In [15]:
```
#### import libraries
import joblib
import pandas as pd
```

In [16]:
```
####Loading the training model
file_name = 'RANDOM_FOREST_MODEL.SAV'
my_model = joblib.load(file_name)
```

In [17]:
```
#### Loading the test_data
Test_data = pd.read_csv('Downloads/test.csv')
Test_data.head()
```

Out[17]:

	datetime	season	holiday	workingday	weather	temp	atemp	humidity	windspeed	casual	registered
0	2012-06-30 1:00:00	3	0	0	3	26.24	28.790	89.0	15.0013	3	55
1	2012-06-30 2:00:00	3	0	0	2	26.24	28.790	89.0	0.0000	7	54
2	2012-06-30 3:00:00	3	0	0	2	26.24	28.790	89.0	0.0000	3	20
3	2012-06-30 4:00:00	3	0	0	2	25.42	27.275	94.0	0.0000	3	15
4	2012-06-30 5:00:00	3	0	0	1	26.24	28.790	89.0	11.0014	3	7

In [18]:
```
#### Doing the data preprocessing for testing_data as same as previously did for the traing_data.
Test_data['datetime'] = pd.to_datetime(Test_data['datetime'])
Test_data['dayofweek'] = Test_data['datetime'].dt.dayofweek
Test_data['month'] = Test_data['datetime'].dt.month
Test_data['year'] = Test_data['datetime'].dt.year
Test_data['hour'] = Test_data['datetime'].dt.hour
Test_data.head()
```

Out[18]:

	datetime	season	holiday	workingday	weather	temp	atemp	humidity	windspeed	casual	registered	dayofweek	month	year	hour
0	2012-06-30 01:00:00	3	0	0	3	26.24	28.790	89.0	15.0013	3	55	5	6	2012	1
1	2012-06-30 02:00:00	3	0	0	2	26.24	28.790	89.0	0.0000	7	54	5	6	2012	2
2	2012-06-30 03:00:00	3	0	0	2	26.24	28.790	89.0	0.0000	3	20	5	6	2012	3
3	2012-06-30 04:00:00	3	0	0	2	25.42	27.275	94.0	0.0000	3	15	5	6	2012	4
4	2012-06-30 05:00:00	3	0	0	1	26.24	28.790	89.0	11.0014	3	7	5	6	2012	5

In [19]:
```
#### droping the unnacessary features.
Test_data = Test_data.drop(['datetime', 'atemp'], axis=1)
Test_data.head()
```

Out[19]:

	season	holiday	workingday	weather	temp	humidity	windspeed	casual	registered	dayofweek	month	year	hour
0	3	0	0	3	26.24	89.0	15.0013	3	55	5	6	2012	1
1	3	0	0	2	26.24	89.0	0.0000	7	54	5	6	2012	2
2	3	0	0	2	26.24	89.0	0.0000	3	20	5	6	2012	3
3	3	0	0	2	25.42	94.0	0.0000	3	15	5	6	2012	4
4	3	0	0	1	26.24	89.0	11.0014	3	7	5	6	2012	5

In [22]:
```
#### Now using the trained model and using the test_data for prediction.
#### printing the predictions
model_prediction = my_model.predict(Test_data)
print(model_prediction)
```

```
[57.96 60.7  23.02 ... 89.6  61.05 49.19]
```

In [23]:
```
#### Now predicted the  counts--('no of total rentals').
### Adding the prediction values as a predicted column to the test_data to compare the actual and predicted values.
Test_data['predicted'] = model_prediction
```

In [24]:
```
Test_data
```

Out[24]:

	season	holiday	workingday	weather	temp	humidity	windspeed	casual	registered	dayofweek	month	year	hour	predicted
0	3	0	0	3	26.24	89.0	15.0013	3	55	5	6	2012	1	57.96
1	3	0	0	2	26.24	89.0	0.0000	7	54	5	6	2012	2	60.70
2	3	0	0	2	26.24	89.0	0.0000	3	20	5	6	2012	3	23.02
3	3	0	0	2	25.42	94.0	0.0000	3	15	5	6	2012	4	18.01
4	3	0	0	1	26.24	89.0	11.0014	3	7	5	6	2012	5	10.01
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4394	1	0	1	2	10.66	60.0	11.0014	11	108	0	12	2012	19	119.10
4395	1	0	1	2	10.66	60.0	11.0014	8	81	0	12	2012	20	89.05
4396	1	0	1	1	10.66	60.0	11.0014	7	83	0	12	2012	21	89.60
4397	1	0	1	1	10.66	56.0	8.9981	13	48	0	12	2012	22	61.05
4398	1	0	1	1	10.66	65.0	8.9981	12	37	0	12	2012	23	49.19

4399 rows × 14 columns

In [28]:
```
#### Converting the final_data into csv(using "to_csv") file by giving the path .
csv_file_path = 'downloads/final_data.csv'
final_data.to_csv(csv_file_path,index=False)
print(f'Data has been saved to {csv_file_path}')
```

```
Data has been saved to downloads/final_data.csv
```

In [29]:
```
#### About Data -
###Bike sharing systems are a means of renting bicycles where the process of obtaining membership,
####rental, and bike return is automated via a network of kiosk locations throughout a city.
####Using these systems, people are able to rent a bike from one location and return it to different
####place on an as-needed basis. Currently, there are over 500 bike-sharing programs around the world.

####The data generated by these systems makes them attractive for researchers because the duration of
####travel, departure location, arrivallocation, and time elapsed is explicitly recorded.
####Bike sharing systems therefore function as a sensor network, which can be used for studying mobility
###in a city.


##### USED THE FOLLOWING DATA-SETS:
#####           1.Train.csv : Use this dataset to train the model. This file contains all the weather related
######          features as well as the target variable “count”. Train dataset is comprised of first
#####           18 months.

###            2. test.csv : Use the trained model to predict the count of total rentals for each hour during the
###             next 6 months.

 #### USING THE RANDOM_FOREST_REGRESSOR CREATED THE MACHINE_LEARNING_MODEL
##### THE PERFORMANCE OF THE MODEL IS EVALUATED BY THE 1.'' MEAN SQUARE ERROR',2.R_2 SCORE,3.'ROOT MEAN SQUARED LOG ERROR'
##### USING THE RANDOM_FOREST_REGRESSOR  THE MODEL HAS  PERFORMED. 1.MEAN SQUARE ERROR = (16.9846).
#####                                                             2.R_2 SCORE = (0.9993).
#####                                                             3.ROOT MEAN SQUARED LOG ERROR = (0.01119)
```

In [ ]: