Assignment 2.3

The biggest problem with my reference monitor was that although I accounted for certain problems and errors, I did not raise exceptions when it ran into them, such as an offset being greater than the file length or being negative, or a provided argument being invalid. After running the attack cases, most of the errors had to with an exception not being raised when it should have. I was able to fix most of these issues, raising a FileClosedError if the file was already closed and a function is called, raising a SeekPastEndOfFileError if the offset is larger than the file length, and raising a RepyArgumentError when anything was invalid with the arguments of a method. There were also some vulnerabilities that I didn't think of at all during the first attempt, like checking that the data was a string, and ensuring the arguments were valid for readat() as well.

The other safety feature I didn't consider was using locks in the code, which ensures that multiple threads are not able to run at the same time and cause multiple writes, which can cause an unexpected error. I was able to fix this vulnerability and add the locks in the readat and writeat functions. Overall the reference monitor is much safer now, as it handles exceptions and protects against any information disclosure, and doesn't allow for multiple writes and reads at the same time.