```
\qecho " data for Assignment3 "
-- Table for person and person values
DROP TABLE
CREATE TABLE
INSERT 0 30
-- Table for knows and knows values
DROP TABLE
CREATE TABLE
INSERT 0 100
-- Table for company and company values
DROP TABLE
CREATE TABLE
INSERT 0 25
-- Table for works for and worksfor values
DROP TABLE
CREATE TABLE
INSERT 0 30

-- Table for jobskill and jobskill values
DROP TABLE
CREATE TABLE
INSERT 0 5
-- Table for personskill and personskill values
DROP TABLE
CREATE TABLE
INSERT 0 60
-- Table for person
```

| pid | name | city | birthyear |
|---|---|---|---|
| 1. | Nick | NewYork | 1990 |
| 2. | Deepa | Indianapolis | 1985 |
| 3. | Eric | NewYork | 1990 |
| 4. | Ryan | Indianapolis | 1995 |
| 5. | Hasan | Indianapolis | 1990 |
| 6. | Arif | Indianapolis | 1980 |
| 7. | Ryan | Chicago | 1980 |
| 8. | Jean | SanFransisco | 2000 |
| 9. | Aya | SanFransisco | 1985 |
| 10. | Lisa | NewYork | 2000 |
| 11. | Arif | Chicago | 1990 |
| 12. | Deepa | Bloomington | 1990 |
| 13. | Nick | SanFransisco | 1980 |
| 14. | Ryan | Indianapolis | 1990 |
| 15. | Nick | Indianapolis | 1990 |
| 16. | Anna | Chicago | 1980 |
| 17. | Lisa | Bloomington | 1990 |
| 18. | Ryan | Bloomington | 1995 |
| 19. | Lisa | Chicago | 1980 |
| 20. | Danielle | Indianapolis | 1985 |
| 21. | Eric | Chicago | 1980 |
| 22. | Anna | Indianapolis | 1985 |
| 23. | Chris | Bloomington | 1990 |
| 24. | Aya | NewYork | 1995 |
| 25. | Arif | SanFransisco | 1990 |
| 26. | Anna | Bloomington | 2000 |
| 27. | Latha | SanFransisco | 2000 |
| 28. | Eric | Bloomington | 2000 |
| 29. | Linda | Bloomington | 1990 |
| 30. | Aya | NewYork | 1995 |

(30 rows)

-- Table for knows

| pid1 | pid2 |
|---|---|
| 31. | 22 |
| 32. | 28 |
| 33. | 27 |
| 34. | 27 |
| 35. | 14 |
| 36. | 14 |
| 37. | 28 |
| 1. | 26 |
| 18 | 24 |
| 24 | 5 |
| 6 | 26 |
| 15 | 7 |
| 15 | 25 |
| 19 | 27 |
| 10 | 5 |
| 11 | 19 |

| | |
|---|---|
| 20 | 22 |
| 27 | 23 |
| 24 | 29 |
| 4 | 10 |
| 26 | 12 |
| 13 | 15 |
| 19 | 4 |
| 20 | 10 |
| 10 | 6 |
| 1. | 7 |
| 17 | 23 |
| 9 | 26 |
| 3 | 10 |
| 21 | 29 |
| 27 | 15 |
| 12 | 13 |
| 16 | 3 |
| 14 | 24 |
| 14 | 28 |
| 12 | 4 |
| 15 | 8 |
| 4 | 28 |
| 18 | 11 |
| 12 | 16 |
| 30 | 12 |
| 4 | 9 |
| 4 | 8 |
| 29 | 13 |
| 29 | 20 |
| 24 | 18 |
| 16 | 13 |
| 30 | 17 |
| 23 | 22 |
| 7 | 16 |
| 29 | 22 |
| 26 | 3 |
| 28 | 30 |
| 25 | 10 |
| 3 | 22 |
| 22 | 21 |
| 30 | 3 |
| 1. | 20 |
| 19 | 11 |
| 29 | 15 |
| 13 | 30 |
| 11 | 12 |
| 1. | 5 |
| 13 | 18 |
| 24 | 19 |
| 30 | 10 |
| 4 | 12 |
| 24 | 11 |
| 18 | 22 |
| 3 | 2 |

```
    4 |    3
   12 |   23
   25 |   24
   17 |   20
   28 |   10
    8 |   17
   15 |   13
    1. |    9
    6 |   18
    3 |    4
    4 |   19
   24 |   23
   27 |    3
   12 |    5
   12 |    2
   26 |   22
   30 |   15
   20 |   13
   28 |   14
   14 |    5
    1. |   10
    7 |    9
   27 |   22
   12 |   11
   16 |   20
   12 |    3
   17 |    7
    2. |   14
   18 |   25
   16 |   24
(100 rows)

-- Table for company

   cname   |     city
-----------+--------------
 Amazon    | NewYork
 IBM       | NewYork
 Amazon    | Indianapolis
 Amazon    | Bloomington
 Intel     | NewYork
 Netflix   | Indianapolis
 Yahoo     | Indianapolis
 Google    | Bloomington
 Apple     | Indianapolis
 Hulu      | Chicago
 Hulu      | NewYork
 Yahoo     | Chicago
 Intel     | Bloomington
 Google    | Chicago
 Zoom      | Chicago
 Yahoo     | NewYork
 Yahoo     | Bloomington
 Netflix   | Bloomington
```

```
 Microsoft | Chicago
 Netflix   | NewYork
 Microsoft | Indianapolis
 Zoom      | SanFransisco
 Netflix   | SanFrancisco
 Yahoo     | SanFrancisco
 IBM       | SanFrancisco
(25 rows)

-- Table for worksfor

 pid |   cname   | salary
-----+-----------+--------
   1. | IBM       |  60000
   2. | Hulu      |  50000
   3. | Amazon    |  45000
   4. | Microsoft |  60000
   5. | Amazon    |  40000
   6. | IBM       |  50000
   7. | IBM       |  50000
   8. | Netflix   |  45000
   9. | Yahoo     |  50000
  10. | Hulu      |  40000
  11. | Apple     |  40000
  12. | Netflix   |  55000
  13. | Apple     |  40000
  14. | IBM       |  50000
  15. | IBM       |  40000
  16. | Apple     |  55000
  17. | Google    |  45000
  18. | Amazon    |  45000
  19. | Zoom      |  45000
  20. | Microsoft |  55000
  21. | Intel     |  55000
  22. | IBM       |  40000
  23. | Apple     |  40000
  24. | Google    |  45000
  25. | Hulu      |  50000
  26. | Intel     |  55000
  27. | Intel     |  50000
  28. | Intel     |  50000
  29. | Google    |  60000
  30. | Intel     |  60000
(30 rows)

-- Table for jobskill

    skill
-------------
 Programming
 Databases
 AI
 Networks
 Mathematics
```

(5 rows)

