assembly - 0911 (1)

1. In an 8-bit binary number, which is the most significant bit (MSB)?

    ▼ MSB는 8비트 이진수에서 가장 왼쪽에 있는 비트를 말한다.

2. What is the decimal representation of each of the following unsigned binary integers?

    a. 0010101 → 32+16+4+2=**53**

    b. 10010110 → 128+16+4+2=**150**

    c. 11001100 → 128+64+8+4=**204**

3. What is the sum of each pair of binary integers?

    a. 10101111 + 11011011 → 175+219=394 → **110001010**

    b. 10010111 + 11111111 → 151+255=406 → **110010110**

    c. 01110101 + 10101100 → 117+172=289 → **100100001**

4. Calculate binary 00001101 minus 00000111.

    00001101 = 13 / 00000111 = 7

    13 - 7 = 6 / 6 = 00000110

    ANSWER: 00000110

5. How many bits are used by each of the following data types?

    a. word → **16비트**

    b. doubleword → **32비트**

    c. quadword → **64비트**

    d. double quadword → **128비트**

6. What is the minimum number of binary bits needed to represent each of the following unsigned decimal integers?

a. 4095 → **12비트**

b. 65534 → **16비트**

c. 42319 → **16비트**

7. What is the hexadecimal representation of each of the following binary numbers?

   a. 0011 0101 1101 1010 → **35DA**

   b. 1100 1110 1010 0011 → **CEA3**

   c. 1111 1110 1101 1011 → **FEDB**

8. What is the binary representation of the following hexadecimal numbers?

   a. 0126F9D4 → **0000 0001 0010 0110 1111 1101 0100**

   b. 64CDFA95 → **0110 0100 1100 1101 1111 1010 1001 0101**

   c. F69BDC2A → **1111 0110 1001 1011 1101 1100 0010 1010**

9. What is the unsigned decimal representation of each of the following hexadecimal integers?

   a. 3A → 48+10=**58**

   b. 1BF → 256+176+15=**447**

   c. 1001 → 4096+0+0+1=**4097**

10. What is the unsigned decimal representation of each of the following hexadecimal integers?

    a. 62 → 96+2=**98**

    b. 4B3 → 1024+176+3=**1203**

    c. 29F → 512+144+15=**671**

11. What is the 16-bit hexadecimal representation of each of the following signed decimal integers?

    a. -24 → **FFE8**

b. -331 → **FEB5**

12. What is the 16-bit hexadecimal representation of each of the following signed decimal integers?
    a. -21 → **FFEB**
    b. -45 → **FFD3**

13. The following 16-bit hexadecimal numbers represent signed integers. Convert each to decimal.
    a. 6BF9 → **27641**
    b. C123 → **-16093**

14. The following 16-bit hexadecimal numbers represent signed integers. Convert each to decimal.
    a. 4CD2 → **19666**
    b. 8230 → **-32208**

15. What is the decimal representation of each of the following signed binary numbers?
    a. 10110101 → **-75**
    b. 00101010 → **42**
    c. 11110000 → **-16**

16. What is the decimal representation of each of the following signed binary numbers?
    a. 10000000 → **-128**
    b. 11001100 → **-52**
    c. 10110111 → **-73**

17. What is the 8-bit binary (two's-complement) representation of each of the following signed decimal integers?
    a. -5 → **11111011**
    b. -42 → **11010110**
    c. -16 → **11110000**

18. What is the 8-bit binary (two's-complement) representation of each of the following signed decimal integers?
    a. -72 → **10111000**
    b. -98 → **10011110**
    c. -26 → **11100110**

19. What is the sum of each pair of hexadecimal integers?
    a. 6B4+3FE → **ABE2**
    b. A49+6BD → **1106**

20. What is the sum of each pair of hexadecimal integers?
    a. 7C4+3BE → **B82**
    b. B69+7AD → **1316**

21. What are the hexadecimal and decimal representations of the ASCII character capital B?

    B → 66

    ANSWER: **66(decimal), 42(hexadecimal)**

22. What are the hexadecimal and decimal representations of the ASCII character capital G?

    G → 71

    ANSWER: **71(decimal), 47(hexadeciaml)**

23. What is the largest decimal value you can represent, using a 129-bit unsigned integer?

    ANSWER: 2^129-1

24. What is the largest decimal value you can represent, using a 86-bit signed integer?

    ANSWER: 2^85-1

25. Create a truth table to show all possible inputs and outputs for the boolean function described by ¬(A∨B).

A	B	A∨B	¬(A∨B)
0	0	0	1
0	1	1	0
1	0	1	0
1	1	1	0

26. Create a truth table to show all possible inputs and outputs for the boolean function described by (¬A ∧ ¬B). How would you describe the rightmost column of this table in relation to the table from question number 25? Have you heard of De Morgan's Theorem?

A	B	¬A	¬B	¬A ∧ ¬B
0	0	1	1	1
0	1	1	0	0
1	0	0	1	0
1	1	0	0	0

    25번에 적은 진리표와 동일.

27. If a boolean function has four inputs, how many rows are required for its truth table?

    ANSWER: 입력이 n개일 때, 진리표는 2^n개 입력 가능하다.

    그러므로 이 함수는 **2^4 = 16개의 행이 필요**하다.

28. How many selector bits are required for a four-input multiplexer?

ANSWER: