

MPCA WEEK6 LAB

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Section:"I"

SRN:PES1UG20CS516

1. Write a program in ARM7TDMI-ISA to find the sum of all the digits in an 32bit number.

=>CODE:

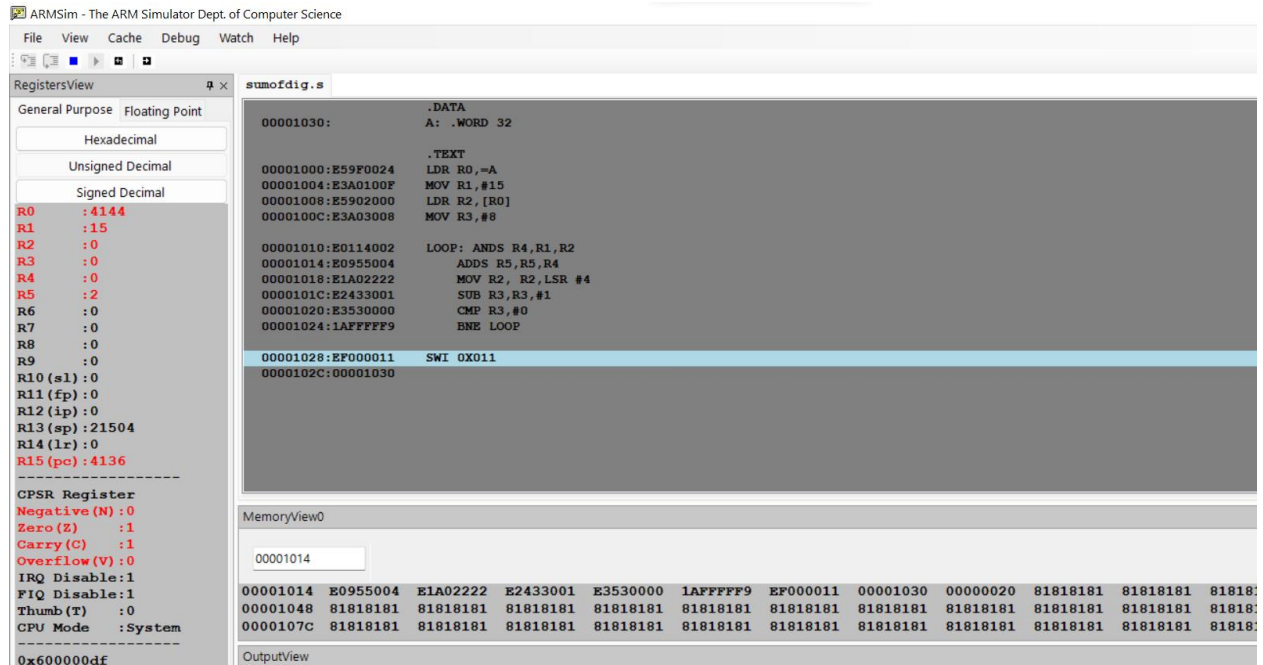
```
.DATA
A: .WORD 32

.TEXT
LDR R0,=A
MOV R1,#15
LDR R2,[R0]
MOV R3,#8

LOOP: ANDS R4,R1,R2
      ADDS R5,R5,R4
      MOV R2, R2,LSR #4
      SUB R3,R3,#1
      CMP R3,#0
      BNE LOOP

SWI 0X011
```

=>Output:



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.

=>CODE:

```
.DATA
A: .ASCII "SHASHA ON THE SEA SHORE"
B: .ASCII "S"
```

```

.TEXT
LDR R0,=A
LDR R1,=B
MOV R4,#0
MOV R9,#0
LOOP: LDRB R2,[R0],#1
      LDRB R3,[R1]
      CMP R2,R3
      BEQ LOOP1
      ADD R9,R9,#1
      CMP R9,#20
      BNE LOOP

LOOP1: ADD R4,R4,#1
      BAL LOOP

SWI 0X011

```

=>Output:

The screenshot shows the ARMSim interface with the following components:

- RegistersView:** Displays the state of registers R0 through R15 and CPSR. R0 is 668391, R1 is 4183, R2 is 0, R3 is 83, R4 is 6, R5 is 0, R6 is 0, R7 is 0, R8 is 0, R9 is 664225, R10 is 0, R11 is 0, R12 is 0, R13 is 21504, R14 is 0, and R15 is 4116.
- MemoryView:** Shows a memory dump starting at address 00001014. The first four lines of memory contain the ASCII string "SHASHA ON THE SEA SHORE".
- OutputView:** Shows the console output, which is currently empty.

Here 4 times “S” is repeated.

R4 contains 4 occurrences of ‘S’ in the sentence.