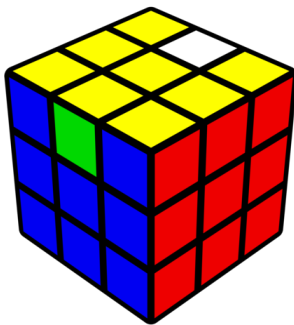


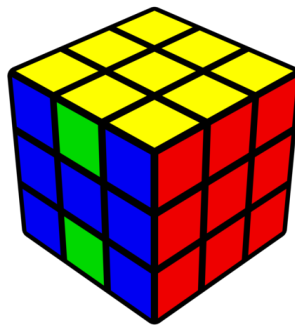
DFDB Recognition method for pauseless 4c

Before completing the 4b step of LSE, you will either have a cycle case (solving 3 edges), or 2e2e(solving 4 edges) case. You will use DFDB for figuring out cycle cases, as they cannot be figured out with only the information of the F and U faces.

The DFDB edges in the cube examples are the green white and blue white edges, because when the cube is solved that is where the edges will be. If you were to have a blue yellow first block and a green yellow second block, the DFDB edges would be the red yellow and orange yellow edges.

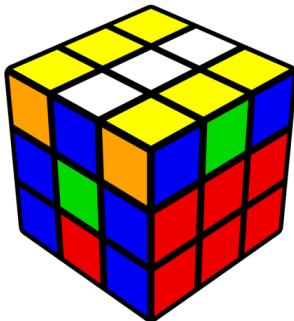


Cycle

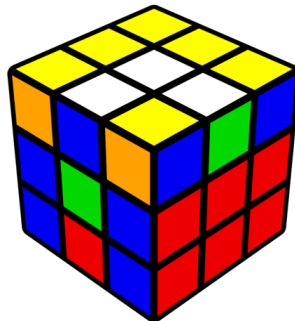


2e2e

You can see if you are getting a cycle or 2e2e case right before you insert ULUR edges with M2 (also M' U2 M'/M U2 M' insertions) by looking at the U face, and seeing if the DFDB edges are opposite or adjacent.



We can tell we are getting a 2e2e case here right before we insert ULUR, as the DFDB edges are opposite to each other



This case is a cycle case, because the DFDB are adjacent before we insert ULUR

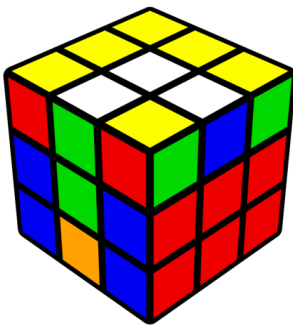
Everything said after here is within the context of cycle cases.

Matching and non matching centers

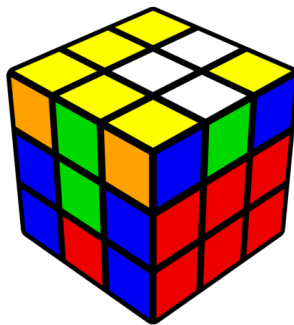
When you insert ULUR edges, you need to deduce whether you have a matching center case, or non-matching center case. This is because these two cases use different rules on what you do.

Matching center cases are when the DFDB edge on the M slice, matches with either the front or back center. Non matching center cases are when the DFDB edge on the M slice does not match.

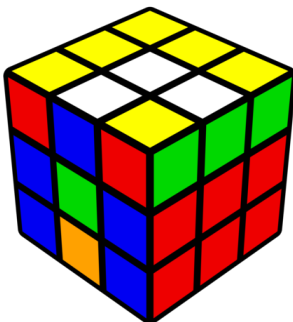
When you have a DFDB cycle case, only one edge will be on the M slice.



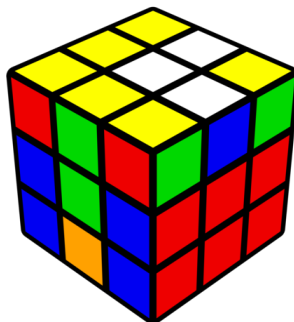
The DFDB edge which is on the M slice (green white), is matching with the green center.



