

OpenGL HW2

CS 550000 Computer Graphics

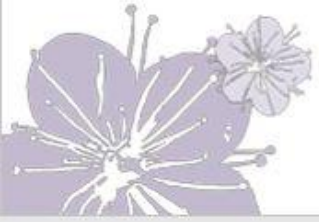
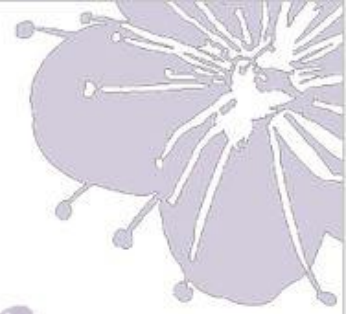
May 9, 2018

CGV Lab, NTHUCS



Outline

- Goal
- Keyboard & Mouse
- Grading principle
- How to submit your homework



Goal

Per pixel lighting

All the lighting calculations are performed in fragment shader

- Directional light
 - Ambient, Diffuse, Specular
- Point light
 - Ambient, Diffuse, Specular
- Spot light
 - Ambient, Diffuse, Specular, Cut-off angle, Exp



Keyboard & Mouse

Change lighting mode

- Key **Q** : Directional light
- Key **W** : Point light
- Key **E** : Spot light

Toggle lighting parameter

- Key **A** : Ambient
- Key **S** : Diffuse
- Key **D** : Specular



Keyboard & Mouse

Keyboard

- Key **R** : Toggle to auto rotate (axis-y) the model
- Key **Z/X** : Change the model



Keyboard & Mouse

Directional light

- lighting direction is fixed at worldspace $(-1, 1, 1)$



Keyboard & Mouse

Point light

- Initially locate at (0,-1,0)
- Use arrow key to move the point light on y-plane

```
void onKeyboardSpecial(int key, int x, int y) {  
    case GLUT_KEY_LEFT:  
    case GLUT_KEY_RIGHT:  
    case GLUT_KEY_UP:  
    case GLUT_KEY_DOWN:
```

```
}
```



Keyboard & Mouse

Spot light

- Left-Click the mouse to increase the EXP
- Right-Click the mouse to decrease the EXP
- Scroll the mouse to modify the Cut-off angle
- Slide the mouse to change the position of lighting source on z-plane (change value of x and y)



Grading principle

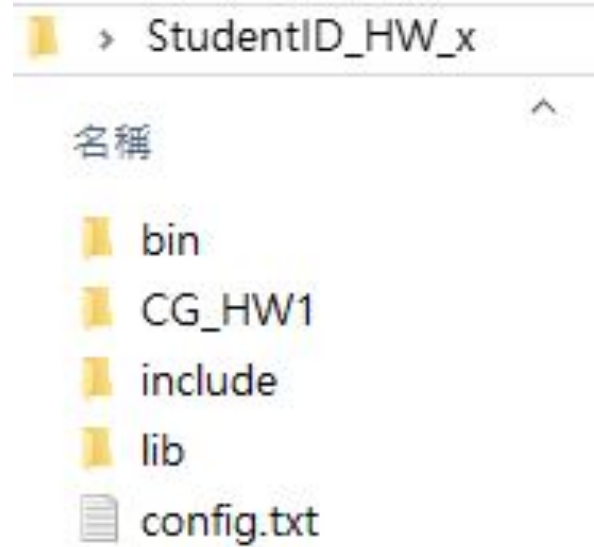
Total score: 100

- Directional light (25 %)
- Point light (25 %)
- Spot light (25 %)
- Other
 - Able to rotate / switch / normalize models (10 %)
 - Report(15 %)



How to submit your homework

- Check your folder structure
 - Folder name: StudentID_HW_x
 - **StudentID : type your student id**



How to submit your homework

- In StudentID_HW_x\CG_HWx
 - **Delete** CG_HWx.VC.db
 - **Must delete .vs**

StudentID_HW_x > CG_HW1

名稱

.vs
CG_HW1
Release
CG_HW1.sln
CG_HW1.suo
CG_HW1.VC.db



StudentID_HW_x > CG_HW1

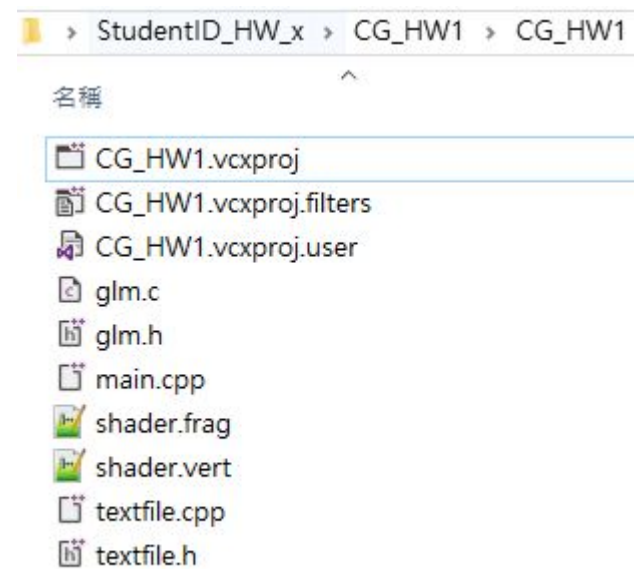
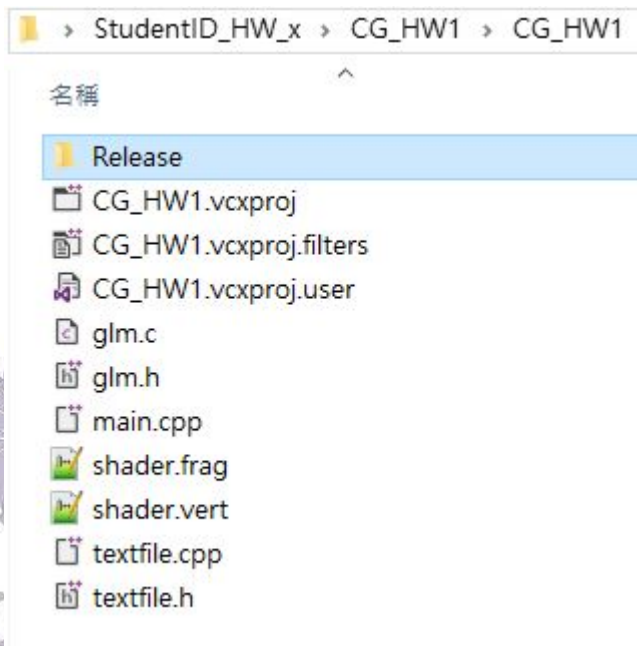
名稱

CG_HW1
CG_HW1.sln
CG_HW1.suo



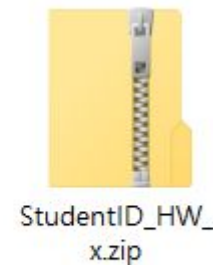
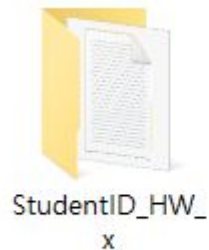
How to submit your homework

- In StudentID_HW_x\CG_HWx\CG_HWx
 - **Delete** Release



How to submit your homework

- Zip StudentID_HW_x -> StudentID_HW_x.zip
- Please make sure your zip file **DOES NOT** contain the folder of ColorModels



How to submit your homework

- Submit **zip** to iLMS
- iLMS homework page
 - Title: HWx_yourStudentID_name
 - Ex: HW2_106012345_李曉萍

