

DEBS 2012 Problem: Query 1

From: <http://www.csw.inf.fu-berlin.de/debs2012/grandchallenge.html>

Within this section we describe the queries which are part of the DEBS 2012 Grand Challenge. In our description we assume that all queries operate on the same event schema as defined above. We describe every query using a block data flow diagram with white rectangles representing operators and gray rectangles representing event streams.

[blocked URL](#)

The goal of the first query is to monitor the behavior of Chem Additive sensors which themselves are responsible for the monitoring of Chem Additive Release valves - see Figure above. As all input data in this task is boolean the first operation performed by the operators 1 till 6 is to detect the change of state of each input fields (bm05 till bm10) and emit those along with time stamps of the state change occurrence. The second set of operators (7 till 9) correlates the change of state of the sensor and the change of state of the valve by calculating the time difference between the occurrence of the state changes. Whenever, the time difference increases by more than 1% within a 24hour period an alarm has to be raised. Moreover, a constant monitoring of the trend for the time difference using the least squares method for the period of 24 hours has to be performed. The trend monitoring can be either visualized or returned as a stream of plot parameters.