

T-106.4155 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 the papers that you return.

- 0 If you want other feedback from your exam than just the points, write down your e-mail address (using clear handwriting!). Otherwise, do not answer to this question.
- 1 (10p) Answer *shortly*. (One point per question.)
- a) What is swapping?
 - b) What is interrupt vector?
 - c) What is PSW in a processor?
 - d) What is a race condition?
 - e) What is a monitor?
 - f) What is a livelock?
 - g) What is double buffering?
 - h) What is priority inversion?
 - i) What is a thin client?
 - j) What is TLB?

Note that long explanations (several sentences) are *not allowed*.

- 2 (6p) Considering the dining philosophers problem (assume five philosophers), give a solution that implements mutual exclusion by using *semaphores*. Present your solution as a piece of pseudo code and give a short explanation.
- 3 (4p) List four criteria for scheduling. Explain the listed criteria compactly (using up to three sentences per criterium).
- 4 (6p) Considering operating system support for symmetric multiprocessing, write an essay that is not longer than a page.
- 5 (6p) Considering architecture of operating system kernels, write an essay that is not longer than a page.