**Walchand College of Engineering, Sangli**

## **Machine Learning Lab (6CS372)**

**TY BTech | AY 2023-2024 | Even Sem**

**Assignment 3**

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**Batch : T5**

1. **Simulation based assignment on python built-in functions**

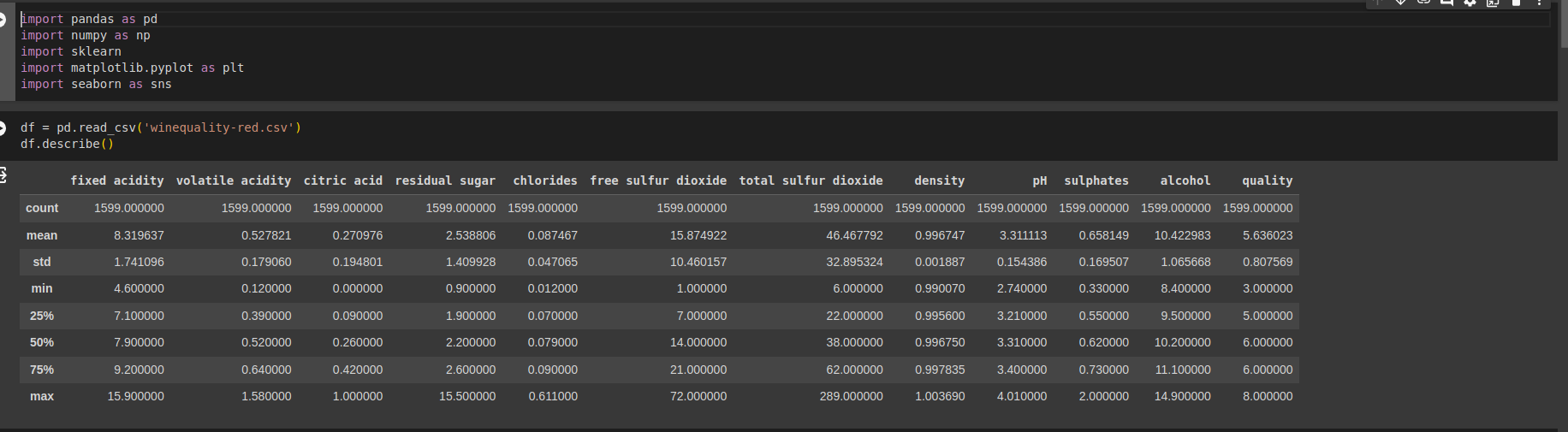
Visit link <https://python-iitk.vlabs.ac.in/exp/built-in-functions/>

Click on tabs on left hand side from Aim to References and read / complete the activity.

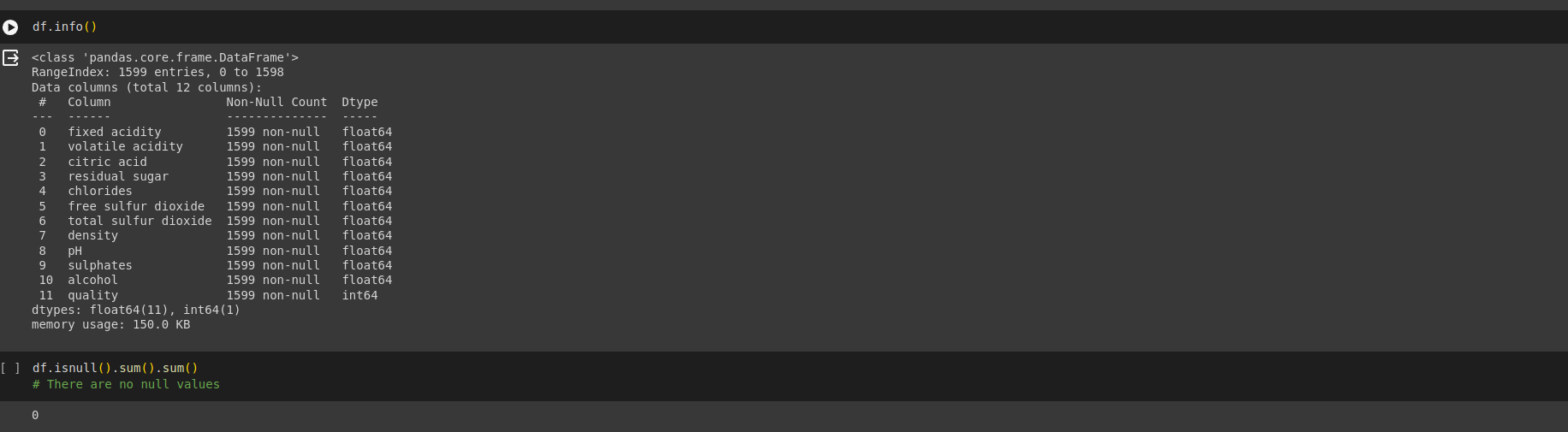
1. **Linear regression**

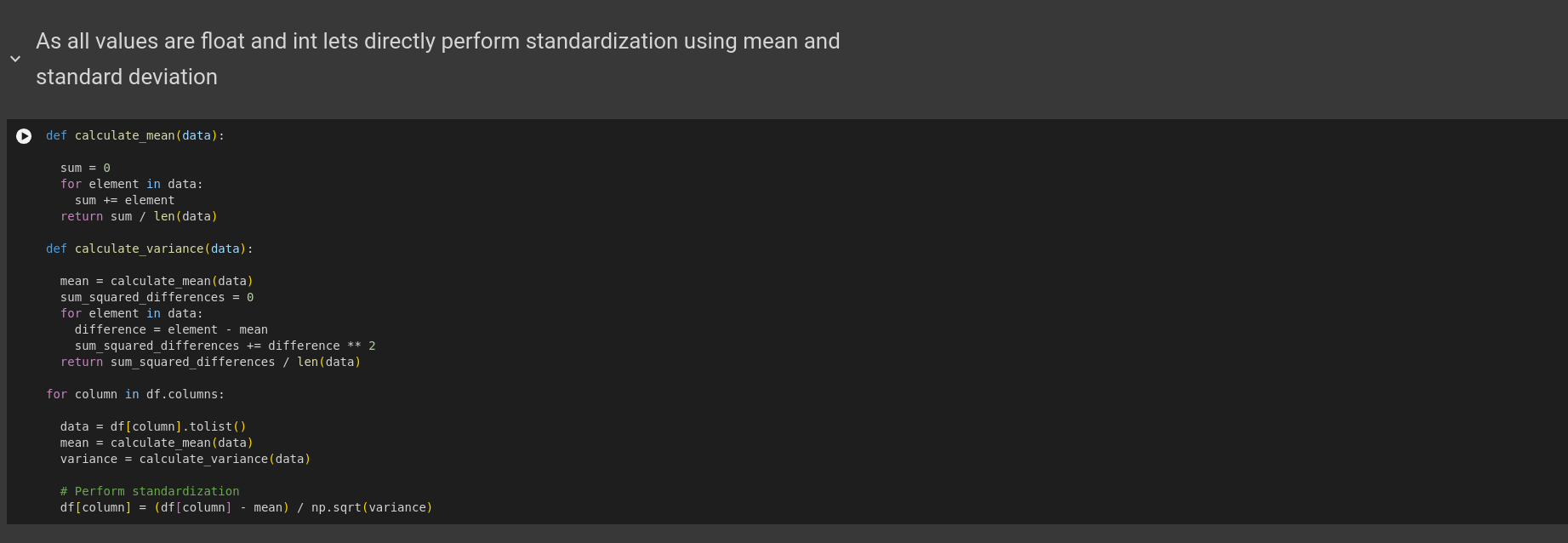
**Part 1: Linear regression *without* scikit-learn (Refer linReg demo)**

