

DBMS Lab

A)

Code

```
create database expert_system_2_libin_n_george;  
use expert_system_2_libin_n_george;
```

MariaDB [(none)]> Query OK, 1 row affected (0.00 sec)

MariaDB [(none)]> Database changed

MariaDB [expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.29 sec)

B)

```
describe paper;  
delete from paper;  
alter table paper auto_increment=0;  
insert into paper (title,conference,year) values  
( 'structured embedding models for grouped data','NIPS',2017),  
( 'Topographic factor analysis: A Bayesian model for inferring brain networks from  
neural data.','PLOS ONE', 2014),  
( 'Nonconvex finite-sum optimization via SCSG methods.','NIPS',2018),  
( 'Nonparametric combinatorial sequence models.','RECOMB', 2011),  
( 'Inferring Cognitive Models from Data using Approximate Bayesian  
Computation','SIGCHI',2017),  
( 'BLOG: Probabilistic Models with Unknown Objects.', 'Statistical Relational  
Learning', 2007),  
( 'Blind Date: Using Proper Motions to Determine the Ages of Historical  
Images.','The Astronomical Journal', 2008),  
( 'Learning structures of Bayesian networks for variable groups.', 'International  
Journal of Approximate Reasoning', 2017);
```

```
select * from paper;
```

```
create table author(author_id int auto_increment primary key, first_name  
varchar(50), last_name varchar(50) not null);
```

```
insert into author (first_name, last_name) values  
( 'M','Rudolph'),  
( 'F','Ruiz'),
```

('S','Athey'),
('D','Blei'),
('J','Manning'),
('R','Ranganath'),
('K','Norman'),
('L','Lei'),
('C','Ju'),
('J','Chen'),
('M','Jordan'),
('F','Wauthier'),
('N','Jojic'),
('Antti','Kangasraasio'),
('Kumariprabha','Athukorala'),
('Andrew','Howes'),
('Jukka','Corander'),
('Samuel','Kaski'),
('Antti','Oulasvirta'),
('B','Milch'),
('B','Marthi'),
('S','Russell'),
('D','Sontag'),
('D','Ong'),
('A','Kolobov'),
('Jonathan','Barron'),
('David','Hogg'),
('Dustin','Lang'),
('Sam','Roweis'),
('Pekka','Parviainen'),
('S','Bhadra');

alter table paper add column corresponding_author int not null after conference;

update paper set corresponding_author=4 where paper_id=1;
update paper set corresponding_author=4 where paper_id=2;
update paper set corresponding_author=8 where paper_id=3;
update paper set corresponding_author=11 where paper_id=4;
update paper set corresponding_author=18 where paper_id=5;
update paper set corresponding_author=23 where paper_id=6;
update paper set corresponding_author=29 where paper_id=7;
update paper set corresponding_author=18 where paper_id=8;

alter table paper add foreign key (corresponding_author) references author
(author_id);

```
create table author_paper (author_id int not null, paper_id int not null);
alter table author_paper add foreign key (paper_id) references paper(paper_id);
alter table author_paper add foreign key (author_id) references author(author_id);
```

```
insert into author_paper (author_id,paper_id) values (1,1),(2,1),(3,1),(4,1),(4,2),
(5,2),(6,2),(7,2),(8,3),(9,3),(10,3),(11,3),(12,4),(13,4),(11,4),(14,5),(15,5),(16,5),
(17,5),(18,5),(19,5),(20,6),(21,6),(22,6),(23,6),(24,6),(25,6),(26,7),(27,7),(28,7),
(29,7),(30,8),(18,8);
```

```
MariaDB [expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.29 sec)
```

```
MariaDB [expert_system_2_libin_n_george]> +-----+-----+-----+-----+
+-----+-----+
| Field      | Type      | Null | Key | Default | Extra      |
+-----+-----+-----+-----+-----+-----+
| paper_id   | int(11)    | NO   | PRI | NULL    | auto_increment |
| title      | varchar(50)| NO   | UNI | NULL    |               |
| year       | int(11)    | NO   |     | NULL    |               |
| conference | varchar(50)| NO   |     | NULL    |               |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
MariaDB [expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.00 sec)
```

```
MariaDB [expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.00 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
MariaDB [expert_system_2_libin_n_george]> -> -> -> -> -> -> ->
-> Query OK, 8 rows affected, 5 warnings (0.05 sec)
Records: 8 Duplicates: 0 Warnings: 5
```

```
MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> +-----+
+-----+-----+-----+-----+
| paper_id | title                                     | year | conference |
+-----+-----+-----+-----+
| 1        | structured embedding models for grouped data | 2017 | NIPS      |
```

