARY
1	4	Chris Hoskins	18193	188
2	255	Vern Ferrer	8830	404
3	253	Hilton Arthur	10824	151
4	35	Kiefer Tate	13761	150
5	58	Curt Gooding	13776	430
6	354	Xander Klugh	12385	351
7	381	Parker Diggs	15191	167
8	365	Olympia Shannon	8419	577
9	112	Rick Logue	16995	631
10	469	Anthony Weiss	18989	377
11	144	Bo Griffin	12194	539
12	421	Heath DeGraw	11922	237
13	500	Vincent Lewin	19989	100
14	483	Steven Tomlin	16074	237
15	208	Patrick Eastwood	9092	930
16	98	Liquid Gilley	14003	200
17	254	Mac Thomson	19984	450
18	183	Emm Woods	19049	987
19	477	Karen Ford	17447	544
20	175	Wesley Judd	10270	237
21	148	Leon Wood	11869	454
22	184	Lauren Atkins	15503	280
23	277	Peter Oldman	13655	377

ayala@xe 23 rows selected in 0.047 seconds (ms)

הרצת ה- SELECT לפני עידכון

	TEACHER_ID	FULL_NAME	CURRENT_SALARY	CORRECT_SALARY
1	342	Mark Lipnicki	520	520
2	404	Sammy Wiedlin	150	150
3	323	Juliana Lunch	754	754
4	321	Holly Ball	301	301
5	354	Xander Klugh	351	351
6	349	Marc Liotta	377	377
7	445	Gordie Lonsdale	781	781
8	392	Nicole McGovern	377	377
9	341	Carla Shayne	846	846
10	320	Christmas Parker	300	300
11	338	Marley Morrison	150	150
12	437	Patti Hynde	1108	1108
13	96	Kristin Ingram	250	250
14	383	Albert Lerner	650	650
15	141	Amanda Payton	188	188
16	355	Humberto Molina	237	237

ayala@xe 16 rows selected in 0.031 seconds (ms)

הרצת ה- SELECT אחרי עידכון

שאלות עם פרמטרים

שאלתא 1

תיאור: כל המורים שמלמדים סדנא <פרמטר 1> והצטרפו לפני תאריך <פרמטר 2>.

פרמטר 1 – סדנא (נבחר מתוך רשימה של סדנאות – שימוש ב- List).
פרמטר 2 – בחירת שנה בשביל התאריך (לפי רמז בחירת מספר בן 4 ספרות – שימוש ב- Hint).

הקוד:

```
--params1
--all teachers who teach <workshop x> and joined before <date y>
SELECT *
FROM teachers t1
JOIN teach t2 ON t1.teacher_id = t2.teacher_id
WHERE workshop_id = &<name="workshop"
      list="select workshop_id,workshop_name from workshops order by workshop_id"
      description="yes"
      restricted="yes" >
      and extract(year from To_DATE(teacher_join_date,'DD/MM/YYYY')) <= &<name=join_date
      type=integer
      hint="enter a year (4 digit number)">;
```

דוגמת הרצה:

The screenshot shows a database query result in a table with 16 rows. The columns are: TEACHER_ID, TEACHER_FNAME, TEACHER_LNAME, TEACHER_ADDR, TEACHER_TEL, TEACHER_SALARY, TEACHER_JOIN_DATE, WORKSHOP_ID, and TEACHER_ID. The data is as follows:

TEACHER_ID	TEACHER_FNAME	TEACHER_LNAME	TEACHER_ADDR	TEACHER_TEL	TEACHER_SALARY	TEACHER_JOIN_DATE	WORKSHOP_ID	TEACHER_ID
1	3	Whoopi	Dafoe	3	18453	0 03/12/1951	3	3
2	43	Bryan	Rippy	275	30948	0 09/11/1951	3	43
3	73	Annette	Lopez	76	40222	0 18/12/1954	3	73
4	78	Danny	Palin	171	79873	0 04/08/1993	3	78
5	121	Gena	Leigh	43	51246	0 12/10/1987	3	121
6	128	Wendy	Krabbe	367	60657	0 31/10/1960	3	128
7	165	Sam	Dillon	11	16423	0 01/10/1988	3	165
8	169	Amy	DiBiasio	100	12482	0 05/01/1953	3	169
9	180	Stellan	Levert	9	36970	0 19/08/1976	3	180
10	192	Anjelica	Place	189	53369	0 20/07/1975	3	192
11	203	Tracy	Cervine	189	88585	0 04/09/1952	3	203
12	255	Vern	Ferrer	167	35397	0 21/10/1956	3	255
13	298	Halle	Tripplehorn	306	25038	0 31/08/1994	3	298
14	313	Hector	Neil	107	34164	0 02/08/1983	3	313
15	320	Christmas	Parker	267	88015	0 27/01/1962	3	320
16	324	Steven	Jamal	286	57402	0 09/08/1994	3	324

