

# Real Time Rendering Engine

**Real – Time Graphics**  
with a modern graphics approach

**Flow Render Engine**

**Rendered scenes**

**Master's degree final project**  
**Master computing engineering**  
**High performance computing area**

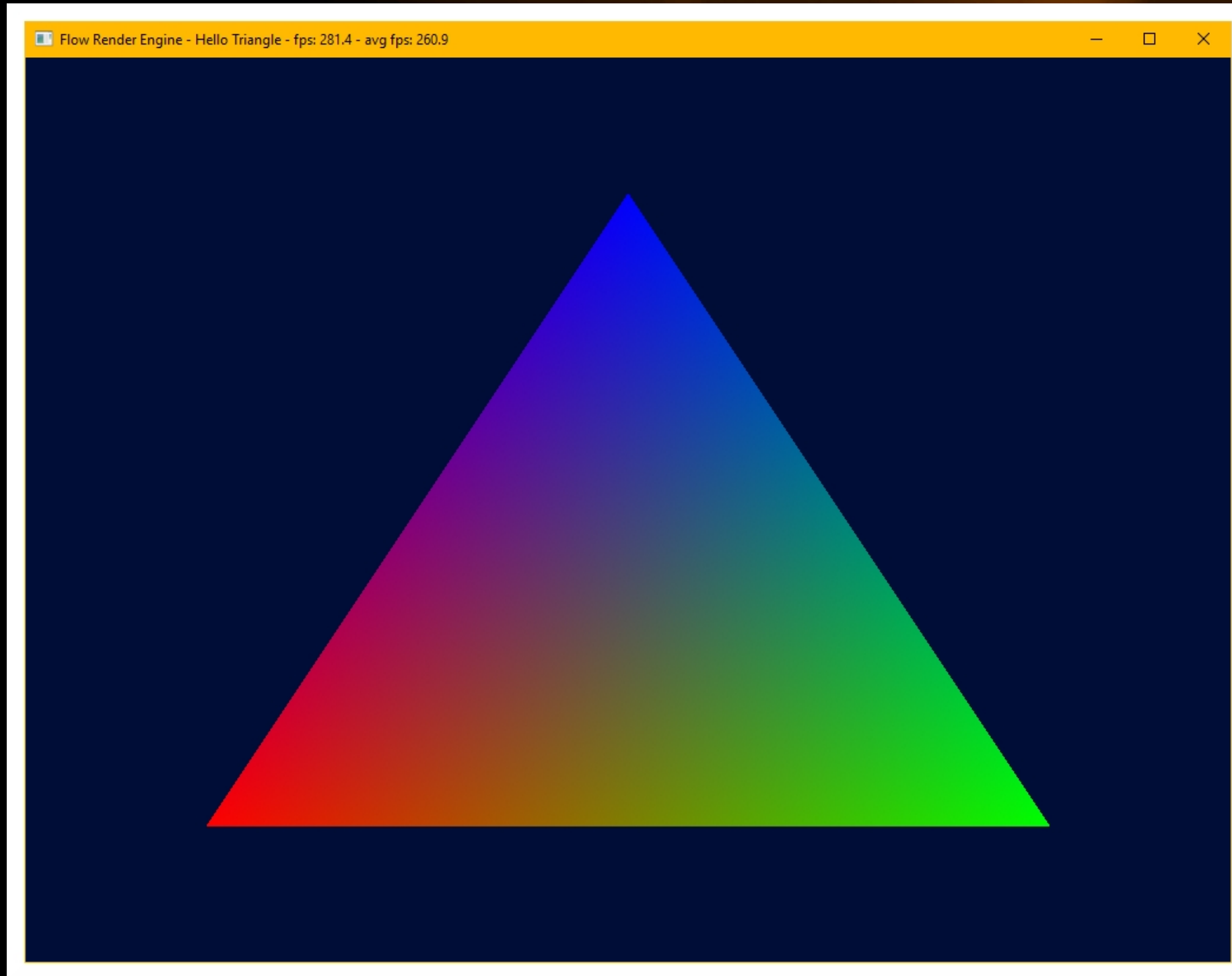


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de Catalunya

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<http://www.flowrenderengine.com/>

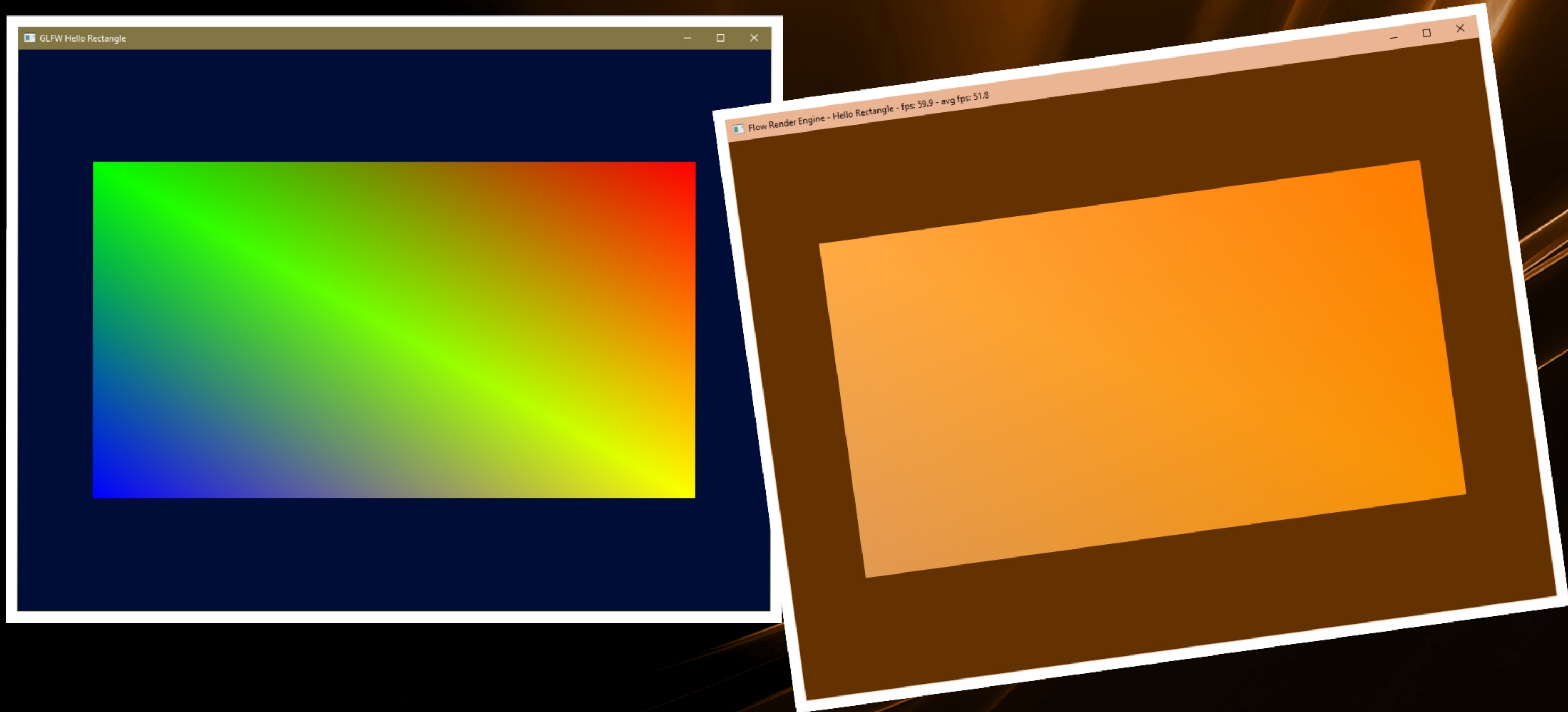
Tutors: Ester Arroyo Garriguez  
Josep Jorba Esteve  
December 2019

