

## OUTPUT

```
/Library/Frameworks/Python.framework/Versions/3.6/bin/python3.6  
/Assignment_AIML/restaurent_visitor.py
```

```
-----air_store_info.csv data-----
```

|   | air_store_id         | air_genre_name | air_area_name \              |
|---|----------------------|----------------|------------------------------|
| 0 | air_0f0cdeee6c9bf3d7 | Italian/French | Hyōgo-ken Kōbe-shi Kumoidōri |
| 1 | air_7cc17a324ae5c7dc | Italian/French | Hyōgo-ken Kōbe-shi Kumoidōri |
| 2 | air_fee8dcf4d619598e | Italian/French | Hyōgo-ken Kōbe-shi Kumoidōri |

|   | latitude  | longitude  |
|---|-----------|------------|
| 0 | 34.695124 | 135.197852 |
| 1 | 34.695124 | 135.197852 |
| 2 | 34.695124 | 135.197852 |

```
-----
```

```
-----air_reserve.csv data-----
```

|   | air_store_id         | visit_datetime | reserve_datetime | reserve_visitors |
|---|----------------------|----------------|------------------|------------------|
| 0 | air_877f79706adbfb06 | 1/1/2016 19:00 | 1/1/2016 16:00   | 1                |
| 1 | air_db4b38ebe7a7ceff | 1/1/2016 19:00 | 1/1/2016 19:00   | 3                |
| 2 | air_db4b38ebe7a7ceff | 1/1/2016 19:00 | 1/1/2016 19:00   | 6                |

```
-----
```

```
-----air_visit_data.csv data-----
```

|   | air_store_id         | visit_date | visitors |
|---|----------------------|------------|----------|
| 0 | air_ba937bf13d40fb24 | 2016-01-13 | 25       |
| 1 | air_ba937bf13d40fb24 | 2016-01-14 | 32       |
| 2 | air_ba937bf13d40fb24 | 2016-01-15 | 29       |

```
-----
```

```
-----hpg_store_info.csv data-----
```

|   | hpg_store_id         | hpg_genre_name | hpg_area_name \               |
|---|----------------------|----------------|-------------------------------|
| 0 | hpg_6622b62385aec8bf | Japanese style | Tōkyō-to Setagaya-ku Taishidō |
| 1 | hpg_e9e068dd49c5fa00 | Japanese style | Tōkyō-to Setagaya-ku Taishidō |
| 2 | hpg_2976f7acb4b3a3bc | Japanese style | Tōkyō-to Setagaya-ku Taishidō |

|   | latitude  | longitude  |
|---|-----------|------------|
| 0 | 35.643675 | 139.668221 |
| 1 | 35.643675 | 139.668221 |

2 35.643675 139.668221

-----hpg\_reserve.csv data-----

|   | hpg_store_id         | visit_datetime      | reserve_datetime \  |
|---|----------------------|---------------------|---------------------|
| 0 | hpg_c63f6f42e088e50f | 2016-01-01 11:00:00 | 2016-01-01 09:00:00 |
| 1 | hpg_dac72789163a3f47 | 2016-01-01 13:00:00 | 2016-01-01 06:00:00 |
| 2 | hpg_c8e24dcf51ca1eb5 | 2016-01-01 16:00:00 | 2016-01-01 14:00:00 |

|   | reserve_visitors |
|---|------------------|
| 0 | 1                |
| 1 | 3                |
| 2 | 2                |

-----date\_info.csv data-----

|   | calendar_date | day_of_week | holiday_flg |
|---|---------------|-------------|-------------|
| 0 | 2016-01-01    | Friday      | 1           |
| 1 | 2016-01-02    | Saturday    | 1           |
| 2 | 2016-01-03    | Sunday      | 1           |

-----store\_id\_relation.csv data-----

|   | air_store_id         | hpg_store_id         |
|---|----------------------|----------------------|
| 0 | air_63b13c56b7201bd9 | hpg_4bc649e72e2a239a |
| 1 | air_a24bf50c3e90d583 | hpg_c34b496d0305a809 |
| 2 | air_c7f78b4f3cba33ff | hpg_cd8ae0d9bbd58ff9 |

-----sample\_submission.csv data-----

|   | id                              | visitors |
|---|---------------------------------|----------|
| 0 | air_00a91d42b08b08d9_2017-04-23 | 0        |
| 1 | air_00a91d42b08b08d9_2017-04-24 | 0        |
| 2 | air_00a91d42b08b08d9_2017-04-25 | 0        |

-----Check for NaN-----

air\_store\_id 0  
air\_genre\_name 0

```

air_area_name  0
latitude      0
longitude     0
dtype: int64
air_store_id   0
visit_datetime 0
reserve_datetime 0
reserve_visitors 0
dtype: int64
air_store_id   0
visit_date     0
visitors      0
dtype: int64
hpg_store_id   0
hpg_genre_name 0
hpg_area_name  0
latitude      0
longitude     0
dtype: int64
hpg_store_id   0
visit_datetime 0
reserve_datetime 0
reserve_visitors 0
dtype: int64
calendar_date  0
day_of_week    0
holiday_flg    0
dtype: int64
air_store_id   0
hpg_store_id   0
dtype: int64
id            0
visitors      0
dtype: int64

```

```

-----
      air_store_id visit_date visitors
0 air_ba937bf13d40fb24 2016-01-13    25
1 air_ba937bf13d40fb24 2016-01-14    32
2 air_ba937bf13d40fb24 2016-01-15    29

```

-----Merged air\_visit\_data.csv and date\_info.csv data -----

```

      air_store_id visit_date visitors day_of_week holiday_flg \
0 air_ba937bf13d40fb24 2016-01-13 3.258097 Wednesday      0

```

|   |                      |            |          |          |   |
|---|----------------------|------------|----------|----------|---|
| 1 | air_ba937bf13d40fb24 | 2016-01-14 | 3.496508 | Thursday | 0 |
| 2 | air_ba937bf13d40fb24 | 2016-01-15 | 3.401197 | Friday   | 0 |
| 3 | air_ba937bf13d40fb24 | 2016-01-16 | 3.135494 | Saturday | 0 |
| 4 | air_ba937bf13d40fb24 | 2016-01-18 | 1.945910 | Monday   | 0 |
| 5 | air_ba937bf13d40fb24 | 2016-01-19 | 2.302585 | Tuesday  | 0 |

|   | weight       |
|---|--------------|
| 0 | 4.008143e-11 |
| 1 | 6.488491e-11 |
| 2 | 1.016026e-10 |
| 3 | 1.545580e-10 |
| 4 | 3.323401e-10 |
| 5 | 4.722912e-10 |

-----Merged air\_visit\_data.csv and air\_store\_info.csv data -----

|   | air_store_id         | visit_date | visitors | day_of_week | holiday_flg \ |
|---|----------------------|------------|----------|-------------|---------------|
| 0 | air_ba937bf13d40fb24 | 2016-01-13 | 3.258097 | Wednesday   | 0             |
| 1 | air_ba937bf13d40fb24 | 2016-01-14 | 3.496508 | Thursday    | 0             |
| 2 | air_ba937bf13d40fb24 | 2016-01-15 | 3.401197 | Friday      | 0             |

|   | weight       | air_genre_name |
|---|--------------|----------------|
| 0 | 4.008143e-11 | Dining bar     |
| 1 | 6.488491e-11 | Dining bar     |
| 2 | 1.016026e-10 | Dining bar     |

-----Merged hpg\_reserve.csv and air\_store\_info.csv data -----

|   | visit_datetime      | reserve_datetime    | reserve_visitors \ |
|---|---------------------|---------------------|--------------------|
| 0 | 2016-01-01 19:00:00 | 2016-01-01 15:00:00 | 4                  |
| 1 | 2016-01-02 19:00:00 | 2016-01-02 14:00:00 | 2                  |
| 2 | 2016-01-03 18:00:00 | 2016-01-02 20:00:00 | 6                  |

|   | air_store_id         |
|---|----------------------|
| 0 | air_db80363d35f10926 |
| 1 | air_db80363d35f10926 |
| 2 | air_db80363d35f10926 |

-----Merged air\_reserve.csv and hpg\_reserve.csv data -----

| air_store_id | reserve_datetime | reserve_visitors \ |
|--------------|------------------|--------------------|
|--------------|------------------|--------------------|

|   |                      |                     |   |
|---|----------------------|---------------------|---|
| 0 | air_877f79706adbfb06 | 2016-01-01 16:00:00 | 1 |
| 1 | air_db4b38ebe7a7ceff | 2016-01-01 19:00:00 | 3 |
| 2 | air_db4b38ebe7a7ceff | 2016-01-01 19:00:00 | 6 |

```

visit_datetime
0 2016-01-01 19:00:00
1 2016-01-01 19:00:00
2 2016-01-01 19:00:00

```

-----Submission data -----

|   | id                   | visitors | visit_date | day_of_week | \                 |
|---|----------------------|----------|------------|-------------|-------------------|
| 0 | air_00a91d42b08b08d9 |          | 2017-04-23 | 0           | 2017-04-23 Sunday |
| 1 | air_0164b9927d20bcc3 |          | 2017-04-23 | 0           | 2017-04-23 Sunday |
| 2 | air_0241aa3964b7f861 |          | 2017-04-23 | 0           | 2017-04-23 Sunday |

|   | holiday_flg | weight   | air_store_id         |
|---|-------------|----------|----------------------|
| 0 | 0           | 0.608825 | air_00a91d42b08b08d9 |
| 1 | 0           | 0.608825 | air_0164b9927d20bcc3 |
| 2 | 0           | 0.608825 | air_0241aa3964b7f861 |

There are 829 different stores in the visits data  
There are 333 different stores in the reservations data  
There are 821 different stores in the submission data

gr1 data frame

| air_store_id         | day_of_week | holiday_flg | weight   |
|----------------------|-------------|-------------|----------|
| air_00a91d42b08b08d9 | Friday      | 0           | 3.584848 |
|                      | Monday      | 0           | 3.223477 |
|                      |             | 1           | 3.091042 |
|                      | Saturday    | 0           | 2.505912 |
|                      | Sunday      | 0           | 1.098612 |

| air_store_id         | day_of_week | holiday_flg | visitors | weight   |
|----------------------|-------------|-------------|----------|----------|
| air_00a91d42b08b08d9 | Friday      | 0           | 0        | 0.808132 |
|                      |             | 1           | 0        | 0.715058 |
|                      | Monday      | 0           | 0        | 0.786922 |

-----

-----

32019

id 0  
visit\_date 0  
day\_of\_week 0  
holiday\_flg 0  
weight 0  
air\_store\_id 0  
visitors 668  
dtype: int64

-----

-----Filled NaN using store\_id and day\_of\_week-----

|                      |             | visitors | holiday_flg | weight   |
|----------------------|-------------|----------|-------------|----------|
| air_store_id         | day_of_week |          |             |          |
| air_00a91d42b08b08d9 | Friday      | 3.595110 | 0.000000    | 0.137009 |
|                      | Monday      | 3.056744 | 0.028571    | 0.131200 |
|                      | Saturday    | 2.505629 | 0.000000    | 0.128220 |
|                      | Sunday      | 1.098612 | 0.000000    | 0.064359 |
|                      | Thursday    | 3.401823 | 0.000000    | 0.143083 |

-----

-----Merged data-----

|   | id                   | visit_date  | day_of_week | holiday_flg | \ |
|---|----------------------|-------------|-------------|-------------|---|
| 0 | air_00a91d42b08b08d9 | _2017-04-23 | 2017-04-23  | Sunday      | 0 |
| 1 | air_0164b9927d20bcc3 | _2017-04-23 | 2017-04-23  | Sunday      | 0 |
| 2 | air_0241aa3964b7f861 | _2017-04-23 | 2017-04-23  | Sunday      | 0 |

  

|   | weight   | air_store_id         | visitors_x | visitors_y |
|---|----------|----------------------|------------|------------|
| 0 | 0.608825 | air_00a91d42b08b08d9 | 1.098612   | 1.098612   |
| 1 | 0.608825 | air_0164b9927d20bcc3 | NaN        | NaN        |
| 2 | 0.608825 | air_0241aa3964b7f861 | 2.214267   | 2.341995   |

