DECISION TREE ALGORITHM

This code performs regression analysis using **decision tree algorithm** to predict the product length based on the product type ID feature.

- First, the required libraries are imported - pandas for data manipulation and sklearn.tree and sklearn.metrics for machine learning operations.Next, the code reads the training and test datasets using pandas' read_csv() function.

- The training and test datasets are then combined into a single dataframe called full_df using pandas' concat() function.Missing values in the combined dataframe are then filled with 0 using pandas' fillna() function.

- The code selects the relevant features for regression analysis. In this case, the feature selected is the product type ID.DecisionTreeRegressor is imported from sklearn.tree and initialized.The code then fits the decision tree regression model to the training data using the fit() method of DecisionTreeRegressor.

- The code then makes predictions on the test data using the predict() method of DecisionTreeRegressor. The mean absolute percentage error is calculated using the mean_absolute_percentage_error() function from sklearn.metrics.

- The code then prints the accuracy score, which is the inverse of the mean absolute percentage error multiplied by 100.Finally, the predicted values are written to a CSV file using pandas' DataFrame() and to_csv() functions.

Feature engineering is not used in this code as only one feature is selected for regression analysis. However, the missing values in the data are handled by filling them with 0. The tools used in this code include pandas and scikit-learn's DecisionTreeRegressor and mean_absolute_percentage_error() functions.