ST. XAVIER’S COLLEGE

**(Affiliated to Tribhuvan University)**

**Maitighar, Kathmandu**

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**Computer Graphics**

**Lab Assignment#6**

**SUBMITTED BY**

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**Statement**

**Draw a Ellipse in C++ Builder,.**

**Algorithm**

**ALGORITHM**

1. Get parameters (cX,cY) for center and a and b as radius for x and y axis respectively.
2. Calculate the initial decision parameter value in the first region: http://geofhagopian.net/sablog/Slog-october/sablog-10-24-05_files/empty.gifhttp://geofhagopian.net/sablog/Slog-october/sablog-10-24-05_files/eq0023M.gif
3. Set x=0 and y=b
4. Use these formulas to iterate *px*k+1 until *b*2*x*>*a*2*y*.
   1. x=x+1
   2. If P<0, P = P + 2b2x+b2
   3. Else, y=y-1, P = P+2b2x+b2-2a2y
   4. Plot a pixel at (x,y) and its reflections plus (cX,cY) at other three quadrants
5. Continue from the previous values of x and y to calculate the initial decision parameter value in the 2nd region:

http://geofhagopian.net/sablog/Slog-october/sablog-10-24-05_files/eq0024M.gifhttp://geofhagopian.net/sablog/Slog-october/sablog-10-24-05_files/empty.gif.

1. Use these formulas to iterate *py*k+1 until *y>=0*.
   1. y=y-1
   2. If P>0, P = P + 2a2(y-1)+a2
   3. Else, x=x+1, P = P+2b2x -2a2y+a2

Plot a pixel at (x,y) and its reflections plus (cX,cY) at other three quadrants

**Program codes**

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

#include <vcl\vcl.h>

#pragma hdrstop

#include "Unit1.h"

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

#pragma resource "\*.dfm"

TForm1 \*Form1;

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

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

: TForm(Owner)

{

}

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

void \_\_fastcall TForm1::BitBtn1Click(TObject \*Sender)

{{

int xc,xr,yc,yr;

xc=StrToInt(Edit1->Text);

xr=StrToInt(Edit2->Text);

yc=StrToInt(Edit3->Text);

yr=StrToInt(Edit4->Text);

int x, y, p;

x=0;

y=yr;

p=(yr\*yr)-(xr\*xr\*yr)+((xr\*xr)/4);

while((2\*x\*yr\*yr)<(2\*y\*xr\*xr))

{

output->Canvas->Pixels[xc+x][yc-y]=RGB(255,0,0);

output->Canvas->Pixels[xc-x][yc+y]=RGB(0,255,0);

output->Canvas->Pixels[xc+x][yc+y]=RGB(0,0,255);

output->Canvas->Pixels[xc-x][yc-y]=RGB(2055,155,0);

if(p<0)

{

x=x+1;

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

}

else

{

x=x+1;

y=y-1;

p+=(2\*yr\*yr\*x+yr\*yr)-(2\*xr\*xr\*y);

}

}

p=((float)x+0.5)\*((float)x+0.5)\*yr\*yr+(y-1)\*(y-1)\*xr\*xr-xr\*xr\*yr\*yr; // Intial Decision parameter for Region 2

while(y>=0)

{

output->Canvas->Pixels[xc+x][yc-y]=RGB(255,120,255);

output->Canvas->Pixels[xc-x][yc+y]=RGB(100,255,130);

output->Canvas->Pixels[xc+x][yc+y]=RGB(110,155,255);

output->Canvas->Pixels[xc-x][yc-y]=RGB(123,145,185);

if(p>0)

{

y=y-1;

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

}

else

{

y=y-1;

x=x+1;

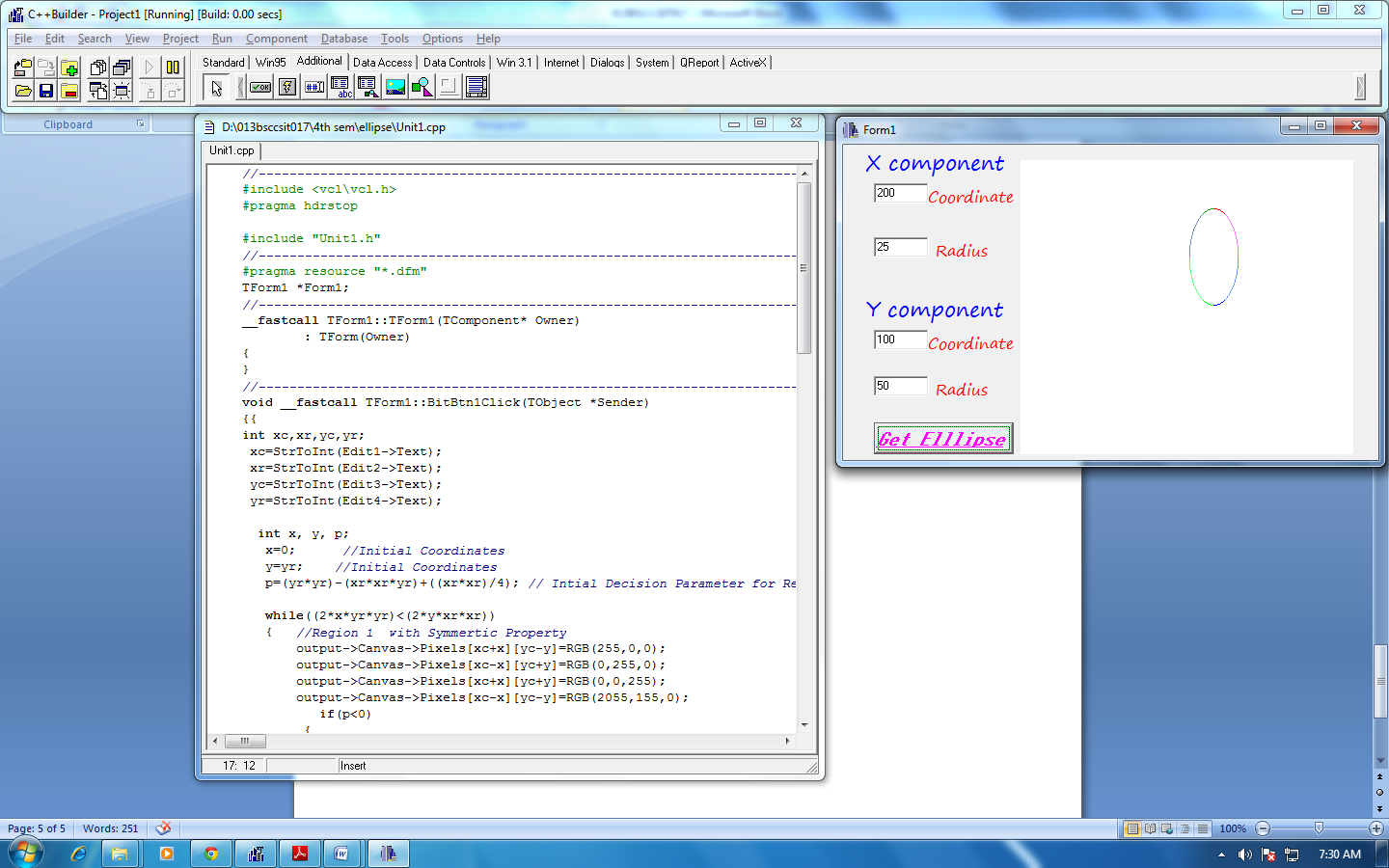
p+=(2\*yr\*yr\*x)-(2\*xr\*xr\*y)-(xr\*xr);

}

}

}

**Output screen**

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