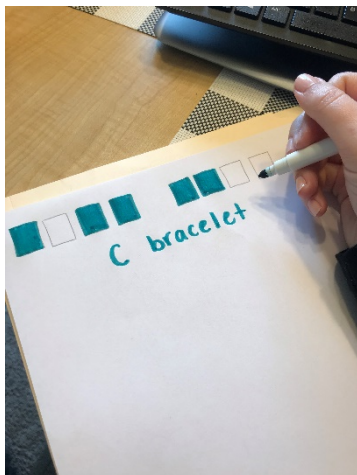# Unplugged Coding

Materials
- Paper
- Pencil
- Markers, crayons, colored pencils
- Scissors
- Tape
- Binary Decoder Key handout from code.org (can be printed out if needed)
- Additional materials if you have them
  - Pony beads
  - Pipe cleaners or string

Introduction
- How do robots communicate?
  - They communicate through codes!
    - What is a code or coding? Coding is a specific language or series of commands that tells a computer what to do.
- How do robots work? Do all robots operate off of the same coding?
  - No, each robot has a set of codes, or a program, that tells that specific robot what to do.
- Have you ever used a microwave before?
  - Then you have coded before! Every time you press numbers on the microwave, you are giving instructions on how to "perform" or cook your food.

Activity
- For this activity, we will be learning about Binary Code.
  - Binary Code is a way of representing information using only two options
  - Computers also store information using binary.
    - Binary uses a pattern of zero's (0) and one's (1)!
- How do you suppose we can convert the things we store in a computer into binary?
  - Let's start with letters.
  - Use the Binary Decoder Key (last page) to show how a computer might represent capital letters.
    - Example: My name is Colleen, my name using the Binary Decoder Key looks like this (the 1's represent the black colored squares and the 0's represent the white colored squares)
    - C = 1011 1100, O = 1011 0000, L = 1011 0011, L = 1011 0011, E = 1011 1010, E = 1011 1010, N = 1011 0001
- Practice making your own name with binary! You can use 0's and 1's or draw out the squares.
- Binary Bracelets
  - If you have beads, string, or pipe cleaners, take it one step further and make a binary bracelet! Choose one color to represent the black square on the Binary Decoder Key and create a bracelet using the first letter of your first name! No beads? Make a paper bracelet instead!

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

Find the first letter of your first name.

Fill in the squares of the bracelet below to match the pattern of the squares next to the letter that you found.

Cut the bracelet out and tape it around your wrist to wear it!

☐ ☐ ☐ ☐   ☐ ☐ ☐ ☐