

Database Exercises (1)

MariaDB setting up and exploring the imported database

```

[root@debian12:/home/vagrant# mysql
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 33
Server version: 10.11.6-MariaDB-0+deb12u1 Debian 12

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database |
+-----+
| census   |
| data     |
| elections|
| information_schema |
| mysql    |
| performance_schema |
| sys      |
+-----+
7 rows in set (0.001 sec)

MariaDB [(none)]> USE elections;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
MariaDB [elections]> SHOW TABLES;
+-----+
| Tables_in_elections |
+-----+
| Candidate |
| Party     |
| Ward      |
+-----+
3 rows in set (0.000 sec)

MariaDB [elections]> SELECT * FROM Party;
+-----+
| id | name |
+-----+
| 7 | Conservative |
| 4 | Green |
| 3 | Independent |
| 8 | Independents for Bristol |
| 6 | Labour |
| 2 | Liberal Democrat |
| 9 | Respect |
| 1 | Trade Unionists and Socialists Against Cuts |
| 5 | UKIP |
+-----+
9 rows in set (0.000 sec)

MariaDB [elections]> DESCRIBE Party;
+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+
| id | int(11) | NO | PRI | NULL | auto_increment |
| name | varchar(100) | NO | UNI | NULL | |
+-----+
2 rows in set (0.001 sec)

MariaDB [elections]> █

```

Entity Relationship Diagram

UK Census

Bristol Elections

Finding specific info using joins

- what party does Patrick Dorian Hume belong to?

```
[MariaDB [elections]> SELECT * FROM Candidate WHERE Candidate.name LIKE '%Patrick Dorian Hulme%';
+-----+-----+-----+-----+-----+
| id | name                | party | ward | votes |
+-----+-----+-----+-----+
| 1  | Patrick Dorian Hulme |      1 | 1    | 16    |
+-----+-----+-----+-----+
1 row in set (0.000 sec)
```

```
[MariaDB [elections]> SELECT Candidate.name LIKE '%Patrick Dorian Hulme%';
ERROR 1109 (42S02): Unknown table 'Candidate' in field list
[MariaDB [elections]> SELECT * FROM electorate WHERE Candidate.name LIKE '%Patrick Dorian Hulme%';
ERROR 1146 (42S02): Table 'elections.electorate' doesn't exist
[MariaDB [elections]> SELECT * FROM party WHERE Candidate.name LIKE '%Patrick Dorian Hulme%';
ERROR 1146 (42S02): Table 'elections.party' doesn't exist
[MariaDB [elections]> SELECT * FROM Party WHERE Candidate.name LIKE '%Patrick Dorian Hulme%';
ERROR 1054 (42S22): Unknown column 'Candidate.name' in 'where clause'
[MariaDB [elections]> SELECT Candidate.name AS CandidateName, Party.name AS PartyName
[    -> FROM Candidate
[    -> INNER JOIN Party ON Party.id = Candidate.party
[    -> WHERE Candidate.name LIKE '%Patrick Dorian Hulme%';
+-----+-----+
| CandidateName | PartyName |
+-----+-----+
| Patrick Dorian Hulme | Trade Unionists and Socialists Against Cuts |
+-----+-----+
1 row in set (0.000 sec)
```

```
[MariaDB [elections]>
```

Querying Challenges

1. List the names of all parties that stood in the election, ordered alphabetically by name.

```
MariaDB [elections]> SELECT DISTINCT Party.name AS PartyName
-> FROM Party
-> ORDER BY Party.name ASC;
+-----+
| PartyName |
+-----+
| Conservative |
| Green |
| Independent |
| Independents for Bristol |
| Labour |
| Liberal Democrat |
| Respect |
| Trade Unionists and Socialists Against Cuts |
| UKIP |
+-----+
9 rows in set (0.000 sec)

MariaDB [elections]>
```

