This program is a small 3D rubik-cube solver based on OpenGL,

Vc++6.0(really too old ☺)

The main purpose is to teach people how to solve a 3 layer cube by layer first method.

And this program can show cube any size in theoretically.

But it only solve 3 layer now.

1.Things to do next:

(1)Add the Thistlethwaite method to show how computer solve a cube (The source code is not write by me, but the Author does not response,hope he will reponse soon ), and may be some method can solve a cube in least step.

(2)Make the program more effectively,

①One cube has n\*n\*n-(n-1)\*(n-1)\*(n-1) blocks, but in the program use n\*n\*n blocks, it can be improved.

②The 3D position of each block is stored in the block data structure (vertex vet[8];), but in fact the program can show one cube each time , the data structure is waste of space .

(3)To teach people how to solve the cube, the program should deal with the cube pictures , store the real world cube state in the program and show the solution, make the program a real rubik solver.

(4)For a any size cube , the rotation of each block should be considered, but the OpenGL selection mode always has bug I cannot fixed , I cannot select one block to rotate , Could you help me?

(5)The UI of the program is really bad ,I think , hope to improve in the future.

2.Data structure

For a cube ,

FACE:

six faces , mark up 0 , front 1 , right 2 , down 3 , back 4 , left 5.

INNER = 6;

COLOR:

Six colors

int C\_UP = 0, C\_DOWN = 3, C\_FRONT = 1, C\_BACK = 4, C\_RIGHT = 2, C\_LEFT = 5, C\_INNER = 6;

BLOCK VERTEX:

one block contain 8 vertex

int Vet\_Index[6][4] = {

0,1,2,3,

0,1,5,4,

1,2,6,5,

4,5,6,7,

2,3,7,6,

0,3,7,4

};

Use vet\_index to draw each block six faces.

Four main class.CrubikCube

①CRubikCube

Contain all the block all the data,

A: void **Rotate**(int from , int to , int column = -1);

rotate one column from face from to to.

If column=-1,it means to rotate all the cube .

B: void **SingleFmlOper**( char \*fml );

This is to execute one operator for a cube “**UDLRFBXYZ**”

C: int **SelectBlock**(int cx , int cy,float fAspect );

cx,cy is the coordinate of the curse , to get the selected block ,but the function does not act right.

D: Formula **Solve…**();

Get a solution of a cube from current state to the next step.

The down solution is to be improve.

E: **Execute**… ()

This function is to execute the formula store in the cube.

But I think the formula is to pass as parameter, To be improve.

②CRubikBlock

Each block contains six face.

float x, y, z; store the position of the block.

int layer, row, column;

A:void **Rotate**(CRubikBlock &rb , int axes , int angle ) ;

in the function ,first rotate the position of one block ,by a matrix

then rotate the six face of the block.

B: inline int **Color**(int face) return the color of face.

③CRubikFace

Six faces , int x, y, z; indicate the position of each face.

Up (0,0,1) Down (0,0,-1)

Left(-1,0,0) Right(1,0,0)

Front(0,1,0) Back(0,-1,0)

④Formula

“UDLRFBXYZ” and “’”,”2”

Execute the formula step by step.

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