2 | Topographic factor analysis: A Bayesian model for | 2014 | PLoS ONE

3 | Nonconvex finite-sum optimization via SCSG methods | 2018 | NIPS

4 | Nonparametric combinatorial sequence models. | 2011 | RECOMB

5 | Inferring Cognitive Models from Data using Approximate | 2017 | SIGCHI

6 | BLOG: Probabilistic Models with Unknown Objects. | 2007 | Statistical
Relational Learning

7 | Blind Date: Using Proper Motions to Determine the | 2008 | The
Astronomical Journal

8 | Learning structures of Bayesian networks for variable | 2017 | International
Journal of Approximate Reasoning

```
+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+
```

8 rows in set (0.06 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.30 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> -> -> -> -> -> -> -> ->
-> -> -> -> -> -> -> -> -> -> -> -> -> ->
-> -> -> -> -> -> -> Query OK, 31 rows affected (0.04 sec)
Records: 31 Duplicates: 0 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.41 sec)
Records: 0 Duplicates: 0 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> Query OK, 1 row affected (0.06 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.04 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.04 sec)
Rows matched: 1 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.03 sec)
Rows matched: 1 Changed: 1 Warnings: 0

Query OK, 8 rows affected (0.75 sec)
Records: 8 Duplicates: 0 Warnings: 0

D)

insert into author (first_name, last_name) values

('Samy','Bengio'),
('Iulian', 'Serban'),
('Alessandro', 'Sordoni'),
('Ryan', 'Lowe'),
('Laurent', 'Charlin'),
('Joelle', 'Pineau'),
('Aaron', 'Courville'),
('Yoshua', 'Ben_gio'),
('Ian','Goodfellow'),
('Jean','Pouget-Abadie'),
('Mehdi', 'Mirza'),
('Bing', 'Xu'),
('David', 'Warde-Farley'),
('Sherjil', 'Ozair');

select * from author;

insert into paper (title, conference, year, corresponding_author) values

('Statistical machine learning for HCI', 'Multimodal Signal Processing: Theory and Applications for Human-Computer Interaction', 2010, 32);

insert into paper (title, conference, year, corresponding_author) values

('A Hierarchical Latent Variable Encoder-Decoder Model for Generating Dialogues.','AAAI', 2017, null);

insert into paper (title, conference, year, corresponding_author) values

("", 'NIPS', 2014, 40);

```
select paper_id, title from paper;
```

```
insert into author_paper (paper_id, author_id) values
```

```
(9, 32),  
(10, 40),  
(10, 41),  
(10, 42),  
(10, 43),  
(10, 44),  
(10, 45),  
(10, 38),  
(10, 39);
```

```
MariaDB [expert_system_2_libin_n_george]> MariaDB
```

```
[expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.27 sec)
```

```
Query OK, 0 rows affected (0.64 sec)
```

```
Records: 0 Duplicates: 0 Warnings: 0
```

```
Query OK, 0 rows affected (0.56 sec)
```

```
Records: 0 Duplicates: 0 Warnings: 0
```

```
MariaDB [expert_system_2_libin_n_george]> MariaDB
```

```
[expert_system_2_libin_n_george]> Query OK, 33 rows affected (0.10 sec)
```

```
Records: 33 Duplicates: 0 Warnings: 0
```

```
MariaDB [expert_system_2_libin_n_george]> MariaDB
```

```
[expert_system_2_libin_n_george]> -> -> -> -> -> -> -> ->  
-> -> -> -> -> -> Query OK, 14 rows affected (0.04 sec)
```

```
Records: 14 Duplicates: 0 Warnings: 0
```

```
MariaDB [expert_system_2_libin_n_george]> MariaDB
```

```
[expert_system_2_libin_n_george]> +-----+-----+-----+
```

```
| author_id | first_name | last_name |
```

```
+-----+-----+-----+
```

```
| 1 | M | Rudolph |  
| 2 | F | Ruiz |  
| 3 | S | Athey |  
| 4 | D | Blei |  
| 5 | J | Manning |  
| 6 | R | Ranganath |  
| 7 | K | Norman |  
| 8 | L | Lei |  
| 9 | C | Ju |  
| 10 | J | Chen |
```

