Announcements
● Project 1 out today, part 1 due 3/19, part 2 due 3/26.
  ○ Get started early! Don’t put it off!
  ○ You can work in pairs.
  ○ Vocareum is not Google Docs. You cannot both work on the assignment at the same time and have both people’s work be saved.

● Next week:
  ○ No class Wednesday (Wellness day)
  ○ No labs Wednesday or Thursday
  ○ No office hours Tuesday or Wednesday
Joins
## Joining Two Tables

The function `drinks.join('Cafe', discounts, 'Location')` is used to join two tables, `drinks` and `discounts`, based on matching values in the `Cafe` column of `drinks` and the `Drink` column of `discounts`. The joined column is sorted automatically. The general form of the `join` operation is `table.join(column1, other_table, column2)`.

**Drinks Table**

<table>
<thead>
<tr>
<th>Drink</th>
<th>Cafe</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk tea</td>
<td>Panda Tea</td>
<td>4</td>
</tr>
<tr>
<td>Espresso</td>
<td>Gimme</td>
<td>2</td>
</tr>
<tr>
<td>Latte</td>
<td>Gimme</td>
<td>3</td>
</tr>
<tr>
<td>Espresso</td>
<td>Cafe Gola</td>
<td>2</td>
</tr>
</tbody>
</table>

**Discounts Table**

<table>
<thead>
<tr>
<th>Cafe</th>
<th>Drink</th>
<th>Price</th>
<th>Coupon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gimme</td>
<td>Espresso</td>
<td>2</td>
<td>50%</td>
</tr>
<tr>
<td>Gimme</td>
<td>Espresso</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>Gimme</td>
<td>Latte</td>
<td>3</td>
<td>50%</td>
</tr>
<tr>
<td>Gimme</td>
<td>Latte</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>Panda Tea</td>
<td>Milk Tea</td>
<td>4</td>
<td>25%</td>
</tr>
</tbody>
</table>

**Description**

- Keep all rows in the table that have a match.
- ... for the value in this column.
- ... somewhere in this other table's ...
- ... column that contains matching values.

**Notes**

- The joined column is sorted automatically.
- Keep all rows in the table that have a match.

**Demo**

Keep all rows in the table that have a match ...
Bikes
Citibike

A bikesharing program in New York City. Bikes taken/returned to docks around the city.

All kinds of data available at https://www.citibikenyc.com/system-data.
Maps
Maps

A table containing columns of latitude and longitude values can be used to generate a map of markers

```
.map_table(table, ...)  
```

Either **Marker** or **Circle**

- Column 0: latitudes
- Column 1: longitudes
- Column 2: labels
- Column 3: colors
- Column 4: sizes

Applies to all features:
- color='blue'
- size=200