Lec-7-HW-2-LC3-sysProg

Reading:

PP, Chp 8.1-8.3.3 (device registers, memory-mapped I/O, keyboard and display I/O),

PP, Chp 8.5 (interrupt overview).

PP, Chp 9.1-9.2.2 (TRAP/JSR subroutine calls, register saving).

PP, Chp 10.1-10.2 (stacks, push/pop, stack under/overflow, interrupt I/O, saving/restoring program state).

PP LC3 Reference (Also in docs/):

ASCII table:	inside back cover
Instruction Formats:	inside back cover
Instruction Descriptions:	App. A.3
Notation for Descriptions:	App. A.2
Memory Map:	App. A.1
TRAP routines:	App. A.3, Table A.2
I/O Device Registers:	App. A.3, Table A.3
Interrupt and Exception execution:	App. A.4 and App. C.6
Control FSM state diagram:	App. C, Fig. C.2 and Fig. C.7
Complete Datapath:	App. C, Fig. C.8
Memory-IO Bus:	lib/system.jelib:top

Problems:

PP, Chp 8:
8.5 (what is KBSR[15]?)
8.11 (polling vs. intr. efficiency)
8.14 (I/O addr. decode)
8.15 (KBSR[14] and intr. handling)

PP, Chp 9:
9.2 (TRAP execution)
9.13 (debugging JSR and RET)
9.19 (complete the intr. priority service call)

PP, Chp 10:
10.10 (cc pushed in intr.)
10.11 (device registers and IVT)
10.15 (keyboard interrupt handler w/ circular buffer)
10.24 (intr. vector and pointer handler)

Question.
Explain how the TRAP x21 (aka "OUT") service routine works. To find that code, start PennSim.jar and look at the TVT slot for x21, find the routine's address there, then look at that memory location and see the code.