The DFDB edge which is on the M slice (blue white), is matching with the blue center. This is harder to see because you can't see blue center or blue white edge, so you have to deduce the piece info at the back using the info at the front.



The DFDB edge on the M slice (blue white) is not matching



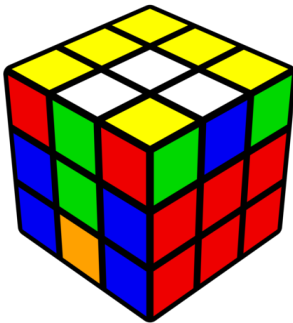
The DFDB edge on the M slice (green white) is not matching

How to solve matching center cases

In cases where it is a matching center case, after you do M^2 to insert ULUR, the DFDB edge which matches with the center will be on the bottom, and the other DFDB edge will be on the U layer. You must now match the colour of the U layer DFDB edge with the center its colour matches with, this will be done with a U or U' move. If it's done correctly, both DFDB edges should be matching with their corresponding center.

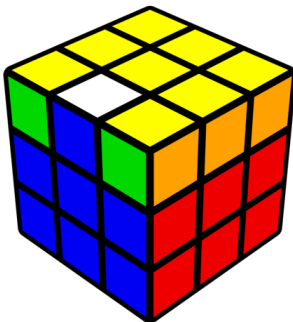
Another way of seeing this is AUFing so that the DFDB pieces are opposite to each other.

After this, the way to finish is to literally solve the DFDB edge which is on top, using ideas like $M' U^2 M$ (a common trigger in 4b used to swap edges) and the rest of the cube will either be solved or have an AUF. You might also have a case where the solution is only 3 moves to finish, which can be done intuitively (such as $M U^2 M$, $M' U^2 M'$, $M' U^2 M$, all these can be figured out intuitively, and eventually will just be instinct).



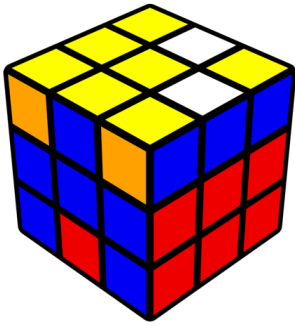
Setup: $M' U^2 M U' M^2$

We can see that it is a matching center case, as the DFDB edge on the M slice is matching with its center, and that the other DFDB edge is blue, so after M^2 , we want it to be matching with the blue center, so we would do a U move after the M^2



You should have this. Now we want to solve the last DFDB edge. We would do it by doing $M' U^2 M$

You could also try starting off the setup with a U2 and you would use the exact same process, but have an AUF at the end.

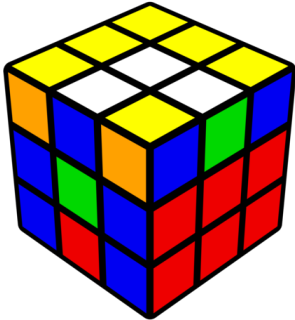


Setup: M U2 M U M2

We can deduce that the center at the back is green, and the DFDB edge at the back is also green, so it's a matching center case. We would do M2 to insert ULUR edges and then do a U' move to AUF to the other DFDB edge to be matching with its center. We now have a case we could easily finish intuitively with M' U2 M'.

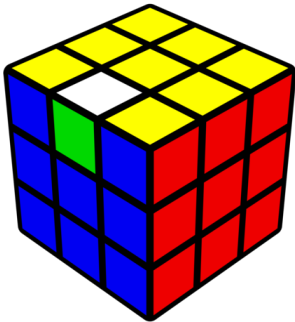
How to solve non matching center cases

Non matching center cases use different rules to matching center cases. First, the AUF you do after M2 to solve ULUR, must always solve the corners. Secondly, you need to be tracking the position the DFDB edges end up in. It will look something like this:



Setup: M2 U2 M U2 M U' M2

M2 to insert ULUR. Notice how the blue white DFDB edge goes to BD after M2.