Below the table, a status bar indicates: 22 rows selected in 0.048 seconds.

On the right, a 'Variables' dialog box is open, showing the following values:

Name	Value
workshop	Drawing
join_date	2000

The dialog box has 'OK', 'Cancel', and 'Clear' buttons. Below the dialog box, the text '4 digit number of year' is visible.

דוגמת הרצה של השאלתא (עם פרמטרים כמופיע מימין)

שאלתא 2

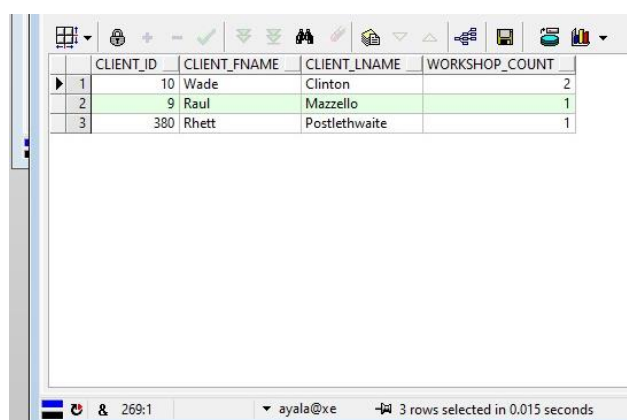
תיאור: כל התלמידים שלוקחים יותר מפרמטר <1 קורסים.

פרמטר 1 – מספר שלם גדול מ-0 (שימוש ב-Hint).

הקוד:

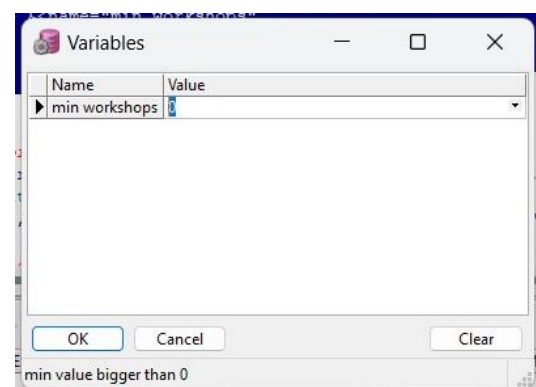
```
--params2
-- find all clients who participate in more than a specified number of workshops
SELECT c.client_ID, (c.client_fname || ' ' || c.client_lname) AS client_name,
       COUNT(DISTINCT sc.workshop_ID) AS workshop_count
FROM Clients c
left JOIN Participate p ON c.client_ID = p.client_ID
JOIN Groups_g ON p.group_ID = g.group_ID
JOIN Scheduler sc ON g.group_ID = sc.group_ID
GROUP BY c.client_ID, c.client_fname, c.client_lname
HAVING COUNT(DISTINCT sc.workshop_ID) > &<name="min workshops"
                                     hint="min value bigger than 0"
                                     type="integer"
                                     default=0>;
```

דוגמת הרצה:



	CLIENT_ID	CLIENT_FNAME	CLIENT_LNAME	WORKSHOP_COUNT
1	10	Wade	Clinton	2
2	9	Raul	Mazzello	1
3	380	Rhett	Postlethwaite	1

דוגמת הרצה של השאלתא (עם פרמטרים כמופיע מימין)



