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

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Week 1 : 28 Jan 2021

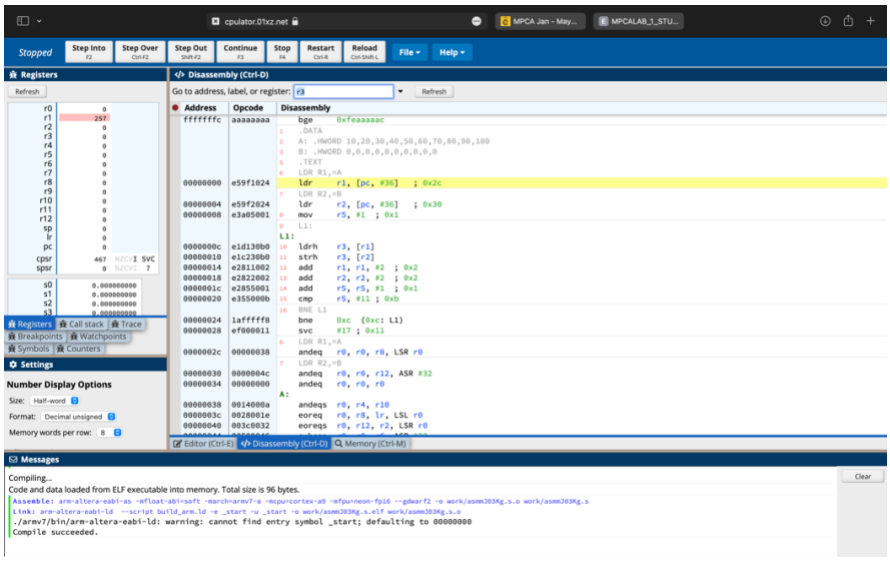
1) Title of Program:
Write a program to copy a block of N data items from locations A to B using Half Word.

Program Code:

```
.DATA
A: .HWORD 10,20,30,40,50,60,70,80,90,100
B: .HWORD 0,0,0,0,0,0,0,0,0,0

.TEXT
LDR R1,=A
LDR R2,=B
MOV R5,#1
L1:
LDRH R3,[R1]
STRH R3,[R2]
ADD R1,R1,#2
ADD R2,R2,#2
ADD R5,R5,#1
CMP R5,#11
BNE L1
SWI 0X011
```

Screenshot of ARMSimulator:



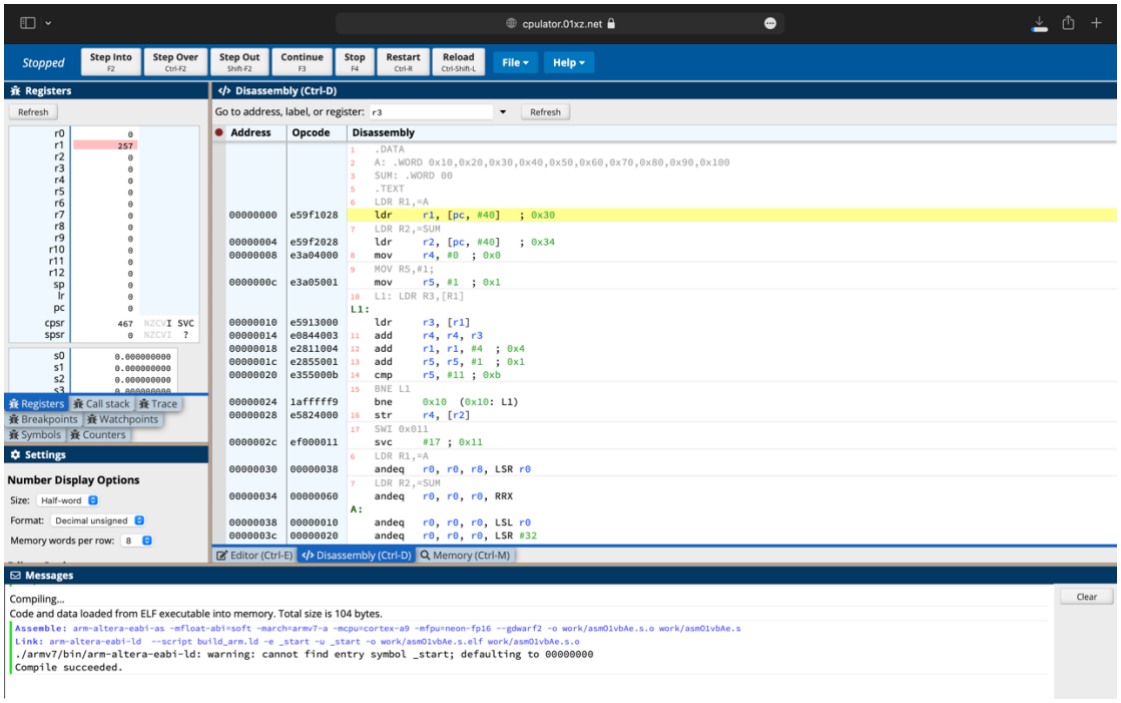
2a)Title of Program:
Write a program to the sum of N data items in the memory using Full Word. Store the result in the memory locations.

Program Code:

```
.DATA
A: .WORD 0x10,0x20,0x30,0x40,0x50,0x60,0x70,0x80,0x90,0x100
SUM: .WORD 00

.TEXT
LDR R1,=A
LDR R2,=SUM
MOV R4,#0
MOV R5,#1;
L1: LDR R3,[R1]
ADD R4,R4,R3
ADD R1,R1,#4
ADD R5,R5,#1
CMP R5,#11
BNE L1
STR R4,[R2]
SWI 0x011
```

Screenshot of ARMSimulator:



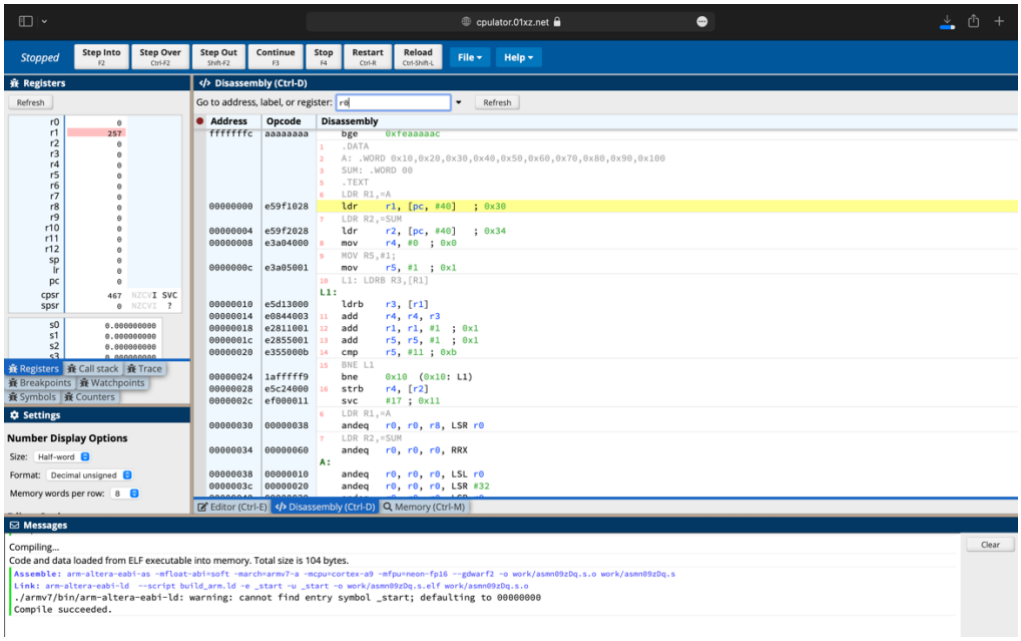
2b)Title of Program:
Write a program to the sum of N data items in the memory using Byte. Store the result in the memory locations.

