In [1]:
```
import pandas as pd
```

In [2]:
```
sql=pd.read_csv(r"dataset_1_202509101947.csv")
```

In [3]:
```
sql
```

Out[3]:

	destination	passanger	weather	temperature	time	coupon	expiration
0	No Urgent Place	Alone	Sunny	55	2PM	Restaurant(<20)	1d
1	No Urgent Place	Friend(s)	Sunny	80	10AM	Coffee House	2h
2	No Urgent Place	Friend(s)	Sunny	80	10AM	Carry out & Take away	2h
3	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	2h
4	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	1d
...	...	...	...	...	...	...	...
12679	Home	Partner	Rainy	55	6PM	Carry out & Take away	1d
12680	Work	Alone	Rainy	55	7AM	Carry out & Take away	1d
12681	Work	Alone	Snowy	30	7AM	Coffee House	1d
12682	Work	Alone	Snowy	30	7AM	Bar	1d
12683	Work	Alone	Sunny	80	7AM	Restaurant(20-50)	2h

12684 rows × 27 columns

In [4]:
```
sql.shape
```

Out[4]:
```
(12684, 27)
```

In [5]:
```
sql.head()
```

Out[5]:

	destination	passanger	weather	temperature	time	coupon	expiration	ge
0	No Urgent Place	Alone	Sunny	55	2PM	Restaurant(<20)	1d	Fe
1	No Urgent Place	Friend(s)	Sunny	80	10AM	Coffee House	2h	Fe
2	No Urgent Place	Friend(s)	Sunny	80	10AM	Carry out & Take away	2h	Fe
3	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	2h	Fe
4	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	1d	Fe

5 rows × 27 columns

In [6]:
```
sql.tail()
```

Out[6]:

	destination	passanger	weather	temperature	time	coupon	expiration
12679	Home	Partner	Rainy	55	6PM	Carry out & Take away	1d
12680	Work	Alone	Rainy	55	7AM	Carry out & Take away	1d
12681	Work	Alone	Snowy	30	7AM	Coffee House	1d
12682	Work	Alone	Snowy	30	7AM	Bar	1d
12683	Work	Alone	Sunny	80	7AM	Restaurant(20-50)	2h

5 rows × 27 columns

In [7]:
```
sql.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 12684 entries, 0 to 12683
Data columns (total 27 columns):
 #   Column                Non-Null Count  Dtype 
---  ------                --------------  ----- 
 0   destination           12684 non-null  object
 1   passanger             12684 non-null  object
 2   weather               12684 non-null  object
 3   temperature           12684 non-null  int64 
 4   time                  12684 non-null  object
 5   coupon                12684 non-null  object
 6   expiration            12684 non-null  object
 7   gender                12684 non-null  object
 8   age                   12684 non-null  object
 9   maritalStatus         12684 non-null  object
 10  has_children          12684 non-null  int64 
 11  education             12684 non-null  object
 12  occupation            12684 non-null  object
 13  income                12684 non-null  object
 14  car                   108 non-null    object
 15  Bar                   12577 non-null  object
 16  CoffeeHouse           12467 non-null  object
 17  CarryAway             12533 non-null  object
 18  RestaurantLessThan20  12554 non-null  object
 19  Restaurant20To50      12495 non-null  object
 20  toCoupon_GEQ5min      12684 non-null  int64 
 21  toCoupon_GEQ15min     12684 non-null  int64 
 22  toCoupon_GEQ25min     12684 non-null  int64 
 23  direction_same        12684 non-null  int64 
 24  direction_opp         12684 non-null  int64 
 25  Y                     12684 non-null  int64 
 26  row_count             12684 non-null  int64 
dtypes: int64(9), object(18)
memory usage: 2.6+ MB
```

In [8]:
```
sql.isnull().sum()
```

Out[8]:
```
destination                0
passanger                  0
weather                    0
temperature                0
time                       0
coupon                     0
expiration                 0
gender                     0
age                        0
maritalStatus              0
has_children               0
education                  0
occupation                 0
income                     0
car                    12576
Bar                      107
CoffeeHouse              217
CarryAway                151
RestaurantLessThan20     130
Restaurant20To50         189
toCoupon_GEQ5min           0
toCoupon_GEQ15min          0
toCoupon_GEQ25min          0
direction_same             0
direction_opp              0
Y                          0
row_count                  0
dtype: int64
```

In [9]:
```
sql[['weather','temperature']]
```

Out[9]:

	weather	temperature
0	Sunny	55
1	Sunny	80
2	Sunny	80
3	Sunny	80
4	Sunny	80
...	...	...
12679	Rainy	55
12680	Rainy	55
12681	Snowy	30
12682	Snowy	30
12683	Sunny	80

