BIRMINGHAM CARPARK REPORT

1. DATA PREPROCESSING
   1. Inaccuracy data
      * + There exist some data having the occupancy is more than the capacity so that we drop it
        + There exist some data having the occupancy is negative value so that we drop it
   2. Missing data
      * + In carpark Nia North and BHMBRTARC01 has only 88 and just above 150 data point, respectively whereas others have more than 1300 data point so that the best solution is drop them.
2. DATA VISUALIZATION
   1. Correlation between all carpark
      * + Cause the data frame is not in a good shape to calculate the correlation so that we re shape it and make sure the columns contain all number of the car parks.
        + Using heatmap function to plot it
        + Shopping and BHMNCPHST01 have the highest positive correlation with the score 0.99 and they also have the largest data set
   2. Carpark occupancy rate visualizing
      * + Converting date and time to datetime type due to object of data point and separating them in 6 columns.
        + Dividing data set by month: October, November, December
        + Visualizing the occupancy based on the hour
   3. Potentially invested carpark decision
      * + As the result, BHMNCPNHS01 and BHMNCPLDH01 have the highest perspective occupancy that nearly reach the capacity
3. Linear Regression Model
   1. Build Model
      * + Using sklearn linear regression to fit the data
        + Using predict to test the test set
   2. Calculate Root Mean Square Error
      * + The result is ranged from 0.25 to 0.27 that is close to 0
        + As the result, the data is great estimated
   3. Calculate Standard Deviation
      * + The result is ranged from 0.9 and 0.11
        + This result means that the predicted data is close to the mean value of actual value
   4. Calculate Accuracy
      * + The result is ranged from 18% to 25%
        + This low result due to missing data feature
        + We highly recommend the data should contain some feature size of car, type of automobile, distance between carpark and the center of city