Microprocessor and Computer Architecture

UE20CS252

4th Semester, Academic Year 2021-22

Date: 24/1/2022

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Week#2 Program Number: 1

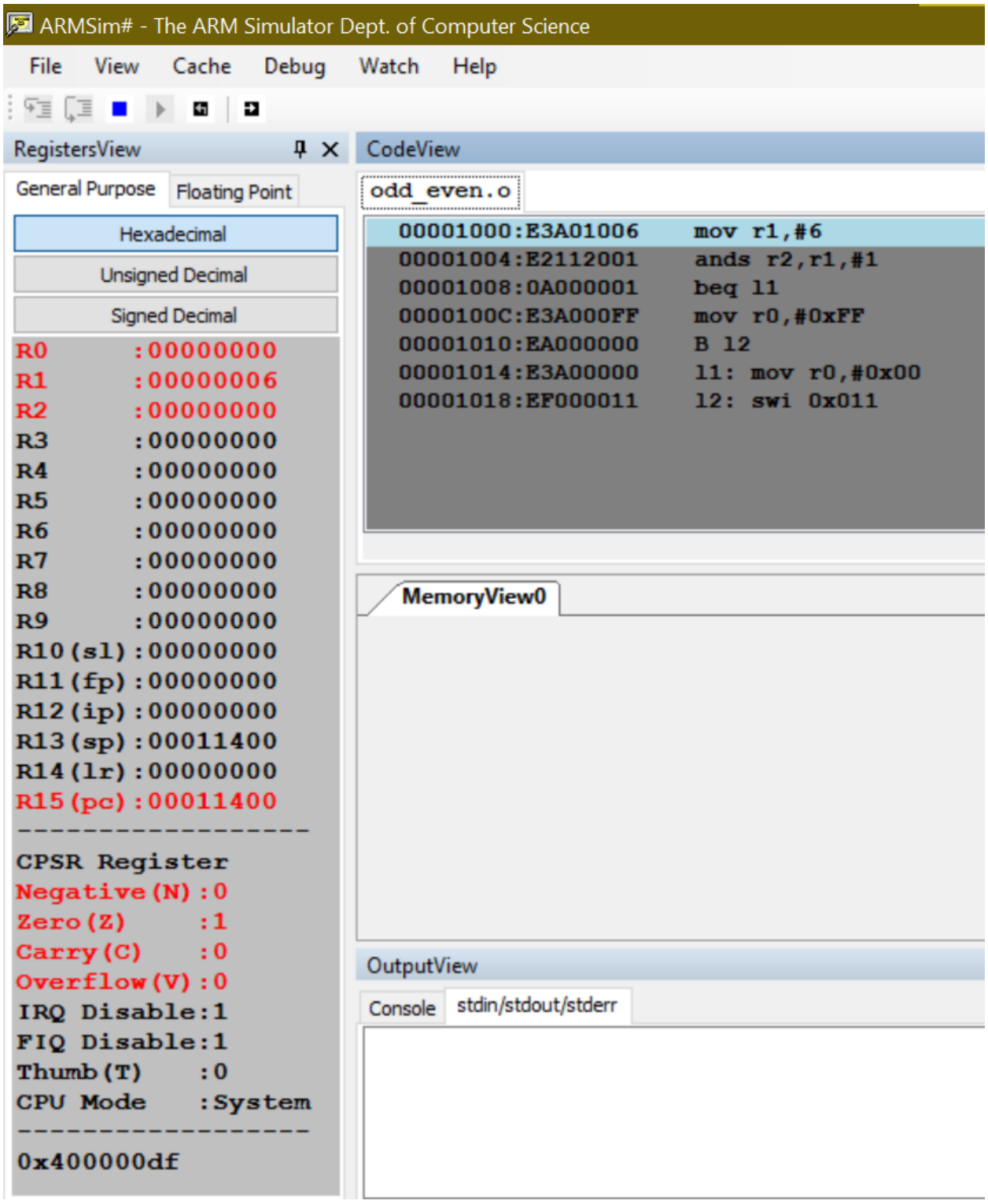
Title of the Program

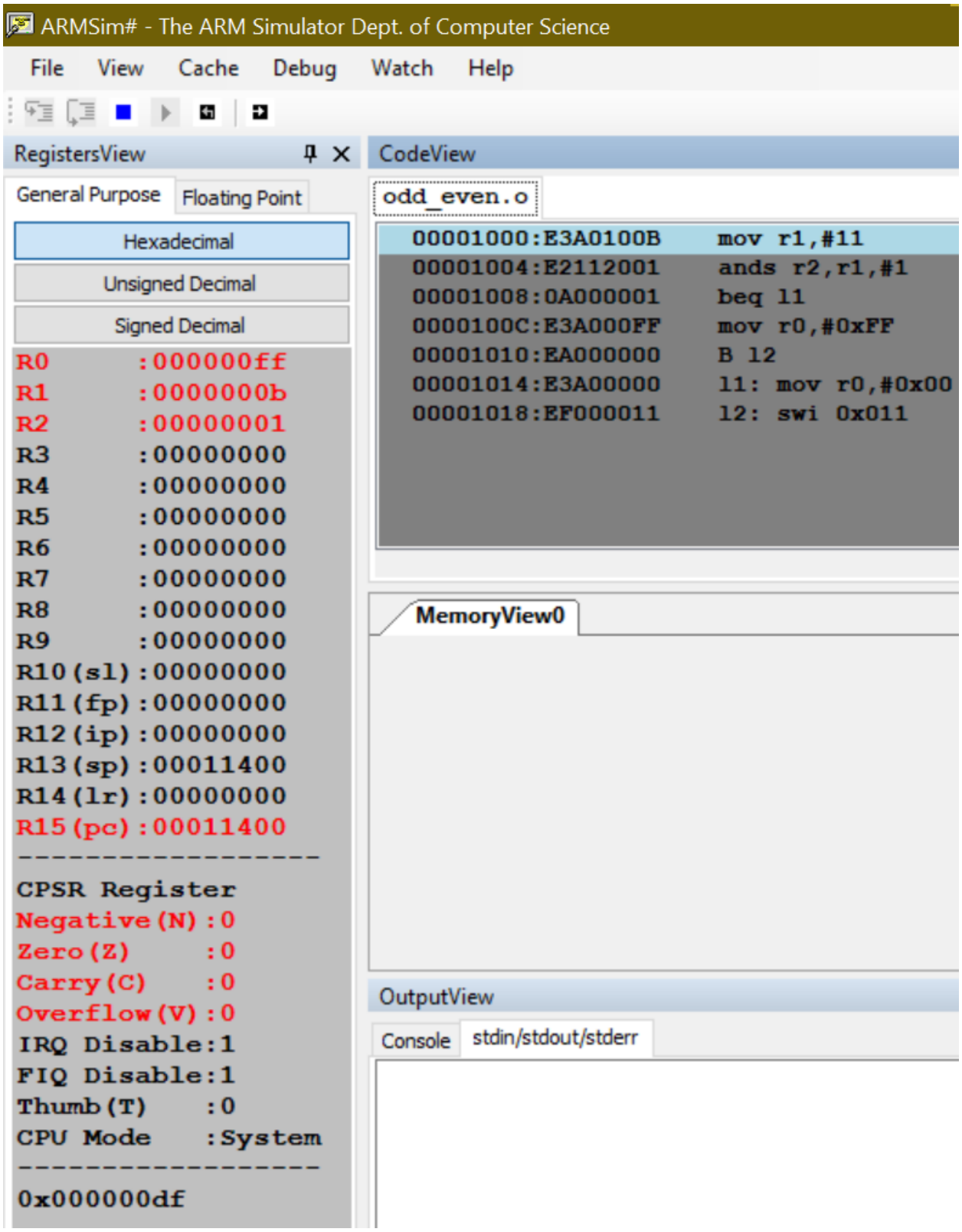
Write an ALP using ARM instruction set to check if a number stored in a register is even or odd. If even, store 00 in R0, else store FF in R0

I. ARM Assembly Code:

```
mov r1,#6
ands r2,r1,#1
beq l1
mov r0,#0xFF
B l2
l1: mov r0,#0x00
l2: swi 0x011
```

II. Output Screen Shot




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 :000000ff
R1 :0000000b
R2 :00000001
R3 :00000000
R4 :00000000
R5 :00000000
R6 :00000000
R7 :00000000
R8 :00000000
R9 :00000000
R10(sl):00000000
R11(fp):00000000
R12(ip):00000000
R13(sp):00011400
R14(lr):00000000
R15(pc):00011400
CPSR Register
Negative(N):0
Zero(Z) :0
Carry(C) :0
Overflow(V):0
IRQ Disable:1
FIQ Disable:1
Thumb(T) :0
CPU Mode :System
0x000000df
CodeView
odd_even.o
00001000:E3A0100B mov r1,#11
00001004:E2112001 ands r2,r1,#1
00001008:0A000001 beq l1
0000100C:E3A000FF mov r0,#0xFF
00001010:EA000000 B l2
00001014:E3A00000 l1: mov r0,#0x00
00001018:EF000011 l2: swi 0x011
MemoryView0
OutputView
Console stdin/stdout/stderr

