

6. Another strange arithmetic/I/O question. Consider a system that has the following characteristics (that are germane to this question): GPIO module located at address **0x86410000** hooked to 32 LEDs (like in lab). GPIO module located at address **0x86420000** hooked to another 32 LEDs (like in lab). A third GPIO module located at **0x86430000** attached to 32 wires from unknown source. Mailbox assigned to address **0x00023200** (one word mailbox). The mailbox provides synchronization only. When the mailbox is non-zero, data is available on the wires of the third GPIO module. So, in the space below provide code to set up and do the following. When data is available, read the value and compare to maximum and minimum. Send maximum values to LEDs at first address. Send minimum value to second address. After 500 values, quit.

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li r13, 0x0          # Count
lis r10, 0x7FFF      # MAX Positive Value
ori r10, r10, 0xFFFF # MIN neg Value
li r11, 0xFFFF      #
ori r11, r11, 0xFFFF #
li r1, 0x8641        # pointer to 1st set of 32 LEDs
li r2, 0x8642        # pointer to 2nd set of 32 LEDs
li r3, 0x8643        # pointer to 3rd GPIO Module
lis r4, 0x00020000   # } pointer to mailbox
ori r4, r4, 0x320000 # }
li r5, 0x0           # Pattern to set GPIO as Output
li r6, 0xFFFF       # Pattern to set GPIO as Input
ori r6, r6, 0xFFFF #
stw r5, 4(r1)        # 1st GPIO set to Output LED
stw r5, 4(r2)        # 2nd " " " " "
stw r6, 4(r3)        # 3rd GPIO set as Input
check: li r7, 0(r4)   # Check the Mail
       cmp 0, 0, r7, r5 # if Mail is zero
       bne check      # keep checking
       li r8, 0(r3)   # if mail box is non zero read 3rd GPIO into r8
       cmp 1, 0, r8, r10 # Compare to Max
       bgt 1, Max     #
       cmp 2, 0, r8, r11 # Compare to Min
       blt 2, Min     #
       mr r10, r8      # update max value
Max:   stw r10, 0(r1)   # Send out to LEDs 1st set
       addi r13, 0x1   # increment count
       b check         # check for next input
Min:   mr r11, r8      # update min value
       stw r11, 0(r2)  # Send out to LED 2nd set
       addi r13, 0x1   # increment
Check1: cmpi r13, 500 # checks for 500 values
       bne check      # if not keep checking input

```