

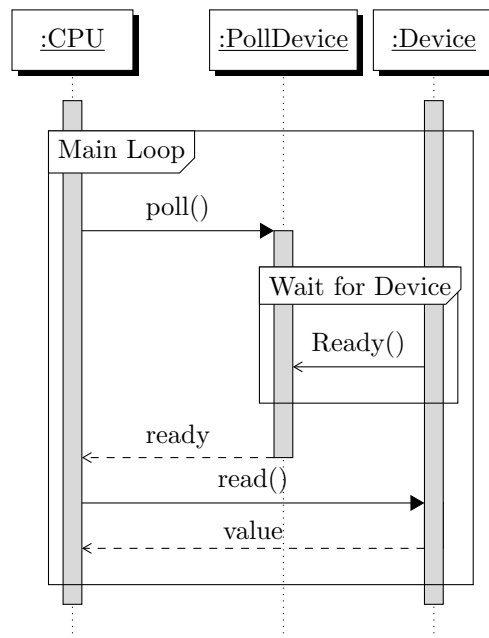
Assignment # 7: Problem Set 4, Problem 2

Brian Arnberg

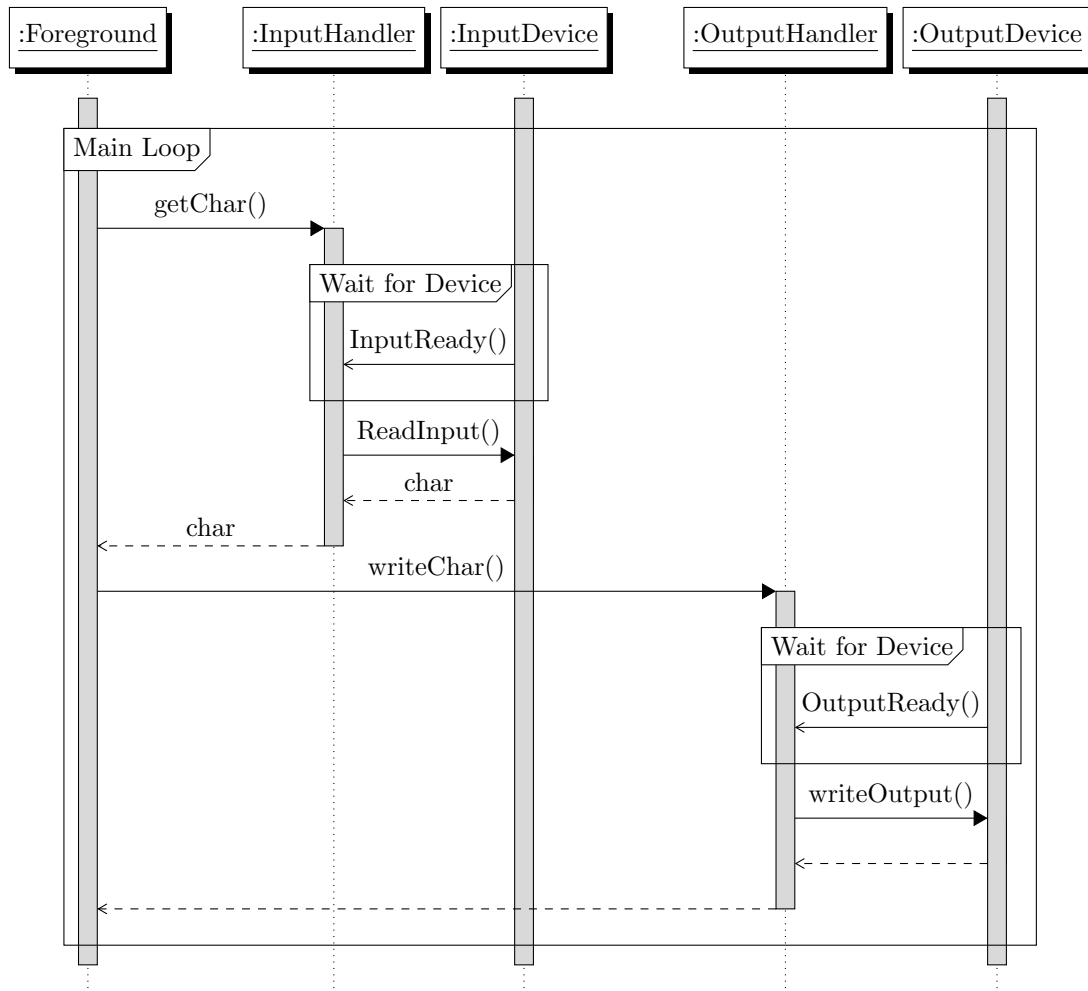
2/15/2013

At the end of Chapter 3, answer/work the following, which deal with input/output operations:
Q3-6, Q3-8, Q3-9, Q3-12, Q3-12, Q3-13, Q3-15, Q3-16, Q3-19.

