This quiz has been regraded; your new score reflects 2 questions that were affected.

Exam 1 Lecture

Due Sep 28 at 4:45pm **Points** 100 **Questions** 37 **Available** Sep 28 at 3:30pm - Sep 28 at 4:45pm about 1 hour **Time Limit** None

Instructions

WARNING!

This quiz is being monitored. You must:

- Close all other applications (except Canvas).
- Have only 1 browser with 1 tab open (the one with canvas).
- Maximize your browser.
- Do not use a secondary device for looking up answers.
- No Calculators!!!
- No help via any of the social media apps!
- You may use an empty notepad, pencil, eraser.
- No NOTES!

Violation of any one of these rules will result in a 0 for your grade and a report being sent to the Dean for academic dishonesty.

This quiz was locked Sep 28 at 4:45pm.

Attempt History

	Attempt	Time	Score	Regraded
▶ EST	Attempt 1	71 minutes	84.7 out of 100	85.7 out of 100

Score for this quiz: **85.7** out of 100
Submitted Sep 28 at 4:42pm
This attempt took 71 minutes.

Question 1 — 1 / 1 pts

Indicate which data type is needed for the two's complement representation of -64,000.

- byte
- halfword
- word
- none of the listed answers.

Correct!

Question 2

1 / 1 pts

Indicate which data type is needed for the two's complement representation of 254.

- byte
- halfword
- word
- none of the listed answers

Correct!

Question 3

1 / 1 pts

If the hexadecimal value 0x8000 is a two's complement, halfword value, what would it be in base ten?

- -8000
- 8000
- 32768
- -32768
- none of the listed answers

Correct!

Question 4

1 / 1 pts

What character does the bits 0100 0001 represent?

- '65 '
- Correct! 'A'
- 'a'
- none of the listed answers

Question 5

1 / 1 pts

What character does the bits 0100 0100 represent?

- 'A'
- Correct! 'D'
- 'E'
- none of the listed answers

Question 6

1 / 1 pts

Word = _____ bits

- 4
- 8
- 16
- Correct! 32
- 64

Question 7

1 / 1 pts

Halfword = _____ bits

- 4
- 8
- 16 (Correct!)
- 32
- 64

Question 8

1 / 1 pts

Byte = _____ bits

- 4
- 8 (Correct!)
- 16
- 32
- 64

Question 9

1 / 1 pts

6. For the ARM7TDMI, instructions are _____ byte(s).

- 1
- 2
- 4 (Correct!)

- 8
- 16

Question 10

1 / 1 pts

What is the standard use of register r13?

A. Stack Pointer
B. Link Register
C. Program Counter
D. CPSR
E. None of the listed are correct.

Correct!

- A
- B
- C
- D
- E

Question 11

1 / 1 pts

What is the standard use of register r14?

A. Stack Pointer
B. Link Register
C. Program Counter
D. CPSR
E. None of the listed are correct.

- A

Correct!

- B
- C
- D

E

Question 12

1 / 1 pts

What is the standard use of register r15?

A. Stack Pointer
B. Link Register
C. Program Counter
D. CPSR
E. None of the listed are correct.

A

B

Correct!

C

D

E

Question 13

1 / 1 pts

What is the standard use of register r7?

A. Stack Pointer
B. Link Register
C. Program Counter
D. CPSR
E. None of the listed are correct.

A

B

C

D

Correct!

E

Question 14

Original Score: 0 / 1 pts Regraded Score: 1 / 1 pts

This question has been regraded.

Which bits of the CPSR contain the flags?

A. 3-0
B. 31-0
C. 31-28
D. 32-29
E. None of the listed are correct.

- A
- B
- C (Correct!)
- D
- E

Question 15

0 / 1 pts

Explain the current program state of an ARM7TDMI if the CPSR had the value 0x10000000.

