

(2021.7.26)

版本：拼图2.0

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完善了：解决没法拼回原图的情况（bug在`map[y][x]`这里,y是在前面！）

mainwindow.h

```
#ifndef MAINWINDOW_H

#define MAINWINDOW_H

#include <QMainWindow>

QT_BEGIN_NAMESPACE

namespace Ui { class MainWindow; }

QT_END_NAMESPACE

class MainWindow : public QMainWindow

{

    Q_OBJECT
```

```
public:
```

```
int map[3][3]; //注意前面是y, 后面才是x!!!!!!
```

```
int coord[2]; //空位置的x,y坐标
```

```
QString pos; //图片位置
```

```
int start; //标记是否开始游戏
```

```
MainWindow(QWidget *parent = nullptr);
```

```
~MainWindow();
```

```
void mousePressEvent(QMouseEvent *event); //鼠标点击事件
```

```
void move(int x,int y); //移动
```

```
void move_f(int i); //有方向的移动
```

```
void upset(); //打乱
```

```
void showpicture(); //显示
```

```
void first(); //初始化
```

```
QPixmap img1,img2,img3,img4,img5,img6,img7,img8,img0;
```

```
private slots:
```

```
void on_pushButton_clicked();
```

```
void on_pushButton_2_clicked();
```

```
void on_pushButton_4_clicked();
```

```
void on_pushButton_3_clicked();
```

```
private:
```

```
Ui::MainWindow *ui;
```

```
};
```

```
#endif // MAINWINDOW_H
```

main.cpp

```
#include "mainwindow.h"
#include <QApplication>

int main(int argc, char *argv[])

{

    QApplication a(argc, argv);

    MainWindow w;

    w.show();

    return a.exec();

}
```

mainwindow.cpp

```
#include "mainwindow.h"

#include "ui_mainwindow.h"

#include <QLabel> //标签

#include <QImage>

#include <QMessageBox> //信息框

#include <QMouseEvent> //鼠标点击事件
```

```
#include <iostream> //swap

#include <math.h> //abs

#include <QFileDialog> //文件

#include<windows.h> //sleep

const int N = 3;


MainWindow::MainWindow(QWidget *parent)

: QMainWindow(parent)

, ui(new Ui::MainWindow)

{

    start = 0; //游戏未开始


    ui->setupUi(this);


    //添加图片资源: https://www.cnblogs.com/lcgbk/p/13259754.html

    pos = ":/img/tup.jpg";


    //pos = "C:\\Users\\czh\\Desktop\\tup.jpg";
```

```
first();
```

```
}
```

```
void MainWindow::move(int x,int y){
```

```
int& c_x = coord[0], & c_y = coord[1];
```

```
if( c_x == x ){
```

```
if( abs(c_y - y ) == 1 ){
```

```
std::swap(map[c_y][c_x],map[y][x]);
```

```
c_x = x;
```

```
c_y = y;
```

```
}
```

```
}else if( c_y == y ){
```

```
if( abs(c_x - x ) == 1 ){
```

```
std::swap(map[c_y][c_x],map[y][x]);
```

```
c_x = x;
```

```
c_y = y;
```

```
}
```

```
}
```

```
}
```

```
void MainWindow::move_f(int i) {
```

```
    int& x = coord[0], & y = coord[1];
```

```
    if (i == 1) { //上(0在下，和上面的换)
```

```
        if (y != 0) {
```

```
            std::swap(map[y][x], map[y-1][x]);
```

```
            y--;
```

```
        }
```

```
    }
```

```
else if (i == 2) { //下 (0在上, 和下面的换)
```

```
if (y != N - 1) {
```

```
std::swap(map[y][x], map[y+1][x]);
```

```
y++;
```

```
}
```

```
}
```

```
else if (i == 3) { //左
```

```
if (x != 0) {
```

```
std::swap(map[y][x], map[y][x-1]);
```

```
x--;
```

```
}
```

```
}
```

```
else if (i == 4) { //右
```

```
if (x != N - 1) {
```

```
std::swap(map[y][x], map[y][x+1]);
```



```
x++;
```

```
}
```

```
}
```

```
}
```

```
void MainWindow::upset()
```

```
{
```

```
    //打乱300次
```

```
    for (int i = 0; i < 300; i++) {
```

```
        //Sleep(1000);
```

```
        move_f(rand() % 4 + 1);
```

```
        //showpicture();
```

```
    }
```

```
}
```

```
void MainWindow::showpicture(){

    //QString tmp_label = QString("QLabel_%1").arg(k);

    //QString tmp_img = QString("img%1").arg(k);

    //QLabel *p = QLabel::findChild("label_3");

    //QLabel* p = QWidget::findChild<QLabel*>("QLabel_3");

    //QPixmap *imgd = QWidget::findChild<QPixmap*>("img6");


    int k = 3;


    for(int j = 0 ; j < N ; j++ ){

        for(int i = 0 ; i < N ; i++ ){

            QString tmp_label = QString("label_%1").arg(k);

            //tmp_img = QString("img%1").arg(map[j][i]);

            //根据控件名得到控件指针
```

```
QLabel *p = QWidget::findChild<QLabel*>(tmp_label);

if( map[j][i] == 0 ){

p->setPixmap(img0);

}else if( map[j][i] == 1 ){

p->setPixmap(img1);

}else if( map[j][i] == 2 ){

p->setPixmap(img2);

}else if( map[j][i] == 3 ){

p->setPixmap(img3);

}

else if( map[j][i] == 4 ){

p->setPixmap(img4);

}

else if( map[j][i] == 5 ){

p->setPixmap(img5);

}
```

```
else if( map[j][i] == 6 ){  
  
    p->setPixmap(img6);  
  
}  
  
else if( map[j][i] == 7 ){  
  
    p->setPixmap(img7);  
  
}  
  
else if( map[j][i] == 8 ){  
  
    p->setPixmap(img8);  
  
}  
  
    k++;  
  
}  
  
}
```

```
}
```

```
//初始化
```

```
void MainWindow::first(){
```

```
    //初始化拼图
```

```
    int num = 1;
```

```
    for (int i = 0; i < N; i++) {
```

```
        for (int j = 0; j < N; j++) {
```

```
            map[i][j] = num;
```

```
            num++;
```

```
        }
```

```
    }
```

```
    map[2][2] = 0;
```

```
    coord[0] = 2, coord[1] = 2;
```

```
    // Qt显示图片
```

(<https://blog.csdn.net/linuxweiyh/article/details/76683479>)

```
//ui->d_label->setScaledContents(true);
```

```
QPixmap *pixmap = new QPixmap(pos);
```

```
pixmap->scaled(ui->label->size(), Qt::KeepAspectRatio);
```

```
ui->label_2->setScaledContents(true);
```

```
ui->label_2->setPixmap(*pixmap);
```

```
//空白图片
```

```
QPixmap *pixmap3 = new  
QPixmap("C:\\Users\\czh\\Desktop\\blank1.jpg");
```

```
pixmap3->scaled(ui->label->size(), Qt::KeepAspectRatio);
```

```
img0 = pixmap3->copy(0, 0, pixmap3->width(), pixmap3->  
>height());
```

```
//ui->label_12->setScaledContents(true);
```

```
QPixmap *pixmap1 = new QPixmap(pos);

pixmap1->scaled(ui->label->size()*2, Qt::KeepAspectRatio);

//切割图片

img1 = pixmap1->copy(0, 0, pixmap1->width()/3, pixmap1->height()/3);

img2 = pixmap1->copy(pixmap1->width()/3, 0, pixmap1->width()/3, pixmap1->height()/3);

img3 = pixmap1->copy(pixmap1->width()/3*2, 0, pixmap1->width(), pixmap1->height()/3);

img4 = pixmap1->copy(0, pixmap1->height()/3, pixmap1->width()/3, pixmap1->height()/3);

img5 = pixmap1->copy(pixmap1->width()/3, pixmap1->height()/3, pixmap1->width()/3, pixmap1->height()/3);

img6 = pixmap1->copy(pixmap1->width()/3*2, pixmap1->height()/3, pixmap1->width(), pixmap1->height()/3);

img7 = pixmap1->copy(0, pixmap1->height()/3*2, pixmap1->width()/3, pixmap1->height());

img8 = pixmap1->copy(pixmap1->width()/3, pixmap1->height()/3*2, pixmap1->width()/3, pixmap1->height());
```

```
ui->label_3->setScaledContents(true);
```

```
ui->label_4->setScaledContents(true);
```

```
ui->label_5->setScaledContents(true);
```

```
ui->label_6->setScaledContents(true);
```

```
ui->label_7->setScaledContents(true);
```

```
ui->label_8->setScaledContents(true);
```

```
ui->label_9->setScaledContents(true);
```

```
ui->label_10->setScaledContents(true);
```

```
ui->label_11->setScaledContents(true);
```

```
ui->label_3->setPixmap(img1);
```

```
ui->label_4->setPixmap(img2);
```

```
ui->label_5->setPixmap(img3);
```

```
ui->label_6->setPixmap(img4);
```

```
ui->label_7->setPixmap(img5);
```

```
ui->label_8->setPixmap(img6);
```



```
ui->label_8->setPixmap(img6);

ui->label_9->setPixmap(img7);

ui->label_10->setPixmap(img8);

ui->label_11->setPixmap(img0);
```

```
}
```

```
MainWindow::~MainWindow()
```

```
{
```

```
    delete ui;
```

```
}
```

```
//开始游戏
```

```
void MainWindow::on_pushButton_clicked()
```

```
{

    start = 1; //标记为开始游戏

    MainWindow::upset();

    MainWindow::showpicture();

}


//使用说明

void MainWindow::on_pushButton_2_clicked()

{

    //信息框（https://www.cnblogs.com/zhoug2020/p/10094855.html，注意加上头文件）

    QMessageBox::information(NULL, "游戏说明", "介绍：\n拼图游戏是一张图片分为若干块，打乱次序，将其中一块变为空白块，其只能与相邻块互换，发挥你的聪明才智来将其复原。\n操作说明：\n用鼠标点击空白块附近的图即将该图移到空白块的位置。");

}
```

```
//退出游戏按钮
```

```
void MainWindow::on_pushButton_4_clicked()
```

```
{
```

```
    exit(1);
```

```
}
```

```
void MainWindow::mousePressEvent(QMouseEvent *event)
```

```
{
```

```
    //鼠标点击事件
```

```
    (https://www.cnblogs.com/aiguona/p/9999507.html)
```

```
    // 如果是鼠标左键按下
```

```
    if(event->button() == Qt::LeftButton)
```

```
{
```

```
    /*
```

```
    if (i == 1) { //向下 //上(0在下，和上面的换)
```

```
    else if (i == 2) { //向上 //下(0在上，和下面的换)
```

```
    else if (i == 3) { //向右 //左(0在右，和左面的换)
```

```
else if (i == 4) { //向左 //右(0在左, 和右面的换)

*/

    if (ui->label_3->geometry().contains(this-
>mapFromGlobal(QCursor::pos())))

    {

        if( start == 0 ){

            QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

        }else{

            //0 0

            move(0,0);

            showpicture();

        }

    }

    else if (ui->label_4->geometry().contains(this-
>mapFromGlobal(QCursor::pos())))

    {

        if( start == 0 ){
```

```
QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

}else{

//1 0

move(1,0);

showpicture();

}

}

else if (ui->label_5->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

if( start == 0 ){

QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

}else{

//2 0

move(2,0);

showpicture();

}
```

```
}

}

else if (ui->label_6->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

if( start == 0 ){

QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

}else{

//0 1

move(0,1);

showpicture();

}

}

else if (ui->label_7->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

if( start == 0 ){
```

```
QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

}else{

// 1 1

move(1,1);

showpicture();

}

}

else if (ui->label_8->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

if( start == 0 ){

QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

}else{

// 2 1

move(2,1);

showpicture();

}
```

```
}

else if (ui->label_9->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

if( start == 0 ){

QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

}else{

// 0 2

move(0,2);

showpicture();

}

}

else if (ui->label_10->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

if( start == 0 ){

QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");
```



```
}else{

// 1 2

move(1,2);

showpicture();

}

}

else if (ui->label_11->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

if( start == 0 ){

QMessageBox::information(NULL, "提示", "请先点击开始游戏按钮");

}else{

// 2 2

move(2,2);

showpicture();

}
```

```
}

}

}

}

void MainWindow::on_pushButton_3_clicked()

{

    //(文件对话框: http://c.biancheng.net/view/1870.html)

    //选择单个文件

    QString curPath=QDir::currentPath();//获取系统当前目录

    //获取应用程序的路径

    QString dlgTitle="请选择图片文件"; //对话框标题

    QString filter="图片文件(*.jpg *.gif *.png)"; //文件过滤器

    QString
aFileName=QFileDialog::getOpenFileName(this,dlgTitle,curPath,filter);

    pos = aFileName;
```

```
//qDebug() <<pos;

first();

}
```

mainwindow.ui

```
<?xml version="1.0" encoding="UTF-8"?>

<ui version="4.0">

    <class>MainWindow</class>

    <widget class="QMainWindow" name="MainWindow">

        <property name="geometry">

            <rect>

                <x>0</x>

                <y>0</y>

                <width>652</width>

                <height>415</height>

            </rect>
```

```
</property>

<property name="windowTitle">

<string>拼图 —by: orall</string>

</property>

<widget class="QWidget" name="centralwidget">

<widget class="QPushButton" name="pushButton">

<property name="geometry">

<rect>

<x>500</x>

<y>200</y>

<width>93</width>

<height>28</height>

</rect>

</property>

<property name="font">

<font>
```

```
<family>华文琥珀</family>

</font>

</property>

<property name="text">

<string>开始游戏</string>

</property>

</widget>

<widget class="QPushButton" name="pushButton_2">

<property name="geometry">

<rect>

<x>500</x>

<y>240</y>

<width>93</width>

<height>28</height>

</rect>

</property>
```

```
<property name="font">

<font>

<family>华文琥珀</family>

</font>

</property>

<property name="text">

<string>游戏说明</string>

</property>

</widget>

<widget class="QLabel" name="label">

<property name="geometry">

<rect>

<x>30</x>

<y>20</y>

<width>361</width>

<height>31</height>
```

```
</rect>

</property>

<property name="font">

  <font>

    <family>华文新魏</family>

    <pointsize>19</pointsize>

    <weight>75</weight>

    <italic>false</italic>

    <bold>true</bold>

  </font>

</property>

<property name="layoutDirection">

  <enum>Qt::LeftToRight</enum>

</property>

<property name="styleSheet">

  <string notr="true"/>
```

```
</property>

<property name="text">

<string>拼图1.0 —by: orall</string>

</property>

</widget>

<widget class="QPushButton" name="pushButton_3">

<property name="geometry">

<rect>

<x>500</x>

<y>280</y>

<width>93</width>

<height>28</height>

</rect>

</property>

<property name="font">

<font>
```



```
<family>华文琥珀</family>
```

```
</font>
```

```
</property>
```

```
<property name="text">
```

```
<string>导入图片</string>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_2">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>470</x>
```

```
<y>50</y>
```

```
<width>121</width>
```

```
<height>121</height>
```

```
</rect>
```

```
</property>
```

```
<property name="font">
```

```
<font>
```

```
<family>方正舒体</family>
```

```
</font>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 3px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_3">
```

```
<property name="geometry">
```

```
<rect>

<x>40</x>

<y>80</y>

<width>90</width>

<height>90</height>

</rect>

</property>

<property name="styleSheet">

<string notr="true">border-width: 2px;

border-style: solid;

border-color: rgb(0,0,0)</string>

</property>

<property name="text">

<string/>

</property>

</widget>
```

```
<widget class="QLabel" name="label_4">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>130</x>
```

```
<y>80</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_5">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>220</x>
```

```
<y>80</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_7">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>130</x>
```

```
<y>170</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_6">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>40</x>
```

```
<y>170</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width:2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_8">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>220</x>
```

```
<y>170</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```



