# INSTRUCTIONS

1. R code of project in '.R format': Predicting Bike Rental Count using R.r

2. Python code of project in '.ipynb format': Predicting Bike Rental Count using python.ipynb

3. Project report: Predicting Bike Rental Count .pdf

**# Predicting Bike-Rental-Count**

**## Problem Statement**

The objective of this Project is to Predict bike rental count on daily based on the environmental and seasonal settings.

### It is a regression Problem.

## All the steps implemented in this project

1. Data Pre-processing.

2. Data Visualization.

3. Outlier Analysis.

4. Missing value Analysis.

5. Feature Selection.

- Correlation analysis.
- Chi-Square test.
- Analysis of Variance(Anova) Test
- Multicollinearity Test.

6. Feature Scaling.

- Normalization.

7. Splitting into Train and Test Dataset.

8. Dimensionality Reduction using PCA technique.

9. Hyperparameter Optimization.

10. Model Development

I. Linear Regression

II. Ridge Regression

III. Lasso Regression

IV. Decision Tree

V. Random Forest

11. Model Performance- Without PCA.

12. Model Performance- With PCA.

13. Conclusion

## Deployment of model into production

Create machine learning models, train them and later use them to predict results in python.

Following are the few libraries and resources which will be used:

- **pickle**: A native python library to save (serialize) and load (de-serialize) python objects as files on the disk
- **flask**: A python based easy to use web framework.
- **pythonanywhere**: A free to use educational website that allows hosting python flask and provides a complete python development environment.

**Environment setup**

pip install the following packages:

1. flask (our python-web framework)
2. flask_cors: for CORS headers

3. jsonify: to return JSON files using flask
4. Other learning libraries as per needs like numpy, pandas, sklearn etc

Here, is th sequence of steps need to be followed:-

- Train the model using Jupyter notebook
- Save the trained model object as a pickle file (serialization)
- Create a flask environment that will have an API endpoint which would encapsulate our trained model and enable it to receive inputs (features) through GET requests over HTTP/HTTPS and then return the output after de-serializing the earlier serialized model.
- Upload the flask script along with the trained model on pythonanywhere.
- Make requests to the hosted flask script through a website, bot, android app or any other application capable of sending HTTP/HTTPS requests.

# Dos script:-

## Python:-

- Open Command line by following this command:-

  Start menu -> Run and type cmd

- Type: “D:/home/Downloads/project/Predicting Bike Rental Count using Python.ipynb” project using python.ipynb(give path of your ipynb file).
- Or if your system is configured correctly, you can drag and drop your script from Explorer onto the Command Line window and press enter.

## R code:-

- Open the command prompt and go the directory where your file is saved and use the following command:

  R < Predicting Bike Rental Count using R.r --no-save , In the following command Predicting Bike Rental Count using R.r is the name of r file containing the R code and --no-save option instruct r not to save the "Work space image".