F2L Algorithms (First 2 Layers)

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Images sourced from Conrad Rider's VisualCube - http://cube.crider.co.uk/visualcube.php

Algorithm Presentation Format

Suggested algorithm here
Alternative algorithms here

Set up F2L pair // Solve F2L pair

It is not recommended to learn any of these algorithms before learning intuitive F2L.

The black part of each algorithm sets up the pieces to a basic insertion case, which is then written in blue.

Basic Inserts

U (R U' R')

y' (R' U' R)
y (L' U' L)

y' U' (R' U R)
y U' (L' U L)

(R U R')

F2L Case 1

U' (R U' R' U) y' (R' U' R)
y' U (R' U' R U') (R' U' R)

U' (R U R' U) (R U R')

U' (R U2' R' U) y' (R' U' R)
U' (R U2' R') d (R' U' R)

R' U2' R2 U R2' U R
y' U (R' U2 R) U' y (R U R')
(R U' R' U) (R U' R') U2 (R U' R')

y' U (R' U R U') (R' U' R)

U' (R U' R' U) (R U R')

F2L Case 2

(U' R U R') U2 (R U' R')

y' (U R' U' R) U2' (R' U R)
d (R' U' R) U2' (R' U R)
Note – (y' U) and (d) are interchangeable

U' (R U2' R') U2 (R U' R')

y' U (R' U2 R) U2' (R' U R)
d (R' U2 R) U2' (R' U R)

F2L Case 3

U (R U2 R') U (R U' R')

y' U' (R' U2 R) U' (R' U R)

U2 (R U R' U) (R U' R')
(R U' R') U2 (R U R')

y' U2 (R' U' R) U' (R' U R)
F' L' U2 L F
Note – The second algorithm is fewer moves, but less intuitive and less finger-friendly.

Incorrectly Connected Pieces

y' (R' U R) U2' y (R U R')
(R U R') U2 (R U' R' U) (R U' R')

(R U' R' U2) y' (R' U' R)
U F (R U R' U') F' (U R U' R')

(R U2 R') U' (R U R')

y' (R' U2 R) U (R' U' R)

U (R U' R' U') (R U' R' U) (R U' R')
(R U R' U2') (R U R' U') (R U R')

y' U' (R' U R U) (R' U R U') (R' U R)
F (U R U' R') F' (R U' R')

Corner in Place, Edge in U Face

U' F' (R U R' U') R' F R
R' F' R U (R U' R') F

U (R U' R') U' (F' U F)
U (R U' R') (F R' F' R)

(R U' R' U) (R U' R')

y' (R' U R U') (R' U R)

y' (R' U' R U) (R' U' R)
(R' F R F') U (R U' R')

(R U R' U') (R U R')

Edge in Place, Corner in U face

(R U' R' U) y' (R' U R)
U' (R' F R F') (R U' R')

(U R U' R') (U R U' R') (U R U' R')

(U' R U' R') U2 (R U' R')

U (R U R') U2 (R U R')

(U' R U R') U y' (R' U' R)

U (F' U' F) U' (R U R')

Edge and Corner in Place

Solved Pair

(R U' R') d (R' U2 R) U2' (R' U R)

(R U' R' U') R U R' U2 (R U' R')
(R U R' U') R U2 R' U' (R U R')

(R U' R' U) (R U2' R') U (R U' R')
(R U R') U2' (R U' R' U) (R U R')

(F' U F) U2 (R U R' U) (R U' R')
(R U' R') F (R U R' U') F' (R U' R')

(R U R' U') (R U' R') U2 y' (R' U' R)

Notation


R


R'


R2


r


r'


x


y


U


U'


U2


u


u'


z


M


F


F'


L


L'


B


B'


D


D'