HW 1-2

Due Aug 24 at 11:59pm **Points** 30 **Questions** 7 **Available** until Aug 24 at 11:59pm **Time Limit** None **Allowed Attempts** 2

Instructions

Complete the following problems from chapter 1 of your text book. Solutions will be turned on after due date/time.

Average Time: 1 hour.

This quiz was locked Aug 24 at 11:59pm.

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	1,338 minutes	29 out of 30
LATEST	Attempt 2	1,338 minutes	29 out of 30
	Attempt 1	7,364 minutes	22.2 out of 30

Score for this attempt: **29** out of 30
Submitted Aug 24 at 9:24pm
This attempt took 1,338 minutes.

Question 1 **9 / 9 pts**

1.7 Perform the following:

(a) Convert 101101_2 to base ten.

(b) Convert 1023_{10} to base nine.

(c) Convert 1023_{10} to base two.

(d) Convert 301_{10} to base 16.
(e) Convert 301_{10} to base 2.
(f) Represent 301_{10} as a null-terminated ASCII string (write your answer in hexadecimal).
(g) Convert 3420_5 to base ten.
(h) Convert 2314_5 to base nine.
(i) Convert 116_7 to base three.
(j) Convert 1294_{11} to base 5.

(a) Base 10: 45

(b) Base 9: 1356

(c) Smallest nibble (dont forget the spaces): 0011 1111 1111

(d) Smallest byte in hex (dont forget the space) 01 2D

(e) smallest nibble boundary 0001 0010 1101

(f) 33 30 31 00

(g) 485

(h) 411

(i) 2022

(j) 23201

Answer 1:

Correct! 45

Answer 2:

Correct! 1356

Answer 3:

You Answered 0011 1111 1111

Correct Answer 0001 1111 1111

Correct Answer 000111111111

Correct Answer 111111111

Answer 4:

Correct! 01 2D

Correct Answer 12D

Correct Answer 012D

Answer 5:

Correct! 0001 0010 1101

Correct Answer 000100101101

Correct Answer 100101101

Answer 6:

Correct! 33 30 31 00

Correct Answer 33303100

Correct Answer 0x33 0x30 0x31 0x00

Answer 7:

Correct! 485

Answer 8:

Correct! 411

Answer 9:

Correct! 2022

Answer 10:

Correct! 23201

Question 2

5 / 5 pts

1.8 Given the following binary string:
01001001 01110011 01101110 00100111 01110100 00100000 01000001
01110011 01110011 01100101 01101101 01100010 01101100 01111001
00100000 01000110 01110101 01101110 00111111 00000000

(a) Convert it to a hexadecimal string.
(b) Convert the first four bytes to a string of base ten numbers.
(c) Convert the first (little-endian) halfword to base ten.
(d) Convert the first (big-endian) halfword to base ten.
(e) If this string of bytes were sent to an ASCII printer or terminal, what would be printed?

(a) Now you know the reason to put spaces in your answer. 49 73 6E 27 74 20

(b) w spaces after each decimal value (8 bits) (i.e. EF 10 = 239 16) 73 115 110 39

(c) Remember a half-word is two bytes, first means leftmost. Give answer as base $_{10}$: 29513

(d) Remember a half-word is two bytes, first means leftmost. Give answer as base $_{10}$: 18803

(e) Isn't Assembly Fun'

Answer 1:

Correct!

49 73 6E 27 74 20 41 73 73 65 6D 62 6C 79 20 46 75 6E 3F 00

Correct Answer

49 73 6E 27 74 20 41 73 73 65 6D 62 6C 79 20 46 75 6E 3F

Answer 2:

Correct!

73 115 110 39

Answer 3:

Correct!

29513

Answer 4:

Correct!

18803

Answer 5:

Correct!

Isn't Assembly Fun?

Question 3

4 / 4 pts

1.9 The number 1,234,567 is stored as a 32-bit word starting at address $\texttt{F0439000}_{16}$. Show the address and contents of each byte of the 32-bit word on a

(a) little-endian system,
(b) big-endian system.

