Universitetet i Oslo
Institutt for Informatikk
PMA
Olaf Owe, Martin Steffen

INF 4140: Models of Concurrency

Høst 2015 — **Series 7** — 28. 10. 2015

Topic: Message passing

Issued: 28. 10. 2015

Exercise 1 (Partition filter) Do [1, Exercise 7.2a]: Implement a "partition filter", which *splits* an unsorted stream of natural numbers into two. The first received value is considered as "pivot" (cf. quicksort). Start by providing a predicate specifying the behavior of the filter.

Exercise 2 (Readers/writers & server with asynchronous message passing) Do [1, Exercise 7.6]: Do a server implementation for the R-W problem. Don't forget to be specific about the interface. The solution should be based on *asynchronous* message passing

Exercise 3 (Savings account) Do [1, Exercise 7.8]. Implement a savings account. The account should be used by a number of people. They can *deposit* or *withdraw* money. It's a invariant, that the saving account never goes "into the red", i.e., the sum must always be ≥ 0. Start by considering the "interface" of the server.

Remember also exercise "Series 4" from our lecture, which had the same problem but with monitors.

Exercise 4 (Printers) Do [1, Exercise 7.10]. Assume there are two kind for printers, A and B. Furthermore, three kinds of clients access the printers, those having access to A, those for B, and then those who can use both.

References

[1] G. R. Andrews. *Foundations of Multithreaded, Parallel, and Distributed Programming.* Addison-Wesley, 2000.