

1 0 0 1
0 1 1 0
0 1 0 1

BINARY BRACELETS

WHAT IS BINARY?

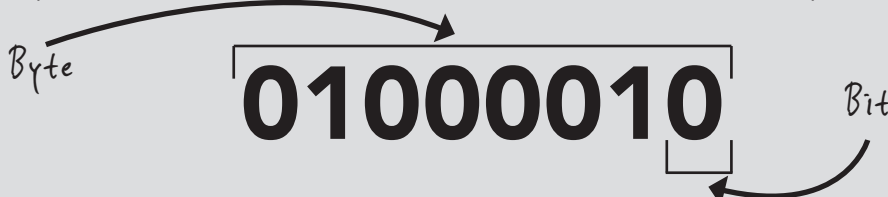
Computers cant read letters like we can, but we can convert information into a language that computers can read, we call this language binary.

Binary is a way of representing information using only two options. Some people think of this as ones and zeros but it can be used for a variety of different states, (on or off, in or out, up or down really any two opposites can work). For computers, Binary refers to electricity going through wires as on or off. Other forms of memory also uses binary, DVDs store information with binary, logging 1s as reflective or 0s non-reflective hard drives store information in binary as magnetic positive and magnetic negative.

SO HOW DO WE STORE INFORMATION WITH JUST TWO NUMBERS?

First its important to know some terms.

For todays purposes we will look at how information is stored on computers:



This is a byte of information, Bytes are made up of 8 bits. Each number here is a bit. Bits can either be on (1) or Off (0). These 8 bits can represent 256 different states!

1 million bytes are stored in a megabyte and 1024 mega bytes are stored in a gigabyte. Previously, storage of bytes took massive amounts of space sometimes rooms of storage for a few megabytes. Today, hundreds of gigabytes of information can be stored on a chip in the size of a quarter.

SO HOW IS INFORMATION STORED?

To dig deeper lets look at the alphabet.

The American Standard Code for information Interchange (ASCII) codes the letters of the alphabet into binary bytes. The table below shows us this with black squares - 0 or white squares - 1

ASCII BINARY CHART

A	■□■□ ■■■□	J	■□■□ □■□■	S	■□■□ ■■■□
B	■□■□ ■■□■	K	■□■□ □■□□	T	■□■□ ■□■□
C	■□■□ ■■□□	L	■□■□ □□■□	U	■□■□ ■□■□
D	■□■□ ■□■□	M	■□■□ □□■□	V	■□■□ ■□■□
E	■□■□ ■□■□	N	■□■□ □□■□	W	■□■□ ■□■□
F	■□■□ ■□■□	O	■□■□ □□■□	X	■□■□ □■□■
G	■□■□ ■□■□	P	■□■□ ■■■■	Y	■□■□ □■□■
H	■□■□ □■□■	Q	■□■□ ■■■□	Z	■□■□ □■□■
I	■□■□ □■□■	R	■□■□ ■■□■		

1 0 0 1
0 1 1 0
0 1 0 1

Today we are going to use the binary chart to make a bracelet with our initials on it.

ASCII BINARY CHART

A	■□■□ ■■■□	J	■□■□ □■□■	S	■□■□ ■■■□
B	■□■□ ■■□■	K	■□■□ □■□□	T	■□■□ ■□■□
C	■□■□ ■■□□	L	■□■□ □□■□	U	■□■□ ■□■□
D	■□■□ ■□■□	M	■□■□ □□■□	V	■□■□ ■□■□
E	■□■□ ■□■□	N	■□■□ □□□■	W	■□■□ ■□□□
F	■□■□ ■□□■	O	■□■□ □□□□	X	■□■□ □■□■
G	■□■□ ■□□□	P	■□□□ ■■■■	Y	■□■□ □■□□
H	■□■□ □■□■	Q	■□■□ ■■■□	Z	■□■□ □■□■
I	■□■□ □■□□	R	■□■□ ■■□■		

HOW TO BUILD A BINARY BRACELET

Your bag comes with the following materials to make a bracelet:
(No bag? No problem, find the following materials)

- String
- Pencil
- 3 Colors of beads
- ASCII Alphabet Chart

INSTRUCTIONS

1. Our bracelets will have our first and last initials on them. Find your initials on the ASCII chart and copy the byte of binary that represents it on the chart below.
2. Choose two colors of beads and decide which color you want to represent on (1) or off (0). The third color of beads will separate your letters.

Your Initials:	Binary Translation:
<input type="text"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="text"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

3. String beads onto your string one at a time making sure you keep them in the order of your code.
4. Once you have all your beads on, wrap the string around your wrist and tie to finish your bracelet.