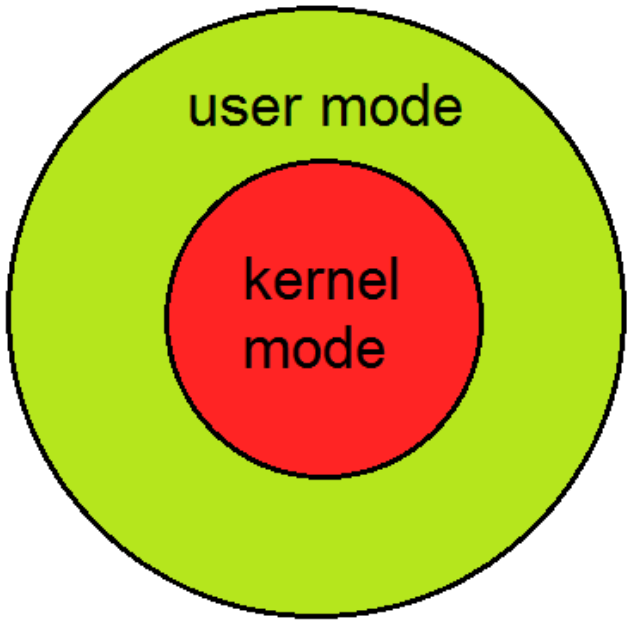
OPERATING SYSTEMS

Unix modes and system calls

Syllabus

- Almost all the modern computers have at least two modes of execution:
- User mode (with the fewest privileges) and
- Privileged mode (with the most).
- Generally, there are three ways to execute in kernel mode:
  - ✓Traps
  - ✓System Calls
  - ✓Interrupts



Syllabus

- **Traps** are the general means for invoking the kernel from user code.
- For **page faults:** the operating system determines the status of the faulted page and takes appropriate action (such as fetching it from secondary storage).
- For **programming errors**: what happens depends upon what the program has previously set up. If nothing, then the program is immediately terminated. A program may establish a handler to be invoked in response to the error; the handler might clean up after the error and then terminate the process, or perhaps perform some sort of corrective action and continue with normal execution.
- Signals

Syllabus

- **Traps** are the general means for invoking the kernel from user code.
- We usually think of a trap as an unintended request for kernel service, say that caused by a programming error such as using a bad address or dividing by zero.
- For **page faults:** the operating system determines the status of the faulted page and takes appropriate action (such as fetching it from secondary storage).
- For **programming errors**: what happens depends upon what the program has previously set up. If nothing, then the program is immediately terminated. A program may establish a handler to be invoked in response to the error; the handler might clean up after the error and then terminate the process, or perhaps perform some sort of corrective action and continue with normal execution.

Suggested Books

- Silberschatz, Galvin,and Gagne, Operating Systems concepts, Wiley
- Gary Nutt, Nabendu Chaki, Sarmistha Neogy, Operating Systems: A Modern Approach, Addison Wesley
- D.M. Dhamdhere, Operating Systems: A Concept Based Approach, Tata McGrawHill