INFDTA01-2 – Data mining (2015-16)
Practical assignment Part 3: forecasting

GOAL

In this assignment you must apply two exponential smoothing techniques (SES and DES) to a time series, in order to forecast future values.

INPUT

The dataset to use comes from Chapter 8 of the book: the complete dataset can be found at http://eu.wiley.com/WileyCDA/WileyTitle/productCd-111866146X.html (in the *Downloads* section).

Only the *first sheet* of the Excel file (containing the time series of the demand of swords) is needed for the assignment.

ALGORITHM

The SES and DES techniques are explained in the slides of the course.

Your program must be able to:

- read the dataset
- find the best values of the smoothing factors (only α for SES, α and β for DES) by minimizing the error measure seen in the slides
- using the best values found at the previous point, compute the forecast for the following year (time steps from 37 to 48)
- visualize the original data series and the forecasted values for the next year.

The visualizations must be *integrated* in your program (that is, you cannot use Excel or other external programs to create the plots) and they must be readable and accurate (with title, axis labels and values, legend).

OUTPUT

Your program must print out in a clear way the following information (for **both** SES and DES!!!):

- the best value(s) of the smoothing factor(s) (that is, best α for SES and best α, β for DES);
- the value of the error measure when using the best values for the smoothing factors;
- the forecasted values for the demand of swords during the following year (time steps 37 - 48), using the best values for the smoothing factors;
- a plot containing the original data sequence plus the smoothed sequence, including the forecasted values for the next year (similarly to Figures 8-9 and 8-19 of the book, at pages 296 and 306).