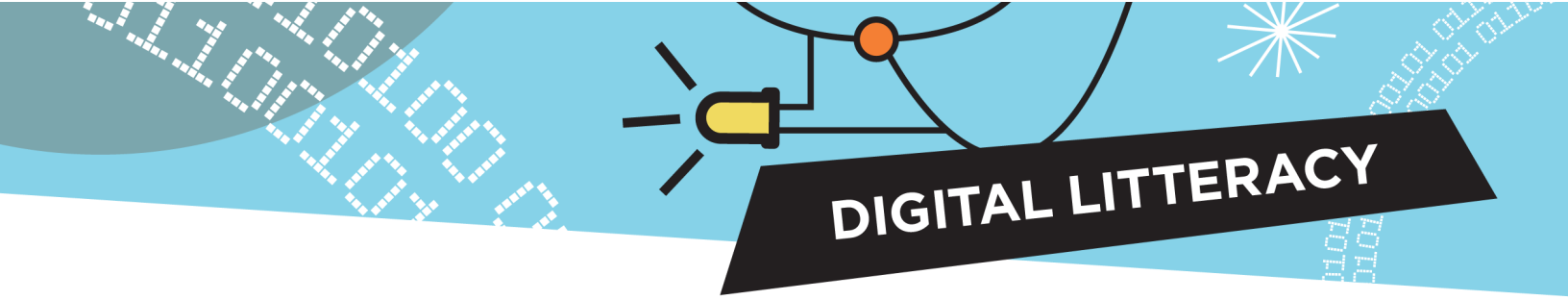
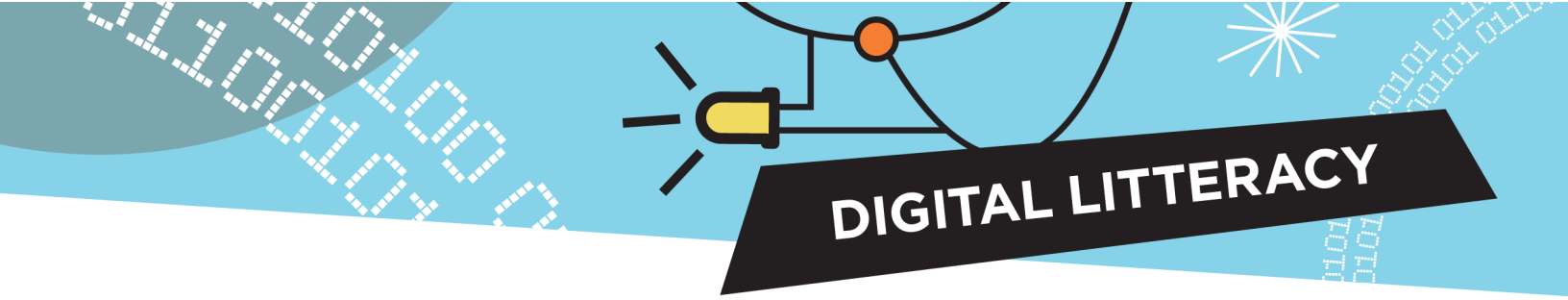


Exploring Pattern Recognition
Art and Binary Code

What is binary code?

Binary code uses only the digits "0" and 1" instead of the usual 0 to 9. Imagine a switch where 0 is *on* and 1 is *off*. Each 0 and 1 is a binary unit called a bit, from the contraction of "binary digit." Bits are grouped into groups of eight digits of 1 or 0, called bytes. Computer transistors read billions of bytes, which are then translated by the processor and sent to the computer software to decode the instructions.

Number of bits	Number of possibilities	The possibilities written in binary code
1 bit	2	0 or 1
2 bits	4 (2^2)	00, 01, 10 or 11
3 bits	8 (2^3)	000, 001, 010, 011, 100, 101, 110 or 111
4 bits	16 (2^4)	0000, 0001, 0011, 0111, 1111, 0010, 0100, 1000, 0011, 0111, 1111, 1001, 1011, 1010, 0110 or 1110
5 bits	32 (2^5)	00000, 01000, 00100, 01100, 00010, 01010, 00110, 01110, 0000,11000, 0100, 11100, 10010, 11010, 0110, 11110, 00001, 01001, 00101, 01101, 0001, 01011, 00111, 01111, 10001, 11001, 10101, 11101, 10011, 11011, 10111 or 11111
6 bits	64 (2^6)	Can you write down five possibilities?
7 bits	128 (2^7)	Can you write down three possibilities?
8 bits (1 byte)	256 (2^8)	Can you write down two possibilities?



Hidden Images Game

Instructions

1. Look at each line of code bytes. There are eight digits per line, so 256 possibilities.
2. Fill in/ only those boxes whose digit is represented by “1” in the column of the appropriate bit.

Bytes	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8
0000 0000								
0010 0100								
0010 0100								
0000 0000								
0100 0010								
0010 0010								
0001 1000								
0000 0000								

DIGITAL LITTERACY

Crack the Code Game

Instructions

1. Complete the "bytes" column by entering the eight-digit binary code sequence for each line.

Bytes	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8

Your turn!

1. Visualize a drawing in the grid.
2. Complete the "bytes" column by entering the eight-digit binary code sequence for each line of your drawing.
3. Ask a friend or relative to decode the drawing.

Bytes	Bit 1	Bit 2	Bit 3	Bit 4	Bit 5	Bit 6	Bit 7	Bit 8