**Microprocessor and Computer Architecture**

**UE20CS252**

**4th Semester, Academic Year 2021-22**

Date: 07/02/2022

| Name: VISHWAS M | SRN: PES2UG20CS390 | Section: F |
|---|---|---|

Week#____4_____ Program Number: ____1___

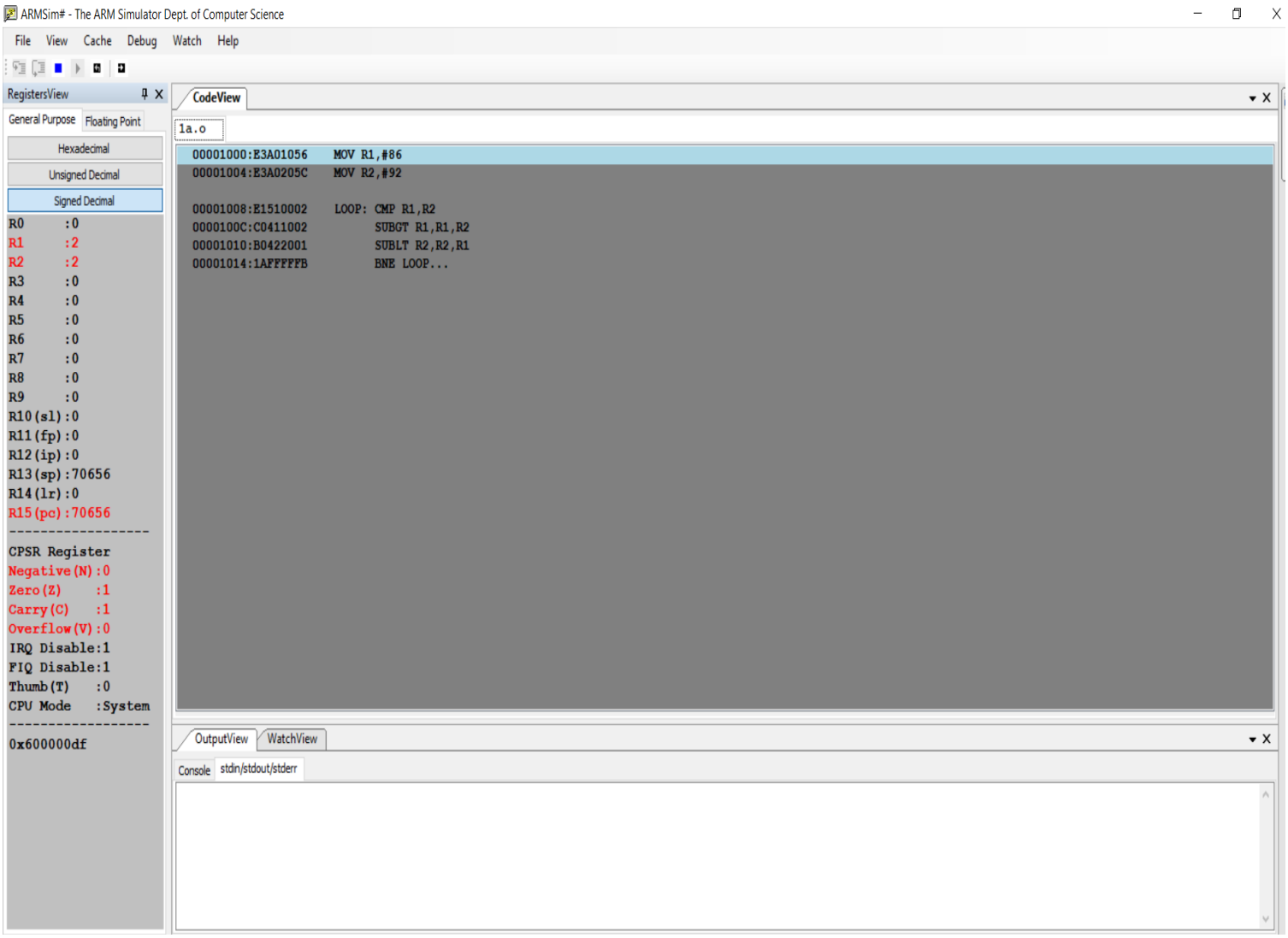
Title of the Program

**Write a program in ARM7TDMI-ISA to find GCD of two numbers.**

**a. Assume operands to be in the CPU registers**

**i)**

```