Q3 - 6: Draw a UML sequence diagram for a busy-wait read of a device. The diagram should include the program running on the CPU and the device.



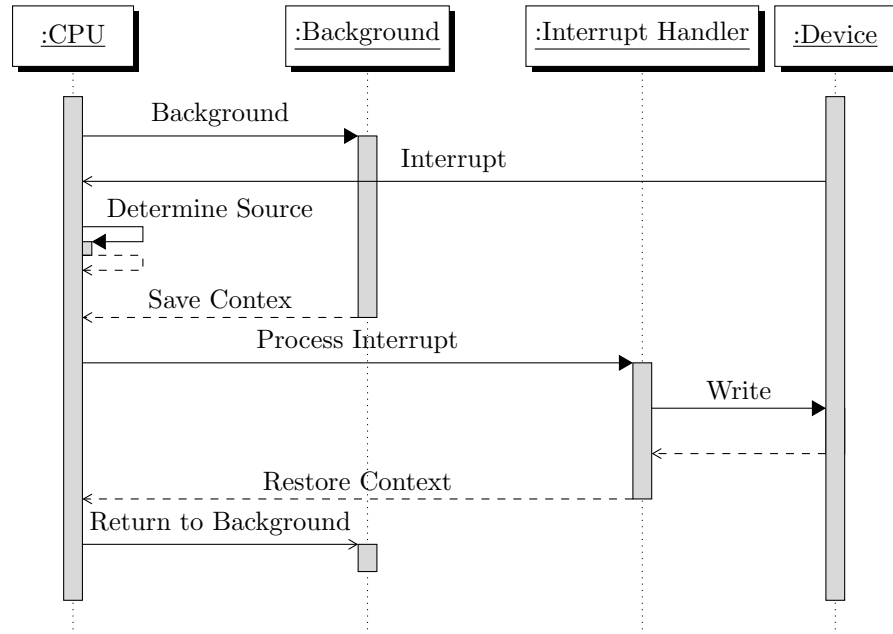
Q3 - 8: Draw a UML sequence diagram for copying characters from an input to an output device using busy-wait I/O. The diagram should include the two devices and the two busy-wait I/O handlers.



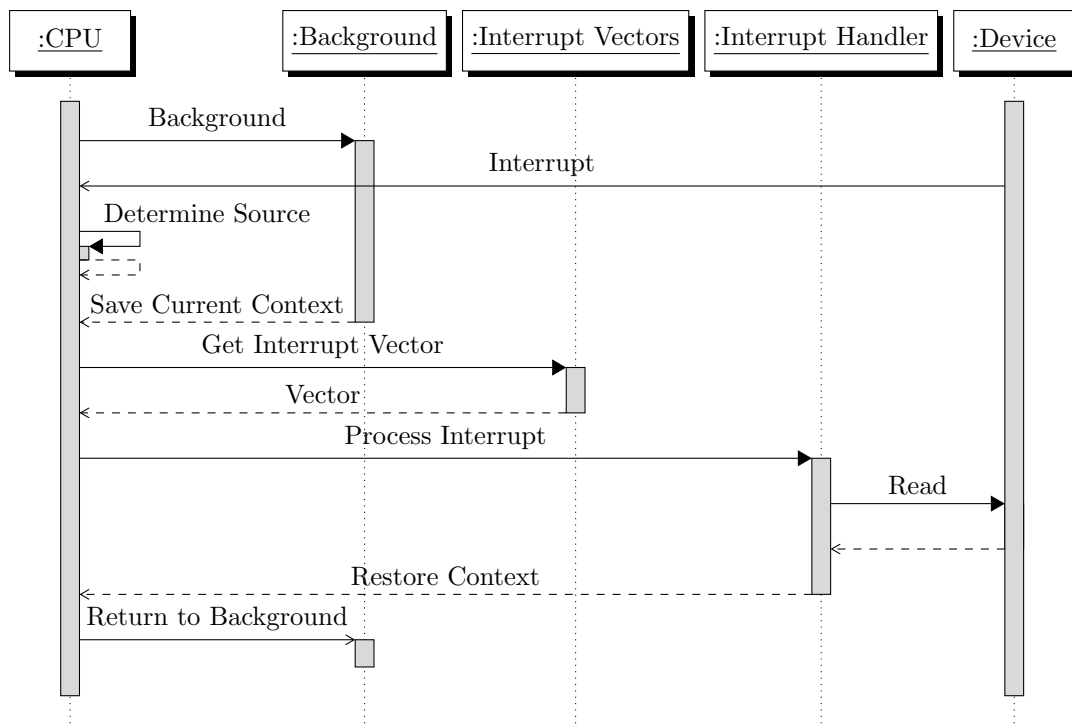
Q3 - 9: When would you prefer to use busy-wait I/O over interrupt driven I/O?

Answer: One would prefer busy-wait I/O over interrupt driven I/O in situations wherein the main program cannot function until a device is ready to service. For instance, a calculator should wait for user input before it does anything, and once it has calculated (and displayed) the output, it should wait for more user input.

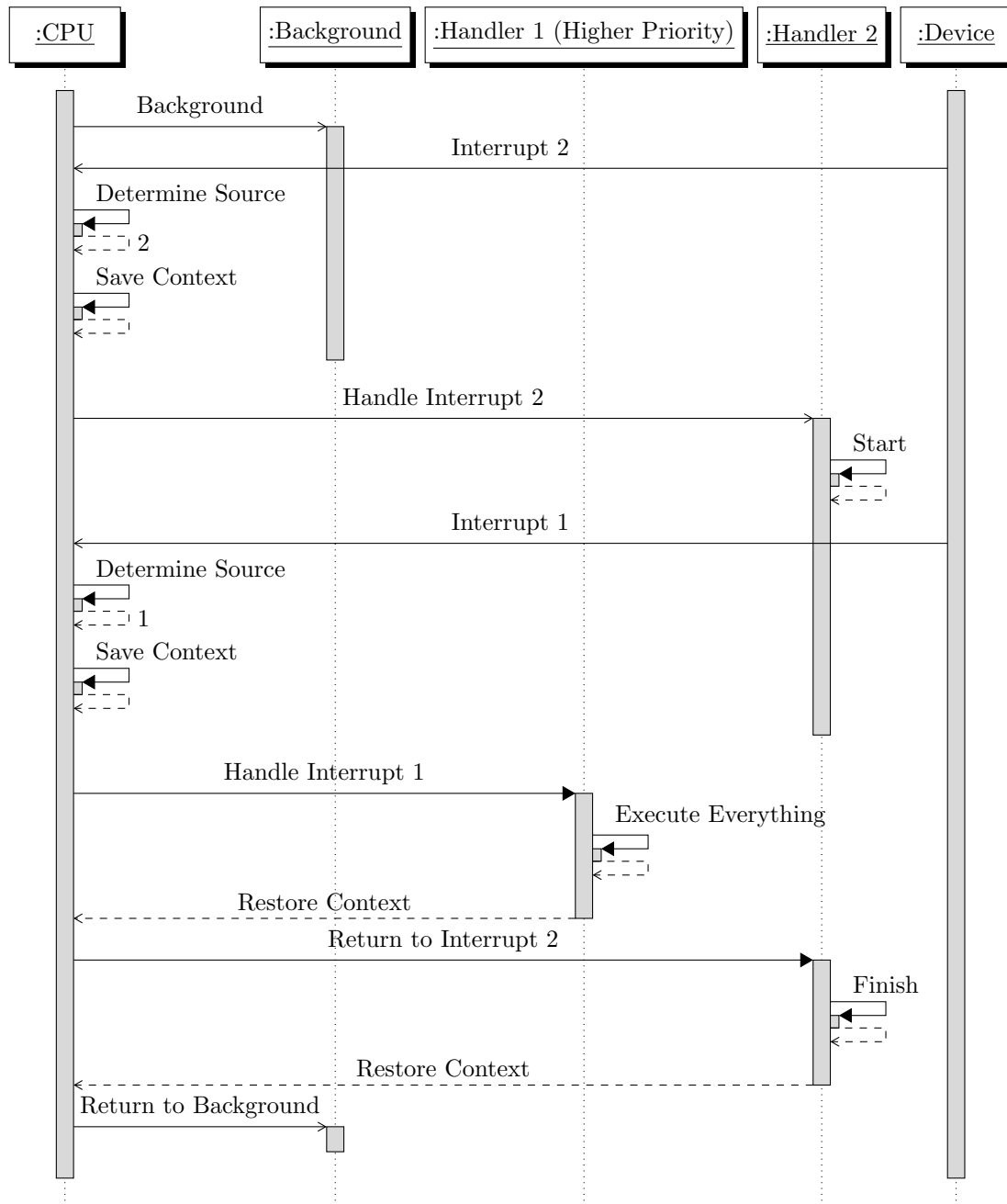
Q3 - 12: Draw a UML sequence diagram for an interrupt-driven write of a device. The diagram should include the background program, the handler, and the device.



