



BINARY CODE BREAKER

ESTIMATED TIME: 20-30 MINUTES

MATERIALS NEEDED: BINARY CODE CARDS,
BINARY KEY, MARKERS OR PENCILS

DIRECTIONS:

1. Provide participants with Binary Code Cards that contain phrases written in binary code.
2. Give participants a key that shows the mapping between binary and text characters.
3. Explain the concept of binary code.
4. Instruct participants to decode the binary phrases using the provided key. They will convert the binary digits into text characters using the matching pairs from the key.

WHAT IS BINARY?

Binary is a way of counting and storing information using just two numbers: 0 and 1. In our everyday number system, we use ten digits (0-9), but it's super simplified in binary. Each digit is like a switch - 0 is 'off,' and 1 is 'on.'

Now, you might wonder, 'How can computers, which are so complex, use just these two numbers?' Well, it's all about how we group them. In binary, it's like counting in regular numbers, but every time you reach 2, you start a new column, just like in our traditional system, when we begin a new column when we get 10.

You can think of each column as representing different things in a computer, like on/off switches for different parts. Using this simple language of 0s and 1s, computers can talk to each other, store information, and perform calculations lightning-fast. It's the fundamental language of all things digital!"

Binary is like the 'DNA' of the digital world; understanding it is key to knowing how computers work at their core.



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EDUCATOR EXTENSIONS

OBJECTIVES:

1. To deepen students' understanding of binary code and its significance in computing.
2. To develop critical thinking, problem-solving, and teamwork skills.
3. To reinforce the connection between binary and digital information storage.
4. To foster an appreciation for precision and accuracy in instructions.

STEAM CONNECTIONS

Science: Explore the binary system as a foundation for all digital technology.

Technology: Discuss how computers use binary code for data storage and processing.

Engineering: Relate the importance of clear instructions (algorithms) in software and hardware design.

Mathematics: Investigate the binary counting pattern and its relationship to powers of 2.

Arts: Encourage students to create visual representations of binary patterns.

VOCABULARY

1. **Binary Code:** A language using only 0 and 1 to represent information in computers.
2. **Algorithm:** A step-by-step set of instructions to solve a problem or complete a task.
3. **Precision:** The quality of being exact and accurate in instructions and actions.

REFLECTION QUESTIONS:

How did you feel when you successfully decoded a binary message? What strategies did you use?

2. Why is precision important when working with binary code and algorithms?

3. How does understanding binary code connect to real-world applications, like computer programming?

4. In what ways does binary code affect our daily lives and the functioning of digital devices?

5. What connections can you make between binary code and the concept of patterns in mathematics and computing?

6. How do collaboration and communication impact the effectiveness of decoding binary messages in this activity?

BINARY CODE KEY

LETTER	BINARY	LETTER	BINARY
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	01010110
K	01001011	X	01010111
L	01001100	Y	01011001
M	01001101	Z	01011010



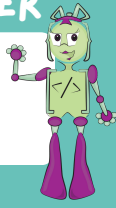
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DATE: _____

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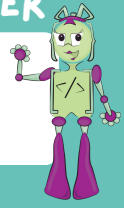
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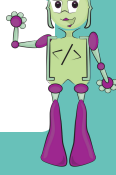
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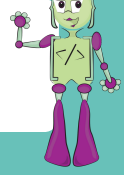
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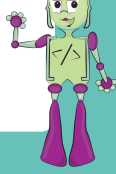
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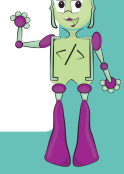
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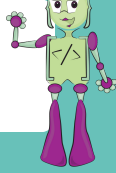
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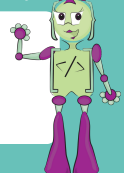
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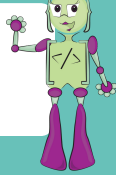
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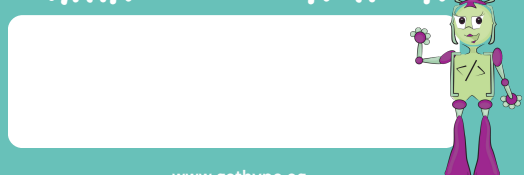
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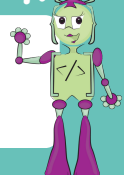
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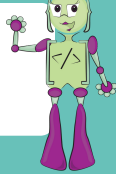
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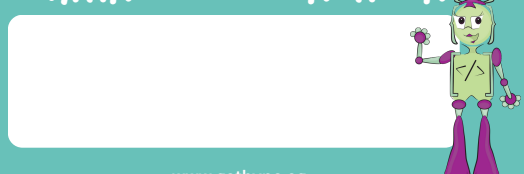
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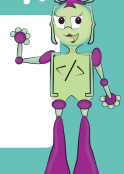
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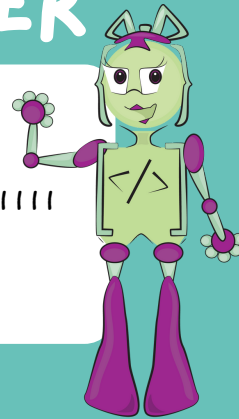


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1.

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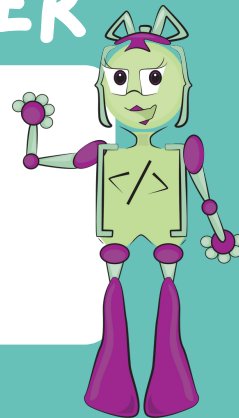


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2.

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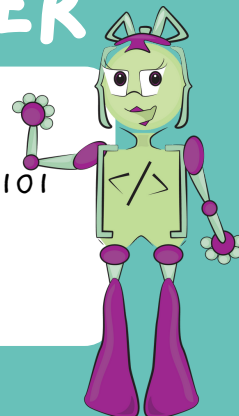


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3.

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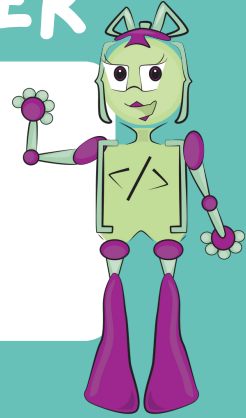
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BINARY CODE BREAKER

1.

Hello

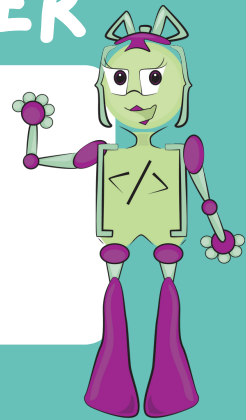


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2.

Code

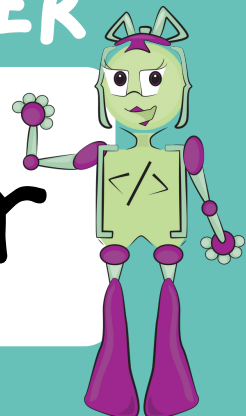


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3.

Computer

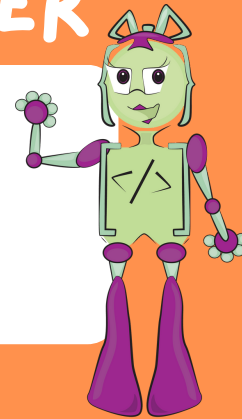


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4.

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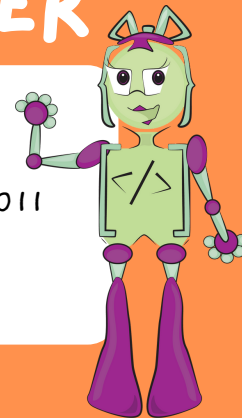


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5.

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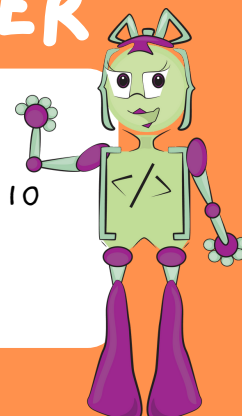


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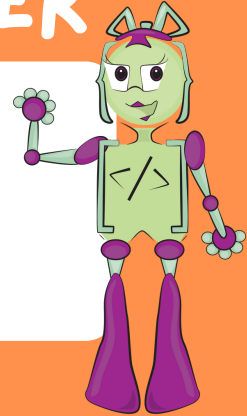
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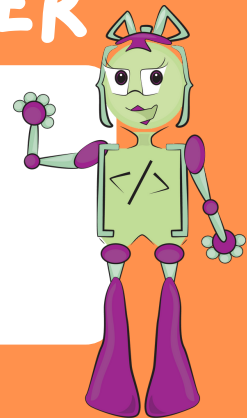
4.
HYPE



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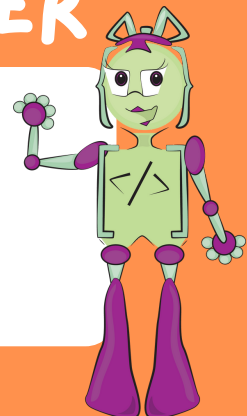
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Girls



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6.
Science

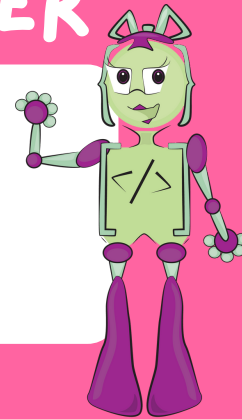


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7.

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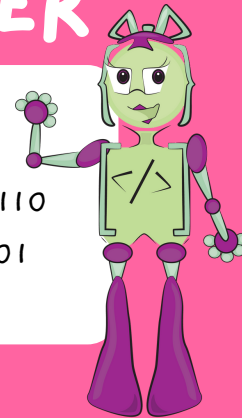


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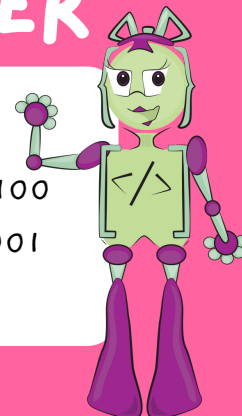


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9.

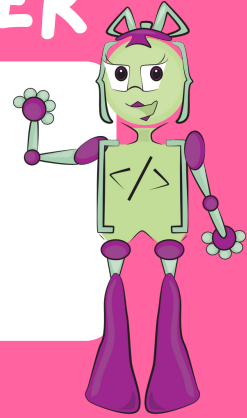
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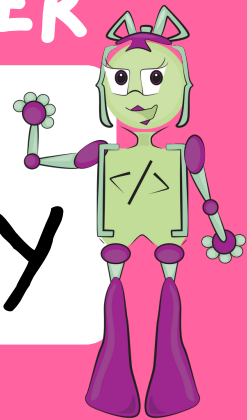
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STEM



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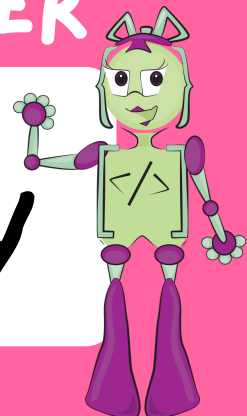
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Technology



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9
creativity



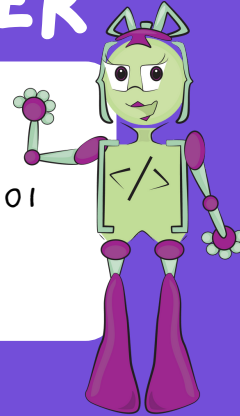
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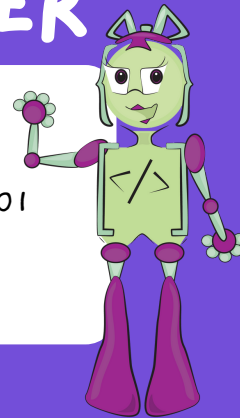


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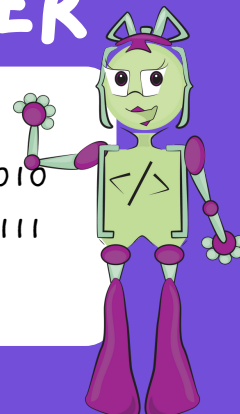


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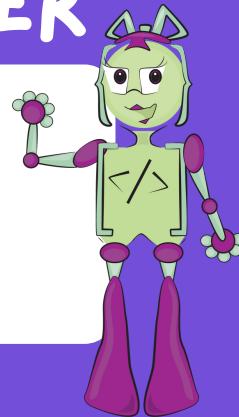
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Courage

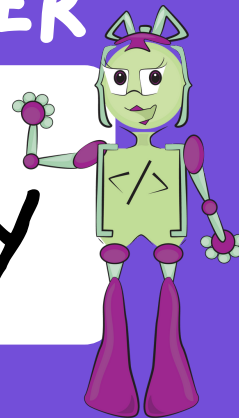
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Community

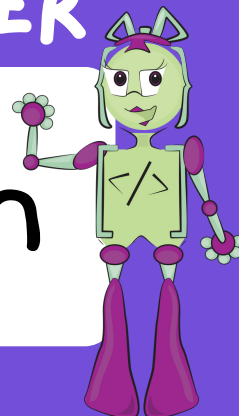
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Celebration

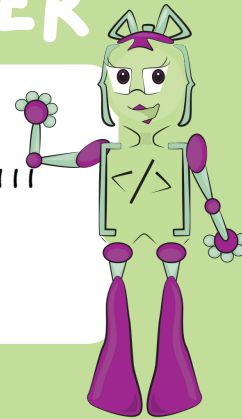
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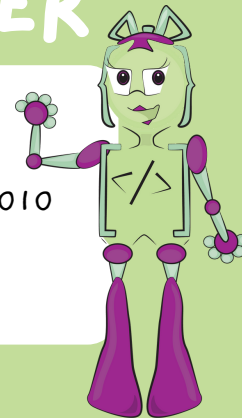
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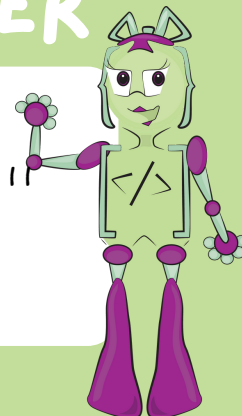
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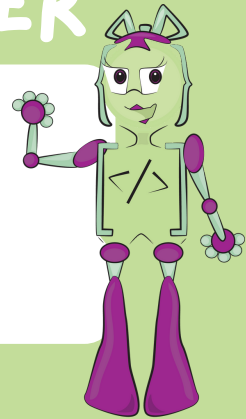
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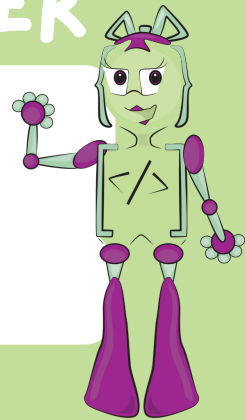
Curiosity



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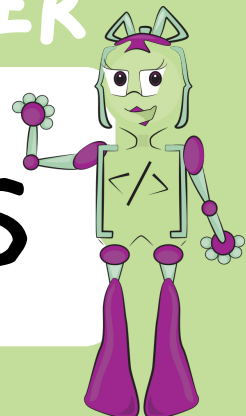
HYPE
Project



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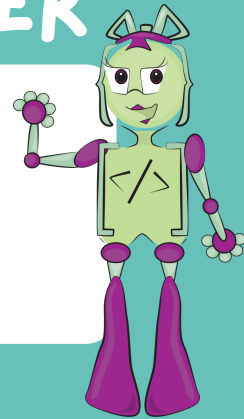
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Empowers



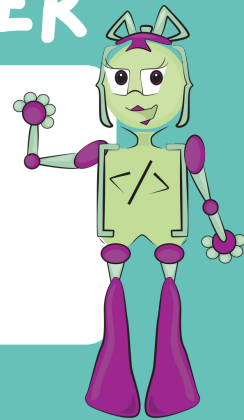
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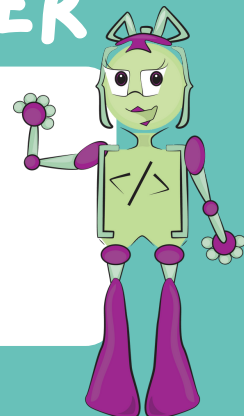
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