# 1 - Triangle

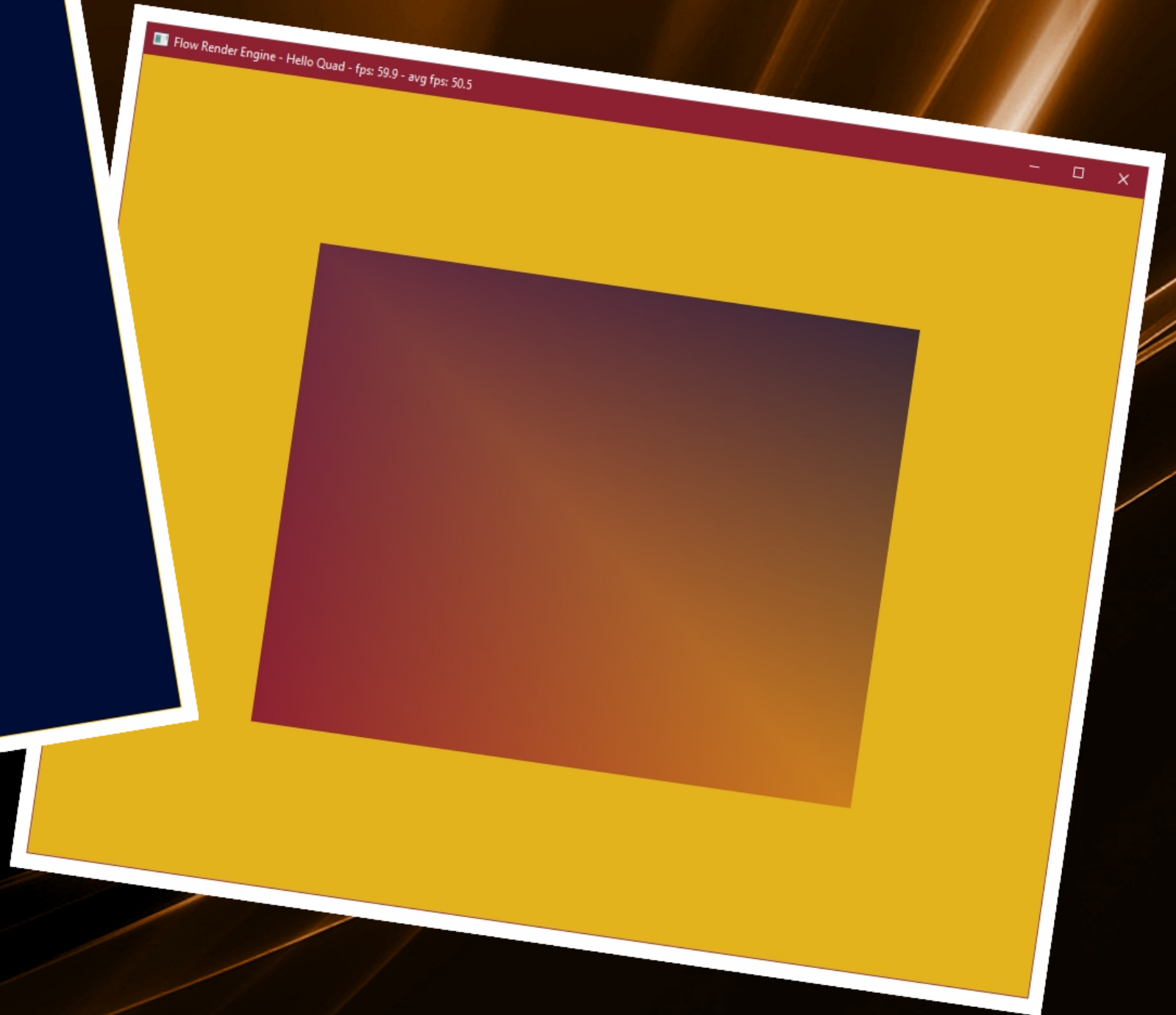




# 2 - Rectangles

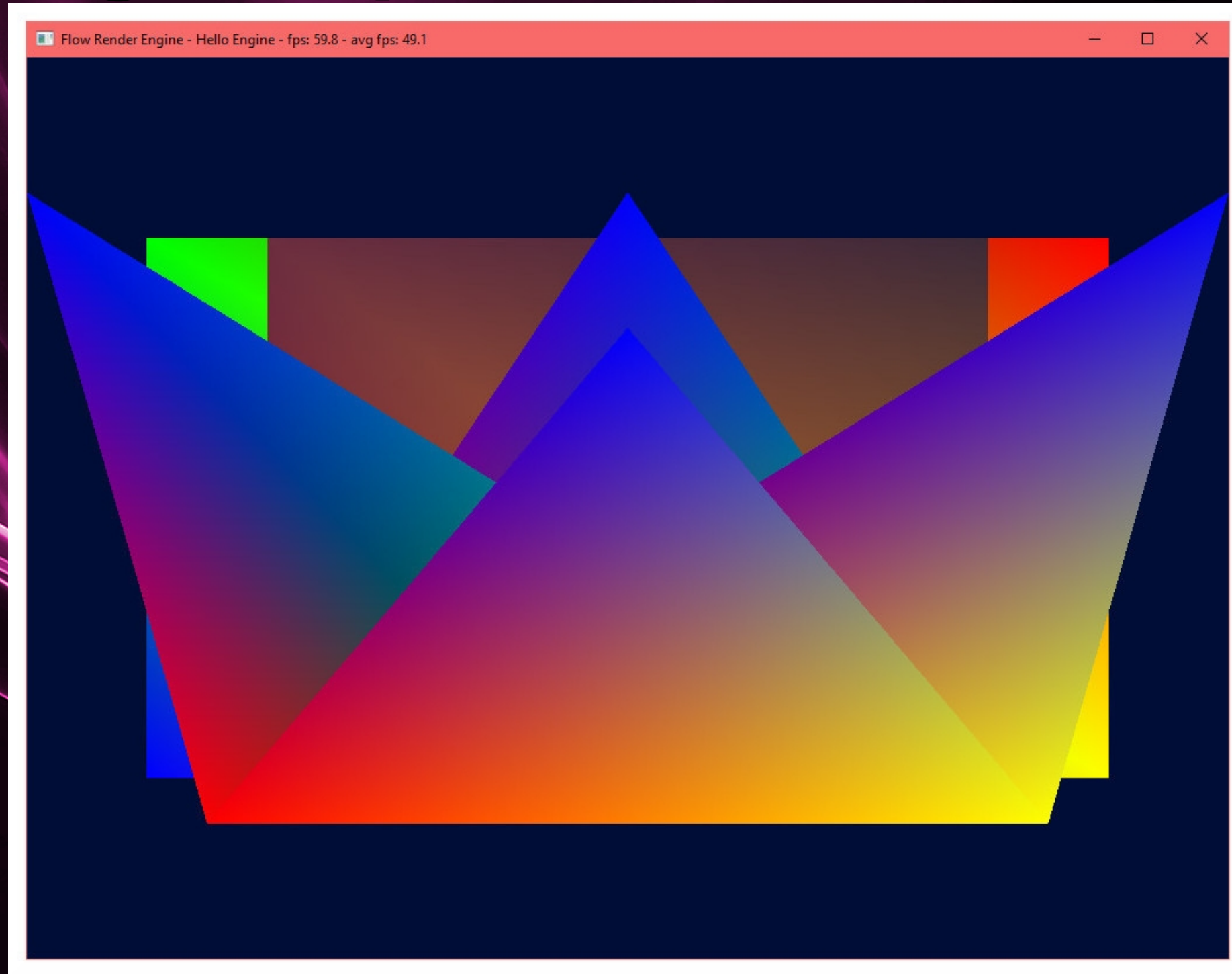


