Contents

1 Basic Test Results

```
Extracting Archive:
Archive:  /tmp/bodek.Wpquy9/db/ex2/mohammadgh/presubmission/submission
  inflating: ex2.pdf
  inflating: q1.sql
  inflating: q2.sql
  inflating: q3.sql
  inflating: q4.sql
  inflating: q5.sql
  inflating: q6.sql
  inflating: q7.sql
  inflating: README

************************************************************
** Testing that all necessary files were submitted:
README:
    SUBMITTED
ex2.pdf:
    SUBMITTED
q1.sql:
    SUBMITTED
q2.sql:
    SUBMITTED
q3.sql:
    SUBMITTED
q4.sql:
    SUBMITTED
q5.sql:
    SUBMITTED
q6.sql:
    SUBMITTED
q7.sql:
    SUBMITTED

************************************************************
** Checking for correct README format:
Output:
CREATE TABLE
CREATE TABLE
CREATE TABLE

Inserting authors.csv
Output:
COPY 41206

Inserting conferences.csv
Output:
COPY 75

Inserting institutions.csv
Output:
COPY 401

Note: The output is capped at 100 characters.

 Running q1.sql
Output:
          name
------------------------
 Alex Samorodnitsky
```

```
 Amit Daniely
 Amit Zoran
 Amnon Shashua
 Ari Rappoport
 Aviv Zohar
 Dafna Shahaf
 Dani Lischinski
 Danny Dolev
 Daphna Weinshall
 Dorit Aharonov
 Dror G. Feitelson
 Gabriel Stanovsky
 Gil Segev 0001
 Guy Kindler
 Ilan Komargodski
 Jeffrey S. Rosenschein
 Katrina Ligett
 Leo Joskowicz
 Matan Gavish
 Michael Ben-Or
 Michael Schapira
 Michael Werman
 Naftali Tishby
 Nathan Linial
 Nir Friedman
 Noam Nisan
 Omri Abend
 Omri Weins

 Running q2.sql
Output:
            institution             |            name
------------------------------------+---------------------------
 Ariel University                   | Amos Azaria
 Ariel University                   | Boaz Ben-Moshe
 Ariel University                   | Eran Omri
 Ariel University                   | Gabriel Nivasch
 Ariel University                   | Lee-Ad Gottlieb
 Ariel University                   | Mira Gonen
 Ariel University                   | Noam Hazon
 Ariel Univ

 Running q3.sql
Output:
          institution           |     name
--------------------------------+---------------
 Hebrew University of Jerusalem | Amnon Shashua
(1 row)



 Running q4.sql
Output:
    name    | year
------------+------
 Yair Weiss | 2012
(1 row)



 Running q5.sql
Output:
         name
----------------------
 Adrian Segall
 Alan Dearle
 Alejandro P. Buchmann
 Amihai Motro
```

```
 A. P. Wim Böhm
 Barbara Pernici
 Boleslaw K. Szymanski
 Chengzheng Sun
 Chung-Ta King
 Claude Frasson
 Clyde P. Kruskal
 Colin Potts
 Cornelis Huizing
 David Gelernter
 David L. Spooner
 Dilip Sarkar
 Donald A. Norman
 Donald Sannella
 Edward F. Gehringer
 Ernst Denert
 Eugene W. Stark
 François Bry
 Giuseppe Pelagatti
 Gösta Grahne
 Gottfried Vossen
 Hassan Gomaa
 Helen Sharp
 I-Lin

 Running q6.sql
Output:
            name
----------------------------
 Aaron Clauset
 Abraham Bernstein
 A. B. Siddique
 Adam Bates 0001
 Adish Singla
 Aditya Bhaskara
 Adriana Iamnitchi
 Ahmet Erdem Sariyüce
 Aiman Erbad
 Alan Mislove
 Alan Ritter
 Albert-László Barabási
 Alberto Montresor
 Aleksandar Kuzmanovic
 Aleksandra Korolova
 Alessandro Bozzon
 Alexandros Kapravelos
 Alex C. Snoeren
 Alin Dobra
 Allan Borodin
 Ambuj K. Singh
 Amir Herzberg
 Amitabha Bagchi
 Amit P. Sheth
 Amr El Abbadi
 Andrew Trot

 Running q7.sql
Output:
 year |      name
------+----------------
 2001 | Yair Bartal
 2002 | Guy Kindler
 2002 | Noam Nisan
 2004 | Guy Kindler
 2006 | Yuval Rabani
 2007 | Dorit Aharonov
 2007 | Gil Segev 0001
 2008 | Michael Ben-Or
```

```
 2013 | Yuval Rabani
 2014 | Katrina Ligett
 2019 | Dorit Aharonov
 2019 | Nathan Linial
 2020 | Omri Weinstein
(13 rows)
```

2 README

```
1 mohammadgh,muaz.abdeen
```

(67506) Databases – Spring 2022 – Exercise (2)

Muaz Abdeen 300575297

Mohammad Ghanayem 208653220

Question (1):

$\boldsymbol{A}$:= authors (name, conference, year, institution, count, adjustedcount)

$\boldsymbol{C}$:= conferences (conference, area, subarea)

$\boldsymbol{I}$:= institutions (institution, region, country)

1. Names of authors belong to "Hebrew University of Jerusalem".

$$\pi_{name}\left(\sigma_{institution="Hebrew\ University\ of\ Jerusalem"}\ \boldsymbol{A}\right)$$

2. Names of authors belong to an Israeli institution, and the name of the institution.

$$\pi_{name,institution}\left(\sigma_{country="il"}\ \boldsymbol{A} \bowtie \boldsymbol{I}\right)$$

3. Names of authors (and their corresponding institution) belong to an Israeli institution, whose $adjustedcount \geq 2$, in any conference with subarea of "*db*" or area of "*ai*".

$$\mathcal{X} := \pi_{name,conference,year,institution}\left(\left(\sigma_{adjustedcount \geq 2}\ \boldsymbol{A}\right) \bowtie \left(\sigma_{country="il"}\ \boldsymbol{I}\right)\right)$$

$$\pi_{name,institution}\left(\mathcal{X} \bowtie \left(\sigma_{\substack{area="ai" \\ \vee\ subarea="db"}}\ \boldsymbol{C}\right)\right)$$

4. (a) Names of authors from HUJI, who publish papers in conference with subarea of "*vision*" and in conference with subarea of "*ml*".

$$\left(\pi_{name}\left(\sigma_{\substack{institution="Hebrew\ University\ of\ Jerusalem" \\ \wedge\ subarea="vision"}}\ \boldsymbol{A} \bowtie \boldsymbol{C}\right)\right.$$

$$\left.\cap\ \pi_{name}\left(\sigma_{\substack{institution="Hebrew\ University\ of\ Jerusalem" \\ \wedge\ subarea="ml"}}\ \boldsymbol{A} \bowtie \boldsymbol{C}\right)\right)$$

(b) Names of authors from HUJI, for which there is a year, they publish in this year papers in conference with subarea of "*vision*" and in conference with subarea of "*ml*". Return rows in the form: $(year, name)$.

This article differs from the previous, in that both conferences must be in the same year, where the previous asks about who published in the two subareas no matter if they were in the same year or not.

$$\pi_{year,name}\left(\sigma_{institution="Hebrew\ University\ of\ Jerusalem"\ \wedge\ subarea="vision"}\ \boldsymbol{A}\bowtie\boldsymbol{C}\right)$$
$$\cap\ \pi_{year,name}\left(\sigma_{institution="Hebrew\ University\ of\ Jerusalem"\ \wedge\ subarea="ml"}\ \boldsymbol{A}\bowtie\boldsymbol{C}\right)$$

5. Names of authors who publish only in the "*systems*" area, only before 1990 .

$$(\pi_{name}\ \boldsymbol{A}) - \pi_{name}\left(\sigma_{year\geq 1990\ \vee\ area\neq"systems"}\ \boldsymbol{A}\bowtie\boldsymbol{C}\right)$$

6. Names of authors who publish a paper in every conference in "*AI*" area, in which "Noam Nisan" has published a paper (but not necessarily in the same year).

$$\left(\pi_{name,conference}\ \boldsymbol{A}\right)\div\pi_{conference}\left(\sigma_{name="Noam\ Nisan"\ \wedge\ area="ai"}\ \boldsymbol{A}\bowtie\boldsymbol{C}\right)$$

7. For every year from 2000 to 2020, return row(s) of form $(year, name)$ of record-holder(s) from "Hebrew University of Jerusalem".

$$\boldsymbol{A_2} := \left(\rho_{A_2(n_2,c_2,y_2,inst_2,count_2,adjc_2)}\boldsymbol{A}\right)$$

$$\mathcal{X} := \sigma_{name \neq n_2}\left(\begin{array}{c}\sigma_{institution="Hebrew\ University\ of\ Jerusalem"}\boldsymbol{A} \\ \wedge\ conference="focs" \\ \wedge\ 2000 \leq year \leq 2020\end{array}\right)$$

$$\times\left(\begin{array}{c}\sigma_{inst_2="Hebrew\ University\ of\ Jerusalem"}\boldsymbol{A_2} \\ \wedge\ c_2="focs" \\ \wedge\ 2000 \leq y_2 \leq 2020\end{array}\right)$$

$$\pi_{year,name} - \left(\pi_{year,name}\left(\sigma_{\begin{array}{c}year = y_2 \\ \wedge\ count < count_2\end{array}}\mathcal{X}\right)\right)$$

4 q1.sql

```
1  select distinct name
2  from authors
3  where institution = 'Hebrew University of Jerusalem'
4  order by name;
```

5 q2.sql

```
1  select distinct institution, a.name
2  from authors a natural join institutions i
3  where country = 'il'
4  order by institution, a.name;
```

6 q3.sql

```
1  select distinct institution, name
2  from (
3       select name, conference, year, institution
4      from authors a1 natural join institutions i
5      where adjustedcount >= 2 and country = 'il'
6      order by name, conference, year, institution
7           ) as a natural join conferences
8  where area = 'ai' or subarea = 'db'
9  order by institution, name;
```

7 q4.sql

```
1  select distinct name, year
2  from authors natural join conferences
3  where institution = 'Hebrew University of Jerusalem' and subarea = 'vision'
4  intersect
5  select name, year
6  from authors natural join conferences
7  where institution = 'Hebrew University of Jerusalem' and subarea = 'ml'
8  order by name, year;
```

8 q5.sql

```
1  select distinct name
2  from authors
3  except
4  select distinct name
5  from authors natural join conferences
6  where year >= 1990 or area != 'systems'
7  order by name;
```

9 q6.sql

```
1  select distinct a.name
2  from authors a
3  where not exists (
4      select a1.conference
5      from authors a1 natural join conferences
6      where a1.name = 'Noam Nisan' and area = 'ai'
7      except
8      select a2.conference
9      from authors a2 natural join conferences
10     where a2.name = a.name
11     )
12 order by a.name;
```

10 q7.sql

```
1  select distinct a.year, a.name
2  from authors a
3  where a.year <= 2020 and a.year >= 2000 and a.conference = 'focs' and a.institution = 'Hebrew University of Jerusalem' and n
4      select a1.year, a1.name
5      from authors a1
6      where a1.year = a.year and a1.institution = a.institution and a1.conference = a.conference and a1.count > a.count)
7  order by a.year, a.name;
```