GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN
INSTITUTE OF COMPUTER SCIENCE
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Data Science and Big Data Analytics
WS 2016/2017
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Exercise 5 · Due at 2016-01-19

Timeseries Analysis with ARIMA

Execute the following tasks with R[1]:

1. Load the library `forecast`. You may have to install it.
2. Load the data with `scan("http://robjhyndman.com/tsdldata/data/nybirths.dat")`
3. The data is monthly and starts in the year 1946. Create an appropriate time series object.
4. Decompose the data into the trend, the seasonal influences and the random influences. Plot the results of the decomposition.
5. Calculate an adjusted time series without the seasonal effects.
6. Use the adjusted time series to
   - train an ARIMA model with the parameters $p = q = d = 1$.
   - train an ARIMA model with automatically guessed parameters for p, q and d (Hint: `auto.arima`).
7. Forecast the next 12 months using both trained models and plot the results (Hint: `forecast.Arima`).

[1] You can start RStudio typing rstudio into the bash in the CIP pool.