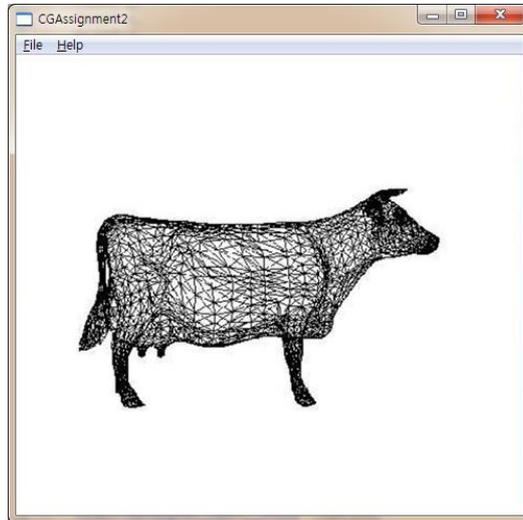
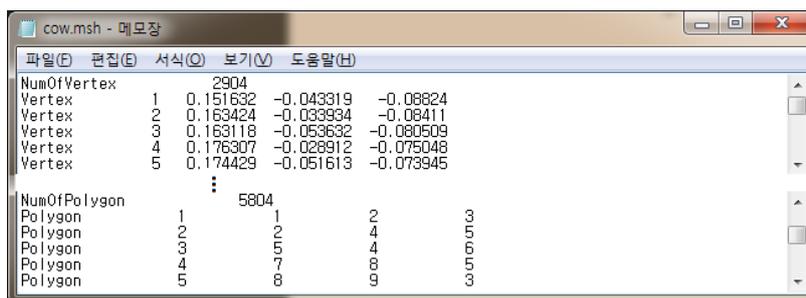


## Assignment 2. 3D Viewing



- ▶ Write a program for 3D viewing. You should show the processes that make matrices.
  - World, view, projection(parallel, perspective), viewport
- ▶ For this program, you have to use two input files.

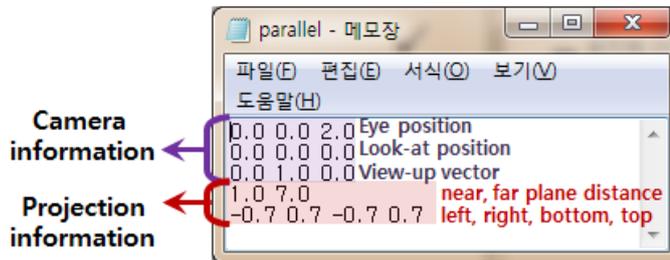
### [Mesh input file → .msh]



- 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)

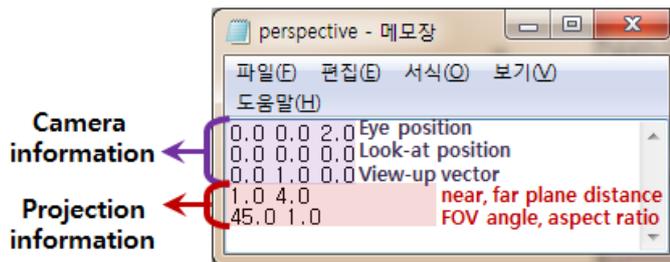
[Viewing-information input file → .txt] – 2 types

1. Parallel projection



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

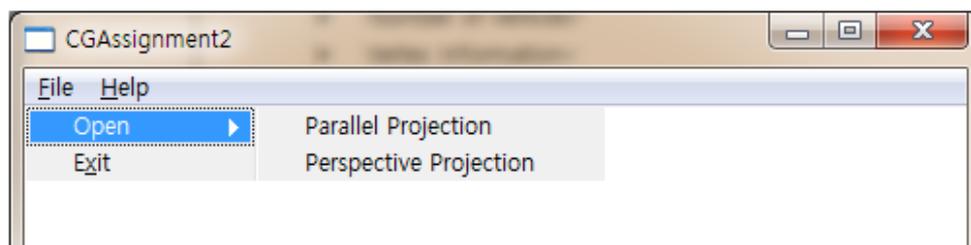
2. Perspective projection



- Eye position
- Look-at position
- View-up vector
- Near, far plane distance
- FOV angle, aspect ratio

▶ Development environment will be given

- <http://vplab.snu.ac.kr/lectures/12-1/graphics/CGAssignment2.zip>



- Write a program in "CViewing" class

```

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

    void LoadMeshFile(TCHAR* strFilename);
    void LoadViewingInfoFile(TCHAR* strFilename, bool bParallel);
    void DrawPolygon(HDC hdc);

private:
    bool    m_bMeshFileLoaded;
    bool    m_bViewingInfoFileLoaded;
};

```

- You can use only *MoveToEx()* and *LineTo()* for drawing
  - If you want, you may use mid-point algorithm by your hand
  - The coordinates of transformed vertices are ceiled

#### **BOOL MoveToEx ( HDC hdc, int X, int Y, LPPOINT lpPoint )**

hdc: A handle to the device context

X: The x-coordinate, in logical units, of the new position

Y: The y-coordinate, in logical units, of the new position

lpPoint: Pointer to a POINT structure that receives the previous current position

If this parameter is a NULL pointer, the previous position is not returned

#### **BOOL LineTo ( HDC hdc, int XEnd, int YEnd )**

hdc: A handle to the device context

XEnd: The x-coordinate, in logical units, of the line's ending point

YEnd: The y-coordinate, in logical units, of the line's ending point

► Due data: **2012/5/3 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%
  - Parallel projection: 45%
  - Perspective projection 45%
- Documentation: 10%

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