Mathematical base 2, or numbers composed of a series of zeros and ones. Since zero's and one's can be easily represented by two voltage levels on an electronic device, the binary number system is widely used in digital computing. (See switch.) Pertaining to a number system that has just two unique digits. For most purposes, we use the decimal number system, which has ten unique digits, 0 through 9. All other numbers are then formed by combining these ten digits. Computers are based on the binary numbering system, which consists of just two unique numbers, 0 and 1. All operations that are possible in the decimal system (addition, subtraction, multiplication, division) are equally possible in the binary system. We use the decimal system in everyday life because it seems more natural (we have ten fingers and ten toes). For the computer, the binary system is more natural because of its electrical nature (charged versus un-charged). In the decimal system, each digit position represents a value of 10 to the position's power. For example, the number 345 means: 3 three 100s (10 to the 2nd power), plus 4 four 10s (10 to the first power), plus 5 five 1s (10 to the zeroth power). In the binary system, each digit position represents a power of 2. For example, the binary number 1011 equals: 1 one 8 (2 to the 3rd power), plus 0 zero 4s (2 to the 2nd power), plus 1 one 2 (2 to the first power), plus 1 one 1 (2 to the zeroth power). So a binary 1011 equals a decimal 11. Because computers use the binary number system, powers of 2 play an important role. This is why everything in computers seems to come in 8s (2 to the 3rd power), 64s (2 to the 6th power), 128s (2 to the 7th power), and 256s (2 to the 8th power). Programmers also use the octal (8 numbers) and hexadecimal (16 numbers) number systems because they map nicely onto the binary system. Each octal digit represents exactly three binary digits, and each hexadecimal digit represents four binary digits.

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