Assignment 1

***Goal:***

In this assignment, you will implement Linear Regression, Ridge Regression and Lasso Regression. The goal of this assignment is to give you experience in model selection and analyze the result with hyperparameter tunning.

***Data sets:***

The dataset that you use in this project is “Boston Housing Data”. The independent variables are “CRIM”, “ZN”, “INDUS”, “CHAS”, “NOX”, “RM”, “AGE”, “DIS”, “RAD”, “TAX”, “TRATIO”, “B”, “LSTAT” and dependent variable “MEDV”. The detail about data is given in the following links.

Divide the data into 70%, 15% and 15% training, validation and test set.

Link (Data Description):

<https://raw.githubusercontent.com/jbrownlee/Datasets/master/housing.names>

Data:

<https://raw.githubusercontent.com/jbrownlee/Datasets/master/housing.csv>

***Your Task:***

1. Implementing Linear Regression and do some model selection on validation set. Find the best model for Linear Regression using validation set and evaluate on test set.
2. Use the selected best model from Linear Regression, develop Ridge Regression and Lasso Regression.
3. Do hyperparameter tuning for Ridge Regression and Lasso Regression on validation set and find the best hyperparameter using validation set and evaluate on test set.
4. Do comparative result analysis for Linear Regression, Ridge Regression and Lasso Regression.