Lab 1

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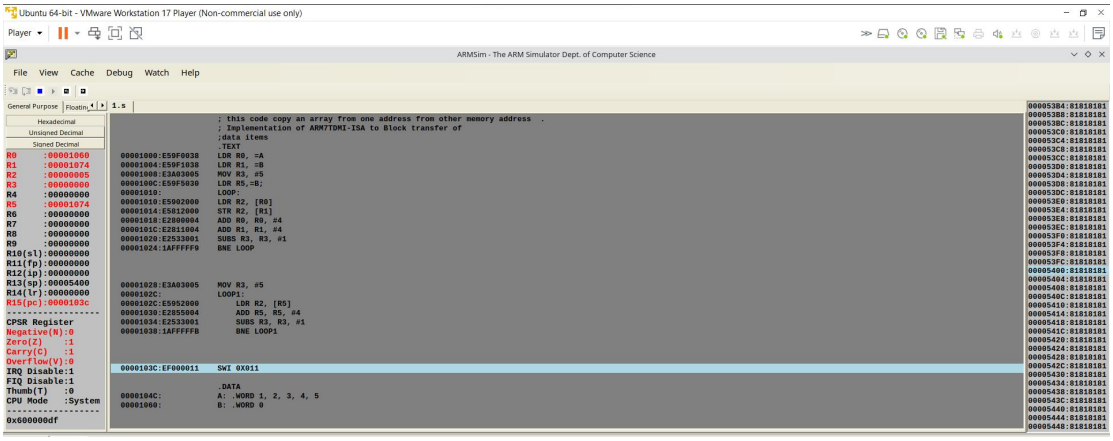
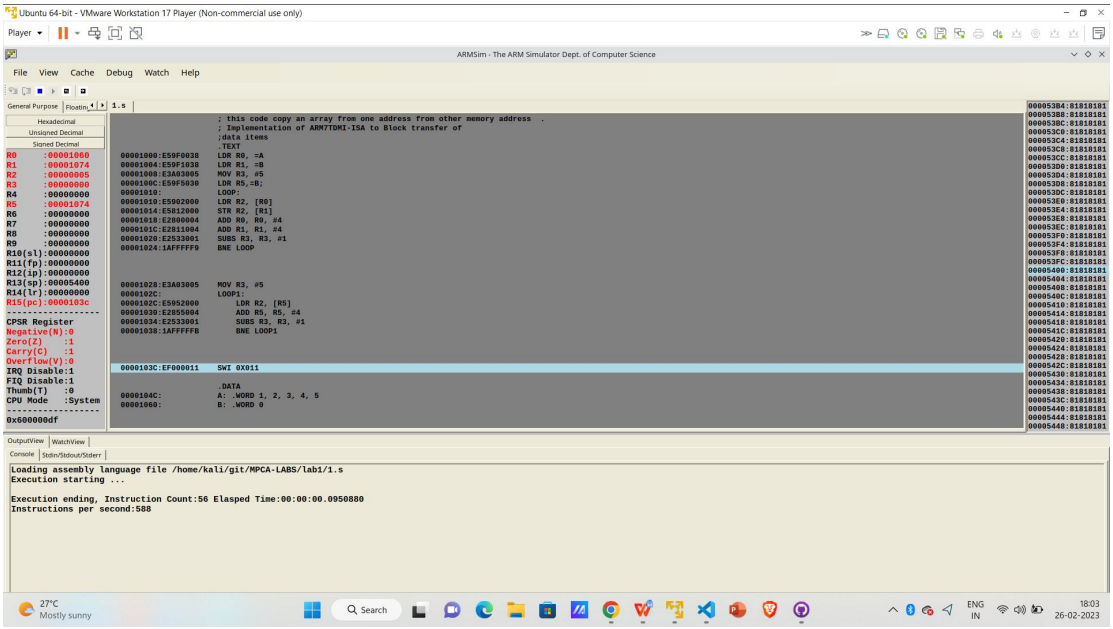
ROLL NO - 1

