Data Collection and Preprocessing Phase

Date	24 April 2024
Team ID	739739
Project Title	RESERVATION CANCELLATION PREDICTION
Maximum Marks	6 Marks

Data Exploration and Preprocessing Template

Identifies data sources, assesses quality issues like missing values and duplicates, and implements resolution plans to ensure accurate and reliable analysis.

Section	Description
Data Overview	

```
[ ] train_data.describe()
```

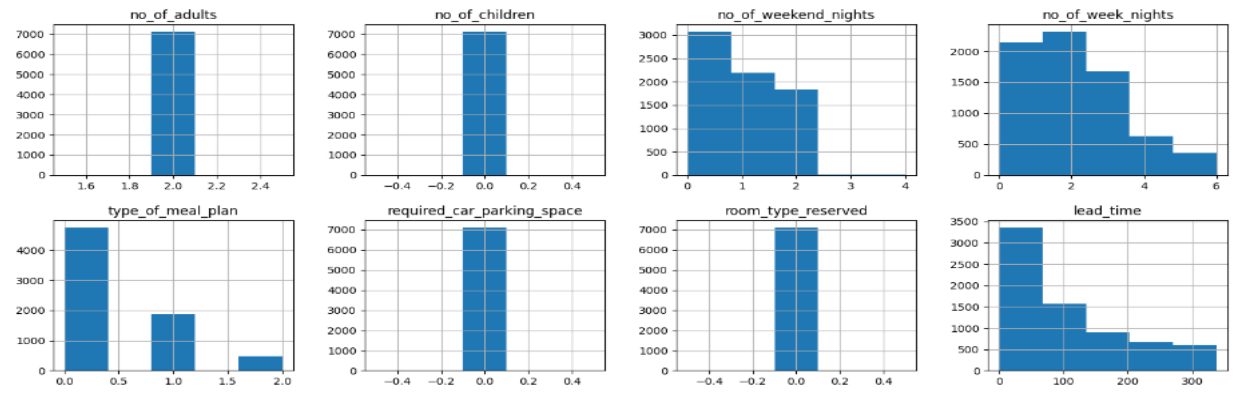
	no_of_adults	no_of_children	no_of_weekend_nights	no_of_week_nights	type_of_meal_plan
count	18137.000000	18137.000000	18137.000000	18137.000000	18137.000000
mean	1.846777	0.107515	0.811104	2.208965	0.318465
std	0.516020	0.408901	0.873470	1.426365	0.629140
min	0.000000	0.000000	0.000000	0.000000	0.000000
25%	2.000000	0.000000	0.000000	1.000000	0.000000
50%	2.000000	0.000000	1.000000	2.000000	0.000000
75%	2.000000	0.000000	2.000000	3.000000	0.000000
max	4.000000	9.000000	7.000000	17.000000	3.000000

