

The primary source of the vulnerabilities in my code was not checking if an offset was valid and not checking if a file was closed before recording a pending writeat. This resulted in exceptions not being raised when they should have been. I fixed this issue by tracking and updating the maximum valid offset and tracking whether a file had been closed and checking against both of those when a writeat was called.

I also encountered a situation in which I tried to acquire a lock twice before one was released or when one would never be released because of an exception raised before the release would have been called. I addressed this by adding a try, except, finally clause that would make sure to raise an exception when expected while also always releasing the lock at the end. In addition, to prevent double-acquiring a lock, I wrote an additional writeat function (writeat_unsafe) that did not use locks, so I could use it in situations where I had already acquired a lock but still wanted to call the functionality of writeat.