-- Table for personskill

| pid | skill |
|---|---|
| 31. | Programming |
| 32. | Mathematics |
| 33. | AI |
| 34. | Networks |
| 35. | AI |
| 36. | AI |
| 1. | Databases |
| 10 | Networks |
| 9 | Programming |
| 13 | Networks |
| 9 | AI |
| 27 | Mathematics |
| 20 | AI |
| 29 | Databases |
| 5 | Programming |
| 26 | Databases |
| 1. | Networks |
| 28 | AI |
| 15 | Programming |
| 16 | Mathematics |
| 12 | Databases |
| 15 | Databases |
| 24 | Programming |
| 14 | AI |
| 25 | Networks |
| 13 | AI |
| 12 | Programming |
| 22 | Programming |
| 7 | Mathematics |
| 10 | Programming |
| 16 | Databases |
| 19 | Programming |
| 7 | Programming |
| 22 | AI |
| 5 | Databases |
| 2. | Mathematics |
| 14 | Programming |
| 26 | Networks |
| 19 | Networks |
| 21 | Programming |
| 14 | Mathematics |
| 19 | AI |
| 3. | Networks |
| 8 | Databases |
| 13 | Mathematics |
| 29 | Programming |
| 4. | AI |
| 16 | Networks |

```
   5 | Networks
  17 | AI
  24 | Databases
   5. | Databases
  27 | Networks
  28 | Databases
  30 | Databases
   6. | Networks
   6 | Networks
  17 | Networks
  23 | Programming
  20 | Programming
(60 rows)

\qecho "Question 1"

\qecho "Question 1.1"

INSERT 0 5
INSERT 0 5

-- TABLE P
 coefficient | degree
-------------+--------
           7. |      4
           8. |      3
           9. |      2
          -  5 |      1
           5 |      0
(5 rows)

-- TABLE Q
 coefficient | degree
-------------+--------
           1. |      5
           2. |      4
          10 |      3
          -  1 |      1
           9 |      0
(5 rows)

CREATE FUNCTION

-- Answer for question 1.1

 coefficient | degree
-------------+--------
           3 |      9
          10 |      8
          40 |      7
          39 |      6
          12 |      5
         -  17 |      4
          84 |      3
```

```
          23 |      2
         -  50 |      1
          45 |      0
(10 rows)

\qecho "Question 1.2"

INSERT 0 4

INSERT 0 4

-- TABLE X

 index | value
-------+-------
     1. |    -8
     2. |    -3
     3. |     4
     4. |     9
(4 rows)

-- TABLE Y
 index | value
-------+-------
     1. |     3
     2. |    -1
     3. |     9
     4. |    -3
(4 rows)

CREATE FUNCTION

-- Answer for 1.2

 dotproductxandy
-----------------
             -  12
(1 row)


\qecho "Question 2"

/* Formulate the following queries in SQL.
You should use aggregate functions to solve these queries.
You can use views, including temporary views as well as parameterized
views defined by user-defined functions that return relations (i.e.,
tables). */

\qecho "Question 2.3"

-- Find the pid and name of each person who lives in â□□Chicagoâ□□ and who
-- knows at least one person who has at least 3 job skills.

 pid | name
```

```
-----+------
   7 | Ryan
  11 | Arif
  16 | Anna
  19 | Lisa
  21 | Eric
(5 rows)

\qecho "Question 2.4"

-- Find the pid and name of each person who has all but four job skills.
I.e.,
-- such a person lacks precisely four job skills from the possible job
skills that
-- are stored in the relation jobSkill and lives in 'Indianapolis'.

ERROR:  relation "personskill.pid" does not exist
LINE 2: ...ECT skill FROM jobskill EXCEPT (SELECT skill FROM personskil...


\qecho "3 Queries with quantifiers"

\qecho "Question 3.5"

CREATE VIEW

CREATE VIEW

 pid |   name
-----+----------
  12 | Deepa
  18 | Ryan
  16 | Anna
   7 | Ryan
  20 | Danielle
  24 | Aya
  29 | Linda
  15 | Nick
  17 | Lisa
  19 | Lisa
(10 rows)

\qecho "Question 3.6"

 cname
--------
 Amazon
 Zoom
(2 rows)


\qecho "4 Queries with quantifiers"

\qecho "Question 4.7"
```

```
 ?column? |   cname
----------+-----------
 t        | Microsoft
 f        | Amazon
 f        | Zoom
 f        | Intel
 f        | Google
 f        | Hulu
 t        | IBM
 t        | Netflix
 f        | Yahoo
 t        | Apple
(10 rows)

 ?column? |   cname
----------+-----------
 f        | Microsoft
 t        | Amazon
 t        | Zoom
 t        | Intel
 t        | Google
 t        | Hulu
 f        | IBM
 f        | Netflix
 t        | Yahoo
 f        | Apple
(10 rows)


\qecho "Question 4.8"

 pid |   name
-----+----------
  22 | Anna
  19 | Lisa
  29 | Linda
   4 | Ryan
  10 | Lisa
   6 | Arif
  13 | Nick
   2 | Deepa
  18 | Ryan
  27 | Latha
  11 | Arif
   9 | Aya
  30 | Aya
  21 | Eric
   3 | Eric
  12 | Deepa
  23 | Chris
  15 | Nick
   5 | Hasan
  14 | Ryan
```

```
   7 | Ryan
  20 | Danielle
   1. | Nick
   8 | Jean
  26 | Anna
  17 | Lisa
  28 | Eric
  16 | Anna
  24 | Aya
  25 | Arif
(30 rows)

\qecho "Question 4.9"

ERROR:  aggregate function calls cannot contain set-returning function
calls
LINE 1: ...ELECT pid FROM person2(p.pid) WHERE (SELECT COUNT(person1(p....
                                                             ^
HINT:  You might be able to move the set-returning function into a LATERAL
FROM item.
```