

Binary Numbers

We use a base 10 number system. Why?

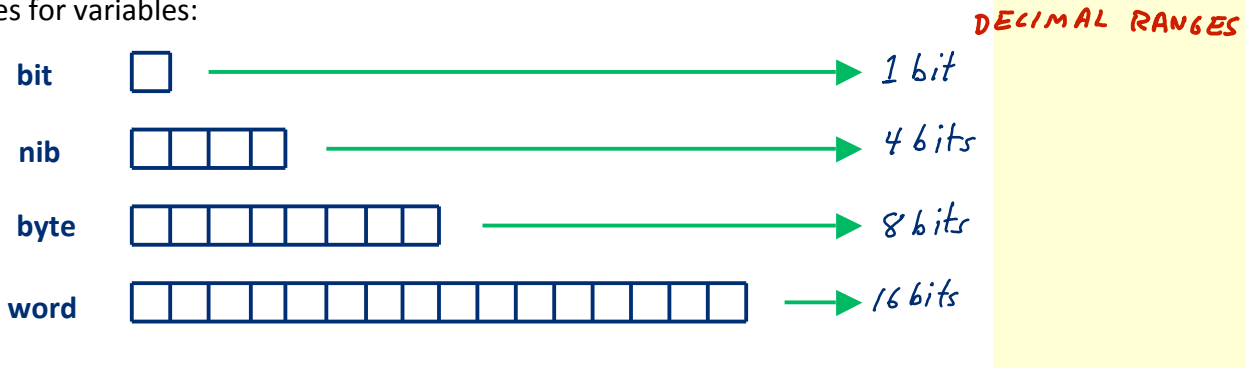


The binary number system is a base 2 number system.

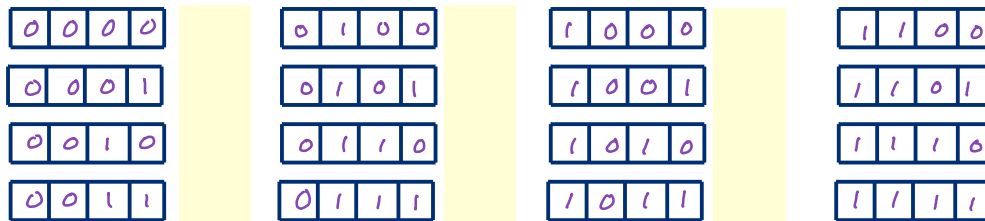


Why do we care about binary numbers? Computer systems work because of digital electronics. Computer memory and computer chips work by keeping track of large numbers of on / off “switches.” A switch that is **off** is associated with a binary number of **0**; a switch that is **on** is associated with **1**. Patterns of “on” and “off” stored inside a computer are used to encode ordinary numbers. Computer processors that use strings of 64 binary numbers to keep track of things are called 64-bit systems.

Variables: Variables are used to store information in the BASIC Stamp (the brain of your Boe-Bot). We have four choices for variables:



Example → NIB



number of combinations
 $2^4 = 16$ ← # bits
 (0 to 15)

CLASS PROBLEM: Write the decimal number 20 in binary. What is the smallest size variable (bit, nib, byte, word) required to store the data?