

Quiz 01 :::: Numbering System

1. Convert the decimal number 431 to binary in two ways:

(a) convert directly to binary	(b) convert first to hexadecimal and then from hexadecimal to binary. Which method is faster?

2. What is the largest binary number that can be expressed with 16 bits? What are the equivalent decimal and hexadecimal numbers?

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3. Add and multiply the following numbers without converting them to decimal.

(a) Binary numbers 1011 and 101.	(b) Hexadecimal numbers 2E and 34.

4. Obtain the 1's and 2's complements of the following binary numbers:

(a) 00010000	(b) 10101010
(c) 00000000	(d) 10000101
(e) 11011010	(f) 11111111

5. Assign a binary code in some orderly manner to the 52 playing cards. Use the minimum number of bits.

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6. Represent the decimal number 6,248 in

(a) BCD,	(b) excess-3 code,
(c) 2421 code	(d) 6311 code

7. Represent the unsigned decimal numbers 791 and 658 in BCD, and then show the steps necessary to form their sum.

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8. Convert decimal 6,514 to both BCD and ASCII codes. For ASCII, an even parity bit is to be appended at the left.

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9. Decode the following ASCII code:

1010011 1110100 1100101 1110110 1100101 0100000 1001010 1101111 1100010 1110011.

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10. The following is a string of ASCII characters whose bit patterns have been converted into hexadecimal for compactness: 73 F4 E5 76 E5 4A EF 62 73. Of the eight bits in each pair of digits, the leftmost is a parity bit. The remaining bits are the ASCII code.

(a) Convert the string to bit form and decode the ASCII.	(b) Determine the parity used: odd or even?
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11. What bit must be complemented to change an ASCII letter from capital to lowercase and vice versa?

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12. The state of a 12-bit register is 100010010111. What is its content if it represents

(a) Three decimal digits in BCD?	(b) Three decimal digits in the excess-3 code?
(c) Three decimal digits in the 84-2-1 code?	(d) A binary number?

13. List the ASCII code for the 10 decimal digits with an even parity bit in the leftmost position.

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