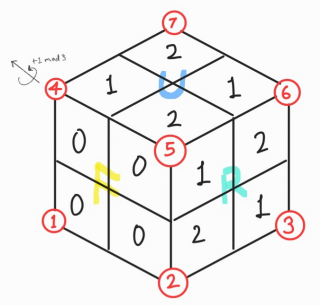
2*2*2 cube



▼ Moves

Moves	Permutation as cycles		x'[0]	x'[1]	x'[2]	x'[3]	x'[4]
F	(5,4,1,2)	x at :	0	4	1	3	5
		+	0	0	0	0	0
R	(5,2,3,6)	x at ;	0	1	5	2	4
		+	0	0	2	1	0
U	(5,6,7,4)	x at :	0	1	2	3	7
		+	0	0	0	0	1

▼ Colouring matrix C

faces \ cubies	0	1	2	3	4	5	6
0	B	F	F	B	F	F	B
1	D	L	D	R	U	R	U
2	L	D	R	D	L	U	R

▼ Scramble encoding

$x[i]$ is the the label on either the Front or Back face (not colour) of cubie at location i .

$c[i]$ is the cubie at location i .

▼ $x[i]$ for different faces.

▼ Top

x[7] -1	x[6]+1
x[4]+1	x[5]-1

▼ Front

x[4]	x[5]
x[1]	x[2]

▼ Right

x[5]+1	x[6]-1
x[2]-1	x[3]+1

▼ Legal scrambles

In total, there are $3^6 \times 7! = 3674160$ scrambles because for any legal scramble,

$$\sum_{i=0}^{7} x[i] \equiv 0 \mod 3$$