

NACME STEM INNOVATION GRANTS – NORTHWEST CAREER AND TECHNICAL ACADEMY



BINARY CODE

INFORMATION

While decimal numbers are used almost exclusively in our everyday activities, they do not represent values in a computer. The reason is that it is difficult to build a computer that understands 10 different states (0-9). Most computers can only understand two states (on or off). This makes the binary number system, which has only two digits (0 and 1), ideal for representing numbers in a computer. Just like decimal numbers, binary numbers are also positional numbers. Instead of decimal digits, which have values from 0 to 9, they are made up of binary digits (also called bits) that have the two values 0 and 1. Also, in a binary number, each bit has a weight that is a power of 2. For example, the binary number 11011 can be represented as:

$$\begin{aligned} 11011_2 &= 1x2^4 + 1x2^3 + 0x2^2 + 1x2^1 + 1x2^0 \\ &= 16 + 8 + 2 + 1 \\ &= 27 \text{ decimal} \end{aligned}$$

In this example, the binary number 11011 is equivalent to the decimal number 27. Any binary number can be converted to a decimal number using this technique. Converting values between binary and decimal is important to engineers (electrical, computer, mechanical) who use computers frequently. These engineers

BACK

