K-OS Project Summary

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Overview

- Boot Sector
- Interrupts
- I/O
- Memory Management
- Task Management
- Miscellaneous

Boot Sector

- Test CPU
- Load GDT
- Enable A20 Address Line
- Load Kernel
- Switch to protected mode
- Flush registers and execute the kernel

Interrupts

- Set up IDT
- Define and install ISR
  - Default Handler
  - Timer Handler
  - Keyboard Handler
  - Handlers for each interrupt
- Remap and enable PIC

I/O

- Low Level I/O (Text Mode)
  - Writing to Video Memory (0x68000)
  - Manipulating the Cursor
  - Scrolling, etc
- High Level I/O
  - printk(unsigned char *fmt, …)

Memory Management

- Physical memory organization
  - page_use_count
- Virtual memory management
  - paging
  - low level allocation with morecore, alloc_page, free_page
  - high level allocation with kmalloc, kfree

Task Management

- Notion of Process
  - Task State Segment
  - Context Switch
- Scheduling
  - Simple Round-Robin
- Process Synchronization
  - Semaphores (todo)

Miscellaneous

- Shell
  - interprets simple commands
- Virtual Desktops
  - more useful when we have multi-tasking
- Multi-User
  - More useful when we have file system

What’s Next?

- Debugging Context Switching
- Simple loader for application
- File system