ZBLL Algorithms

version 3.00

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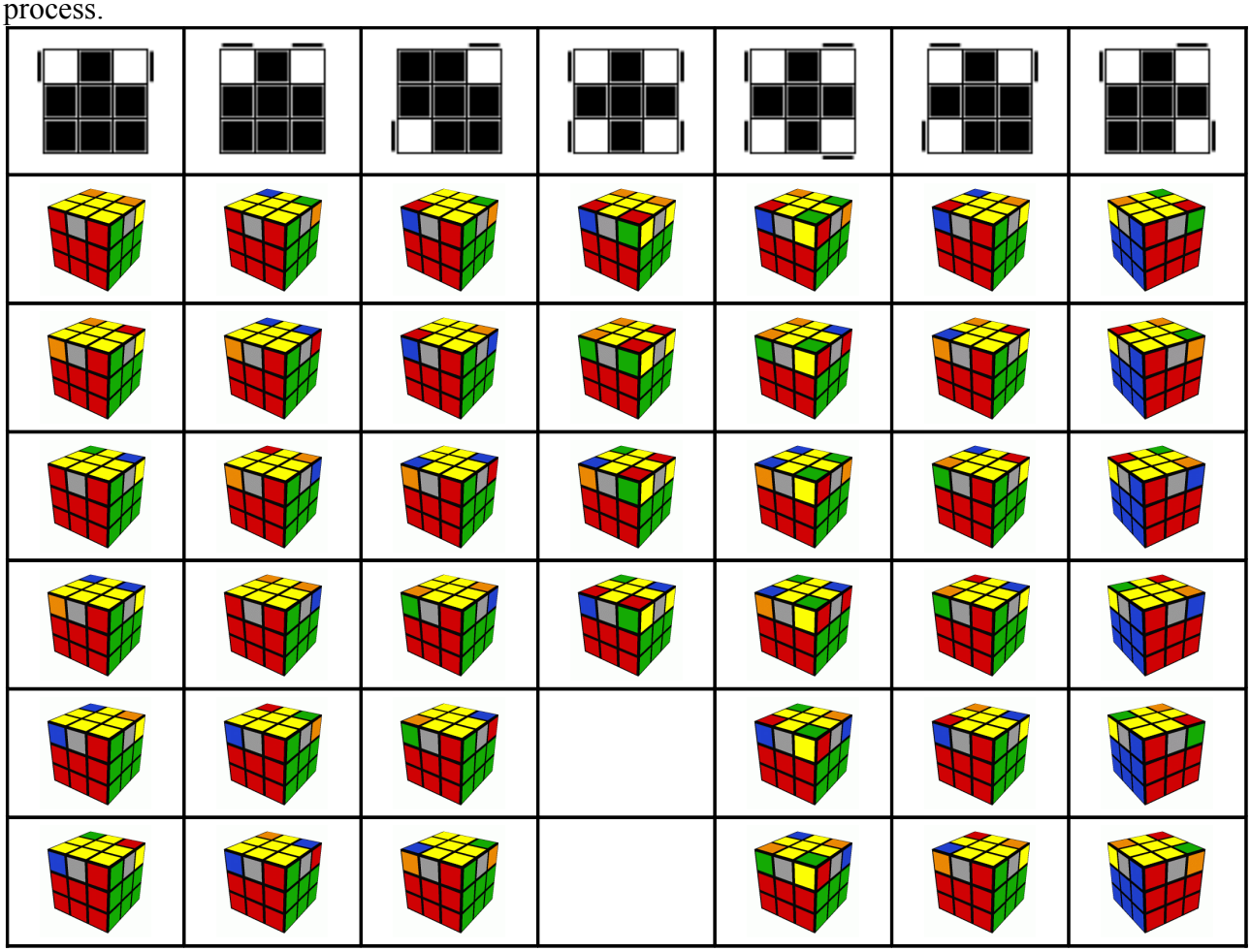
ZBLL: short for the Zborowski-Bruchem Last Layer. This is the final step of a solution method created by Zbiginiew Zborowski and Ron von Bruchem which solves the last layer of a cube in one step once the edges are oriented. There are 501 ZBLL cases – 12 edge permutations for each of the 40 COLL cases and 21 PLL cases.

As the title would suggest, this document contains solutions for every ZBLL case. Very few of these algorithms are optimal length, as they were made under the assumption that the reader wants to learn ZBLL for speedsolving. When I started looking for ZBLL algorithms, I found very few sources available for use. Jason Baum's site has all of T and some of U online, Chris Hardwick has a link for all of T and some of U. On the speedsolving.com wiki, the entire H set is online but with a different recognition system than what I use (I still took a couple of algorithms from there, though). I also found one set of L somewhere (I think it was on Dan Harris' old site). In the end, I decided that if I was going to learn these algorithms, I would have to generate them all myself. Using Herbert Kociemba's wonderful program Cube Explorer and Josef Jelink's awesome command line solver ACube, I generated every algorithm myself. I would also like to give a shout-out to Josef Jelink's awesome php script ICube, which generates good looking images with very little effort. Lars Vandenbergh also has a great php script in ImageCube, which you can run directly from his site. These programs are all free and I highly recommend you check them out.

Because I made these algorithms for speedsolving, there is an abundance of <R,U>, <L,U>, <R,U,L>, <L,U,F>, and <R,U,F> generator cases. Many cases have more than one algorithm listed. I did this when I had two algorithms that seemed to be equally or at least comparably fast. I list the one that I prefer first, but you always have the option of using another one, if you so please.

Now, as for the document itself, I have divided it in the way I felt was most logical. Every page contains one COLL case. The pages are ordered by orientation as indicated in the table below. I just went down the first column, then hopped over to the next orientation, and repeated the process.



This table shows every COLL (Corners and Orientation of the Last Layer) case. You must be able to recognize the COLL case before you can recognize the ZBLL case (it's a 2-step recognition system). I'll let Jason Baum explain the code used to define COLL recognition, as it was his explanation that finally got me to understand COLL:

> *COLL is broken up into 7 orientations. Once you determine what orientation you have, you have to recognize the corner permutation. There are a few ways you can do this. You can simply look at the corners and determine what needs to go where. This is fine, but it takes too long in my opinion. I use the "code" recognition method. It looks hard, but it is actually rather easy. It is a bit hard to explain though. Basically, with every orientation there are four stickers you are going to look at, and you are going to determine the relationship those four stickers have with each other. For example, say you had the U orientation. In this case, you look at the ULB, URB, FUL, and FUR stickers. The code might look something like this (side note: I avoided writing down letters and just gave you guys images to use instead):*
>
> **L R**
> **F F**
>
> *All this means is the ULB and URB stickers are opposite colors, and the FUL and FUR stickers are the same colors. The letters don't literally mean "left", "right", and "front". It is just a way to denote if the stickers are opposite colors or the same color. Note that the code could also look like this:*
>
> **F B**
> **R R**
>
> *That means the exact same thing as the grid above it. Again, the letters are just there as a way to denote if the stickers are opposite or the same. Hopefully that clears up some of the confusion. If it still doesn't make sense, try setting up some of the cases and comparing the code to what the stickers are. Hopefully it will start to click.*

Knowing which stickers to look at is a different issue, but for my table, every sticker used is either on the F or U face. I have L set up a bit weird and Sune and Anti-Sune have F-sticker priority, but it's really not that hard. You should know COLL before attempting full ZBLL. When you learn it you will get your own recognition system, and you probably won't use my convoluted system.