```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_10">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>130</x>
```

```
<y>260</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_9">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>40</x>
```

```
<y>260</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_11">
```

```
<property name="geometry">
```

```
<rect>

<x>220</x>

<y>260</y>

<width>90</width>

<height>90</height>

</rect>

</property>

<property name="styleSheet">

<string notr="true">border-width: 2px;

border-style: solid;

border-color: rgb(0, 0, 0)</string>

</property>

<property name="text">

<string/>

</property>

</widget>
```

```
<widget class="QPushButton" name="pushButton_4">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>500</x>
```

```
<y>320</y>
```

```
<width>93</width>
```

```
<height>28</height>
```

```
</rect>
```

```
</property>
```

```
<property name="font">
```

```
<font>
```

```
<family>华文琥珀</family>
```

```
</font>
```

```
</property>
```

```
<property name="text">
```

```
<string>退出游戏</string>
```

```
</property>

</widget>

</widget>

<widget class="QMenuBar" name="menubar">

  <property name="geometry">

    <rect>

      <x>0</x>

      <y>0</y>

      <width>652</width>

      <height>26</height>

    </rect>

  </property>

</widget>

<widget class="QStatusBar" name="statusbar"/>

</widget>

<resources/>
```

```
<connections/>
```

```
</ui>
```

(2021.7.22)

版本：拼图1.0

作者：orall

时间：2021.7.22

版本特点：基本实现了GUI的拼图

待完善：1.后续可以完成44, 55

2.存在没法拼回原图的情况

关键代码

Qt显示图片

```
// Qt显示图片  
(https://blog.csdn.net/linuxweiyh/article/details/76683479)  
  
QString pos = "C:\\\\Users\\czh\\Desktop\\tup.jpg";  
  
QPixmap *pixmap = new QPixmap(pos);  
  
pixmap->scaled(ui->label->size(), Qt::KeepAspectRatio);  
  
ui->label_2->setScaledContents(true);  
  
ui->label_2->setPixmap(*pixmap);
```

Qt切割图片

```
//切割图片
img1 = pixmap->copy(0, 0, pixmap->width()/3, pixmap-
>height()/3);
ui->label_3->setPixmap(img1);
```

mainwindow.h

