

CS 301 Lab 8

Min-Max.s

Student ID: 200482797

Owen Monus

March 16th, 2024

MinMax.s source code

```
LDR R1, N          ;Load count into R1
LDR R2, POINTER    ; load base pointer of array
LDR R4, N

LOOP
    LDR R3, [R2], #4    ; load value from array, increment array pointer to next word

    CMP R1, R4
    BEQ HANDLE_FIRST_ITEM

    CMP R3, R5
    BGT INCREMENT_MAX

    CMP R3, R6
    BLT INCREMENT_MIN

    B ITERATE

INCREMENT_MIN
    MOV R5, R3
    B ITERATE

INCREMENT_MAX
    MOV R6, R3
    B ITERATE

HANDLE_FIRST_ITEM
    MOV R5, R3
    MOV R6, R3
    B ITERATE

ITERATE
    SUBS R1, R1, #1    ; decrement counter
    BGT LOOP           ; keep looping until counter is zero
    B STOP

STOP
```

MinMax.s successful build

```
47:*****User Code Start from the next line*****
48:
49:  Add code below to find the maximum value and
50:  the minimum value in the number array [R0].
51:  You can use the example in the notes as a reference.
52:  Min in R5 and the Max in R6.
53:
54:*****
55:
56:  LDR R1, #0          /Load count into R1
57:  LDR R2, POINTER     / load base pointer of array
58:  LDR R4, #0
59:
60:
61: LOOP
62:  LDR R3, [R2], #4     / load value from array, increment array pointer to next word
63:
64:  CMP R1, R6
65:  BEQ HANDLE_FIRST_ITEM
66:
67:  CMP R3, R5
68:  BGT INCREMENT_MAX
69:
70:  CMP R3, R6
71:  BLT INCREMENT_MIN
72:
73:  B ITERATE
74:
75: INCREMENT_MIN
76:  MOV R5, R3
77:  B ITERATE
78:
79: INCREMENT_MAX
80:  MOV R6, R3
81:
82:  MOV R7, R3
```

Build Output

```
*** Using Compiler 'V6.06 update 3' (Build 300)*, folder: 'C:\Keil_V6\ARM\ARMCC\Bin'
Build target 'Target 1'
".\OBJ\cortex-ls10.o" -> 0 Error(s), 0 Warning(s).
Build Time Elapsed: 00:00:00
```

MinMax.s Min in R5 and Max in R6

Registers	
Register	Value
Core	
R0	0x00000000
R1	0x00000000
R2	0x08000044
R3	0x00000042
R4	0x0000000C
R5	0xFFFFFFFF9
R6	0x00000042
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x20001000
R14 (LR)	0xFFFFFFFF
R15 (PC)	0x0800007A
+ xPSR	0x61000000
+ Banked	
+ System	
- Internal	
Mode	Thread
Privilege	Privileged
Stack	MSP
States	203
Sec	0.00001692