As for the actual ZBLL cases, I ordered them by CC, CA, CO, AA, AC, AO, OO, OC, AC, OxO, CxO, OxC. This helped to keep the document organized and neat. This recognition system is called the Harris/Baum system, which compares the FU and RU edge stickers to the FUR and RUF corner stickers, respectively. Jason Baum, again, has a great way of explaining this on his website (I've modified this description slightly to account for our differences in the lettering system):

> *There are three parts to recognizing ZBLL cases. First, you see what orientation case you have. Then, you see what COLL case you have within that orientation. Finally, you see what edge permutation you have within that COLL case. The first two steps should be fairly straight forward, as long as your COLL is solid. However, recognizing the edges can be tricky. Dan Harris came up with a pretty good way of recognizing this, and it is what I will be using here. I've adapted some of the different cases to better suit me, but the core idea is all his. Basically, there are four stickers you look at: FU, FUR, RUF, and RU. You are going to determine the relationship between these stickers. Depending on the case you have, you will either look at the relationship between FU and FUR-RUF and RU, or FU and RUF-FUR and RU. The first relationship is more common. For example, FU and FUR could be the same color, while RUF and RU could be opposite colors. This case is denoted as CO (Correct/Opposite). The second relationship is less common and can be tricky to recognize at first, but it gets easier with practice. These cases are denoted by an 'x', because the stickers you are recognizing cross with each other. For example, if the case is OxO, that means that FU and RUF are opposite, and FUR and RU are also opposite. CxO and OxC are pretty tough to recognize, but this is the best way that I've found for me to deal with them. Fortunately, the rest of the sticker relationships are very easy to recognize. There are 12 ways the stickers can possibly be.*

Now, this recognition system doesn't work for the H and Pi orientations, so I did some tinkering and found what worked best for me. I compare the two stickers adjacent to each other (whichever two that may be) and the other edge sticker to the sticker on top of the UFR corner.

Though it takes a little more work than, say, T orientation recognition, it takes less work than trying to determine what the oriented corner would look like and comparing the edges to that. I use to have Anti-Sune set up like this, but I decided that it was much easier to just mirror Sune than to try and work out my system. If you take a look at the cases you will quickly see what I mean.

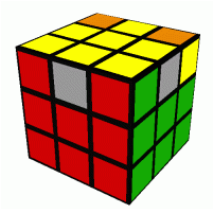
Enough rambling. You're probably waiting for the algorithms. Well, the next 40 pages are just algorithms. I made them 2-generator when possible and 3-generator as often as I could. Just a few words before you go on:

1. It is not quite guaranteed that every algorithm matches the case. I may have missed something. If you find a problem, let me know please. My email is both below and at the end of the document. I would like to give a shout out to Cride5 of the speedsolving.com forums here. He pretty much went through the whole document verifying algorithms, then posted them on the Wiki page (link below) way back when this first came out. Since then much has changed, so mistakes could be anywhere (though most likely in Pi, L, or Anti-Sune).
2. I have omitted the PLL orientation for this document (all corners oriented). Why? Because everyone knows PLL. There are hundreds of websites out there with algorithms for PLLs. There are many, many usable algorithms for every case. And, to be quite honest, PLL should be the first subset of ZBLL you learn. You should have PLL ingrained in your memory before you even attempt ZBLL.
3. I cannot thank Herbert Kociemba and Josef Jelink enough for the fantastic materials they have brought the cubing community. Their cube solvers are brilliant pieces of work. Also, Macintosh users out there: you can run the real Cube Explorer (instead of the strange Mac version) on your machine by having X11 and downloading Wine or DarWine or Wine Bottler (or using Boot Camp?). Just choose to open the .exe file with one of the two. It's pretty awesome.
4. Your printer may appreciate it if you only print pages 5 through 44 (this is currently page 4). That way you'll get only the algorithm pages. This typing at the beginning is really rather unnecessary. Especially that last sentence. Also, I recommend printing in color. It is actually not the end of the world if you don't print in color, as you can typically make out what is happening. But it looks so much better in color. Also, page 45 is very meaningless, but necessary because the table force a line after themselves. Better like this than blank, right?
5. This took a long time to make. I'll estimate 150 hours of work (and counting) was put into this, mostly over school breaks when I could have done something else. Please respect that. Do not claim this work to be your own. Give credit where credit is due and I will be happy. Actually, it makes me happy just googling this and seeing people spreading it around. Good work!
6. Finally, and most importantly: Enjoy it. Edit it. Expand it. Got an algorithm you just love? A great idea for the next version? Something I did wrong? Send it to me. I may actually read it. My email is nomiswanson@gmail.com. My ego needs a boost every once in a while.

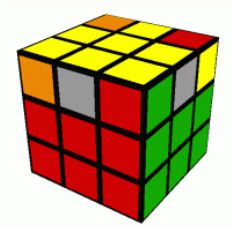
What's new in this version? Well, I gave the entire document a comb-over. I went through every algorithm again and decided which ones I liked. Many of the algorithms are now shorter. I have even acknowledged that sometimes it is faster to do COLL+EPLL (just a few times) than one-look ZBLL. I tried to note that with brackets around the PLL you need to use. Otherwise, everything should be better.

A Few Links

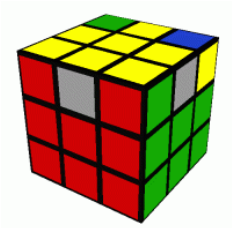
Good source of links and information: http://www.speedsolving.com/wiki/index.php/ZBLL
Herbert Kociemba's website (Cube Explorer): http://kociemba.org/
Josef Jelink's cubing site (ACube and ICube): http://rubikscube.info/



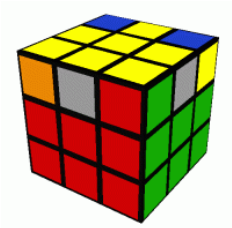
	C/C	R' U R U2 R' U2 R' U' R U' R' U2 R U2 R U' R' U' R U' R' U2 R U2 R U R' U R U2 R'
	C/A	R' U R U2 R' U' R U2 R' U' R U' R' U R U' R U R' U R U2 R' U' R U2 R' U' R U' R'
	C/O	L U' L' U2 L U L' U2 L U L' U L U' L' U L' U' L U' L' U2 L U L' U2 L U L' U L
	A/A or CxC	R U2 R' U' R U' R2 U2 R U R' U R
	A/C	U L' U' L U' L' U L U' L U L2 U L2 U2 L' L' U L' U2 L' U2 L U' L' U' L U L U' L
	A/O	L' U2 L U2 L U2 L' U' L' U L U' L U' L' U L U L2 U' L2 U' L2 U2 L U' L U' L'
	O/O	U x' R U L' U' R' U2 R2 U' L U R2 U2 R U2 R2 U R' U R' U R' U R U2 R2 U' R2
	O/C	L' U2 L U L' U L U' L' U' L U' L' U2 L L U2 L U' L2 U L' U2 L2 U L U2 L' U' L
	O/A	R U2 R' U' R U' R' U R U R' U R U2 R' R' U2 R' U R2 U' R U2 R2 U' R' U2 R U R'
	OxO	L' U2 L U L' U L2 U2 L' U' L U' L'
	CxO	U' R U R' U R U' R' U R' U' R2 U' R2 U2 R R U' R U2 R U2 R' U R U R' U' R' U R'
	OxC	R U2 R' U2 R' U2 R U R U' R' U R' U R U' R' U' R2 U R2 U R2 U2 R' U R' U R



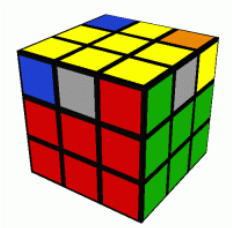
	C/C	U R U2 L' U R' U' L R U2 R2 U' R U' R' U2 R D' L' D F2 R U R' F2 L2 U' L' U L2
	C/A	U L' U' L U R U R' U L' U' R U' L U2 R' U L' U' L R U2 L' U' L U' R' U R U2 R'
	C/O	L U' L2 D' l U2 l' D L2 U L'
	A/A or CxC	L U' D L' U2 L D' L U L' U2 L U L2
	A/C	U L' U2 L U L' U' R U' L U R' L' U2 L L2 U' L D L' U' L D' L U L2 U L2
	A/O	R' U D' R U2 R' D R' U' R U2 R' U' R2
	O/O	U' R U R' U' L' U' L U' R U L' U R' U2 L U' R U R' L' U2 R U R' U L U' L' U2 L
	O/C	R' U R2 D r' U2 r D' R2 U' R
	O/A	U' L' U2 R U' L U R' L' U2 L2 U L' U L U2 L' D R D' F2 L' U' L F2 R2 U R U' R2
	OxO	U' R U2 R' U' R U L' U R' U' L R U2 R' R2 U R' D' R U R' D R' U' R2 U' R2
	CxO	R U2 R' U L U' R U L2 U R' U' L
	OxC	U' r2 U R2 U' L' U2 R' D' R U' R' D R' U' L' U' r2 U' R2 U L U2 R D R' U R D' R U L



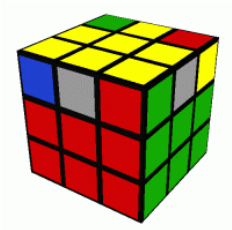
	C/C	R' U R U2 L' R' U R U' L R' U L' U' R L U2 L' U' L
	C/A	L U' L' U2 R L U' L' U R' L U' R U L' R' U2 R U R'
	C/O	R U R' U' R' U L' U2 R U' R' U2 R2 L U' R' L' U' L U L U' R U2 L' U L U2 L2 R' U L
	A/A or CxC	U R' F R' F' R2 U' R' U' F' U' F R
	A/C	U' L F' L F L2 U L U F U F' L'
	A/O	L' U' L U' y L U' L U x U' L U r' U' L2 L F' L' U2 M' U' R U r' U F' U F
	O/O	F' U L U2 L' U' F L U L' U' L U' L'
	O/C	r' U r' U2 l U' l' U2 r2 B' R' U2 R' U' R B' D' R' u R2 U' R' F
	O/A	F U' R' U2 R U F' R' U' R U R' U R
	OxO	R U R' U y' R' U R' U' x U R' U' l U R2 R' F R U2 M' U L' U' l U' F U' F'
	CxO	R2 U R U' R2 U R U2 M x U R U' R' M' R' U2 R U R' U R F U R U2 R' U R U R' F'
	OxC	L2 U' L' U L2 U' L' U2 M x U' L' U L M' L U2 L' U' L U' L' F' U' L' U2 L U' L' U' L F



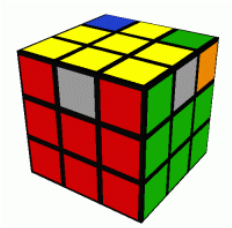
	C/C	F' U R U' L2 U R' U' L2 F
	C/A	R U2 L' U' L U2 R' U R U' L' U R' U2 L R U' L U' R2 U L' U' R2 U' R' U R U2 R'
	C/O	r D r' U L U2 L' U L U B' L' aka L B L' U L U2 L' U L U B' L'
	A/A or CxC	B' l2 U' y R U' R2 U R U' R U2 x' U2 r F' U2 l' U R' U2 R U R' U x' R2 U2 F
	A/C	M' x' U' R' U L' U' R U' R U R' U R
	A/O	U R' U' R U' F U' R' U R U F' R' U R
	O/O	F U' L' U R2 U' L U R2 F'
	O/C	L' U2 R U R' U2 L U' L' U R U' L U2 R' L' U R' U L2 U' R U L2 U L U' L' U2 L
	O/A	l' D' l U' R' U2 R U' R' U' B R aka R' B' R U' R' U2 R U' R' U' B R
	OxO	B' R' U' R U R' U R U' B L U' L
	CxO	U' L U L' U F' U L U' L' U' F L U' L'
	OxC	M' x' U L U' R U L' U L' U' L U' L'



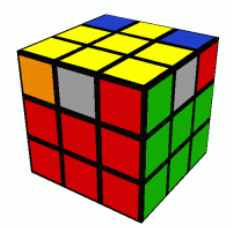
	C/C	R U R D R' U M U2 r D' R2
	C/A	U' L U L' U L U R U R' L' U2 R U R'
	C/O	L' U' L' U L2 U D' L U2 L' U2 D L' B r U' L' U L' U' D L' U L D2
	A/A or CxC	L2 U2 L U' L' U L' U2 L' U' R U' L' U R'
	A/C	R D' R' U R2 U' R2 U' R2 U2 R' D R'
	A/O	U' L' U' L U L F L' U2 L' U2 L F'
	O/O	M' x' U L' U' R U L U L' U' L U' L'
	O/C	L U2 L' F' U L U' L' U' F L U' L' L' U2 D L' U L' U' L' U L2 U D' L
	O/A	L' U L U' M x U' L U R' U L' U2 L
	OxO	L' U' y' L' U2 L U' L' U' L F
	CxO	l' U' R D' R' U R D [x' M2 U M2 U2 M2 U M2] l U' R U x U' R' U R2 U F' U F R' U' R
	OxC	l' U' R D' R' U R D x D L U' L' D' L U L



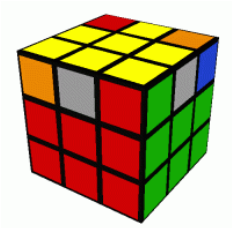
	C/C	x D' R' U R D R' U' R r U L' D L U' L' D'
	C/A	R U y R U2 R' U R U R' F'
	C/O	L' D L U' L2 U L2 U L2 U2 L D' L
	A/A or CxC	R' U2 R F U' R' U R U F' R' U R R U2 D' R U' R U R U' R2 U' D R'
	A/C	R U R' U' R' U R' U' D R' U R D' R
	A/O	M' x' U' R U L' U' R' U' R U R' U R
	O/O	x D' R' U R D R' U' R [x' M2 U M2 U2 M2 U M2] r' U L' U' x U L U' L2 U' F U' F' L U L'
	O/C	U R U R' U' R' F' R U2 R U2 R' F
	O/A	R2 U2 R' U R U' R U2 R U L' U R U' L
	OxO	R U R U' R2 U' D R' U2 R U2 D' R B' l' U R U' R U D' R U' R' D2
	CxO	U' R' U L y L2 U L2 U' L2 F B'
	OxC	R' U L' U' x U L U' L2 U' F U' F' L U L'



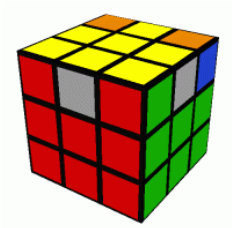
	C/C	U' R' U2 R' U2 R U R' U R U2 R U2 R' U' R U R U2 R' U' R U' R' U2 R' U2 R U R' U R
	C/A	U' R' U' R U R' U R U2 R' U R U2 R' U' R R' U' R U' R' U2 R U' R' U2 R U R' U R
	C/O	U L U L' U' L U' L' U2 L U' L' U2 L U L' L U L' U L U2 L' U L U2 L' U' L U' L'
	A/A or CxC	R' U' R U' R' U2 R2 U R' U R U2 R'
	A/C	U' L' U2 L U L' U L U L' U' L U' L' U2 L L' U L U2 L' U' L2 U2 L U' L2 U L' U2 L'
	A/O	R' U' R U' R U R' U' R' U2 R U2 R U2 R' R' U' R U' R U2 R2 U' R2 U' R2 U R
	O/O	U' x' U2 R2 U' L' U R2 U2 R U L U' R' R2 U R2 U2 R' U' R U' R U' R U' R U' R2 U2 R'
	O/C	U' L U2 L2 U' L2 U' L' U L' U' L U L' U L U' L' U L' U' L' U L U L' U2 L U2 L U' L
	O/A	U R U' R U R U' R' U' R U2 R' U2 R' U R' U R' U2 R2 U R2 U R U' R U R' U' R U' R'
	OxO	L U L' U L U2 L2 U' L U' L' U2 L
	CxO	R U' R' U2 R U R2 U2 R' U R2 U' R U2 R U R U2 R' U' R U' R' U' R U R' U R U2 R'
	OxC	L U L' U L' U' L U L U2 L' U2 L' U2 L L U L' U L' U2 L2 U L2 U L2 U' L'