# 3 - Quads

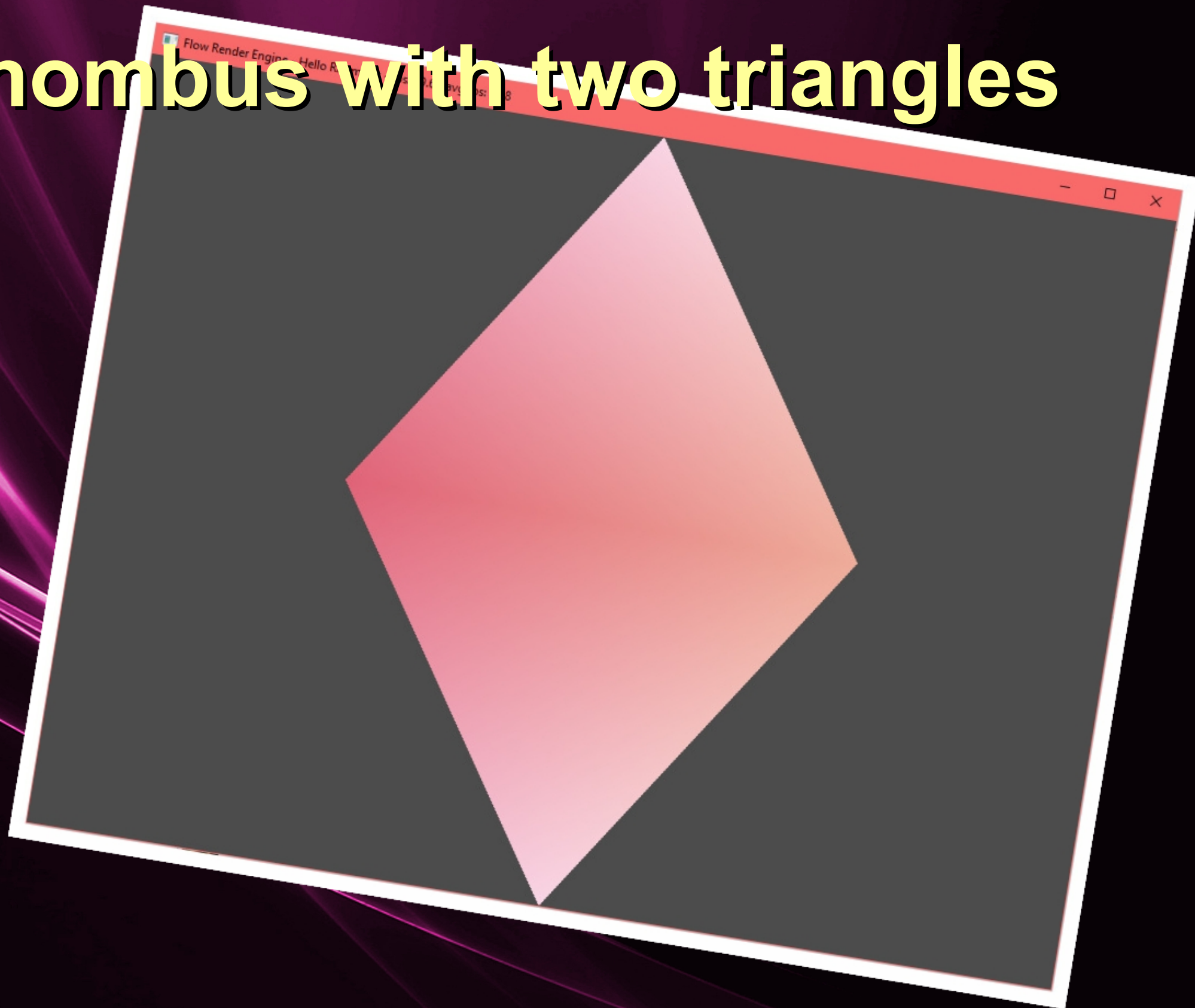




# 4 – Triangles, quads and rectangles

