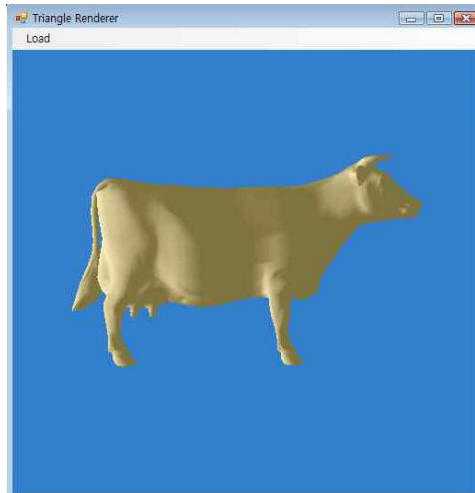


## Assignment 3. Shading



► Write a program for illumination. It must include the following:

- Back-face culling
- Hidden surface removal using the depth buffer
- Gouraud shading and Phong shading

► For this program, you have to use two input files. (the same as Assignment #2's)

**[Mesh input file → .msh]**

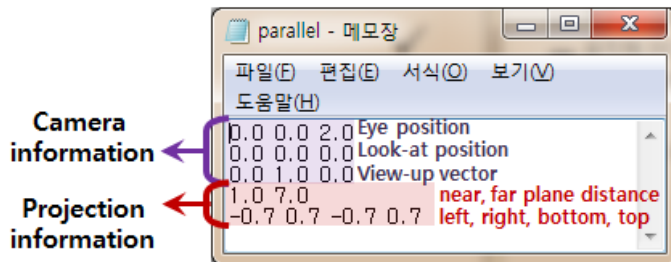
```

NumOfVertex      2904
Vertex 1  0.151632 -0.043319 -0.08824
Vertex 2  0.163424 -0.033934 -0.08411
Vertex 3  0.163118 -0.053632 -0.080509
Vertex 4  0.176307 -0.028912 -0.075048
Vertex 5  0.174429 -0.051613 -0.073945
      ⋮
NumOfPolygon      5804
Polygon 1  1 2 3
Polygon 2  2 4 5
Polygon 3  3 5 6
Polygon 4  4 7 8
Polygon 5  5 8 9
  
```

- Number of vertices
- Vertex information

- Index
- Position: x, y, z [-1, 1]
- Number of polygons
- Polygon information :
  - Index
  - Indices of vertices composing each polygon (counter clockwise)

**[Viewing-information input file → .txt] – only parallel projection**



- Eye position
- Look-at position
- View-up vector
- Near, far plane distance
- Left, right, bottom, top

▶ Development environment will be given

- <http://vplab.snu.ac.kr/lectures/12-1/graphics/CGAssignment3.zip>



- Write a program in "CShading" class

```

class CShading
{
public:
    CShading(void);
    ~CShading(void);

    void LoadMeshFile(TCHAR* strFilename);
    void LoadViewingInfoFile(TCHAR* strFilename);
    void DrawPolygon(HDC hdc);
    void SetShadingMode(bool bGouraud);

private:
    bool    m_bMeshFileLoaded;
    bool    m_bViewingInfoFileLoaded;
    bool    m_bGouraud;
};

```

- You can use only *SetPixel()* for drawing

**COLORREF SetPixel(HDC hdc, int X, int Y, COLORREF crColor)**

hdc: a handle to the device context

X: the x-coordinate, in logical units, of the point to be set

Y: the y-coordinate, in logical units, of the point to be set

crColor: the color to be used to paint the point

▶ Due date: **2012/6/11 23:59**

- Source code  
Briefly comment the source code
- Report  
Describe structure and implementation
- Submit via email: [jhyun@cglab.snu.ac.kr](mailto:jhyun@cglab.snu.ac.kr)  
Email subject: [CG]학번이름 (eg. [CG]2011-3XXXX윤지혜)
- 10% penalty per day delayed, no score after 5 days delay

▶ Grading

- Implementation: 90%

- Back-face culling and hidden surface removal: 30%
- Gouraud shading: 30%
- Phong shading: 30%
- Documentation: 10%

▶ If you have a question, email me ([jhyun@cglab.snu.ac.kr](mailto:jhyun@cglab.snu.ac.kr))