Assignment #3

Due Date: November 23, 2017

Total: 100 marks

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1. (65 marks) Implement the readers writers problem using processes, where shared data is a structure as follows:

   ```
   struct {
   int datalength;
   char info[datalength];
   } INFO;
   ```

   After each operation read or write, each process will suspend itself, and place itself in a queue. A monitor program will generate random operations (either read and write) and will also monitor the scheduling queue. The monitor must ensure that two processes will not enter their critical section at the same time, and if more processes can run simultaneously, they will all be scheduled to run.

   (a) creating appropriate processes: 20 marks

   (b) solving conflicts: 20 marks

   (c) process scheduling using the monitor queue: 20 marks

   (d) testing, comments and demo of an execution: 5 marks

   Additional relevant material can be consulted on the virtual machine in : `Examples/Sync/`

2. (65 marks) Implement the same problem using threads.

Note:

- Please be aware that structure `INFO` cannot be declared in C in the above form (we'll get a compiler error) and your task is to find a solution for declaring and using variable shared data size.
- We assume a maximum length `MaxLen` for shared data.