CS307 – Operating Systems

Programming Assignment 4

Report

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1. Implementation Explanation

In this programming assignment, we are asked to extend an existing simple virtual memory implementation by adding certain different functions and a mechanism to translate physical adresses to virtual ones.

For my implementation, as asked, I did not change any method declerations, and only tried to implement the functions given to us. As it was crucial, I started with the initOS. I first, as asked on the file, defined the Cur_Proc_id, as 0xFFFF, meaning it is defined as 0. Later, I defined the Proc_Count as 0, meaning currently no process is running, and finished with creating the OS_STATUS as again, 0. It means that the operating system is in the clear state, without any errors or conditions.

FreeMem function, frees a previously allocated chunk, by first locating header and checking if the wanted number is present in the memory, if not it indicates invalid memory. Then locates previous chunk, insert sthe found chunk into free list.

Similarly, alllocMem, by first locating the free list header and calculating required size, finds a suitable chunk and allocates memory, finishing with updating remaining free chunk.

2. Helper Functions

To add different workings to our code, we are asked to implement different helper functions such as loadProc, which loads a program counter of a process, createProc, which creates processes as well as different trap instructions such as tyld and tbrk. Due to the errors that I got on the previous parts of the project, I couldn't, in time, nor implement neither modify the wanted parts of the vm.c.