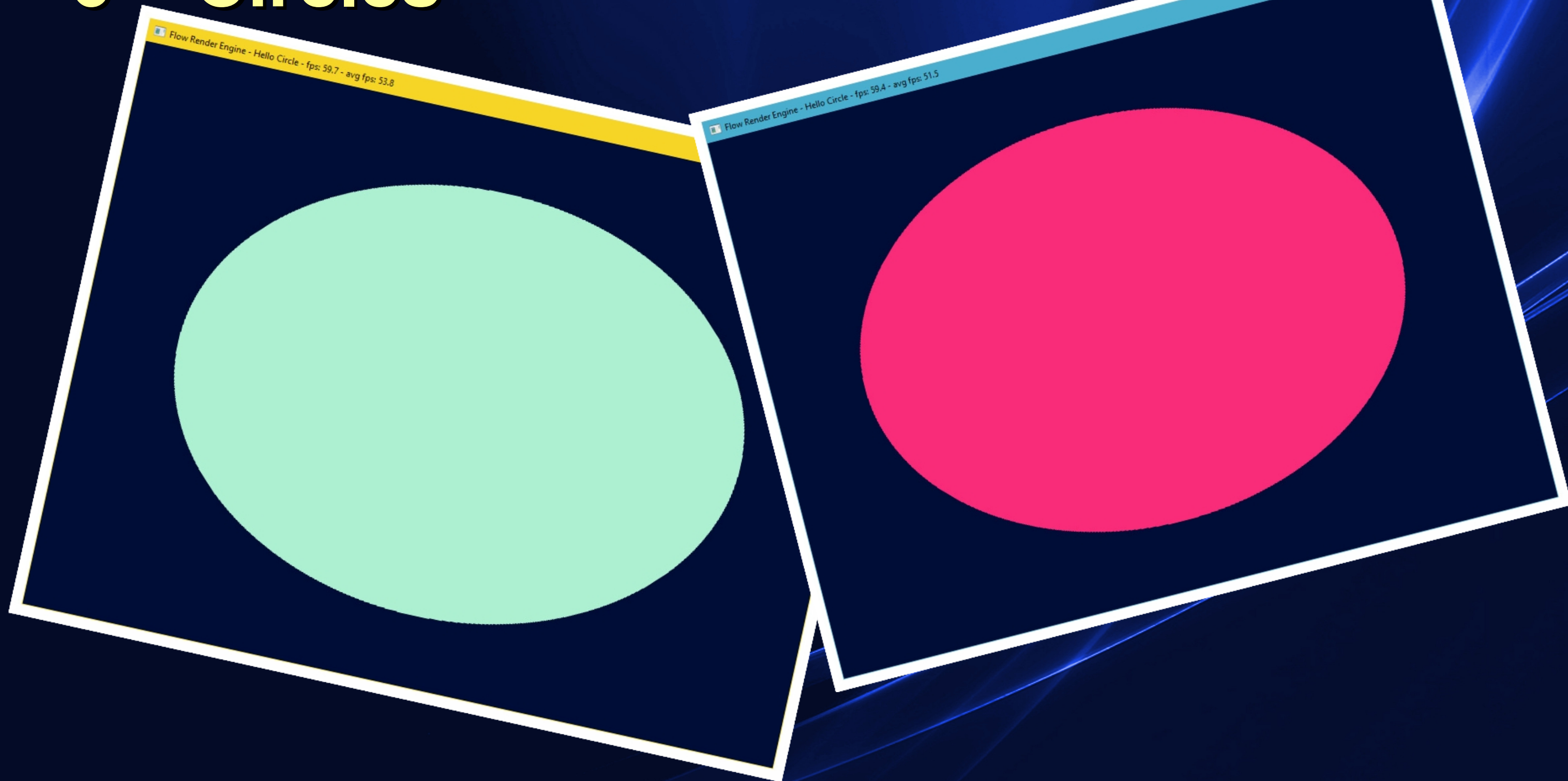


# 5 – Rhombus with two triangles

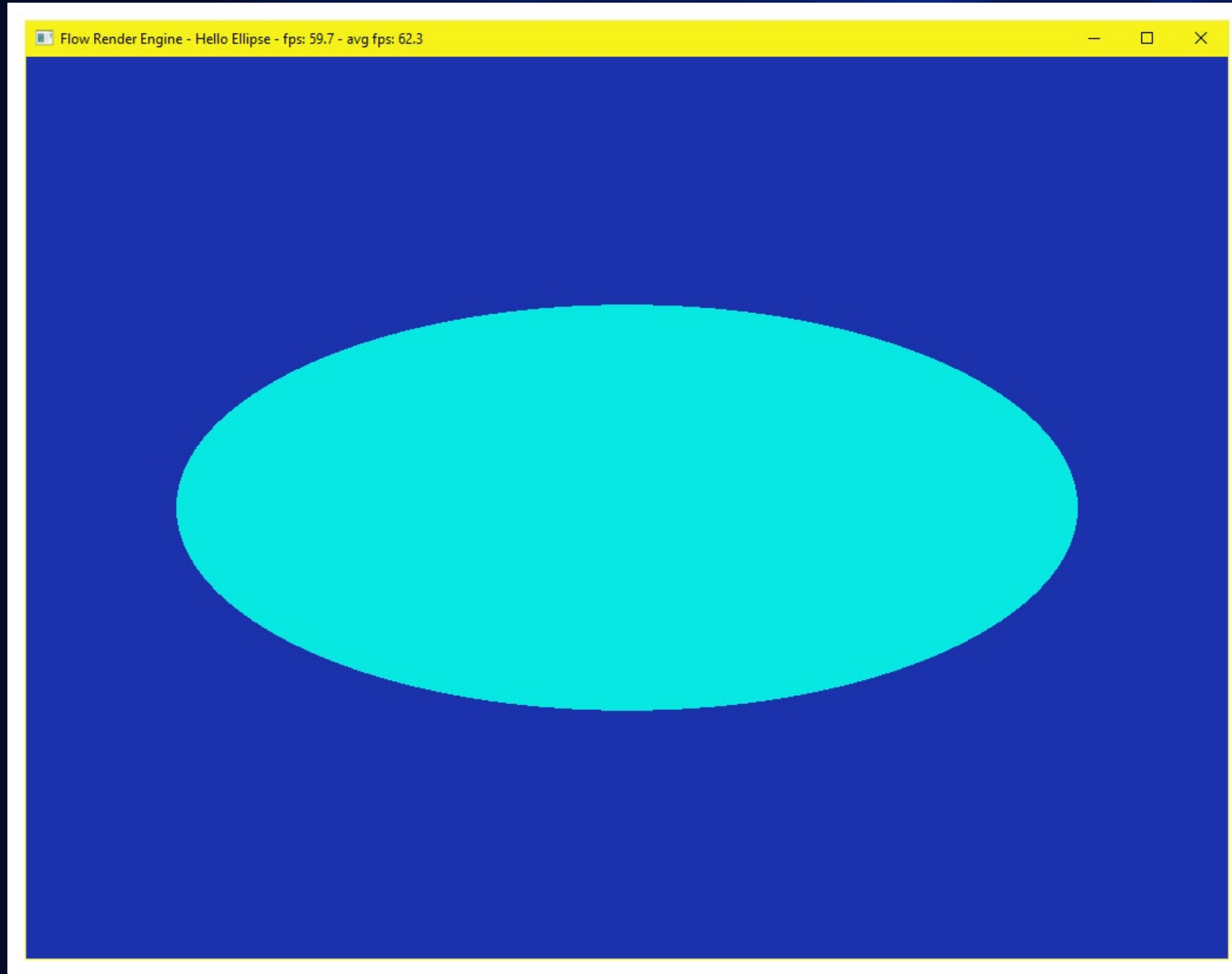




