Recall: ToyOS has a request handler (ioReqHndlr) and possibly an interrupt handler (ioIntHndlr) for each io device. These handlers make use of functions updateRunqPcb, scheduler, wakeup, wait, among others. OS-IO interaction can have various features: program-driven, interrupt-driven, synchronous, asynchronous, dma, etc.

1. [20 points]
Consider an output device $X$ as follows: (1) data block size is 2 memory words (e.g., 64 bits); (2) time to output a data block (i.e., from adaptor to device) is the time that the cpu takes to execute about 10 machine instructions.

Part a. Which features would you choose for OS–X interaction. Explain briefly.

Part b. Write down the request handler and the interrupt handler (if any) for $X$, consistent with your part a answer. You should use a similar level of detail as in ToyOS.
2. [20 points] Repeat problem 1 but with device $X$ replaced by a keyboard. (So your answer has part a and part b.)