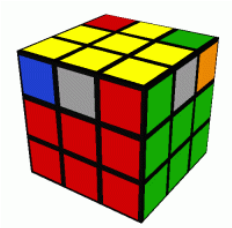
	C/C	R U2 R' L' U R U L U L' U M'
	C/A	L U' y L' U L U B' L' U2 L
	C/O	U L U2 L' F' U L U' L' U' L U' L' U F
	A/A or CxC	U R' u' R U' R U R U' R2 D R' U R B
	A/C	L U2 L' F' U L U L' U' F
	A/O	U' L u L' U L' U' L' U L2 D' L U' L' B'
	O/O	R' U y' R U' R' U' B R U2 R'
	O/C	U' R' U2 R F U' R' U R U R' U R U' F'
	O/A	L' U2 L R U' L' U' R' U' R U' M'
	OxO	R' U2 R F U' R' U' R U F'
	CxO	l' U' R D L2 D' R' U' L2 U2 L l U2 L'
	OxC	L U' R' U L' U' M x U R U' L U R'



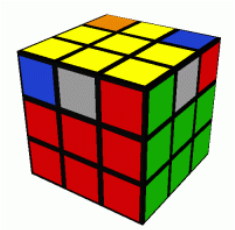
	C/C	x' R2 D2 R' U2 R D2 R' U2 R'
	C/A	L U' L' U u L2 U y' R U2 R' F2 D' L
	C/O	R L F U2 R' U' R U' F' U' L' U R' R2 D' R2 U2 R2 D R' D' R' U' R' U' R2 D R'
	A/A or CxC	U R U2 x U2 R U' R U R2 U' R U' x' U2 R'
	A/C	L' F' U L U L' U2 L U L' F L
	A/O	R' U' R F U' R' U' R U F' U R' U R
	O/O	x' L2 D2 L U2 L' D2 L U2 L
	O/C	R' U R U' u' R2 U' y L' U2 L F2 D R'
	O/A	L' R' F' U2 L U L' U F U R U' L L2 D L2 U2 L2 D' L D L U L U L2 D' L
	OxO	F R U' R' U R U R' U R U' R' F'
	CxO	L U L' F' U L U L' U' F U' L U' L'
	OxC	R F U' R' U' R U2 R' U' R F' R'



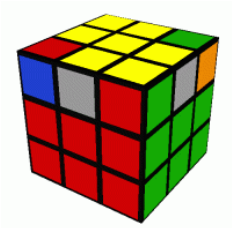
	C/C	R U' R' U F' U' x U2 R' U' R B R' U R U' D' R2 U x U2 L' B' L U2 l U' l2 U l'
	C/A	L' U L U' F U x U2 L U L' B' L U' L' U D L2 U' x U2 R B R' U2 r' U r2 U' r
	C/O	R U' R' U R U' L U r' F U2 R U2 R2
	A/A or CxC	U R U' L U L' U R' U' l U2 R U2 R2
	A/C	U' L' U R' U' R U' L U r' U2 L' U2 L2
	A/O	F U' R U2 L U2 L' U2 R' U F' L U' L'
	O/O	R' U' R F' U L' U2 R' U2 R U2 L U' F
	O/C	D R' U' R D' F2 R2 U' r U2 r' U R2 F2
	O/A	L U L' F U' R U2 L U2 L' U2 R' U F'
	OxO	F' U L' U2 R' U2 R U2 L U' F R' U R
	CxO	r U L' D L U' r2 U' R U L U' R' U' R' U' R F R2 D' R U R' D R2 U' F'
	OxC	l' U' R D' R' U l2 U L' U' R' U L U L U L' F' L2 D L' U' L D' L2 U F



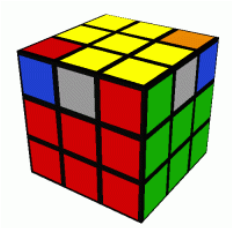
	C/C	R2 D' r U2 r' D R U2 R
	C/A	L U L' U L U2 L2 U R U' L U R'
	C/O	U R U' L U L' U' R' U2 L U2 L' U' R U2 R' R U' R2 U' R2 F' R U R' U' R' F U2 R'
	A/A or CxC	R U' R' F R2 U x U' R U B' R U' R
	A/C	U' L2 D' L U' L' D L2 U' L' U2 L
	A/O	R' U2 F U F' R F U2 R' U' R U F'
	O/O	U L U L' U R' U L U2 R U2 L' U R' U2 R
	O/C	L' U' L F U F2 D' L U' L U L' D F
	O/A	U' F R U R U' R y R U R' U F U2 F L'
	OxO	U R U L' U R' U' L U' R U R' U R U' R' U' R D2 r2 U' R U2 r D2 r D R2
	CxO	U x U' L' D L2 U' R U L' U' R' U2 L' D' L
	OxC	R2 D' R U2 R' D R U2 R



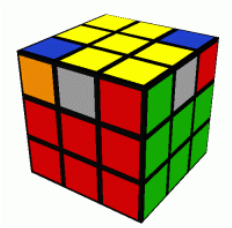
	C/C	L2 D L' U2 L D' L' U2 L'
	C/A	U' L' U' R U' L U R' U L' U' L U' L' U L U L' D2 l2 U L' U2 l' D2 l' D' L2
	C/O	U R2 D R' U R D' R2 U R U2 R'
	A/A or CxC	R U R' F' U' F2 D R' U R' U' R D' F'
	A/C	L2 D l' U2 l D' L' U2 L'
	A/O	U' R' U' R U' L U' R' U2 L' U2 R U' L U2 L'
	O/O	U' x U R D' R2 U L' U' R U L U2 R D R'
	O/C	L U2 F' U' F L' F' U2 L U L' U' F
	O/A	L' U L F' L2 U' x U L' U' B L' U L'
	OxO	U' L' U R' U' R U L U2 R' U2 R U L' U2 L L' U L2 U L2 F L' U' L U L F' U2 L
	CxO	U F' L' U' L' U L' y' L' U' L U' F' U2 F' R
	OxC	R' U' R U' R' U2 R2 U' L' U R' U' L



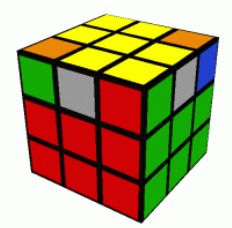
	C/C	R U2 R' U2 R' U' R U R U' R' U2 R' U2 R
	C/A	L U2 L' U' L U' L' U L' U2 L U L' U L R2 U R' U R' U2 R' U' R' U R2 U R U' R2
	C/O	U L' U L' U2 L' U L U' L' U L2 U L U2 L R2 U R' U R' U' R U' R' U' R U R U' R2
	A/A or CxC	L U2 L' U' L U' L' U2 L U L' U L U2 L'
	A/C	U R' U2 R U R' U R U' R U2 R' U' R U' R' U L2 U' L U' L U2 L U L U' L2 U' L' U L2
	A/O	U L' U2 L' U' L2 U' L U L' U' L U2 L U' L
	O/O	R U R' U R U' R' U R U' R' U R U2 R'
	O/C	R U' R U2 R U' R' U R U' R2 U' R' U2 R' U L2 U' L U' L U L' U L U L' U' L' U L2
	O/A	R U2 R U R2 U R' U' R U R' U2 R' U R'
	OxO	U R' U' R U' R' U2 R U2 R' U2 R U R' U R
	CxO	L U L' U L U2 L' U L' U' L U' L' U2 L
	OxC	U R' U' R U' R' U2 R U' R U R' U R U2 R'



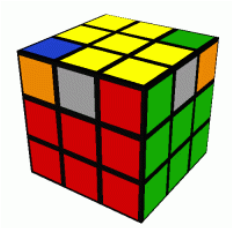
	C/C	R' F U' R' U R U F' R' U2 R U2 R
	C/A	L2 U' L2 U L U F' L2 U' L2 U F L
	C/O	L' U' L B U' L' U' L U B' L' U2 L U L D' U L2 U L' U' L' U L' D U2 L'
	A/A or CxC	R2 U2 R U R' B' R' B U R B U2 B' R U' R F U R U' F U R F' R2 F R U' F2 R'
	A/C	R' U' R B2 U x' U2 x' R U' R U R D R U F' U F U L' U F' U F L U L' U L
	A/O	U F' L' U' L' U L2 F L U' L' U F' L' F U M' x' U' R U2 L' U2 R' U R U L U' L'
	O/O	R' U' R F U' R' U2 R U F'
	O/C	L' U' L B U' L' U' L U B' L' U2 L U L D' U L2 U L' U' L' U L' D U2 L'
	O/A	M' U2 y R U2 R' U2 y l' U' L
	OxO	L' U' L U' L' U L U R U' L' U M'
	CxO	x U R D R' U' R D' R' [x' M2 U M2 U2 M2 U M2]
	OxC	x U R D R' U' R D' R'



