Open GL Assignment 2
Computer Graphics

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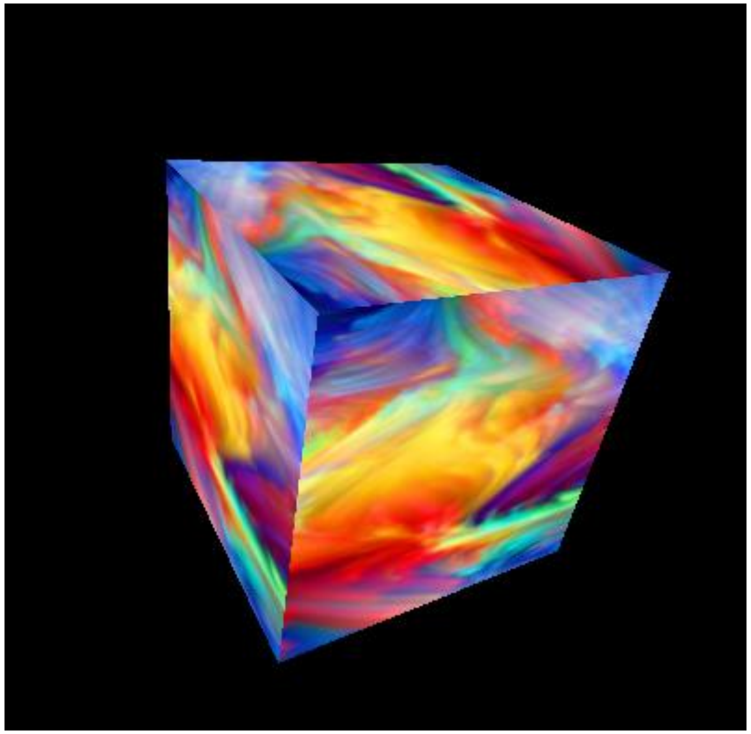
Texture Mapping

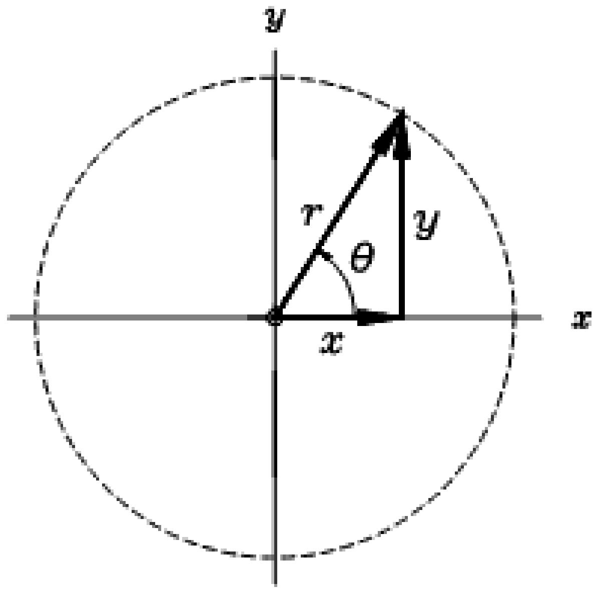
Used texture (.png image)

Texture Mapping (2)



Texture mapped on the cube in the interactive environment of the first Open GL lab assignment

Animation

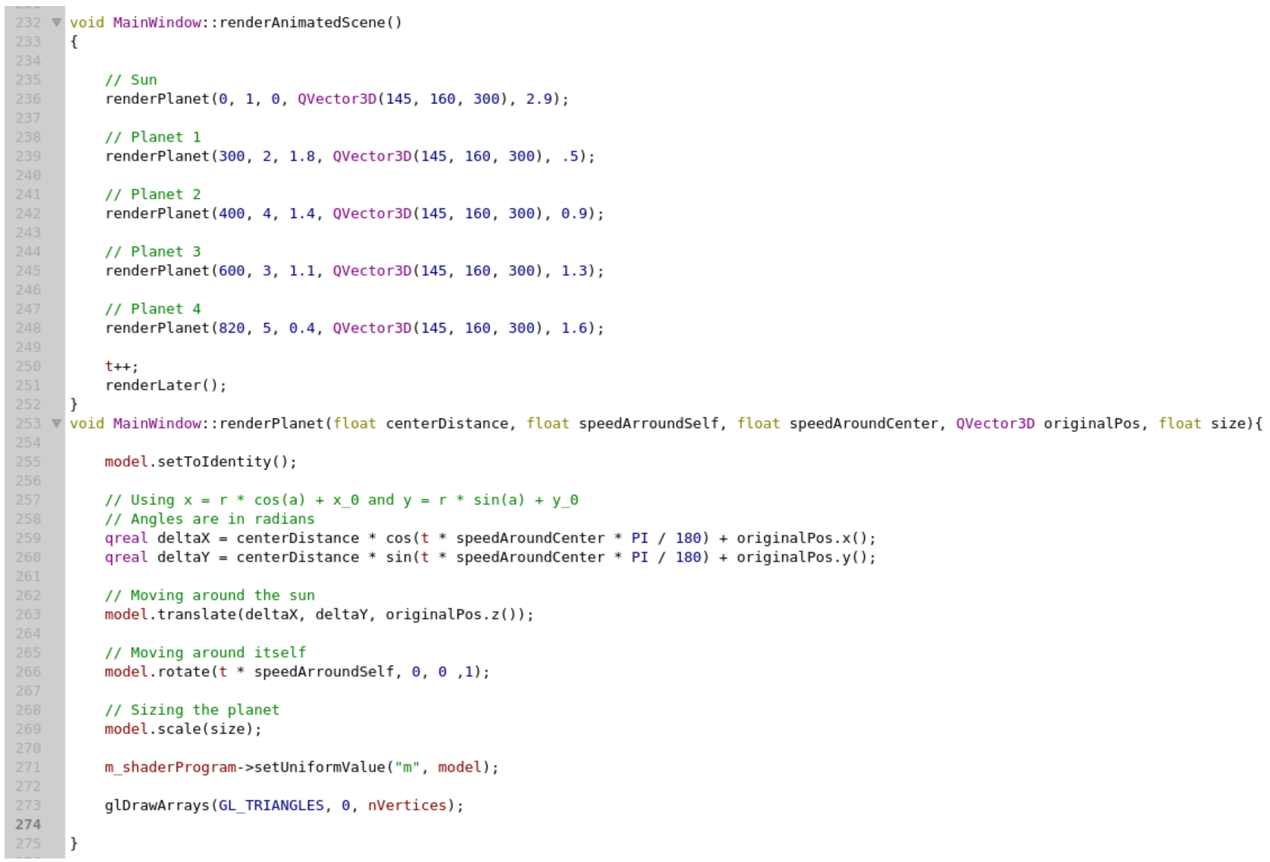


x and y coordinates when rotating around a center
Source: http://mathonweb.com/help_ebook/html/trigonometry.htm

$$x = r * \cos(speed * t) + x.pos\ center$$

$$y = r * sin(speed * t) + y.pos\ center$$

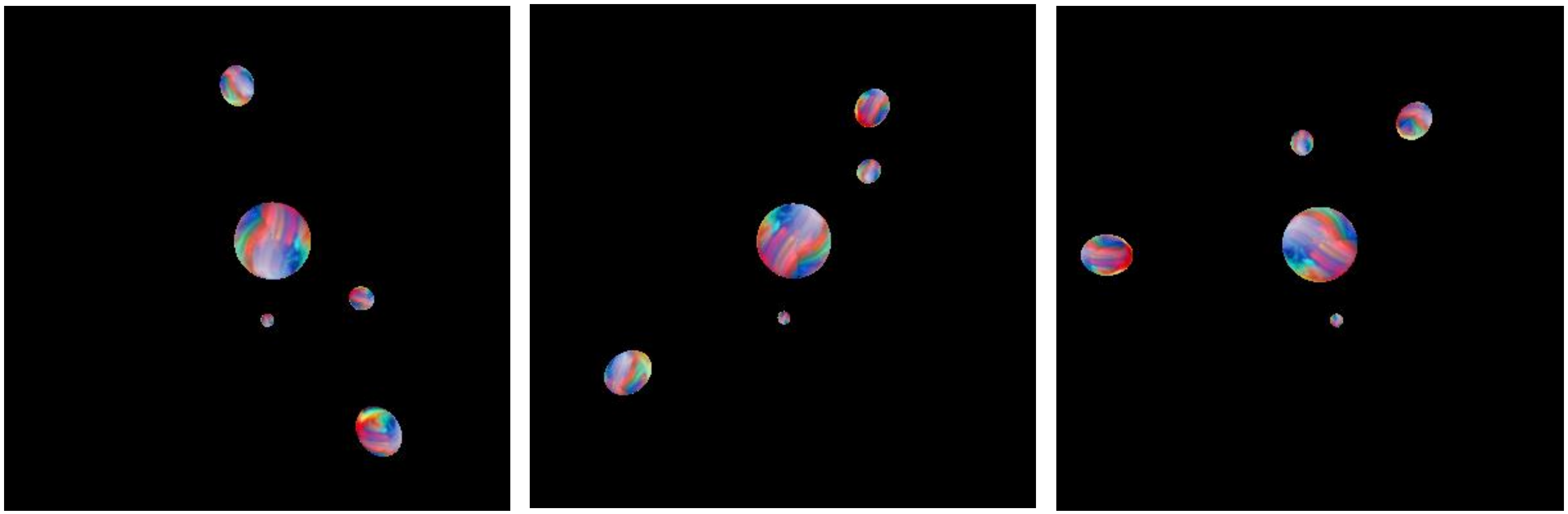
Animation (2)



```
void MainWindow::renderAnimatedScene()
{

    // Sun
    renderPlanet(0, 1, 0, QVector3D(145, 160, 300), 2.9);

    // Planet 1
    renderPlanet(300, 2, 1.8, QVector3D(145, 160, 300), .5);

    // Planet 2
    renderPlanet(400, 4, 1.4, QVector3D(145, 160, 300), 0.9);

    // Planet 3
    renderPlanet(600, 3, 1.1, QVector3D(145, 160, 300), 1.3);

    // Planet 4
    renderPlanet(820, 5, 0.4, QVector3D(145, 160, 300), 1.6);

    t++;
    renderLater();
}
void MainWindow::renderPlanet(float centerDistance, float speedArroundSelf, float speedAroundCenter, QVector3D originalPos, float size){

    model.setToIdentity();

    // Using x = r * cos(a) + x_0 and y = r * sin(a) + y_0
    // Angles are in radians
    qreal deltaX = centerDistance * cos(t * speedAroundCenter * PI / 180) + originalPos.x();
    qreal deltaY = centerDistance * sin(t * speedAroundCenter * PI / 180) + originalPos.y();

    // Moving around the sun
    model.translate(deltaX, deltaY, originalPos.z());

    // Moving around itself
    model.rotate(t * speedArroundSelf, 0, 0 ,1);

    // Sizing the planet
    model.scale(size);

    m_shaderProgram->setUniformValue("m", model);

    glDrawArrays(GL_TRIANGLES, 0, nVertices);

}
```

Code for rendering the animated scene

Animation (3)



Screenshots of animation of a ‘solar system’