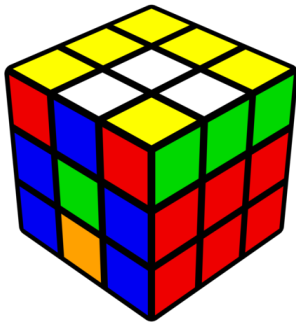


U to solve corners. Also we are tracking the position of DFDB edges. Green white DFDB edge goes to FU. DFDB edges are now at BD and FU.

After you insert ULUR and solve corners with U or U' and understand where DFDB is positioned, you need to figure out if DFDB are opposite, or stacked.

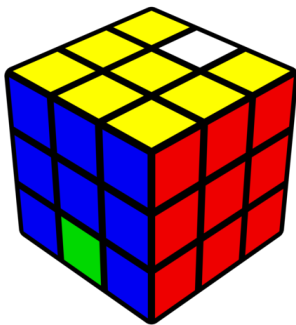
Stacked DFDB, are when the two DFDB edges are on top of each other. Opposite DFDB, are when the two DFDB edges are not on top of each other. In the example I previously gave, the DFDB edges are on FU and BD, so they are not on top of each other and therefore are opposite. If the edges were for example on FU and FD, or BU and BD the edges would be stacked.

If you have stacked DFDB, simply do M2 U2. This reduces it into a matching center case and you should now be able to solve the rest intuitively.

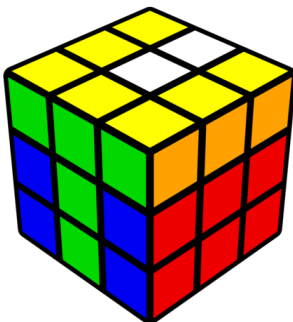


Setup: M U2 M U2 M2 U M2

We can see M2 to insert ULUR, and U' after to solve corners, and after M2 U', the edges are at BU/BD so they are stacked.

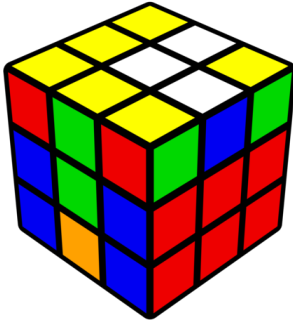


According to the rule of stacked cases, we must now do M2 U2.



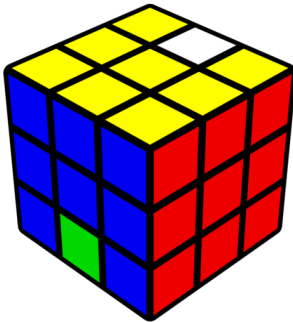
We are now left with a case from matching centers you should know.

If you have opposite DFDB, it's slightly more complicated. After M2 and either U or U' to solve corners,



Setup: M2 U2 M' U2 M' U M2

M2 and then U' to solve ULUR and corners, and DFDB ends up in FD and BU, so the edges are opposite. We can tell all of that from this position.



The rest is by XtremeCubez, sub to him [here](#)

Now we need to either do a M or M' and the reason we do this is to get whichever dfdb piece which doesn't match it's center to the top. so here you can see the dfdb edge on BU doesn't match its center. So to get it on the top we do a M move, after this you need to do U2 irrespective of whether you do M or M'. After doing U2 you can see that the dfdb edge now forms a line now you do either M or M' to get that line on the top, here the line is formed on the back so we do an M move to get it to the top. After that you just need to do U2 M2.

Let's take another example:



Setup: M2 U2 M U2 M U M2

M2 and then U' to solve ULUR and corners, and DFDB ends up in FU and BD, so the edges are opposite. We can tell all of that from this position.



We need to get whichever dfdb piece which doesn't match it's center to the top.so here you can see the dfdb edge on FU doesn't match its center. So to get it on the top we do a M' move,after this we do U2 . After doing U2 you can see that the dfdb edge now forms a line ,here the line is formed in the front so we do an M' move to get it to the top.After that you just need to do U2 M2 .