Tests & Quizzes

Quiz 07

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Part 1 of 5 / 3.0 Points

Question 1 of 5 3.0 Points

Consider the following ARM assembly program

```
     AREA prog, CODE, READONLY
     ENTRY
          MOV   R0, #250
          MOV   R1, #1
repeat    ADD   R1,R1,R0,ASR#3
          TST   R1,#1
          SUBNE R0,#61
          SUBEQ R0,#91
          CMP   R0,#0
          BGT   repeat
halt      B     halt
     END
```

What is the value of R0 and R1 after executing the above program (until reaching the "`B halt`" instruction)?

R0 = 0x ✔ FFFFFFE8 , R1 = 0x ✔ 00000043

How many times is the ADD instruction executed? ✔ 4

Answer Key: FFFFFFE8|-18, 43|00000043, 4

Part 2 of 5 / 1.0 Points

Question 2 of 5 1.0 Points

If the align code is 0x5 and the 0-to-255 value is 0xFA, then the literal value in hexadecimal without any leading zeros will be 0x ✖ 5FA .

Answer Key: 3E800000

```
        AREA prog, CODE, READONLY
        ENTRY
            MOV    R0, #250
            MOV    R1, #1
repeat      ADD    R1,R1,R0,ASR#3
            TST    R1,#1
            SUBNE  R0,#61
            SUBEQ  R0,#91
            CMP    R0,#0
            BGT    repeat
halt        B      halt
        END
```

What is the value of R0 and R1 after executing the above program (until reaching the "B halt" instruction)?

TST R1,#1 => check the last digit is 1 or not.

SUBNE: not equal to 1

SUBEQ: equal to

61 => 3D

91 => 5B.

Round 1 2 3 4

R0: FA → 9F → 62 → 25 → −18 (FFFFFFCA)

DEC: 250 → 159 → 98 → 37 → −24

R1: 01 → 20 → 33 → 3E

(−5B, −3D, −3D, −3D; −91, −61, −61, −61; +1F, +13)

37 − 91 = −54

F = 15 − 6 + 1

15 − 3

12

FA: 15×16+10 = 31×8+10 = 250

9F: 9×16+15 = 144+15 = 159

62: 6×16+2 = 96+2

25: 32+5

EC, 05, 40, 13, 13: simply × 2^3; /8, truncated; /8, truncated.

For others, 1–32 => 7

* the … bits).

HEX	Bin	LSR#1	LSL#1	ASR#1	ROR#1
F7	11110111	7B	1EE	7B	7B
	00001000				
	11100100				

```
      AREA prog, CODE, READONLY
      ENTRY
            MOV   R0, #250
            MOV   R1, #1
repeat      ADD   R1,R1,R0,ASR#3
            TST   R1,#1   => check the last digit is 1 or not.
            SUBNE R0,#61  not equal => 1
            SUBEQ R0,#91  equal => 0
            CMP   R0,#0
            BGT   repeat
halt        B     halt
      END
```

What is the value of R0 and R1 after executing the above program (until reaching the "`B halt`" instruction)?

Round	R1	R0	R0
1	01	11111010	250
2	32	10011111	159
	41	01100010	98

159 = 128+16+8+4+2+1

159/8 = 19 (remainder 7)

159 - 61 = 98

64+32+2

Part 3 of 5 / 2.0 Points

Question 3 of 5 2.0 Points

Click to see additional instructions
If the literal value is 0x2000000A, then the align code in decimal will be ✖ 2097152 and the 0-to-255 value in decimal will be ✖ 10 .

Answer Key: 2, 162

Part 4 of 5 / 7.0 Points

Question 4 of 5 7.0 Points

Encode the following ARM assembly instruction to ARM machine language code.
ADC r1,r2,#0xFC000003
0x ✖ FF13A2E2

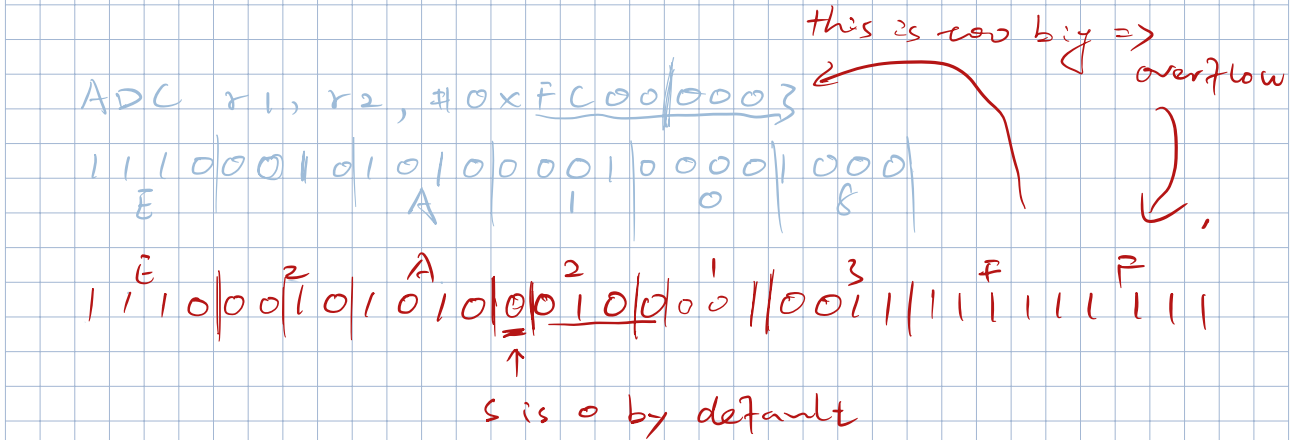
Answer Key: E2A213FF

Part 5 of 5 / 7.0 Points

Question 5 of 5 7.0 Points

Decode the following ARM machine language code to ARM assembly instruction. 0x71E04345
✖ MVN r4, r5, ASR#6

Answer Key: MVNVC r4,r5,ASR #6



0x71E04345

0111 0001 1111 0000 0100 0011 0101

VC MVN R0 R4 #6 ASR R5

MVNVC, R4, R0, R5, ASR#6.