Lab 7 – File I/O and database interfacing

Exercise: File I/O

Implement a program that reads a file 'sensor.data' and prints the result of this file in table format on screen. The file contains an unknown number of sensor measurements. Every sensor measurement written to file has the format:

<sensor id> <sensor value> <timestamp>

The types of sensor id, sensor value and timestamp are given in the 'config.h' file, enclosed to this lab. The file is in binary format. Also implement a small program that generates these files starting from the 'sensor simulator' of the previous lab.

Exercise: MySQL interfacing

Implement a program that connects to the MySql server running on "studev.groept.be". Login using the account "a12_syssoft" with password "a12_syssoft". (Connection will only work from within the GroupT network, outside you can test on a local MySQL server) Once connected to the database server, the program creates a new table "yourname" in the existing database "a12_syssoft". This table should have the following columns:

- id: automatically generated unique id
- sensor_id
- sensor_value
- timestamp

The C API of MySQL is required in order to implement this program. You can install the MySql client developer package with the following command:

```
> apt get-install libmysqlclient-dev
```

Compile your code as follows:

```
> gcc yourfile.c $(mysql_config –cflags --libs)
```

Some information sources:

- A tutorial that will guide you all the way through this exercise: http://zetcode.com/tutorials/mysqlcapitutorial/
- The MySql reference manual discusses the full C API: dev.mysql.com/doc/refman/5.0/en/c-api.html

Exercise: File I/O and MySQL interfacing

Adapt the program of the first exercise such that all sensor measurements read from the file 'sensor.data' are now inserted into the database table created in second exercise.

Exercise: MySQL interfacing

THE SOLUTION OF THIS EXERCISE NEEDS TO BE UPLOADED ON TOLEDO BEFORE THE DEADLINE.

Finally, implement a program to query the database with sensor data. For instance, the program implements an alert that finds all sensors that exceeded a maximum temperature and, of course, the time when this happened. You are free to experiment with other queries!