

Operating Systems

CMPT 424 • Fall 2024

– iProject Four (final) - 150 points

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| Goals | To improve on the functionality from iProject Three (all of which is required) by adding a local file system and swapped virtual memory so you can execute more processes than you have partitions for in memory. Also, to make something of which you are proud, that you can show people, and brag about, and talk about in job interviews for years to come. |
| Functional Requirements | <p>Add shell commands and implement functionality for the following disk operations, displaying a message of success or failure for each one:</p> <ul style="list-style-type: none"><input type="checkbox"/> <code>format</code> — Initialize all blocks in all sectors in all tracks [5 points]<input type="checkbox"/> <code>create <filename></code> — Create the file <i>filename</i> [5 points]<input type="checkbox"/> <code>read <filename></code> — Read and display the contents of <i>filename</i> [5 points]<input type="checkbox"/> <code>write <filename> "data"</code> — Write the data inside the quotes (but not the quotes themselves) to <i>filename</i> [5 points]<input type="checkbox"/> <code>delete <filename></code> — Remove <i>filename</i> from storage [5 points]<input type="checkbox"/> <code>copy <existing filename> <new filename></code> — copy [5 points]<input type="checkbox"/> <code>rename <current filename> <new filename></code> — rename [5 points]<input type="checkbox"/> <code>ls</code> — list the files currently stored on the disk. [5 points] <p>Challenges: See many challenges on next page. [+ points]</p> |
| Implementation Requirements | <p>Implement your file system in HTML5 session storage as discussed in class, including</p> <ul style="list-style-type: none"><input type="checkbox"/> a disk system viewer in your OS interface [5 points]<input type="checkbox"/> a Disk System Device Driver (dsDD) for all of the functional requirements noted above. [5 points]<ul style="list-style-type: none">• Load the dsDD in a similar manner as the keyboard device driver.• Develop your dsDD to insulate and encapsulate the implementation of the kernel-level I/O operations (noted above) from the byte-level details of your individual blocks on the local storage. <p>Implement swapped virtual memory with enough physical memory for three concurrent user processes.</p> <ul style="list-style-type: none"><input type="checkbox"/> Allow the OS to execute four or more concurrent user process by writing roll-out and roll-in routines to . . . [100 points]<ul style="list-style-type: none">• Take a ready process and store it to the disk via your dsDD.• Load a swapped-out process from disk and put it in the ready queue.• Your ready queue should denote which processes are where.<input type="checkbox"/> Your code must separate structure from presentation, be professionally formatted, use and demonstrate best practices, and make me proud to be your teacher. [−∞ if not]<input type="checkbox"/> You must commit to Git early and often. I am not kidding. By the end of this semester you should have over 100 commits. |
| Submitting | Update GitHub with your current code. Tell me what branch to grade. |