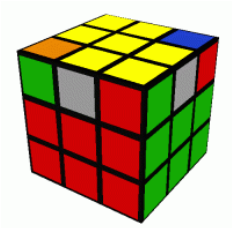
	C/C	U R' U2 R' D' R U2 R' D R2
	C/A	B U' L' U L U2 B' L' B U' B' U2 L
	C/O	U R' U2 R' D' r U2 r' D R2
	A/A or CxC	B' D' R U' R' U R' D B2 U' B' R' U R L' U R' U' R U L U2 R' U' L' U' R U' L
	A/C	R' U2 R U R2 D' R U R' D R2
	A/O	R B' U2 B' U' L U' L' y' L' U L' U' L' B'
	O/O	x L' D L U2 R U L U' R' U L2 D' L U
	O/C	U R' U R U' R' U F' R U2 R' U2 R' F R2
	O/A	L U' R' U L' U' R2 U2 R' U' R U' R'
	OxO	L U2 L' U R U2 R' U2 L U R U' R' U L'
	CxO	L' U2 L U' R U2 L' U2 R' U' L U' R U' R'
	OxC	L U2 L' U' L U' M x U' L' U R' U' L M' x' U' R U' R' U2 R U R' U L' U' R



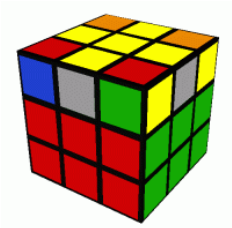
	C/C	L U2 L D L' U2 L D' L2
	C/A	U L U2 L' U' L2 D L' U' L D' L2
	C/O	L U' L' U L U' F L' U2 L U2 L F' L2
	A/A or CxC	U B D L' U L U' L D' B2 U B L U' L' U R U' L U L' U' R' U2 L U R U L' U R'
	A/C	U B' U R U' R' U2 B R B' U B R U2 R'
	A/O	U R' U L U' R U L2 U2 L U L' U L
	O/O	U x R D' R' U2 L' U' R' U L U' R2 D R' U'
	O/C	L U2 L D l' U2 l D' L2
	O/A	U L' B U2 B U R' U R y R U' R U R B
	OxO	U R' U2 R U' L' U2 L U2 R' U' L' U L U' R
	CxO	U R' U2 R U R' U M x U R U' L U R' U M' x' U L' U L U2 L' U' L U' R U L'
	OxC	R U2 R' U L' U2 R U2 L U R' U L' U L



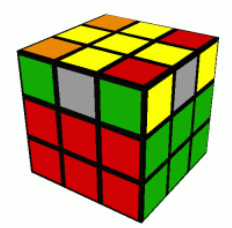
	C/C	U L F' U L U' L' U' F L U2 L' U2 L'
	C/A	U' R U R' F2 U' x U2 x R' U R' U' R' D' R' F U' F' U' R U' F U' F' R' U' R U' R'
	C/O	U R U R' B' U R U R' U' B R U2 R' R' D U' R2 U' R U R U' R D' U2 R
	A/A or CxC	U L2 U2 L' U' L B L B' U' L' B' U2 B L' R' B' U' R' U B' U' R' B R2 B' R' U B2 R
	A/C	U R2 U R2 U' R' U' F R2 U R2 U' F' R'
	A/O	U M' U2 y' L' U2 L U2 y' r U R'
	O/O	U L U L' F' U L U2 L' U' F
	O/C	U R U R' B' U R U R' U' B R U2 R' R' D U' R2 U' R U R U' R D' U2 R
	O/A	F R U R U' R2 F' R' U R U' F R F' M' x' U L' U2 R U2 L U' L' U' R' U R
	OxO	U R U R' U R U' R' U' L' U R U' M'
	CxO	l' U' L' U R U' L U
	OxC	l' U' L' U R U' L U [x' M2 U M2 U2 M2 U M2]



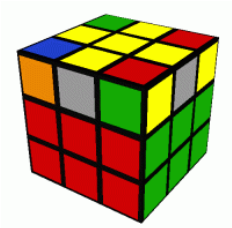
	C/C	L' U' D L' U' L D' L2 U L' U' L2 U2 L
	C/A	L' U2 R U' R' U2 L R U' R'
	C/O	F R U R' U' R' F R2 U' R' U' R U R' F2
	A/A or CxC	U F R U R' F R' F' R2 U' R' F'
	A/C	U R U2 L' U L U2 R' L' U L
	A/O	U R U2 R' B' U R U R' U y' L U L' U L
	O/O	U' R' F2 R2 U' L' U L R2 F2 R
	O/C	U F' L' U' L U L F' L2 U L U L' U' L F2
	O/A	L' U2 L B U' L' U' L U' y R' U' R U' R'
	OxO	R' F2 R2 L' U' L U R2 F2 R
	CxO	L U' R' U' L' U' F2 U L U2 L' U' F2 R
	OxC	U R' U L U R U F2 U' R' U2 R U F2 L'



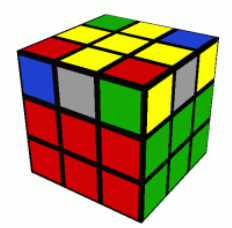
	C/C	U R U2 R' U' R U' R' U' R' U' R U' R' U2 R U' L U2 L' U' L U' L' U' L' U' L U' L' U2 L
	C/A	R' U' R U' R' U R U' R' U2 R U2 L' U' L U' L' U L U' L' U2 L
	C/O	U L U2 L' U' L U L' U' L U' L' U' R U2 R' U' R U R' U' R U' R'
	A/A or CxC	R U R' U R U' R' U R2 U R U R U' R' U' R' U R' F U R' F R F' R U' R' U R' F R F' R U' R' F'
	A/C	U' L' U2 L U L' U' L U L' U L U R' U2 R U R' U' R U R' U R
	A/O	L' U' L U' L' U L U' L' U2 L U2 R' U' R U R' U R U' R' U2 R
	O/O	U' R' U2 R U R' U R U R U R' U R U2 R' U L' U2 L U L' U L U L U L' U L U2 L'
	O/C	L U L' U L U' L' U L U2 L' U2 R U R' U R U' R' U R U2 R'
	O/A	U' R' U2 R U R' U' R U R' U R U L' U2 L U L' U' L U L' U L
	OxO	R U R' U R U2 R' U' R' U2 R U R' U R
	CxO	R U R' U R U' R' U R U2 R' U2 L U L' U L U' L' U L U2 L'
	OxC	U R U2 R' U' R U R' U' R U' R' U' L U2 L' U' L U L' U' L U' L'



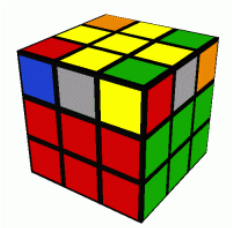
	C/C	L' U' L2 F' L' F U2 L' U' L U' x' u L' u' F' L U' L' U2 L2 U L' U2 L U L2 U' F
	C/A	R U R2 F R F' U2 R U R' U x' u' R u F R' U R U2 R2 U' R U2 R' U' R2 U F'
	C/O	x U R' U R U' l U2 l' U R' U' R U'
	A/A or CxC	R' U' R2 B' R' B U2 R' U' R U' x u R' u' B' R U' R' U2 R2 U R' U2 R U R2 U' B
	A/C	L U L2 B L B' U2 L U L' U x u' L u B L' U L U2 L2 U' L U2 L' U' L2 U B'
	A/O	L U2 R' U L' U L U2 R U R' U L' U2 R
	O/O	L' U2 R U' L U' L' U2 R' U' R U' L U2 R'
	O/C	U F R U R' U' R U R' U' R U R' U' F'
	O/A	R U2 L' U R' U R U2 L U L' U R' U2 L
	OxO	R' U2 L U' R U' R' U2 L' U' L U' R U2 L'
	CxO	R U R2 B U' y R2 F R2 U R' F L' U2 L R U R' U R U2 R2 U2 L U' R U L' U R' U R
	OxC	L' U' L2 B' U y' L2 F' L2 U' L F' R U2 R' L' U' L U' L' U2 L2 U2 R' U L' U' R U' L U' L'