# 6 – Circles

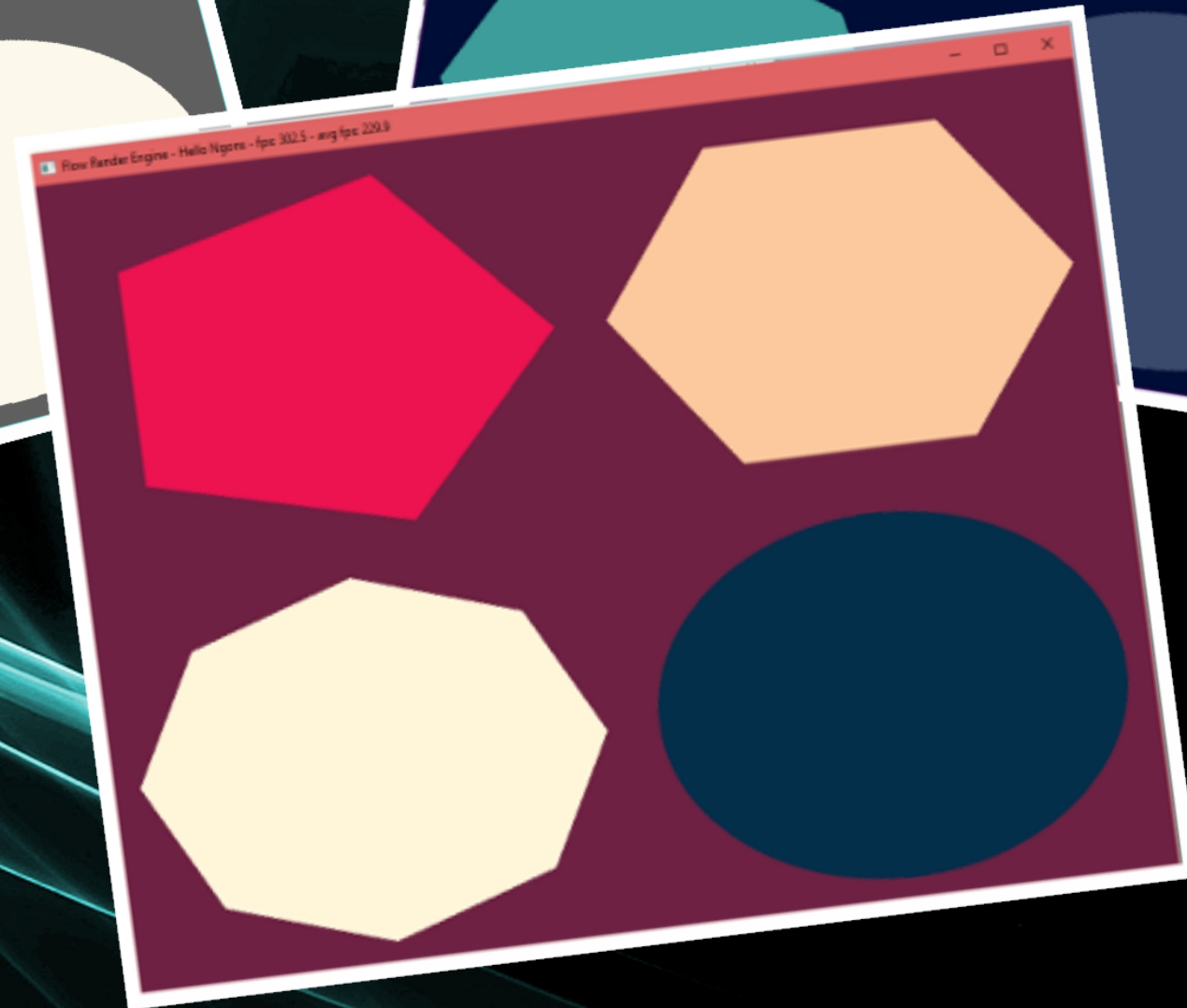


# 7 – Ellipse

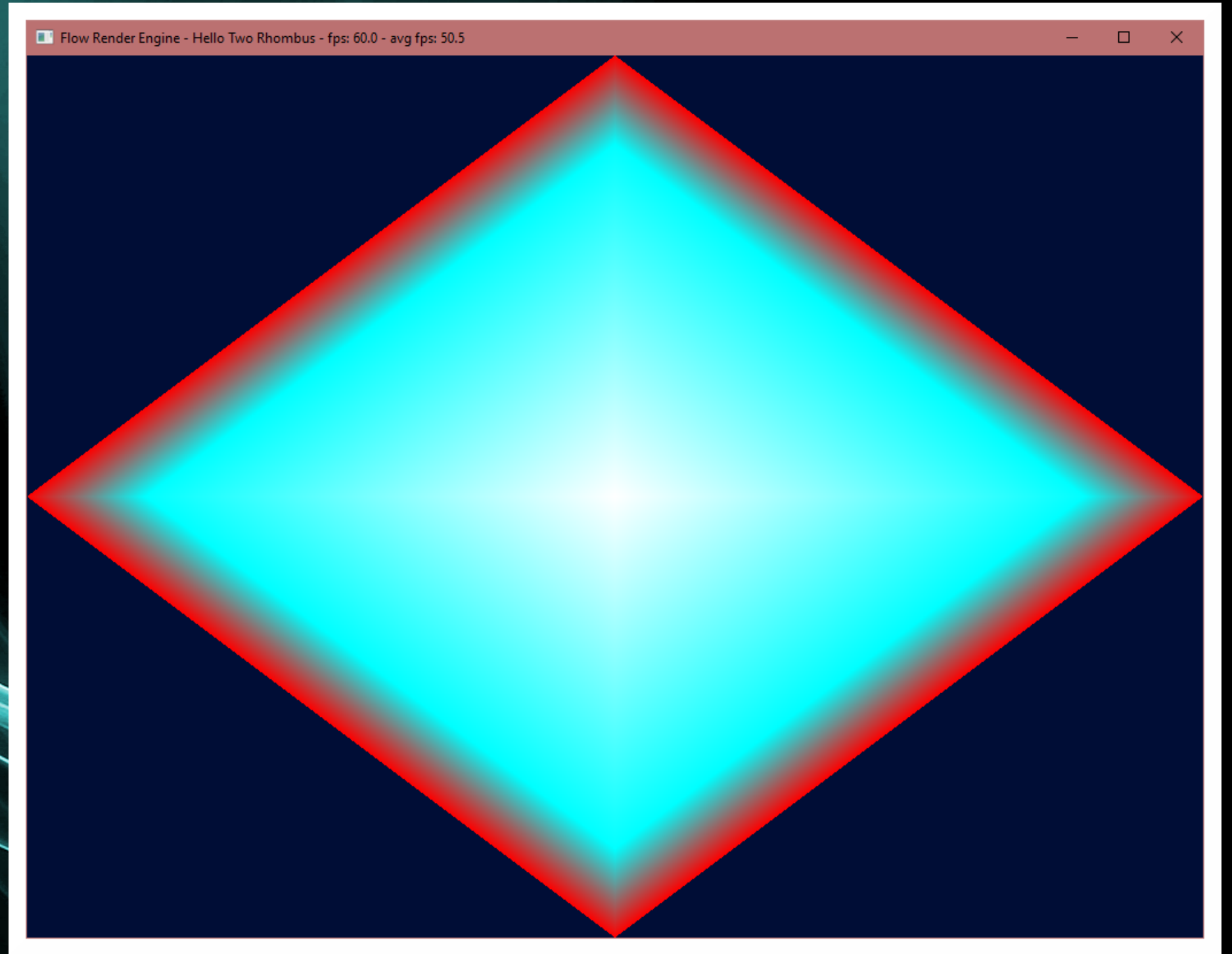




# 8 – Ngons: pentagon, hexagon, octagon, circle

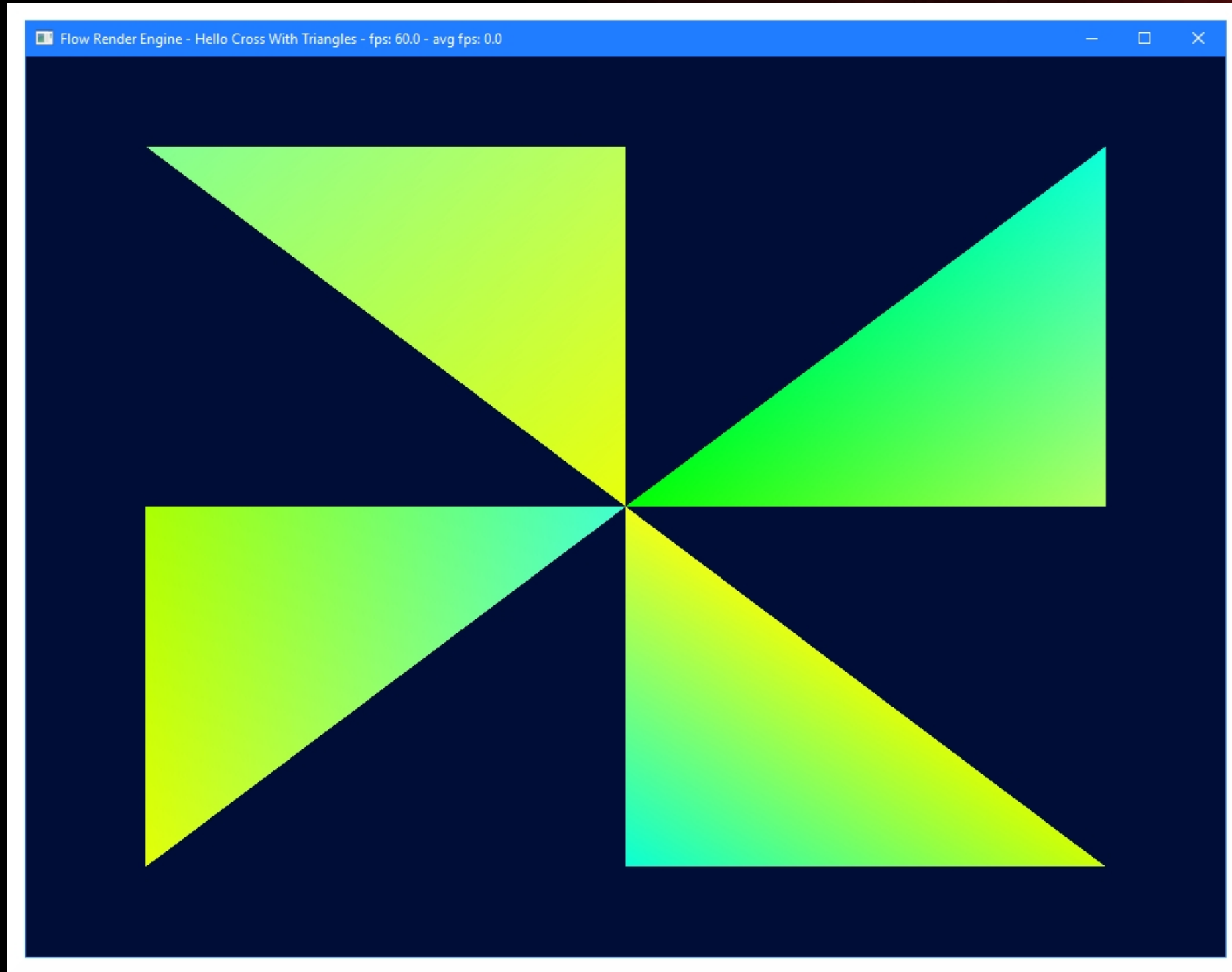


