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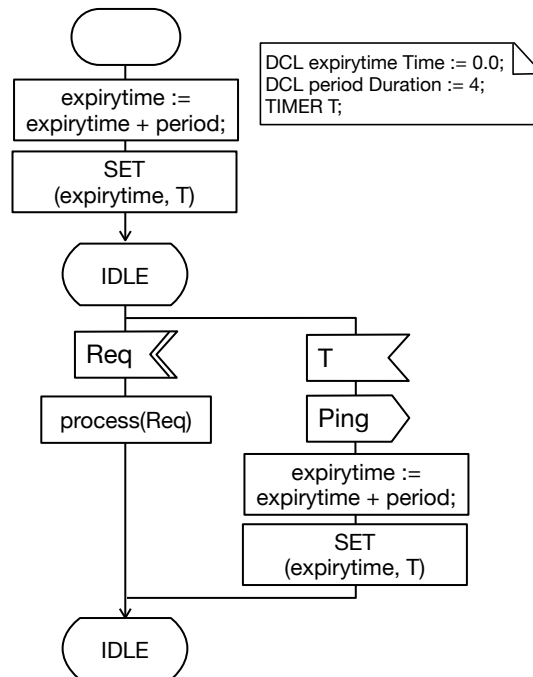University of Freiburg, Germany

Exercise No. 3

May 22, 2009

Task 1 *SDL and Message Sequence Charts*

A server responds to request messages ("Req") and sends Ping messages in regular intervals of 4 sec according to the specification given below. Assume that requests arrive at time 1, 3, 5, 6, 7, 15 and that processing a request takes 2 sec. Draw a MSC of the server for time 0 – 16. Consider the alternative timer setting `expirytime := NOW + period;` and draw a MSC for this variant.

Task 2 *Alternating Bit Protocol*
Consider the Alternating Bit Protocol for an unreliable channel as specified below. Lost messages are retransmitted after a timeout. What happens if we allow that messages arrive out of order?

1. Describe a scenario, where out-of-order arrival leads to a failure of the protocol. What kind of failures may happen?

2. Try to fix the protocol and give a formal specification of your new protocol.