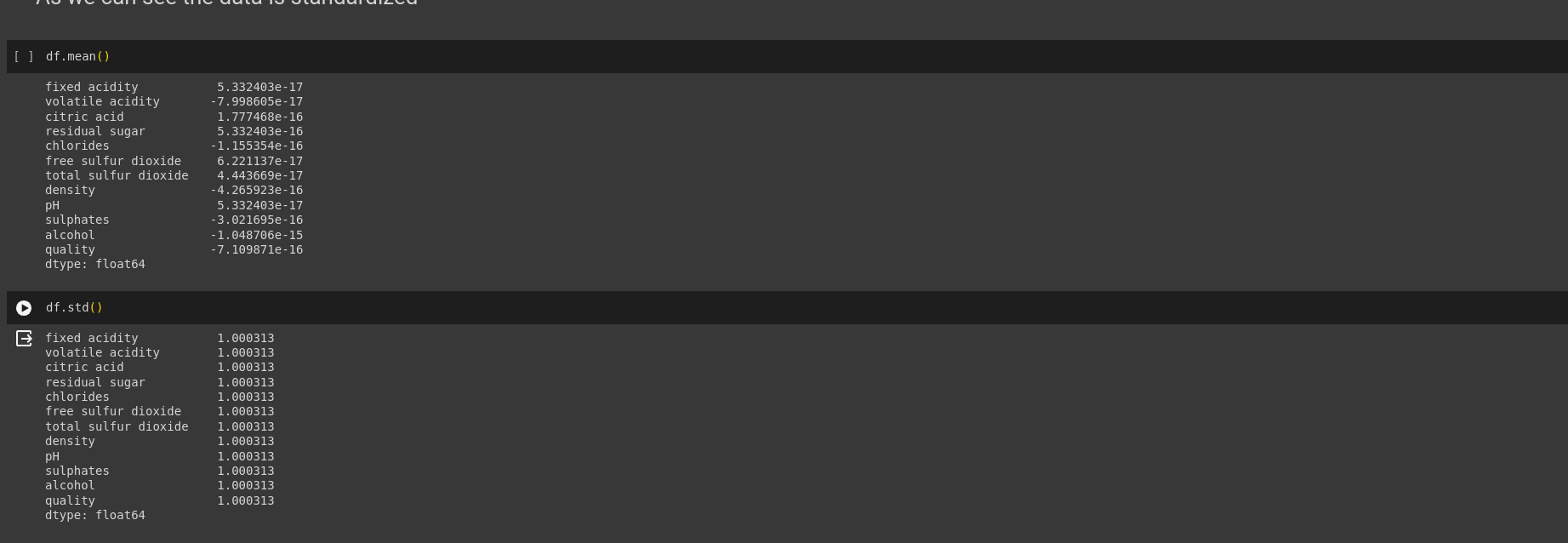
* 1. Load diabetes dataset from sklearn.



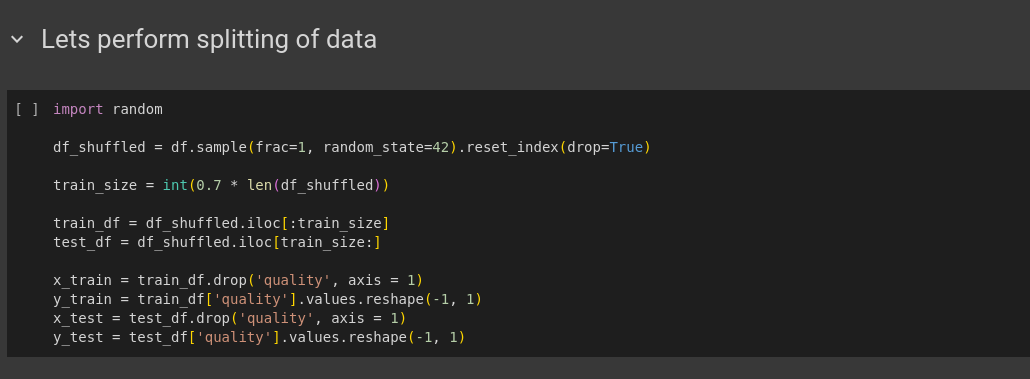
* 1. Preprocessing: Null value handling, standardization



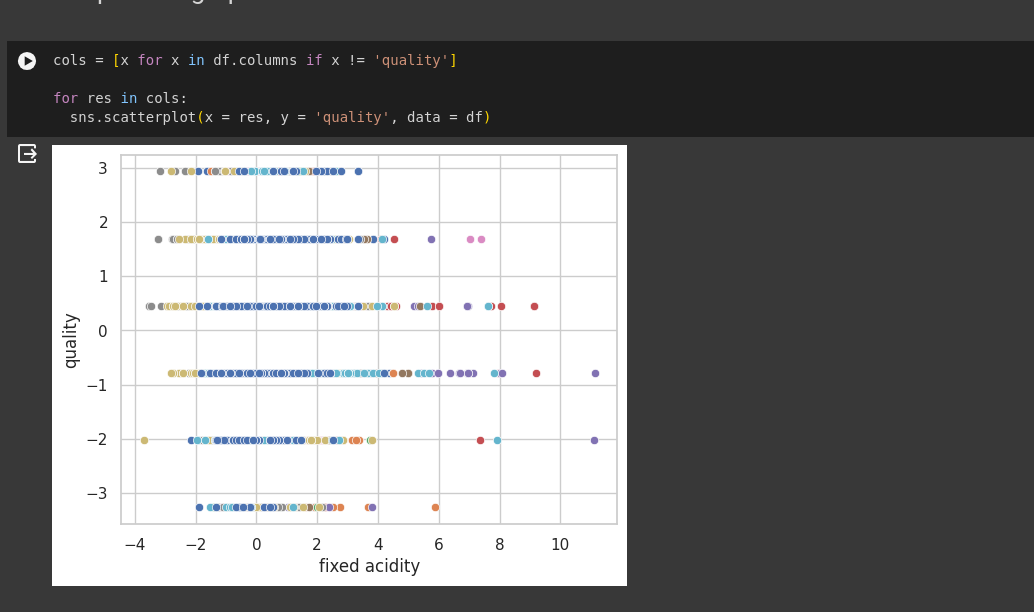




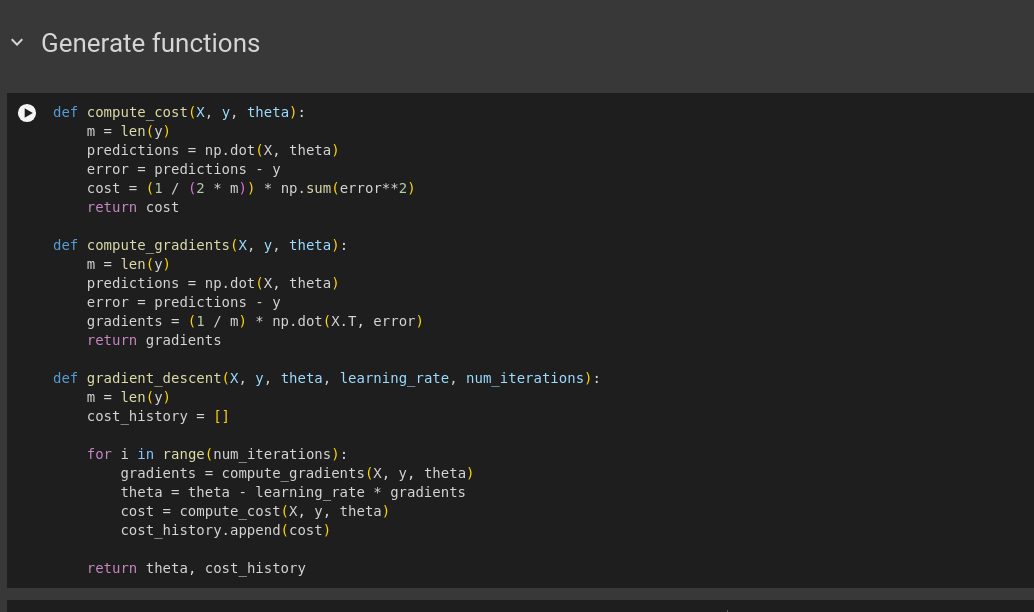
* 1. Data splitting: Split data as 70% train and 30% test.

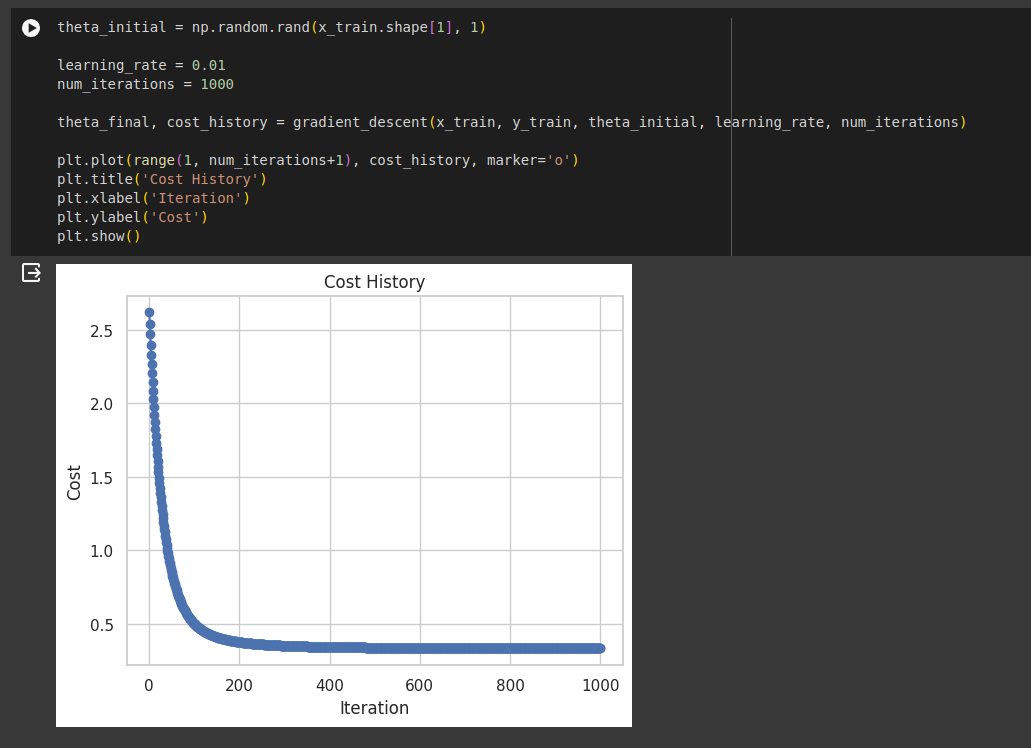


* 1. Select a single input feature. Plot input feature against target variable.



* 1. Write functions for computing cost, gradients and gradient descent algorithm. (Save cost values of each iteration).

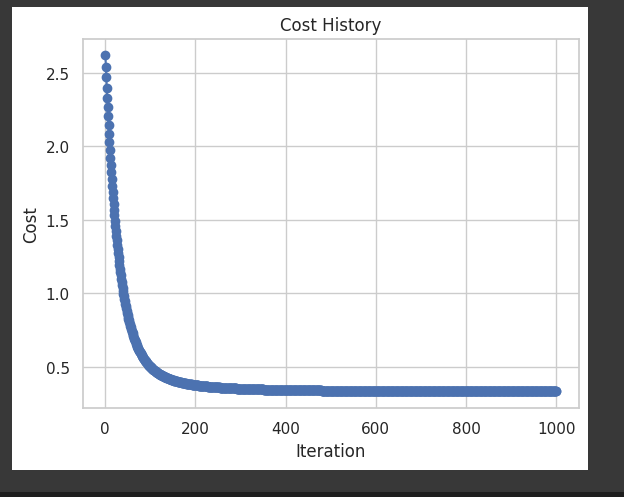




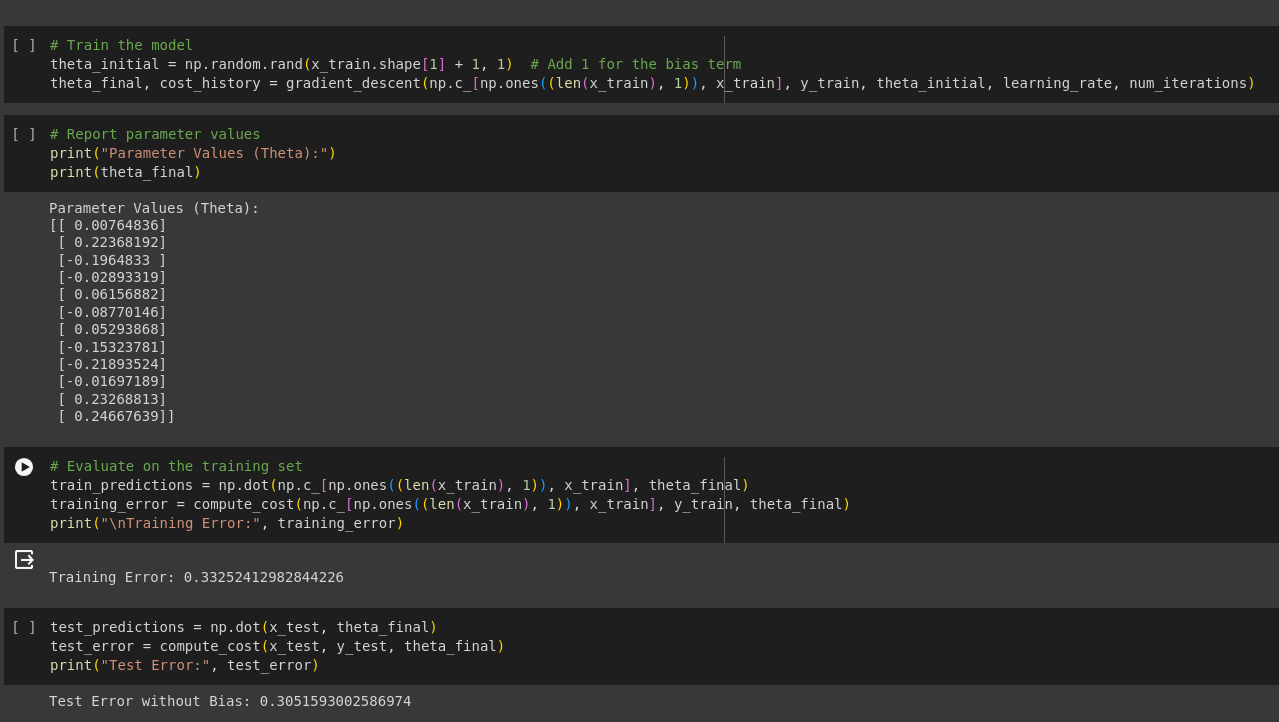
* 1. Plot regression line on scatter plot of feature vs target.

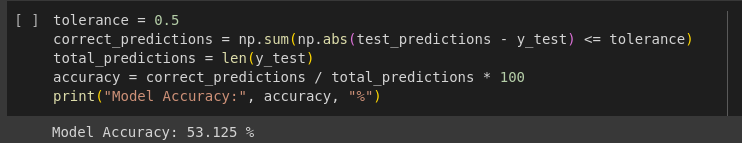


* 1. Plot cost vs #iterations.



