

Name	Signature	Student Id Nr	Points

581305-6 Computer Organization I, miniexam 1, 12.11.2018 (12 p)

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

a) [4 p] data referencing, memory references

i. [2 p] Assume that current instruction loads value 1234 into register R4. Where in the system can the value 1234 be located at instruction execution time, and how are these different location given in machine instructions?

ii. [2 p] One way to define the main memory area used by any given program is to use base and limit registers (BASE and LIMIT). Assume now, that the program in execution is stored in memory area 5000-20999.

What are the values for registers BASE and LIMIT? Who will set them up, how do you use them, and what good is there with this arrangement?

How is memory reference (to memory location 5012) performed with base and limit registers, when we are executing instruction

LOAD R1, 5012 /* read the value in memory location 5012 to register R1 */?

b) [4 p] Processor execution modes: privileged (supervisor) and user mode.

i. [1 p] What problems would it cause, if there would be no privileged execution mode and the processor would always be in only one execution mode?

ii. [2p] What all can the processor do in privileged mode that it cannot do in user mode? Give concrete examples.

iii. [1 p] How does the processor know that it is in privileged mode?
How does it get into privileged mode, and how does it get back to user mode?

