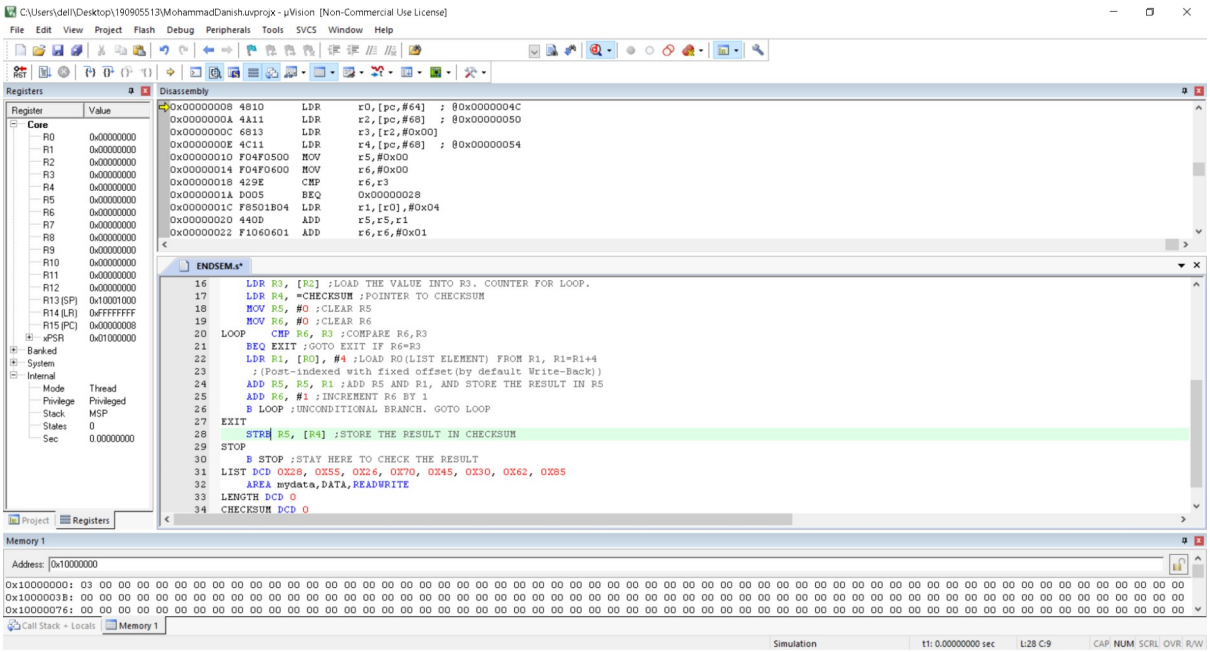
Question: The checksum of a set of numbers is the sum of all the elements of the set, ignoring the carry. Write and execute an ARM assembly language program to calculate the checksum of a set of numbers, available in the code memory as LIST, which is initialized with 0x28, 0x55, 0x26, 0x70, 0x45, 0x30, 0x62 and 0x85. The size of the set whose checksum is to be calculated is defined by the variable LENGTH. You are supposed to find the checksum by adding all the numbers up to LENGTH from the first element in the LIST, ignoring the carry. Store the checksum in the variable CHECKSUM.
Sample input and output Input: LENGTH: 3 Output: CHECKSUM = 0x28 + 0x55 + 0x26=A3

Program:

