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SUB ⇒ Computer Graphics

Course ⇒ BCA VI

Ans 2 =) WAP TO IMPLEMNT 2D TRANFORMATION of a GIVEN TRIANGLE.

Algorithm :

1. Start

2. Initiallize the graphical mode.

3. Construct a 2D object (use Drawpoly() e.g. (x,y)

4. A) Tranelation

   a. Get the translation value tx, ty

   b. Move the 2d object with tx, ty
   $(x' = x + tx , y' = y + ty)$

   c. Plot (x', y')

5. B) Scaling

   a. Get the Scaling value sx, sy

   b. Rsize the object with sx, sy
   $(x' = x * sy , y' = y * sy)$

   c. Plot (x', y')

6.) C) Rotation

   a.) Get the Rotation angle

   b.) Rotate the object by angle ϕ
   $x' = x \cos \phi - y \sin \phi$
   $y' = x \sin \phi - y \cos \phi$

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c) Plot (x',y')

PROGRAM:

```
#include<graphic.h>
#include<stdlib.h>
# incluo<stdio.h)
# include <math.h>
void main()
{
 int gm
int gd=DETECT;
int x1,x2,x3,y1,y2,y3,nx1,nx2,nx3,ny1,ny2,ny3,c;
int sx,sy,xt,yt,r;
float t;
initgraph(&gd,&gm,"c:\tc\bg:");
printf("\t Program for basic transaction");
printf("\n \t Enter the points of triangle");
setcolor(1);
scanf("%d,%d,%d,%d,%d,%d,&x1,&y1,&x2,&y2,&x3,&y3);
 line(x1,y1,x2,y2);
 line(x2,y2,x3,y3);
 line(x3,y3,x1,y1);
```

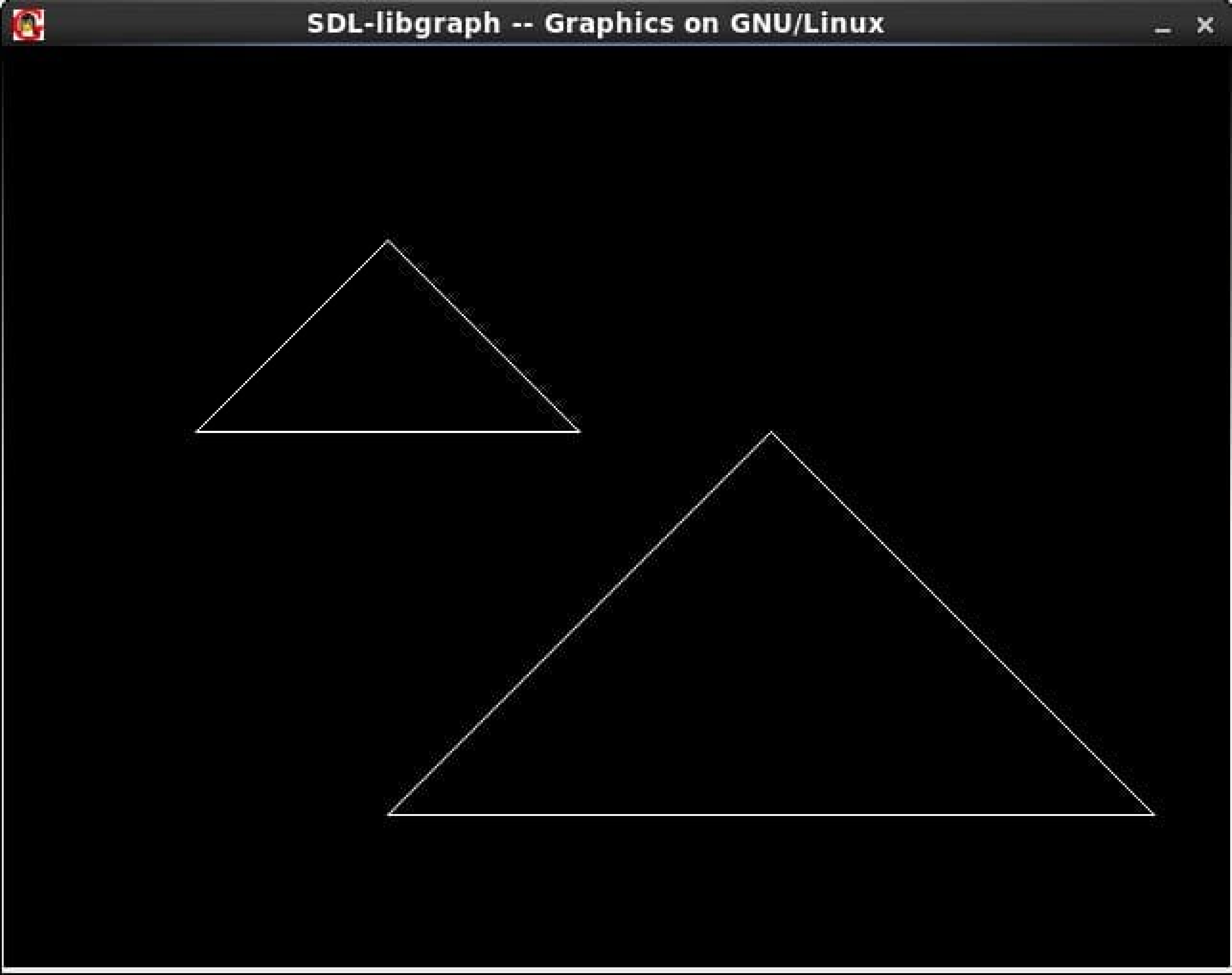
```
getch ( );
printf ("\n 1. Transaction \n 2. Rotation \n 3.Scalling\n
        4. Exit ");
printf (" Enter your choice: ");
 scanf (" %d ", &c);
 switch (c)
 {
   case1 :
   printf ("\n Enter the translation factor");
   scanf ("%d%d, &xt,& yt);
    nx1 = x1 + xt ;
    ny1 = y1 + yt ;
    nx2 = x2 + yt ;
    nx2 = y3 + yt ;
    line (nx1, ny1, nx2, ny2);
    line (nx2, ny2, nx3, ny3);
    line (nx3, ny3, nx1, ny1);
    getch( );

    case 2 :
    printf ("\n Enter the angle of rotation");
```

```
Scanf ("%d", &r);
t=3.14*r/180;
nx1= abs (x1* cos (t)-y1* sint(t));
ny1 = abs (x1 * sin(t) + y1* cos (t));
nx2 = abs (x2 * cos (t) - y 2* sin(t));
ny2 = abs (x 2* sin (t )+ y2* cost (t));
nx3= abs (x3* cos(t) - y3 * sint(t));
ny3 = abs (x3* sint(t) + y3* cost (t));
line (nx1, ny1, nx2, ny2);
 line (nx2, ny2, nx3, ny3);
 line (nx3, ny3, nx1, ny1);
 getch();

case 3:
printf("\n enter the scalling factor");
  scanf("%d %d, &sx, &sy);
   nx1=x1*sx;
   ny1 = y2* sy;
   nx2= x2*sx;
   ny2 = y2 * sy;
   nx3 = x3*sx;
   ny3= y3* sy;
 line (nx1 , ny1 , nx2 , ny2);
 line (nx2 , ny2 , nx3 , ny3);
 line (nx3 , ny3 , nx1, ny1);
 getch();

case 4:
  break;
default:
 printf("enter the correct choice");
}
 closegraph();
}
```


SDL-libgraph -- Graphics on GNU/Linux