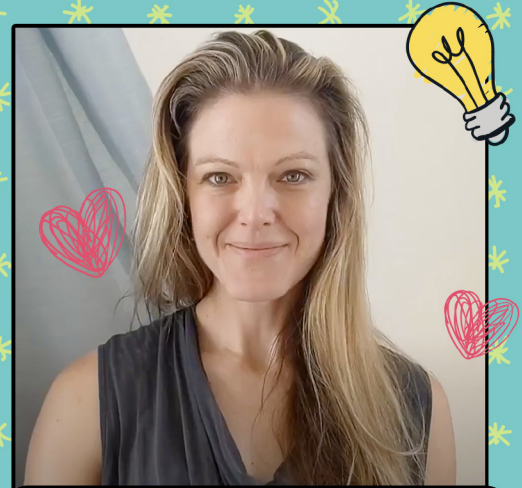


CAMP Goldie Blox

BINARY CODE BRACELET

At its simplest level, a computer is a machine that processes information. It takes in data, processes it, and then responds to it. But computers can't understand English. They can only understand one "language": binary. Binary is composed of only two digits—zero and one. Humans use many different coding languages to give computers instructions, but all of these languages eventually get converted into zeros and ones.

Generally, each letter or character is represented in binary by an 8-digit string of ones and zeros. Each zero or one is called a bit. It's where the term 8-bit comes from! Eight-bit games like the Legend of Zelda or Super Mario Bros. are usually slow with low-resolution graphics. But in the 1970s and 1980s, a computer could only process 8 bits at a time. In this activity, we're going to literally string together a series of bits to spell out a message. Using the chart on page 3, translate your name, the name of your hero, or a phrase into binary code.



Kim Swennen is a programmer at YouTube who collaborates with a team of other computer scientists.



YOU WILL NEED :

- Pencil
- 3 colors of Seed Beads
- Paper
- String



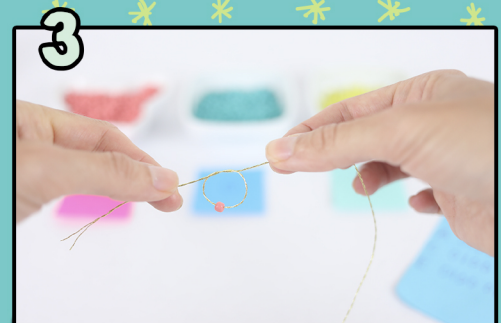
- Magnetic Clasp



Use the code on page 3 to translate your name or message into binary code. If it's more than five letters, plan on wrapping the bracelet around your wrist more than once.



Assign one color of bead to the number 1 and a second color of bead to the number 0. Then assign a third color of bead to act as spaces between the letters.



Cut a length of string at least six inches longer than your wrist. String one of the space beads onto the end and tie a double knot around it, leaving at least 3 inches of string at the end.

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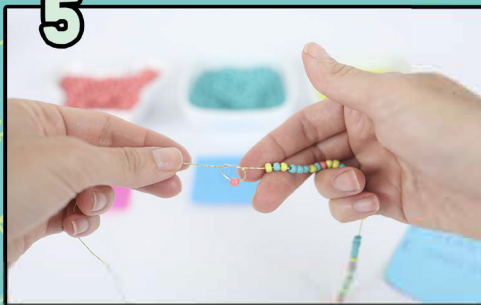
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4



Now begin stringing the beads according to your pattern. If your pattern includes three letters or less, you may want to start and finish the pattern with some space beads.

5



Finish your bracelet by string on one more space bead then tying a double knot around it. (If your bracelet is too short, add more space beads first.)

6



Tie a double-knot around a magnetic clasp at each end of the bracelet.

THINK ABOUT IT!



Coding is all about problem solving, and learning how to solve a problem in a way that a computer will understand. You'll also need a strong memory. Improve your programming skills with brain games like pattern recognition and memory challenges. There are also programming-specific games like CodeMonkey that can help sharpen your skills.

There are hundreds of different kinds of computer programming languages but some are more popular than others. JavaScript makes websites interactive. Python is good for creating programs that crunch math and science data. Ruby was designed to be as close to human language as possible by using words instead of numbers. PHP is the most common language for the web. Which computer language sounds most interesting to you?

LEARN MORE

<https://girlswhocode.com/>

How to Code by Max Wainwright
Sterling Children's Books, 2016

Code This! by Jennifer Szymanski
National Geographic Children's Books,
2019



G 0100 0111
R 0101 0010
A 0100 0001
C 0100 0011
E 0100 0101



FUN FACT!

Grace Hopper is known as the "Queen of Code." She earned her PhD in mathematics from Yale in 1934 then went on to build Mark I, one of the world's earliest computers while serving as an officer in the U.S. Navy during World War II.

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BINARY CODE CHART

A - 01000001

J - 01001010

S - 01010011

B - 01000010

K - 01001011

T - 01010100

C - 01000011

L - 01001100

U - 01010101

D - 01000100

M - 01001101

V - 01010110

E - 01000101

N - 01001110

W - 01010111

F - 01000110

O - 01001111

X - 01011000

G - 01000111

P - 01010000

H - 01001000

Q - 01010001

I - 01001001

R - 01010010