StackExchange question quality detection

Aim: Categorise the StackOverflow questions into various quality classes.

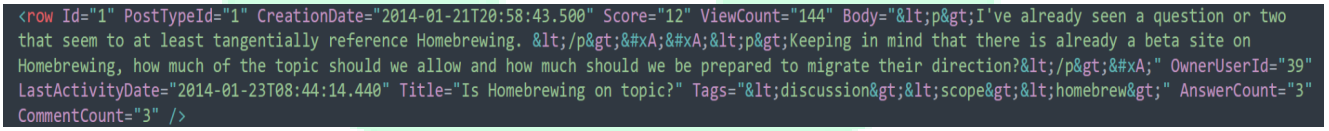
Dataset Creation:
You can download the dataset from here. The folder contains two files, one is the zipped file containing multiple XML files, another is a readme file describing the details related to each xml file. You can work on **Post.xml** only.

You can also use Stack Exchange API to sample the dataset directly from there. You can store each question's information as a document in the mongoDB collection, or you can create a DataFrame to store all the features related to each question.
Create a program to label the data into three categories:

1. Good-Quality questions: Questions for which score is greater than 5 and answer count is greater than 0 should be labelled as good quality questions.
2. Low-Quality questions: Questions for which the score is between 0 to 5 and having no answers should be labelled as low-quality questions.
3. Very-low quality questions: Questions which have negative scores

Feature Extraction: Since you are performing the labelling by yourself, any set of features can be used for the classification **scores** and **answer_count**. Your task is to come up with a feature set which allows you to get more accuracy.

Parsing the XML file:
There are various ways to parse an XML file. Easiest way is to use celementtree library of Python to parse the Posts.xml file. Refer to the following document on how to parse an XML data using celementtree. We recommend you to play around with it to understand the basic parsing. At the end, you need to create a feature matrix from Posts.xml. For example, for a particular question on Posts.XML, you can create following list of features (please see the below picture)



ID	viewcount	Text length	Title length	Comment count	Quality
1	144	20	10	3	Good

Exploratory data analysis:
Measure the statistics for the sample dataset created, such as mean votes, mean title length, mean body length, etc. (Hint: can you use these as features?)
Perform feature engineering on the dataset created by you. Create a correlation matrix (use the confusion matrix approach) between every parameter.

Preprocessing: Choose the preprocessing steps that boost your prediction.

Prediction:
Your task is to train a classifier which, given a question's data, categorises the data into one of these three categories.

Models to choose from: Logistic-regression, Multinomial-Naive Bayes, Random forest. Highest accuracy will fetch higher marks.

Post-analysis Questions:

1. Clearly mention and explain the preprocessing phase. Why did you choose a particular pre-processing step?
2. The code should be added to your GitHub repository with a proper readme file.
3. Explain your choice of model and why do you think it performs well?