Linear Algebra Assignment 2

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Python code (executed on processing IDE) :

1. Translation :

```
def setup():
  size(200, 200)
  background(255)
  noStroke()

  # draw the original position in gray
  fill(192)
  rect(20, 20, 40, 40)

  # draw a translucent red rectangle by changing the coordinates
  fill(255, 0, 0, 128)
  rect(20 + 60, 20 + 80, 40, 40)

  # draw a translucent blue rectangle by translating the grid
  fill(0, 0, 255, 128)
  pushMatrix()
  translate(60, 80)
  rect(20, 20, 40, 40)
  popMatrix()
```

2. Rotation :

```
def setup():

  size(200, 200)

  background(255)

  smooth()
```

```
    fill(192)
    noStroke()
    rect(40, 40, 40, 40)

    pushMatrix()
    # move the origin to the pivot point
    translate(40, 40)

    # then pivot the grid
    rotate(radians(45))

    # and draw the square at the origin
    fill(0)
    rect(0, 0, 40, 40)
    popMatrix()
```

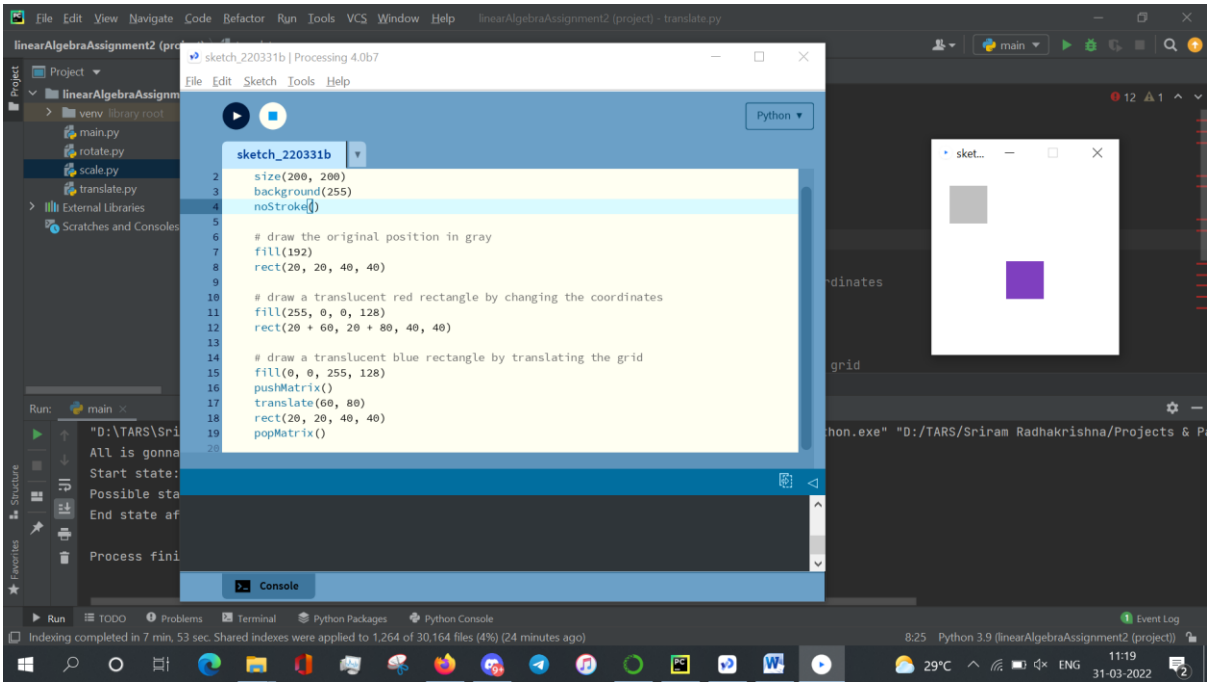
3. Scaling :

```
def setup():
    size(200, 200)
    background(255)

    stroke(128)
    rect(20, 20, 40, 40)
```