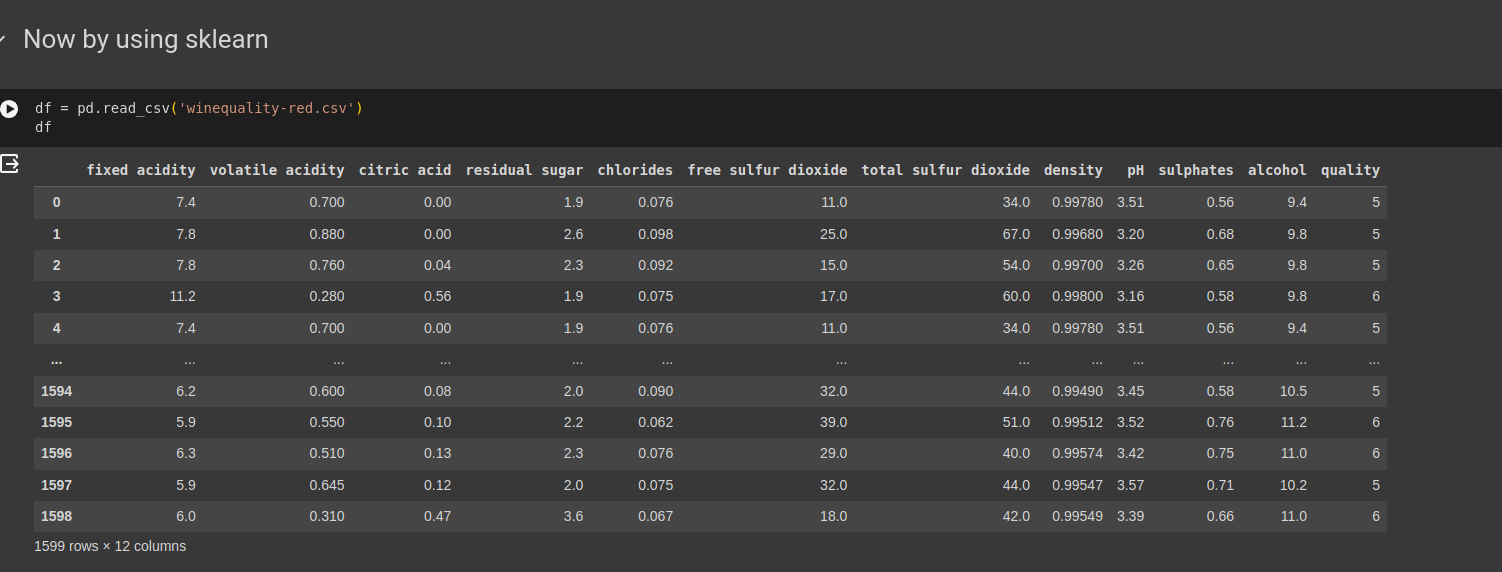
* 1. Report parameter values, training error, test error and model accuracy.





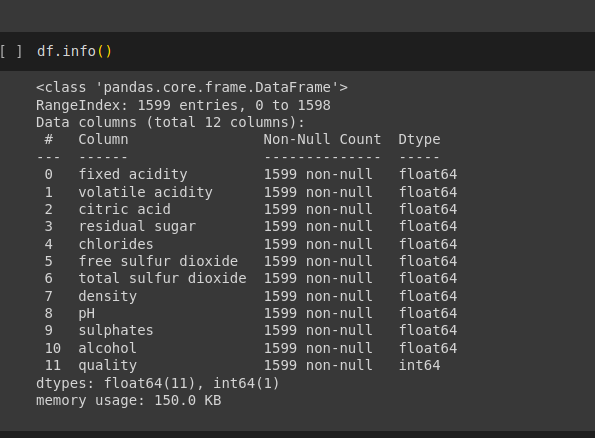
**Part 2: Linear regression *with* scikit-learn**

1. Download dataset as per your batch



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1. Preprocessing: Null value handling, standardization, replace categorical values with numeric values (e.g. 0, 1, 2 etc.)



1. Data splitting: Split data as 70% train and 30% test using train\_test\_split function.
2. Feature selection: Dimensionality reduction / select manually
3. Fit model using fit function.
4. Report parameter values, training error and test error and model accuracy.