2. List the names of all parties that stood in the Bedminster ward.

```
MariaDB [elections]> SELECT DISTINCT Party.name AS PartyName
-> FROM Party
-> INNER JOIN Candidate ON Candidate.party = Party.id
-> INNER JOIN Ward ON Ward.id = Candidate.ward
-> WHERE Ward.name LIKE '%Bedminster%';
+-----+
| PartyName |
+-----+
| Conservative |
| Green |
| Labour |
| Liberal Democrat |
| Trade Unionists and Socialists Against Cuts |
+-----+
5 rows in set (0.001 sec)
```

3. How many votes did Labour get in the Stockwood ward?

- need to SUM the votes for each candidate who is associated with Labour
 - join party and candidate tables to match the party names with candidate votes
 - Candidate.party LIKE '%Labour%'
 - Table list:

```

+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra      |
+-----+-----+-----+-----+-----+
| id    | int(11)   | NO   | PRI | NULL    | auto_increment |
| name  | varchar(100) | NO   | UNI | NULL    |              |
| electorate | int(11)   | NO   |     | NULL    |              |
+-----+-----+-----+-----+-----+
3 rows in set (0.001 sec)

MariaDB [elections]> DESCRIBE Candidate
-> ;
+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra      |
+-----+-----+-----+-----+-----+
| id    | int(11)   | NO   | PRI | NULL    | auto_increment |
| name  | varchar(100) | NO   | UNI | NULL    |              |
| party | int(11)   | YES  | MUL | NULL    |              |
| ward  | int(11)   | YES  | MUL | NULL    |              |
| votes | int(11)   | YES  |     | NULL    |              |
+-----+-----+-----+-----+-----+
5 rows in set (0.001 sec)

MariaDB [elections]> DESCRIBE Party;
+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra      |
+-----+-----+-----+-----+-----+
| id    | int(11)   | NO   | PRI | NULL    | auto_increment |
| name  | varchar(100) | NO   | UNI | NULL    |              |
+-----+-----+-----+-----+-----+
2 rows in set (0.001 sec)

```

```

SELECT SUM(Candidate.votes) AS Votes
FROM Candidate
INNER JOIN Party ON Candidate.party = Party.id
INNER JOIN Ward ON Candidate.ward = Ward.id
WHERE Ward.name LIKE '%Stockwood%' AND Party.name LIKE '%Lab%'
;

```

SOLUTION:

```

+-----+
| Votes |
+-----+
| 855   |
+-----+

```

4. List the names, parties and number of votes obtained for all candidates in the Southville ward. Order the candidates by number of votes obtained descending (winner comes first).

```

SELECT Candidate.name AS Name, Party.name AS PartyName, Candidate.votes
FROM Candidate

```

```

INNER JOIN Ward ON Candidate.ward = Ward.id
INNER JOIN Party ON Candidate.party = Party.id
WHERE Ward.name LIKE '%Southville%'
ORDER BY VotesObtained DESC;

```

OUTPUT:

| Name | PartyName | VotesObtained |
|-----------------------------|---|---------------|
| Charlie Bolton | Green | 1700 |
| Celia Christine Phipps | Labour | 1322 |
| Paul Anthony Turner | UKIP | 402 |
| James Andrew Hale Stevenson | Conservative | 289 |
| Lena Clare Wright | Liberal Democrat | 208 |
| Matthew Edward Carey | Trade Unionists and Socialists Against Cuts | 76 |

6 rows in set (0.001 sec)

5. List the name, party and number of votes obtained for the winner only in the Knowle ward. (Hint: apart from changing the ward name, you only need one small modification to the statement from the last question. You may assume no ties.)

```

SELECT Candidate.name AS Name, Party.name AS PartyName, Candidate.WinningVotes
FROM Candidate
INNER JOIN Ward ON Candidate.ward = Ward.id
INNER JOIN Party ON Candidate.party = Party.id
WHERE Ward.name LIKE '%Knowle%'
ORDER BY WinningVotes DESC
LIMIT 1;

```

OUTPUT:

```

+-----+-----+-----+
| Name          | PartyName          | WinningVotes |
+-----+-----+-----+
| Gary Hopkins  | Liberal Democrat   | 1659         |
+-----+-----+-----+
1 row in set (0.001 sec)

```