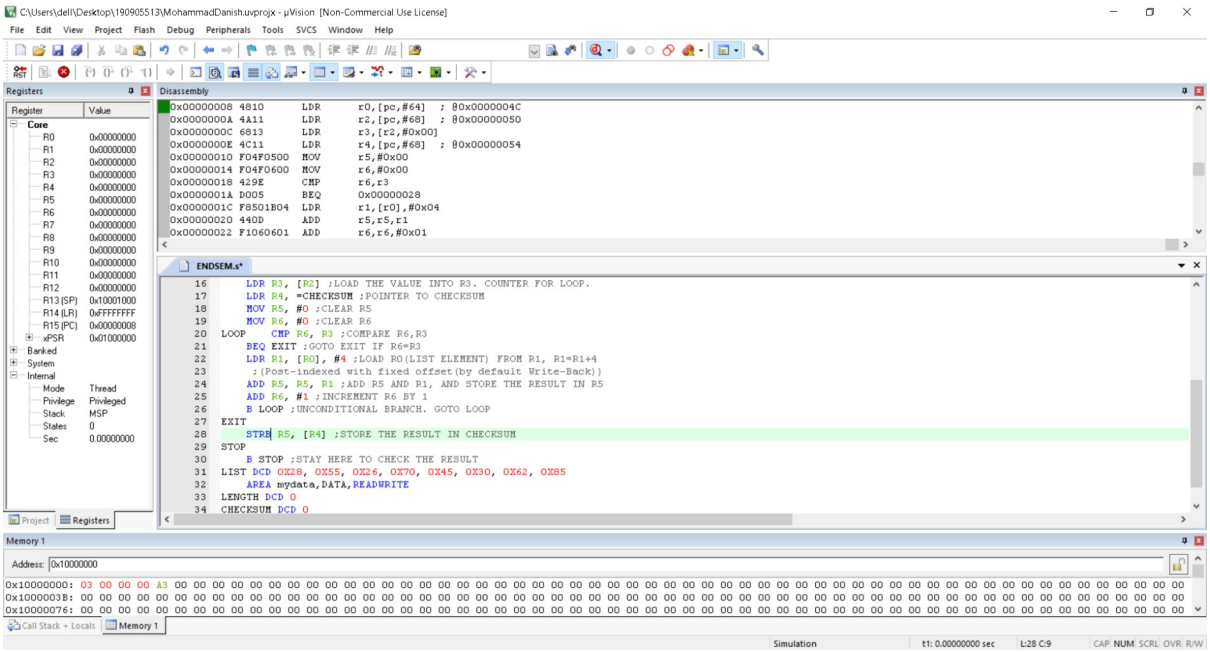
```
     AREA RESET,DATA,READONLY
     EXPORT __Vectors

__Vectors

     DCD 0x10001000
     DCD Reset_Handler
          ALIGN
          AREA mycode,CODE,READONLY
          ENTRY
          EXPORT Reset_Handler

Reset_Handler
     LDR R0, =LIST ;POINTER TO LIST
     LDR R2, =LENGTH ;POINTER TO LENGTH
     LDR R3, [R2] ;LOAD THE VALUE INTO R3. COUNTER FOR LOOP.
     LDR R4, =CHECKSUM ;POINTER TO CHECKSUM
     MOV R5, #0 ;CLEAR R5
     MOV R6, #0 ;CLEAR R6
LOOP CMP R6, R3 ;COMPARE R6,R3
     BEQ EXIT ;GOTO EXIT IF R6=R3
     LDR R1, [R0], #4 ;LOAD R0(LIST ELEMENT) FROM R1, R1=R1+4
     ;(Post-indexed with fixed offset(by default Write-Back))
     ADD R5, R5, R1 ;ADD R5 AND R1, AND STORE THE RESULT IN R5
     ADD R6, #1 ;INCREMENT R6 BY 1
     B UP ;UNCONDITIONAL BRANCH. GOTO LOOP
EXIT
     STRB R5, [R4] ;STORE THE RESULT IN CHECKSUM
STOP
     B STOP ;STAY HERE TO CHECK THE RESULT
LIST DCD 0X28, 0X55, 0X26, 0X70, 0X45, 0X30, 0X62, 0X85
     AREA mydata,DATA,READWRITE
LENGTH DCD 0
CHECKSUM DCD 0
     END
```

OUTPUT:

Entered LENGTH=3 from keyboard.

