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Operating Systems Project Documentation

1. General Description:
   This operating system uses a module OS structure with separate modules(methods) for different parts of the OS that communicate through the main method of the program. The modules include a round robin scheduling algorithm, a mutex lock critical section resolving scheme, a process creation module, an external I/O module(simulated with a random chance for I/O events to occur(keyboard plugged in, etc.)), memory management module(checkMem method), and modules that simulate communication with the user.

2. Parameters/Functionalities:
   To compile, you can use the make command, or compile Operating_System_Simulator.c specifically. To run operatingSys.exe, you will need to enter the names of the given program files(2d_Video_Game.txt, etc.) as command line arguments:
   operatingSys.exe 2d_Video_Game.txt 3d_Video_Game.txt Email_Application.txt Text_Processor.txt
   Then the OS will prompt the user for an input with the following choices(all of which are case sensitive and to be entered as written below, without parameters):
   “EXE” - Runs through the OS without stopping.
   “PAUSE” - Will prompt the user for a number of system cycles to run before pausing and will prompt again after.
   “NEW” - Will prompt the user for the name of a program file to create a process from. The name should contain the extension of the file.

   Prompts that follow after this will have each of the previous options as well as the following:
   “YIELD” - Stops running the current process, puts it back in the ready queue, and continues on the next cycle with the next process in the queue.
   “OUT” - Prints relevant PCB content for the current process.

3. Requirements:
   - (Requirement 1)Process implementation and PCB:
     - Lines: 38-48, 156-183
   - (2)Critical section within each process:
     - (In program files): CRIT, CRITEND
   - (3)Critical section resolving scheme:
     - Lines: 204-272, 557-564, 620-637
   - (8)Scheduler:
     - Lines: 613-649
   - (14)Basic memory and operations on it:
     - Lines: 258-271, 280-291
   - (18)I/O interrupts and handlers
     - Lines: 297-312, 318-325
   - (23)Loading external processes and generating new ones on user request:
     - Lines: 156-183, 454-468, 427-441