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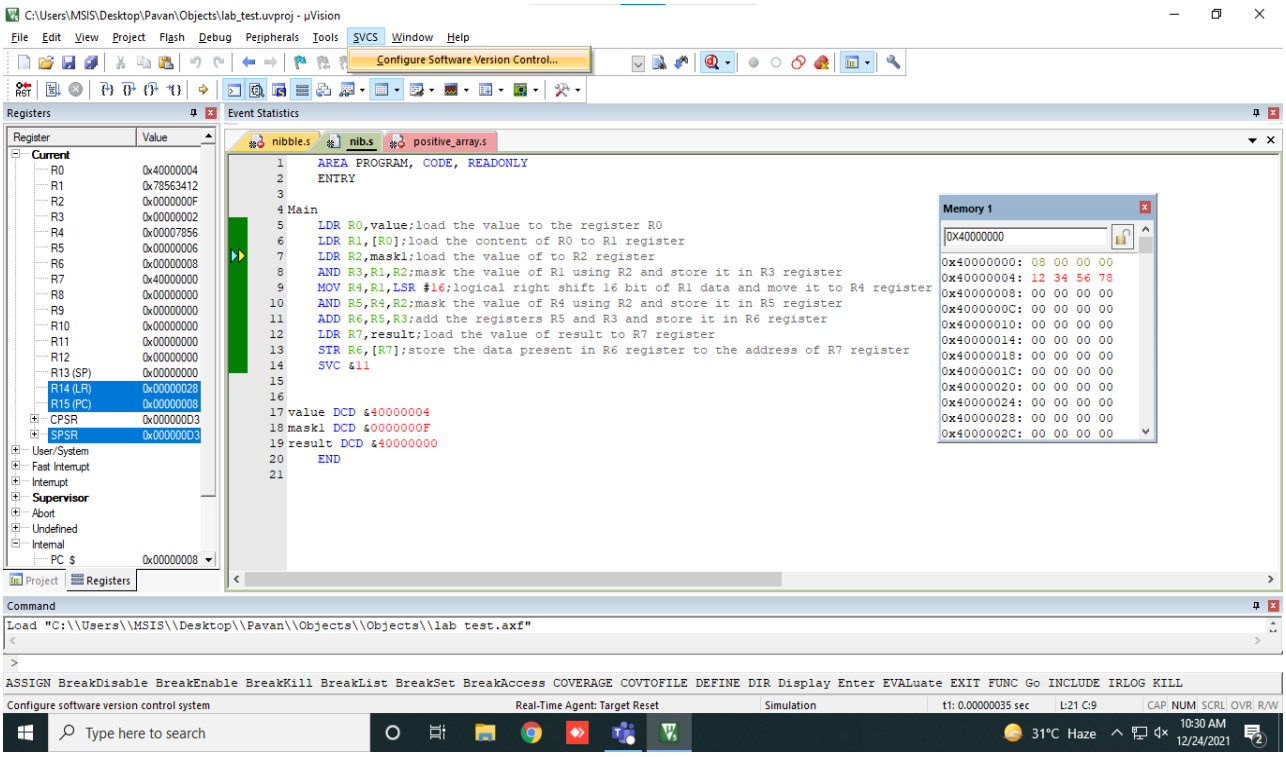
Q1 : Add nibble N4 and N0 from memory location and store results in 40000000

```
        AREA PROGRAM, CODE, READONLY
        ENTRY

Main
        LDR R0, value; load the value to the register R0
        LDR R1, [R0]; load the content of R0 to R1 register
        LDR R2, mask1; load the value of to R2 register
        AND R3, R1, R2; mask the value of R1 using R2 and store it in R3 register
        MOV R4,R1,LSR #16;logical right shift 16 bit of R1 data and move it to R4 register
        AND R5, R4, R2; mask the value of R4 using R2 and store it in R5 register
        ADD R6, R5, R3; add the registers R5 and R3 and store it in R6 register
        LDR R7, result; load the value of result to R7 register
        STR R6, [R7]; store the data present in R6 register to the address of R7 register
        SVC &11


value DCD &40000004
mask1 DCD &0000000F
result DCD &40000000
        END
```

OUTPUT:



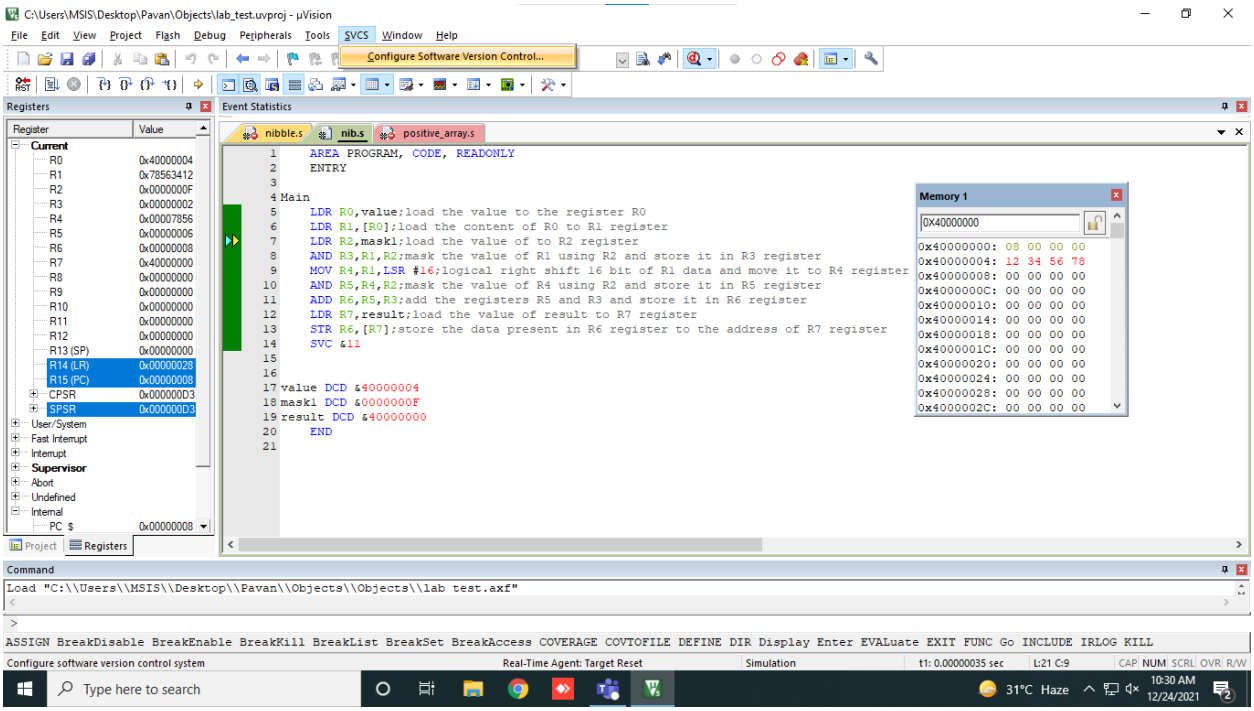
Q2 : Implement ASM program to add array of numbers present at 400000004 only if it is positive, and store it in 4000000C

PROGRAM :

```
        AREA PROGRAM, CODE, READONLY
        ENTRY
MAIN
        LDR R0, VALUE;loading adress of the value to R0
        LDR R3, COUNT;loading adress of the count into R3
        LDR R4, [R3]; loading count into R4
LOOP
        LDR R1,[R0];loading content of address which is in R0 into R1
        CMP R1,#0;comparing content of R1 to 0 to check for negative number
```

```
        BMI JUMP;if the number in R1 is negative goto jump
        ADC R2, R1;else add R2 and R1 and stores in R2
        ADD R0,#4;incrementing the address in R0 to fetch next element of array
        ADD R4,#-1;decrementing counter
        CMP R4,#0;checks if R4 thta is counter is 0 or not
        BEQ DONE;if counter is 0 goto done
        B LOOP;else go to loop
JUMP
        ADD R0,#4;incrementing address
        ADD R4,#-1;decrementing counter
        B LOOP;go 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 :


C:\Users\MSIS\Desktop\Pavan\Objects\lab_test.uvproj - µVision
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
Configure Software Version Control...
Registers
Register
Value
Current
R0 0x40000004
R1 0x78563412
R2 0x0000000F
R3 0x00000002
R4 0x00007856
R5 0x00000006
R6 0x00000008
R7 0x40000000
R8 0x00000000
R9 0x00000000
R10 0x00000000
R11 0x00000000
R12 0x00000000
R13 (SP) 0x00000000
R14 (LR) 0x00000028
R15 (PC) 0x00000008
CPSR 0x000000D3
SPSR 0x000000D3
User/System
Fast Interrupt
Interrupt
Supervisor
Abort
Undefined
Internal
PC $ 0x00000008
Project
Registers
Event Statistics
nibble.s
nib.s
positive_array.s
1 AREA PROGRAM, CODE, READONLY
2 ENTRY
3
4 Main
5 LDR R0,value;load the value to the register R0
6 LDR R1,[R0];load the content of R0 to R1 register
7 LDR R2,mask1;load the value of to R2 register
8 AND R3,R1,R2;mask the value of R1 using R2 and store it in R3 register
9 MOV R4,R1,LSR #16;logical right shift 16 bit of R1 data and move it to R4 register
10 AND R5,R4,R2;mask the value of R4 using R2 and store it in R5 register
11 ADD R6,R5,R3;add the registers R5 and R3 and store it in R6 register
12 LDR R7,result;load the value of result to R7 register
13 STR R6,[R7];store the data present in R6 register to the address of R7 register
14 SVC &11
15
16
17 value DCD &40000004
18 mask1 DCD &0000000F
19 result DCD &40000000
20 END
21
Memory 1
0X40000000
0x40000000: 08 00 00 00
0x40000004: 12 34 56 78
0x40000008: 00 00 00 00
0x4000000C: 00 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
0x40000024: 00 00 00 00
0x40000028: 00 00 00 00
0x4000002C: 00 00 00 00
Command
Load "C:\\Users\\MSIS\\Desktop\\Pavan\\Objects\\Objects\\lab test.axf"
ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE COVTOFILE DEFINE DIR Display Enter EVALuate EXIT FUNC Go INCLUDE IRLOG KILL
Configure software version control system
Real-Time Agent: Target Reset
Simulation
t1: 0.00000035 sec
L:21 C:9
CAP NUM SCRL OVR R/W
Type here to search
31°C Haze
10:30 AM
12/24/2021