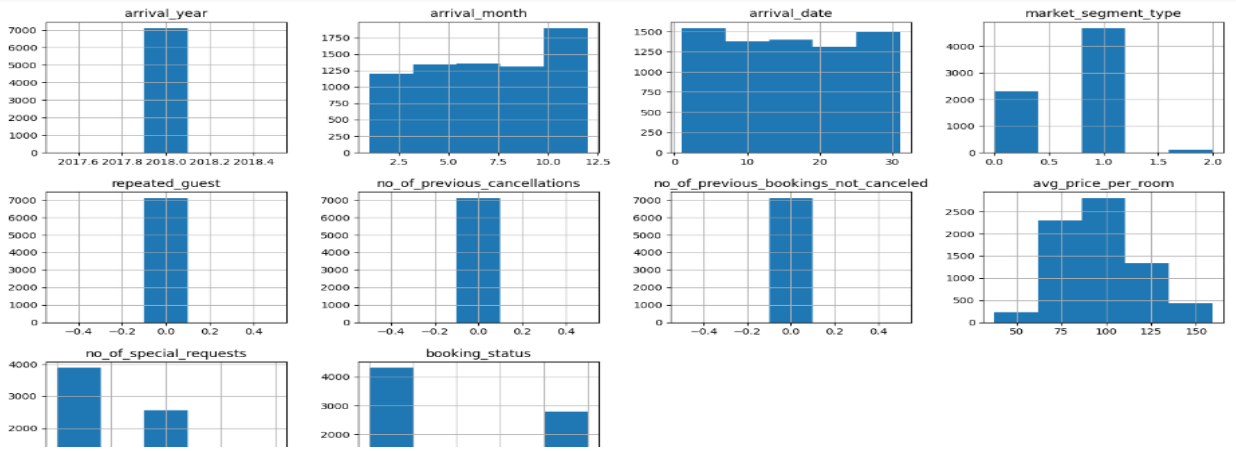
```
[ ] test_data.describe()
```

	no_of_adults	no_of_children	no_of_weekend_nights	no_of_week_nights	type_of_meal_plan
count	18138.000000	18138.000000	18138.000000	18138.000000	18138.000000
mean	1.843147	0.103043	0.810343	2.199636	0.329639
std	0.521403	0.396295	0.867833	1.395298	0.639016
min	0.000000	0.000000	0.000000	0.000000	0.000000
25%	2.000000	0.000000	0.000000	1.000000	0.000000
50%	2.000000	0.000000	1.000000	2.000000	0.000000
75%	2.000000	0.000000	2.000000	3.000000	0.000000
max	4.000000	10.000000	6.000000	16.000000	3.000000

Univariate Analysis

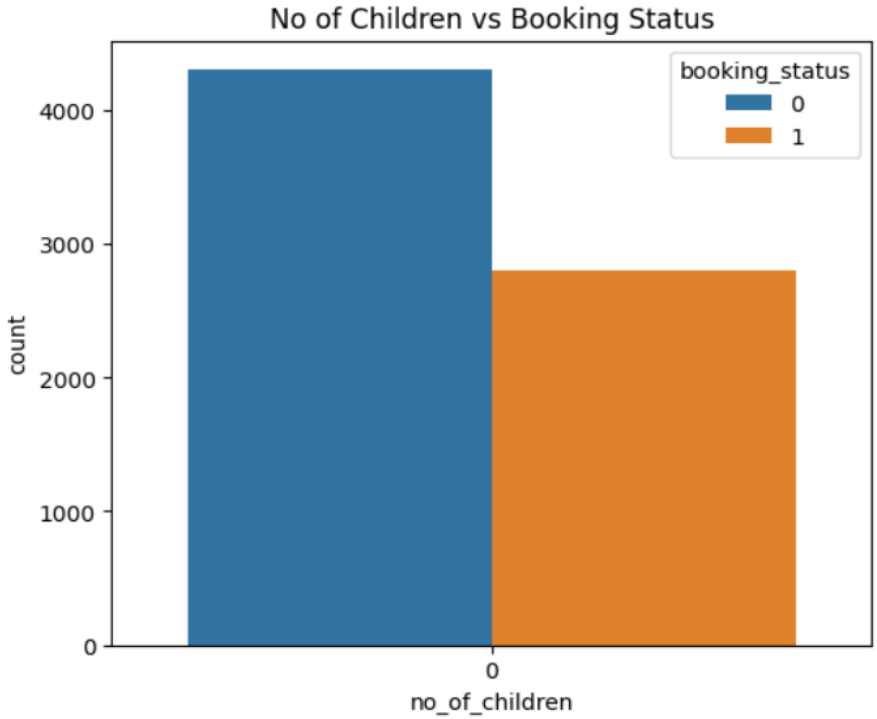
```
[ ] filtered_data.hist(bins=5, figsize=(18, 18))
    plt.show()
```



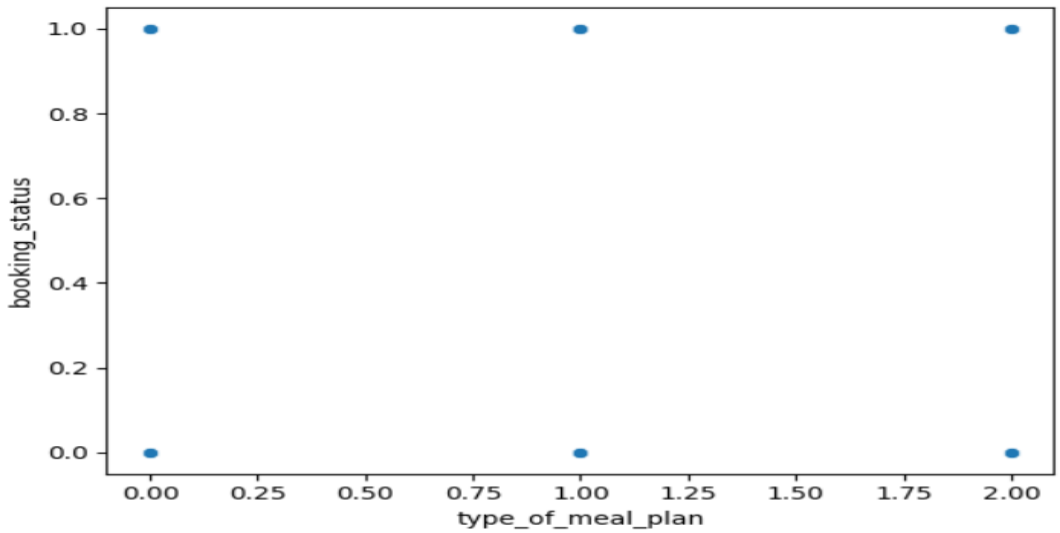


Bivariate Analysis

```
countplot_of_z(x='no_of_children', hue='booking_status', title='No of Children vs Booking Status')
```