A. N flag set
B. Z flag set
C. CV flags set
D. NZCV flags set
E. V flag set.

- A
- B (You Answered)
- C
- D

Correct Answer

E

Question 16

1 / 1 pts

If R0 contains 0x00005093 and R1 contains 0x00005555 what is the resulting value in R0 following this instruction: **ADD R0,R1**

A. 0x00050930
B. 0x00005011
C. 0x000055D7
D. 0x000005C6
E. 0x0000A5E8

A

B

C

D

Correct!

E

Question 17

1 / 1 pts

6. What command code goes into *R7* prior to issuing the *SVC 0* instruction if we want to tell Linux to terminate the program?
   A. 0
   B. 1
   C. 2
   D. 3
   E. 4

A

Correct!

B

C

D

E

Question 18

1 / 1 pts

If the value in the PC is 0x00005000, what value would it be after 2 instructions are executed?

A. 0x00005004
B. 0x00005008
C. 0x00005010
D. 0x00005014
E. None of the above.

- A
- Correct! B
- C
- D
- E

Question 19

Original Score: 1 / 1 pts Regraded Score: 1 / 1 pts

This question has been regraded.

Which instruction would we use to store an immediate value into a register?

A. MOV
B. LDR
C. STR
D. LDM
E. STM
F. none of the listed answers.

- You Answered A
- Correct Answer B
- C
- D

E

F

Question 20

0 / 1 pts

MOV R0, R1 copies the contents of

A. R0 to R1 and updates the Status Register (CPSR)
B. R1 to R0 and updates the Status Register (CPSR)
C. R0 to R1
D. R1 to R0
E. none of the listed answers.

A

You Answered — B

C

Correct Answer — D

E

Question 21

1 / 1 pts

Which data directive would be the “best” if we needed a variable with a maximum unsigned value of 0xFF?

A. .int
B. .hword
C. .word
D. .byte
E. none of the listed answers.

A

B

C

Correct!

- D
- E

Question 22

1 / 1 pts

Which data directive would be the 'best' if we needed a variable with a maximum unsigned value of 0xFFFF?

A. .int
B. .hword
C. .word
D. .byte
E. none of the listed answers

- A

Correct!

- B
- C
- D
- E

Question 23

1 / 1 pts

Which data directive would be the 'best' if we needed a variable with a maximum unsigned value of 0xFFFFFFFF?

A. .int
B. .hword
C. .word
D. .byte
E. none of the listed answers.

- A
- B

Correct!

- C
- D

E

Question 24

1 / 1 pts

Which data directive places a null character at the end of a string?

A. .asciz
B. .asci
C. .asciiz
D. .byte
E. none of the listed answers.

Correct!

- (selected) A
- B
- C
- D
- E

Question 25

1 / 1 pts

LDR stands for:

A. LoaD Register from memory
B. LoaD Register to memory
C. LoaD Register from Register
D. none of the listed answers.

Correct!

- (selected) A
- B
- C
- D

Question 26

0 / 1 pts

Which data directive reserves 12 bytes for the label strBuffer?

A. strBuffer: .byte 0,0,0,0,0,0,0,0,0,0,0,0
B. strBuffer: .word 0,0,0
C. strBuffer: .skip 12
D. strBuffer: .hword 0,0,0,0,0,0
E. All of the above.

- A
- B
- You Answered: C
- D
- Correct Answer: E

Question 27

1 / 1 pts

What does the instruction LDR R1, [R5] do?

A. Load the contents of the memory address pointed to by R5 into R1
B. Load the contents of the memory address pointed to by R1 into R5
C. Load the contents of R5 into R1
D. Load the contents of R1 into R5
E. none of the listed answers.

- Correct!: A
- B
- C
- D
- E

Question 28

1 / 1 pts

What does the instruction LDR R1, =string do?

A. Load the address of the label string into R1
B. Load the value of the label string into R1
C. Load the value R1 into the address pointed to by the label string
D. none of the listed answers.

Correct!

- (●) A
- ( ) B
- ( ) C
- ( ) D

Question 29

1 / 1 pts

STR stands for:

A. STore memoRy to memory
B. STore memory to Register
C. STore Register to memory
D. none of the listed answers.

- ( ) A
- ( ) B

Correct!

- (●) C
- ( ) D

Question 30

0 / 1 pts

What does the instruction STR R0, [R1] do?

A. Store the contents of the memory address pointed to by R0 into R1
B. Store the contents of the memory address pointed to by R1 into R0

C. Store the contents of R0 into R1
D. Store the contents of R0 into the address pointed to by R1
E. none of the listed answers.

- A
- You Answered: B
- C
- Correct Answer: D
- E

Question 31

0 / 1 pts

Executing either LDR or STR instructions would effectively transfer a _____ of data from one point in memory to another.

A. byte
B. half byte (nibble)
C. word
D. string
E. none of the listed answers.

- You Answered: A
- B
- Correct Answer: C
- D
- E

Question 32

0 / 1 pts

Which does the instruction LDR R1, R2 do?

A. Load the address of R2 into R1
B. Load the value of R2 into R1

C. Load the R1 into the address pointed to by R2
D. none of the listed answers.

You Answered
- (•) A

- ( ) B
- ( ) C

Correct Answer
- ( ) D

Question 33

6 / 6 pts

Part 1 (5 pts): Suppose that the starting address of the first byte in our data segment is **00020088** in hex. Suppose further that the **data** identifiers are as described below. Finish writing out the memory addresses for each label below. The first label 'bA' has been completed for you. Your answer must include all 8 hex digits without the '0x'! No exceptions.

		.data	
0x00020088	bA:	.byte	155
0x 00020089	bFlag:	.byte	1
0x 0002008A	chInit:	.byte	'j'
0x 0002008B	u16Hi:	.hword	88
0x 0002008D	wAlt:	.word	77, -1024, -6
0x 00020099	szMsg2	.asciz	"ABC"
0x 0002009D	chCr	.byte	10

Answer 1:

Correct!

00020089

Answer 2:

Correct!

0002008a

Answer 3:

Correct!

0002008b

Answer 4:

Correct! 0002008d

Answer 5:

Correct! 00020099

Answer 6:

Correct! 0002009d

Question 34

2 / 2 pts

Based on the data identifiers listed in Part 1, how many bytes is our data segment (Only enter the number!)

Correct! 22

Correct Answers 22

Question 35

26 / 26 pts

Using the data segment is Part 1 Question 1 and complete the memory dump below.

MEMORY DUMP

0x00020088	0x 9B	0x 01	0x 6A	0x 58	0x 00	0x 4D	0x 00	0x 00
0x 00020090	0x 00	0x 00	0x FC	0x FF	0x FF	0x FA	0x FF	0x FF
0x 00020098	0x FF	0x 41	0x 42	0x 43	0x 00	0x 0A	0x 00	0x 00

Answer 1:

Correct! 9b

Answer 2:

Correct! 01

Answer 3:

Correct! 6a

Answer 4:

Correct! 58

Answer 5:

Correct! 00

Answer 6:

Correct! 4d

Answer 7:

Correct! 00

Answer 8:

Correct! 00

Answer 9:

Correct! 00020090

Correct Answer 20090

Answer 10:

Correct! 00

Answer 11:

Correct! 00

Answer 12:

Correct! fc

Answer 13:

Correct! ff

Answer 14:

Correct! ff

Answer 15:

Correct! fa

Answer 16:

Correct! ff

Answer 17:

Correct! ff

Answer 18:

Correct! 00020098

Correct Answer 20098

Answer 19:

Correct! ff

Answer 20:

Correct! 41

Answer 21:

Correct! 42

Answer 22:

Correct! 43

Answer 23:

Correct! 00

Answer 24:

Correct! 0a

Answer 25:

Correct! 00

Answer 26:

Correct! 00

Question 36

24 / 24 pts

Still using the data segment is Part 1,

Suppose now that the contents of the memory have changed to reflect the results of the execution of code by an unknown program to be the following…

USE the TAB Key to navigate from byte to byte if necessary.

