**ST. XAVIER’S COLLEGE**

**(Affiliated to Tribhuvan University)**

Maitighar, Kathmandu



**COMPUTER GRAPHICS**

**LAB ASSIGNMENT#7**

**Submitted by:**

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**Submitted to:**

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**STATEMENT: IMPLEMENTATION OF TRANSLATION, ROTATION AND SCALING.**

Source code:

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

#include <math.h>

#include <vcl\vcl.h>

#pragma hdrstop

#include "Unit1.h"

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

#pragma resource "\*.dfm"

TForm1 \*Form1;

int x,y,i,j,a,b;

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

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

: TForm(Owner)

{

}

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

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

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

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

{

x=Image1->Height;

y=Image1->Width;

for(i=0;i<=x;i++)

{

for(j=0;j<=y;j++)

{

a=i+StrToInt(Edit1->Text);

b=j+StrToInt(Edit2->Text);

Image2->Canvas->Pixels[a][b]=Image1->Canvas->Pixels[i][j];

}

}

}

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

void \_\_fastcall TForm1::Button2Click(TObject \*Sender)

{

x=Image1->Height;

y=Image1->Width;

for(i=0;i<=x;i++)

{

for(j=0;j<=y;j++)

{

a=i\*StrToInt(Edit4->Text);

b=j\*StrToInt(Edit5->Text);

Image2->Canvas->Pixels[a][b]=Image1->Canvas->Pixels[i][j];

}

}

}

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

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

{

x=Image1->Height;

y=Image1->Width;

for(i=0;i<=x;i++)

{

for(j=0;j<=y;j++)

{

a=100+i\*cos(StrToInt(Edit3->Text))-j\*sin(StrToInt(Edit3->Text));

b=100+i\*sin(StrToInt(Edit3->Text))+j\*cos(StrToInt(Edit3->Text));

Image2->Canvas->Pixels[a][b]=Image1->Canvas->Pixels[i][j];

}

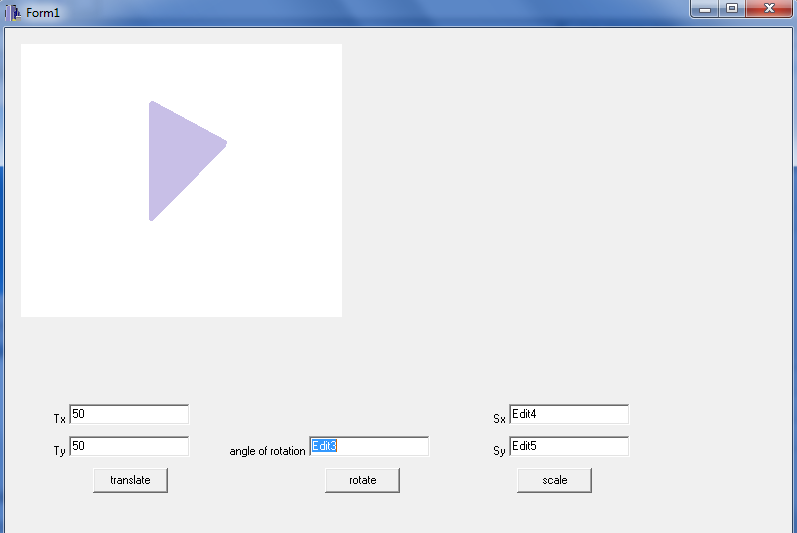
}

}

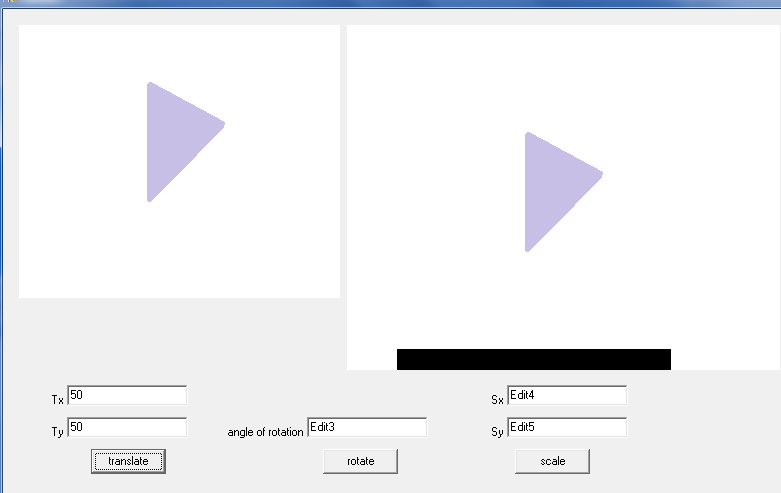
//---------------------------------------------------------------------------