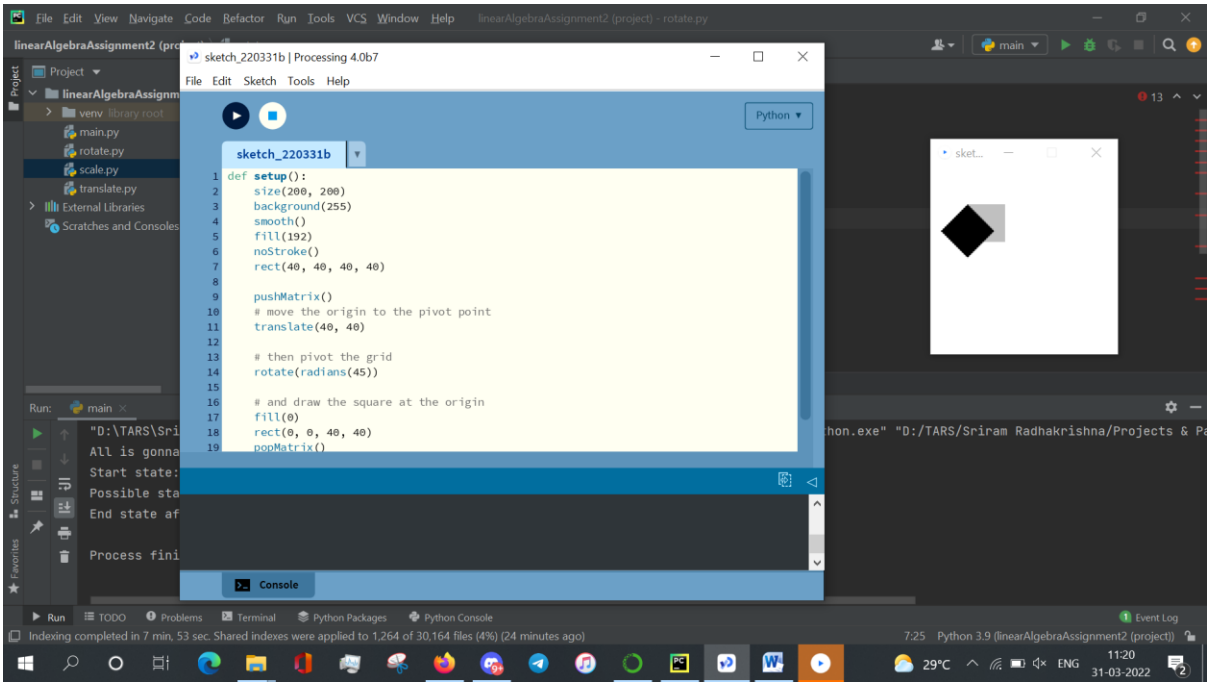
```
stroke(0)

pushMatrix()

scale(2.0)

rect(20, 20, 40, 40)

popMatrix()
```

Output screenshots :

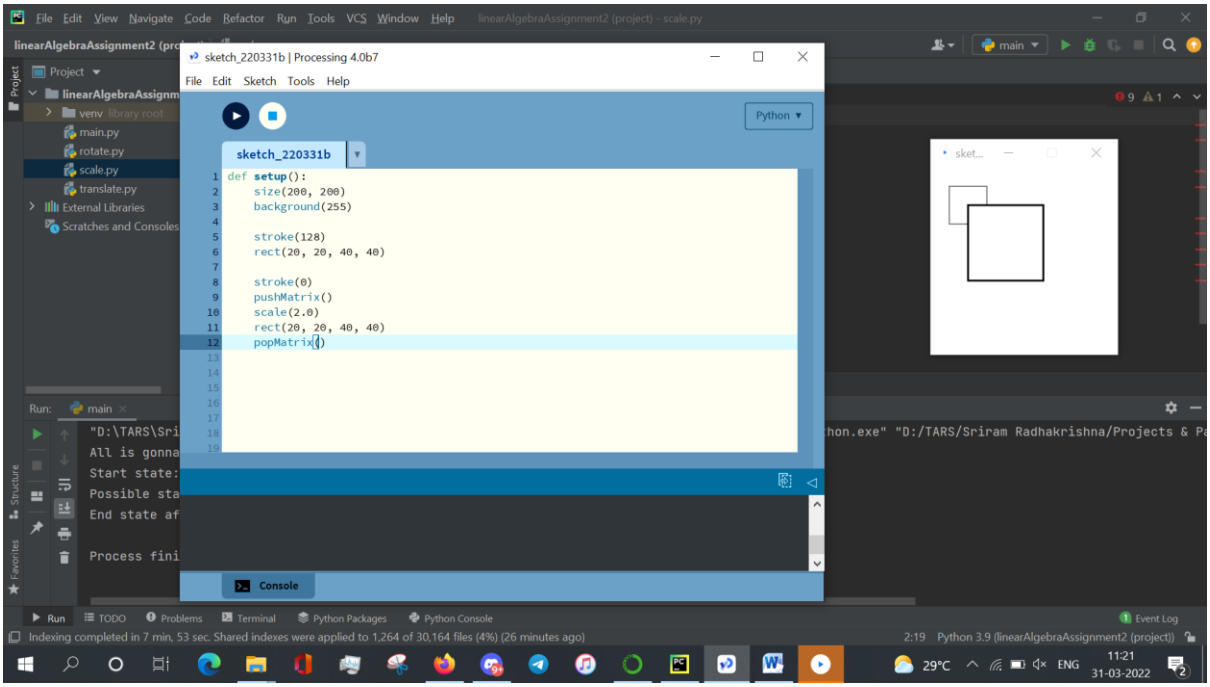
1. Translation :



2. Rotation :


sketch_220331b | Processing 4.0b7
File Edit Sketch Tools Help
Python
sketch_220331b
def setup():
size(200, 200)
background(255)
smooth()
fill(192)
noStroke()
rect(40, 40, 40, 40)
pushMatrix()
# move the origin to the pivot point
translate(40, 40)
# then pivot the grid
rotate(radians(45))
# and draw the square at the origin
fill(0)
rect(0, 0, 40, 40)
popMatrix()
Console

3. Scaling :


sketch_220331b | Processing 4.0b7
File Edit Sketch Tools Help
Python
sketch_220331b
def setup():
size(200, 200)
background(255)
stroke(128)
rect(20, 20, 40, 40)
stroke(0)
pushMatrix()
scale(2.0)
rect(20, 20, 40, 40)
popMatrix()
Console