Implementation of ARM7TDMI-ISA to Block transfer of data items

```
; this code copy an array from one address from other memory address  .
; Implementation of ARM7TDMI-ISA to Block transfer of
;data items
.TEXT
LDR R0, =A
LDR R1, =B
MOV R3, #5
LDR R5,=B;
LOOP:
LDR R2, [R0]
STR R2, [R1]
ADD R0, R0, #4
ADD R1, R1, #4
SUBS R3, R3, #1
BNE LOOP



MOV R3, #5
LOOP1:
   LDR R2, [R5]
   ADD R5, R5, #4
   SUBS R3, R3, #1
   BNE LOOP1



SWI 0X011

.DATA
A: .WORD 1, 2, 3, 4, 5
B: .WORD 0
```

OUTPUT

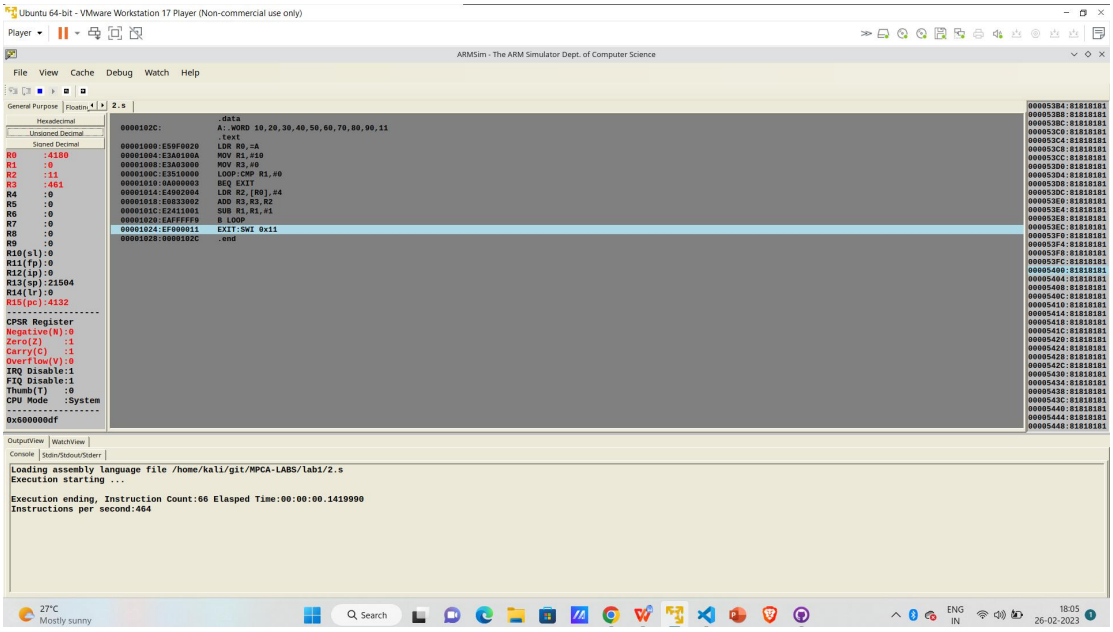




2. Find sum of N data items in the memory.

.data
A:.WORD 10,20,30,40,50,60,70,80,90,11

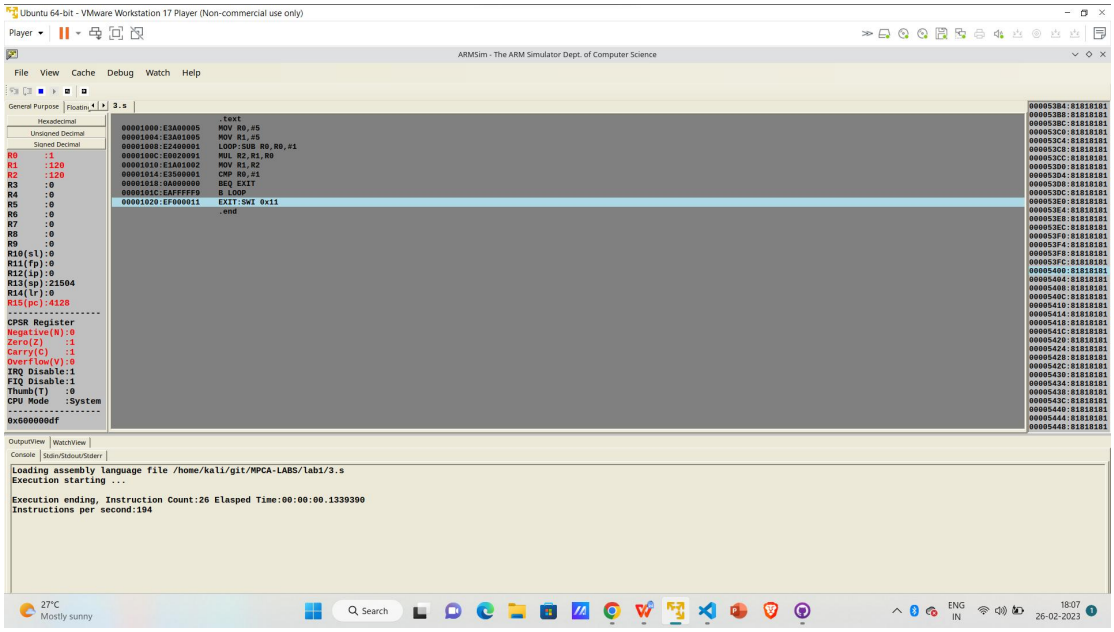
```
.text
LDR R0,=A
MOV R1,#10
MOV R3,#0
LOOP:CMP R1,#0
BEQ EXIT
LDR R2,[R0],#4
ADD R3,R3,R2
SUB R1,R1,#1
B LOOP
EXIT:SWI 0x11
.end
```



\\\\\\

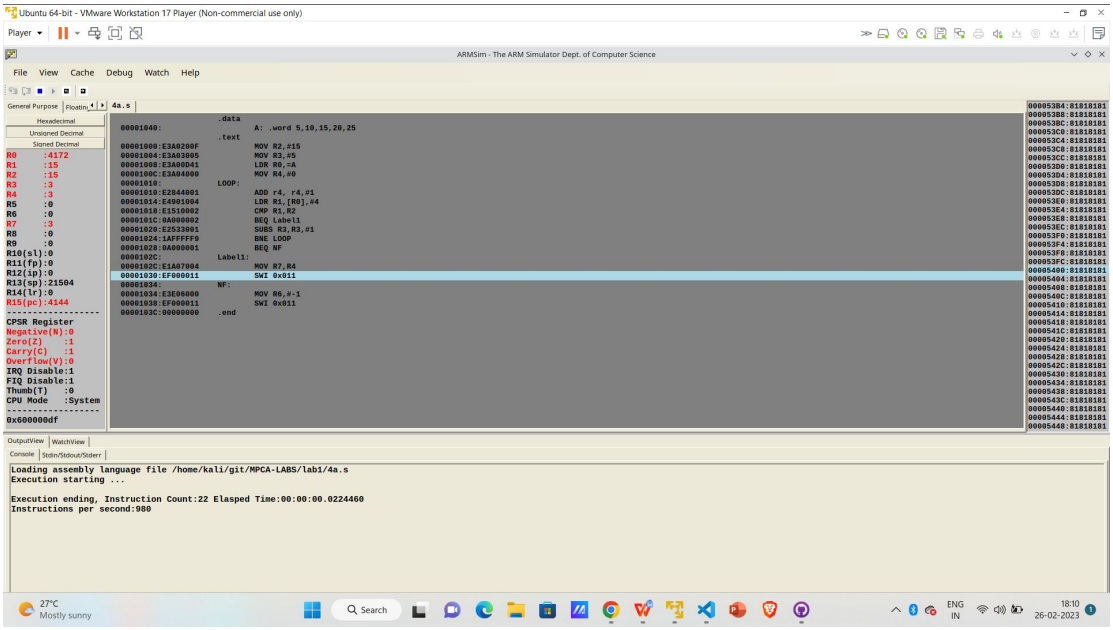
3. Find Factorial

```
.text
MOV R0,#5
MOV R1,#5
LOOP:SUB R0,R0,#1
MUL R2,R1,R0
MOV R1,R2
CMP R0,#1
BEQ EXIT
B LOOP
EXIT:SWI 0x11
.end
```



