```
Last login: Tue Feb 15 18:36:44 on ttys001
(base) AATLs-MacBook-Air-8:~ markbraxton$ cd Desktop
(base) AATLs-MacBook-Air-8:Desktop markbraxton$ cd py4e
(base) AATLs-MacBook-Air-8:py4e markbraxton$ ls
New_Content      RaNDUM Folder    emaildb.sqbpro    example.db
(base) AATLs-MacBook-Air-8:py4e markbraxton$ cd New_Content/
(base) AATLs-MacBook-Air-8:New_Content markbraxton$ ls
Boston.csv
CodeWars
Ex_1_Chapter_1.py
File2.py
INNHotelsGroup.csv
Learner+Notebook+-+Project_Classification_ML.ipynb
Learners_Notebook_Boston_house_price.ipynb
MarkBraxtonMachineLearning.py
Strings
Untitled
Untitled.ipynb
dic_ex_1.py
dicesim.py
dict_ex_03.py
dict_ex_2.py
download.txt
emaildb.sqlite
factorialfunction.py
fileupper.py
fizz.buzz.py
function_area.py
iterations.py
lamdafunctions.py
mbox-short.txt
mbox-short.txt.webarchive
mbox-short.webarchive
mbox.txt
mini_project_2_emailusername.py
modulobeforeIlearnedreturn.py
parameter.py
payratecalculator.py
problem1sqlorganizationfrequency.ipynb
r.txt
rom.txt.rtf
romeo.webarchive
shakespeareunique.py
sum_array.py
tuple2.py
tuple_1.py
zombie_mystery.py
(base) AATLs-MacBook-Air-8:New_Content markbraxton$ python3
MarkBraxtonMachineLearning.py
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 36275 entries, 0 to 36274
Data columns (total 19 columns):
 #   Column                                Non-Null Count  Dtype
---  ------                                --------------  -----
 0   Booking_ID                            36275 non-null  object
 1   no_of_adults                          36275 non-null  int64
 2   no_of_children                        36275 non-null  int64
 3   no_of_weekend_nights                  36275 non-null  int64
 4   no_of_week_nights                     36275 non-null  int64
 5   type_of_meal_plan                     36275 non-null  object
 6   required_car_parking_space            36275 non-null  int64
 7   room_type_reserved                    36275 non-null  object
 8   lead_time                             36275 non-null  int64
 9   arrival_year                          36275 non-null  int64
 10  arrival_month                         36275 non-null  int64
 11  arrival_date                          36275 non-null  int64
 12  market_segment_type                   36275 non-null  object
 13  repeated_guest                        36275 non-null  int64
 14  no_of_previous_cancellations          36275 non-null  int64
 15  no_of_previous_bookings_not_canceled  36275 non-null  int64
 16  avg_price_per_room                    36275 non-null  float64
 17  no_of_special_requests                36275 non-null  int64
 18  booking_status                        36275 non-null  object
dtypes: float64(1), int64(13), object(5)
memory usage: 5.3+ MB
lead_time
Skew : 1.29
no_of_previous_cancellations
Skew : 25.2
no_of_previous_bookings_not_canceled
Skew : 19.25
avg_price_per_room
Skew : 0.67
2    0.719724
1    0.212130
3    0.063873
0    0.003832
4    0.000441
Name: no_of_adults, dtype: float64
*************************************
0    0.925624
1    0.044604
2    0.029166
3    0.000524
9    0.000055
10   0.000028
Name: no_of_children, dtype: float64
*************************************
2    0.315479
1    0.261558
```

```
3      0.216099
4      0.082426
0      0.065803
5      0.044493
6      0.005210
7      0.003115
10     0.001709
8      0.001709
9      0.000937
11     0.000469
15     0.000276
12     0.000248
14     0.000193
13     0.000138
17     0.000083
16     0.000055
Name: no_of_week_nights, dtype: float64
*************************************
0      0.465114
1      0.275534
2      0.250062
3      0.004218
4      0.003556
5      0.000937
6      0.000551
7      0.000028
Name: no_of_weekend_nights, dtype: float64
*************************************
0      0.969014
1      0.030986
Name: required_car_parking_space, dtype: float64
*************************************
Meal Plan 1      0.767333
Not Selected     0.141420
Meal Plan 2      0.091110
Meal Plan 3      0.000138
Name: type_of_meal_plan, dtype: float64
*************************************
Room_Type 1     0.775465
Room_Type 4     0.166975
Room_Type 6     0.026630
Room_Type 2     0.019076
Room_Type 5     0.007305
Room_Type 7     0.004356
Room_Type 3     0.000193
Name: room_type_reserved, dtype: float64
*************************************
10     0.146575
9      0.127112
8      0.105114
```

```
6      0.088298
12     0.083280
11     0.082150
7      0.080496
4      0.075424
5      0.071620
3      0.065003
2      0.046975
1      0.027953
Name: arrival_month, dtype: float64
*****************************************
Online          0.639945
Offline         0.290227
Corporate       0.055603
Complementary   0.010779
Aviation        0.003446
Name: market_segment_type, dtype: float64
*****************************************
0    0.545196
1    0.313522
2    0.120303
3    0.018608
4    0.002150
5    0.000221
Name: no_of_special_requests, dtype: float64
*****************************************
Not_Canceled    0.672364
Canceled        0.327636
Name: booking_status, dtype: float64
*****************************************
```

	precision	recall	f1-score	support
0	0.82	0.89	0.86	17029
1	0.74	0.61	0.67	8363
accuracy			0.80	25392
macro avg	0.78	0.75	0.76	25392
weighted avg	0.80	0.80	0.79	25392

	precision	recall	f1-score	support
0	0.82	0.89	0.86	17029
1	0.74	0.61	0.67	8363
accuracy			0.80	25392
macro avg	0.78	0.75	0.76	25392
weighted avg	0.80	0.80	0.79	25392

```
0.41968097623892847
```

	precision	recall	f1-score	support

```
           0        0.84        0.84      0.84       17029
           1        0.68        0.68      0.68        8363

    accuracy                              0.79       25392
   macro avg        0.76        0.76      0.76       25392
weighted avg        0.79        0.79      0.79       25392

                precision      recall   f1-score    support

           0        0.85        0.85      0.85        7361
           1        0.68        0.69      0.68        3522

    accuracy                              0.79       10883
   macro avg        0.77        0.77      0.77       10883
weighted avg        0.80        0.79      0.79       10883

KNeighborsClassifier(n_neighbors=14, p=1, weights='distance')
                precision      recall   f1-score    support

           0        0.82        0.95      0.88       17029
           1        0.84        0.56      0.67        8363

    accuracy                              0.82       25392
   macro avg        0.83        0.76      0.78       25392
weighted avg        0.82        0.82      0.81       25392

                precision      recall   f1-score    support

           0        0.81        0.94      0.87        7361
           1        0.81        0.54      0.65        3522

    accuracy                              0.81       10883
   macro avg        0.81        0.74      0.76       10883
weighted avg        0.81        0.81      0.80       10883

(base) AATLs-MacBook-Air-8:New_Content markbraxton$
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