NUMBER SYSTEMS

1. Convert the binary number \(101_2\) to decimal: 

2. Convert the binary number \(1010_2\) to decimal: 

3. How are the two questions above related?

4. Convert the binary number \(10101_2\) to decimal: 

5. How are questions 2 and 4 related?

6. Convert the binary number \(101011_2\) to decimal: 

7. Describe a program that calculates the decimal equivalent of any binary number:

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8. Convert the decimal number \(11_{10}\) to binary: 

9. Convert the decimal number \(116_{10}\) to binary: 

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HEXADECIMAL

10. Convert the hexadecimal numbers \(C_{16}, D_{16}, \text{ and } E_{16}\) to binary:

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11. Express the hexadecimal number \(CODE_{16}\) as a sum of 4 terms in decimal: (i.e. \(\_ \cdot 16^3 + \_ \cdot 16^2 + \_) 

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12. Convert the hexadecimal number \(CODE_{16}\) to binary:

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13. Convert the binary number: \(100100110_2\) to hexadecimal:

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BITWISE OPERATORS

14. What is the value of $1010_2 \mid 110_2$? 

15. What is the value of $1010_2 \& 110_2$? 

16. What is the value of $1010_2 \l^1 110_2$? 

17. What is the value of $1010_2 \ll 10_2$? 

18. What is the value of $1010_2 \gg 10_2$? 

19. What is the value of $C05126_{16} \l CBE245_{16} \l C05126_{16}$? 

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TWO'S COMPLEMENT

20. What is the complement of $0101 \ 0000 \ 1100 \ 1111_2$? 

21. What is the 16-bit two's complement binary representation of the decimal number $116_{10}$? 

22. What is the 16-bit two's complement binary representation of the decimal number $-116_{10}$? 

23. What is the 16-bit two's complement hexadecimal representation of the decimal number $-116_{10}$? 

24. What is the decimal representation of the 16-bit two's complement hexadecimal number $FFE_{16}$? 

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CHALLENGE

25. Convert the binary numbers $0.1_2$ and $0.01_2$ to decimal:

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