```
#ifndef MAINWINDOW_H

#define MAINWINDOW_H

#include <QMainWindow>

QT_BEGIN_NAMESPACE

namespace Ui { class MainWindow; }

QT_END_NAMESPACE

class MainWindow : public QMainWindow

{

    Q_OBJECT
```



```
public:
```

```
int map[3][3];
```

```
int coord[2]; //空位置的x,y坐标
```

```
QString pos; //图片位置
```

```
MainWindow(QWidget *parent = nullptr);
```

```
~MainWindow();
```

```
void mousePressEvent(QMouseEvent *event); //鼠标点击事件
```

```
void move(int x,int y); //移动
```

```
void move_f(int i); //有方向的移动
```

```
void upset(); //打乱
```

```
void showpicture(); //显示
```

```
void first(); //初始化
```

```
QPixmap img1,img2,img3,img4,img5,img6,img7,img8,img0;
```

```
private slots:
```

```
void on_pushButton_clicked();
```

```
void on_pushButton_2_clicked();
```

```
void on_pushButton_4_clicked();
```

```
void on_pushButton_3_clicked();
```

```
private:
```

```
Ui::MainWindow *ui;
```

```
};
```

```
#endif // MAINWINDOW_H
```

main.cpp

```
#include "mainwindow.h"

#include <QApplication>

int main(int argc, char *argv[])

{

    QApplication a(argc, argv);

    MainWindow w;

    w.show();

    return a.exec();

}
```

mainwindow.cpp

```
#include "mainwindow.h"

#include "ui_mainwindow.h"
```

```
#include <QLabel> //标签
```

```
#include <QImage>
```

```
#include <QMessageBox> //信息框
```

```
#include <QMouseEvent> //鼠标点击事件
```

```
#include <iostream> //swap
```

```
#include <math.h> //abs
```

```
#include <QFileDialog>
```

```
const int N = 3;
```

```
MainWindow::MainWindow(QWidget *parent)
```

```
    : QMainWindow(parent)
```

```
    , ui(new Ui::MainWindow)
```

```
{
```

```
    ui->setupUi(this);
```

```
    //添加图片资源: https://www.cnblogs.com/lcgbk/p/13259754.html
```

```
    pos = ":/img/tup.jpg";
```

```
pos = "/img/cup.jpg";

//pos = "C:\\Users\\czh\\Desktop\\tup.jpg";

first();

}

void MainWindow::move(int x,int y){

    int& c_x = coord[0], & c_y = coord[1];

    if( c_x == x ){

        if( abs(c_y - y ) == 1 ){

            std::swap(map[c_x][c_y],map[x][y]);

            c_x = x;

            c_y = y;

        }

    }else if( c_y == y ){

        if( abs(c_x - x ) == 1 ){
```

```
std::swap(map[c_x][c_y],map[x][y]);
```

```
c_x = x;
```

```
c_y = y;
```

```
}
```

```
}
```

```
}
```

```
void MainWindow::move_f(int i) {
```

```
    int& x = coord[0], & y = coord[1];
```

```
    if (i == 1) { //上(0在下，和上面的换)
```

```
        if (y != 0) {
```

```
            std::swap(map[x][y], map[x][y - 1]);
```

```
            y--;
```

```
        }
```

```
}
```

```
else if (i == 2) { //下（0在上，和下面的换）
```

```
    if (y != N - 1) {
```

```
        std::swap(map[x][y], map[x][y + 1]);
```

```
        y++;
```

```
    }
```

```
}
```

```
else if (i == 3) { //左
```

```
    if (x != 0) {
```

```
        std::swap(map[x][y], map[x - 1][y]);
```

```
        x--;
```

```
    }
```

```
}
```

```
else if (i == 4) { //右
```

```
    if (x != N - 1) {
```

```
if (x + 1 < N) {
```

```
    std::swap(map[x][y], map[x + 1][y]);
```

```
    x++;
```

```
}
```

```
}
```

```
}
```

```
void MainWindow::upset()
```

```
{
```

```
    //打乱300次
```

```
    for (int i = 0; i < 300; i++) {
```

```
        move_f(rand() % 4 + 1);
```

```
    }
```

```
}
```

```
void MainWindow::showpicture(){
```



```
int k = 3;

//QString tmp_label = QString("QLabel_%1").arg(k);

//QString tmp_img = QString("img%1").arg(k);

//QLabel *p = QLabel::findChild("label_3");

//QLabel* p = QWidget::findChild<QLabel*>("QLabel_3");

//QPixmap *imgd = QWidget::findChild<QPixmap*>("img6");


for(int j = 0 ; j < N ; j++ ){

for(int i = 0 ; i < N ; i++ ){

QString tmp_label = QString("label_%1").arg(k);

//tmp_img = QString("img%1").arg(map[i][j]);

//根据控件名得到控件指针

QLabel *p = QWidget::findChild<QLabel*>(tmp_label);

if( map[i][j] == 0 ){

p->setPixmap(img0);
```

```
p->setPixmap(img0);

}else if( map[i][j] == 1 ){

p->setPixmap(img1);

}else if( map[i][j] == 2 ){

p->setPixmap(img2);

}else if( map[i][j] == 3 ){

p->setPixmap(img3);

}

else if( map[i][j] == 4 ){

p->setPixmap(img4);

}

else if( map[i][j] == 5 ){

p->setPixmap(img5);

}

else if( map[i][j] == 6 ){

p->setPixmap(img6);

}
```



```
//初始化  
  
void MainWindow::first(){
```

```
    //初始化拼图
```

```
    int num = 1;
```

```
    for (int i = 0; i < N; i++) {
```

```
        for (int j = 0; j < N; j++) {
```

```
            map[i][j] = num;
```

```
            num++;
```

```
        }
```

```
    }
```

```
    map[2][2] = 0;
```

```
    coord[0] = 2, coord[1] = 2;
```

```
    // Qt显示图片
```

```
    (https://blog.csdn.net/linuxweiyh/article/details/76683479)
```

```
    //ui->d_label->setScaledContents(true);
```

```
QPixmap *pixmap = new QPixmap(pos);

pixmap->scaled(ui->label->size(), Qt::KeepAspectRatio);

ui->label_2->setScaledContents(true);

ui->label_2->setPixmap(*pixmap);


//空白图片

QPixmap *pixmap3 = new
QPixmap("C:\\Users\\czh\\Desktop\\blank1.jpg");

pixmap3->scaled(ui->label->size(), Qt::KeepAspectRatio);

img0 = pixmap3->copy(0, 0, pixmap3->width(), pixmap3-
>height());


//ui->label_12->setScaledContents(true);

QPixmap *pixmap1 = new QPixmap(pos);

pixmap1->scaled(ui->label->size()*2, Qt::KeepAspectRatio);
```

//切割图片

```
img1 = pixmap1->copy(0, 0, pixmap1->width()/3, pixmap1->height()/3);
```

```
img2 = pixmap1->copy(pixmap1->width()/3, 0, pixmap1->width()/3, pixmap1->height()/3);
```

```
img3 = pixmap1->copy(pixmap1->width()/3*2, 0, pixmap1->width(), pixmap1->height()/3);
```

```
img4 = pixmap1->copy(0, pixmap1->height()/3, pixmap1->width()/3, pixmap1->height()/3);
```

```
img5 = pixmap1->copy(pixmap1->width()/3, pixmap1->height()/3, pixmap1->width()/3, pixmap1->height()/3);
```

```
img6 = pixmap1->copy(pixmap1->width()/3*2, pixmap1->height()/3, pixmap1->width(), pixmap1->height()/3);
```

```
img7 = pixmap1->copy(0, pixmap1->height()/3*2, pixmap1->width()/3, pixmap1->height());
```

```
img8 = pixmap1->copy(pixmap1->width()/3, pixmap1->height()/3*2, pixmap1->width()/3, pixmap1->height());
```

```
ui->label_3->setScaledContents(true);
```

```
ui->label_4->setScaledContents(true);
```

```
ui->label_5->setScaledContents(true);
```

```
ui->label_6->setScaledContents(true);
```

```
ui->label_7->setScaledContents(true);
```

```
ui->label_8->setScaledContents(true);
```

```
ui->label_9->setScaledContents(true);
```

```
ui->label_10->setScaledContents(true);
```

```
ui->label_11->setScaledContents(true);
```

```
ui->label_3->setPixmap(img1);
```

```
ui->label_4->setPixmap(img2);
```

```
ui->label_5->setPixmap(img3);
```

```
ui->label_6->setPixmap(img4);
```

```
ui->label_7->setPixmap(img5);
```

```
ui->label_8->setPixmap(img6);
```

```
ui->label_9->setPixmap(img7);
```

```
ui->label_10->setPixmap(img8);
```

```
ui->label_11->setPixmap(img0);
```

```
}
```

```
MainWindow::~~MainWindow()
```

```
{
```

```
    delete ui;
```

```
}
```

```
//开始游戏
```

```
void MainWindow::on_pushButton_clicked()
```

```
{
```

```
    MainWindow::upset();
```

```
    MainWindow::showpicture();
```



```
}
```

```
//使用说明
```

```
void MainWindow::on_pushButton_2_clicked()
```

```
{
```

```
    //信息框 (https://www.cnblogs.com/zhoug2020/p/10094855.html, 注意加上头文件)
```

```
    QMessageBox::information(NULL, "游戏说明", "介绍: \n拼图游戏是一张图片分为若干块, 打乱次序, 将其中一块变为空白块, 其只能与相邻块互换, 发挥你的聪明才智来将其复原.\n操作说明: \n用鼠标点击空白块附近的图即将该图移到空白块的位置。");
```

```
}
```

```
//退出游戏按钮
```

```
void MainWindow::on_pushButton_4_clicked()
```

```
{
```

```
    exit(1);
```

```
}
```

```
void MainWindow::mousePressEvent(QMouseEvent *event)
```

```
{
```

```
    //鼠标点击事件
```

```
    (https://www.cnblogs.com/aiguona/p/9999507.html)
```

```
    // 如果是鼠标左键按下
```

```
    if(event->button() == Qt::LeftButton)
```

```
    {
```

```
        /*
```

```
        if (i == 1) { //向下 //上(0在下，和上面的换)
```

```
        else if (i == 2) { //向上 //下 (0在上，和下面的换)
```

```
        else if (i == 3) { //向右 //左(0在右，和左面的换)
```

```
        else if (i == 4) { //向左 //右(0在左，和右面的换)
```

```
        */
```

```
        if (ui->label_3->geometry().contains(this->  
>mapFromGlobal(QCursor::pos())))
```

```
{

//0 0

move(0,0);

showpicture();

}

else if (ui->label_4->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

//1 0

move(1,0);

showpicture();

}

else if (ui->label_5->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

//2 0

move(2,0);
```

```
showpicture();

}

else if (ui->label_6->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

//0 1

move(0,1);

showpicture();

}

else if (ui->label_7->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

// 1 1

move(1,1);

showpicture();

}

else if (ui->label_8->geometry().contains(this->mapFromGlobal(QCursor::pos())))
```

```
>mapFromGlobal(QCursor::pos()))))

{

// 2 1

move(2,1);

showpicture();

}

else if (ui->label_9->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

// 0 2

move(0,2);

showpicture();

}

else if (ui->label_10->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

// 1 2

move(1,2);
```

```
move(1,2);

showpicture();

}

else if (ui->label_11->geometry().contains(this->mapFromGlobal(QCursor::pos())))

{

// 2 2

move(2,2);

showpicture();

}

}

}

void MainWindow::on_pushButton_3_clicked()

{

// (文件对话框: http://c.biancheng.net/view/1870.html)

// 选择单个文件
```

```
QString curPath=QDir::currentPath();//获取系统当前目录

//获取应用程序的路径

QString dlgTitle="请选择图片文件"; //对话框标题

QString filter="图片文件(*.jpg *.gif *.png);"; //文件过滤器

QString
aFileName=QFileDialog::getOpenFileName(this,dlgTitle,curPath,filter);

pos = aFileName;

//qDebug()<<pos;

first();

}
```

mainwindow.ui

```
<?xml version="1.0" encoding="UTF-8"?>

<ui version="4.0">
```

```
<class>MainWindow</class>

<widget class="QMainWindow" name="MainWindow">

  <property name="geometry">

    <rect>

      <x>0</x>

      <y>0</y>

      <width>646</width>

      <height>411</height>

    </rect>

  </property>

  <property name="windowTitle">

    <string>拼图 —by: orall</string>

  </property>

  <widget class="QWidget" name="centralwidget">

    <widget class="QPushButton" name="pushButton">

      <property name="geometry">
```



```
<rect>

<x>500</x>

<y>200</y>

<width>93</width>

<height>28</height>

</rect>

</property>

<property name="font">

<font>

<family>华文琥珀</family>

</font>

</property>

<property name="text">

<string>开始游戏</string>

</property>

</widget>
```

```
<widget class="QPushButton" name="pushButton_2">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>500</x>
```