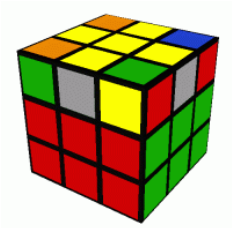
	C/C	L2 D' l U2 l' D L' U L2 U L2 U2 L'
	C/A	U' R' U L U' R2 U R' L' U2 R U R'
	C/O	R' U' R U' R' U' L U' R U L'
	A/A or CxC	x' U' R U L' U2 R' U' L' U' L2 u L2 D' L U' R' U L' U2 R U' R U R2 U R2 U2 R'
	A/C	L2 D' L U2 L' D L' U L2 U L2 U2 L'
	A/O	R U R' U R U L' U R' U' L
	O/O	D R' U' R D' R U' R' U2 R U2 R U R U' R2
	O/C	L2 D L' U2 L D' L U' L2 U' L2 U2 L
	O/A	L U2 R' U L' U L U L' U' L U' R U2 L'
	OxO	x U R' U' L U2 R U L U L2 u' L2 D L' U R U' L U2 R' U R' U' R2 U' R2 U2 R
	CxO	L' U2 R U' L U' L' U' L U L' U R' U2 L
	OxC	U R U' L' U R2 U' L R U2 R' U' R



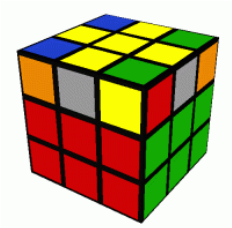
	C/C	L' U2 L U y' L F' U F L' U L U2 L'
	C/A	R U R' U R U L' U' L2 U2 R' U' r U2 L2 U2
	C/O	U R' F R F' U2 x' R2 U L' U L U2 R2
	A/A or CxC	U' L' U2 L2 F' U L2 U L2 U' F U' L'
	A/C	U' L' U2 M' x U R2 D R2 U' x' U2 R
	A/O	U R U2 R2 F U' R2 U' R2 U F' U R
	O/O	L' U' L U' L' U' R U R2 U2 L U l' U2 R2 U2
	O/C	U' L F' L' F U2 x' L2 U' R U' R' U2 L2
	O/A	R U2 R' U' y R' F U' F' R U' R' U2 R
	OxO	U R U2 M' x' U' L2 D' L2 U x' U2 L'
	CxO	U F R U R' U' R' F' U2 R U R' U R2 U2 R'
	OxC	F R U' R' U R U2 R' U' R U R' U' F'



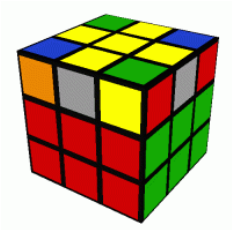
	C/C	R' U' R U R U2 R' U' R U' R2 U2 R
	C/A	R' U2 R2 U R2 U R2 U2 R'
	C/O	L' U' L U L2 U' L U' L' U2 L2 U L' U' L
	A/A or CxC	R U R2 U' R2 U' R2 U2 R2 U' R' U R U2 R'
	A/C	L U L' U' L2 U L' U L U2 L2 U' L U L'
	A/O	U L' U2 L U L' U L2 U L' U L U2 L'
	O/O	R U R' U' R' U2 R U R' U R2 U2 R'
	O/C	U R U2 R' U' R U' R2 U' R U' R' U2 R
	O/A	L' U L U' L2 U2 L U L' U L2 U' L' U L
	OxO	U' R' U' R U' R' U2 R U' R' U' R U' R' U2 R
	CxO	R U2 R2 U' R2 U' R2 U2 R
	OxC	L U' L' U L2 U2 L' U' L U' L2 U L U' L'



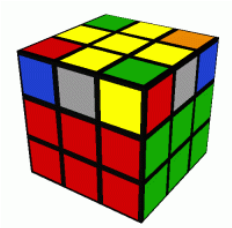
	C/C	F R2 U' R U' R U' R' U2 R' U R2 F' L' F' U L2 U2 L' U' L U' L2 U' F L
	C/A	x U' D L' U L U' L U2 D' x' U' R U' R' F'
	C/O	F U R' U' R2 U' R2 U2 R U2 R U R' F'
	A/A or CxC	x' U D' L U' L' U L' U2 D x U R' U R B
	A/C	B' R2 U R' U R' U R U2 R U' R2 B L B U' L2 U2 L U L' U L2 U B' L'
	A/O	R F' U' R2 F U' F' U R2 U F R'
	O/O	R' B U R2 B' U B U' R2 U' B' R
	O/C	R' U' D R' U' R D' R U R' U' R2 U2 R2 U2 R'
	O/A	L' F U L2 U F' U' F L2 U' F' L
	OxO	L B' U' L2 U' B U B' L2 U B L'
	CxO	L' U' L U' R U' L' U' R' U' R U' M'
	OxC	L U L' U R' U L U R U R' U M



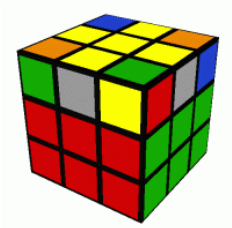
	C/C	R U2 R D' R U' R' D R' U' R2 U2 R
	C/A	R' U L U' R U' L' U' L U' L'
	C/O	R' U' R U' R U R2 U2 L U' R2 U L' U R' R' U L' U R L U2 R U' L' U R2 U R L
	A/A or CxC	L' U2 R U' L U' L' U L U L' U R' U2 L
	A/C	L U' L' U2 R L U' L2 U R' U' L
	A/O	R' U2 R' D R' U R D' R U R2 U2 R'
	O/O	L' U L U2 R' L' U L2 U' R U L'
	O/C	R U R' U R' U' R2 U2 L' U R2 U' L U' R R U' L U' R' L' U2 R' U L U' R2 U' R' L'
	O/A	L U2 R' U L' U L U' L' U' L U' R U2 L'
	OxO	R U' L' U R' U L U L' U L
	CxO	D R2 U' R U R U2 R U2 R' U' R D' R U' R' x L2 D F L' U2 L' U' L U2 F' L2 D' L
	OxC	U L' U2 L2 U L2 U L' D R' F2 R D' L2



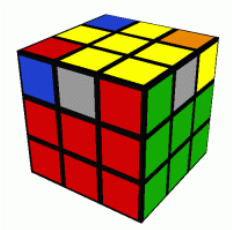
	C/C	U R U2 R2 U' R U' R' U2 F R U R U' R' F'
	C/A	x L2 U2 L2 z l U' L' U2 R2 U' R' U L U L' U L
	C/O	R' F2 D R2 U' R2 D' M x U2 L aka l' U2 y' l U2 L' U2 R' U D' L2 u
	A/A or CxC	U' x' L2 U2 R U R' U L2 x U2 F' L F L'
	A/C	L U y' R U' R' F2 L' U' L2 U L' F L U' L' R U2 R' U' R y R' U' R F' U' R' U2 R
	A/O	R B2 D' R2 U R2 D M' x' U2 L' aka l U2 y l' U2 L U2 R U' D L2 D'
	O/O	R U y R U' R' U R U2 R' U' R U R' F'
	O/C	L' U' y R' U R B2 L U L2 U' L B' L' U L R' U2 R U R' y R U R' F U R U2 R'
	O/A	U' L U F' U L2 U' L2 U' F L2 U2 L
	OxO	U' x' R2 U2 L' U' L U' R2 x U2 F R' F' R
	CxO	U' R' U' F U' R2 U R2 U F' R2 U2 R'
	OxC	x' L2 U2 L2 z l' U L U2 R2 U R U' L' U' L U' L'



