Self join

Edinburgh Buses

Details of the database Looking at the data

```
stops(id, name)
route(num, company, pos, stop)
```

stops
id
name

route
num
company
pos
stop

Summary

1. 

How many **stops** are in the database.

```
select count(*)
from stops;
```

Submit SQL restore default

Correct answer

count(*)

246

2. 

Find the **id** value for the stop 'Craiglockhart'

```
select id
from stops
where name = 'Craiglockhart';
```

Submit SQL restore default

Correct answer

id
53

3. 

Give the **id** and the **name** for the **stops** on the '4' 'LRT' service.

```
select s.id, s.name
from stops s
join route r on r.stop = s.id
where r.num = '4' and r.company = 'LRT';
```

Submit SQL restore default

Correct answer

id	name
19	Bingham
177	Northfield
149	London Road
194	Princes Street
115	Haymarket
53	Craiglockhart
179	Oxgangs
85	Fairmilehead
117	Hillend

Routes and stops

4. 

The query shown gives the number of routes that visit either London Road (149) or Craiglockhart (53). Run the query and notice the two services that link these **stops** have a count of 2. Add a HAVING clause to restrict the output to these two routes.

```
SELECT company, num, COUNT(*)
FROM route WHERE stop=149 OR stop=53
GROUP BY company, num
having count(*) = 2;
```

Submit SQL restore default

Correct answer

company	num	COUNT(*)
LRT	4	2
LRT	45	2

5. 

Execute the self join shown and observe that b.stop gives all the places you can get to from Craiglockhart, without changing routes. Change the query so that it shows the services from Craiglockhart to London Road.

```
SELECT a.company, a.num, a.stop, b.stop
FROM route a
JOIN route b ON
  (a.company=b.company AND a.num=b.num)
JOIN stops s on s.id = b.stop
WHERE s.name = 'London Road' and a.stop = 53;
```

Submit SQL restore default

Correct answer

company	num	stop	stop
LRT	4	53	149
LRT	45	53	149

6. 

The query shown is similar to the previous one, however by joining two copies of the **stops** table we can refer to **stops** by **name** rather than by number. Change the query so that the services between 'Craiglockhart' and 'London Road' are shown. If you are tired of these places try 'Fairmilehead' against 'Tollcross'

```
SELECT a.company, a.num, stopa.name, stopb.name
FROM route a
JOIN route b ON
  (a.company=b.company AND a.num=b.num)
JOIN stops stopa ON
  (a.stop=stopa.id)
JOIN stops stopb ON
  (b.stop=stopb.id)
WHERE stopa.name='Craiglockhart' and stopb.name = 'London Road';
```

Submit SQL restore default

Correct answer

company	num	name	name
LRT	4	Craiglockhart	London Road
LRT	45	Craiglockhart	London Road

Using a self join

7. 

Give a list of all the services which connect stops 115 and 137 ('Haymarket' and 'Leith')

```
SELECT distinct a.company, a.num
FROM route a
JOIN route b ON
  (a.company=b.company AND a.num=b.num)
JOIN stops stopa ON
  (a.stop=stopa.id)
JOIN stops stopb ON
```

Submit SQL restore default

Correct answer

company	num
LRT	12
LRT	2
LRT	22
LRT	25
LRT	2A
SMT	C5

8. 

Give a list of the services which connect the **stops** 'Craiglockhart' and 'Tollcross'

```
SELECT distinct a.company, a.num
FROM route a
JOIN route b ON
  (a.company=b.company AND a.num=b.num)
JOIN stops stopa ON
  (a.stop=stopa.id)
JOIN stops stopb ON
  (b.stop=stopb.id)
WHERE stopa.name='Craiglockhart' and stopb.name = 'Tollcross';
```

Submit SQL restore default

Correct answer

company	num
LRT	10
LRT	27
LRT	45
LRT	47

9. 

Give a distinct list of the **stops** which may be reached from 'Craiglockhart' by taking one bus, including 'Craiglockhart' itself, offered by the LRT company. Include the company and bus no. of the relevant services.

```
SELECT distinct stopb.name, a.company, a.num
FROM route a
JOIN route b ON
  (a.company=b.company AND a.num=b.num)
JOIN stops stopa ON
  (a.stop=stopa.id)
JOIN stops stopb ON
  (b.stop=stopb.id)
WHERE stopa.name='Craiglockhart';
```

Submit SQL restore default

Craiglockhart	LRT	45
Colinton	LRT	45
Currie	LRT	45
Riccarton Campus	LRT	45
Canonmills	LRT	47
Hanover Street	LRT	47
Tollcross	LRT	47
Craiglockhart	LRT	47
Colinton	LRT	47
Currie	LRT	47
Balerno	LRT	47
Cockburn Crescent	LRT	47
Balerno Church	LRT	47

10. 

Find the routes involving two buses that can go from **Craiglockhart** to **Lochend**.
Show the bus no. and company for the first bus, the name of the stop for the transfer,
and the bus no. and company for the second bus.

Hint

Self-join twice to find buses that visit Craiglockhart and Lochend, then join those on matching stops.

```
SELECT a.num, a.company, stopc.name, c.num, c.company
FROM route a
JOIN stops stopa ON stopa.id = a.stop and stopa.name='Craiglockhart'
JOIN route b ON b.company=a.company AND b.num=a.num
JOIN stops stopb ON stopb.id = b.stop
JOIN route c ON c.stop = b.stop
```

Submit SQL restore default

45	LRT	Duddingston	46A	LRT
45	LRT	London Road	20	LRT
45	LRT	London Road	34	LRT
45	LRT	London Road	35	LRT
45	LRT	London Road	42	LRT
45	LRT	London Road	46A	LRT
45	LRT	London Road	65	LRT
45	LRT	London Road	87	LRT
45	LRT	London Road	87A	LRT
45	LRT	London Road	C5	SMT
45	LRT	Riccarton Campus	65	LRT
47	LRT	Canonmills	34	LRT
47	LRT	Canonmills	35	LRT

Clear your results

Self join Quiz