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Week#1 Program Number: 2

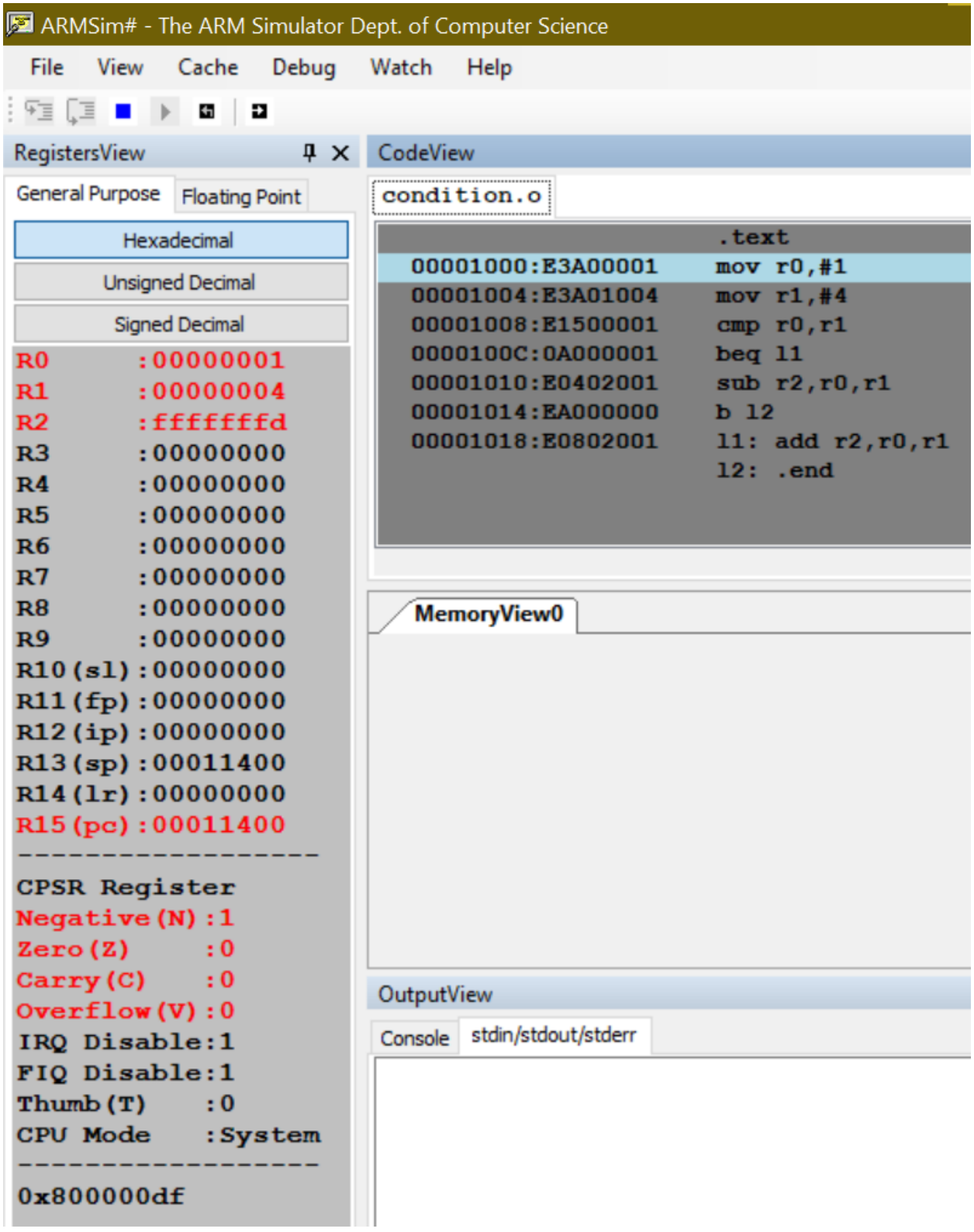
Title of the Program

Write an ALP to compare the value of R0 and R1, add if R0 = R1, else subtract

I. ARM Assembly Code:

```
.text
mov r0,#1
mov r1,#4
cmp r0,r1
beq l1
sub r2,r0,r1
b l2
l1: add r2,r0,r1
l2: .end
```

II. Output Screen Shot


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 :00000001
R1 :00000004
R2 :fffffffd
R3 :00000000
R4 :00000000
R5 :00000000
R6 :00000000
R7 :00000000
R8 :00000000
R9 :00000000
R10(sl):00000000
R11(fp):00000000
R12(ip):00000000
R13(sp):00011400
R14(lr):00000000
R15(pc):00011400
CPSR Register
Negative(N):1
Zero(Z) :0
Carry(C) :0
Overflow(V):0
IRQ Disable:1
FIQ Disable:1
Thumb(T) :0
CPU Mode :System
0x800000df
CodeView
condition.o
.text
00001000:E3A00001 mov r0,#1
00001004:E3A01004 mov r1,#4
00001008:E1500001 cmp r0,r1
0000100C:0A000001 beq l1
00001010:E0402001 sub r2,r0,r1
00001014:EA000000 b l2
00001018:E0802001 l1: add r2,r0,r1
l2: .end
MemoryView0
OutputView
Console stdin/stdout/stderr

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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