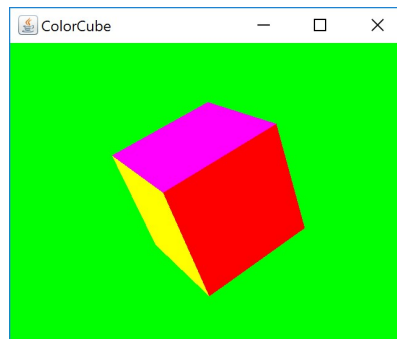


Computer Graphics

Exercises for Chapter 5

5.1 The `ColorCube` class is a subclass of `Shape3D` and can be used as a leaf node to represent a cube with colored faces.

a) Write a Java 3D application that displays a `ColorCube` object using the `SimpleUniverse` class. The following figure shows the expected result.



b) Add a `Background` node to the scene and interact with the applet so that the background color varies between Red, Green and Blue when the user clicks on the applet.

c) Add a `TransformGroup` node to rotate the cube 45° around axis (1, 1, 1).

```
Transform3D tr = new Transform3D();  
tr.setRotation(new AxisAngle4d(1, 1, 1, Math.PI / 4));  
TransformGroup tg = new TransformGroup(tr);
```

d) Draw a diagram with the scene graph of the application and display the image in the page of the applet