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ICS212 Assignment 3

01/11/16

1. Convert the unsigned 8-bit binary number to decimal: 1011 0101

= 1\*27 + 0\*26 + 1\*25 + 1\*24 + 0\*23 + 1\*22 + 0\*21 + 1\*20

=128 + 0 + 32 + 16 + 0 + 4 + 0 + 1

= 181

2. Convert the decimal number to 8-bit unsigned binary: 35

35 = 0010 0011

2| 35 r.1

2| 17 r.1

2| 8 r. 0

2| 4 r. 0

2| 2 r. 0

2| 1 r. 1

0

3. Convert the hexadecimal number to 16-bit unsigned binary: 0x4A2B

4 = 0100

A = 1010

2 = 0010

B = 1011

0x4A2B = 0100 1010 0010 1011

4. Convert the unsigned 16-bit binary number to hexadecimal.: 1011 0010 0111 0100

1011 = B

0010 = 2

0111 = 7

0100 = 4

1011 0010 0111 0100 = 0xB274

5. Convert the decimal number to hexadecimal: 95

95 = 0x5F

16| 95 = 5 r. 15

16| 15 = F

6. Convert the hexadecimal number to decimal: 0x13F

= 162\*1 + 161\*3 + 160\*F

=256\*1 + 16\*3 + 15

=256 + 48 + 15

=319

7. Convert the signed 8-bit binary number to decimal: 1001 1001

convert to complement form: 0110 0110

convert to 2’s complement form: 0110 0111

decimal: = 0\*27 + 1\*26 + 1\*25 + 0\*24 + 0\*23 + 1\*22 + 1\*21 + 1\*20

= 64 + 32 +4 + 2 + 1

= 103

add sign: = -103

8. Convert the decimal number to signed 8-bit binary: -35

2| 35 r.1

2| 17 r.1

2| 8 r. 0

2| 4 r. 0

2| 2 r. 0

2| 1 r. 1

0

35 = 00100011

complement = 1101 1100

2’s complement = 1101 1101

-35 = 1101 1101

9. Convert the unsigned 8-bit hexadecimal to unsigned 8-bit binary: 0x80

0x80 = 161\*8 + 160\*0

=16\*8

=128

128 = 1000 0000

10. Convert the decimal number to signed 8-bit binary: 127

27, x

26, 127 - 64 = 63

25, 63 – 32 = 31

24, 31 – 16 = 15

23, 15 – 8 = 7

22, 7 – 4 = 3

21, 3 – 2 = 1

20, 1- 1 = 0

127 = 0111 1111

11. Convert the decimal number to signed 8-bit binary: -100

26, 100 -64 = 36

25, 36 – 32 = 4

24, x

23, x

22, 4 – 4 = 0

21, x

20, x

100 = 0110 0100

1’s complement = 1001 1011

2’s complement = 1001 1100

-100 = 1001 1100

12. Convert the signed 8-bit binary number to decimal: 1010 1010

1’s complement = 0101 0101

2’s complement = 0101 0110

decimal = 0\*27 + 1\*26 + 0\*25 + 1\*24 + 0\*23 + 1\*22 + 1\*21 + 0\*20

= 64 + 16 + 4 +2

= 86

answer = -86

13. Convert the hexadecimal number to the corresponding ASCII character: 0x41

0x41 = ‘A’

14. Convert the ASCII character to the corresponding hexadecimal number: 'a'

‘a’ = 0x61

15. Convert the hexadecimal number to the corresponding ASCII character: 0x30

0x30 = ‘0’

16. Convert the ASCII character to the corresponding hexadecimal number: '9'

‘9’ = 0x39

17. Convert the binary number to the corresponding ASCII character: 0100 0001

0100 0001 = ‘A’

18. Convert the ASCII character to the corresponding binary number: 'a'

‘a’ = 110 0001

19. Convert the decimal number to the corresponding ASCII character: 48

48 = ‘0’

20. Convert the ASCII character to the corresponding decimal number: '9'

‘9’ = 57