

CSE3241: Operating System and System Programming

Class-9

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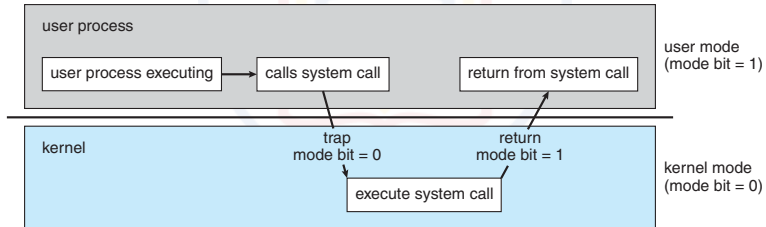
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November 6, 2017

What is System Call?

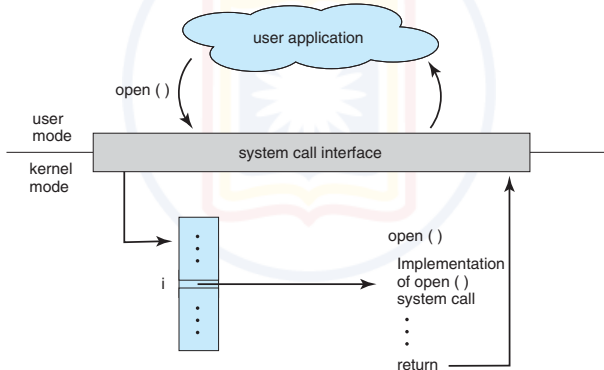
■ System Call is an instruction that:

- ▶ provides an interface between restricted processes (e.g., user process) and unrestricted processes (e.g., kernel process).
- ▶ generates a software interrupt to get services from the kernel process.
- ▶ is also called Kernel call.

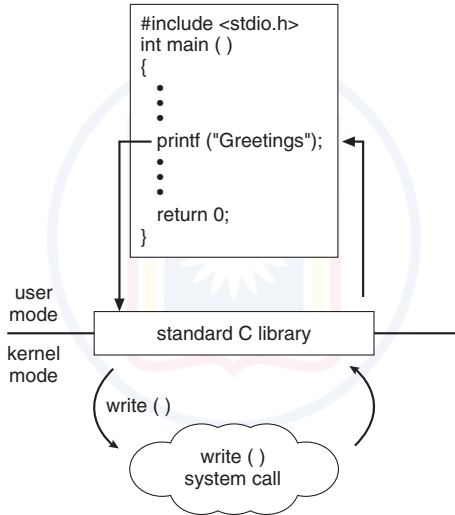


System Call Interface (SCI) [1]

- Most programming languages provide a **System-Call Interface (SCI)**:
 - ▶ maintains a table indexed according to the numbers associated with system calls.
 - ▶ invokes the intended system call in the OS kernel.
 - ▶ returns the status of the system call and any return values.

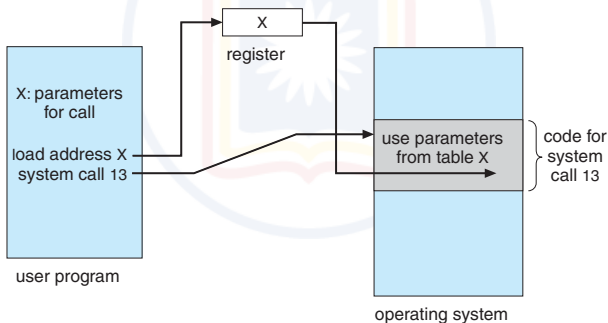


Standard C Library Handling of write()



Passing Parameters to Kernel Process [1]

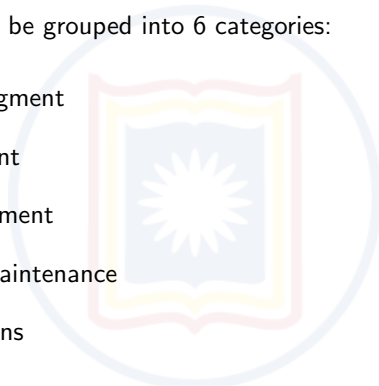
- In a general way, argument(s) of a system call are:
 1. placed in registers (say **rdi**, **rsi**, **rdx**, **rcx**, **r8**, **r9**).
 2. pushed onto the stack by the SCI and popped off the stack by the kernel process.
 3. stored in a block, or table, in memory, and the address of the block is passed as a parameter in a register.



Types of System Call

■ System calls can be grouped into 6 categories:

1. Process Management
2. File Management
3. Device Management
4. Information Maintenance
5. Communications
6. Protections



References



P. B. Galvin A. Silberschatz and G. Gagne.
Operating System Concepts.
John Wiley & Sons, 9 edition, 2012.