

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")`

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5

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```
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"]`

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```
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""")`