**Luggage Bags Cost Prediction**

The dataset attached contains the data of 160 different bags associated with ABC industries. The bags have certain attributes which are described below:

1. Height – The height of the bag
2. Width – The width of the bag
3. Length – The length of the bag
4. Weight – The weight the bag can carry
5. Weight1 – Weight the bag can carry after expansion

The company now wants to predict the cost they should set for a new variant of these kinds of bags based on the attributes below. As a result, they want you to build a prediction model that can correctly set the cost of the bag provided the attributes are given. The task involves the following things:

* Analyze the dataset and do EDA(Exploratory Data Analysis) – 4 Marks
* Plotting of various graphs & correlations – 4 Marks
* Model Building using Multiple Linear Regression – 12 Marks [3 Marks for each SGD, Mini Batch, Gradient Descent, Normal SK-Learn library]
* Calculating the R squared, RMSE, and MSE for the model - 4 Marks

**Dataset**: [Data\_miniproject.csv](https://taxila-aws.bits-pilani.ac.in/pluginfile.php/1285875/mod_assign/intro/Dataset%20-%20Mini%20Project.csv)

**Hints**: EDA refers to exploring the dataset from various facets such as outliers, correlations, wrong data types, Null values, etc.

I am also attaching the links of SGD, MBGD, and Gradient Descent code links. You can refer to them while writing your code.

Link 1 -  <https://towardsdatascience.com/gradient-descent-in-python-a0d07285742f>

Link 2 - <https://medium.com/coinmonks/implementation-of-gradient-descent-in-python-a43f160ec521>

Link 3 - <https://www.geeksforgeeks.org/ml-mini-batch-gradient-descent-with-python/>

**Additional Instructions:**

* Data need not be uploaded with the submission.
* Submit the updated Jupyter Notebook with outputs + the final .ipynb notebook file converted as PDF, with proper formatting and alignment.
* Incomplete output, misalignment, or lack of comments may result in mark deductions.
* For any queries, use the discussion forum.