Program Code:

```
.DATA
A: .WORD 0x10,0x20,0x30,0x40,0x50,0x60,0x70,0x80,0x90,0x100
SUM: .WORD 00

.TEXT
LDR R1,=A
LDR R2,=SUM
MOV R4,#0
MOV R5,#1;
L1: LDR R3,[R1]
ADD R4,R4,R3
ADD R1,R1,#4
ADD R5,R5,#1
CMP R5,#11
BNE L1
STR R4,[R2]
SWI 0x011
```

Screenshot of ARMSimulator:



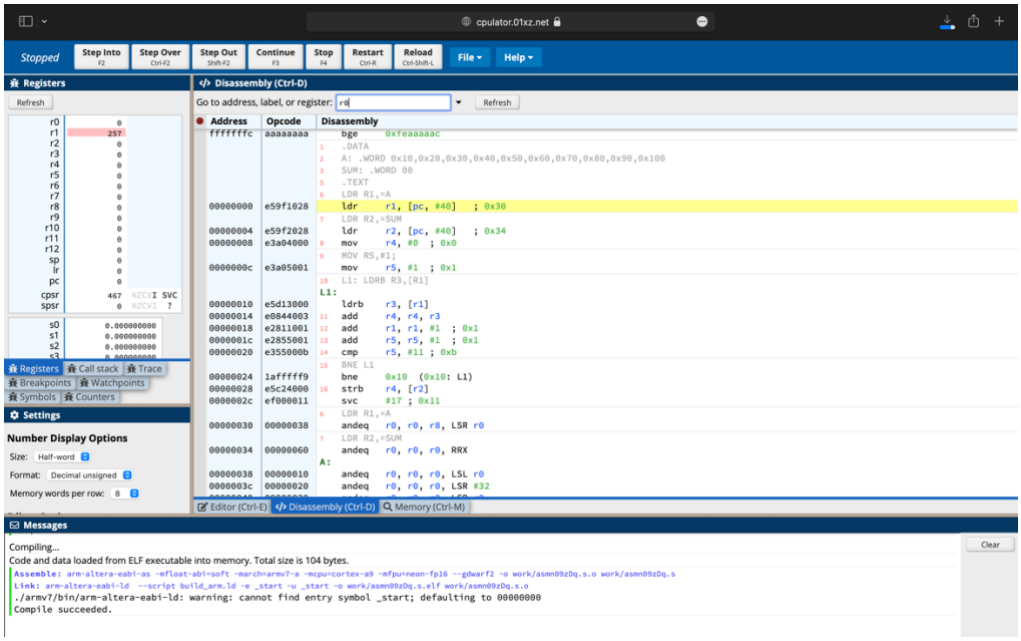
2b)Title of Program:
Write a program to find the sum of N data items in the memory using Byte. Store the result in the memory locations.

Program Code:

```
.DATA
A: .WORD 0x10,0x20,0x30,0x40,0x50,0x60,0x70,0x80,0x90,0x100
SUM: .WORD 00

.TEXT
LDR R1,=A
LDR R2,=SUM
MOV R4,#0
MOV R5,#1;
L1: LDR R3,[R1]
ADD R4,R4,R3
ADD R1,R1,#4
ADD R5,R5,#1
CMP R5,#11
BNE L1
STR R4,[R2]
SWI 0x011
```

Screenshot of ARMSimulator:



2b)Title of Program:
Write a program to find the sum of N natural numbers using Full Word. Store the result in the memory locations.

Program Code:

```
.DATA
A: .WORD 1,2,3,4,5,6,7,8,9,10
SUM: .WORD 00
.TEXT
LDR R1,=A
LDR R2,=SUM
MOV R4,#0
MOV R5,#1
L1:
LDR R3,[R1]
ADD R4,R4,R3
ADD R1,R1,#4
ADD R5,R5,#1
CMP R5,#11
BNE L1
STR R4,[R2]
SWI 0x011
```

Screenshot of ARMSimulator: