

TAGE

Scenegraphs / Node Controllers (based on code 01a)

```

...
public class MyGame extends VariableFrameRateGame
{
    ...
    private NodeController rc, sc;
    ...
    @Override
    public void initializeGame()
    {
        rc = new RotationController(engine, new Vector3f(0,1,0), 0.001f);
        sc = new StretchController(engine, 2.0f);
        rc.addTarget(dol);
        rc.addTarget(cube);
        sc.addTarget(dol);
        (engine.getSceneGraph()).addNodeController(rc);
        (engine.getSceneGraph()).addNodeController(sc);
        ...
    }
    ...
    public void keyPressed(KeyEvent e)
    {
        switch (e.getKeyCode())
        {
            ...
            case KeyEvent.VK_2:
                sc.toggle();
                break;
        }
        super.keyPressed(e);
    }
}

```

Custom Node Controller

```

package myGame;
import tage.*;
import org.joml.*;
↓
public class StretchController extends NodeController
{
    private float scaleRate = .0003f;
    private float cycleTime = 2000.0f;
    private float totalTime = 0.0f;
    private float direction = 1.0f;
    private Matrix4f curScale, newScale;
    private Engine engine;

    public StretchController(Engine e, float ctime)
    {
        super();
        cycleTime = ctime;
        engine = e;
        newScale = new Matrix4f();
    }

    public void apply(GameObject go)
    {
        float elapsedTime = super.getElapsedTime();
        totalTime += elapsedTime/1000.0f;
        if (totalTime > cycleTime)
        {
            direction = -direction;
            totalTime = 0.0f;
        }
        curScale = go.getLocalScale();
        float scaleAmt = 1.0f + direction * scaleRate * elapsedTime;
        newScale.scaling(curScale.m00()*scaleAmt, curScale.m11(), curScale.m22());
        go.setLocalScale(newScale);
    }
}

```