Exercise Sheet 5, Business Analytics, SoSe 2011, 11.07.2011
Dr. Tomáš Horváth, Osman Akcatepe

1. True/False questions:
a) The moving average is used to take away short-term seasonal and random variation.
b) Smoothing time series data with moving averages or exponential smoothing is an attempt to dampen the effects of seasonal variation.
c) Any variable that is measured over time in sequential order is called a time series.
d) The mean absolute deviation averages the absolute differences between the actual values of the time series at time t and the forecast values at time t+ 1.
e) Each forecast using the method of exponential smoothing depends on all the previous observations in the time series.
f) The method of exponential smoothing is useful for short-term predictions if a time series does not exhibit a long-term trend.

2. Which of the following methods is appropriate for forecasting a time series when the trend, cyclical, and seasonal components of the series are not significant?
- Moving averages
- Exponential smoothing
- Mean absolute deviation
- Seasonal indexes

3. Calculate the 4-period moving average and draw the graph according to following:

Year	1996				1997				1998			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4
Sales	189	244	365	262	190	266	359	250	201	259	401	265

4. What is the period of the first step to construct a centered moving average in determining monthly seasonal indexes?

5. Suppose users rate movies on a 5 star system: zero stars means the movie is terrible, 5 stars means the movie is great. Now, we have two movies: The Bourne Identity and Ratatouille. We would like to recommend a movie to the mysterious Mr. X who rated The Bourne Identity 4 stars and Ratatouille 2 stars. Find the person who is most similar, or closest, to Mr. X through Euclidean similarity measure.

	The Bourne Identity	Ratatouille
Lena	★★★★★	★★★★★
Timm	★★	★★★★★
Jan	★	★★★★

Good Luck!