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("worksheet.db")

def qry(sql):
    return pd.read_sql(sql, c)

species = qry("SELECT * FROM species")
trees = qry("SELECT * FROM trees")
```

1 `trees[trees["priority"] > 90][["x", "y"]]` # convert to SQL

2 qry("**SELECT** x+y **FROM** trees **WHERE** species = 'm'") # convert to Pandas

3
```
cd = species["code"][species["species"]=="maple"].iloc[0]
trees[trees["species"] == cd]["tree"] # convert to 2 SQL queries
```

4 qry("**SELECT** species **FROM** trees **ORDER BY** priority DESC")

species

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trees

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```
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species = qry("SELECT * FROM species")
trees = qry("SELECT * FROM trees")
```

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

6
```
qry("""SELECT COUNT(SPECIES) AS c1,
              COUNT(DISTINCT SPECIES) as c2
       FROM trees""")
```

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

hydrants

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

```
hydrants = qry("""
    SELECT * FROM hydrants
""")
```

8
```
qry("SELECT color, year FROM hydrants WHERE color = 'blue' ")
```

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

10
```
qry("SELECT year FROM hydrants WHERE owner='private' AND active")
```

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

hydrants

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

```
hydrants = qry("""
    SELECT * FROM hydrants
""")
```

12 hydrants["color"].value_counts() # convert to SQL

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

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

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