4. search for an element, sum of n elements in an array
using various addressing modes

```
.data
        A: .word 5,10,15,20,25
.text
        MOV R2,#15
        MOV R3,#5
        LDR R0,=A
        MOV R4,#0
LOOP:
        ADD r4, r4,#1
        LDR R1,[R0],#4
        CMP R1,R2
        BEQ Label1
        SUBS R3,R3,#1
        BNE LOOP
        BEQ NF
Label1:
        MOV R7,R4
        SWI 0x011
NF:
        MOV R6,#-1
        SWI 0x011
.end
```


Ubuntu 64-bit - VMware Workstation 17 Player (Non-commercial use only)
Player
ARMSim - The ARM Simulator Dept. of Computer Science
File View Cache Debug Watch Help
General Purpose
Floating
4a.s
Hexadecimal
Unsigned Decimal
Signed Decimal
R0 :4172
R1 :15
R2 :15
R3 :3
R4 :3
R5 :0
R6 :0
R7 :3
R8 :0
R9 :0
R10(sl):0
R11(fp):0
R12(ip):0
R13(sp):21504
R14(lr):0
R15(pc):4144
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
.data
00001040: A: .word 5,10,15,20,25
.text
00001000:E3A0200F MOV R2,#15
00001004:E3A03005 MOV R3,#5
00001008:E3A00D41 LDR R0,=A
0000100C:E3A04000 MOV R4,#0
00001010: LOOP:
00001010:E2844001 ADD r4, r4,#1
00001014:E4901004 LDR R1,[R0],#4
00001018:E1510002 CMP R1,R2
0000101C:0A000002 BEQ Label1
00001020:E2533001 SUBS R3,R3,#1
00001024:1AFFFFF9 BNE LOOP
00001028:0A000001 BEQ NF
0000102C: Label1:
0000102C:E1A07004 MOV R7,R4
00001030:EF000011 SWI 0x011
00001034: NF:
00001034:E3E06000 MOV R6,#-1
00001038:EF000011 SWI 0x011
0000103C:00000000 .end
000053B4:81818181
000053B8:81818181
000053BC:81818181
000053C0:81818181
000053C4:81818181
000053C8:81818181
000053CC:81818181
000053D0:81818181
000053D4:81818181
000053D8:81818181
000053DC:81818181
000053E0:81818181
000053E4:81818181
000053E8:81818181
000053EC:81818181
000053F0:81818181
000053F4:81818181
000053F8:81818181
000053FC:81818181
00005400:81818181
00005404:81818181
00005408:81818181
0000540C:81818181
00005410:81818181
00005414:81818181
00005418:81818181
0000541C:81818181
00005420:81818181
00005424:81818181
00005428:81818181
0000542C:81818181
00005430:81818181
00005434:81818181
00005438:81818181
0000543C:81818181
00005440:81818181
00005444:81818181
00005448:81818181
OutputView
WatchView
Console
Stdin/Stdout/Stderr
Loading assembly language file /home/kali/git/MPCA-LABS/lab1/4a.s
Execution starting ...
Execution ending, Instruction Count:22 Elasped Time:00:00:00.0224460
Instructions per second:980
27°C
Mostly sunny
Search
ENG
IN
18:10
26-02-2023