K-NN REGRESSION

This code is an implementation of the **K-NN (K-Nearest Neighbors) regression algorithm.**

- Import necessary libraries: Pandas for data manipulation, KNeighborsRegressor for the K-NN model, and mean_absolute_percentage_error for the evaluation metric.

- Load the train and test data into Pandas dataframes.

- Concatenate the train and test dataframes into one full dataframe.

- Replace all NaN values in the full dataframe with 0.

- Select the relevant features for the model, in this case, 'PRODUCT_TYPE_ID' for X_train and X_test, and 'PRODUCT_LENGTH' for y_train and y_test.

- Train the K-NN model using KNeighborsRegressor() and fit() function.

- Use the trained model to predict the target variable 'PRODUCT_LENGTH' on the test data using predict() function.

- Calculate the evaluation metric mean_absolute_percentage_error() between the predicted 'PRODUCT_LENGTH' and actual 'PRODUCT_TYPE_ID' values of test data.

- Print the score (in percentage) as the metric to measure model performance.Create a submission file containing the predicted values of 'PRODUCT_LENGTH' and corresponding 'PRODUCT_ID' from the test data.

Overall, the K-NN regression algorithm is a non-parametric algorithm that estimates the values of the target variable by taking the average of the k nearest neighbors of the data point being predicted. In this implementation, we use the default value of k (5). This code doesn't involve feature engineering, and only uses one feature (product type ID) for prediction.