

Project Statement

Background

A modern operating system (OS) performs important tasks such as memory management, process management, I/O management etc. This project focuses on an OS' memory management module which supports the fundamental task of keeping track of processes resident in the memory. We assume that our OS does not support paging. At any point in time, memory can be viewed as a sequence of occupied and free chunks. When a new process arrives, it must be placed in a place in memory that is big enough to hold it. When a process terminates, the memory that it occupied must be deemed as free and available for forthcoming new processes to use. A memory manager performs this fundamental task of tracking free and occupied places in memory. There are many algorithms for memory management in a non-paged OS including first fit, best fit, buddy system etc.

Requirements

It is desired to build a memory visualization tool. This tool enables a user to see occupied and free chunks of memory. This tool simulates the arrival and departure of processes. When a process arrives, a free chunk that is big enough to fit the process is allocated for this process to run. When a process terminates, the chunk of memory that it occupied must be freed. At this time, our OS uses the buddy system (refer https://en.wikipedia.org/wiki/Buddy_memory_allocation), but this may change in future versions of the OS. The visualization should provide statistics that pertain to memory usage.

There is room for extra credit in this project. Please start early and meet the instructor frequently for feedback.