1.2 Sentiment Classification of Movie Reviews

We used the k-fold cross-validation approach to evaluate the performance of the naive Bayes classifier in the task of Sentiment Classification of Movie Reviews.

c) The accuracy values obtained for each fold and summary statistics:

	Accuracy	Mean	Standard deviation
1	0.5776	0.5743	0.02897
2	0.573		
3	0.5804		
4	0.5878		
5	0.5524		
6	0.5724		
7	0.5544		
8	0.5722		
9	0.5822		
10	0.591		

The accuracy values obtained for all folders are in range from 0.55 to 0.6 and the mean equals to 0.5743, which is not much higher than ½. Considering that we have 2 classes, we can conclude that the NB classifier implemented is just slightly better than random guessing.

d) The main advantage of using k-fold cross-validation when building predictive models and evaluating model's performance is that it allows to average results over the entire dataset. Intuition is that it is like training the model over all data we have and test on the entire dataset.
Moreover, k-fold cross-validation ensures that the characteristics of the dataset are plain over its different parts and it allows strengthening the model in the context of outliers.

e) Sentiment analysis of texts is more difficult and tricky for computational approaches compared to the topic categorization task. In the topic categorization task the text could be evaluated by presence of topic-related words, whereas sentiment classification task is complicated by semantic phenomena that change the sentiment class. For example, negation (like 'not') switches the meaning to opposite: from positive to negative or vice versa.