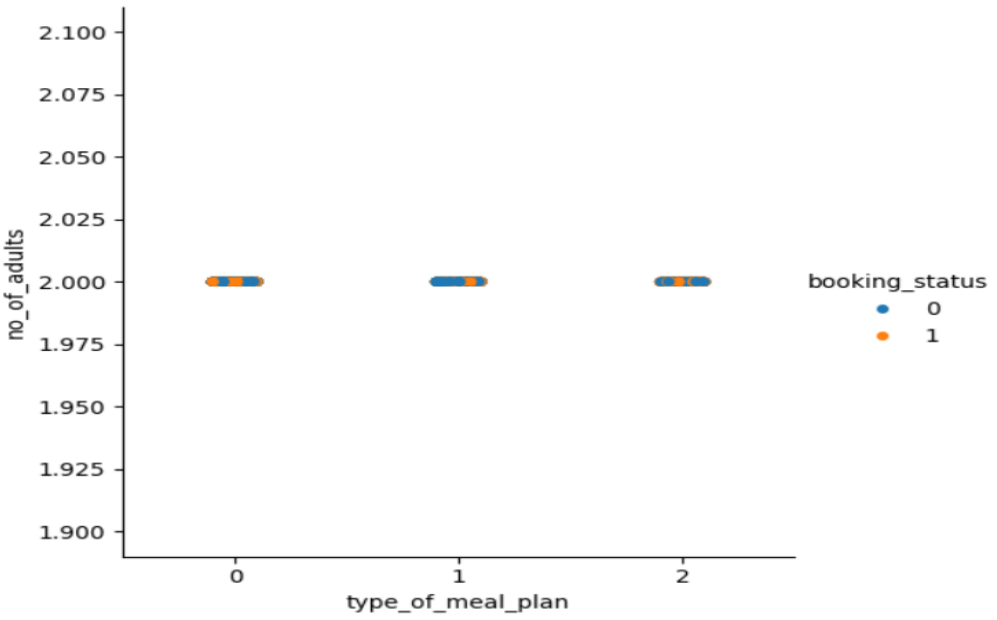

```
[ ]  sns.scatterplot(data=filtered_data, x='type_of_meal_plan', y='booking_status',)
     plt.show()
```



