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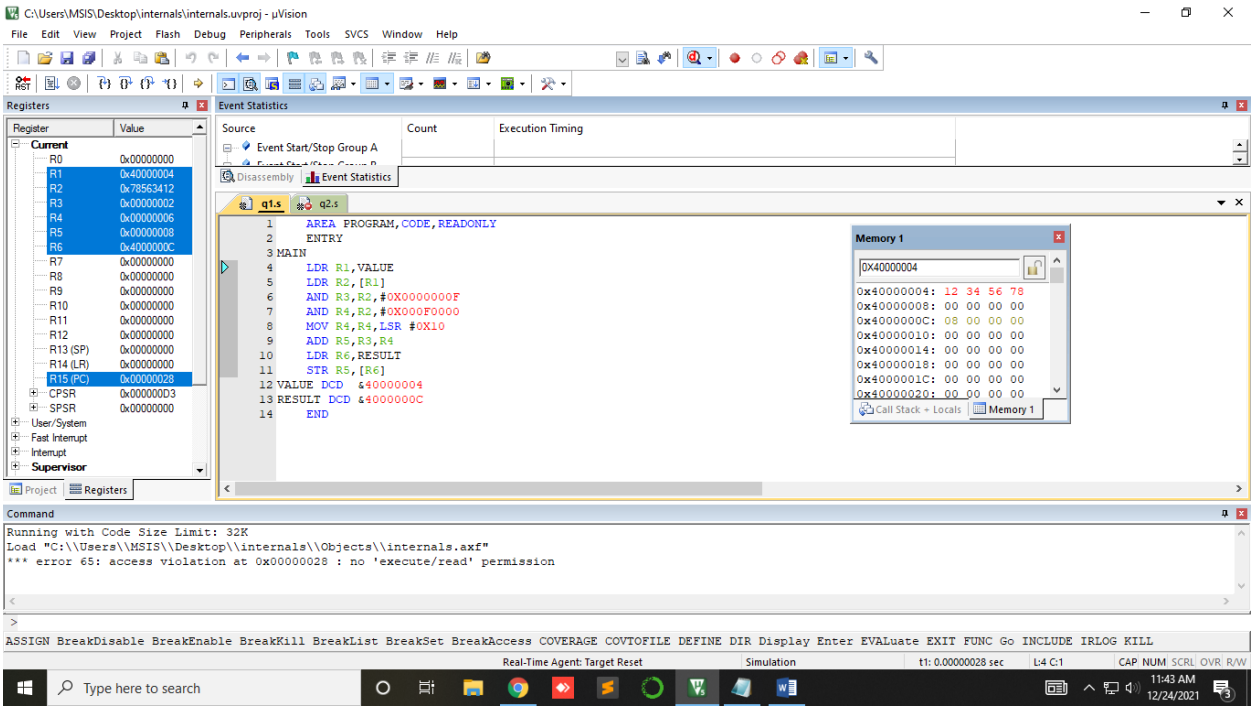
Q1: Implement an ASM program for the following. Assume a 32 bit-number in 4000 0004H.
;Add nibble 4 and nibble 0 and store the result in 4000 000CH

```
 PROGRAM:
                AREA PROGRAM,CODE,READONLY
        ENTRY
MAIN
        LDR R1,VALUE
        LDR R2,[R1]
        AND R3,R2,#0X0000000F
        AND R4,R2,#0X000F0000
        MOV R4,R4,LSR #0X10
        ADD R5,R3,R4
        LDR R6,RESULT
        STR R5,[R6]
VALUE DCD  &40000004
RESULT DCD &4000000C

        END
```

OUTPUT:


C:\Users\MSIS\Desktop\internals\internals.uvproj - µVision
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
Registers
Register Value
Current
R0 0x00000000
R1 0x40000004
R2 0x78563412
R3 0x00000002
R4 0x00000006
R5 0x00000008
R6 0x4000000C
R7 0x00000000
R8 0x00000000
R9 0x00000000
R10 0x00000000
R11 0x00000000
R12 0x00000000
R13 (SP) 0x00000000
R14 (LR) 0x00000000
R15 (PC) 0x00000028
CPSR 0x000000D3
SPSR 0x00000000
User/System
Fast Interrupt
Interrupt
Supervisor
Project Registers
Event Statistics
Source Count Execution Timing
Event Start/Stop Group A
Disassembly Event Statistics
q1.s q2.s
1 AREA PROGRAM,CODE,READONLY
2 ENTRY
3 MAIN
4 LDR R1,VALUE
5 LDR R2,[R1]
6 AND R3,R2,#0X0000000F
7 AND R4,R2,#0X000F0000
8 MOV R4,R4,LSR #0X10
9 ADD R5,R3,R4
10 LDR R6,RESULT
11 STR R5,[R6]
12 VALUE DCD &40000004
13 RESULT DCD &4000000C
14 END
Memory 1
0X40000004
0x40000004: 12 34 56 78
0x40000008: 00 00 00 00
0x4000000C: 08 00 00 00
0x40000010: 00 00 00 00
0x40000014: 00 00 00 00
0x40000018: 00 00 00 00
0x4000001C: 00 00 00 00
0x40000020: 00 00 00 00
Call Stack + Locals Memory 1
Command
Running with Code Size Limit: 32K
Load "C:\\Users\\MSIS\\Desktop\\internals\\Objects\\internals.axf"
*** error 65: access violation at 0x00000028 : no 'execute/read' permission
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE COVTOFILE DEFINE DIR Display Enter EVALuate EXIT FUNC Go INCLUDE IRLOG KILL
Real-Time Agent: Target Reset
Simulation
t1: 0.00000028 sec
L:4 C:1
CAP NUM SCRL OVR R/W
Type here to search
11:43 AM
12/24/2021

Q2 Implement ASM program to add array of numbers present at 4000 0004H only if it is positive, and store it in 4000 000CH
;Let count value be at 4000 0000H

PROGRAM:

```
                AREA PROGRAM, CODE, READONLY
        ENTRY
MAIN
        LDR R0,VALUE   ;load value 0X40000004 to R0
        LDR R3,COUNT  ;load vlaue 0X40000000 to r3 act as a counter
        LDR R4,[R3]             ;load  content of R4 to R3
LOOP LDR R1,[R0]        ;load content of R0 to R1
        CMP R1,#0               ;compare the value of R1 to check the no equal to 0 if it is 0 it set 0 flag to high
        BMI JUMP                ;if the number is negetive move to jump instruction
        ADD R2,R1               ;if not equal to 0 add r2 and r1 and store in r5
        ADD R0,#4               ;incrementing the address in R0 to get the next element from the array
        ADD R4,#-1              ;decrementing r4 which is the counter value
        CMP R4,#0               ;again check if R4 is 0 or not if yes set 0 flag to high
        BEQ DONE                ;if not 0 jump to done
        B LOOP                  ;else go to loop
JUMP ADD R0,#4                  ;incrementing r1
        ADD R4,#-1              ;decrementing r4 counter
        B LOOP                  ;branch to loop
DONE LDR R3,RESULT    ;laoding address to store result
        STR R2,[R3]             ;storing result
STOP B STOP;
VALUE DCD 0X40000004;
COUNT DCD 0X40000000;
```

RESULT DCD 0X4000002C;

END

OUTPUT: