**Name : Ghanashyam Bhat**

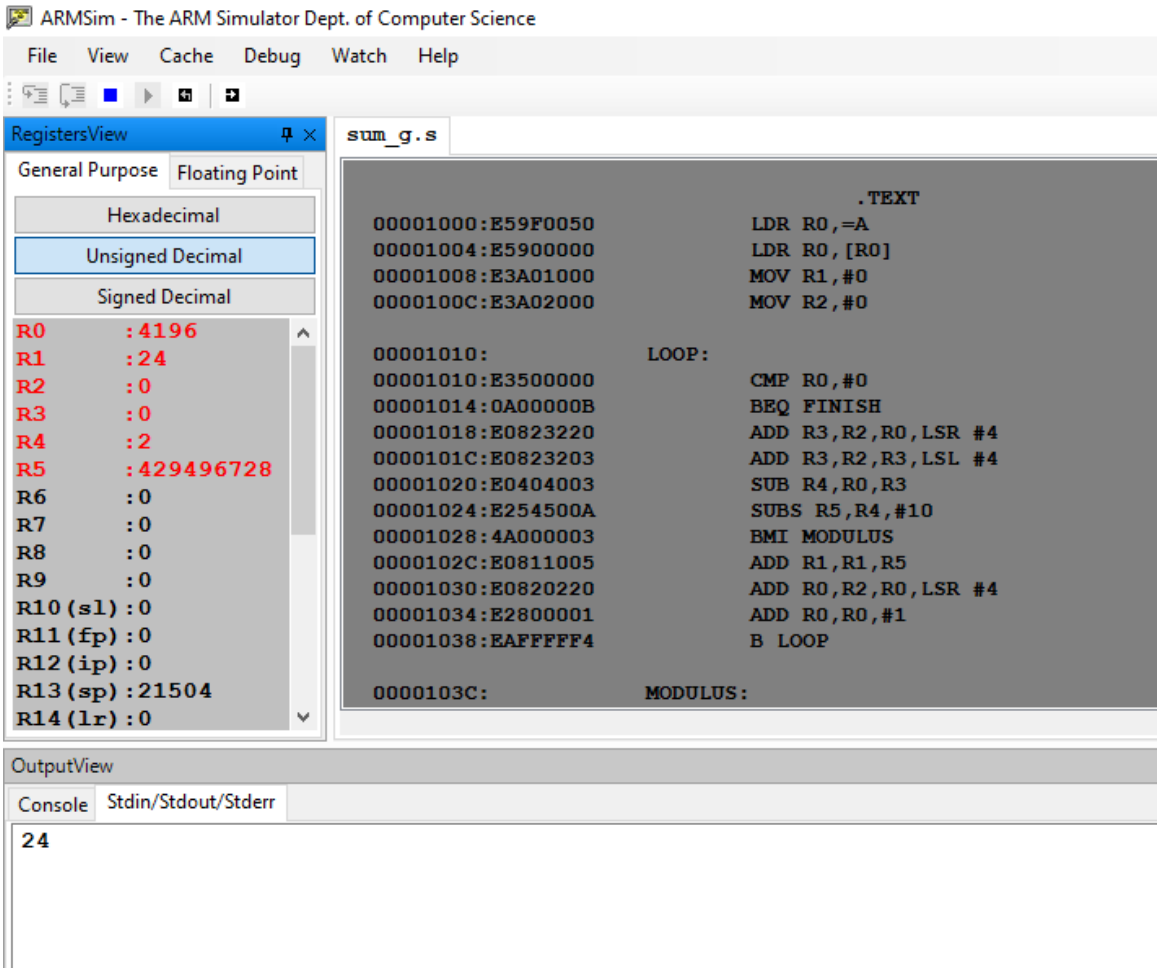
**SRN : PES1UG20CS153**

PES UNIVERSITY

# Department of Computer Science & Engineering
## Microprocessor & Computer Architecture - UE20CS252

| Sl. No | Programs |
|---|---|
| Week No.6 | 1. Write a program in ARM7TDMI-ISA to generate a diagonal matrix. Note: do not read the matrix elements.<br><br>2. Write a program in ARM7TDMI-ISA to find the sum of all the positive numbers in the array. Use subroutine SUMPOSITIVE for the same.<br><br>3. Write a program in ARM7TDMI-ISA to check the parity of given 32 bit number using function subprogram PARITYCHECK. Display appropriate messages as ODD PARITY or EVEN PARITY number.<br><br>**Student exercises:**<br><br>1. Write a program in ARM7TDMI-ISA to find the sum of all the digits in an 32bit number.<br><br>*.DATA*<br>*A: .WORD 6666*<br>*SUM:.WORD 0*<br>*.TEXT*<br>*LDR R5,=A*<br>*LDR R0,[R5]*<br>*MOV R2,#0 ;final answer*<br>*MOV R3,#0*<br>*MOV R4,#0*<br>*LOOP:*<br>*MOV R4,#0*<br>*DI:*<br>*CMP RO,#10*<br>*BMI FINISH*<br>*SUB R0,R0,#10*<br>*ADD R4,R4,#1*<br>*B DI*<br>*FINISH:* |

```
        MOV R3,R0
        ADD R2,R2,R3
        MOV R0,R4
        CMP R0,#0
        BNE LOOP
        B EXIT
EXIT:
        LDR R9,=SUM
        STR R2,[R9]
        SWI 0X011
```




2. Write a program in ARM7TDMI-ISA to find the number of occurrences of a given character in a string.

   Example: Given string : My name is Bond.

   Character : ‘n’.

   Expected Output : Display 2 in a register.

```
        .DATA
A: .ASCIZ "My name is Bond"
B: .BYTE 'n'
```

```
                .TEXT
        LDR R5,=A
        LDR R6,=B
        MOV R3,#15
        MOV R4,#0
        LDRB R2,[R6]

LOOP:
        LDRB R1,[R5]
        CMP R1,R2
        ADDEQ R4,R4,#1
        SUB R3,R3,#1
        CMP R3,#0
        ADD R5,R5,#1
        BNE LOOP

                .END
```