Triggers

The following relations are given (primary keys are underlined, optional attributes are denoted with *):

GREENHOUSE(GHCode, Location, Sensor#)
SENSOR(SCode, Measurement, GHCode, CriticalOffset)
EVENT-LOG(ECod, TimeStamp, EventType, SCode, Value)
MEASURE(SCode, TimeStamp, Value)
SENSOR-DAILY-SUMMARY(Date, SCode, AVGValue)
NOTIFICATION(NCode, GHCode, Location, Message)

Esercise #1
Write the trigger managing new events of measure type (EventType='M'). When a new event of measure type occurs, the new measure has to be inserted in the MEASURE table. Furthermore, it is necessary to check if a critical condition has occurred in the greenhouse where the corresponding sensor is located.
A condition is critical when more than half of the sensors in the considered greenhouse have sensed an exceptional value for the last sensed measurement. A measurement is exceptional if the difference between the last sensed measurement and the daily average for the sensor is greater than CriticalOffset. The daily average for each sensor is stored in the SENSOR-DAILY-SUMMARY table. This table is automatically updated by a trigger not considered in this application. To extract the date from the TimeStamp attribute, a generic function DATE(TimeStamp) can be exploited.
When a critical condition occurs, a notification request is inserted in the NOTIFICATION table. NCode is a counter, which should be incremented each time a new notification is inserted in the NOTIFICATION table.

Esercise #2
Write a trigger to verify the correctness of a new event of measure type (EventType='M') inserted in the EVENT_LOG table. For the sensors which measure the temperature (Measurement='Temperature'), the temperature measure cannot be lower than -50. If the value is lower assign -50 to the Value attribute in the EVENT-LOG table.

Esercise #3
Write a trigger that implements the constraint that a greenhouse cannot have more than 200 sensors with critical offset larger than 50.