```cpp
//CG Lab 01 Pattern

#include "lab01.h"
#include "ui_lab01.h"
#include "iostream"
using namespace std;
QImage img(500,500,QImage::Format_RGB888);
lab01::lab01(QWidget *parent)
    : QMainWindow(parent)
    , ui(new Ui::lab01)
{
    ui->setupUi(this);
}

lab01::~lab01()
{
    delete ui;
}



void lab01::on_pushButton_clicked()
{
    int a,b,c,d;
    a=ui->textEdit->toPlainText().toInt();
    b=ui->textEdit_2->toPlainText().toInt();
    c=ui->textEdit_3->toPlainText().toInt();
    d=ui->textEdit_4->toPlainText().toInt();
    display(a, b, c, d);
    ui->label->setPixmap(QPixmap::fromImage(img));
}


void::lab01::display(int x1,int y1,int x2, int y2)
{
  float dx = x2 -x1;
  float dy = y2 -y1;
  float step;
  if(dx>=dy){
      step = dx;
  }else{
      step = dy;
  }
  if(step>0){
      step =(1)*step;
  }else{
      step = (-1)*step;
  }
  if(step==0){
      cout<<"Please enter other values!";
      return;
  }
  float x_in, y_in;
  x_in = dx/step;
  y_in = dy/step;

  float x=x1;
  float y=y1;
```

```cpp
    float i = 0;
    while(i<step){
        x = x+ x_in;
        y = y+ y_in;
        img.setPixel(x,y,qRgb(255,255,255));
        i++;
    }
}

void lab01::on_pushButton_2_clicked()
{
    int a,b,r;
    a=ui->textEdit->toPlainText().toInt();
    b=ui->textEdit_2->toPlainText().toInt();
    r=ui->textEdit_3->toPlainText().toInt();
    display1(a,b,r);
    ui->label->setPixmap(QPixmap::fromImage(img));
}

void::lab01::display1(int a,int b,int r)
{
    int x1 = 0;
    int y1 = r;

    int D = 3 - (2*r);

    while(x1<=y1){

        img.setPixel(x1+a,y1+b,qRgb(255,255,0));
        img.setPixel(y1+a,x1+b,qRgb(255,255,0));
        img.setPixel(-x1+a,y1+b,qRgb(255,255,0));
        img.setPixel(-y1+a,x1+b,qRgb(255,255,0));
        img.setPixel(-x1+a,-y1+b,qRgb(255,255,0));
        img.setPixel(-y1+a,-x1+b,qRgb(255,255,0));
        img.setPixel(x1+a,-y1+b,qRgb(255,255,0));
        img.setPixel(y1+a,-x1+b,qRgb(255,255,0));

        if(D<0){
            D = D + 4*x1 + 6;
        }else{
            D = D + 4 * (x1-y1) + 10;
            y1 = y1 -1;
        }
        x1 = x1 + 1;

    }


}
```