

CS 414 : Operating Systems

UNIVERSITY OF VIRGINIA
Department of Computer Science

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Topic 1: Introduction to Processes

- Readings for this topic: Ch. 3
- Process: an execution stream in the context of a particular process state
- Process = Program?

- *Uniprogramming* vs *Multiprogramming*; uniprocessing vs multiprocessing
- *Process control block* and process table
- Several processes sharing one CPU: fair scheduling & protection
- *Dispatcher*: inner-most portion of the OS
 - Run process for a while
 - Save state
 - Load state of another process
- How does dispatcher decide which process to run next?
 - Plan 0: search process table from front, run first runnable process.
 - Plan 1: link together the runnable processes into a queue.
 - Plan 2: give each process a priority, organize the queue according to priority.
 - *Who decides priorities?*
- CPU can only be doing one thing at a time: if user process is executing, dispatcher isn't: OS has lost control. How does OS regain control of processor?

- What causes a process on CPU to get stopped?
- Internal events: system calls, errors, page faults.
- External events: character typed at terminal, completion of I/O operations, timer.