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 context switch?

    b) What is an interrupt?

    c) What is virtualization?

    d) What is middleware?

    e) What is a TLB?

2 (6p) Considering the *readers-writers* problem, give a solution that implements mutual exclusion using *monitor* synchronization. Present your solution as a piece of pseudo code and explain it (including all monitor semantic assumptions that you rely on).

3 (4p) What conditions must be satisfied by a system in order for a race condition to occur? (I.e., define in detail what the concept means.)

4 (6p) What are the phases of a typical remote procedure call? In our answer, remember to address the situations, where the machines are significantly different or errors occur.

5 (6p) Write an essay not longer than 50 lines on OS technology for *implementing* shared memory on modern systems.