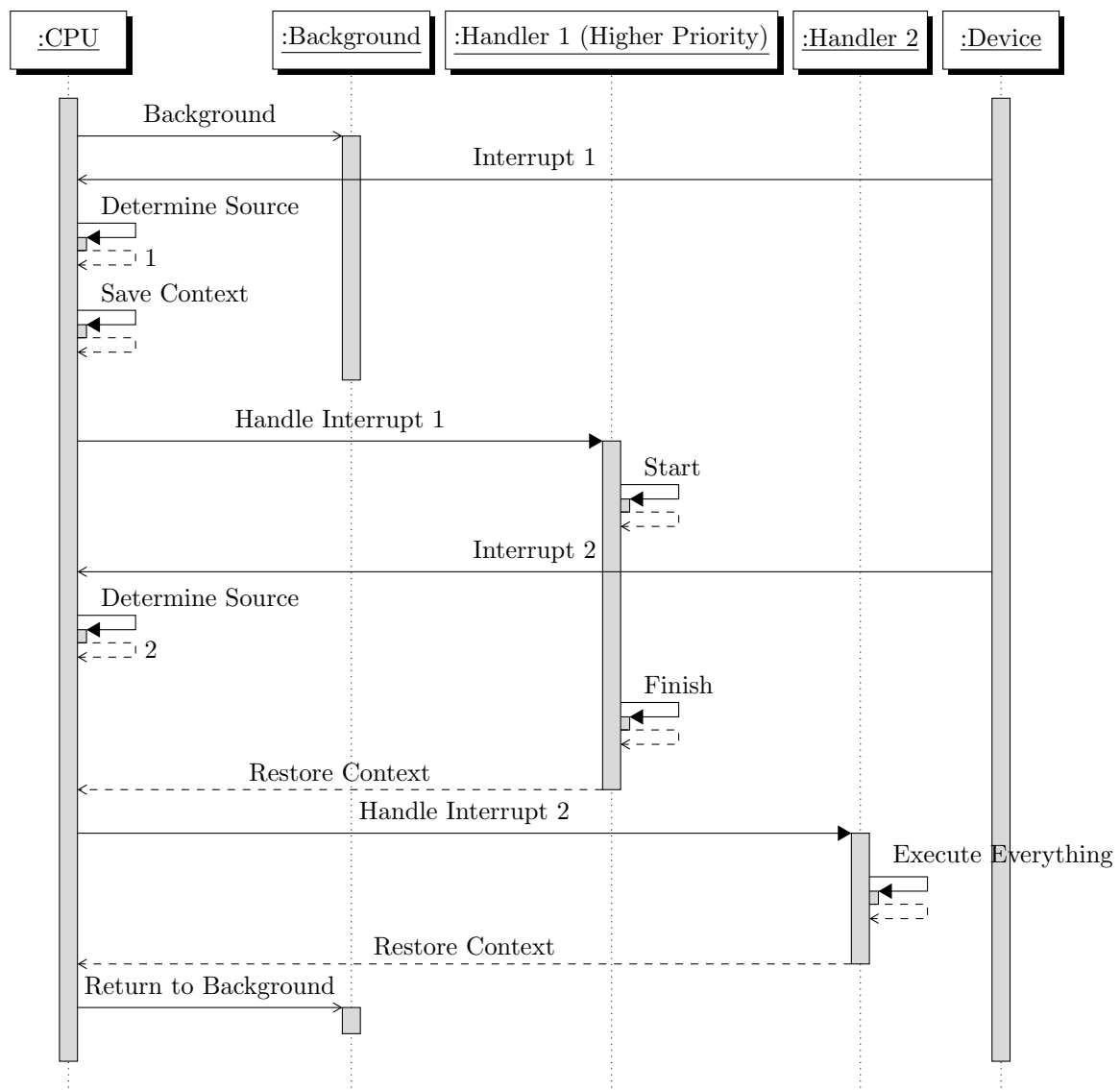
Q3 - 13: Draw a UML sequence diagram for a vectored interrupt-driven read of a device. The diagram should include the background program, the interrupt vector table, the handler, and the device.



Q3 - 15: Draw a UML sequence diagram of a higher-priority interrupt that happens during a lower-priority interrupt handler. The diagram should include the device, the two handlers, and the background program.



Q3 - 16: Draw a UML sequence diagram of a lower-priority interrupt that happens during a higher-priority interrupt handler. The diagram should include the device, the two handlers, and the background program.



Q3 - 19: Three devices are attached to a microprocessor: Device 1 has highest priority and device 3 has lowest priority. Each device's interrupt handler takes 5 time units to execute. Show what interrupt handler (if any) is executing at each time given the sequency of device interrupts displayed below.