MEMORY DUMP

0x00020088	0x42	0x61	0x74	0x6d	0x61	0x6e	0x00	0x61
0x 00020090	0x6c	0x18	0x0a	0x00	0x00	0x00	0x01	0xff
0x 00020098	0xff	0x55	0x53	0x41	0x00	0xff	0xff	0xfd

Step 1: Complete the row address values in the table above. DO NOT INCLUDE the '0x's, show all 4 bytes of the address, with no spaces! Use the 00020170 as an example format.

Step 2: Answer the 4 questions below:

Q1. If we were to print *szMsg* using the **putstring** function what would **display** to the terminal? USA

Q2. Assuming **R1** contained the address of *wAlt[1]*, what would be stored in **R0** (Big-Endian) after the following instruction is executed:

```
ldrh r0, [ r1 ]
```

Provide your answer as a hex value stored in R0, do not provide the '0x', just the values, with **no spaces**. You must provide all 4 bytes in your answer, even if the byte is 0 (i.e. 0000000000) would be the equivalent to 0x.0000

R0 = 0x 00000A18

Q3. What is the 1-byte hex value of szMsg2[2] (do not include the '0x' in your answer)? 0x 41

Answer 1:

Correct! 00020090

Answer 2:

Correct! 00020098

Answer 3:

Correct! USA

Answer 4:

You Answered 00000A18

Correct Answer 00000100

Answer 5:

Correct! 41

correct

Question 37

1.7 / 10 pts

What is stored in the following registers after line 49 executes in the code below (Ensure you show all 8 nibbles in your answer in hex):

```
1      .data
2   0x00020100  strBuffer:  .skip 512
3
4   0x________  cCR:        .byte 10
5
6   0x________  sValA:      .hword 5
7
8   0x________  strMessage: .ascii "Result: "
9
10  0x________  strAddress: .skip 10
11
12  0x________  strPrompt1: .asciz "I love Assembly!"
13
14  0x________  iValA:      .word 2
15
16  0x________  iValB:      .word 2048
17
18  0x________  iResult:    .word 0
19
20  0x________  iArray:     .word 0,0,0
21
22  0x________  strResult:  .skip 12
23
24
25  @This is also a comment
26      .text
27      .global _start          @ provide a program starting address to Linker
28      .balign 4
29
30  _start:
31      ldr R0, =strResult
32      ldr R1, =iArray
33      ldr R2, =iResult
34      ldr R3, =iValB
35      ldr R4, =iValA
36      ldr R5, =strPrompt1
37      ldr R6, =strAddress
38      ldr R7, =strMessage
39      ldr R8, =sValA
40      ldr R9, =cCR
41      ldr R10, =strBuffer
42
43
44      mov R10, #1024
45      str R10, [R3]
46      ldr R11, [R4]
47
48      add R12,R10,R11
49      sub R12,R11,R10
50
51
52
53
54
55
56
57      mov r0, #0          @ Exit Status code set to 0 to indicate "normal completion"
58      mov r7, #1          @ service command code (1) will terminate this program
59      svc 0               @ Issue Linux command to terminate program
60
61      .end
62
```

R10 = 00000800

R11 = 00000002

R12 = FFFFF802

If the next instruction after line 49 was:

```
orr r10,r11,r12
```

The value of r10 would = FFFFF802

If the next instruction after line 49 was:

```
lsl r10,#2
```

The value of r10 would = 00002000

If the next instruction after line 49 was:

```
asr r10, #4
```

The value of r10 would = 00000080

Answer 1:

You Answered: 00000800

Correct Answer: 00000400

Answer 2:

You Answered: 00000002

Correct Answer: 00000000

Answer 3:

You Answered: FFFFF802

Correct Answer: fffffc00

Answer 4:

You Answered: FFFFF802

Correct Answer: fffffc00

Answer 5:

You Answered: 00002000

Correct Answer: 00001000

Answer 6:

You Answered: 00000080

Correct Answer: 00000010

R10 = 00000400 R11 = 00000002 R12 = fffffc02 A = fffffc02 B = 00001000 C = 00000040

Quiz Score: **85.7** out of 100