trees.db (`execute` API)

species

code	species
m	maple
p	pine

trees

tree	x	y	species	diameter	priority
A	10	4	m	8	71
B	20	4	m	10	100
C	30	4	p	6	30
D	40	4	p	8	40
E	50	4	m	12	99

```
import sqlite3
c = sqlite3.connect("trees.db")

def query(sql):
    return list(c.execute(sql))
```

What is printed? (if there are no prints, what is returned by the call?)

1
```
query("select * from species")
```

2
```
query("SELECT x, y FROM trees WHERE tree = 'C'")
```

3
```
query("SELECT tree FROM trees")
```

4
```
query("SELECT species FROM trees ORDER BY priority DESC")
```

5
```
query("SELECT tree, priority FROM trees " +
      "ORDER BY priority DESC LIMIT 1")[0]
```

6
```
query("""SELECT COUNT(SPECIES) AS c1,
                COUNT(DISTINCT SPECIES) as C2
           FROM trees""")
```

7
```
query("""SELECT species, COUNT(SPECIES) AS count,
                AVG(diameter) AS size
           FROM trees
           GROUP BY species ORDER BY count DESC""")
```

fire.db (`read_sql` API)

```
import sqlite3
import pandas as pd

c = sqlite3.connect("fire.db")

def query(sql):
    return pd.read_sql(sql, c)
```

hydrants

idx	year	color	style	owner	alt	active
1	1999	red	K-81	private	1179	0
2	2000	red	M-3	public	1065	0
3	2001	green	Pacer	private	1058	1
4	2010	blue	Pacer	public	1081	1
5	2014	blue	Pacer	public	1052	1
6	2018	blue	Pacer	public	1109	1

---

8 query("**SELECT** color, year **FROM** hydrants **WHERE** color = 'blue' ")

9
```
df = query("SELECT color, year FROM hydrants")
df[df.color == "blue"]
```

10 query("**SELECT** idx **FROM** hydrants **WHERE** owner='private' AND active")

11
```
df = query("SELECT year, style, active FROM hydrants")
df[df.active == 1]["style"]
```

12 query("**SELECT** color, COUNT(*) **FROM** hydrants **GROUP BY** color")

13
```
query("""SELECT color, COUNT(*) FROM hydrants
         WHERE active GROUP BY color""")
```

14
```
query("""SELECT color, COUNT(*) AS count FROM hydrants
         GROUP BY color HAVING count > 1""")
```

15
```
query("""SELECT color, COUNT(*) AS count
         FROM hydrants WHERE year >= 2000
         GROUP BY color HAVING count < 2""")
```