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Computer Security

Assignment 2.3

Due to my own personal lack of understanding about the assignment, my original reference monitor was rather barebones. As such, it was plain to see upon review that there were many vulnerabilities, mostly around the handling of writeat past EOF, and edge cases around closing and reopening files. I was able to remedy the majority of these vulnerabilities with the addition of clauses that track the EOF of a file upon file open, writeat, and undos, and therefore block attacks made to target those vulnerabilities. Second, I had close make an empty writeat to ensure that the user's latest writeat is committed before closing the file, thus taking care of most of the edge cases around closing and reopening files. Unfortunately, I damaged my installation of repy close to the deadline and was unable to repair it, and so when I was implementing the locks to counter race conditions I gave up on trying to identify critical regions of code from the attack data, and instead tried to make as simple a locking mechanism as possible for fear of introducing more vulnerabilities into my monitor. I then wrapped all functions that edit the file (writeat and undo) as well as close into locks in the hopes that that would eliminate the race conditions.