

Name	Signature	Student Id Nr	Points

## Operating Systems, miniexam 1, 1.2.2016 (6p)

Write your answer on this exam paper in the space given. Please notice, that the exam paper is 2-sided.

- a) [1 p] Cache memory is based on the concept of locality. There are two types of locality, spatial locality and temporal locality.

Give a code or data reference example which contains spatial locality. Explain.

Give a code or data reference example which contains temporal locality. Explain.

- b) [1 p] What in cache memory implementation serves spatial locality?

How do you make it serve spatial locality better?

- c) [1 p] How do you know whether the referenced word (e.g., in address 0x12345678) is in cache or not?

If it is, how do you locate it?

d) [1 p] How does a multicore system differ from symmetric multiprocessor (SMP) system? How do their cache memories differ?

e) [1 p] How does the system being multicore complicate cache implementation (as compared to 1-core system)?

How does the system being multicore complicate operating system implementation (as compared to 1-core system)?

f) [1 p] What do you gain with virtual machine?

Give one way to implement virtual machine. What do you virtualize there?