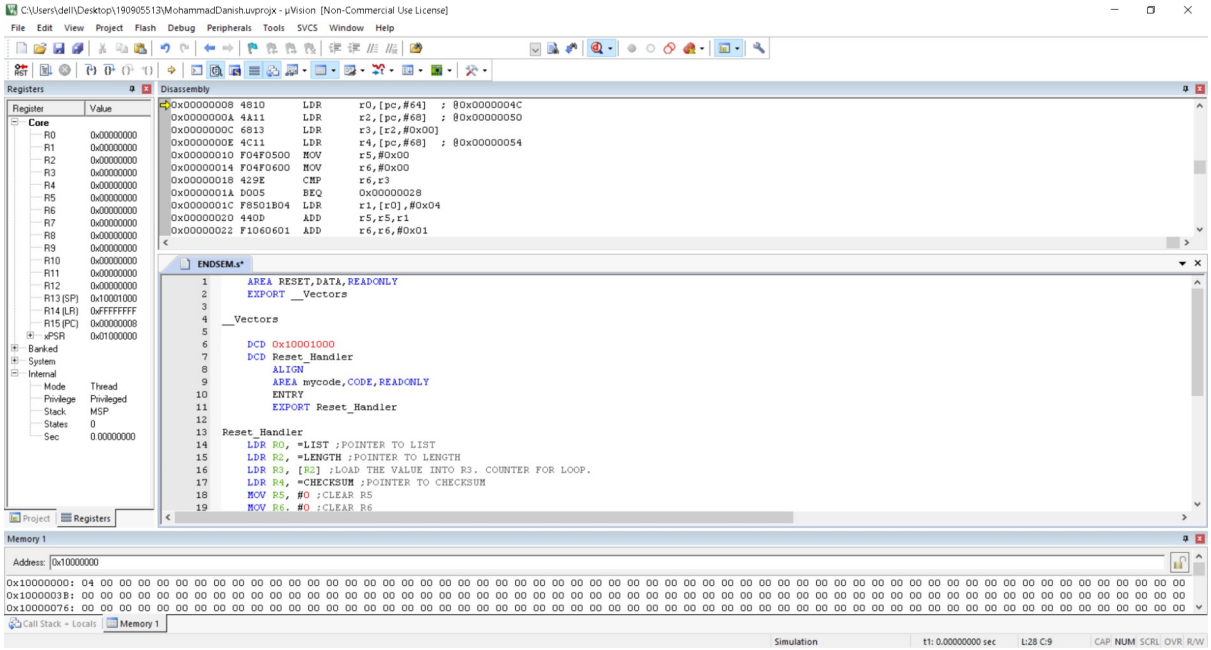


Output for LENGTH=3

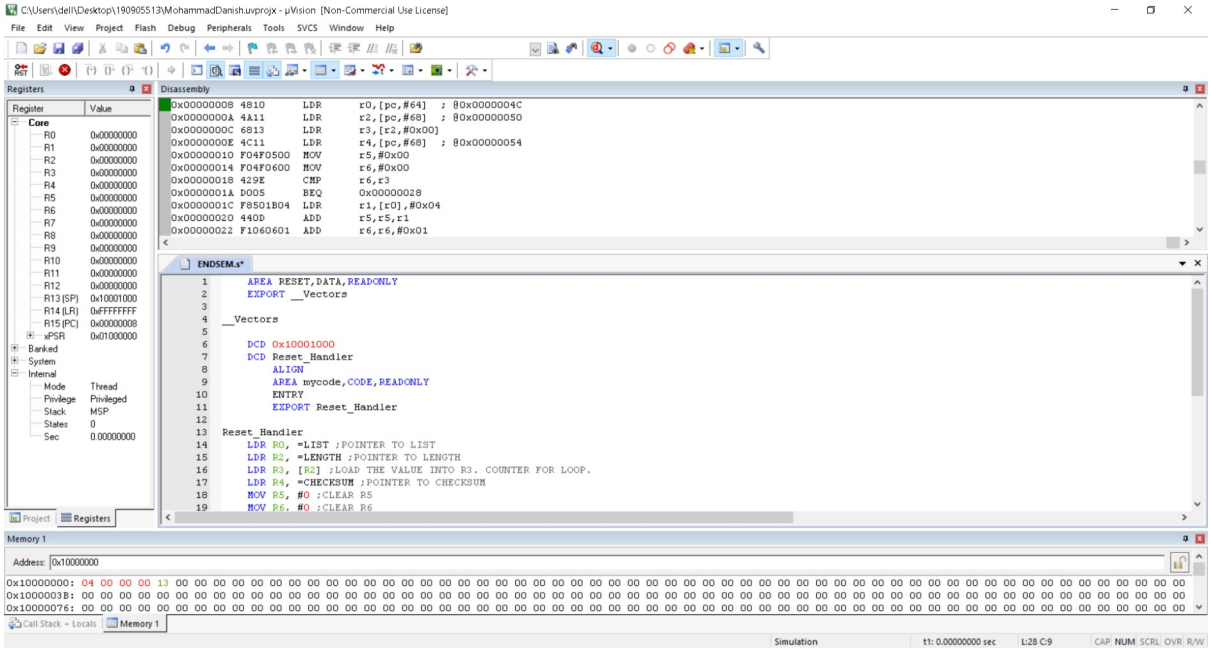


P.T.O

Entered LENGTH=4 from keyboard.

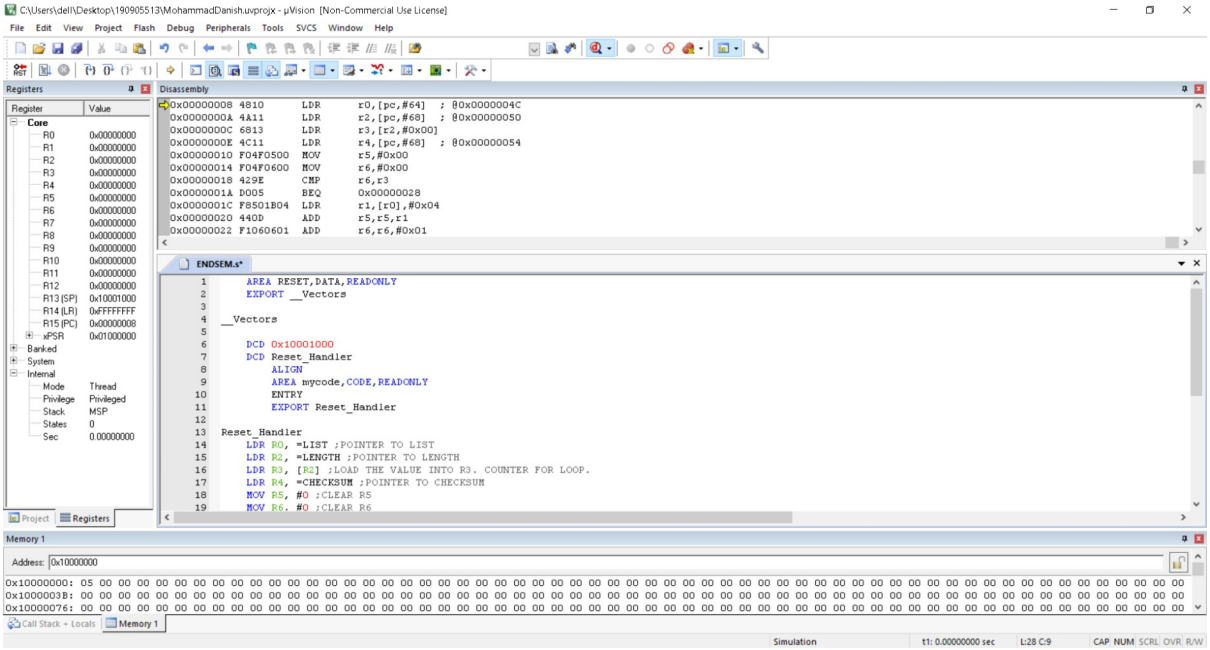


Output for LENGTH=4



P.T.O

Entered LENGTH=5 from keyboard.



Output for LENGTH=5