


## Technology V9/S4: Binary Code

Binary code is a system used by computer processors that uses two symbols, usually “1” and “0”. The computer translates this code into sound, text, and images. When you stream a video, you are watching and listening to thousands of binary code strings. Binary code is a reliable way of storing data because it does not have a predetermined meaning on its own. Each set of data is coded according to different rules. Binary code is used for complex types of data.

UTF-8			
A 01000001	J 01001010	S 01010011	C 01000011
B 01000010	K 01001011	T 01010100	A 01000001
C 01000011	L 01001100	U 01010101	T 01010100
D 01000100	M 01001101	V 01010110	
E 01000101	N 01001110	W 01010111	
F 01000110	O 01001111	X 01011000	
G 01000111	P 01010000	Y 01011001	
H 01001000	Q 01010001	Z 01011010	
I 01001001	R 01010010		



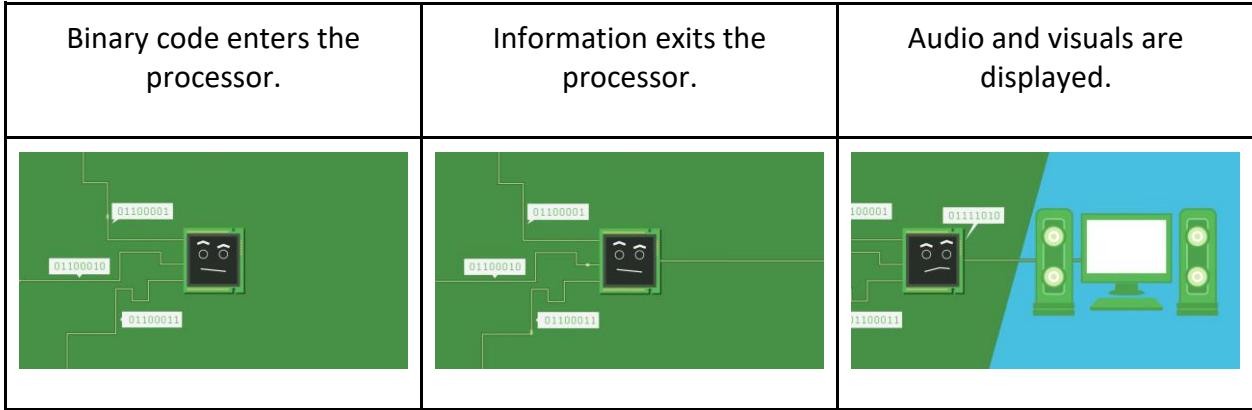
One of those rules is UTF-8. UTF-8 is a rule system that gives predetermined codes to the letters of the alphabet. You need to know the rule system before being able to read the code because the number orders are given meaning by the UTF-8 rule system.





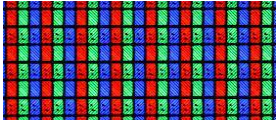
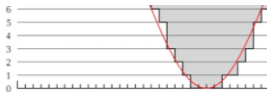
Images are made of hundreds of thousands of pixels. Each pixel is made of binary sequences that represent red, green, and blue. Each sequence gives a number that controls the intensity of each color within the pixel. The information is sent to the pixels in your screen and these pixels create the images you see.


Every few milliseconds, sound waves are digitized using strings of code. The process is called Pulse Code Modulation. The numbers tell the speakers how fast the coils should vibrate. There are around 44,000 binary strings for one second of sound.



Short cuts can be created in order to cut down on the amount of binary code needed to create complex sounds and images. This can be done by layering repeating bits of code in a technique called Run Length Encoding.



Term	Definition	Photo
Binary Code	A two-symbol system used to stream audio, visuals, and text.	
String of Binary Code	A sequence of numbers representing binary code.	
Computer Processor	Responds to and processes the binary code that drives a computer.	
Data	The information processed or stored by a computer.	
Pixel	The basic unit of programmable color in a computer image.	
Pulse Code Modulation	A method used to digitally represent sampled analog signals.	 Each digitized sample of audio is assigned a value that corresponds to the amplitude of the analog wave.

Sound Waves	A sound wave is the pattern of disturbance caused by moving energy.	
Digitize	To convert pictures, text, or sound into a digital format for computers.	