12684 rows × 2 columns

In [10]:
```
sql.head(10)
```

Out[10]:

	destination	passanger	weather	temperature	time	coupon	expiration	ge
0	No Urgent Place	Alone	Sunny	55	2PM	Restaurant(<20)	1d	Fe
1	No Urgent Place	Friend(s)	Sunny	80	10AM	Coffee House	2h	Fe
2	No Urgent Place	Friend(s)	Sunny	80	10AM	Carry out & Take away	2h	Fe
3	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	2h	Fe
4	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	1d	Fe
5	No Urgent Place	Friend(s)	Sunny	80	6PM	Restaurant(<20)	2h	Fe
6	No Urgent Place	Friend(s)	Sunny	55	2PM	Carry out & Take away	1d	Fe
7	No Urgent Place	Kid(s)	Sunny	80	10AM	Restaurant(<20)	2h	Fe
8	No Urgent Place	Kid(s)	Sunny	80	10AM	Carry out & Take away	2h	Fe
9	No Urgent Place	Kid(s)	Sunny	80	10AM	Bar	1d	Fe

10 rows × 27 columns

In [12]:
```
sql ['passanger'].unique()
```

Out[12]:
```
array(['Alone', 'Friend(s)', 'Kid(s)', 'Partner'], dtype=object)
```

In [13]:
```
sql[sql['destination']=='Home']
```

Out[13]:

	destination	passanger	weather	temperature	time	coupon	expiration
13	Home	Alone	Sunny	55	6PM	Bar	1c
14	Home	Alone	Sunny	55	6PM	Restaurant(20-50)	1c
15	Home	Alone	Sunny	80	6PM	Coffee House	2h
35	Home	Alone	Sunny	55	6PM	Bar	1c
36	Home	Alone	Sunny	55	6PM	Restaurant(20-50)	1c
...	...	...	...	...	...	...	..
12675	Home	Alone	Snowy	30	10PM	Coffee House	2h
12676	Home	Alone	Sunny	80	6PM	Restaurant(20-50)	1c
12677	Home	Partner	Sunny	30	6PM	Restaurant(<20)	1c
12678	Home	Partner	Sunny	30	10PM	Restaurant(<20)	2h
12679	Home	Partner	Rainy	55	6PM	Carry out & Take away	1c

3237 rows × 27 columns

In [14]:
```
sql.sort_values('coupon')
```

Out[14]:

	destination	passanger	weather	temperature	time	coupon	expiration
11702	Home	Partner	Sunny	30	10PM	Bar	2h
9930	No Urgent Place	Alone	Snowy	30	2PM	Bar	1d
10632	Home	Alone	Rainy	55	6PM	Bar	1d
7997	No Urgent Place	Friend(s)	Rainy	55	10PM	Bar	2h
11166	Work	Alone	Snowy	30	7AM	Bar	1d
...	...	...	...	...	...	...	..
10476	Home	Alone	Sunny	80	6PM	Restaurant(<20)	1d
5447	Home	Alone	Sunny	80	10PM	Restaurant(<20)	2h
10478	Home	Alone	Snowy	30	10PM	Restaurant(<20)	2h
5440	No Urgent Place	Alone	Sunny	80	2PM	Restaurant(<20)	2h
0	No Urgent Place	Alone	Sunny	55	2PM	Restaurant(<20)	1d

12684 rows × 27 columns

In [15]:
```
sql.rename(columns={'destination':'Destination'},inplace=True)
```

In [16]:
```
sql
```

Out[16]:

	Destination	passanger	weather	temperature	time	coupon	expiratio
0	No Urgent Place	Alone	Sunny	55	2PM	Restaurant(<20)	1d
1	No Urgent Place	Friend(s)	Sunny	80	10AM	Coffee House	2h
2	No Urgent Place	Friend(s)	Sunny	80	10AM	Carry out & Take away	2h
3	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	2h
4	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	1d
...	...	...	...	...	...	...	.
12679	Home	Partner	Rainy	55	6PM	Carry out & Take away	1d
12680	Work	Alone	Rainy	55	7AM	Carry out & Take away	1d
12681	Work	Alone	Snowy	30	7AM	Coffee House	1d
12682	Work	Alone	Snowy	30	7AM	Bar	1d
12683	Work	Alone	Sunny	80	7AM	Restaurant(20-50)	2h

12684 rows × 27 columns

In [18]:
```
sql.groupby('occupation').size().to_frame('Count').reset_index()
```

Out[18]:

	occupation	Count
0	Architecture & Engineering	175
1	Arts Design Entertainment Sports & Media	629
2	Building & Grounds Cleaning & Maintenance	44
3	Business & Financial	544
4	Community & Social Services	241
5	Computer & Mathematical	1408
6	Construction & Extraction	154
7	Education&Training&Library	943
8	Farming Fishing & Forestry	43
9	Food Preparation & Serving Related	298
10	Healthcare Practitioners & Technical	244
11	Healthcare Support	242
12	Installation Maintenance & Repair	133
13	Legal	219
14	Life Physical Social Science	170
15	Management	838
16	Office & Administrative Support	639
17	Personal Care & Service	175
18	Production Occupations	110
19	Protective Service	175
20	Retired	495
21	Sales & Related	1093
22	Student	1584
23	Transportation & Material Moving	218
24	Unemployed	1870