MOV R1,#86
MOV R2,#92
LOOP: CMP R1,R2
    SUBGT R1,R1,R2
    SUBLT R2,R2,R1
    BNE LOOP
```




**ii)**

**MOV R1,#86**

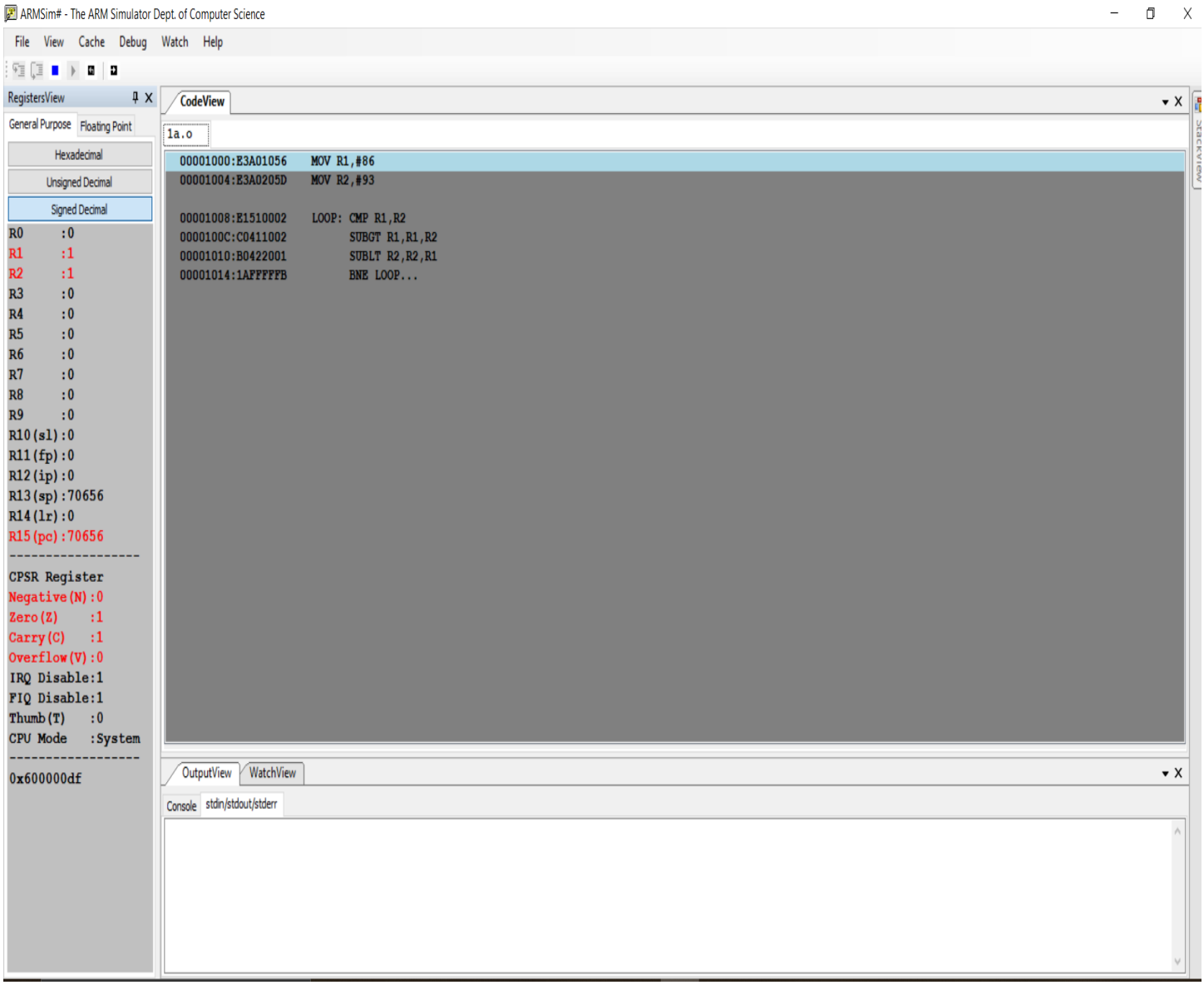
**MOV R2,#93**

**LOOP: CMP R1,R2**

**SUBGT R1,R1,R2**

**SUBLT R2,R2,R1**

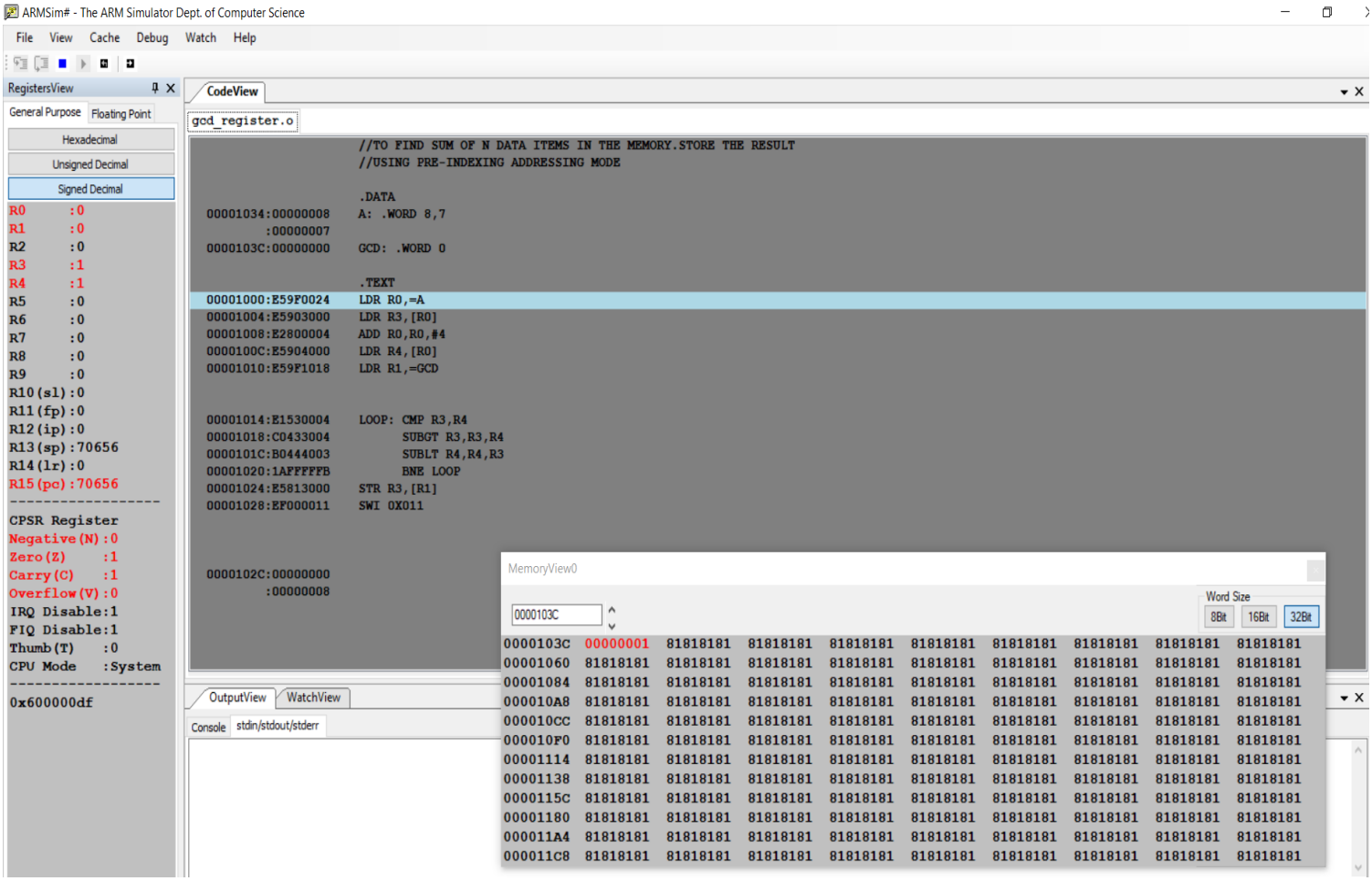
**BNE LOOP**


ARMSim# - The ARM Simulator Dept. of Computer Science
File View Cache Debug Watch Help
RegistersView
General Purpose Floating Point
Hexadecimal
Unsigned Decimal
Signed Decimal
R0 :0
R1 :1
R2 :1
R3 :0
R4 :0
R5 :0
R6 :0
R7 :0
R8 :0
R9 :0
R10(sl):0
R11(fp):0
R12(ip):0
R13(sp):70656
R14(lr):0
R15(pc):70656
CPSR Register
Negative(N):0
Zero(Z) :1
Carry(C) :1
Overflow(V):0
IRQ Disable:1
FIQ Disable:1
Thumb(T) :0
CPU Mode :System
0x600000df
CodeView
1a.o
00001000:E3A01056 MOV R1,#86
00001004:E3A0205D MOV R2,#93
00001008:E1510002 LOOP: CMP R1,R2
0000100C:C0411002 SUBGT R1,R1,R2
00001010:B0422001 SUBLT R2,R2,R1
00001014:1AFFFFFB BNE LOOP...
OutputView WatchView
Console stdin/stdout/stderr

**b. Assume operands in the memory locations.**

**i)**

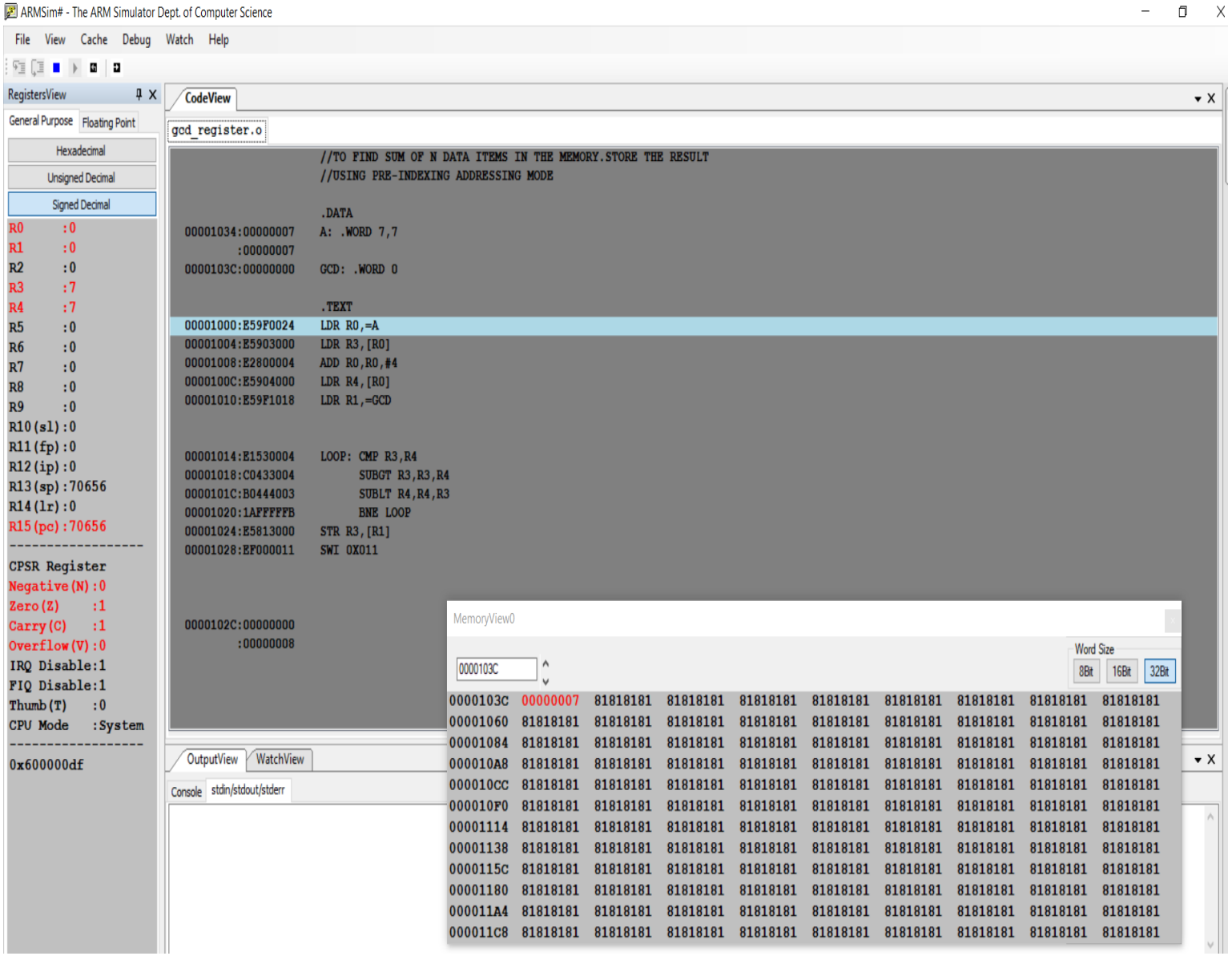
```
.DATA
A: .WORD 8,7
GCD: .WORD 0

.TEXT
LDR R0,=A
LDR R3,[R0]
ADD R0,R0,#4
LDR R4,[R0]
LDR R1,=GCD


LOOP: CMP R3,R4
    SUBGT R3,R3,R4
    SUBLT R4,R4,R3
    BNE LOOP
STR R3,[R1]
SWI 0X011
```




**ii)**

```
.DATA
A: .WORD 8,7
GCD: .WORD 0
.TEXT
LDR R0,=A
LDR R3,[R0]
ADD R0,R0,#4
LDR R4,[R0]
```

```
LDR R1,=GCD
LOOP: CMP R3,R4
    SUBGT R3,R3,R4
    SUBLT R4,R4,R3
    BNE LOOP
STR R3,[R1]
SWI 0X011
```



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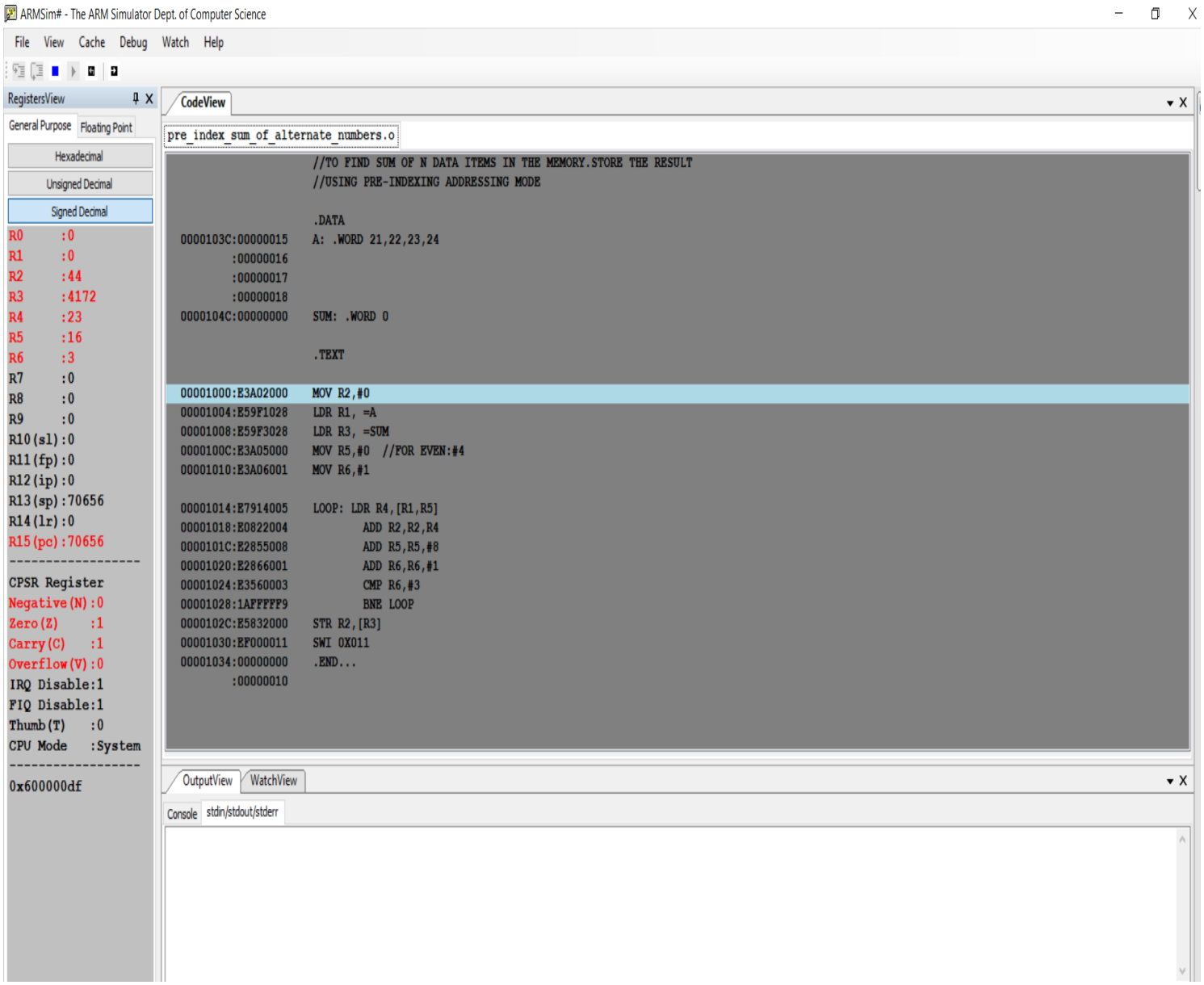
Week#____4_____ Program Number: ____2___

