

GameGenie Patching

GameGenie was a device created by codemasters and galoob that let you make cheats for games. It was plugged in the console like a normal cartridge, and in its top the desired cartridge was plugged. These cheats are possible because what GameGenie do is edit the RAM that stores values used by the ROMs, setting these values to a constant that can be, for example, the number of lifes you have!

Genecyst was the first Genesis emulator to have support for GameGenie then, with Kgen98, Steve Snake started to use this neat feature in his great emulator. No ROM image of a GameGenie is necessary, as some may imagine, to use them with console emulators, these programs themselves have a built-in feature that acts like a GameGenie, writing the codes in the emulated RAM.

The GameGenie code consists of a eight-bytes long string, and the valid characters are A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T, V, W, X, Y, Z, 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9, all in uppercase. Each character have a binary representation, which is 5-bits long.

Char	Value	Char	Value	Char	Value
A	00000	M	01011	0	10110
B	00001	N	01100	1	10111
C	00010	P	01101	2	11000
D	00011	R	01110	3	11001
E	00100	S	01111	4	11010
F	00101	T	10000	5	11011
G	00110	V	10001	6	11100
H	00111	W	10010	7	11101
J	01000	X	10011	8	11110
K	01001	Y	10100	9	11111
L	01010	Z	10101		

The cheat code should be firstly converted directly using the table above, and then the bits should be reordered. For example, the GameGenie code SCRA-BJX0 is translated to:

Code:	S	C	R	A	-	B	J	X	0
Bits:	01111	00010	01110	00000	-	00001	01000	10011	10110
Id:	ijklm	nopIJ	KLMNO	PABCD	-	EFGHd	efgha	bcQRS	TUVWX

Then rearrange (using the id) as...

Bits:	00000000	10011100	01110110	:	01010100	01111000
Id:	ABCDEFGH	IJKLMNOP	QRSTUVWXYZ	:	abcdefgh	ijklmnop

Which give us, in hexa, **009C76:5478**. This means that **H5478** will be written at **H009C76** memory offset.