

1		$(R\ U\underline{U}')\ (R2'\ F\ R\ F')\ U2\ (R'\ F\ R\ F')$
2		$(F\ R\ U\ R'\ \underline{U}'\ F')\ (f\ R\ U\ R'\ \underline{U}'\ f')$
3		$f(R\ U\ R'\ \underline{U}')f'\ \underline{U}'\ F(R\ U\ R'\ \underline{U}')F'$
4		$f(R\ U\ R'\ \underline{U}')y\ x(R'\ F)(R\ U\ R'\ \underline{U}')F'$
5		$(r'\ U2)\ (R\ U\ R'U)\ r$
6		$(r\ U\underline{U}')\ (R'\ \underline{U}'\ R\ U'\ r')$
7		$r\ U\ R'\ U\ R\ U'\underline{U}'\ r'$
8		$r'\ \underline{U}'\ R\ U'\ R'\ U2\ r$
9		$(R'\ U'\ R)\ y'\ x'\ (R\ \underline{U}')(R'F)\ (R\ U\ R')$
10		$(R\ U\ R'U)(R'F\ R\ F')\ (RU'\underline{U}'R')$

21		$(R\ U'\underline{U}')\ (R'\ \underline{U}'\ R\ U\ R'\ U')\ (R\ U'\ R')$
22		$R\ U'\underline{U}'\ (R2'\ \underline{U}')\ (R2\ \underline{U}')\ R2'\ \underline{U}'\ U'R$
23		$(R2\ D)\ (R'\ U2)\ (R\ D')\ (R'\ U2\ R')$
24		$x'\ R\ U\ R'\ (D\ R)\ \underline{U}'\ R'\ D'$
25		$F'(r\ U\ R'\ U')\ (r'\ F\ R)$
26		$R\ U'\underline{U}'\ R'\ \underline{U}'\ R\ U'\ R'$
27		$R'\ U2\ R\ U\ R'\ U\ R$
28		$(r\ U\ R'\ \underline{U}')\ (r'\ R\ U)\ (R\ U'\ R')$
29		$(R2\ U'\ R)\ F\ (R'\ U)\ (R2\ \underline{U}')\ (R'\ F'\ R)$
30		$(R2\ U\ R'\ B')(RU')\ (R2'\ U)\ (I\ U\ I')$

11		$r'(R2\ U\ R'\ U)(R\ U'\underline{U}'\ R'\ U)\ (r\ R')$
12		$L2\ I\ U'\ z\ (U\ R'\underline{U}')\ (R2\ U\ R')\ z'\ r\ R'$
13		$(r\ \underline{U}'\ r'\ \underline{U}')(r\ U\ r')\ (F'\ U\ F)$
14		$R'\ F\ R\ U\ R'\ F'R\ (F\ \underline{U}'\ F')$
15		$(r'\ \underline{U}'\ r)\ (R'\underline{U}'R\ U)\ (r'\ U\ r)$
16		$R\ B\ R'\ L\ U\ L'\ U'\ R\ \underline{B}'\ R'$
17		$(R\ U\ R'\ U)\ (R'\ F\ R\ F'U2)\ R'\ F\ R\ F'$
18		$F\ (R\ U\ R'\ d)(R'\ U2)\ (R'\ F\ R\ F')$
19		$R'\ U2\ F\ R\ U\ R'\underline{U}'\ y'R2\ U'\underline{U}'\ R\ B$
20		$r'(R\ U)\ (R\ U\ R'\underline{U}'\ r2)(R2'U)\ (R\ \underline{U}')\ r'$

31		$(r'\ F'\ U\ F)\ (L\ F'\ L'\ U'\ r)$
32		$(R\ U)(B'\ U')(R'\ U\ R\ B\ R')$
33		$(R\ U\ R'\ U')\ (R'\ F\ R\ F')$
34		$(R'U'R\ U)\ x'\ z'(R\ U)\ (L'U')r\ R'$
35		$R\ U'U'R2'\ F\ R\ F'(R\ U'U'R')$
36		$R'U'R\ U'\ R'U\ R\ U\ I\ U'R'U$
37		$F\ (R\ U'\ R'U'R\ U)\ (R'\ F')$
38		$(R\ U\ R'U)\ (RU'R'U')\ (R'F\ R\ F')$
39		$(R'\ F\ R\ U\ R'U')\ (F'\ U\ R)$
40		$(L\ F'L'\ U'L\ U)\ (F\ U'\ L')$

41		$R\ U'\ R'\ U^2\ R\ U\ y\ R\ \underline{U}'\ R'\ \underline{U}'\ F'$
42		$(R'\ U\ R\ U'\ \underline{U}'\ R'\ \underline{U}')(F'\ U)(F\ U\ R)$
43		$(B'\ \underline{U}')\ (R'\ U\ R\ B)$
44		$f\ (R\ U\ R'\ \underline{U}')f$
45		$F\ (R\ U\ R'\ \underline{U}')\ F'$
46		$(R'\ \underline{U}')\ R'\ F\ R\ F'\ (U\ R)$
47		$B'(R'\ \underline{U}'\ R\ U)^2\ B$
48		$F\ (R\ U\ R'\ \underline{U}')^2\ F'$
49		$R\ B'(R^2\ F)(R^2\ B)\ R^2\ F'\ R$
50		$L'B\ (L^2\ \underline{F}')(L^2\ B')\ L^2\ F\ L'$
51		$f\ (R\ U\ R'\ \underline{U}')^2\ f$
52		$R'\underline{U}'\ R\ \underline{U}'\ R'\ d\ R'\ U\ U$
53		$(r'\ U^2)\ (R\ U\ R'\underline{U}')\ (R\ U\ R'U)\ r$
54		$(r\ U'\underline{U}')\ (R'\ \underline{U}'\ R\ U\ R'\ \underline{U}')\ (R\ U'\ r')$
55		$(R\ U\ R'\ \underline{U}'\ r)(R'\ U)\ (R\ U'\ r')$
56		$F\ (R\ U\ R'\underline{U}')(R\ F')(r\ U\ R'\underline{U}')r'$
57		$(R\ U'\underline{U}')\ (R'^2\ \underline{U}')\ R\ U'\ R'U^2\ (F\ R\ F')$
符号系统：RLUDBF, r1udfb(转两层) 如u 就是上两层顺时针转90度 x(整个魔方以R的方向转动), y(整个魔方以U的方向转动), z(整个魔方以F的方向转动), 斜体是用右拇指, 下划线用左食指		

1		$(R\ U'\ R')(U\ R\ U\ R)(\underline{U}'\ R'\ \underline{U}'\ R^2)$
2		$(R^2'\ U)(R\ U\ R'\ \underline{U}')(R'\ \underline{U}')(R'\ U\ R')$
3		$L^2(I'^2\ U)L^2(I'^2\ U^2)L^2(I'^2\ U)L^2\ I^2$
4		$(U\ R'\underline{U}')(R\ \underline{U}'R)(U\ R\ \underline{U}')(R'\ U\ R\ U)(R^2\ \underline{U}')(R'\ U)$
5		$x'\ R^2\ D^2(R'\ \underline{U}'\ R)D^2(R'\ U\ R')$
6		$(I\ U'\ R)D^2(R'\ U\ R)D^2\ R^2$
7		$x'(R\ U'\ R'\ D)(R\ U\ R')u^2(R'\ U\ R)D(R'\ \underline{U}'\ R)$
8		$(R\ U\ R'\ \underline{U}')(R'\ F)(R^2\ \underline{U}'\ R'\ \underline{U}')(R\ U\ R'\ F')$
9		$\underline{U}'(R'\ U\ R\ \underline{U}'\ R'^2\ b')x(R'\ U\ R)y'(R\ U\ R'\ \underline{U}'\ R^2)$
10		$(R'\ U\ R'\ \underline{U}')\ yx^2\ (R'\ U\ R'\ \underline{U}'R^2)\ xz'(R'\underline{U}'R\ U\ R)$
11		$F(R\ \underline{U}'R'\ \underline{U}')(R\ U\ R'\ F')(R\ U\ R'\ \underline{U}')(R'\ F\ R\ F')$
12		$z(\underline{U}'\ R\ D')(R^2\ U\ R'\ \underline{U}'\ R^2\ U)z'(R\ U')$
13		$(R\ U\ R'F')(R\ U\ R'\underline{U}')(R'\ F\ R^2\ \underline{U}'R'U')$
14		$(R'\ U^2)(R\ U'\underline{U}')(R'\ F\ R\ U\ R'\ \underline{U}')(R'\ F'\ R^2\ \underline{U}')$
15		$z(\underline{U}'R\ D')(R^2\ U\ R'\underline{U}')z'(R\ U\ R')\ z(R^2\ U\ R')z'(R\ U')$
16		$(R^2'\ \underline{u}'\ R\ U'\ R)(U\ R'\ u)(R^2\ f\ R'\ f)$
17		$(R\ U\ R')y'(R^2'\ u'\ R\ U')(R'\ U\ R'\ u\ R^2)$
18		$(R^2\ u)(R'\ U\ R'\ \underline{U}')(R\ u')\ (R^2'\ F'\ U\ F)$
19		$(R'\ d'\ F)(R^2\ u)(R'\ U)(R\ U'\ R\ \underline{u}'\ R^2)$
20		$z(R'\ U\ R')z'(R\ U^2\ \underline{U}'\ U\ R')\ z(U\ R')z'(R\ U^2\ \underline{U}'\ U\ R')$
21		$(R\ U'\underline{U}')(R'\ U^2)(R\ B'\ R'\ \underline{U}')(R\ U\ R\ B\ R^2'\ U)$

1		$(R\ U'\ \underline{U}'\ R'\ U)^2\ y'(R'\ \underline{U}'\ R)$
2		$(U\ R\ \underline{U}'\ R'\ \underline{U}')\ y'(R'\ U\ R)$
3		$y\ \underline{U}'(L'\ U\ L\ U)y'(R\ \underline{U}'\ R')$
4		$(R\ U\ R'\ U')(R\ \underline{U}'\ R'\ U')(R\ U\ R')$
5		$(R\ U'\ R\ U)y(R\ U'\ R'\ F^2)$
6		$y'(R'\ \underline{U}'\ R\ U)(R'\ \underline{U}'\ R)$
7		$(R\ U'\ R'\ U)(R\ U'\ R')$
8		$(R\ \underline{U}'\ U')(R\ U\ R'\ U)(R\ \underline{U}'\ U')R^2$
9		$R^2\ y(R\ U\ R'\ U')y'(R'\ U\ R')$
10		$y'(R'\ U)(R\ U')(R'\ U\ R)$
11		$(R\ U\ R'\ U')(R\ U\ R')$
12		$(R\ U\ R'\ U')^2\ (R\ U\ R')$
13		$d'\ z\ U'(R^2\ U)(R'\ U'\ R\ U)$
14		$y'(R'\ U^2)(R\ U\ R'\ U')R$
15		$(R\ U'\ R')\ y'\ (R'\ U^2\ R)$
16		$\underline{E}'\ L'\ U^2\ r\ U\ x'$
17		$y'\ (U^2\ R^2'\ U^2)(R\ U\ R'\ U\ R^2)$
18		$(U^2\ R^2'\ U^2)(R'\ U'\ R\ U'\ R^2)$
19		$R\ y\ (R\ U^2\ R'\ F')$
20		$U(R\ \underline{U}'\ U')(R'\ U\ R\ U')\ R'$