In [21]:
```
sql.groupby('weather')['temperature'].mean().to_frame('avg_temp').reset_index()
```

Out[21]:

	weather	avg_temp
0	Rainy	55.000000
1	Snowy	30.000000
2	Sunny	68.946271

In [22]:
```
sql.groupby('weather')['temperature'].size().to_frame('count_temp').reset_index(
```

Out[22]:

	weather	count_temp
0	Rainy	1210
1	Snowy	1405
2	Sunny	10069

In [24]:
```
sql.groupby('weather')['temperature'].nunique().to_frame('count_distict_temp').r
```

Out[24]:

	weather	count_distict_temp
0	Rainy	1
1	Snowy	1
2	Sunny	3

In [25]:
```
sql.groupby('weather')['temperature'].sum().to_frame('sum_temp').reset_index()
```

Out[25]:

	weather	sum_temp
0	Rainy	66550
1	Snowy	42150
2	Sunny	694220

In [27]:
```
sql.groupby('weather')['temperature'].min().to_frame('min_temp').reset_index()
```

Out[27]:

	weather	min_temp
0	Rainy	55
1	Snowy	30
2	Sunny	30

In [28]:
```
sql.groupby('weather')['temperature'].max().to_frame('max_temp').reset_index()
```

Out[28]:

	weather	max_temp
0	Rainy	55
1	Snowy	30
2	Sunny	80

In [30]:
```
sql.groupby('occupation').filter(lambda x:x['occupation'].iloc[0]=='Student').gr
```

Out[30]:
```
occupation
Student    1584
dtype: int64
```

In [36]:
```
sql1=pd.read_csv(r'table_to_join_202509111744.csv')
```

In [39]:
```
pd.concat([sql,sql1])['Destination'].drop_duplicates()
```

Out[39]:
```
0     No Urgent Place
13               Home
16               Work
0                 NaN
Name: Destination, dtype: object
```

In [42]:
```
pd.merge(sql,sql1[['time','part_of_day']],on='time',how='inner')[['Destination',
```

Out[42]:

	Destination	time	part_of_day
0	No Urgent Place	2PM	Afternoon
1	No Urgent Place	10AM	Morning
2	No Urgent Place	10AM	Morning
3	No Urgent Place	2PM	Afternoon
4	No Urgent Place	2PM	Afternoon
...	...	...	...
12679	Home	6PM	Evening
12680	Work	7AM	Morning
12681	Work	7AM	Morning
12682	Work	7AM	Morning
12683	Work	7AM	Morning

12684 rows × 3 columns

In [43]:
```
sql[sql['passanger']=='Alone'][['Destination','passanger']]
```

Out[43]:

	Destination	passanger
0	No Urgent Place	Alone
13	Home	Alone
14	Home	Alone
15	Home	Alone
16	Work	Alone
...	...	...
12676	Home	Alone
12680	Work	Alone
12681	Work	Alone
12682	Work	Alone
12683	Work	Alone

7305 rows × 2 columns

In [44]:
```
sql[sql['weather'].str.startswith('Sun')]
```

Out[44]:

	Destination	passanger	weather	temperature	time	coupon	expiratio
0	No Urgent Place	Alone	Sunny	55	2PM	Restaurant(<20)	1d
1	No Urgent Place	Friend(s)	Sunny	80	10AM	Coffee House	2h
2	No Urgent Place	Friend(s)	Sunny	80	10AM	Carry out & Take away	2h
3	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	2h
4	No Urgent Place	Friend(s)	Sunny	80	2PM	Coffee House	1d
...	...	...	...	...	...	...	.
12673	Home	Alone	Sunny	30	6PM	Carry out & Take away	1d
12676	Home	Alone	Sunny	80	6PM	Restaurant(20-50)	1d
12677	Home	Partner	Sunny	30	6PM	Restaurant(<20)	1d
12678	Home	Partner	Sunny	30	10PM	Restaurant(<20)	2h
12683	Work	Alone	Sunny	80	7AM	Restaurant(20-50)	2h

10069 rows × 27 columns

In [45]:
```
sql[(sql['temperature']>=29)&(sql['temperature']<=75)]['temperature'].unique()
```

Out[45]:
```
array([55, 30])
```

In [46]:
```
sql[sql['occupation'].isin(['Sales & Related','Management'])][['occupation']]
```

Out[46]:

	occupation
193	Sales & Related
194	Sales & Related
195	Sales & Related
196	Sales & Related
197	Sales & Related
...	...
12679	Sales & Related
12680	Sales & Related
12681	Sales & Related
12682	Sales & Related
12683	Sales & Related

1931 rows × 1 columns

In [ ]: