Reference Monitor Patch

The previous version of my reference monitor couldn't handle a lot of problems such as invalid arguments, writing, reading after the end of file, writing, reading into closed file, and race conditions.

To fix the invalid arguments, I added multiple if statements to check if the offset is negative, the bytes to read are negative, or the data is not string. If the arguments are invalid, I will raise RepyArgumentError with an error message.

To fix writing and reading after the end of the file, I added another variable called filesize. I keep track of this variable by adding the len of each write up I provide. If the offset is bigger than the file size, I will raise SeekPastEndOfFileError.

To fix reading, writing into a closed file, I set self.LPfile to None everytime I close a file. I then check if self.LPfile is None at the beginning of my readat and writeat functions. If it is None, it means that the file has been closed

To fix race conditions, I added lock to my function. Before I execute any function, I would acquire lock first, then do the function. Afterwards, I will make sure to release the lock.

After patching up the reference monitor, the security of my monitor has improved drastically. Now, only attacks that are flagged with orange and red color can bypass my monitor.