**Translation:**

**Input:**

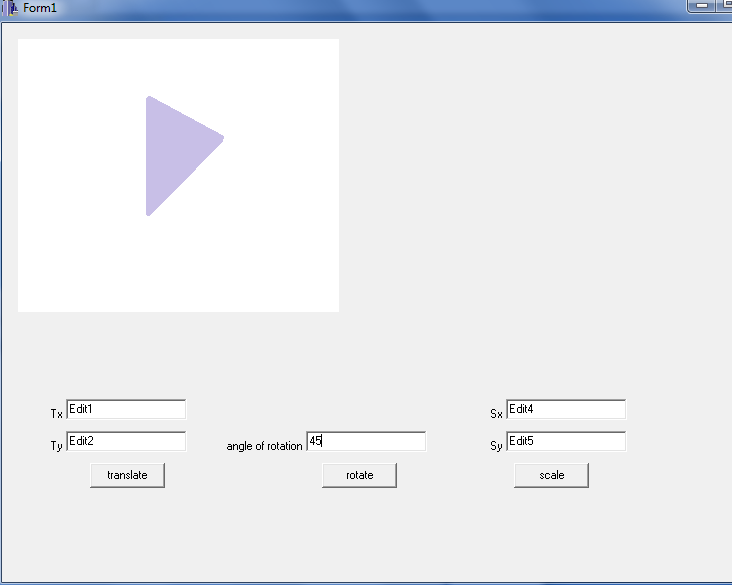
****

**Output:**

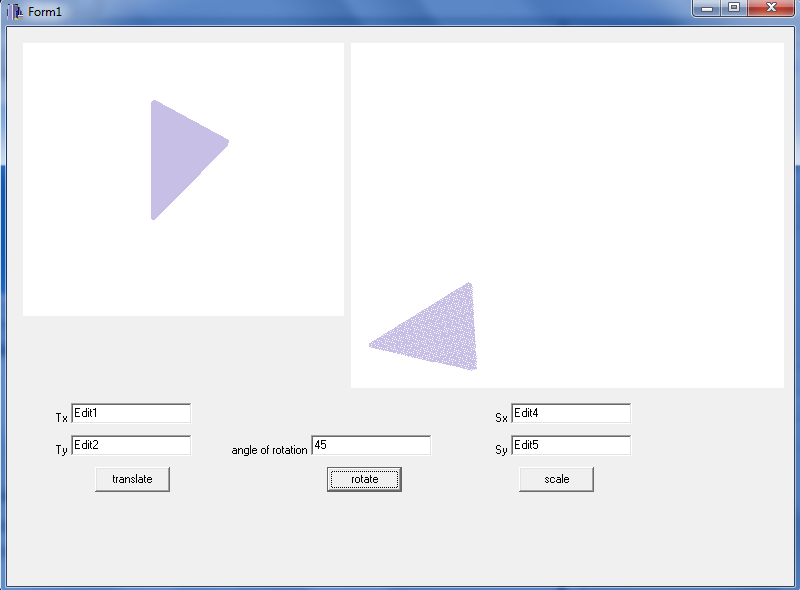
****

**Rotation:**

**Input:**

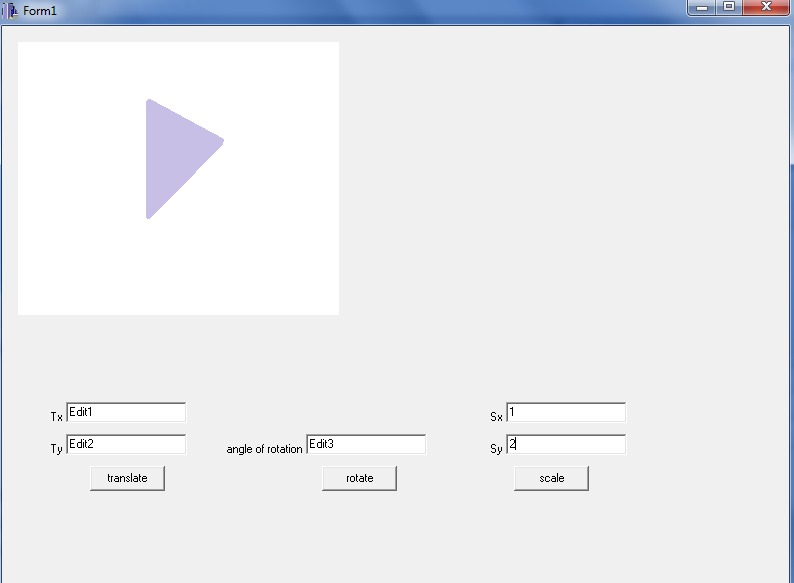
****

**Output:**

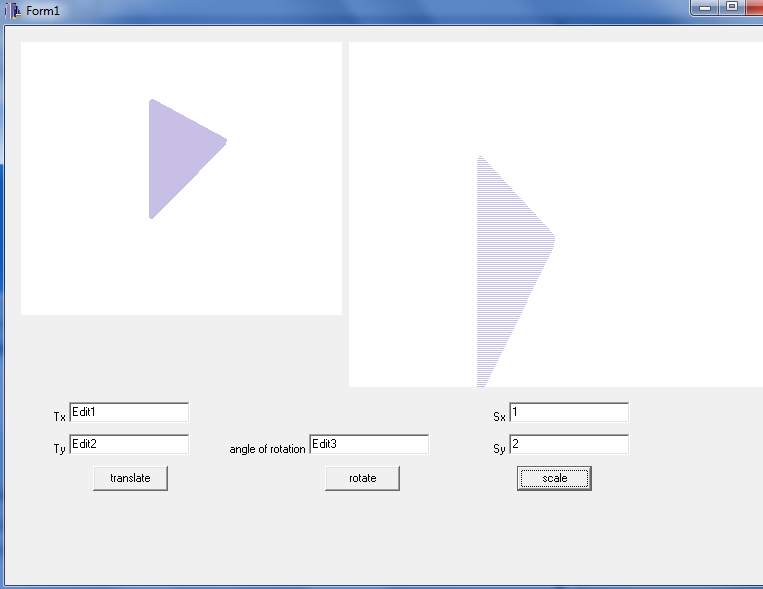
****

**Scaling:**

**Input:**

****

**Output:**

****

**Conclusion:**

Therefore, translation, rotation and scaling were implemented as shown.

**Reference:**

[1] D. Hearn and M. Baker, Computer Graphics, second edition.