KTH Stockholm
CSC :: HPCViz
Introduction to Visualization and Computer Graphics, Fall 2016,
DH2320
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Homework assignment No. 02
Due October 6, 2016

Task 2.1: Programming : Transformations   10 P + 5 BP

In this exercise you are required to code up the necessary transformations to achieve the desired results in
the OpenGL/GLFW framework provided. Use **cmake** to generate the solution files for MSVC (Windows)
or Xcode (Mac) following the instructions for **Assignment 0** (Environment Setup). Set the project '*task*'
as your 'Start Up' Project/Target and run the program. You should see a window like in Fig. 1. The
XYZ global coordinate system is symbolized by the RGB axes in that order. You will **only** work on the
file `task.cpp`.

(a) The initial configuration is shown in Fig. 1. Transform all of the dice by modifying the function
`initDice()` so that the configuration shown in Fig. 2 is achieved.

(b) (Bonus Points: +5)

Transform the 6th die to obtain the configuration shown in Fig. 3

Task 2.2: Animation / Modeling   10 P

In this exercise you **EITHER** do

Animation : Extend Task 2.1(a) by modifying the code in the function `displayDice()` to animate the
6th cube, so that it rotates around the other cubes and at the same time performs a swirly motion as
shown in the video `animation_exercise.mp4`.

OR

Modelling The platonic solids are regular polyhedra - polyhedras with congruent faces and identical
vertices. There are only five of them and they are shown in Fig. 4. Your task is to model all platonic
solids as different sided dice, export the models as `.obj` files, and load each of them in the framework in
place of the default 6-sided die provided. You already have the Hexahedron (6 sided dice). Also indicate
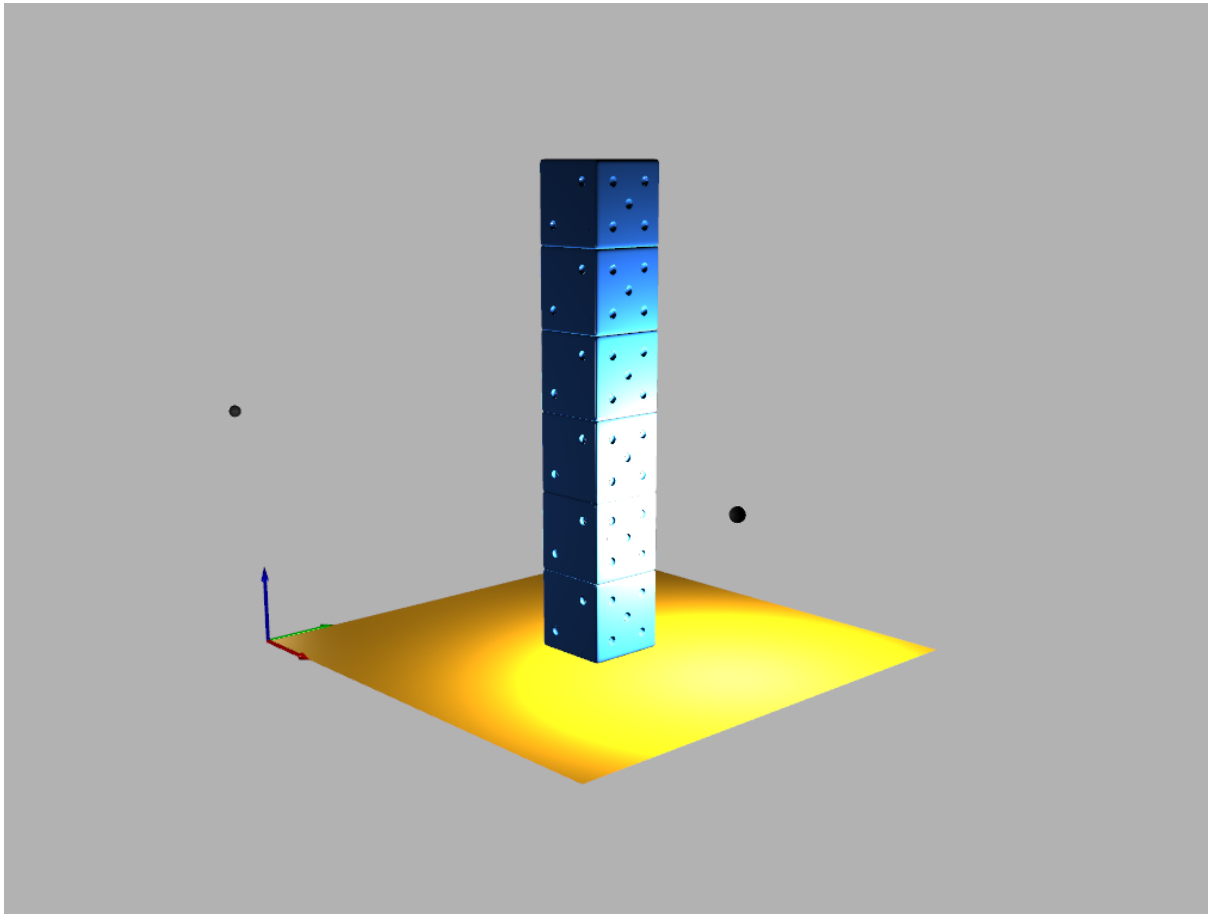the number on each side by using either dots or numerals.
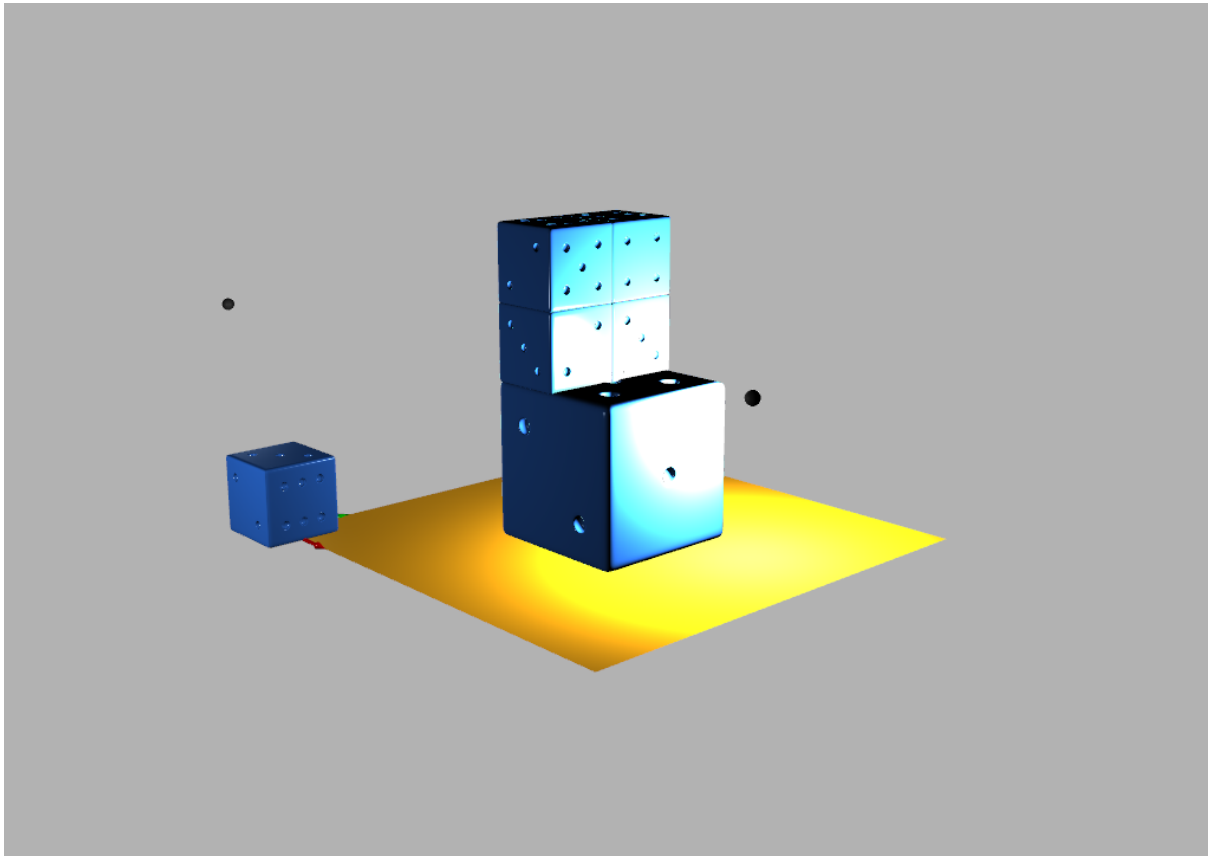
Figure 1: Initial Framework
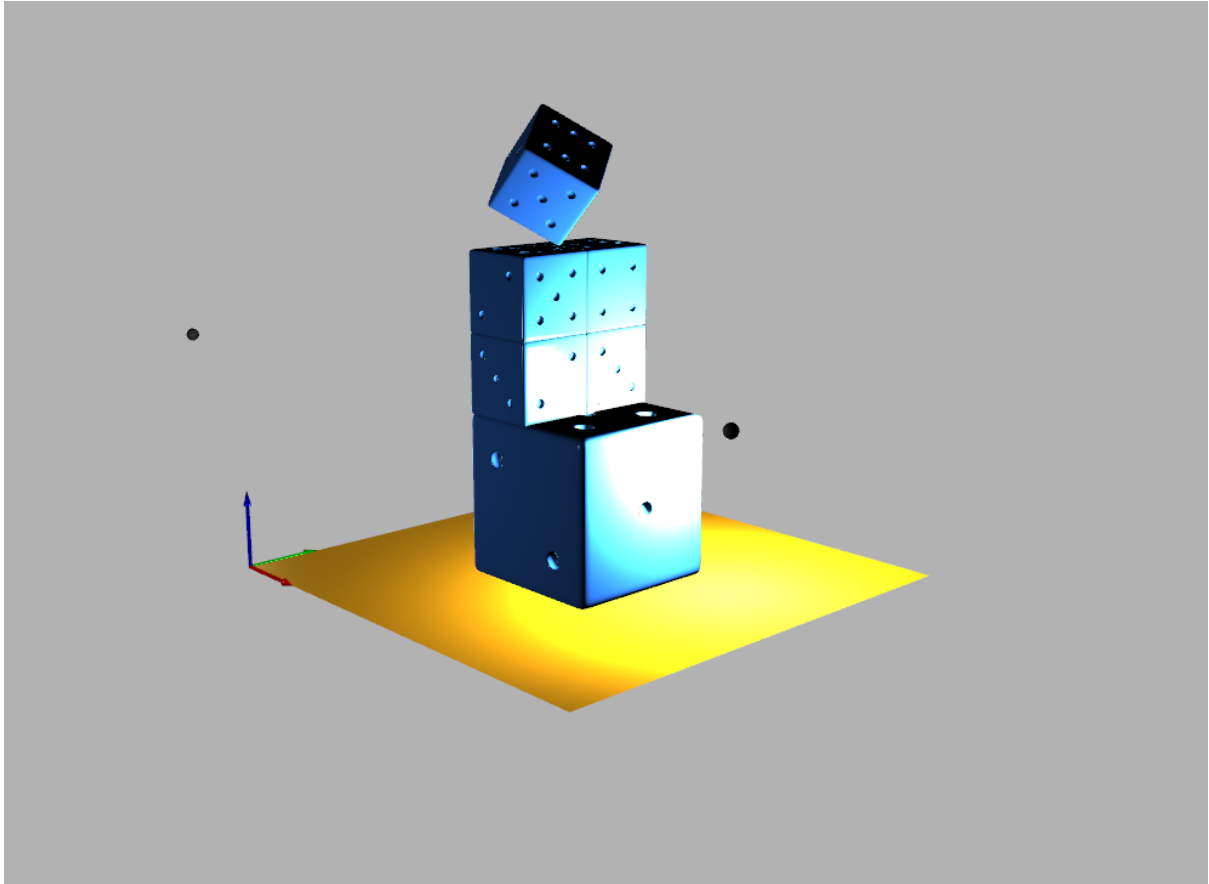
Figure 2: Expected Output for 2.1(a)
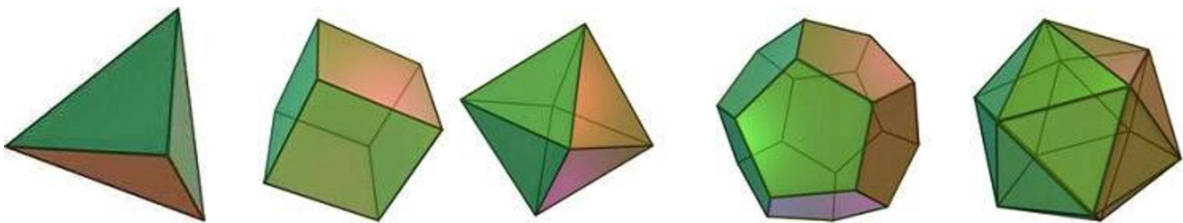
Figure 3: Expected Output for 2.1(b)

Figure 4: The Platonic Solids. From left to right : Tetrahedron(4 sides), Hexahedron(6 sides), Octahedron(8 sides), Dodecahedron (12 sides) and the Icosahedron (20 sides).