

# Code Your Name


Each "0" or "1" in binary is called a bit and eight bits together is a byte. So, when you put together a whole letter in binary, it may become an alpha-byte! Explore more about binary code and how it works below!




## Materials:

- 15 Red Beads
- 5 White Beads
- 15 Black Beads
- 12 Inches of String

Note: If you do not have red, black, or white beads, you can use other colors.

Binary code is a language that computers use and is made up of 1's and 0's. When we look at the alphabet in binary, each letter is made of a combination of eight 0's and 1's. The first three characters decide if it is uppercase or lowercase – 010 is UPPERCASE and 011 is lowercase. Are the letters in the chart uppercase or lowercase? 

The remaining five characters determine what the letter is – do any of the letters have the same pattern?

For example, "Hi" becomes "01001000 01101001". 

## Binary Code Alphabet

A	01000001	N	01001110
B	01000010	O	01001111
C	01000011	P	01010000
D	01000100	Q	01010001
E	01000101	R	01010010
F	01000110	S	01010011
G	01000111	T	01010100
H	01001000	U	01010101
I	01001001	V	01010110
J	01001010	W	01010111
K	01001011	X	01011000
L	01001100	Y	01011001
M	01001101	Z	01011010

The beads you are using, represent different things:

**Red** = 0, **Black** = 1, and **White** = a space between each letter

## Procedure:

1. Tie one of your white beads at the end of your string. Make sure to tie a knot around it so it cannot come loose.



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2. Use the binary code alphabet chart to plan out your beads by spelling out the first three letters of your name or your first three initials.

Example: "C" = 00011

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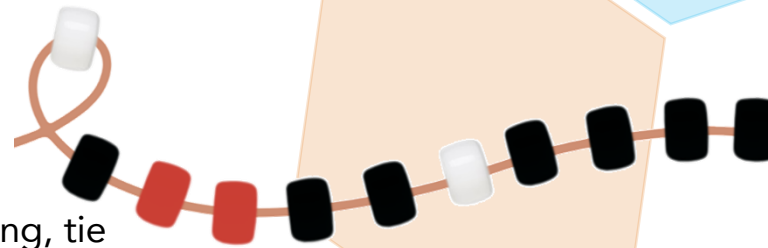
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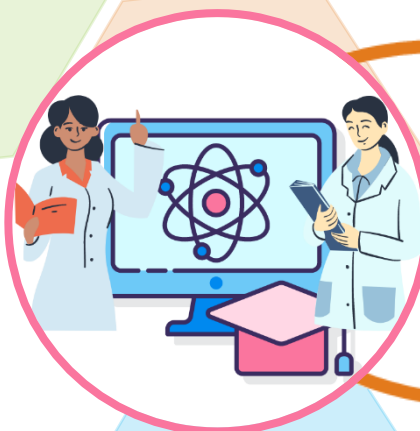
3. Carefully place your beads onto your string using the number patterns you wrote out above. Use a white bead in between the letters and at the end of your last letter. *Tip: If your string starts to fray, you can use a small piece of tape to hold it together.*



4. Once you have all of your beads on the string, tie the other end in a knot. Now, you can wear it as a bracelet, tie it on your backpack, or put it anywhere else you want!

You just used binary code to spell out three letters! Coding is used in many things from playing your favorite video game to buying things online or in the store.

Where else do you think we use codes?



## DID YOU KNOW?

A **computer scientist** is someone who designs, develops, and analyzes software and hardware used to solve problems! If you liked exploring this activity, maybe computer science is for you!