Institute of Engineering Geodesy
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Module ENGINEERING GEODESY
(M.Sc.)
- Monitoring -
Winter Semester 2018/2019

Lab 1 *(Individual Laboratory)*
Introduction into LabView (in groups of two)

Date of first submission:

	Date of exercise	29.10/12.11. 2018
	Submission	12.11/26.11. 2018

| **Family Name**	**First Name**	**Matriculation number**	**Signature**

Mark

Task

The graphical programming language National Instruments „LabView" can be used for programming of measurement tasks and provides a wide range of functions for data acquisition, data processing and analysis as well as data storage. Graphical respectively symbolic programming in comparison to command-orientated programming languages involves a number of specific techniques for reading, manipulating, and writing. Most of these techniques are discussed in the laboratory. The aim of this lab is to use these techniques in order to create your own application. You will find the input data sets including a detailed description of your individual task in the data exchange directory for this lab. (see below)

A separate data set ("*Lab1_task_(x).dat*") and a specific data processing task does exist for each student. The following steps should be applied to the provided data set:

- read the data from file

- apply data processing as described in the first lines of "*Lab1_task_(x).dat*"

- write the results into "*dataout.dat*".
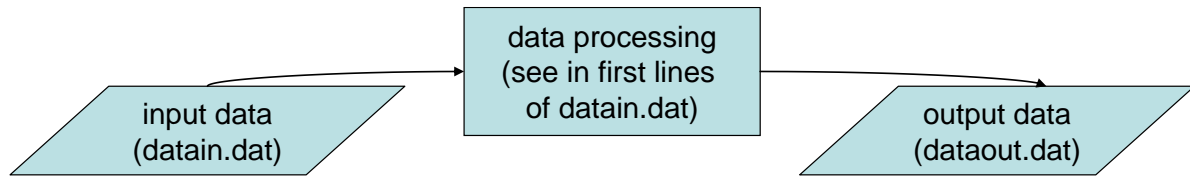
Sub-tasks in detail:

a) Draw a **flowchart** of your application. Please use the standard syntax that is used in computer science according to ISO 5807! (Wikipedia, for instance, provides a good summary)
Please highlight the different processing steps: data input, data processing and data storage.

b) Explain in a **short report** the flow chart of your application. Please mark each described step using the terms, function names and VI-names (virtual instrument) of your flow chart.

c) Implement your **application** in LabVIEW. The following parts should be programmed and grouped accordingly within the Block Diagram:

- Data input from "*Lab1_task_(x).dat*"

- Data processing

- Storing the data in "*dataout.dat* ".

d) Create a chart of the processed result using LabVIEW and enclose it into your report.

Results of laboratory 1:

- **Printout (incl. this sheet):**
  o Tasks a), b) und d)
  o Printout of the Block Diagram („source code") on one sheet of paper
  o Printout of "*dataout.dat*" (<u>first page only</u>) on one sheet of paper (DIN A4)

- **Files:**
  Please upload the virtual instrument from task c) and "*dataout.dat*" to:
  ILIAS → Monitoring, Übung →Monitoring, Labs WS18/19→Lab 1

Remark:
Each student has a specific data set for the homework. Please find your individual data file on ILIAS:

→ *ILIAS*
→ *Engineering*
→ *Geodesy and Geoinformatics Engineering*
→ *Lehrveranstaltungen WS 18/19*
→ *Monitoring, Übung →Monitoring, Labs WS18/19→Lab 1→data_for_students*

Please choose the data file corresponding to the number you've got during the laboratory. The first lines of the data file describe the data processing steps to be implemented.