

F^2

The image shows three 3x3 Rubik's cubes in a sequence, illustrating the commutator sequence $U'F'UF URU'R'$. Each cube has a white top face, a yellow bottom face, and gray side faces. The sequence shows how the sequence of moves affects the positions of the red and green faces.

- Cube 1 (Initial State):** The front face (F) is white, the back face (B) is yellow, the right face (R) is red, and the left face (L) is green.
- Cube 2 (After $U'F'UF$):** The front face (F) is white, the back face (B) is yellow, the right face (R) is red, and the left face (L) is green. The sequence $U'F'UF$ has been applied.
- Cube 3 (After $URU'R'$):** The front face (F) is white, the back face (B) is yellow, the right face (R) is red, and the left face (L) is green. The sequence $URU'R'$ has been applied.

Below each cube is a blue rounded rectangle containing the sequence of moves:

- Under Cube 1: $U'F'UF$
 $URU'R'$
- Under Cube 2: $URU'R'$
 $U'F'UF$
- Under Cube 3: $RU^2R'U$
 $RU^2R'U$
 $F'U'F$

Three 3x3 grids illustrating the sequence of moves for the F2L algorithm. The first grid shows the initial state with a yellow center and a blue edge. The second grid shows the result of the first move sequence. The third grid shows the result of the second move sequence.

Below each grid is a sequence of moves in a blue box:

- First grid: $F R U R' U' F'$
 $f R U R' U' f'$
- Second grid: $F R U R' U' F'$
- Third grid: $f R U R' U' f'$

turn U that one edge is in right spot (not two)
put it in back

$R'U^2RUR'U$

do algorithm once or twice

turn cube X^2 that white is on top
look at corner front-right-bottom

- * put in temporary place: RUR'
- * turn D until target position is in front-right-bottom position
- * put corner back: $RU'R'$
- * choose another yellow corner and turn D until it is in front-right-bottom
- * repeat steps until correct permutation

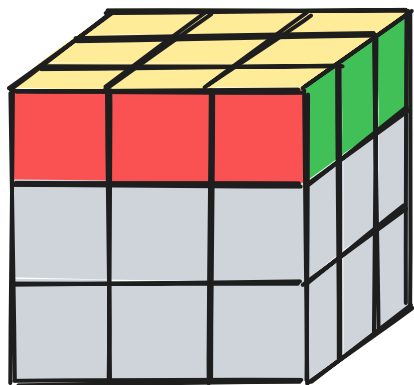
turn cube X^2 that white is on top

- * put misorientated corner in front-right-bottom
- * after doing algorithm, turn D for next corner
- * repeat steps until correct orientation

[illegible]

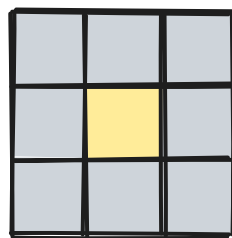
x: like turning R
y: like turning U
z: like turning F

3x3 LAST LAYER

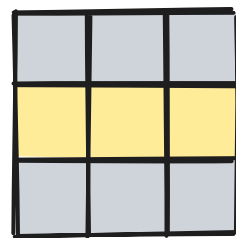


OLL algorithms

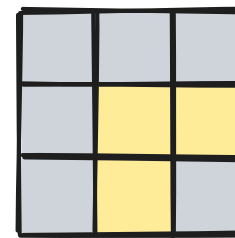
1)



$F R U R' U' F'$
 $f R U R' U' f'$

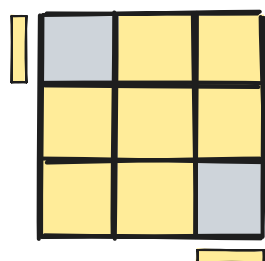


$F R U R' U' F'$

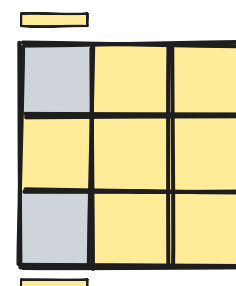


$f R U R' U' f'$

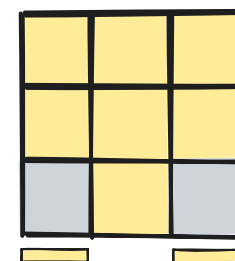
2)



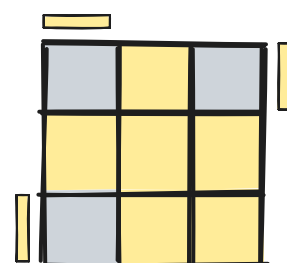
$F' r U R' U' L' U l$



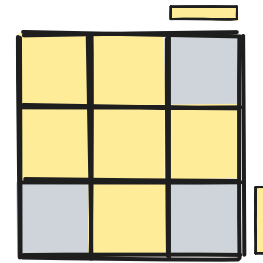
$r U R' U' L U l F'$



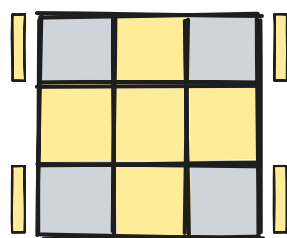
$R^2 D R' U^2 R D' R' U^2 R'$



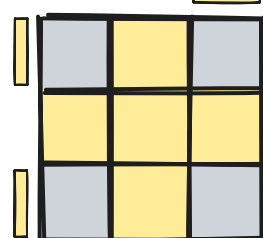
$R' U^2 R U R' U R$



$R' U' R U' R' U^2 R$



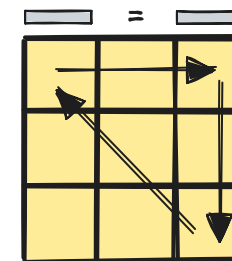
$R U R' U R U' R' U R U^2 R'$



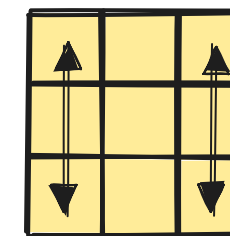
$R U^2 R^2 U' R^2 U' R^2 U^2 R$

PLL algorithms

3)

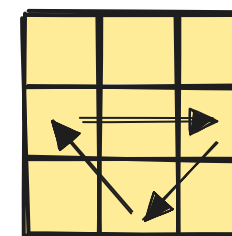


$x R' U R' D^2$
 $R U' R' D^2 R^2 x'$

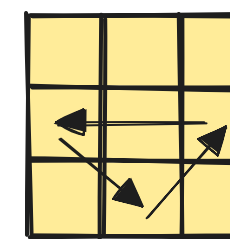


$x' R U' R' D R U R' D'$
 $R U R' D R U' R' D' x$

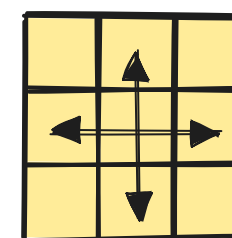
4)



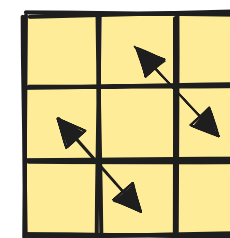
$R^2 U R U R' U' R' U' R' U R'$



$R^2 U' R' U' R U R U R U R$



$M^2 U M^2 U^2 M^2 U M^2$



$M^2 U' M^2 U'$
 $M' U^2 M^2 U^2 M'$