

Advanced Operating Systems and Virtualization

October 23rd, 2018

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 (20 points)

Consider the following C program executed on an x86 Linux system:

```
#include <stdio.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <sys/syscall.h>
#include <fcntl.h>

int main(void)
{
    int fd, siz;
    fd = open("foo", O_RDONLY);
    siz = syscall(SYS_read, fd, NULL, 1024);
    printf ("I have read %d bytes\n", siz);
    return 0;
}
```

Assume that the file `foo` exists in the CWD of the program. Discuss what are the internal security measures that are enforced by modern Linux systems towards this adversarial program. What is the message printed by the program?

Question 2 (10 points)

Describe what are the reasons behind the development of the Linux kpatch system, and illustrate how it works

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: _____