LAB 1. LINEAR MODELDIAGNOSTICS

PLEASE, READ THE TASK AND THE DIRECTIONS CAREFULLY!

The results should be submitted to vikorsunova@gmail.com

For this lab use data frame *Leinhardt* from package **car**.

This database contains the following variables:

- *income* - per-capita income in U. S. dollars.
- *infant* - infant-mortality rate per 1000 live births.
- *region* – a factor with levels: Africa; Americas; Asia, Asia and Oceania; Europe.
- *oil* - oil-exporting country; a factor with levels: no, yes.

Specify a linear model that shows the impact of income, region and oil-exporting on the infant-mortality rate. Apply the following diagnostics to your model:

1.Test the distribution of residuals. Comment on your results.

2.Test for outliers, leverages and Cook’s distance. Are there any observations that might be outliers or/and affect the regression coefficients significantly? Justify your decision.

3.Test for the non-constant error variance. Comment on your results.

4.Testfor non-linear effects in your model. Should your variables be transformed, if yes, then how? Justify your opinion. Specify a new model if necessary. Any difference in the results of the models?

5.Test for multicollinearity (your new model, if specified). Comment on your results.