Nanyang Technological University

Lab 1 Report: **Visualization using polygons**

CZ2003 Computer Graphics and Visualization

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PT2

Visualization using polygons (Experiment on Resolution)

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| Polygon 1 | Polygon 2 | Note |
| Above is the snapshot of “polygons.wrl” which define a polygon by 5 points: (-1.0 -1.0 1.0)(1.0 -1.0 1.0)(1.0 -1.0 -1.0)(-1.0 -1.0 -1.0)(0.0 1.0 0.0). and 5 panel. | This is the snapshot of the same pyramid but in  “Wireframe” mode which represents the edges  that form the pyramid. | **Note 1:**  Explore different Graphics Modes of the VRML browser (Wireframe, Vertices, Flat). |
| Above is the snapshot of “DiffuseColor.wrl” which define a polygon with diffuseColor 1, 0.5, 0.2 (#red=1, green=0.5, blue=0.2) | Above is the snapshot of “DiffuseColor2.wrl” which define a polygon with diffuseColor 1, 1, 1 (#red=1, green=1, blue=1) | **Note 2:**  The rendered color is composed of three primary color in computer graphics and visualization which are Red, Green and Blue. First parameter in diffuseColor() represents Red, the second represent Green and the third for Blue. Thus, any parameter will result in respective color being rendered. |

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| Above is the snapshot of “polygon hexagon.wrll” which define a six-sided equilateral and equiangular polygon with (-0.5, 0.866, 0.0) #vertex 0  (-1.0, 0.0, 0.0) #vertex 1  (-0.5, -0.866, 0.0) #vertex 2  (0.5, -0.866,0.0) #vertex 3  (1.0,0.0,0.0) #vertex 4  (0.5,0.866,0.0) #vertex 5  And place order in 012345 | Above is the snapshot of “polygon hexagon2.wrll” which define a six-sided equilateral and equiangular polygon with  (-0.5, 0.866, 0.0) #vertex 0  (0.5, 0.866, 0.0) #vertex 1  (1.0, 0.0, 0.0) #vertex 2  (0.5, -0.866, 0.0) #vertex 3  (-1.0, 0.0, 0.0) #vertex 4  (-0.5, 0.866, 0.0) #vertex 5  And place order in 012345 | **Note 3:**  The different vertices placed order makes different visible direction. For first hexagon, the visible direction is (0, 0, -1), and if watching direction is (0, 0, 1) the hexagon will be invisible. Same as hexagon2, the visible direction is from (0, 0, 1), and if watching direction is (0, 0, -1) the hexagon will be invisible. |
| Above is the snapshot of “polygon cube.wrl” which defines a 3D cube based on 8 vertices. Each visible side of the cube is defined differently so that their visible side are displayed to the viewer. | Above is the snapshot of “polygon cube2.wrl” which defines a 3D cube with the same 8 vertices in “polygon cube.wrl”. However, the order of bottom square is now “0, 1, 2, 3” instead of “0, 3, 2, 1” as in “polygon cube.wrl”. | **Note 4:**  The invisible side of bottom square is shown to the viewer. Which makes the square and even other square covered by it invisible. |