# 9 – Two Rhombus

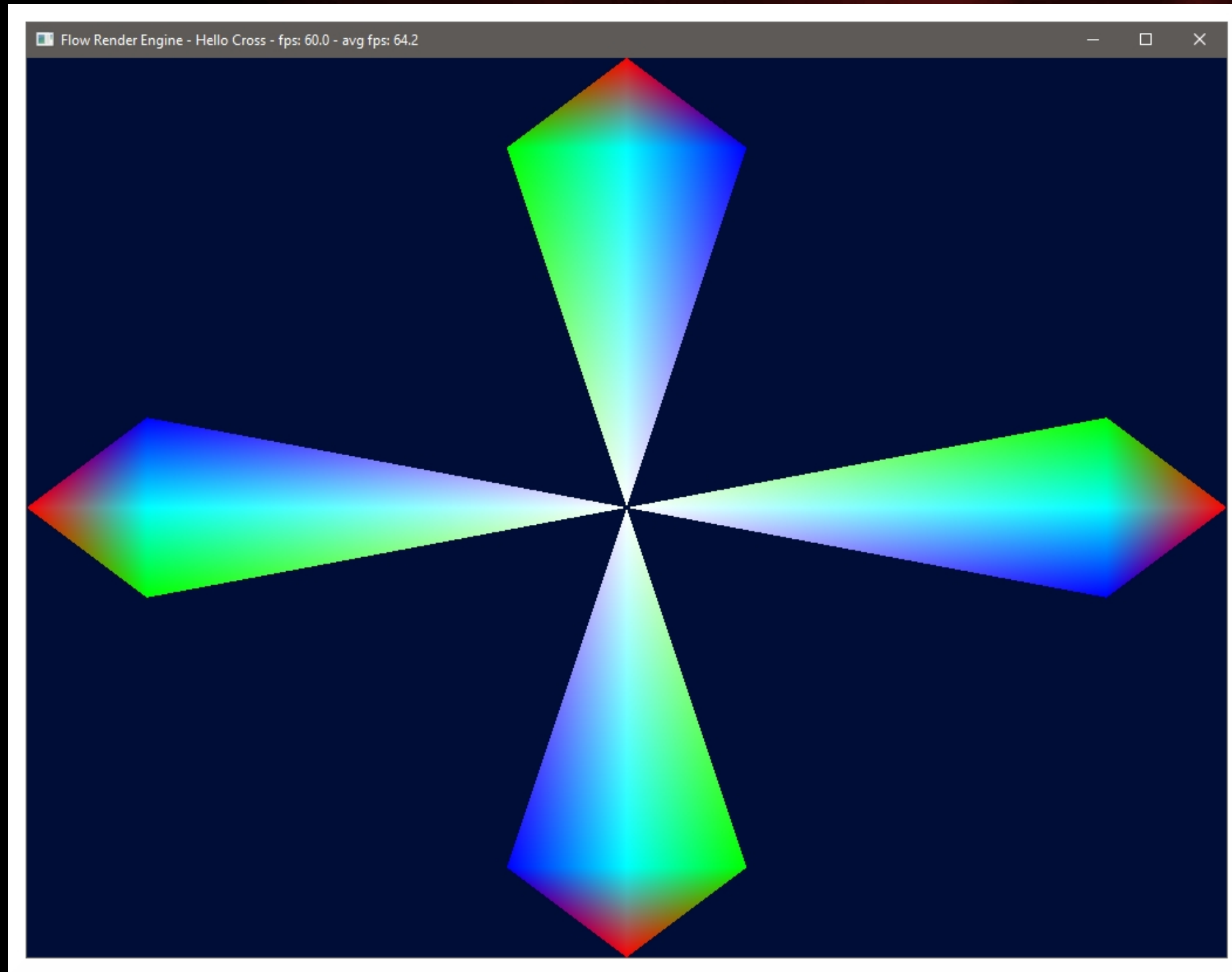




# 10 – Cross with triangles

