CMPSCI 377 Operating Systems **Fall 2005**

Lecture 11: October 18

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Today:

- Memory Management
- Peace Love and Harmony

11.1 Memory Management

11.1.1 Fragmentation

As processes come and go, fragmentation occurs.
How to fit new processes in remaining memory chunks.

- Compaction - expensive
- First Fit
- Best Fit- doesn't allow for growth of memory needs
- Worst Fit - Allows memory needs to grow, could waste space

11.1.2 Paging

Divide memory into chunks, fixed 'pages' of 4K, 8k, or etc...

- allocate pages to frames in memory
- OS manages pages - move, removes, reallocates...
- to and from disk

Physical space is not continuous

- 90/10 rule - 90% of time accessing 10% of memory
- internal fragmentation up to process to deal with
- eliminates external fragmentation

Page Hardware

- processes use virtual address
- address start at 0 or some other address
- OS

Page is unit of virtual memory Frame is unit of physical memory

Page Table describes beginning and end of memory segment.

Managed in hardware so one process can't address another's memory

(Size of page too large - make fragment)?

Page size fixed by OS