```
<y>240</y>
```

```
<width>93</width>
```

```
<height>28</height>
```

```
</rect>
```

```
</property>
```

```
<property name="font">
```

```
<font>
```

```
<family>华文琥珀</family>
```

```
</font>
```

```
</property>
```

```
<property name="text">
```

```
<string>游戏说明</string>
```

```
</property>

</widget>

<widget class="QLabel" name="label">

  <property name="geometry">

    <rect>

      <x>30</x>

      <y>20</y>

      <width>361</width>

      <height>31</height>

    </rect>

  </property>

  <property name="font">

    <font>

      <family>华文新魏</family>

      <pointsize>19</pointsize>

      <weight>75</weight>
```

```
<italic>>false</italic>

<bold>true</bold>

</font>

</property>

<property name="layoutDirection">

<enum>Qt::LeftToRight</enum>

</property>

<property name="styleSheet">

<string notr="true"/>

</property>

<property name="text">

<string>拼图1.0 —by: orall</string>

</property>

</widget>

<widget class="QPushButton" name="pushButton_3">

<property name="geometry">
```

```
<rect>

<x>500</x>

<y>280</y>

<width>93</width>

<height>28</height>

</rect>

</property>

<property name="font">

<font>

<family>华文琥珀</family>

</font>

</property>

<property name="text">

<string>导入图片</string>

</property>

</widget>
```

```
<widget class="QLabel" name="label_2">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>450</x>
```

```
<y>40</y>
```

```
<width>121</width>
```

```
<height>121</height>
```

```
</rect>
```

```
</property>
```

```
<property name="font">
```

```
<font>
```

```
<family>方正舒体</family>
```

```
</font>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 3px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_3">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>40</x>
```

```
<y>80</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0,0,0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_4">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>130</x>
```

```
<y>80</y>
```

```
<width>90</width>
```

```
<height>90</height>
```



```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_5">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>220</x>
```

```
<y>80</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_7">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>130</x>
```

```
<y>170</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_6">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>40</x>
```

```
<y>170</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width:2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_8">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>220</x>
```

```
<y>170</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_10">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>130</x>
```

```
<y>260</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_9">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>40</x>
```

```
<y>260</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```

```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QLabel" name="label_11">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>220</x>
```

```
<y>260</y>
```

```
<width>90</width>
```

```
<height>90</height>
```

```
</rect>
```

```
</property>
```



```
<property name="styleSheet">
```

```
<string notr="true">border-width: 2px;
```

```
border-style: solid;
```

```
border-color: rgb(0, 0, 0)</string>
```

```
</property>
```

```
<property name="text">
```

```
<string/>
```

```
</property>
```

```
</widget>
```

```
<widget class="QPushButton" name="pushButton_4">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>500</x>
```

```
<y>320</y>
```

```
<width>93</width>
```

```
<height>28</height>
```

```
</rect>

</property>

<property name="font">

<font>

<family>华文琥珀</family>

</font>

</property>

<property name="text">

<string>退出游戏</string>

</property>

</widget>

</widget>

<widget class="QMenuBar" name="menubar">

<property name="geometry">

<rect>

<x>0</x>
```

```
<y>0</y>

<width>646</width>

<height>26</height>

</rect>

</property>

</widget>

<widget class="QStatusBar" name="statusbar"/>

</widget>

<resources/>

<connections/>

</ui>
```

(2021.7.21)

```
/* 版本：拼图雏形
 * 时间：2021.7.21
 * 作者：orall
 * 版本特点：完成拼图的基本功能
 */
```

//拼图 (<https://www.cnblogs.com/labixiaohei/p/6713761.html>)

```
# include<iostream>
# include<time.h>
# include<stdlib.h>
using namespace std;
const int N = 3;
int map[N][N] = { 0 };
int coord[2] = { 0 };          //x,y坐标

//初始化
void first() {
    int num = 1;
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < N; j++) {
            map[i][j] = num;
            num++;
        }
    }
    map[2][2] = 0;
    coord[0] = 2, coord[1] = 2;
}

//显示
void show() {
    for (int i = 0; i < N; i++) {
        for (int j = 0; j < N; j++) {
            cout << map[i][j] << " ";
        }
        cout << endl;
    }
}

//上下移动
```

```

void move(int i) {
    int& x = coord[0], & y = coord[1];
    if (i == 1) { //上(0在下, 和上面的换)
        if (y != 0) {
            swap(map[x][y], map[x][y - 1]);
            y--;
        }
    }
    else if (i == 2) { //下(0在上, 和下面的换)
        if (y != N - 1) {
            swap(map[x][y], map[x][y + 1]);
            y++;
        }
    }
    else if (i == 3) { //左
        if (x != 0) {
            swap(map[x][y], map[x - 1][y]);
            x--;
        }
    }
    else if (i == 4) { //右
        if (x != N - 1) {
            swap(map[x][y], map[x + 1][y]);
            x++;
        }
    }
}

//打乱
void upset() {
    //打乱200次

```

```
    for (int i = 0; i < 200; i++) {  
        move(rand() % 4 + 1);  
        //show();  
    }  
    show();  
  
}  
  
int main() {  
    srand(unsigned(time(NULL)));  
    first();  
    show();  
    upset();  
}
```