**CSCI240 – Computer Organization and Assembly Language Programming**

**Name:**  Jonathan Limpus

**Student ID:** 1429394

**Assignment:** Homework 8: I/O

**2.** A ready bit isn’t needed because in synchronous I/O, the processor would already know when to receive input and give output, so there is no need to check if the I/O is “ready”.

**3.** Bit[15] is the ready bit of the KBSR, it indicates whether or not the register is ready to receive input.

**5.** If the ready bit isn’t checked before reading the KBDR, characters could potentially be read more than once unintentionally.

**8.**

; ASCII values range from 0-127

; Check to see if value is in this range

; If so, print

.ORIG x3000

LDI R0, ASCII

BRn END ; If the number is negative, exit program

LD R1 FOO

ADD R1 R0 R1 ; if the value is still positive,

BRp END ; it is > 127 and not ASCII

OUT

END HALT

ASCII .FILL x4000

FOO .FILL -127

**11.** Interrupt-driven I/O is more efficient, as the processor doesn’t need to frequently check a certain register for data.

**14.**

**16.** Prints the letters A – I. It loads ASCII x41 (A) to R0 and outputs it, then adds one to R0 while R0 < x4A