Each answer below requires all two digits (i.e. 0 = 00). Grading for this is strict!

The following fill in the blanks are for the little-endian system:

- What are the contents of address 0xF0439000? 87
- What are the contents of address 0xF0439001? D6
- What are the contents of address 0xF0439002? 12

- What are the contents of address 0xF0439003? 00

The following fill in the blanks are for the big-endian system:

- What are the contents of address 0xF0439000? 00
- What are the contents of address 0xF0439001? 12
- What are the contents of address 0xF0439002? D6
- What are the contents of address 0xF0439003? 87

Answer 1:

Correct! 87

Correct Answer 10000111

Correct Answer 1000 0111

Answer 2:

Correct! D6

Correct Answer 11010110

Correct Answer 1101 0110

Answer 3:

Correct! 12

Correct Answer 00010010

Correct Answer 0001 0010

Answer 4:

Correct! 00

Correct Answer 00000000

Correct Answer 0000 0000

Answer 5:

Correct! 00

Correct Answer 00000000

Correct Answer 0000 0000

Answer 6:

Correct! 12

Correct Answer 00010010

Correct Answer 0001 0010

Answer 7:

Correct! D6

Correct Answer 11010110

Correct Answer 1101 0110

Answer 8:

Correct! 87

Correct Answer 10000111

Correct Answer 1000 0111

Question 4

2 / 2 pts

1.10 The ISO/IEC 10646 standard defines 1,112,064 code points (glyphs). Each code point could be encoded using 24 bits, or three bytes. The UTF-8 encoding uses up to four bytes to encode a code point. Give three reasons why UTF-8 is preferred over a simple 3-byte per code point encoding.

Correct! ☑ Backwards compatible with ASCII

Correct! ☑ Efficient code structure

Correct! ☑ Easily extended to include new languages

☐ Easier to memorize the character sets

☐ Every possible character is currently represented

Question 5

2 / 2 pts

1.11 UTF-8 is often referred to as Unicode. Why is this not correct?

Mark all that apply.

☐ Unicode is backwards compatible to ASCII where as UTF-8 is not backwards compatible.

Correct! ☑ Unicode is not backwards compatible to ASCII where as UTF-8 is backwards compatible.

☐ UTF-8 was designed as a 16-bit encoding and Unicode uses variable width encoding.

Correct! ☑ Unicode was designed as a 16-bit encoding and UTF-8 uses variable width encoding.

Question 6

5 / 6 pts

1.12 Skilled assembly programmers can convert small numbers between binary, hexadecimal, and decimal in their heads. Without referring to any tables or using a calculator or pencil, fill in the blanks in the following table:

Binary	Decimal	Hexadecimal
0101	5	5

1010	10	A
1100	12	C
0001 0111	23	17
0010 1101	45	2D
0100	1011	4B

Answer 1:

Correct!

0101

Correct Answer

101

Answer 2:

Correct!

5

Correct Answer

05

Answer 3:

Correct!

10

Answer 4:

Correct!

A

Correct Answer

0A

Answer 5:

Correct!

1100

Answer 6:

Correct!

12

Answer 7:

Correct!

0001 0111

Correct Answer 00010111

Correct Answer 10111

Answer 8:

Correct! 17

Answer 9:

Correct! 45

Answer 10:

Correct! 2D

Answer 11:

You Answered 0100

Correct Answer 0100 1011

Correct Answer 01001011

Correct Answer 1001011

Answer 12:

You Answered 1011

Correct Answer 75

Question 7

2 / 2 pts

1.13 What are the differences between a CPU register and a memory location?

Choose all that apply.

Correct!
- [x] Data in CPU registers can be used directly for computation.
- [ ] Computer memory consist of number of registers, each of which has a unique address.

Correct!
- [x] There are a small number of CPU registers.
- [ ] The most common size of a register is 1 byte.
- [ ] The ARM 32-bit processor family registers have variable size registers.

Correct!
- [x] Registers are used for storing temporary values, or temporary copies of data in memory.
- [ ] Registers are accessed via their memory addres.

Quiz Score: **29** out of 30