Name	Value
min workshops	0

min value bigger than 0

שאלתא 3

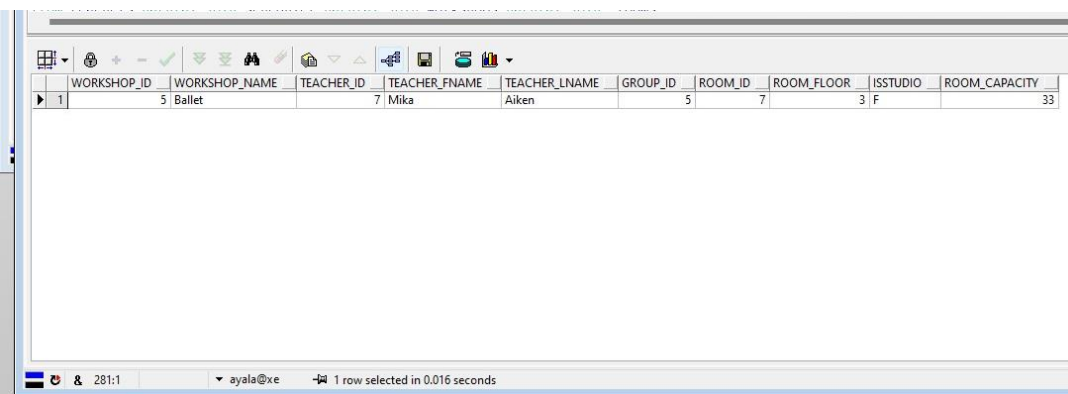
תיאור: עבור יום <פרמטר 1> ושעה <פרמטר 2>, הצגת חדרים, קורסים ומורים.

שימוש ב- Hint להצגת הערכים המתאימים עבור פרמטרים ליום / שעה.

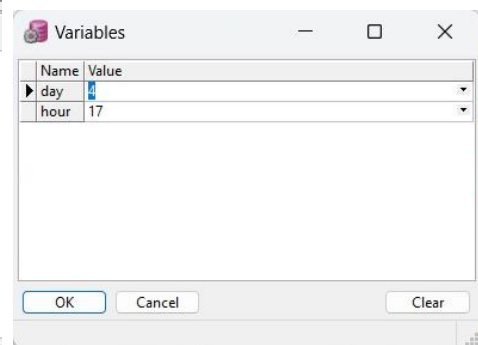
הקוד:

```
--params3
--show a schedule (room, teache, and workshop) for <day x> and <hour y>
select workshop_id,workshop_name,teacher_id,(teacher_fname || ' ' || teacher_lname) AS teacher_name,
       group_id,room_id,room_floor,isstudio,room_capacity
from teachers
natural join scheduler
natural join workshops
natural join rooms
where sc_day = &<name="day"
              list="1,2,3,4,5,6"
              type="integer"
              default=1>
       and sc_time = &<name="hour"
                    type=integer
                    hint="a number between 6 and 24"
                    default=6>;
```

דוגמת הרצה:



	WORKSHOP_ID	WORKSHOP_NAME	TEACHER_ID	TEACHER_FNAME	TEACHER_LNAME	GROUP_ID	ROOM_ID	ROOM_FLOOR	ISSTUDIO	ROOM_CAPACITY
1	5	Ballet	7	Mika	Aiken	5	7	3	F	33



Name	Value
day	4
hour	17

OK Cancel Clear

דוגמת הרצה של השאלתא (עם פרמטרים כמופיע מימין)

שאלתא 4

תיאור: כל התלמידים שגרים בעיר של מורה <פרמטר 1>.

שימוש ב- List להצגת רשימה של ת"ז של מורים.

הקוד:

```
--params4
-- find clients living in the same city as the teacher with the specified teacher_id
SELECT c.client_ID, (c.client_fname || ' ' || c.client_lname) AS client_name, ci.city_name
FROM Clients c
JOIN City ci ON c.client_addr = ci.city_num
WHERE c.client_addr = (
    SELECT t.teacher_addr
    FROM Teachers t
    WHERE t.teacher_ID = &<name="teacher_id"
           list="SELECT teacher_id FROM Teachers">
);
```

דוגמת הרצה:

	CLIENT_ID	CLIENT_FNAME	CLIENT_LNAME	CITY_NAME
1	5	Jackie	Vance	Kejae City
2	180	Joy	Himmelman	Kejae City
3	1405	William	Martinez	Kejae City
4	1427	James	Taylor	Kejae City
5	1428	John	Hernandez	Kejae City
6	1497	Mason	Williams	Kejae City
7	1498	James	Hernandez	Kejae City
8	1105	Michael	Johnson	Kejae City
9	1114	Lucas	Jones	Kejae City
10	1117	Emma	Martinez	Kejae City
11	1157	Mia	Martinez	Kejae City
12	1158	Abigail	Lopez	Kejae City
13	1162	John	Rodriguez	Kejae City

דוגמת הרצה של השאלתא (עם פרמטרים כמופיע מימין)

Name	Value
teacher_id	<div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> <div>9</div> <div>10</div> </div>

תנאי אמינות - אילוצים

אילוץ 1

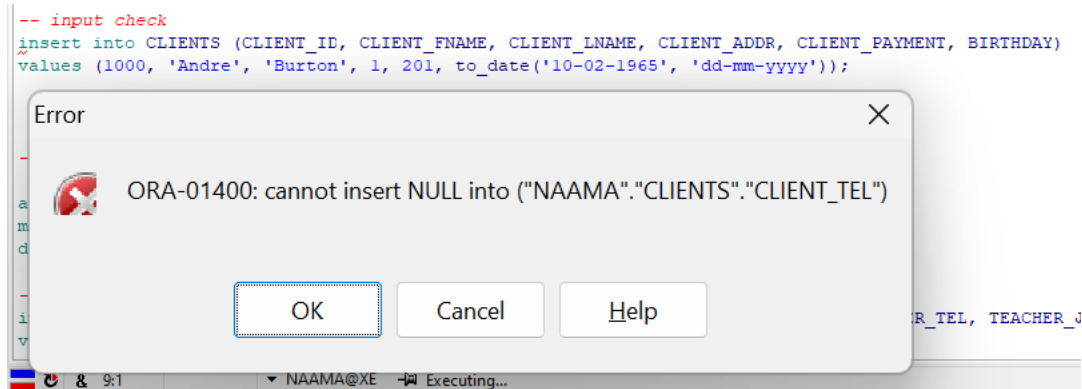
תיאור: אילוץ הזנת ערך עבור מספר טלפון של לקוח.

הקוד:

```
-- constraint 1

alter table clients
modify client_tel not null;
```

קיום האילוץ:



אילוץ 2

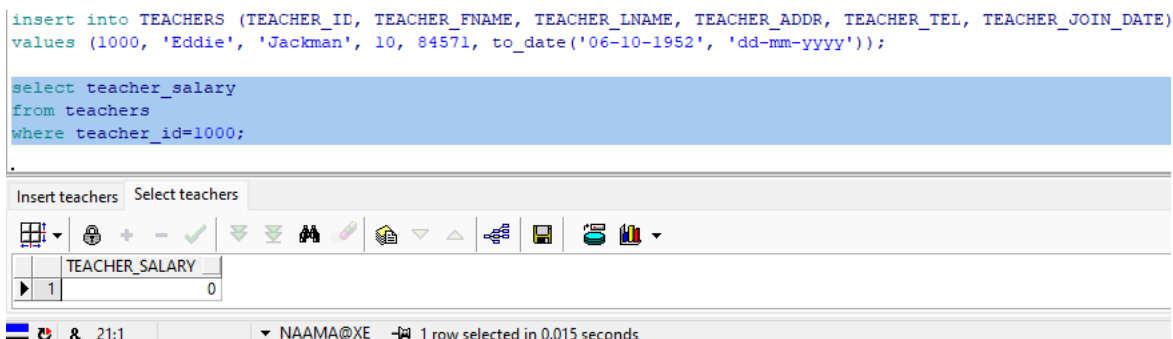
תיאור: ערך ברירת מחדל עבור משכורת של מורה הוא 0.

הקוד:

```
-- constraint 2

alter table teachers
modify teacher_salary
default 0;
```

קיום האילוץ:



אילוח 3

תיאור: אילוח על ערך התכונה isStudio של חדר להיות האותיות T או F בלבד.

הקוד:

```
-- constraint 3  
  
alter table rooms  
add constraint boolean_isStudio  
check (isStudio in ('T', 'F'));
```

קיום האילוח:

