**ST.XAVIER’S COLLEGE**

MAITIGHAR, KATHMANDU



Computer Graphics

Assignment #6

Submitted By:

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Submitted to:

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**STATEMENT**

Write a program to draw an ellipse in C++ builder.

­**ALGORITHM**

Step 1: Set x = 0 and y = ry

Step 2: Set P = (ry\*ry) - (rx \* rx \* ry) + ((rx \* rx) / 4) and

Step 3: Repeat While ((2 \* x \* ry \* ry)<(2 \* y \* rx \* rx))

Image1->Canvas->Pixels[x0 + x][y0 - y] = RGB(100,55,250)

Image1->Canvas->Pixels[x0 - x][y0 + y] = RGB(255,0,127)

Image1->Canvas->Pixels[x0 + x][y0 + y] = RGB(127,255,0)

Image1->Canvas->Pixels[x0 - x][y0 - y] = RGB(0,0,255)

If (P < 0) Then

Set x = x + 1

p = p+(2 \* ry \* ry \* x)+(ry \* ry)

Else

Set y = y – 1

x = x + 1

p =p + (2\* ry \* ry \* x + ry \* ry)-(2 \* rx \* rx \* y)

Step 4: Set p =(x \* x \* ry \* ry)+(y \* y \* rx \* rx)-(rx \* rx \* ry \* ry);

Step 4: Repeat while(y >= 0)

Image1->Canvas->Pixels[x0+x][y0-y]=RGB(10,55,250);

Image1->Canvas->Pixels[x0-x][y0+y]=RGB(255,0,127);

Image1->Canvas->Pixels[x0+x][y0+y]=RGB(127,255,0);

Image1->Canvas->Pixels[x0-x][y0-y]=RGB(12,0,255);

If(p>0)

Set y = y - 1;

p = p-(2 \* rx \* rx \* y)+(rx \* rx);

else

Set y = y - 1;

x = x + 1;

p = p +(2 \* ry \* ry \* x)-(2 \* rx \* rx \* y)-(rx \* rx);

Step 5: End

**SOURCE CODE**

//---------------------------------------------------------------------------

#include <vcl\vcl.h>

#pragma hdrstop

#include "Ellipse.h"

//---------------------------------------------------------------------------

#pragma resource "\*.dfm"

TForm1 \*Form1;

int x0 , y0 , rx , ry , p , x , y;

//---------------------------------------------------------------------------

\_\_fastcall TForm1::TForm1(TComponent\* Owner)

: TForm(Owner)

{

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::Edit1Change(TObject \*Sender)

{

rx = Edit1->Text.ToInt();

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::Edit2Change(TObject \*Sender)

{

ry = Edit2->Text.ToInt();

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::Edit3Change(TObject \*Sender)

{

x0 = Edit3->Text.ToInt();

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::Edit4Change(TObject \*Sender)

{

y0 = Edit4->Text.ToInt();

}

//---------------------------------------------------------------------------

void \_\_fastcall TForm1::Button1Click(TObject \*Sender)

{

x = 0;

y = ry;

p =(ry \* ry) - (rx \* rx \* ry) + ((rx \* rx) / 4);

while((2 \* x \* ry \* ry)<(2 \* y \* rx \* rx))

{

Image1->Canvas->Pixels[x0 + x][y0 - y] = RGB(100,55,250);

Image1->Canvas->Pixels[x0 - x][y0 + y] = RGB(255,0,127);

Image1->Canvas->Pixels[x0 + x][y0 + y] = RGB(127,255,0);

Image1->Canvas->Pixels[x0 - x][y0 - y] = RGB(0,0,255);

if(p<0)

{

x = x + 1;

p = p+(2 \* ry \* ry \* x)+(ry \* ry);

}

else

{

x = x + 1;

y = y - 1;

p = p +(2 \* ry \* ry \* x + ry \* ry)-(2 \* rx \* rx \* y);

}

}

p =(x \* x \* ry \* ry)+(y \* y \* rx \* rx)-(rx \* rx \* ry \* ry);

while(y >= 0)

{

Image1->Canvas->Pixels[x0+x][y0-y]=RGB(10,55,250);

Image1->Canvas->Pixels[x0-x][y0+y]=RGB(255,0,127);

Image1->Canvas->Pixels[x0+x][y0+y]=RGB(127,255,0);

Image1->Canvas->Pixels[x0-x][y0-y]=RGB(12,0,255);

if(p>0)

{

y = y - 1;

p = p-(2 \* rx \* rx \* y)+(rx \* rx);

}

else

{

y = y - 1;

x = x + 1;

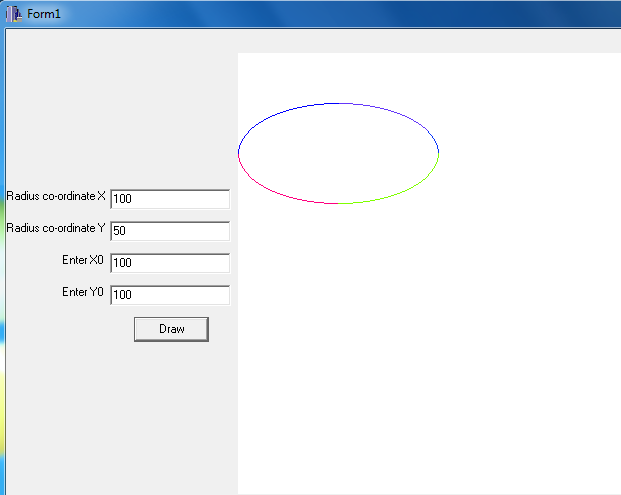
p = p +(2 \* ry \* ry \* x)-(2 \* rx \* rx \* y)-(rx \* rx);

}

}

}

**OUTPUT SCREENS**

****

**CONCLUSION**

Hence, a program to draw an ellipse was implemented using in C++ builder.