



Operating System Concepts

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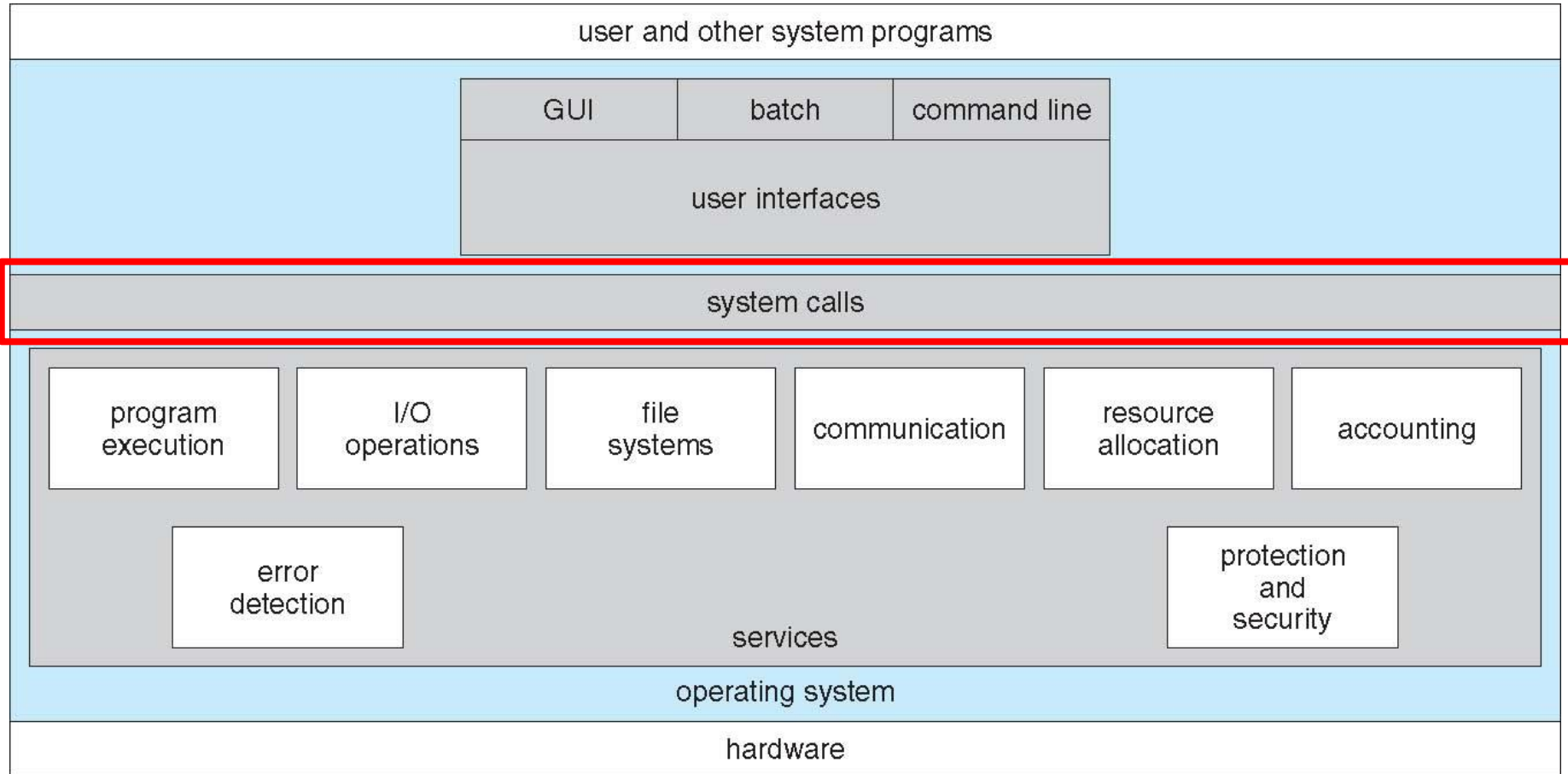
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Homework 3– Implement a System Call

System Calls in an OS



Types of System Calls

- ▶ Process Control
- ▶ File Management
- ▶ Device Management
- ▶ Information Maintenance
- ▶ Communications
- ▶ Protection



Requirements

- ▶ Implement your system call and recompile the kernel
- ▶ The new system call just has to print out the following message by `printk()`: “I am Student-ID at OS 2024!”
- ▶ Write some C program to invoke the new system call
- ▶ Use `dmesg` command to check the result of using the new system call



The Sketch of Implementation

- ▶ Write system call in your Linux source code directory:
`#include <linux/kernel.h>`, `asmlinkage`, `printk()`
- ▶ Modify the Makefile so as to build the new system call into the Kernel
- ▶ Put the prototype of the new system call into `syscall.h`
- ▶ Add the mapping number of your new system call into the system call table in your system
- ▶ Compile the Kernel
- ▶ Use the function `syscall()` to invoke the new system call in a user C program



Report

1. The steps for your implementation
 2. The problem you met, and how you solved it
 3. **The reference of this homework**
- ▶ The report is limited within 4 pages in PDF



Grading

- ▶ Implementation
 - Implement a system call and recompile the Kernel 30%
 - Write a C program to invoke the system call 30%
- ▶ Report
 - 20%
- ▶ Demo Q&A
 - 20%



Submission

- ▶ Homework 3 deadline: at 20:00 on 2024-11-26
→NO DELAY!
 - ▶ Upload to e-learning system
 - ▶ The title of the report: OSHomework3StudentID
 - ▶ **Point deduction for wrong format: 10%**
- DEMO will be arranged!**

