

Lion's Commentary on UNIX

Chapter 12

COP 5611: Operating Systems

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Outline

- Introduction to traps
- Traps in UNIX
- The *trap* function
- System calls
- "exec" system call
- Conclusions

Introduction to traps (1/2)

- Also called software interrupts
 - Bus errors
 - Illegal instructions
 - Segmentation exceptions
 - Floating exceptions
 - System calls

Introduction to traps (2/2)

- The operating system
 - Captures the trap
 - Identifies the trap
 - If system calls, performs the requested tasks
 - Possibly sends a signal back to the user program.

Traps in UNIX (1/4)

- UNIX divides traps into three classes, depending on the prior processor mode and the source of the trap
 - Kernel mode
 - User mode, not due to a “trap” instruction
 - User mode, due to a “trap” instruction
 - i.e. System calls

Traps in UNIX (2/4)

- Kernel mode traps
 - Unexpected
 - Usually caused by a kernel mode bus error
 - Examples:
 - Reading past EOF, reading a closed file, bad file pointers
 - Referencing a non-existent bus device