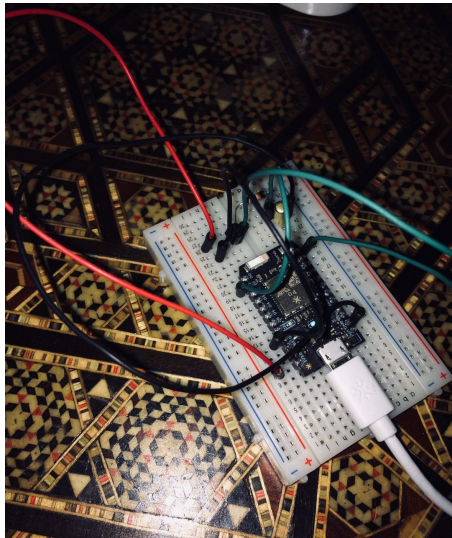**Approach**

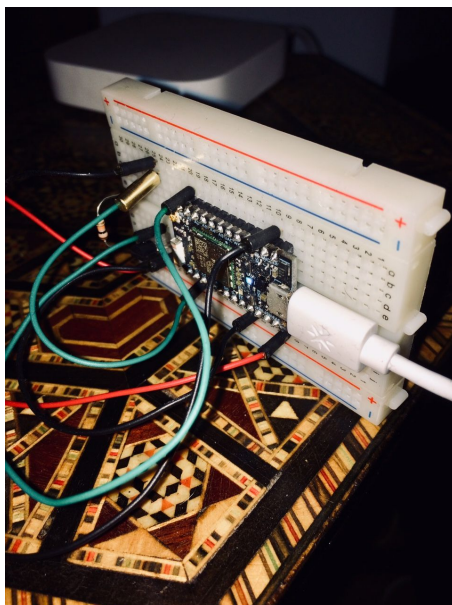Using Particle Photon, I brought two sensors online:

Temp sensor
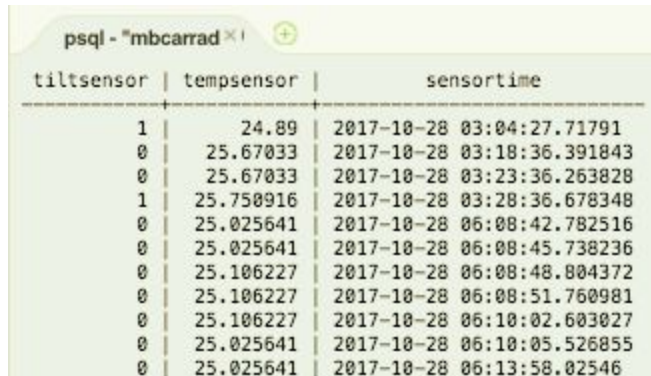Used to track temperatures in my living room.

Tilt ball sensor
Used as a binary flag to track the amount of time I was together (and conscious) with my partner. The breadboard hosting the sensor was manually tilted on its side to report a value of 1 (together) or placed flat to report a value of 0 (not together).
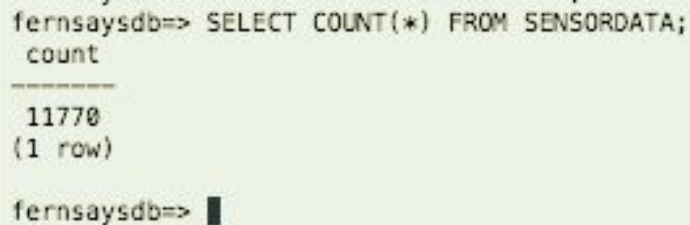
Process

The sensors were programmed to write data every 5 minutes into an Amazon EC2-hosted PostgreSQL database.


```
psql - "mbcarrad ×

tiltsensor | tempsensor |         sensortime
-----------+------------+------------------------------
        1  |     24.89  | 2017-10-28 03:04:27.71791
        0  |  25.67033  | 2017-10-28 03:18:36.391843
        0  |  25.67033  | 2017-10-28 03:23:36.263828
        1  | 25.750916  | 2017-10-28 03:28:36.678348
        0  | 25.025641  | 2017-10-28 06:08:42.782516
        0  | 25.025641  | 2017-10-28 06:08:45.738236
        0  | 25.106227  | 2017-10-28 06:08:48.804372
        0  | 25.106227  | 2017-10-28 06:08:51.760981
        0  | 25.106227  | 2017-10-28 06:10:02.603027
        0  | 25.025641  | 2017-10-28 06:10:05.526855
        0  | 25.025641  | 2017-10-28 06:13:58.02546
```
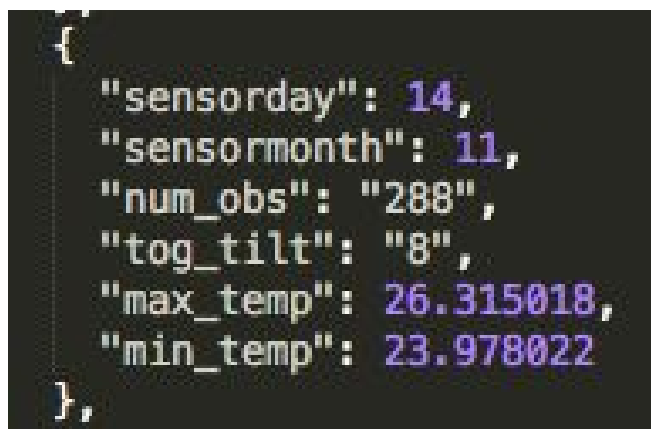
To date, over 10,000 rows have been written.


```
fernsaysdb=> SELECT COUNT(*) FROM SENSORDATA;
 count
-------
 11770
(1 row)

fernsaysdb=> █
```

This resulted in 288 daily observations (1440\5). Tog_tilt shows "8" below. Knowing that data is being queried and written every 5 minutes, this means I spent a total of 40 (8*5) conscious minutes with my partner on November 14. Temperature max and mins (in Celsius) were aggregated in the SQL query.

```json
{
    "sensorday": 14,
    "sensormonth": 11,
    "num_obs": "288",
    "tog_tilt": "8",
    "max_temp": 26.315018,
    "min_temp": 23.978022
},
```

Results

Temperatures were converted from Celsius to Fahrenheit in the reporting layer. Querying for max and min temperatures is a good validation technique as we can easily spot the data integrity issues below in the min temp visualization. If I rolled the values up to averages, these abnormal readings would be unseen and buried in an average value.
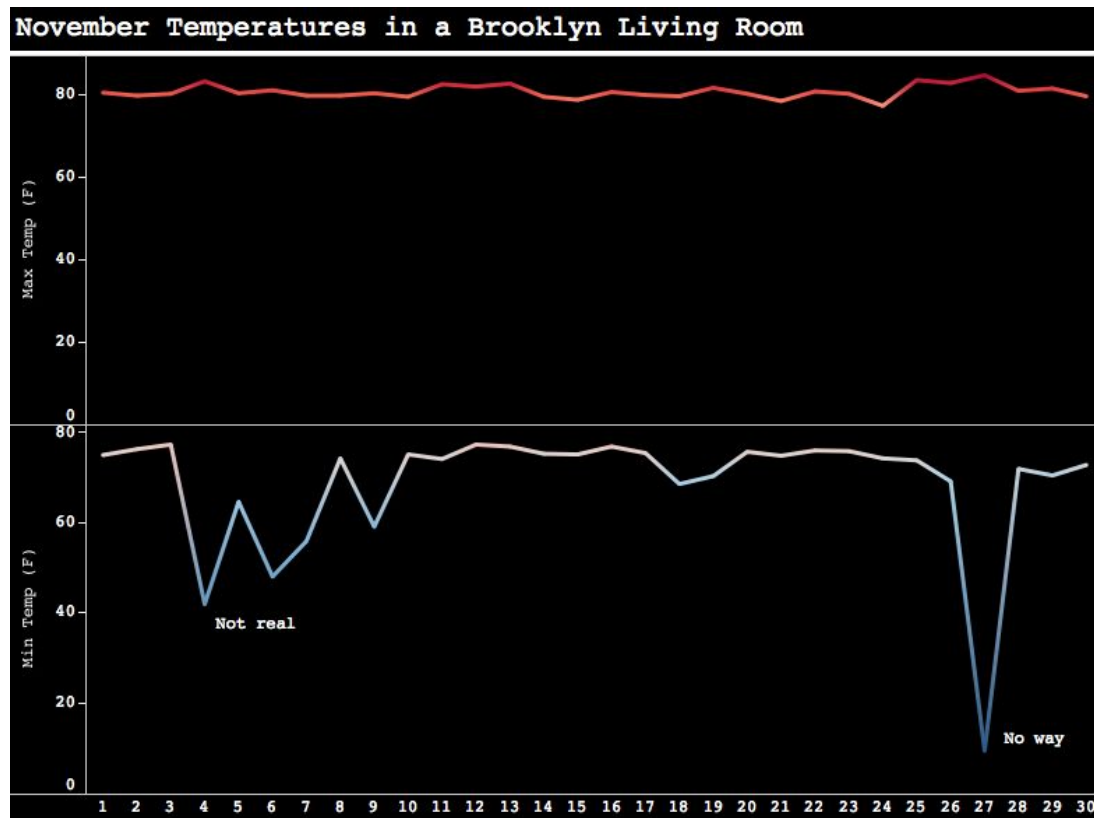
Tilt ball data was rolled up from minutes to hours in the reporting layer.
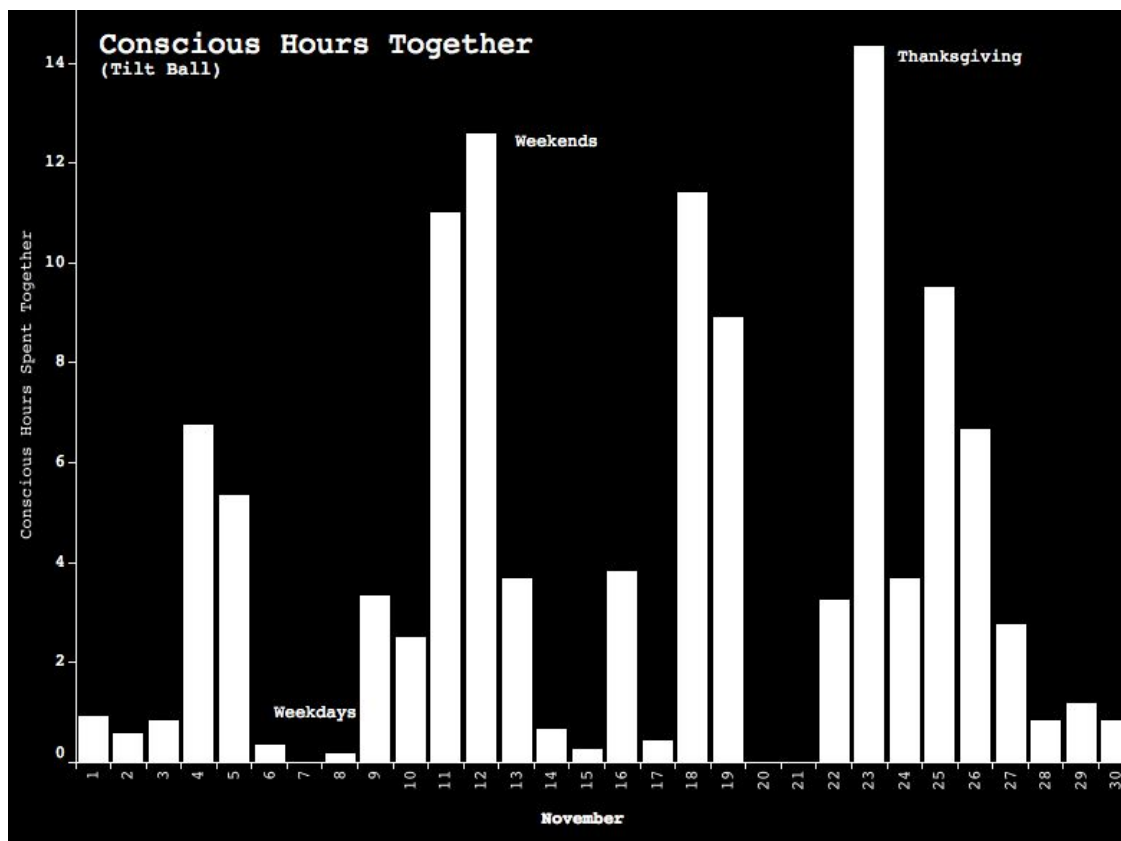
Days were rolled up to weekdays and weekends\holiday in the reporting layer.