Assignment8

Please complete a report and upload the corresponding codes.

The files should be uploaded directly without compression <mark>without compression without compression without compression</mark>

The files to be submitted for this assignment are:

1. report.pdf
2. Assignment8.zip

1. I/O [50 pts]

Please read "Three Easy Pieces" Ch36 https://pages.cs.wisc.edu/~remzi/OSTEP/file-devices.pdf, and answer the following questions:

(1) What are the pros and cons of polling and interrupt-based I/O?

(2) What are the differences between PIO and DMA?

(3) How to protect memory-mapped I/O and explicit I/O instructions from being abused by malicious user process?

2. Condition variable [50 pts]

Please implement the condition variable in ucore by the already implemented wait queue or semaphore.

Requirements:

1. Please complete the definition of the condition variable in `condvar.h`
2. Please implement the related functions of condition variables in `condvar.c`
3. We have used these functions in check_milk, please make sure your implementation can make check_milk run in valid order. (Please release annotations of check_milk in init_main in proc.c for testing, and annotate check_sync).

Please include your design idea, code(screen-shot) and the running result(screen-shot) in your report.