**Assignment 3**

**#include "mainwindow.h"**

#include "ui\_mainwindow.h"

QImage img(300,300,QImage::Format\_RGB888);

MainWindow::MainWindow(QWidget \*parent) :

QMainWindow(parent),

ui(new Ui::MainWindow)

{

ui->setupUi(this);

}

MainWindow::~*MainWindow*()

{

delete ui;

}

void MainWindow::on\_pushButton\_4\_clicked() //standard line

{

float x1,y1,x2,y2;

x1 = ui -> textEdit->toPlainText().toFloat();

y1 = ui -> textEdit\_2->toPlainText().toFloat();

x2 = ui -> textEdit\_3->toPlainText().toFloat();

y2 = ui -> textEdit\_4->toPlainText().toFloat();

dda\_line(x1,y1,x2,y2);

}

void MainWindow::dda\_line(float x1, float y1, float x2, float y2)

{

float dx,dy,len,x,y;

int i = 0;

dx = x2-x1;

dy = y2-y1;

if(abs(dx)>=abs(dy))

len = abs(dx);

else

len = abs(dy);

dx = dx/len;

dy = dy/len;

x = x1 + 0.5 \* sign(x2-x1);

y = y1 + 0.5 \* sign(y2-y1);

while (i<=len) {

img.setPixel(x,y,qRgb(255,0,0));

x = x + dx;

y = y + dy;

i = i + 1;

}

ui->label->setPixmap(QPixmap::fromImage(img));

}

float MainWindow::sign(float p)

{

if(p<0)

return -1;

else

return 1;

}

void MainWindow::on\_pushButton\_2\_clicked() //for dotted

{

float x1,y1,x2,y2;

x1 = ui -> textEdit->toPlainText().toFloat();

y1 = ui -> textEdit\_2->toPlainText().toFloat();

x2 = ui -> textEdit\_3->toPlainText().toFloat();

y2 = ui -> textEdit\_4->toPlainText().toFloat();

dda\_line\_dotted(x1,y1,x2,y2);

}

void MainWindow::dda\_line\_dotted(float x1, float y1, float x2, float y2)

{

float dx,dy,len,x,y;

int i = 0;

dx = x2-x1;

dy = y2-y1;

if(abs(dx)>=abs(dy))

len = abs(dx);

else

len = abs(dy);

dx = dx/len;

dy = dy/len;

x = x1 + 0.5 \* sign(x2-x1);

y = y1 + 0.5 \* sign(y2-y1);

while (i<=len) {

if(i%2 == 0)

{

img.setPixel(x,y,qRgb(255,0,0));

}

x = x + dx;

y = y + dy;

i = i + 1;

}

ui->label->setPixmap(QPixmap::fromImage(img));

}

void MainWindow::on\_pushButton\_clicked() //dashed line

{

float x1,y1,x2,y2;

x1 = ui -> textEdit->toPlainText().toFloat();

y1 = ui -> textEdit\_2->toPlainText().toFloat();

x2 = ui -> textEdit\_3->toPlainText().toFloat();

y2 = ui -> textEdit\_4->toPlainText().toFloat();

dda\_line\_dashed(x1,y1,x2,y2);

}

void MainWindow::dda\_line\_dashed(float x1, float y1, float x2, float y2)

{

float dx,dy,len,x,y;

int i = 0;

dx = x2-x1;

dy = y2-y1;

if(abs(dx)>=abs(dy))

len = abs(dx);

else

len = abs(dy);

dx = dx/len;

dy = dy/len;

x = x1 + 0.5 \* sign(x2-x1);

y = y1 + 0.5 \* sign(y2-y1);

while (i<=len) {

if(i%15>3)

{

img.setPixel(x,y,qRgb(0,255,255));

}

x = x + dx;

y = y + dy;

i = i + 1;

}

ui->label->setPixmap(QPixmap::fromImage(img));

}

void MainWindow::on\_pushButton\_3\_clicked()

{

float x1,y1,x2,y2;

x1 = ui -> textEdit->toPlainText().toFloat();

y1 = ui -> textEdit\_2->toPlainText().toFloat();

x2 = ui -> textEdit\_3->toPlainText().toFloat();

y2 = ui -> textEdit\_4->toPlainText().toFloat();

dda\_line\_dashed\_dotted(x1,y1,x2,y2);

}

void MainWindow::dda\_line\_dashed\_dotted(float x1, float y1, float x2, float y2)

{

float dx,dy,len,x,y;

int i = 0;

dx = x2-x1;

dy = y2-y1;

if(abs(dx)>=abs(dy))

len = abs(dx);

else

len = abs(dy);

dx = dx/len;

dy = dy/len;

x = x1 + 0.5 \* sign(x2-x1);

y = y1 + 0.5 \* sign(y2-y1);

while (i<=len) {

if(i%12 == 2)

{

img.setPixel(x,y,qRgb(255,255,255));

}

if(i%12>3)

{

img.setPixel(x,y,qRgb(0,255,255));

}

x = x + dx;

y = y + dy;

i = i + 1;

}

ui->label->setPixmap(QPixmap::fromImage(img));

}

void MainWindow::on\_pushButton\_5\_clicked()

{

float x1,y1,x2,y2;

int width;

x1 = ui -> textEdit->toPlainText().toFloat();

y1 = ui -> textEdit\_2->toPlainText().toFloat();

x2 = ui -> textEdit\_3->toPlainText().toFloat();

y2 = ui -> textEdit\_4->toPlainText().toFloat();

width = ui->textEdit\_5->toPlainText().toFloat();

while(width!=0)

{

dda\_line\_thick(x1,y1,x2,y2);

if(x1 == x2)

{

x1 = x1 + 1;

x2 = x2 + 1;

}

else if(y1 == y2)

{

y1 = y1 + 1;

y2 = y2 + 1;

}

else

{

x1 = x1 + 1;

x2 = x2 + 1;

}

width = width -1;

}

}

void MainWindow::dda\_line\_thick(float x1,float y1,float x2,float y2)

{

float dx,dy,len,x,y;

int i = 0;

dx = x2-x1;

dy = y2-y1;

if(abs(dx)>=abs(dy))

len = abs(dx);

else

len = abs(dy);

dx = dx/len;

dy = dy/len;

x = x1 + 0.5 \* sign(x2-x1);

y = y1 + 0.5 \* sign(y2-y1);

while (i<=len) {

img.setPixel(x,y,qRgb(0,255,255));

x = x + dx;

y = y + dy;

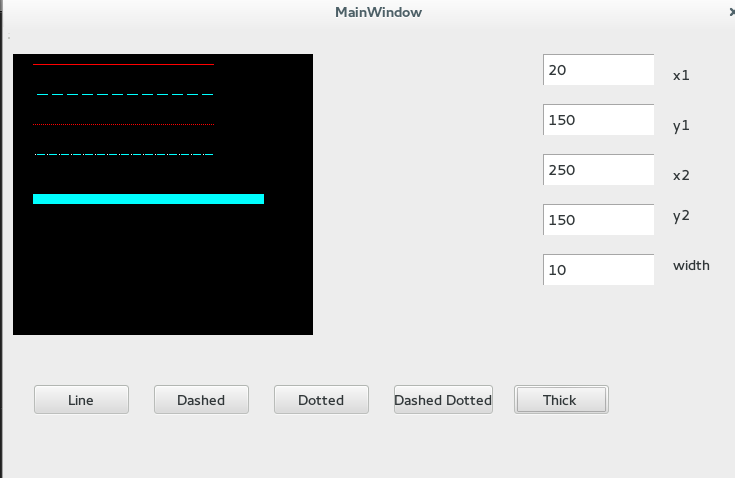
i = i + 1;

}

ui->label->setPixmap(QPixmap::fromImage(img));

}

**Output:**

****