CZ2003 Lab1 Report

Experiment 1: Visualization using polygons

Damien Goh

SS2

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| **Polygon 1** | **Polygon 2** | **Notes:** |
| Above is the image “polygons.wrl”, polygon mesh displayed in the “smooth” option. It is made up of 5 different vertices and each face is connected by 3 vertices except the base which requires 4. | This is the exact same polygon but seen from the “Wireframe” option instead. | **Note 1:**  Seeing the polygons using different **Graphic Modes** allows us to see different details of the polygons. |
| Above is the image “polygonsDF1.wrl”, which looks like this when I change the **diffuseColor** to coordinates (0.7, 0.5, 0.3) | Above is the image “polygonsDF2.wrl”, which looks like this when I change the **diffuseColor** to coordinates (0, 0, 0) | **Note 2:**  For the 3 coordinates, it is arranged such that it represents red, green and blue respectively and each has a range from 0 to 1. For **Polygon 1**, all 3 coordinates have a value that is non-zero and less than 1 hence the colour shown is a mixed of the 3 colours. For **Polygon 2**, since 0 means there is no red, green or blue component, the colour will just be black as shown. |
|  |  | **Note 3:**  By changing the order of the vertices, it changes which part of the polygon is viewable. For **Polygon 1**, we can view the front but when we flip it around, the polygon turns invisible and we are unable to see the back. The opposite happens for **Polygon 2**, when we first |
| Above is the image “hexagon1.wrl” which is a 6 sided equilateral polygon, hexagon, with:  (-0.5 -1.0 0.0) #vertex 0  (0.5 -1.0 0.0) #vertex 1  (1.0 0.0 0.0) #vertex 2  (0.5 1.0 0.0) #vertex 3  (-0.5 1.0 0.0) #vertex 4  (-1.0 0.0 0..0) #vertex 5, and connected in this sequence: 0, 1, 2, 3, 4, 5, -1. | Above is the image “hexagon2.wrl” which is the same polygon as “hexagon1.wrl” just that this time the vertices are connected in reverse: 0, 5, 4, 3, 2, 1, -1. | cannot see the front until we flip it and then the back of the hexagon appears. |
| Above is the image “3DCube1.wrl” which is a 3D cube with 8 different vertices and 6 sides consisting of 4 vertices that are connected in a way that the whole cube can be seen from any direction. | Above is the image “3DCube2.wrl” showing the exact same cube as “3DCube1.wrl”, but the bottom, which is side0, has the vertices connected as (0, 1, 2, 3, -1) instead of the previous (0, 3, 2, 1, -1). | **Note 4:**  Hence as explained in the previous example, changing the order of vertices will cause a change in the way the cube is displayed and even those sides which the invisible side are covering are affected as they also cannot be seen even though I did not change their connection. |