

Advanced Operating Systems and Virtualization
July 19th, 2019

Name: _____ **Surname:** _____ **Student ID:** _____

Remember to write your correct personal data on this sheet, and use it as a folder to wrap the exposition. If you think a question is ambiguous, write your interpretation and answer accordingly. Ability to précis will be honoured.

You are not allowed to use any note or digital device. If you are found copying or consulting notes, you will not pass the written test.

Question 1

Describe how the Linux kernel manages physical memory on NUMA machines, and what is the fundamental data structure used for physical frame allocation.

Question 2

Discuss the Linux system call invocation path on the different flavors of x86 architectures. Describe how the kernel source base allows for kernel portability to different architectures of the system call interface.

Question 3

Illustrate the differences between character and block devices. Discuss how the Linux kernel allows userspace applications to interact with these classes of devices in a homogeneous way.

I, the undersigned, according to the provisions of law N. 675/96, allow the professor to publish on the website the results of this written test.

Legible signature in full: _____