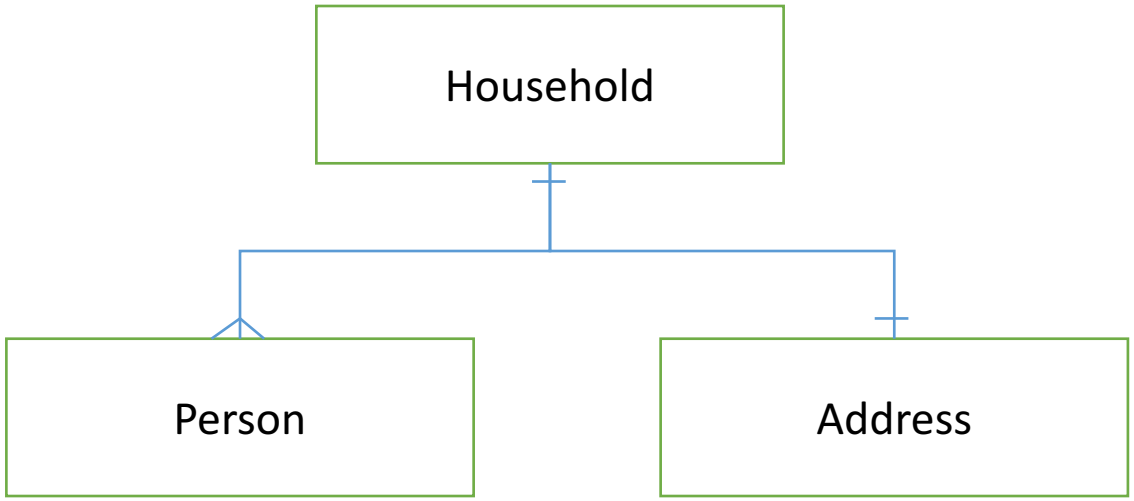
Database & Relational Data

A Model: Entity Relations



- A “Household” has one or more “Person”
- A “Household” has exactly 1 ”Address”
- An “Address” belongs to exactly 1 “Household”

Creating a database

```
import sqlite3
query = """
    CREATE TABLE test
        (a VARCHAR(20), b VARCHAR(20),
         c REAL, d INTEGER );"""
con = sqlite3.connect(':memory:')
con.execute(query)
con.commit()
```

Inserting data to a database

```
data = [('Atlanta', 'Georgia', 1.25, 6),
('Tallahassee', 'Florida', 2.6, 3),
('Sacramento', 'California', 1.7, 5)]

stmt = "INSERT INTO test VALUES(?, ?, ?, ?)"

con.executemany(stmt, data) con.commit()
```

Finding data in a database

```
cursor = con.execute('select * from test')

rows = cursor.fetchall()
```

In [580]: rows
Out[580]:
[(u'Atlanta', u'Georgia', 1.25, 6),
(u'Tallahassee', u'Florida', 2.6, 3), (u'Sacramento', u'California', 1.7, 5)]

Creating a DataFrame

```
rows = cursor.fetchall()
```

In [580]: rows
Out[580]:
[(u'Atlanta', u'Georgia', 1.25, 6),
(u'Tallahassee', u'Florida', 2.6, 3), (u'Sacramento', u'California', 1.7, 5)]

Finding data in a database

```
DataFrame(rows, columns=zip(*cursor.description)[0])
```

```
In [582]: DataFrame(rows, columns=zip(*cursor.description)[0])
Out[582]:
             a           b     c  d
0      Atlanta     Georgia  1.25  6
1  Tallahassee     Florida  2.60  3
2   Sacramento  California  1.70  5
```