VIT AP UNIVERSITY, ANDHRA PRADESH

Lab Sheet 03 : 2D Transformations

Academic year: 2020-2021 **Branch :**CSE B.Tech

Semester: Fall **Date:21/11/20**

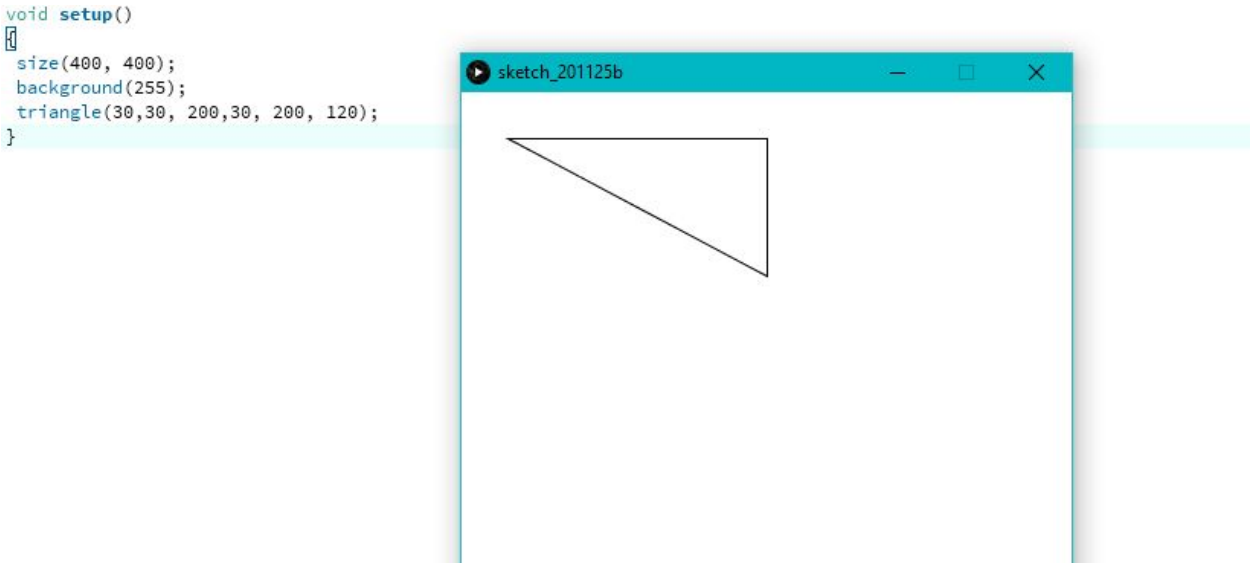
Faculty Name: Prof.Mukti Kaushal Shah **School:** SCOPE

Student name: M.Taran **Reg. no.: 19BCE7346**

1.To write a C program to perform 2D basic transformations such as translation, rotation, scaling, shearing and reflection.

CODE:

```
void setup()
{
 size(400, 400);
 background(255);
 triangle(30,30, 200,30, 200, 120);
}
```



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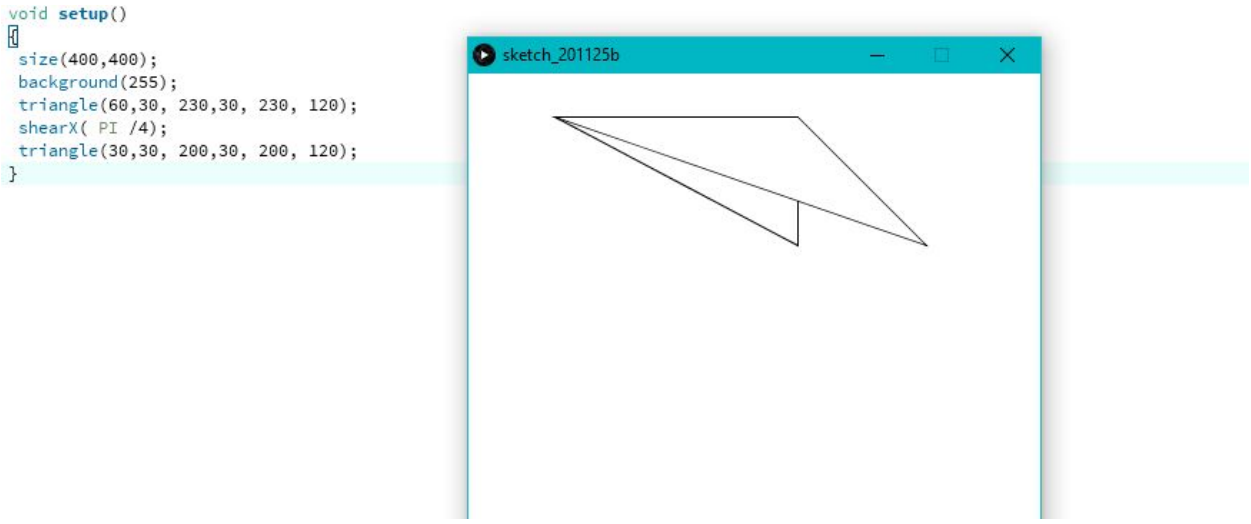
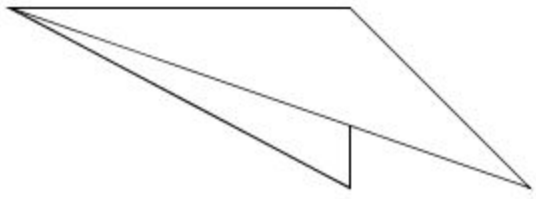
X direction Shearing w.r.t Y reference
Code:

```
void setup()
{
 size(400,400);
 background(255);
 triangle(60,30, 230,30, 230, 120);
 shearX( PI /4);
 triangle(30,30, 200,30, 200, 120);
}
```





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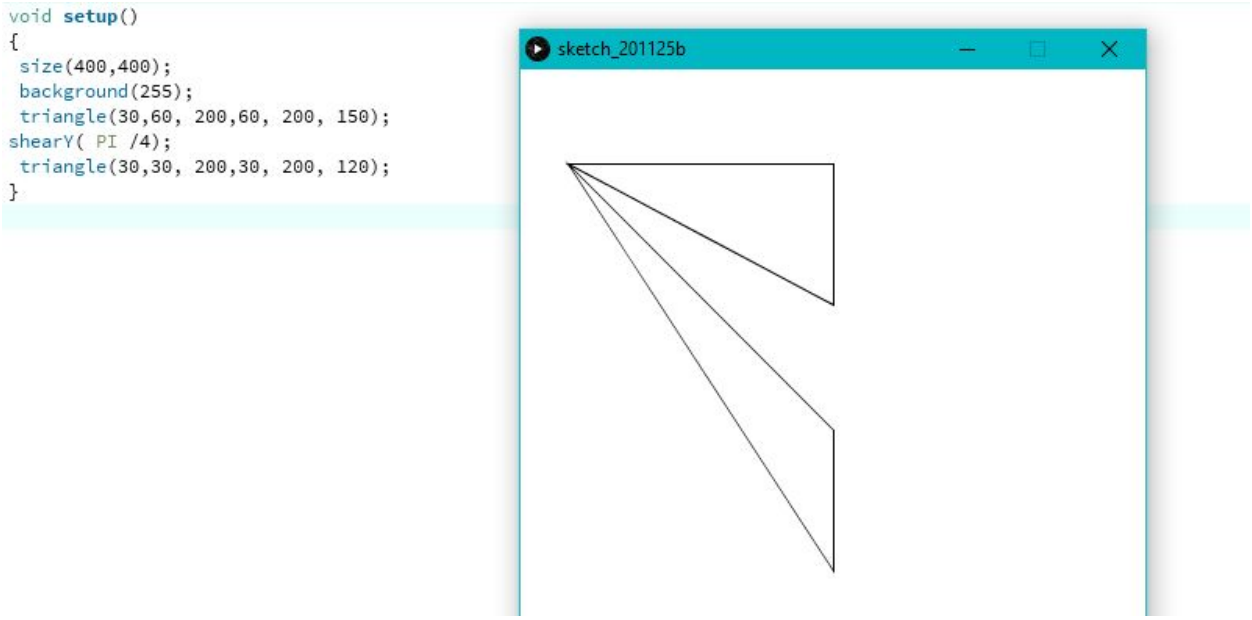
Y direction Shearing w.r.t X reference

Code:

```
void setup()
{
 size(400,400);
 background(255);
 triangle(30,60, 200,60, 200, 150);
shearY( PI /4);
 triangle(30,30, 200,30, 200, 120);
}
```



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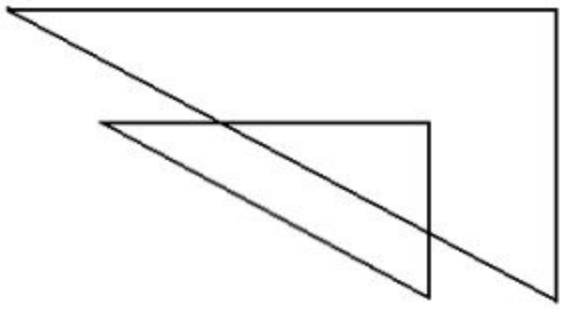
Scaling:

CODE:

```
void setup()
{
 size (400,400);
 triangle(30,60, 200,60, 200, 150);
 scale(0.9,0.9);
triangle(30,60, 200,60, 200, 150);
}
```



Reflection:

w.r.t line x=y

Code:

```
int x1=500;
int y1=100;
int x2=500;
int y2=225;
int x3=100;
int y3=245;
float sh=PI/2;
void setup()
{ size(600,600);
background(225); }
```

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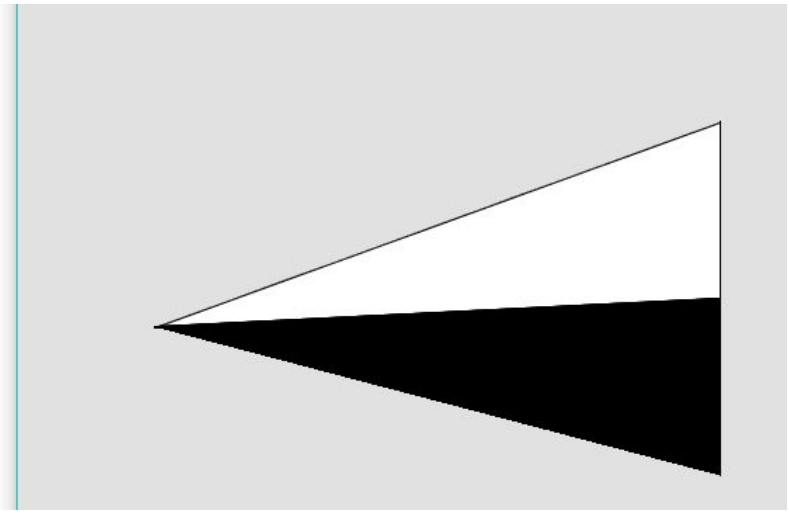
```
void draw()
{
fill(255); triangle(x1,y1,x2,y2,x3,y3);
fill(0); triangle(x1,y1+250,x2,y2,x3,y3);
}
```

```
int x1=500;
int y1=100;
int x2=500;
int y2=225;
int x3=100;
int y3=245;
float sh=PI/2;
void setup()
{ size(600,600);
background(225); }
void draw()
{
fill(255); triangle(x1,y1,x2,y2,x3,y3);
fill(0); triangle(x1,y1+250,x2,y2,x3,y3);
}
```



Rotation
Enter the Degree to rotate the object: 190

CODE:

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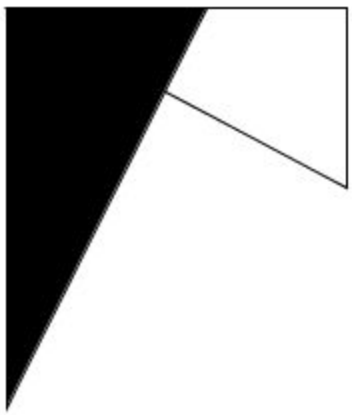
```
void setup()
{
 size(400, 400);
 background(255);
 triangle(100,150,190,150, 270, 240);
 pushMatrix();
 translate(100, 350);
 rotate(radians(190));
 fill(0);
 triangle(0,0, 200,0, 200, 100);
 popMatrix();
}
```

```
void setup()
{
 size(400, 400);
 background(255);
 triangle(100,150, 270,150, 270, 240);
 pushMatrix();
 translate(100, 350);
 rotate(radians(270));
 fill(0);
 triangle(0,0, 200,0, 200, 100);
 popMatrix();
}
```



Translation:

CODE:

```
 void setup()
{
 size(400, 400);
```

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```
 background(255);
 noStroke();
 fill(192);
 triangle(30,30, 200,30, 200, 120);
 fill(0, 0, 255, 128);
 pushMatrix();
 translate(60, 150);
 triangle(30,30, 200,30, 200, 120);
 popMatrix();
}
```

```
 void setup()
{
 size(400, 400);
 background(255);
 noStroke();
 fill(192);
 triangle(30,30, 200,30, 200, 120);
 fill(0, 0, 255, 128);
 pushMatrix();
 translate(60, 150);
 triangle(30,30, 200,30, 200, 120);
 popMatrix();
}
```