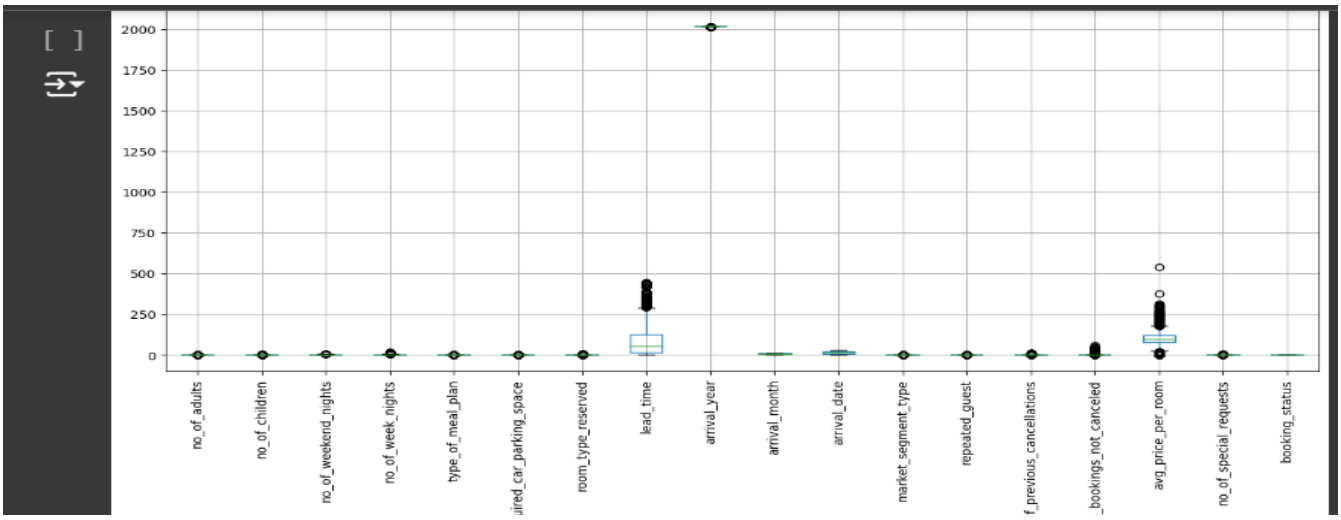
	no_of_adults	no_of_children	no_of_weekend_nights	no_of_week_nights	type_of_meal_plan	required_car_parking_space	room_type_reserved	le
no_of_adults	nan	nan	nan	nan	nan	nan	nan	
no_of_children	nan	nan	nan	nan	nan	nan	nan	
no_of_weekend_nights	nan	nan	1.000000	0.002152	-0.048610	nan	nan	
no_of_week_nights	nan	nan	0.002152	1.000000	-0.108686	nan	nan	
type_of_meal_plan	nan	nan	-0.048610	-0.108686	1.000000	nan	nan	
required_car_parking_space	nan	nan	nan	nan	nan	nan	nan	
room_type_reserved	nan	nan	nan	nan	nan	nan	nan	
lead_time	nan	nan	0.013533	0.189781	0.019528	nan	nan	
arrival_year	nan	nan	nan	nan	nan	nan	nan	
arrival_month	nan	nan	0.008513	0.082517	-0.024910	nan	nan	
arrival_date	nan	nan	0.053746	-0.006413	0.054452	nan	nan	
market_segment_type	nan	nan	0.037351	-0.031379	0.055280	nan	nan	
repeated_guest	nan	nan	nan	nan	nan	nan	nan	
no_of_previous_cancellations	nan	nan	nan	nan	nan	nan	nan	
no_of_previous_bookings_not_canceled	nan	nan	nan	nan	nan	nan	nan	
avg_price_per_room	nan	nan	-0.125499	-0.112414	0.148880	nan	nan	
no_of_special_requests	nan	nan	0.051803	0.013128	0.063569	nan	nan	
booking_status	nan	nan	-0.055431	0.026674	0.112614	nan	nan	

Multivariate Analysis

```
sns.catplot(x='type_of_meal_plan', y='no_of_adults', hue='booking_status', data=filtered_data)
plt.show()
```



Outliers



Data Preprocessing Code Screenshots

Loading Data

```
#reading the test data
test_data=pd.read_csv('/content/test___dataset.csv')
#reading the train data
train_data=pd.read_csv('/content/train__dataset.csv')
```

```
test_data.head()
```

	no_of_adults	no_of_children	no_of_weekend_nights	no_of_week_nights	type_of_meal_plan	rec
0	2	0	1	2	0	
1	2	0	0	2	0	
2	1	0	2	3	0	
3	2	0	2	0	2	
4	2	0	1	4	0	

```
train_data.head()
```

	no_of_adults	no_of_children	no_of_weekend_nights	no_of_week_nights	type_of_meal_plan	rec
0	2	0	1	4	0	
1	2	1	0	2	0	
2	1	0	1	5	0	
3	1	0	2	4	0	
4	2	0	0	4	1	

Handling Missing values

```
[ ] test_data.isna().sum()
```

```
no_of_adults                            0
no_of_children                          0
no_of_weekend_nights                    0
no_of_week_nights                       0
type_of_meal_plan                       0
required_car_parking_space              0
room_type_reserved                      0
lead_time                               0
arrival_year                            0
arrival_month                           0
arrival_date                            0
market_segment_type                     0
repeated_guest                          0
no_of_previous_cancellations            0
no_of_previous_bookings_not_canceled    0
avg_price_per_room                      0
no_of_special_requests                  0
dtype: int64
```

```
[ ] train_data.isna().sum()
```

```
no_of_adults                            0
no_of_children                          0
no_of_weekend_nights                    0
no_of_week_nights                       0
type_of_meal_plan                       0
required_car_parking_space              0
room_type_reserved                      0
lead_time                               0
arrival_year                            0
arrival_month                           0
arrival_date                            0
market_segment_type                     0
repeated_guest                          0
no_of_previous_cancellations            0
no_of_previous_bookings_not_canceled    0
avg_price_per_room                      0
no_of_special_requests                  0
booking_status                          0
dtype: int64
```

Save Processed Data	[ ] `import joblib # Import the pickle m`
	`joblib.dump(model, 'model.pkl')`
	
	`['model.pkl']`