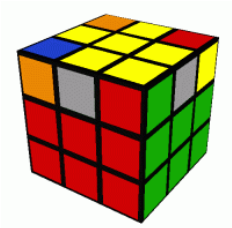
	C/C	R' U F2 U L U2 L' U' F2 L U' M
	C/A	U R' U' R U' B2 R' U2 R U2 R B2 R'
	C/O	R U R' D R2 U' R2 U' R2 U2 R2 D' R U2 R'
	A/A or CxC	R' U2 R U R' U' R U2 L U' R' U M
	A/C	U R U2 R' U' R U' R2 U L U' R U L'
	A/O	F' U' L U L' F U L U' L' U L U2 L'
	O/O	U L' U R U' L U R2 U' R U' R' U2 R
	O/C	r U R' U R U L' D L2 U L2 D'
	O/A	U R' U' R U' R2 B2 R U2 R U2 R2 B2 R2
	OxO	R' F2 R U2 R U2 R' F2 U' R U' R'
	CxO	R B' R' U' R2 U B U' R' U R' U' F' U' F
	OxC	R U R2 U B' R' B R U R U R2 F' U F R U' R U' R' U' R' B2 U2 R' U R2 U' R U2 B2 R



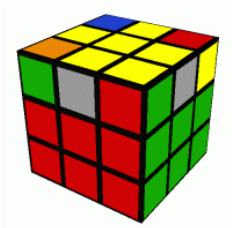
	C/C	R' F R U R2 U' F' U R U' R U B U B'
	C/A	R U' B2 U' L' U2 L U B2 L' U M'
	C/O	U' R U R' U R2 F2 R' U2 R' U2 R2 F2 R2
	A/A or CxC	R' U' R D' R2 U R2 U R2 U2 R2 D R' U2 R
	A/C	R B2 R' U2 R' U2 R B2 U R' U R
	A/O	R U2 R' U' R U R' U2 L' U R U' M'
	O/O	R' U' R2 U' B R B' R' U' R' U' R2 F U' F' R' U R' U R U R F2 U2 R U' R2 U R' U2 F2 R'
	O/C	U' R U R' U F2 R U2 R' U2 R' F2 R
	O/A	U' L U' R' U L' U' R2 U R' U R U2 R'
	OxO	r' U' R U' R' U' L D' L2 U' L2 D
	CxO	U' R' U2 R U R' U R2 U' L' U R' U' L
	OxC	B U L' U' L B' U' L' U L U' L' U2 L



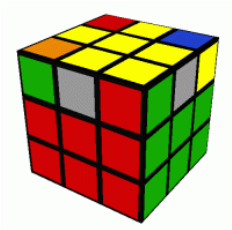
	C/C	R' U R2 U R' U R U2 R U2 R U R' U R2
	C/A	R' U2 R2 U R U' R' U R U R2 U' R'
	C/O	U R U R' U R U2 R' U' L U L' U L U2 L'
	A/A or CxC	R U R' U' R' U2 R U R U' R' U R' U R R2 U' R' U' R2 U R U R2 U R' U R
	A/C	R' U2 R U R' U R
	A/O	R2 U' R2 U' R U2 R U' R' U' R U R2
	O/O	U L' U' L U' L U L2 U L2 U2 L' R' U' R2 U R' U' R2 U' R2 U R' U' R'
	O/C	U R U R2 U' R2 U' R2 U2 R2 U2 R'
	O/A	U' R' U' R U' R U R' U R U2 R' U' R' U R R2 U R' U' R' U' R U2 R' U' R2 U' R2
	OxO	L' U' L U' L' U2 L U' L U2 L' U' L U' L' R' U2 R2 U R U R U' R' U' R2 U R
	CxO	R2 U R U' R' U' R U2 R U' R2 U' R2
	OxC	R U R' U' R' U2 R U R' U R U' R U' R'



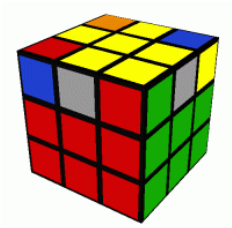
	C/C	F R' U2 R F' R' F U2 F' R
	C/A	R U R' U R U' R D R' U' R D' R2
	C/O	U' L' U2 L' F2 D' R B2 R' D F2 L2
	A/A or CxC	R2 U R' U' D R' U' R2 D' R D R2 D' R U2 R' F U R' U' R' F' U' R U R2 U' R' U2 F R F'
	A/C	U' F2 L2 u R' F2 R u' L2 F' U2 F'
	A/O	L' F2 L U L U L' U2 L U L2 F2 L
	O/O	F R' U R U F' R' U F U F' R
	O/C	F' L' U' L U x L2 D L2 U L' D' L
	O/A	L' U' L B U' L' U L U B' U2 L' U2 L
	OxO	L2 F L2 U' L2 u L U D' L U' L2 B2
	CxO	R' U' R F' R' F U2 F' R F U2 R' U R
	OxC	U' L' U2 L2 F2 U L2 U L2 U' F2 U' L'



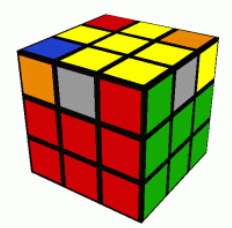
	C/C	U R U F' R U R U' R' F R2 U R2 U2 R'
	C/A	U' R U R' U L' U R U' L U2 R'
	C/O	L' U2 L U L' F U' L U' L' U2 F' U L
	A/A or CxC	F' L' U' L U F U l U L' U L U2 l'
	A/C	U' L' U2 R U' L U R' U L' U L
	A/O	R D' F2 R2 U R U R' U2 R2 F2 D R' R U' R2 U2 D' R U R' U D R2 U R'
	O/O	R' U' F' U L' U L U' L' U L U' F R
	O/C	R U F' U2 R' U' R U' F R' U R U2 R'
	O/A	F' L' U' L U L' U' L F' L F L' U F
	OxO	L U2 L2 x' U2 L U2 l' U2 R U' L U' L'
	CxO	R U' L' U R' U' R U' L U R' U' L' U L
	OxC	R' F' R U R B2 R2 U' R' F R U R2 B2 R'



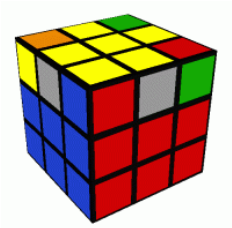
	C/C	U R U' L' U R' U' L
	C/A	R' U' R' F R2 x' U R' D' R r U L' B'
	C/O	F L' U' L2 U L F' U L2 U' L' U' L'
	A/A or CxC	U L U L' D L' U L U' L2 U' L U L2 D'
	A/C	R' U' R' U' R F U' R' U2 R U F' R
	A/O	U R U' L2 U' L' U' L U L U M' x' U' L
	O/O	R U2 x' U' R U R' U2 L' U R U2 L U' R2 R' U2 R2 U R D' R U R' D R2 U' R U' R'
	O/C	U R U R' U' F' L' U2 L U x U2 R' U' R
	O/A	U R U' R' D' L' U2 L D R' u' R2 u R
	OxO	U' L2 u L' u L2 B D2 R2 U' F
	CxO	U L U2 L F L' U' L' U L F' U2 L'
	OxC	L' U2 L U L' U' L' D' l U2 l' D L2



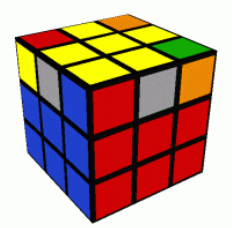
	C/C	R2 U F' R' U2 R U2 F U' R' U R'
	C/A	L' U L U2 R U' L' U R2 U L U' R
	C/O	B' U' R' U x U' R D r' U' L U R' F R
	A/A or CxC	U' M' x' U L' U' R U2 L U2 L'
	A/C	L' U2 L U L2 D' L U' L' D L U2 L
	A/O	R U R U' L' U R2 U' L U2 R U2 R'
	O/O	L U' R U' L2 u' L2 u L2 U2 R' L'
	O/C	U' R2 D' r U2 r' D R2 U R' U R
	O/A	F U' B' R D' R U' R' D R' U x' R2 U D'
	OxO	U L2 D' L U2 L' D L2 U L' U L
	CxO	R' U' R U' R U R D' R U R' D R' U2 R'
	OxC	L U' R' U L' U2 R U L U' R' U M



