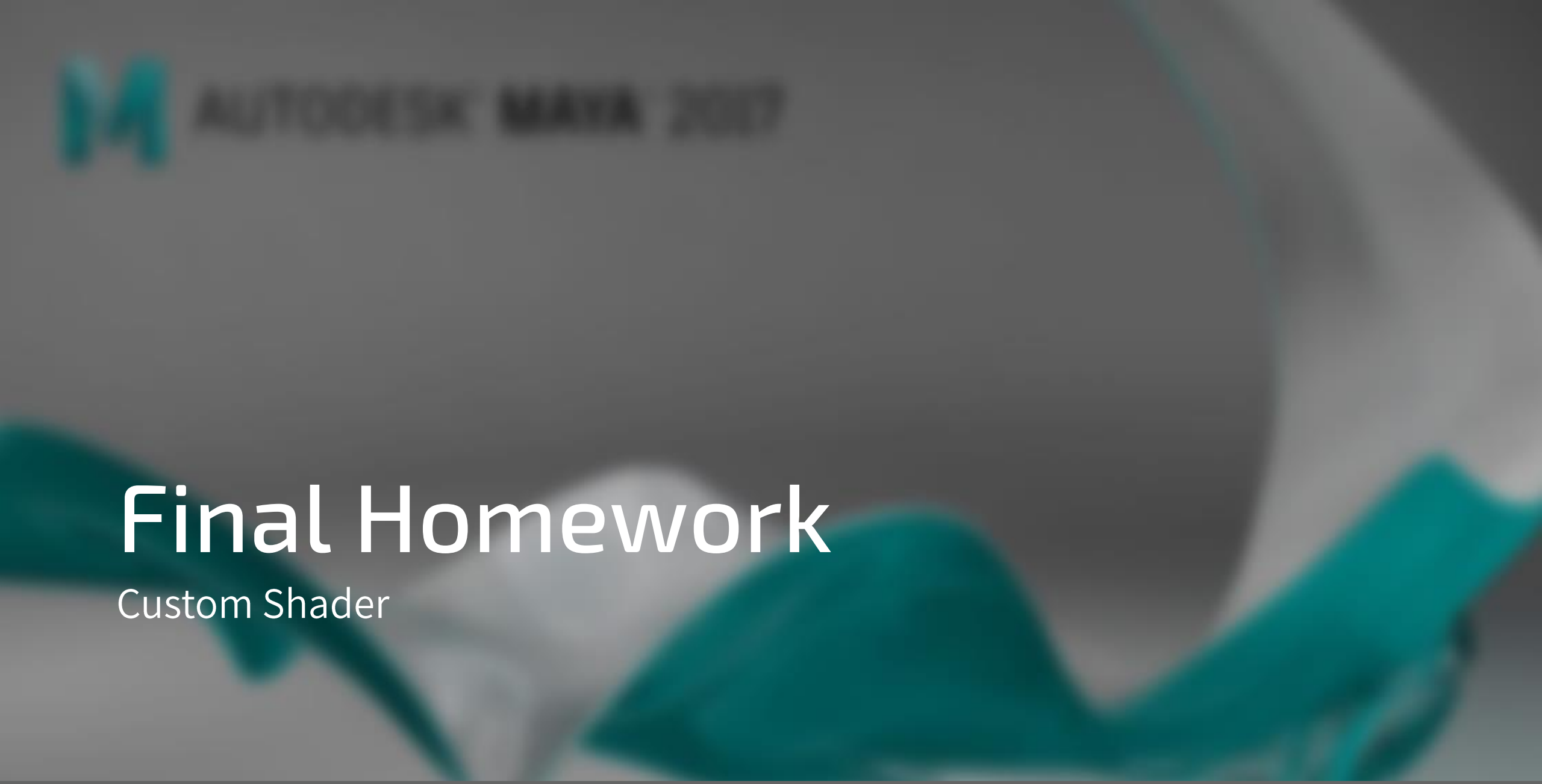
Homework #5

2018 Fall, GCT522, Computer Graphics Theory and Application

Hanui Lee

2018.11.05

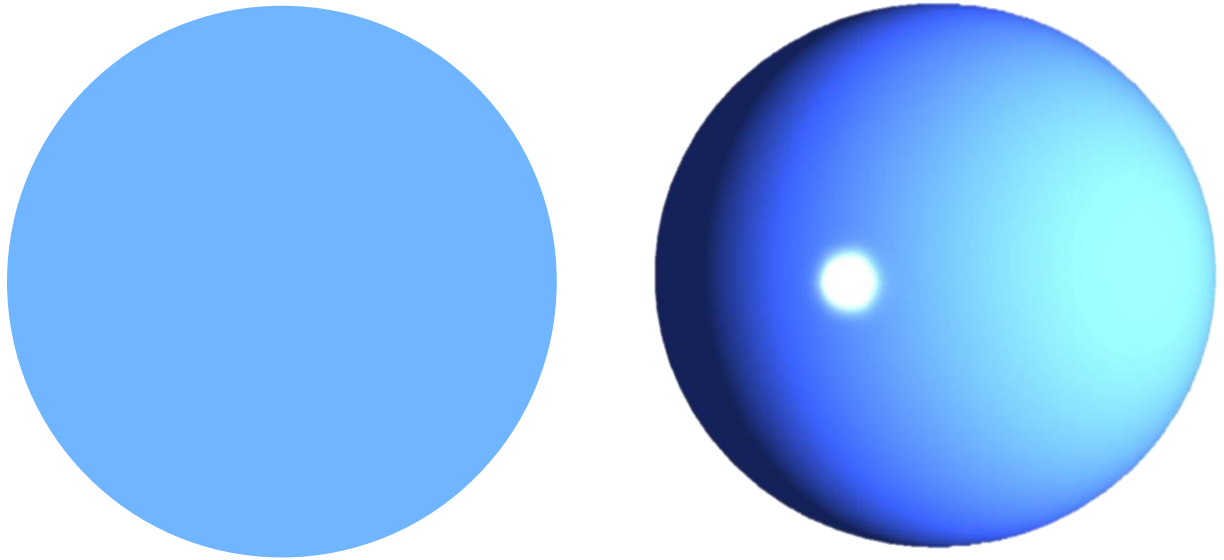


Final Homework

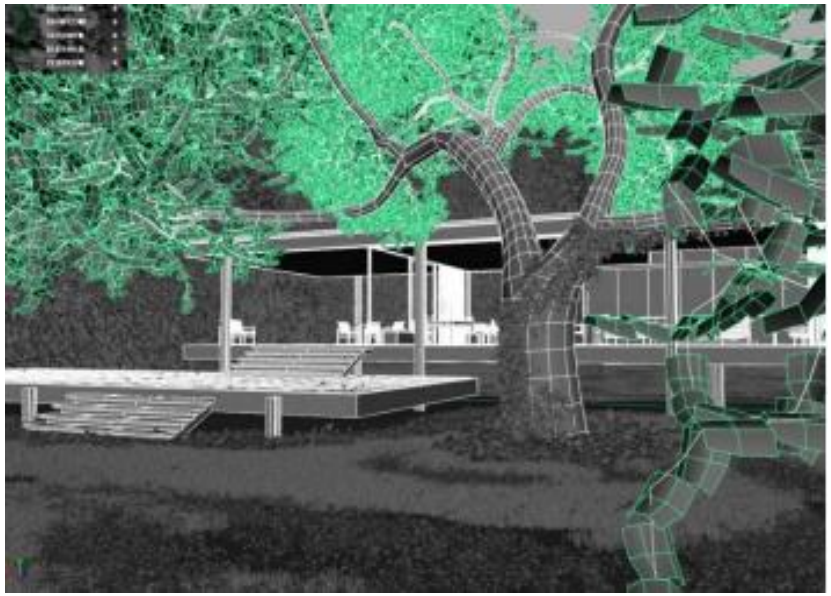
Custom Shader

Shading

- **Definition**
  - Computing or simulating the color of objects as seen from a given viewpoint
  - Depends on
    - Angle of view
    - Amount of light
    - Orientation of the surfaces
    - Objects' color



Shading



Shading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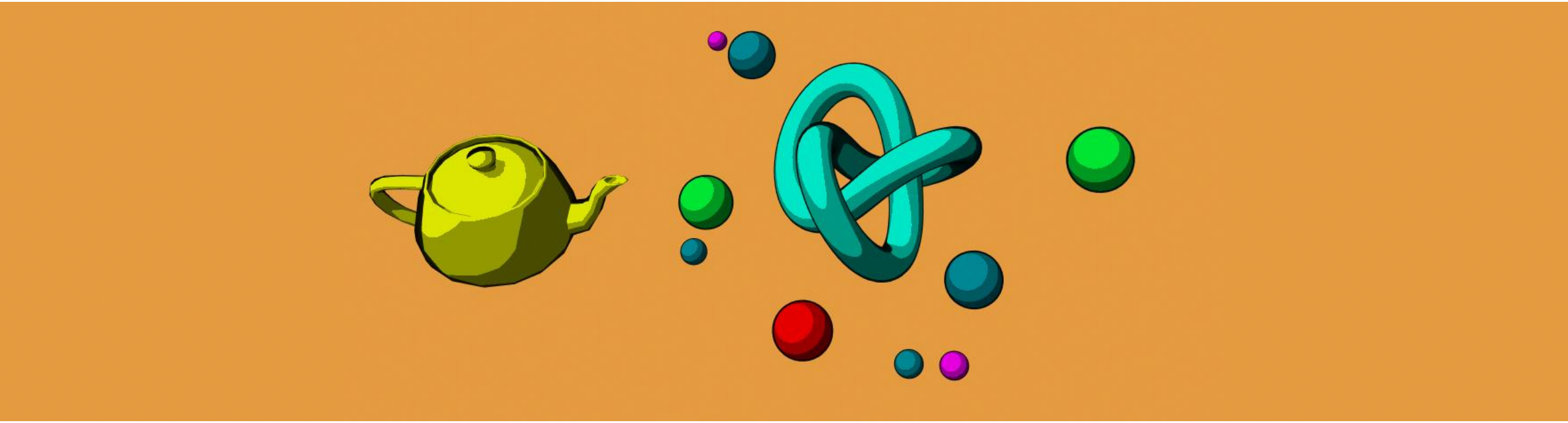
Disney
FROZEN
IN THEATRES IN 3D
THANKSGIVING

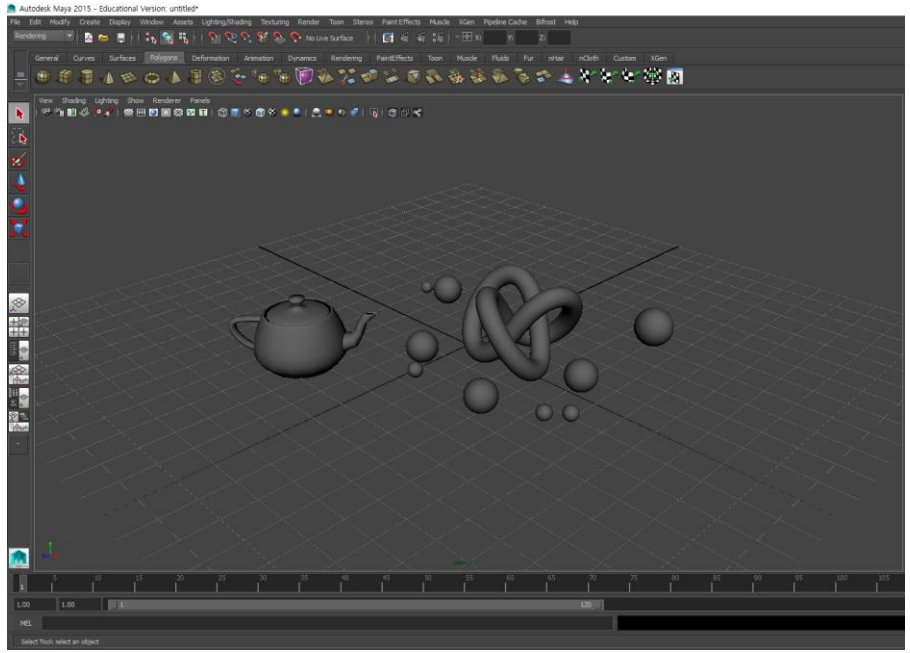
Goal

- Implementing a ‘Custom Shader(Toon Shader)’
  - Understanding shader node and making your own shader node

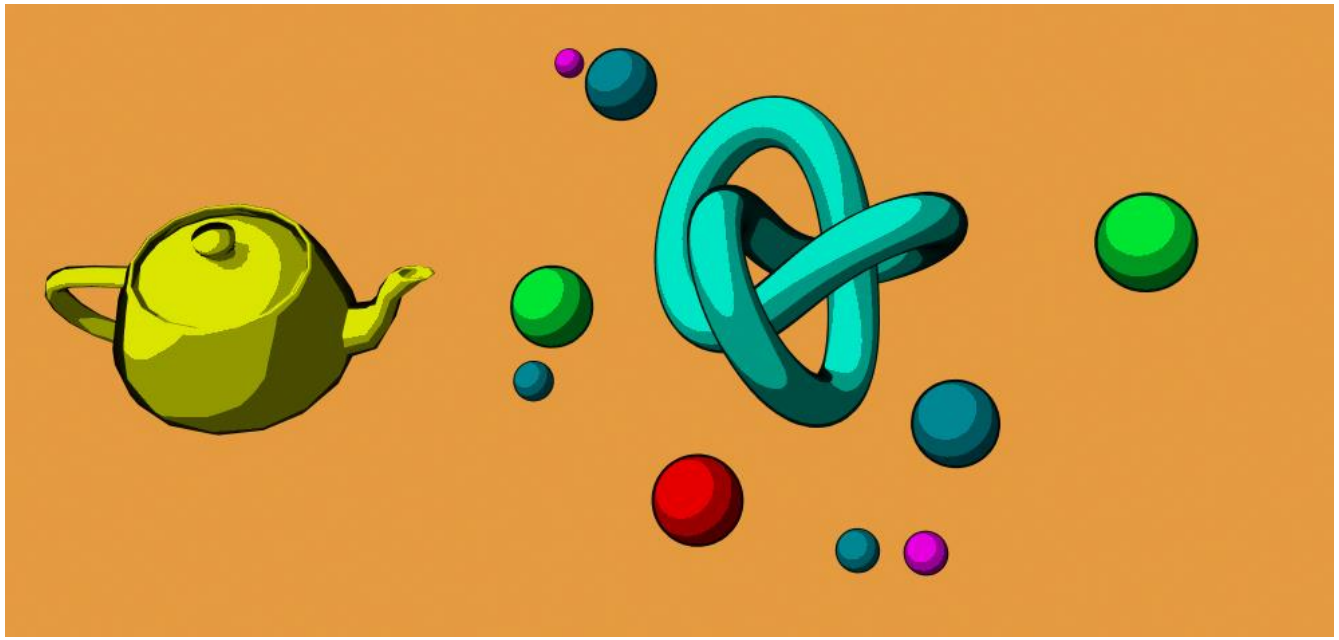


Goal

- Implementing a ‘Custom Shader(Toon Shader)’



Maya scene



Result

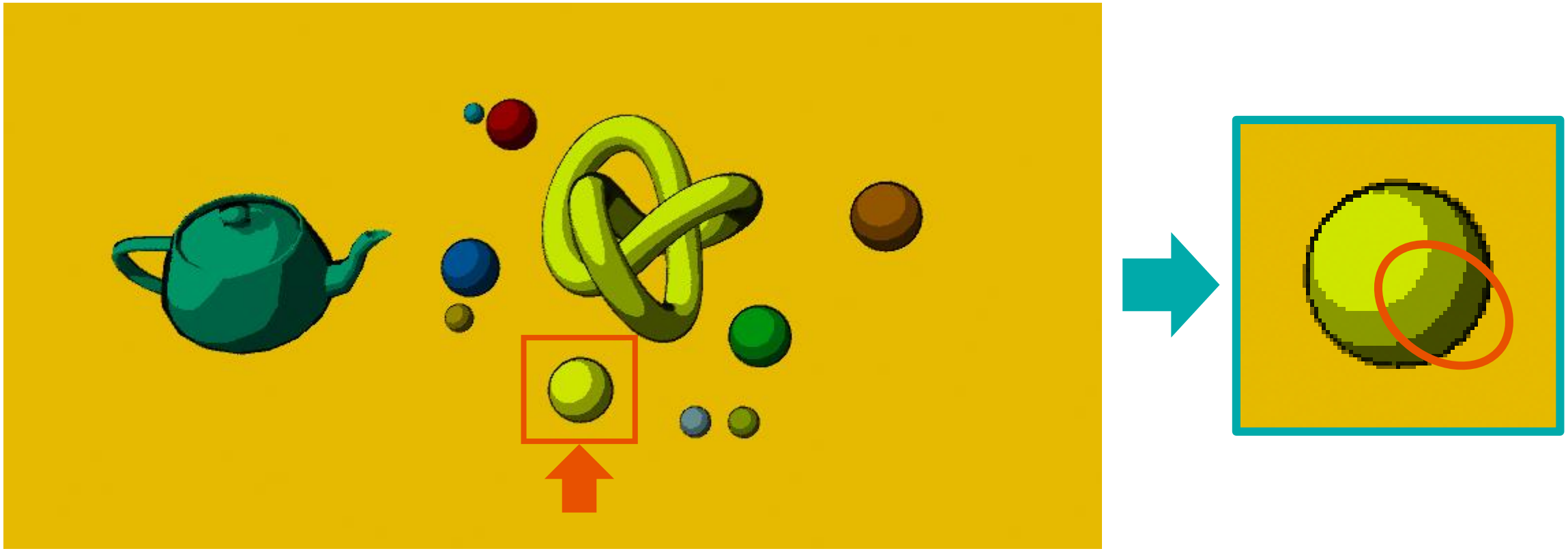
Homework #5

- Toon Shader
  - Get familiar with custom shader node
  - Make custom shader
  - 5 Points
  - 2 Requirements

- Due date
  - 21th, November, 14:30

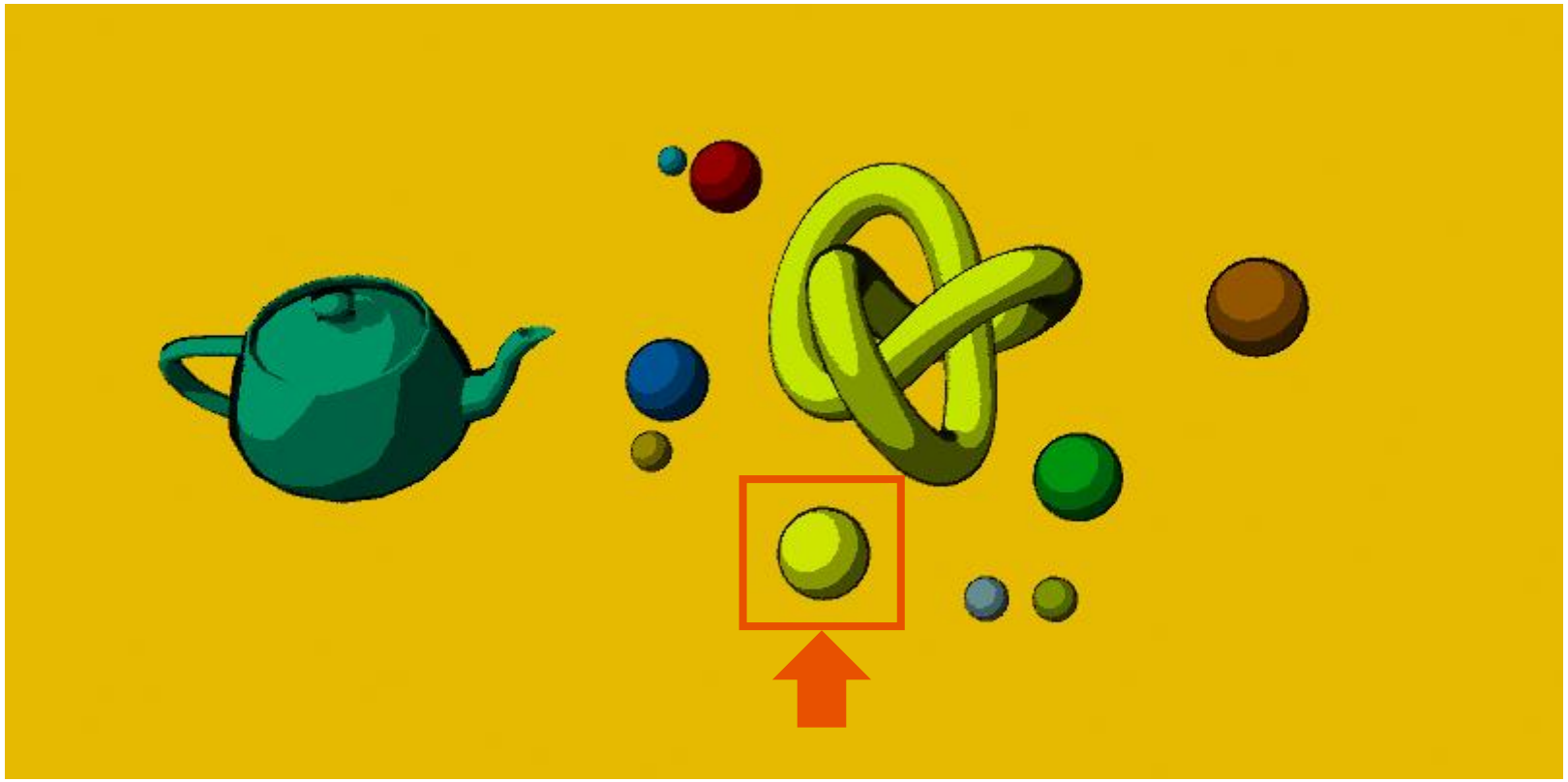
Requirements

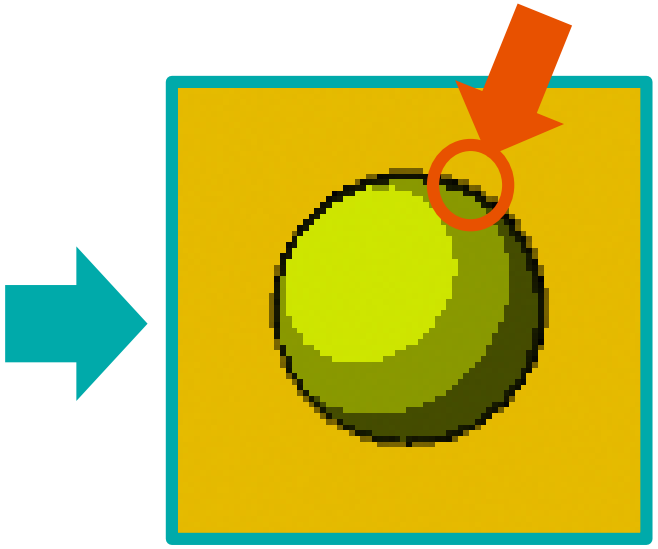
- Color shading (3.0pts)



Requirements

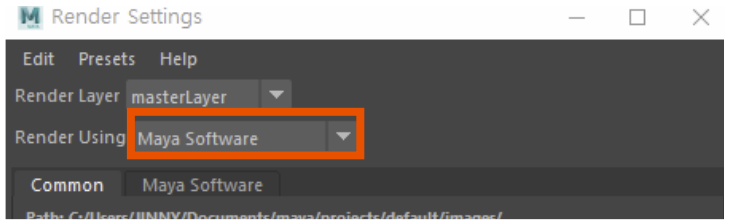
- Silhouette Edge (2.0pts)

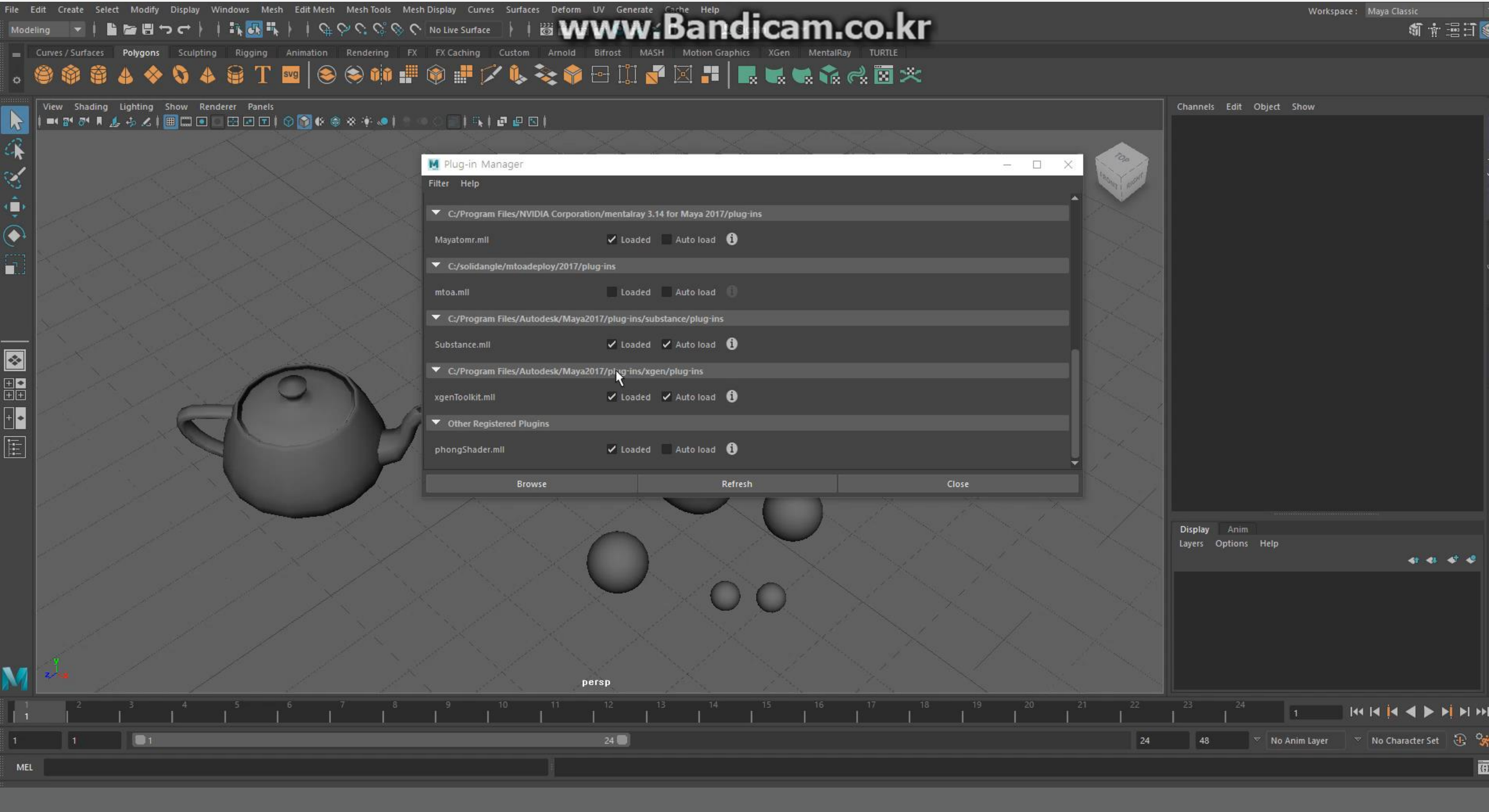




Workflow

1. **Make** your own maya scene to render
2. **Make** your custom shader.
3. **Load** .mll file in maya.
4. **Fine** your shader node in ‘Hypershade’ window.
5. **Apply** your custom shader through drag and drop by using **middle button on mouse.**
6. **Render** scene by using your shader.




File Edit Create Select Modify Display Windows Mesh Edit Mesh Mesh Tools Mesh Display Curves Surfaces Deform UV Generate Cache Help
Workspace : Maya Classic
Modeling
No Live Surface
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Curves / Surfaces Polygons Sculpting Rigging Animation Rendering FX FX Caching Custom Arnold Bifrost MASH Motion Graphics XGen MentalRay TURTLE
View Shading Lighting Show Renderer Panels
Channels Edit Object Show
Plug-in Manager
Filter Help
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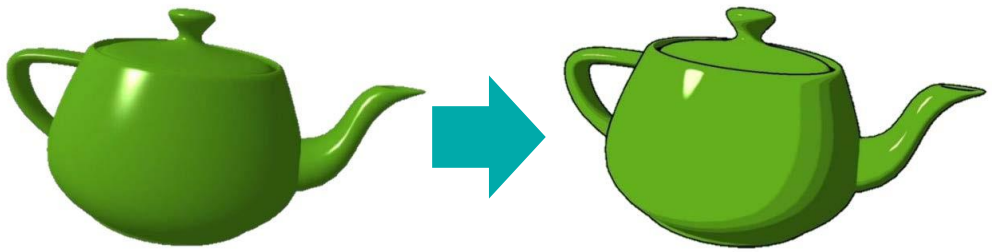
Other Registered Plugins
phongShader.mll Loaded Auto load
Browse
Refresh
Close
Display Anim
Layers Options Help
persp
No Anim Layer
No Character Set
MEL

Submission files

- Source code :
  - .sln / .cpp / . h / .vcproj (Please don't send me *.sdf)
- Maya scene file :
  - .mb
- Complied binary file :
  - .mll
- Readme.txt file :
  - Target Machine & software(ex. Maya 2017, x64)
  - How to use your Command(Please explain in detail)
- Screen Capture file:
  - .png file, video file

Tips & Code Snippets

- **Code Structure**
  - Phong shader example
    - {Maya2017_Path}\devkit\plug-ins\phongShader
    - Ex) C:\Program Files\Autodesk\Maya2017\devkit\plug-ins\phongShader
  - Change a part of the code for *phong shading* to *toon shading*

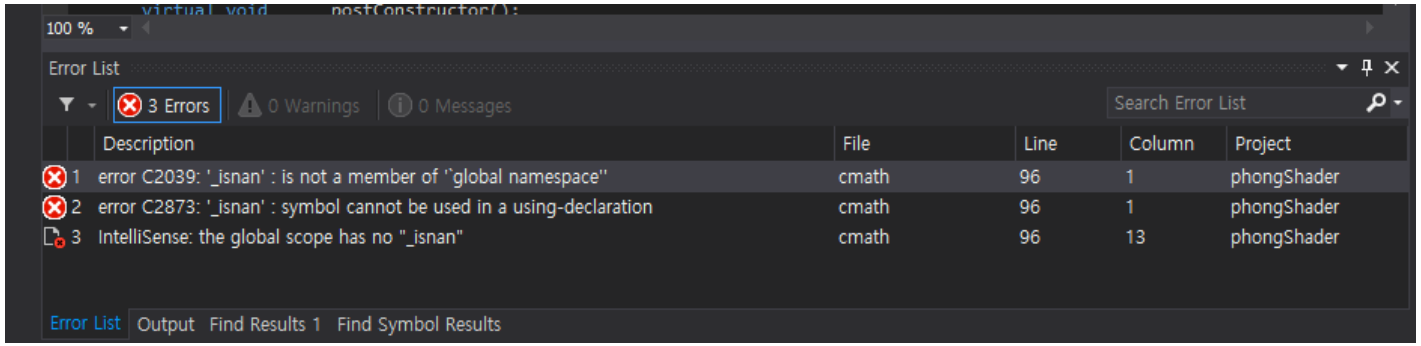


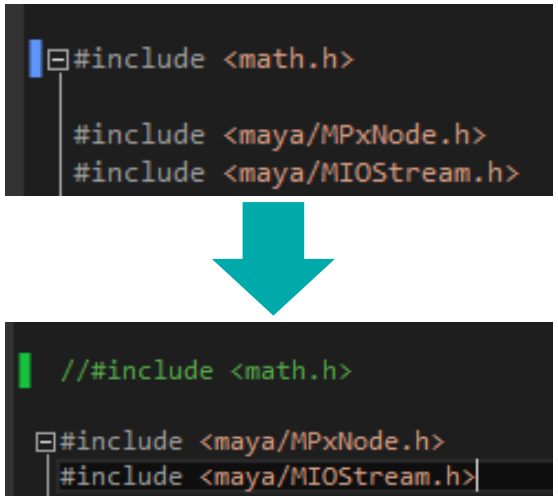
Tips & Code Snippets

- **Code Structure**
  - Phong shader example
    - {Maya2017_Path}\devkit\plug-ins\phongShader
    - Ex) C:\Program Files\Autodesk\Maya2017\devkit\plug-ins\phongShader
  - Change a part of the code for ***phong shading*** to ***toon shading***
    - First, understand the original example code of phong shading
    - Second, edit the code in *[phongShader.cpp]* only.
      - Replace with your code from commend line **510** to **573**

Tips & Code Snippets

- Code Structure
  - For the ‘isnan’ error
    - Comment #include <math.h>

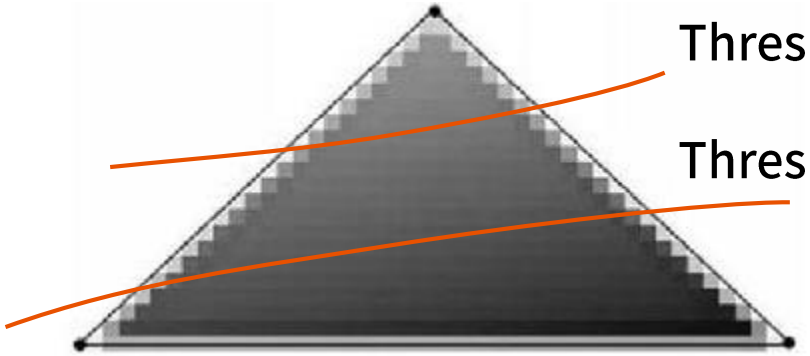


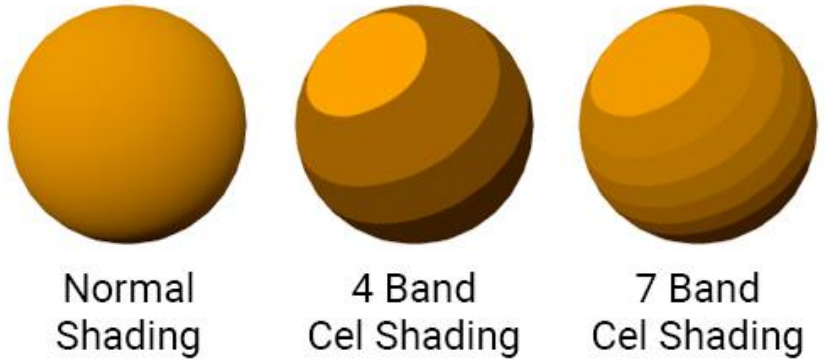


Tips & Code Snippets

Read this - *https://en.wikipedia.org/wiki/Cel_shading*

- Toon shading
  - Apply step function to the diffuse color(R,G,B) values
  - The number of steps depends on you

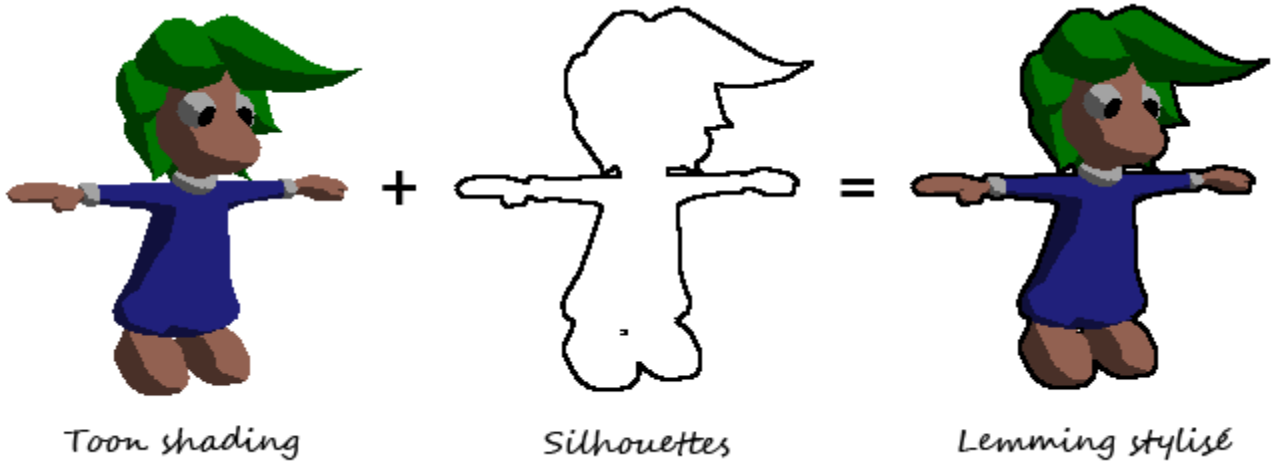




Tips & Code Snippets

Read this - *https://en.wikipedia.org/wiki/Cel_shading*

- **Silhouette Edge**
  - Draw black color at the edge
    - By calculating the angle between surface normal and ray direction vector
    - Think in 3D space, not in 2D image domain



Workflow

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6. Render scene by using your shader.

Upload your files to KLMS

until 21th, November, 14:30

Q/A

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