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190905522 CSE D 62

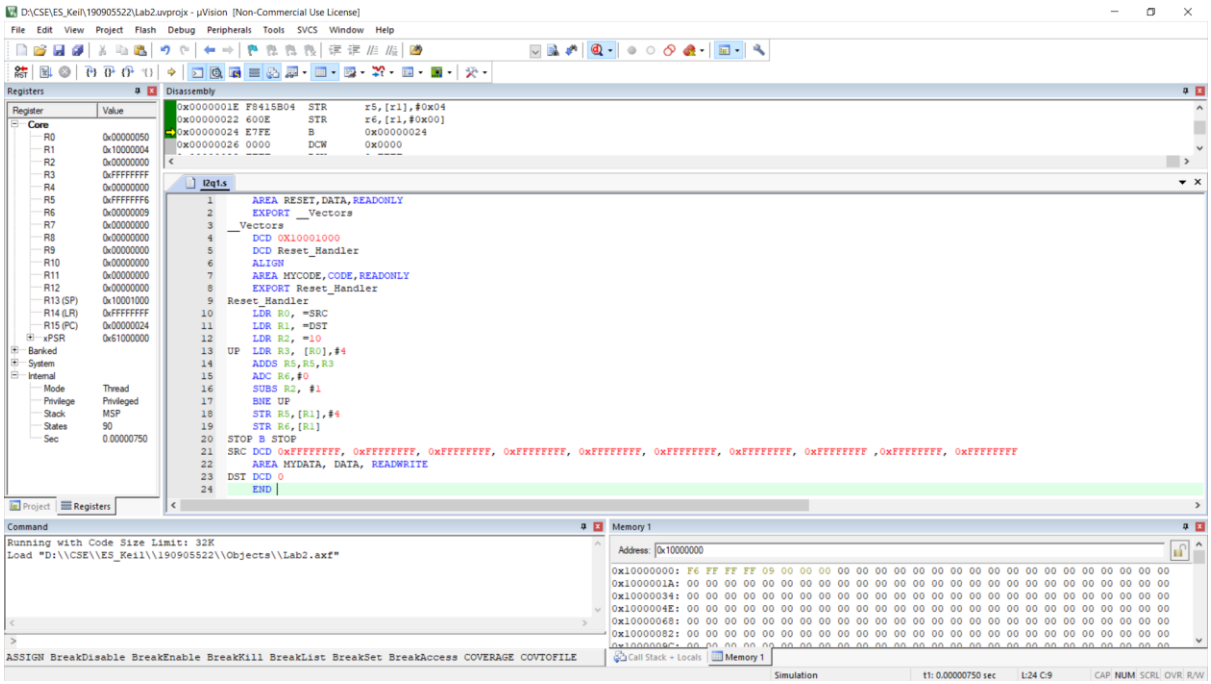
ES LAB 2 (Week 2)

Q1) Write a program to add ten 32-bit numbers available in code memory and store the result in data memory.

CODE:

```
        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, =SRC
        LDR R1, =DST
        LDR R2, =10
UP      LDR R3, [R0],#4
        ADDS R5,R5,R3
        ADC R6,#0
        SUBS R2, #1
        BNE UP
        STR R5,[R1],#4
        STR R6,[R1]
STOP B STOP
SRC DCD 0xFFFFFFFF, 0xFFFFFFFF, 0xFFFFFFFF, 0xFFFFFFFF, 0xFFFFFFFF, 0xFFFFFFFF, 0xFFFFFFFF,
0xFFFFFFFF ,0xFFFFFFFF, 0xFFFFFFFF
        AREA MYDATA, DATA, READWRITE
DST DCD 0
        END
```

OUTPUT:



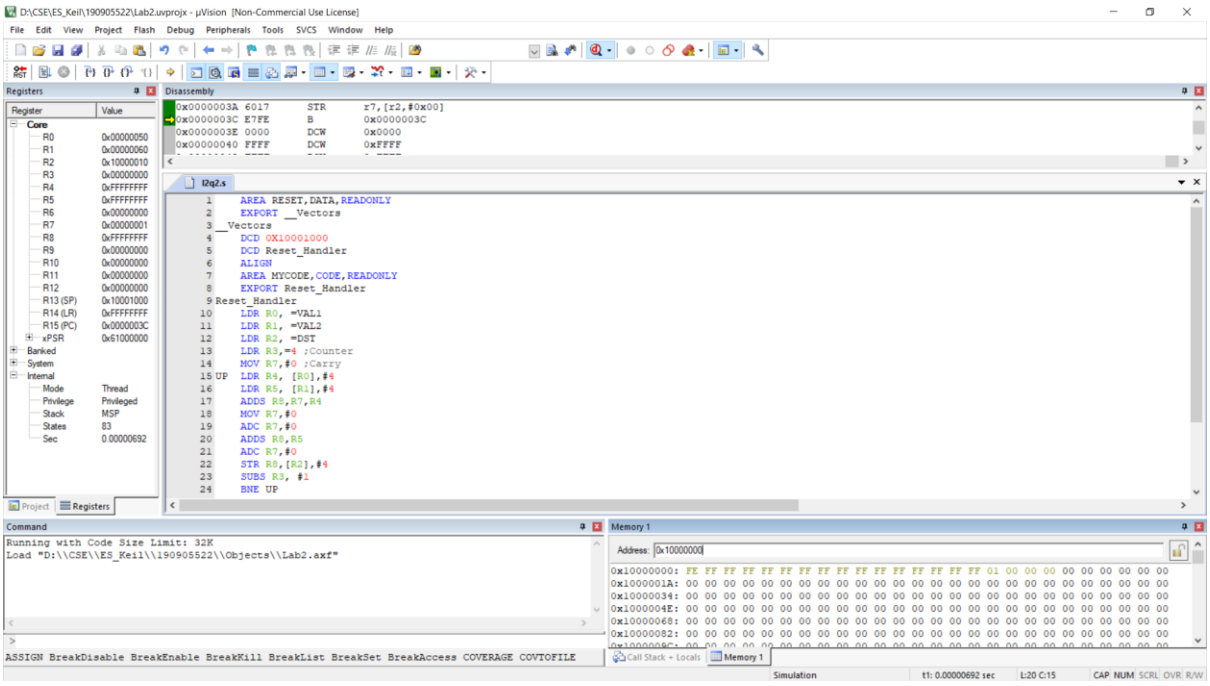
Q2) Write a program to add two 128 -bit numbers available in code memory and store the result in data memory.

CODE:

```
        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, =VAL1
        LDR R1, =VAL2
        LDR R2, =DST
        LDR R3,=4 ;Counter
```

```
        MOV R7,#0 ;Carry
UP      LDR R4, [R0],#4
        LDR R5, [R1],#4
        ADDS R8,R7,R4
        MOV R7,#0
        ADC R7,#0
        ADDS R8,R5
        ADC R7,#0
        STR R8,[R2],#4
        SUBS R3, #1
   BNE  UP
        STR R7,[R2]
STOP B STOP
VAL1 DCD 0xFFFFFFFF,0xFFFFFFFF,0xFFFFFFFF,0xFFFFFFFF
VAL2 DCD 0xFFFFFFFF,0xFFFFFFFF,0xFFFFFFFF,0xFFFFFFFF
   AREA MYDATA, DATA, READWRITE
DST DCD 0
   END
```

OUTPUT:

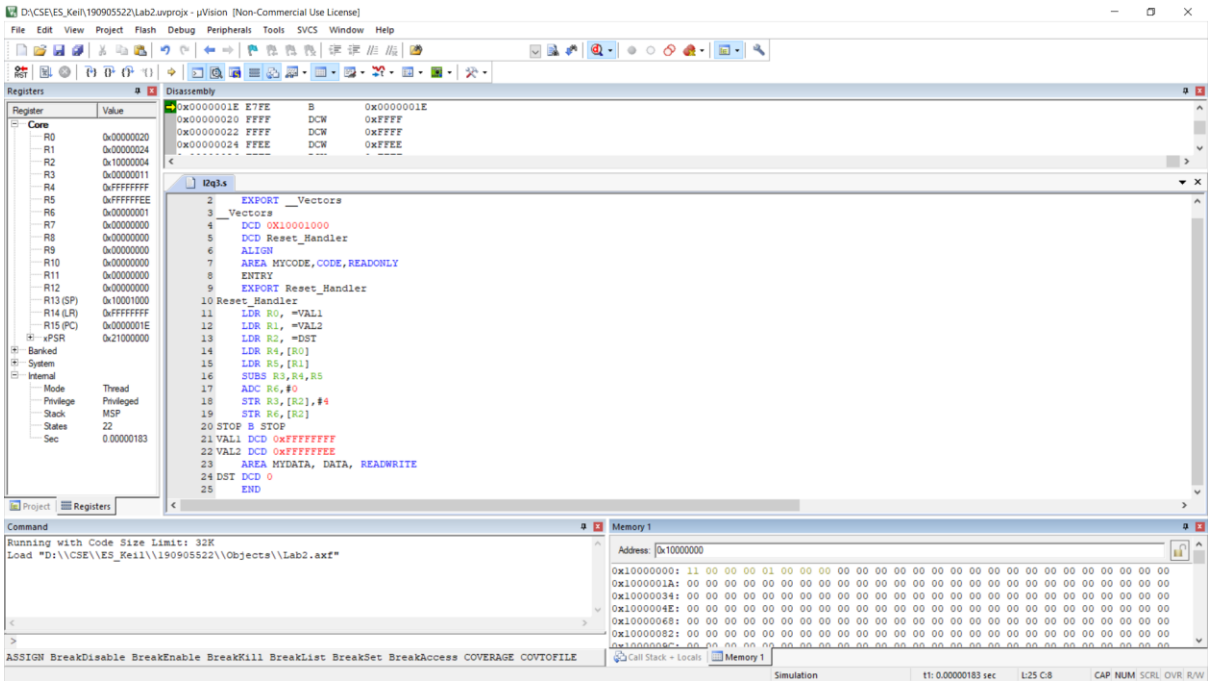


Q3) Write a program to subtract two 32 bit numbers available in the code memory and store the result in the data memory.

CODE:

```
        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, =VAL1
        LDR R1, =VAL2
   LDR R2, =DST
        LDR R4,[R0]
        LDR R5,[R1]
   SUBS R3,R4,R5
        ADC R6,#0
        STR R3,[R2],#4
        STR R6,[R2]
STOP B STOP
VAL1 DCD 0xFFFFFFFF
VAL2 DCD 0xFFFFFFEE
   AREA MYDATA, DATA, READWRITE
DST DCD 0
        END
```

OUTPUT:



Q4) Write a program to subtract two 128-bit numbers available in the code memory and store the result in the data memory.

CODE:

```
        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, =VAL1
        LDR R1, =VAL2
        LDR R8, =DST
        LDR R3, =4
        LDR R4, =0
```

```
GO  LDR R5, [R0], #4
        LDR R6, [R1], #4
        SUBS R7, R5, R6
        SUB R7, R7, R4
        STR R7, [R8], #4
        ADC R4, #0
        TEQ R4, #0
        BEQ ZERO
        MOV R4, #0
        B SKIP
ZERO    MOV R4, #1
SKIP    SUBS R3, #1
        BNE GO
VAL1 DCD 0xFFFFFFFF,0xFFFFFFFF,0xFFFFFFFF,0xFFFFFFFF
VAL2 DCD 0xFFFFFFEE,0xFFFFFFEE,0xFFFFFFEE,0xFFFFFFEE
   AREA MYDATA, DATA, READWRITE
DST DCD 0
        END
```

OUTPUT: