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CS-UY 3923 Assignment 2 Part 3

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For this assignment, where I needed to fix my reference monitor, I made several changes. First of all, to check the offset of readat or writeat functions, I created a buffer as an attribute of LPfile. Whenever something is written to the file, the buffer gets updated, which indicates the end of file (EOF). If it is after EOF, it raises SeekPastEndOfFileError. Also, if the offset for read or write is negative, ReplyArgumentError is raised. In order to keep track of the buffer, I have a code to update the buffer whenever EOF changes. It reads from the beginning of the file without maximum size.

Also, to check if any of the functions tries to access the file when it is closed, I made a boolean variable “closed” to keep track of whether the file is closed or not. If the function is called when self.closed is true, then FileClosedError is raised.

Moreover, I utilized a lock to avoid the race conditions. The four functions (readat, writeat, undo, and close), which make changes or access data in the file, create and acquire a lock once they are called. Then, after finishing all the changes to data, the lock is released so that other functions can acquire the lock.

One last thing to note is the writeat function. It checks for EOF in the beginning, but if there is any pending data to be written from the previous valid writeat function, then it still uses the size of the current file without the pending data. This raised SeekPastEndOfFileError, even if the writeat function is valid. Therefore, I declared a local variable called maxBuf which is the greater one between the current buffer and the buffer with pending data. Then, I compared the maxBuf with the offset to check for EOF.