AALTO UNIVERSITY   Exam   26.10.2018
CS Department   CS-C3140   Page 1/1
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CS-C3140 Operating systems

The exam contains five questions. The maximum points for each question are listed in the beginning of the questions. Read the questions carefully. Give clear and compact answers. Remember to write the name of the course and your own personal information on each of your answer papers. No extra appliances are allowed in the exam.

1 (10p) Answer *shortly* with clear definitions and descriptions. (Max. two points per subquestion.)

     a) What is a process?

     b) What is a race condition?

     c) What is middleware?

     d) What is PSW (Program Status Word)?

     e) What is DMA (Direct Memory Access)?

2 (6p) Considering the *producer–consumer* problem, give a solution that implements mutual exclusion using a *monitor* as the synchronization mechanism. Present your solution as a piece of pseudo code and explain it.

3 (6p) How is interrupt handling done in modern operating systems? What hardware support is typically available in modern processors for interrupt handling?

4 (6p) Describe how RMS scheduling works. What analysis is needed for the scheduling?

5 (6p) Write an essay that is not longer than 50 lines on device drivers.