21		$(R\ \underline{U}'\ U')(R'\ \underline{U}'\ R\ U)R'$
22		$\underline{U}'(R\ \underline{U}')(R'\ U^2)(R\ U'\ R')$
23		$\underline{U}'\ (R\ U\ R')\ d\ (R'\ \underline{U}'\ R)$
24		$d\ (R'\ U\ R\ U')(R'\ \underline{U}'\ R)$
25		$y'\ (R'\ \underline{U}'\ R)$
26		$(R^2\ U)y(R\ U'\ R'\ F^2)$
27		$y'\ (R\ \underline{U}'\ U')R'^2\ \underline{U}'\ R^2\ \underline{U}'\ R'$
28		$y'\ (R'\ U)(R\ d'\ \underline{U}')(R\ U\ R')$
29		$y'\ R^2\ y'(R'\ U'\ R\ U)Y\ R^2$
30		$U'\ (R\ \underline{U}'\ U')(R'\ U^2)(R\ U'\ R')$
31		$U\ R\ U'\ R'$
32		$\underline{U}'\ (R\ \underline{U}'\ U'\ R'\ U)(R\ U\ R')$
33		$d\ (R'\ U'\ R)\ d'\ (R\ U\ R')$
34		$x(U\ R'\ \underline{U}'\ I)$
35		$R^2\ y\ (R\ U\ R'\ \underline{U}')y'\ R^2$
36		$d\ (R'\ U^2)(R\ \underline{U}'\ U')(R'\ U\ R)$
37		$(R\ U'\ R'\ U)(d\ R'\ \underline{U}'\ R)$
38		$(R\ U\ R')$
39		$y'\ (R^2\ U')(F'\ U\ F)R^2$
40		$(R'\ U^2)(R^2'\ U)(R^2'\ U\ R)$
41		$\underline{U}'\ (R\ \underline{U}'\ R'\ U)(R\ U\ R')$

1		$(R\ U' R)(U\ R\ U\ R)(\underline{U}'\ R'\ \underline{U}'\ R^2)$
2		$(R^2\ U)(R\ U\ R'\ \underline{U}')(R'\ \underline{U}')(R'\ U\ R')$
3		$L^2(I^2\ U)L^2(I^2\ U^2)L^2(I^2\ U)L^2\ I^2$
4		$(U\ R'\underline{U}')(R\ \underline{U}'R)(U\ R\ \underline{U}')(R'U\ R\ U)(R^2\ \underline{U}')(R'U)$
5		$x' R^2 D^2(R'\ \underline{U}' R)D^2(R'\ U\ R')$
6		$(I\ U' R)D^2(R'\ U\ R)D^2\ R^2$
7		$x'(R\ U' R' D)(R\ U\ R')u^2(R'\ U\ R)D(R'\ \underline{U}' R)$
8		$(R\ U\ R'\ \underline{U}')(R'\ F)(R^2\ \underline{U}' R'\ \underline{U}')(R\ U\ R' F')$
9		$\underline{U}'(R'U\ R\ \underline{U}' R^2\ b')x(R'U\ R)y'(R\ U\ R'\ \underline{U}' R^2)$
10		$(R'\ U\ R'\ \underline{U}')\ yx^2\ (R'\ U\ R'\ \underline{U}'R^2)\ xz'(R'\underline{U}'R\ U\ R)$
11		$F(R\ \underline{U}'R'\ \underline{U}')(R\ U\ R'\ F')(R\ U\ R'\ \underline{U}')(R'\ F\ R\ F')$
12		$z(\underline{U}' R\ D')(R^2\ U\ R'\ \underline{U}' R^2\ U)z'(R\ U')$
13		$(R\ U\ R'F')(R\ U\ R'\underline{U}')(R'F\ R^2\ \underline{U}'R'U')$
14		$(R'\ U^2)(R\ U'\underline{U}')(R'\ F\ R\ U\ R'\ \underline{U}')(R'F' R^2\ \underline{U}')$
15		$z(\underline{U}'R\ D')(R^2\ U\ R'\underline{U}')z'(R\ U\ R')\ z(R^2\ U\ R')z'(R\ U')$
16		$(R^2\ \underline{u}' R\ U' R)(U\ R'\ u)(R^2\ f\ R'\ f')$
17		$(R\ U\ R')y'(R^2\ u' R\ U')(R'\ U\ R'\ u\ R^2)$
18		$(R^2\ u)(R'\ U\ R'\ \underline{U}')(R\ u')\ (R^2\ F' U\ F)$
19		$(R'\ d' F)(R^2\ u)(R'\ U)(R\ U' R\ \underline{u}' R^2)$
20		$z(R'\ U\ R')z'(R\ U^2\ \underline{U}' U\ R')\ z(U\ R')z'(R\ U^2\ \underline{U}' U\ R')$

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$$(R \ U' \underline{U})(R' \ U2)(R \ B' \ R' \ \underline{U})(R \ U \ R \ B \ R2' \ U)$$