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ECE391

When executing, for each tasklet in linked list (at either priority)

A. set TASKLET_STATE_RUN atomically (if already set, stop)

- B. check if tasklet is software disabled (count field)
- if so, clear TASKLET_STATE_RUN

$$\begin{split} \mathbf{S} &\Rightarrow \mathbf{TASKLET_STATE_SCHED} \\ \mathbf{R} &\Rightarrow \mathbf{TASKLET_STATE_RUN} \end{split}$$
· leave the tasklet in the linked list for this priority schedule (S=1, R=0)• set the pending bit for this priority · daemon will try again later SCHED flags C. clear TASKLET_STATE_SCHED (S=0, R=0)D. execute handler E. clear TASKLET_STATE_RUN Execute Step E schedule

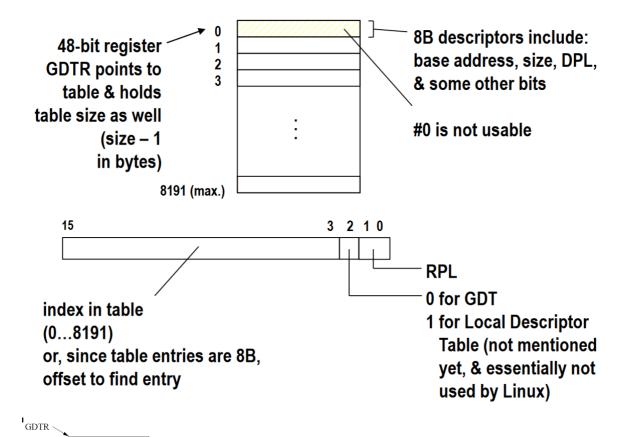
RUN

Execute Step D occurs in lower two states

RUN+

SCHED (S = 1, R = 1)

- Protection
 - Programs cannot access memory outside of their space
- · Effective Sharing
 - Can share memory between two programs quite easily
 - Libraries, global data
- Limited Fragmentation
 - Can piece together disconnected memory into a single "virtually" connected piece of memory
- Simplifies Program Loading
 - We can place a program wherever we like and simply redirect the pointers the program is expecting to their actual locations



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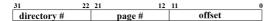
unused

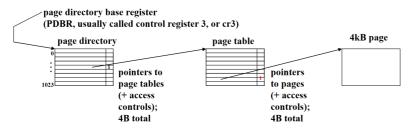
kernel code segment kernel data segment user code segment user data segment

CPU #0 TSS desc. CPU #0 LDT desc.

unused
unused
CPU #1 TSS desc.
CPU #1 LDT desc.
unused
unused

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x86 supports both

- · G flag—global
 - TLB not flushed when changing to new program or address space (i.e., when cr3 changes)
 - used for kernel pages (in Linux)
- · 4MB pages
 - skip the second level of translation
 - indicated by PS (page size) bit in PDE
 - PS=1 means that the PDE points directly to a 4MB page
 - remaining 22 bits of virtual address used as offset
 - x86 provides separate TLBs for 4kB & 4MB translations
 absolute block numbers (4kB per block)