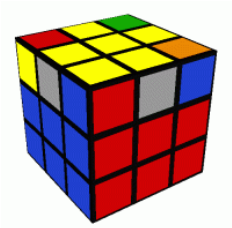
	C/C	U L' U L' U' F U2 L U2 L' F' U L2
	C/A	L U2 L D L' U' L D' L2 U L U2 L'
	C/O	U' R U R' U R2 u B' R2 B u' R2
	A/A or CxC	U L' U2 L U2 R U' L' U M'
	A/C	R' U' R U' L' D L2 U L2 D' B2 L
	A/O	U' L U L' U' L F' L' U' L U L F L2
	O/O	U' R U R' U R2 D R' U2 R D' R2
	O/C	R B R' U L U' r' D R U' x U R' U' F'
	O/A	L' D2 R U R' U' R D R2 D L U' B2
	OxO	R U R' U L F' U y' R2 U' R' F' R' U R
	CxO	R' U' R U' R B' U R2 U R2 U' B U' R'
	OxC	F' U' L U L' F L U2 R' U L' U' R F U2 L U' R' U L' U2 R F' R' U R



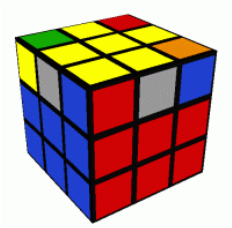
	C/C	L U' L2 U' L U' L' U2 L' U2 L' U' L U' L2
	C/A	L U2 L2 U' L' U L U' L' U' L2 U L
	C/O	U R' U' R U' R' U2 R U' L' U' L U' L' U2 L
	A/A or CxC	L' U' L U L U2 L' U' L' U L U' L U' L' L2 U L U L2 U' L' U' L2 U' L U' L'
	A/C	L U2 L' U' L U' L'
	A/O	L2 U L2 U L' U2 L' U L U L' U' L2
	O/O	U' R U R' U R' U' R2 U' R2 U2 R L U L2 U' L U L2 U L2 U' L U L
	O/C	U' L' U' L2 U L2 U L2 U2 L2 U2 L
	O/A	U L U L' U L' U' L U' L' U2 L U L U' L' L2 U' L U L U L' U2 L U L2 U L2
	OxO	R U R' U R U2 R' U R' U2 R U R' U R L U2 L2 U' L' U' L' U L U L2 U' L'
	CxO	L2 U' L' U L U L' U2 L' U L2 U L2
	OxC	L' U' L U L U2 L' U' L U' L' U L' U L



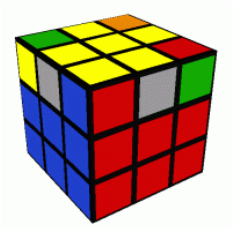
	C/C	F' L U2 L' F L F' U2 F L'
	C/A	L' U' L U' L' U L' D' L U L' D L2
	C/O	U R U2 R F2 D r' U2 r D F2 L2
	A/A or CxC	L2 U' L U D' L U L2 D L' D' L2 D L' U2 L F' U' L U L F U L' U' L2 U L U2 F' L' F
	A/C	U F2 R2 u' L F2 L' u R2 F U2 F
	A/O	R F2 R' U' R' U' R U2 R' U' R2 F2 R'
	O/O	F' L U' L' U' F L U' F' U' F L'
	O/C	F R U R' U' x R2 D' R2 U' R D R'
	O/A	R U R' B' U R U' R' U' B U2 R U2 R'
	OxO	R2 F' R2 U R2 u' R' U' D R' U R2 B2
	CxO	L U L' F L F' U2 F L' F' U2 L U' L'
	OxC	U R U2 R2 F2 U' R2 U' R2 U F2 U R



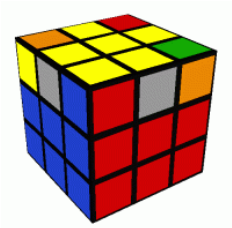
	C/C	U' L' U' F L' U' L' U L F' L2 U' L2 U2 L
	C/A	U L' U' L U' R U' L' U R' U2 L
	C/O	R U2 R' U' R F' U R' U R U2 F U' R'
	A/A or CxC	F R U R' U' F' U' r' U' R U' R' U2 r
	A/C	U R U2 L' U R' U' L U' R U' R'
	A/O	L' D F2 L2 U' L' U' L U2 L2 F2 D' L L' U L2 U2 D L' U' L U' D' L2 U' L
	O/O	L U F U' R U' R' U R U' R' U F' L'
	O/C	L' U' F U2 L U L' U F' L U' L' U2 L
	O/A	F R U R' U' R U R' F R' F' R U' F'
	OxO	R' U2 R2 x' U2 R' U2 r U2 L' U R' U R
	CxO	L' U R U' L U L' U R' U' L U R U' R'
	OxC	L F L' U' L' B2 L2 U L F' L' U' L2 B2 L



	C/C	U' L' U R U' L U R'
	C/A	L U L F' L2 x' U' L D L' l' U' R B
	C/O	F' R U R2 U' R' F U' R2 U R U R
	A/A or CxC	U' D R' U' R D' R U' R' U R2 U R' U' R2
	A/C	L U L U L' F' U L U2 L' U' F L'
	A/O	U' L' U R2 U R U R' U' R' U' M' x' U R'
	O/O	L' U2 x' U L' U' L U2 R U' L' U2 R' U L2 L U2 L2 U' L' D L' U' L D' L2 U L' U L
	O/C	U' L' U' L U F R U2 R' U' x U2 L U L'
	O/A	U' L' U L D R U2 R' D' L u L2 u' L'
	OxO	U R2 u' R u' R2 B' D2 L2 U F'
	CxO	U' R' U2 R' F' R U R U' R' F U2 R
	OxC	R U2 R' U' R U R D r' U2 r D' R2



	C/C	L2 U' F L U2 L' U2 F' U L U' L
	C/A	R U' R' U2 L' U R U' L2 U' R' U L'
	C/O	B U L U' x U L' D' l U R' U' L F' L'
	A/A or CxC	U M' x' U' R U L' U2 R' U2 R
	A/C	R U2 R' U' R2 D R' U R D' R' U2 R'
	A/O	L' U' L' U R U' L2 U R' U2 L' U2 L
	O/O	R' U L' U R2 u R2 u' R2 U2 L R
	O/C	U L2 D l' U2 l D' L2 U' L U' L'
	O/A	F' U B L' D L' U L D' L U' x' L2 U' D
	OxO	U' R2 D R' U2 R D' R2 U' R U' R'
	CxO	L U L' U L' U' L' D L' U' L D' L U2 L
	OxC	R' U L U' R U2 L' U' R' U L U' M



	C/C	U' R U' R U F' U2 R' U2 R F U' R2
	C/A	R' U2 R' D' R U R' D R2 U' R' U2 R
	C/O	U L' U' L U' L2 u' B L2 B' u L2
	A/A or CxC	U' R U2 R' U2 L' U R U' M'
	A/C	L U L' U R D' R2 U' R2 D B2 R'
	A/O	U R' U' R U R' F R U R' U' R F' R2
	O/O	U L' U' L U' L2 D' L U2 L' D L2
	O/C	L' B' L U' R' U l D' L' U x U' L U F
	O/A	R D2 L' U' L U L' D' L2 D' R' U B2
	OxO	L' U' L U' R' F U' y L2 U L F L U' L'
	CxO	L U L' U L' B U' L2 U' L2 U B' U L
	OxC	F U R' U' R F' R' U2 L U' R U L' F' U2 R' U L U' R U2 L' F L U' L'

Congratulations! You just finished ZBLL! More than likely, however, you just scanned through the pages and ended up here. Well, this is the end. Hope you enjoyed the algorithms! Questions? Comments? Algorithm suggestions? Feel free to contact me about any problems or suggestions for the document. My email is nomiswanson@gmail.com and I read and respond to my mail very regularly.