11	M	Jordan	
12	F	Wauthier	
13	N	Joic	
14	Antti	Kangasraasio	
15	Kumariprabha	Athukorala	
16	Andrew	Howes	
17	Jukka	Corander	
18	Samuel	Kaski	
19	Antti	Oulasvirta	
20	B	Milch	
21	B	Marthi	
22	S	Russell	
23	D	Sontag	
24	D	Ong	
25	A	Kolobov	
26	Jonathan	Barron	
27	David	Hogg	
28	Dustin	Lang	
29	Sam	Roweis	
30	Pekka	Parviainen	
31	S	Bhadra	
32	Samy	Bengio	
33	Iulian	Serban	
34	Alessandro	Sordoni	
35	Ryan	Lowe	
36	Laurent	Charlin	
37	Joelle	Pineau	
38	Aaron	Courville	
39	Yoshua	Ben_gio	
40	Ian	Goodfellow	
41	Jean	Pouget-Abadie	
42	Mehdi	Mirza	
43	Bing	Xu	
44	David	Warde-Farley	
45	Sherjil	Ozair	

+-----+-----+-----+

45 rows in set (0.06 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> -> Query OK, 1 row affected, 1 warning
(0.04 sec)

MariaDB [expert_system_2_libin_n_george]> -> ERROR 1048 (23000):
Column 'corresponding_author' cannot be null

```
#MariaDB [expert_system_2_libin_n_george]> -> Query OK, 1 row affected  
(0.04 sec)
```

E

```
SELECT C.first_name, C.last_name, COUNT(C.paper_id) AS paper_count  
FROM (SELECT A.author_id, A.first_name, A.last_name, W.paper_id  
      FROM author_paper AS W  
      RIGHT JOIN  
      author AS A  
      ON A.author_id=W.author_id) AS C  
GROUP BY C.author_id;
```

```
SELECT P.*, T.num_authors  
FROM paper AS P,  
     ( SELECT AP.paper_id, COUNT(AP.author_id) as num_authors  
       FROM author_paper AS AP  
       GROUP BY AP.paper_id) AS T  
WHERE P.year=2017 AND T.paper_id=P.paper_id  
ORDER BY T.num_authors DESC;
```

```
SELECT P.*  
FROM paper AS P, author AS A  
WHERE P.corresponding_author=A.author_id  
      AND A.first_name='Samuel'  
      AND A.last_name='Kaski';
```

```
SELECT DISTINCT Q.year FROM (SELECT P.* FROM paper AS P, author AS A  
WHERE P.corresponding_author=A.author_id AND A.first_name='Samuel' AND  
A.last_name='Kaski') AS Q;
```

```
SELECT P.*, T.num_authors  
FROM paper AS P,  
     ( SELECT AP.paper_id, COUNT(AP.author_id) as num_authors  
       FROM author_paper AS AP  
       GROUP BY AP.paper_id) AS T  
WHERE T.num_authors>2 AND T.paper_id=P.paper_id ;
```

```
SELECT P.*  
FROM paper AS P, author AS A, author_paper AS AP  
WHERE A.first_name LIKE '%Sam%'
```



```
AND AP.paper_id=P.paper_id
AND AP.author_id=A.author_id;
```

```
SELECT DISTINCT A.*
FROM paper AS P, author AS A, author_paper AS AP
WHERE (P.year= 2011 OR P.year= 2018)
      AND AP.paper_id=P.paper_id
      AND AP.author_id=A.author_id;
```

```
DELETE FROM author WHERE first_name='Samuel' AND last_name='Kaski';
```

```
SELECT A.*
FROM author AS A
      WHERE A.first_name LIKE '%\_%' OR A.last_name LIKE '%\_%';
```

```
update author set first_name=(SELECT REPLACE(first_name, '_', '-')) ;
update author set last_name=(SELECT REPLACE(last_name, '_', '-')) ;
```

```
SELECT * FROM author;
```

```
DESCRIBE paper;
```

```
ALTER TABLE paper CHANGE conference venue VARCHAR(50) NOT NULL;
```

```
DESCRIBE paper;
```

```
ALTER TABLE paper ADD type ENUM('C', 'J', 'W') NOT NULL;
```

```
DESCRIBE paper;
```

```
MariaDB [expert_system_2_libin_n_george]> +-----
+-----+
| paper_id | title |
+-----+-----+
| 10 | |
| 7 | Blind Date: Using Proper Motions to Determine the |
| 6 | BLOG: Probabilistic Models with Unknown Objects. |
| 5 | Inferring Cognitive Models from Data using Approxi |
| 8 | Learning structures of Bayesian networks for varia |
| 3 | Nonconvex finite-sum optimization via SCSG methods |
| 4 | Nonparametric combinatorial sequence models. |
| 9 | Statistical machine learning for HCI |
```

```
| 1 | structured embedding models for grouped data |
| 2 | Topographic factor analysis: A Bayesian model for |
```

```
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

10 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> -> -> -> -> -> -> -> ->

-> Query OK, 9 rows affected (0.07 sec)

Records: 9 Duplicates: 0 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> -> -> -> -> -> -> +-----

```
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

```
| first_name | last_name | paper_count |
```

```
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

```
| M      | Rudolph   | 1 |
| F      | Ruiz      | 1 |
| S      | Athey     | 1 |
| D      | Blei      | 2 |
| J      | Manning   | 1 |
| R      | Ranganath | 1 |
| K      | Norman    | 1 |
| L      | Lei       | 1 |
| C      | Ju        | 1 |
| J      | Chen      | 1 |
| M      | Jordan    | 2 |
| F      | Wauthier  | 1 |
| N      | Jojic     | 1 |
| Antti  | Kangasraasio | 1 |
| Kumariprabha | Athukorala | 1 |
| Andrew | Howes     | 1 |
| Jukka  | Corander  | 1 |
| Samuel | Kaski     | 2 |
| Antti  | Oulasvirta | 1 |
| B      | Milch     | 1 |
| B      | Marthi    | 1 |
| S      | Russell   | 1 |
| D      | Sontag    | 1 |
| D      | Ong       | 1 |
| A      | Kolobov   | 1 |
| Jonathan | Barron    | 1 |
| David  | Hogg      | 1 |
| Dustin | Lang      | 1 |
| Sam    | Roweis    | 1 |
```

Pekka	Parviainen	1
S	Bhadra	0
Samy	Bengio	1
Iulian	Serban	0
Alessandro	Sordoni	0
Ryan	Lowe	0
Laurent	Charlin	0
Joelle	Pineau	0
Aaron	Courville	1
Yoshua	Ben_gio	1
Ian	Goodfellow	1
Jean	Pouget-Abadie	1
Mehdi	Mirza	1
Bing	Xu	1
David	Warde-Farley	1
Sherjil	Ozair	1

+-----+

45 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> -> -> -> -> -> -> +-----
+-----+

paper_id	title	year	conference
corresponding_author	num_authors		

+-----+

5	Inferring Cognitive Models from Data using Approxi	2017	SIGCHI
18	6		
1	structured embedding models for grouped data	2017	NIPS
4	4		
8	Learning structures of Bayesian networks for varia	2017	International Journal of Approximate Reasoning
18	2		

+-----+

3 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> MariaDB [expert_system_2_libin_n_george]>
-> -> -> -> +-----+

paper_id	title	year	conference
corresponding_author			

+-----+

```

+-----+-----+
| 5 | Inferring Cognitive Models from Data using Approxi | 2017 | SIGCHI
| 18 |
| 8 | Learning structures of Bayesian networks for varia | 2017 | International
Journal of Approximate Reasoning | 18 |
+-----+-----+
+-----+-----+

```

2 rows in set (0.00 sec)

```

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> +-----+

```

```

| year |
+-----+
| 2017 |
+-----+

```

1 row in set (0.00 sec)

```

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> MariaDB [expert_system_2_libin_n_george]>

```

```

-> -> -> -> -> +-----+-----+
+-----+-----+-----+-----+
| paper_id | title | year | conference |
corresponding_author | num_authors |
+-----+-----+-----+-----+
+-----+-----+-----+-----+

```

```

| 1 | structured embedding models for grouped data | 2017 | NIPS
| 4 | 4 |
| 2 | Topographic factor analysis: A Bayesian model for | 2014 | PLoS ONE
| 4 | 4 |
| 3 | Nonconvex finite-sum optimization via SCSG methods | 2018 | NIPS
| 8 | 4 |
| 4 | Nonparametric combinatorial sequence models. | 2011 | RECOMB
| 11 | 3 |
| 5 | Inferring Cognitive Models from Data using Approxi | 2017 | SIGCHI
| 18 | 6 |
| 6 | BLOG: Probabilistic Models with Unknown Objects. | 2007 | Statistical
Relational Learning | 23 | 6 |
| 7 | Blind Date: Using Proper Motions to Determine the | 2008 | The
Astronomical Journal | 29 | 4 |
| 10 | | 2014 | NIPS |
40 | 8 |

```

```

+-----+-----+
+-----+-----+
8 rows in set (0.00 sec)

```

```

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> MariaDB [expert_system_2_libin_n_george]>
->  ->  ->  -> +-----+-----+-----+-----+
+-----+-----+-----+-----+
| paper_id | title                                     | year | conference
| corresponding_author |
+-----+-----+-----+-----+
+-----+-----+-----+-----+
|      5 | Inferring Cognitive Models from Data using Approxi | 2017 | SIGCHI
|      18 |
|      7 | Blind Date: Using Proper Motions to Determine the | 2008 | The
Astronomical Journal |      29 |
|      8 | Learning structures of Bayesian networks for varia | 2017 | International
Journal of Approximate Reasoning |      18 |
|      9 | Statistical machine learning for HCI | 2010 | Multimodal Signal
Processing: Theory and Applicati |      32 |
+-----+-----+-----+-----+
+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

```

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> MariaDB [expert_system_2_libin_n_george]>
MariaDB [expert_system_2_libin_n_george]>  ->  ->  ->  -> +-----+
+-----+-----+
| author_id | first_name | last_name |
+-----+-----+-----+
|      8 | L | Lei |
|      9 | C | Ju |
|     10 | J | Chen |
|     11 | M | Jordan |
|     12 | F | Wauthier |
|     13 | N | Jojic |
+-----+-----+-----+
6 rows in set (0.00 sec)

```

```

MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]> ERROR 1451 (23000): Cannot delete or
update a parent row: a foreign key constraint fails
(`expert_system_2_libin_n_george`.`author_paper`, CONSTRAINT
`author_paper_ibfk_2` FOREIGN KEY (`author_id`) REFERENCES `author`
(`author_id`))
#MariaDB [expert_system_2_libin_n_george]> MariaDB
[expert_system_2_libin_n_george]>  ->  -> +-----+-----+-----+

```

```
| author_id | first_name | last_name |
+-----+-----+-----+
|      39 | Yoshua    | Ben_gio   |
+-----+-----+-----+
```

1 row in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.00 sec)

Rows matched: 45 Changed: 0 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> Query OK, 1 row affected (0.03 sec)

Rows matched: 45 Changed: 1 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> +-----+-----+-----+

```
| author_id | first_name | last_name |
+-----+-----+-----+
|      1 | M          | Rudolph   |
|      2 | F          | Ruiz      |
|      3 | S          | Athey     |
|      4 | D          | Blei      |
|      5 | J          | Manning   |
|      6 | R          | Ranganath |
|      7 | K          | Norman    |
|      8 | L          | Lei       |
|      9 | C          | Ju        |
|     10 | J          | Chen      |
|     11 | M          | Jordan    |
|     12 | F          | Wauthier  |
|     13 | N          | Jojic     |
|     14 | Antti      | Kangasraasio |
|     15 | Kumariprabha | Athukorala |
|     16 | Andrew     | Howes     |
|     17 | Jukka      | Corander  |
|     18 | Samuel     | Kaski     |
|     19 | Antti      | Oulasvirta |
|     20 | B          | Milch     |
|     21 | B          | Marthi    |
|     22 | S          | Russell   |
|     23 | D          | Sontag    |
|     24 | D          | Ong       |
|     25 | A          | Kolobov   |
|     26 | Jonathan   | Barron    |
|     27 | David      | Hogg      |
```

28	Dustin	Lang
29	Sam	Roweis
30	Pekka	Parviainen
31	S	Bhadra
32	Samy	Bengio
33	Iulian	Serban
34	Alessandro	Sordoni
35	Ryan	Lowe
36	Laurent	Charlin
37	Joelle	Pineau
38	Aaron	Courville
39	Yoshua	Ben-gio
40	Ian	Goodfellow
41	Jean	Pouget-Abadie
42	Mehdi	Mirza
43	Bing	Xu
44	David	Warde-Farley
45	Sherjil	Ozair

+-----+-----+-----+

45 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> +-----+-----+-----+-----+
+-----+-----+

Field	Type	Null	Key	Default	Extra
paper_id	int(11)	NO	PRI	NULL	auto_increment
title	varchar(50)	NO	UNI	NULL	
year	int(11)	NO		NULL	
conference	varchar(50)	NO		NULL	
corresponding_author	int(11)	NO	MUL	NULL	

+-----+-----+-----+-----+
5 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.07 sec)

Records: 0 Duplicates: 0 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> +-----+-----+-----+-----+
+-----+-----+

Field	Type	Null	Key	Default	Extra
paper_id	int(11)	NO	PRI	NULL	auto_increment

```

| title          | varchar(50) | NO  | UNI | NULL |      |
| year           | int(11)     | NO  |     | NULL |      |
| venue          | varchar(50) | NO  |     | NULL |      |
| corresponding_author | int(11)     | NO  | MUL | NULL |      |
+-----+-----+-----+-----+-----+

```

5 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> Query OK, 0 rows affected (0.45 sec)

Records: 0 Duplicates: 0 Warnings: 0

MariaDB [expert_system_2_libin_n_george]> MariaDB

```

[expert_system_2_libin_n_george]> +-----+-----+-----+
+-----+-----+-----+

```

```

| Field          | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| paper_id       | int(11)       | NO   | PRI | NULL    | auto_increment |
| title          | varchar(50)   | NO   | UNI | NULL    |                |
| year           | int(11)       | NO   |     | NULL    |                |
| venue          | varchar(50)   | NO   |     | NULL    |                |
| corresponding_author | int(11)       | NO   | MUL | NULL    |                |
| type           | enum('C','J','W') | NO   |     | NULL    |                |
+-----+-----+-----+-----+-----+

```

6 rows in set (0.00 sec)

)

C)

```

show tables;
describe author;
describe paper;
describe author_paper;

```

MariaDB [expert_system_2_libin_n_george]> MariaDB

[expert_system_2_libin_n_george]> +-----+-----+-----+-----+-----+-----+

```

| Tables_in_expert_system_2_libin_n_george |
+-----+

```

```

| author          |
| author_paper    |
| paper           |
+-----+

```

3 rows in set (0.00 sec)

```

MariaDB [expert_system_2_libin_n_george]> +-----+-----+-----+-----+
+-----+-----+

```

```

| Field          | Type          | Null | Key | Default | Extra          |

```



```
+-----+-----+-----+-----+-----+-----+
| author_id | int(11)  | NO  | PRI | NULL  | auto_increment |
| first_name | varchar(50) | YES |    | NULL  |                |
| last_name  | varchar(50) | NO  |    | NULL  |                |
+-----+-----+-----+-----+-----+-----+
```

3 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> +-----+-----

```
+-----+-----+-----+-----+
| Field          | Type      | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+
| paper_id       | int(11)   | NO   | PRI | NULL    | auto_increment |
| title          | varchar(50) | NO   | UNI | NULL    |                |
| year           | int(11)   | NO   |    | NULL    |                |
| conference     | varchar(50) | NO   |    | NULL    |                |
| corresponding_author | int(11)   | NO   | MUL | NULL    |                |
+-----+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

MariaDB [expert_system_2_libin_n_george]> +-----+-----+-----+-----

```
+-----+-----+
| Field  | Type  | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| author_id | int(11) | NO  | MUL | NULL    |       |
| paper_id  | int(11) | NO  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+
```

2 rows in set (0.00 sec)