UNIVERSITÀ DI TRIESTE	
Course: Operating Systems	**Professor:** Martino Trevisan
Date: December 17, 2023	**Version: A**
First and Last Name:	
Student ID:	

Instructions:

For each open question, please clearly write any assumption you make. Write in the given box using a comprehensible handwriting.

1. A System Call

   A. Is used by the OS to orchestrate the kernel modules

   B. Is used by a process to use a functionality of the software library

   C. Is used by a process to use a functionality of the OS

   D. Is used by the OS to schedule the active processes

2. The following script

   `ls | wc -l`

   A. Prints the number of subdirectories in the current folder

   B. Prints the number of files/subdirectories in the current folder

   C. Counts the file in the computer

   D. Prints the number of active processes

3. A system has 4 GB of RAM and Virtual Memory with 1 kB pages.
   (a) Compute how many bits the page offset is.

   (b) Compute the number of pages of the system.

   > (a) Page Offset Bit $= log_2(1 \cdot 1\,024) = 10$ bit
   >
   > (b) Number of pages $= \frac{4 \cdot 1024^2}{1} = 4194304$

4. Describe the difference between the multi-process and multi-thread paradigm

With multi-threading, memory is shared