MULTI-LAYER PERCEPTRON (MLP) REGRESSION

The code is implemented through Multi-Layer Perceptron (MLP) regression for the task of predicting the length of a product based on its type. Here's a step-by-step explanation:

- First, the necessary libraries are imported: pandas for data handling, MLP Regressor from scikit-learn for building the MLP model, and mean_absolute_percentage_error from scikit-learn for evaluation.

- The train and test data are loaded using pandas read_csv method.The train and test data are concatenated vertically to form a single data frame using pandas concat method.

- NaN values are replaced with 0 using pandas fillna method.Features and target variables are selected from the data frame using pandas DataFrame indexing. The selected feature is PRODUCT_TYPE_ID and the selected target variable is PRODUCT_LENGTH.

- The MLP regression model is instantiated using MLPRegressor().The model is trained on the training data using the fit() method.The trained model is used to make predictions on the test data using the predict() method.

- The mean absolute percentage error (MAPE) between the predicted values and the actual values is calculated using mean_absolute_percentage_error().The score is printed, which is the percentage of error that the model made in predicting the lengths of the products.

- Finally, a submission file is created using pandas DataFrame method. The submission file contains two columns, 'PRODUCT_ID' and 'PRODUCT_LENGTH', where the 'PRODUCT_ID' column is taken from the test data and the 'PRODUCT_LENGTH' column is the predicted lengths by the MLP model. The submission file is saved to disk using the to_csv() method.