Microprocessor and Computer Architecture (MPCA) Laboratory
UE20CS252 4th Semester,
Academic Year 2021-22

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Week # 2 **Program Number: 1**

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
b. Use Post- Indexing addressing mode
c. Use Auto-indexing addressing mode

Program Code

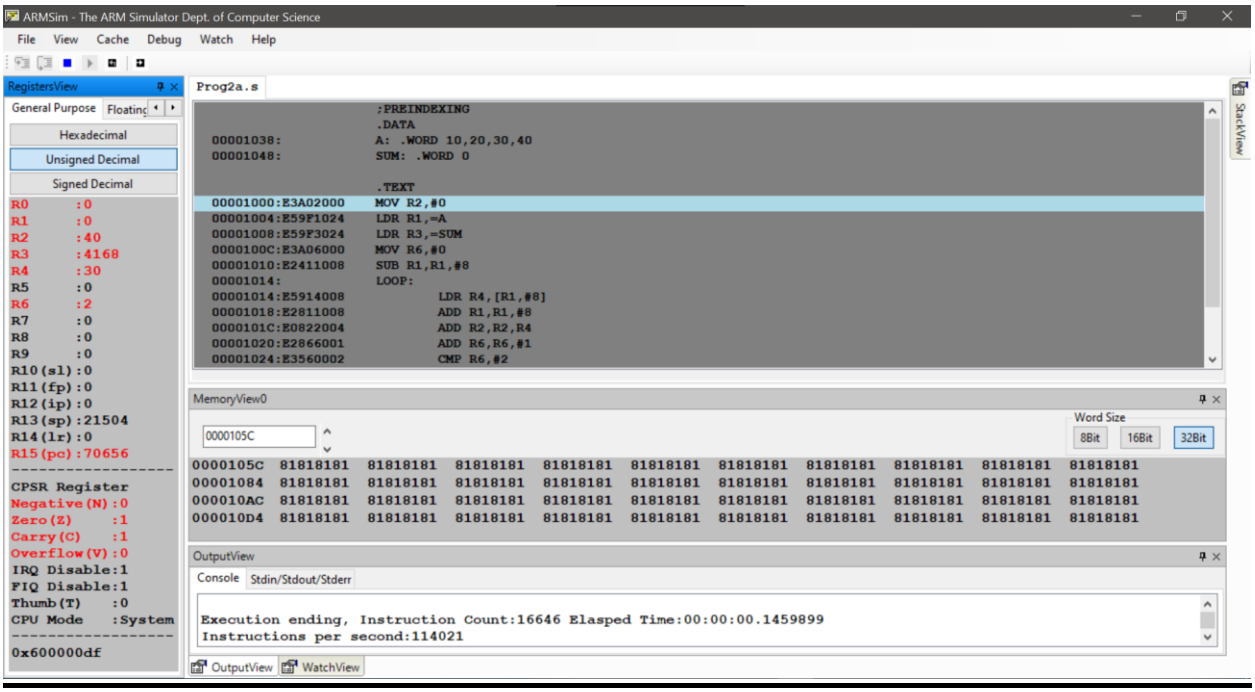
Preindexing :

```
.DATA
A: .WORD 10,20,30,40
SUM: .WORD 0

.TEXT
MOV R2,#0
LDR R1,=A
LDR R3,=SUM
MOV R6,#0
SUB R1,R1,#8
LOOP:
        LDR R4,[R1,#8]
        ADD R1,R1,#8
```

```
        ADD R2,R2,R4
        ADD R6,R6,#1
        CMP R6,#2
BNE LOOP
STR R2,[R3]
.END
```

Screenshot of ArmSimulator of the Program Executed



Program Code

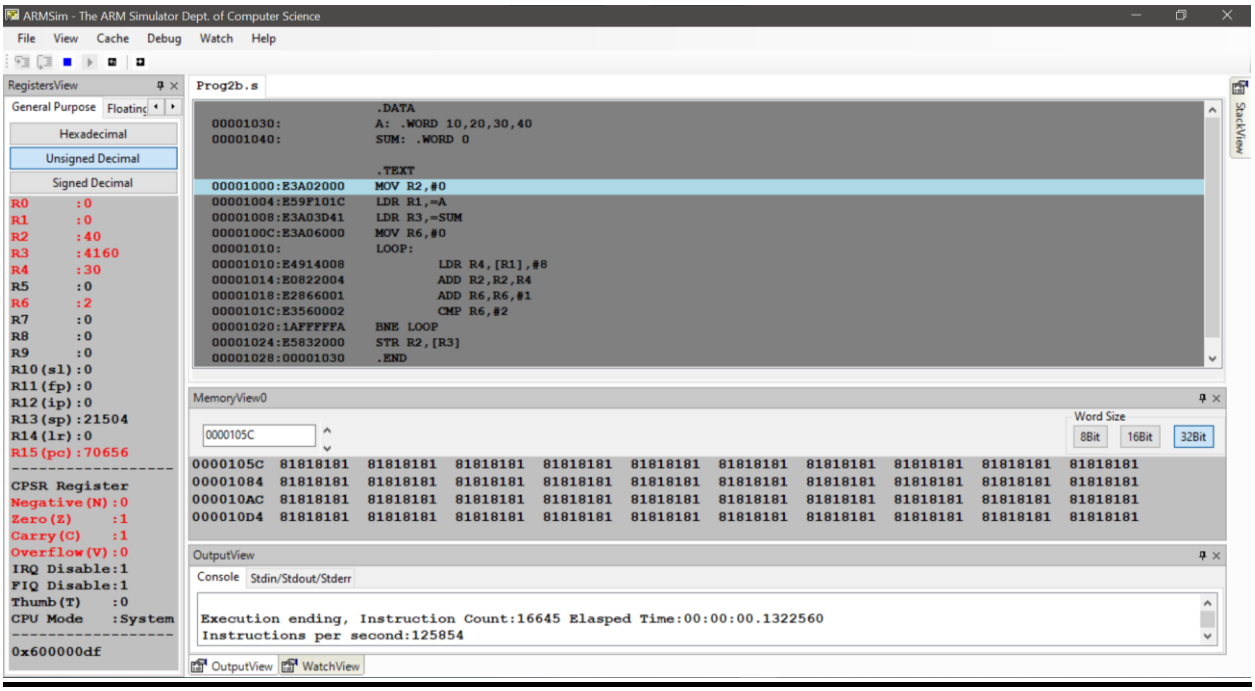
Postindexing:

```
.DATA
A: .WORD 10,20,30,40
SUM: .WORD 0

.TEXT
MOV R2,#0
LDR R1,=A
LDR R3,=SUM
MOV R6,#0
LOOP:
        LDR R4,[R1],#8
```

```
        ADD R2,R2,R4
        ADD R6,R6,#1
        CMP R6,#2
BNE LOOP
STR R2,[R3]
.END
```

Screenshot of ArmSimulator of the Program Executed



Program Code

Autoindexing :

```
.DATA
A: .WORD 10,20,30,40
SUM: .WORD 0

.TEXT
MOV R2,#0
LDR R1,=A
LDR R3,=SUM
MOV R6,#0
SUB R1,R1,#8
LOOP:
        LDR R4,[R1,#8]!
```

```
        ADD R2,R2,R4
        ADD R6,R6,#1
        CMP R6,#2
BNE LOOP
STR R2,[R3]
.END
```

Screenshot of ArmSimulator of the Program Executed