Title of the Program

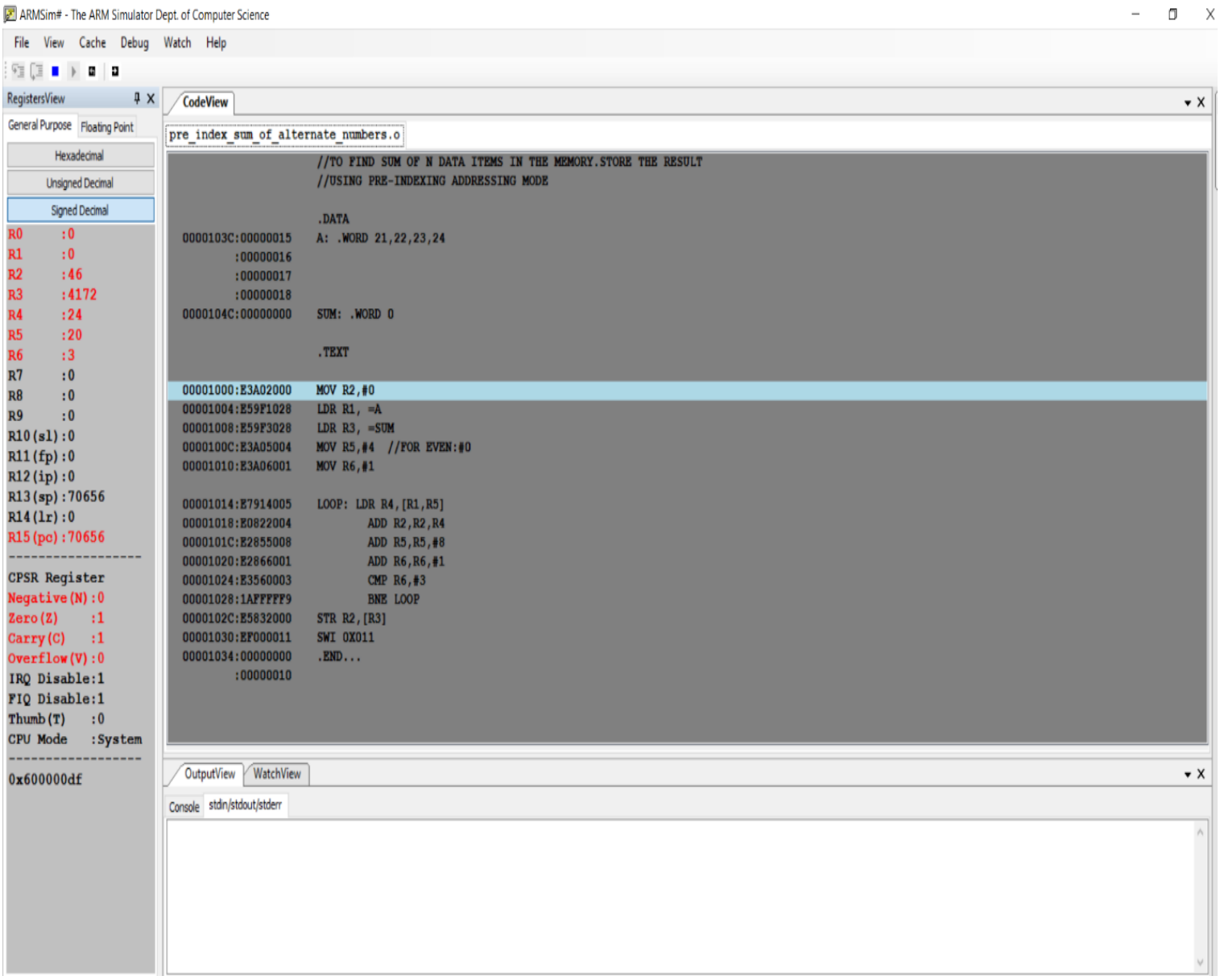
**Write a program in ARM7TDMI-ISA to find the sum of N data items at alternate [ odd or even positions] locations in the memory. Store the result in the memory location.**

a. **Use Pre-indexing addressing mode**

# i)For odd indices:

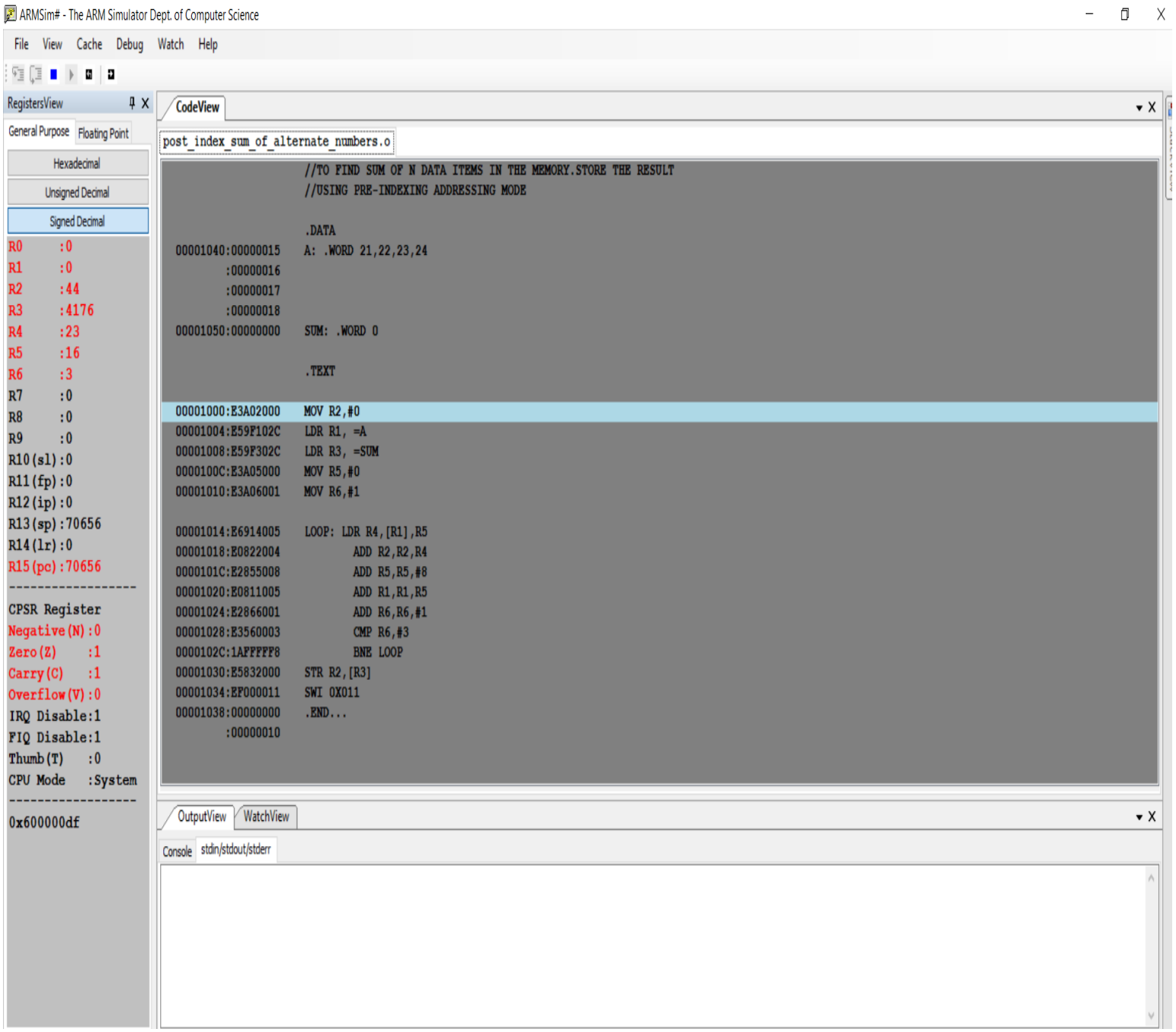


## ii)For even indexes:

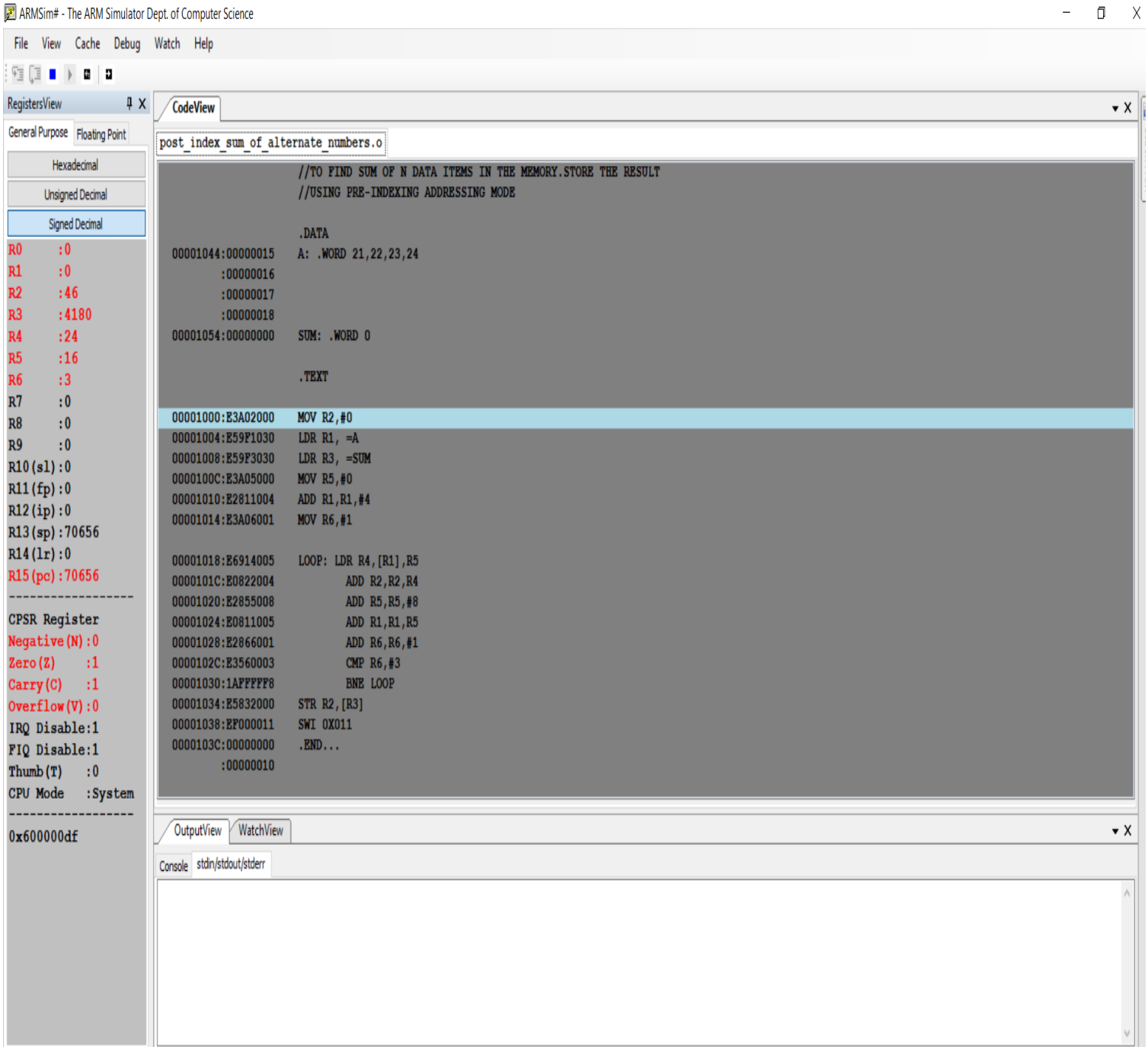


## b. Use Post- Indexing addressing mode

### i)For odd indices:



## ii)For even indices:



**Disclaimer:**

- The programs and output submitted is duly written, verified and executed by me.
- I have not copied from any of my peers nor from the external resource such as internet.
- If found plagiarized, I will abide with the disciplinary action of the University.

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