-----

32019

id 0  
visit\_date 0  
day\_of\_week 0

```
holiday_flg    0
weight         0
air_store_id   0
visitors_x     341
visitors_y     341
dtype: int64
```

-----

-----Filled NaN using store\_id-----

```
visitors holiday_flg weight
air_store_id
air_00a91d42b08b08d9 3.167414 0.004310 0.133653
air_0164b9927d20bcc3 2.117522 0.026846 0.197747
air_0241aa3964b7f861 2.236649 0.032828 0.081408
air_0328696196e46f18 1.966041 0.034483 0.166813
air_034a3d5b40d5b1b1 2.457141 0.047809 0.140520
```

-----

-----Submission data-----

```
id visit_date day_of_week holiday_flg \
0 air_00a91d42b08b08d9_2017-04-23 2017-04-23 Sunday 0
1 air_0164b9927d20bcc3_2017-04-23 2017-04-23 Sunday 0
2 air_0241aa3964b7f861_2017-04-23 2017-04-23 Sunday 0
```

```
weight air_store_id visitors
0 0.608825 air_00a91d42b08b08d9 1.098612
1 0.608825 air_0164b9927d20bcc3 2.117522
2 0.608825 air_0241aa3964b7f861 2.214267
```

-----

```
32019
id      0
visit_date  0
day_of_week  0
holiday_flg  0
weight      0
air_store_id  0
visitors    0
dtype: int64
```

-----

-----Result-----

visitors

id

air\_00a91d42b08b08d9\_2017-04-23 2.000000  
air\_0164b9927d20bcc3\_2017-04-23 7.310516  
air\_0241aa3964b7f861\_2017-04-23 8.154696  
air\_0328696196e46f18\_2017-04-23 8.221349  
air\_034a3d5b40d5b1b1\_2017-04-23 26.193425  
air\_036d4f1ee7285390\_2017-04-23 18.233564  
air\_0382c794b73b51ad\_2017-04-23 36.679000  
air\_03963426c9312048\_2017-04-23 16.503911  
air\_04341b588bde96cd\_2017-04-23 39.212767  
air\_049f6d5b402a31b2\_2017-04-23 2.979078  
air\_04cae7c1bc9b2a0b\_2017-04-23 18.209367  
air\_0585011fa179bcce\_2017-04-23 4.020074  
air\_05c325d315cc17f5\_2017-04-23 27.736457  
air\_0647f17b4dc041c8\_2017-04-23 51.805938  
air\_064e203265ee5753\_2017-04-23 24.645225  
air\_066f0221b8a4d533\_2017-04-23 4.748777  
air\_06f95ac5c33aca10\_2017-04-23 9.563454  
air\_0728814bd98f7367\_2017-04-23 9.092506  
air\_0768ab3910f7967f\_2017-04-23 20.378386  
air\_07b314d83059c4d2\_2017-04-23 53.363816  
air\_07bb665f9cdfbdfb\_2017-04-23 14.722590  
air\_082908692355165e\_2017-04-23 6.174684  
air\_083ddc520ea47e1e\_2017-04-23 19.541531  
air\_0845d8395f30c6bb\_2017-04-23 18.342771  
air\_084d98859256acf0\_2017-04-23 1.774972  
air\_0867f7bebad6a649\_2017-04-23 20.550150  
air\_08ba8cd01b3ba010\_2017-04-23 13.760151  
air\_08cb3c4ee6cd6a22\_2017-04-23 15.600914  
air\_08ef81d5b7a0d13f\_2017-04-23 3.604947  
air\_08f994758a1e76d4\_2017-04-23 8.643456  
...  
air\_f6b2489ccf873c3b\_2017-05-31 15.189451  
air\_f6bfd27e2e174d16\_2017-05-31 12.001173  
air\_f6cdf7b7fdc6d78\_2017-05-31 6.274068  
air\_f8233ad00755c35c\_2017-05-31 40.779368  
air\_f85e21e543cf44f2\_2017-05-31 3.403728  
air\_f88898cd09f40496\_2017-05-31 6.564836  
air\_f911308e19d64236\_2017-05-31 26.583771  
air\_f9168b23fdcf1e52\_2017-05-31 17.010831  
air\_f927b2da69a82341\_2017-05-31 24.000000  
air\_f957c6d6467d4d90\_2017-05-31 6.778120  
air\_f96765e800907c77\_2017-05-31 55.563300  
air\_fa12b40b02fecfd8\_2017-05-31 9.853709



```

air_fa4ffc9057812fa2_2017-05-31 4.714464
air_fab092c35776a9b1_2017-05-31 11.117027
air_fb44f566d4f64a4e_2017-05-31 17.194034
air_fbadf737162a5ce3_2017-05-31 14.315238
air_fc477473134e9ae5_2017-05-31 11.329959
air_fcd4492c83f1c6b9_2017-05-31 19.335625
air_fcfbdcf7b1f82c6e_2017-05-31 40.386821
air_fd154088b1de6fa7_2017-05-31 4.783228
air_fd6aac1043520e83_2017-05-31 37.975081
air_fdc02ec4a3d21ea4_2017-05-31 6.955057
air_fdcfef8bd859f650_2017-05-31 3.897188
air_fe22ef5a9cbef123_2017-05-31 21.871975
air_fe58c074ec1445ea_2017-05-31 27.588161
air_fea5dc9594450608_2017-05-31 14.775094
air_fee8dcf4d619598e_2017-05-31 22.670421
air_fef9ccb3ba0da2f7_2017-05-31 6.609633
air_ffcc2d5087e1b476_2017-05-31 22.834023
air_fff68b929994bfbfbd_2017-05-31 3.608247

```

[32019 rows x 1 columns]

-----

-----Submission data by id-----

|      | id                   | visit_date | day_of_week | holiday_flg \ |   |
|------|----------------------|------------|-------------|---------------|---|
| 0    | air_00a91d42b08b08d9 | 2017-04-23 | 2017-04-23  | Sunday        | 0 |
| 821  | air_00a91d42b08b08d9 | 2017-04-24 | 2017-04-24  | Monday        | 0 |
| 1642 | air_00a91d42b08b08d9 | 2017-04-25 | 2017-04-25  | Tuesday       | 0 |
| 2463 | air_00a91d42b08b08d9 | 2017-04-26 | 2017-04-26  | Wednesday     | 0 |
| 3284 | air_00a91d42b08b08d9 | 2017-04-27 | 2017-04-27  | Thursday      | 0 |
| 4105 | air_00a91d42b08b08d9 | 2017-04-28 | 2017-04-28  | Friday        | 0 |
| 4926 | air_00a91d42b08b08d9 | 2017-04-29 | 2017-04-29  | Saturday      | 0 |
| 5747 | air_00a91d42b08b08d9 | 2017-04-30 | 2017-04-30  | Sunday        | 0 |
| 6568 | air_00a91d42b08b08d9 | 2017-05-01 | 2017-05-01  | Monday        | 0 |
| 7389 | air_00a91d42b08b08d9 | 2017-05-02 | 2017-05-02  | Tuesday       | 0 |

|      | weight   | air_store_id         | visitors  |
|------|----------|----------------------|-----------|
| 0    | 0.608825 | air_00a91d42b08b08d9 | 2.000000  |
| 821  | 0.617134 | air_00a91d42b08b08d9 | 24.115296 |
| 1642 | 0.625539 | air_00a91d42b08b08d9 | 27.819471 |
| 2463 | 0.634041 | air_00a91d42b08b08d9 | 27.795590 |
| 3284 | 0.642640 | air_00a91d42b08b08d9 | 31.828997 |
| 4105 | 0.651338 | air_00a91d42b08b08d9 | 35.047890 |
| 4926 | 0.660135 | air_00a91d42b08b08d9 | 11.254733 |

|      |          |                      |           |
|------|----------|----------------------|-----------|
| 5747 | 0.669033 | air_00a91d42b08b08d9 | 2.000000  |
| 6568 | 0.678031 | air_00a91d42b08b08d9 | 24.115296 |
| 7389 | 0.687132 | air_00a91d42b08b08d9 | 27.819471 |

-----

Process finished with exit code 0