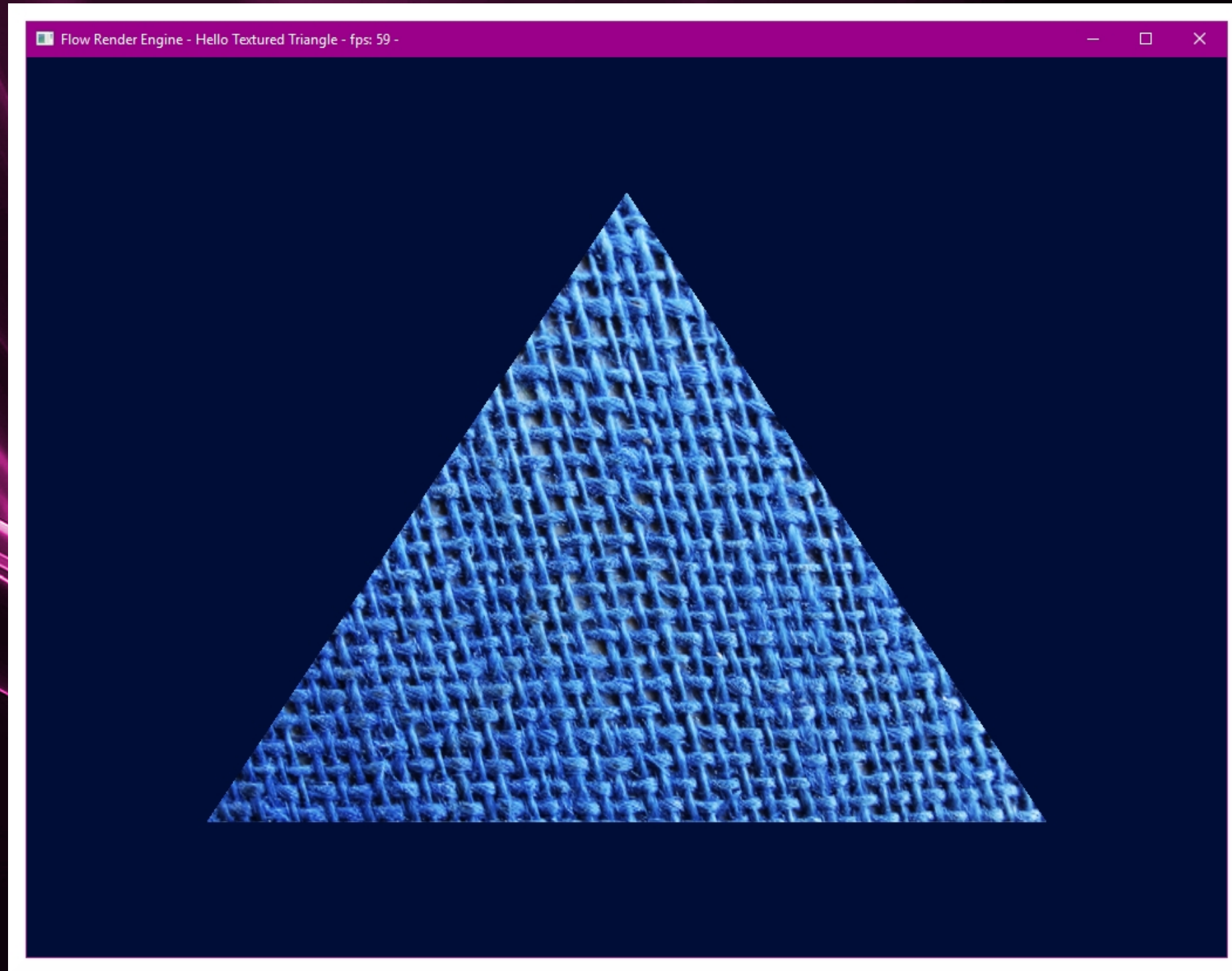


# 11 – Cross

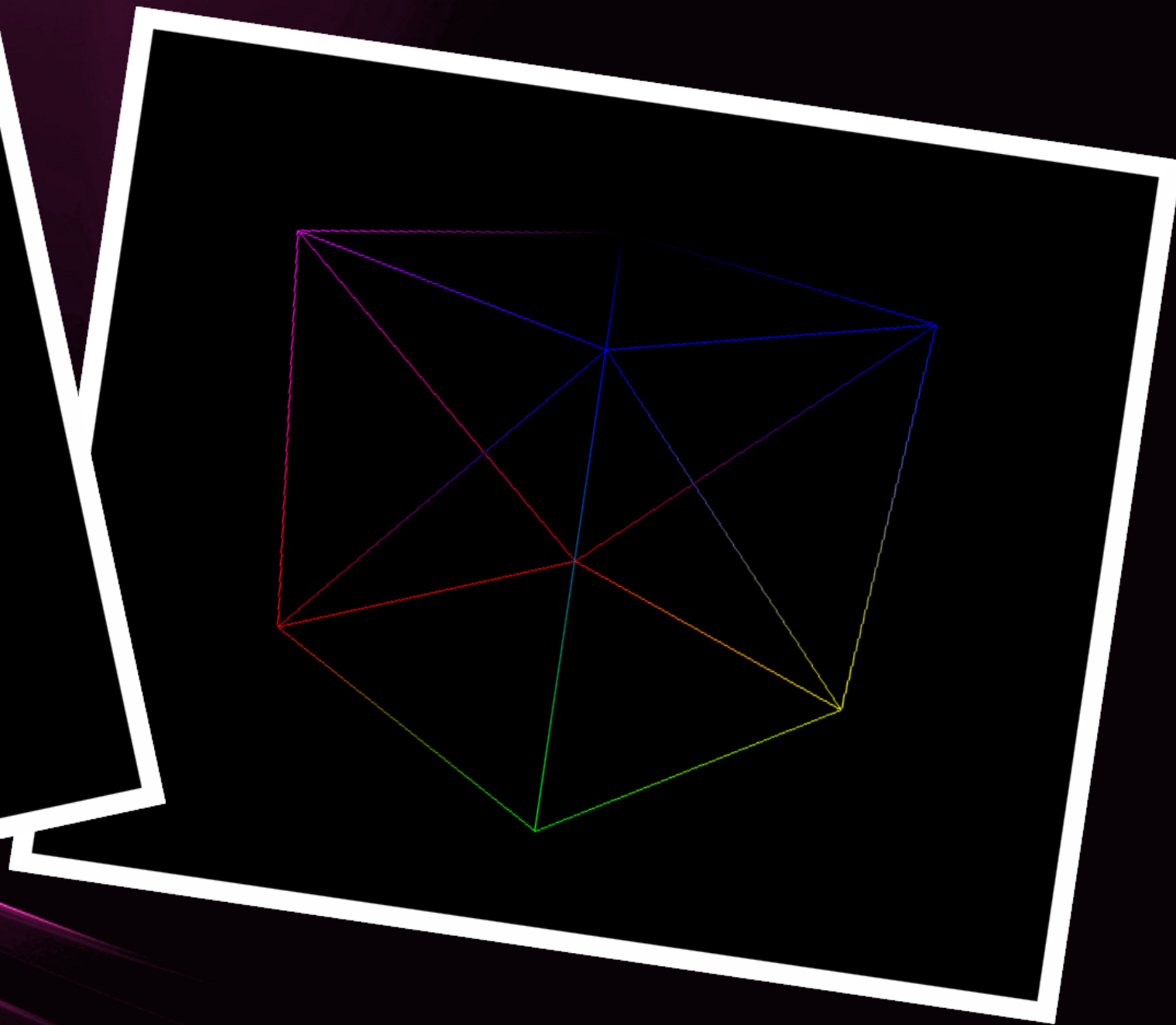




# 12 – Textured Triangle

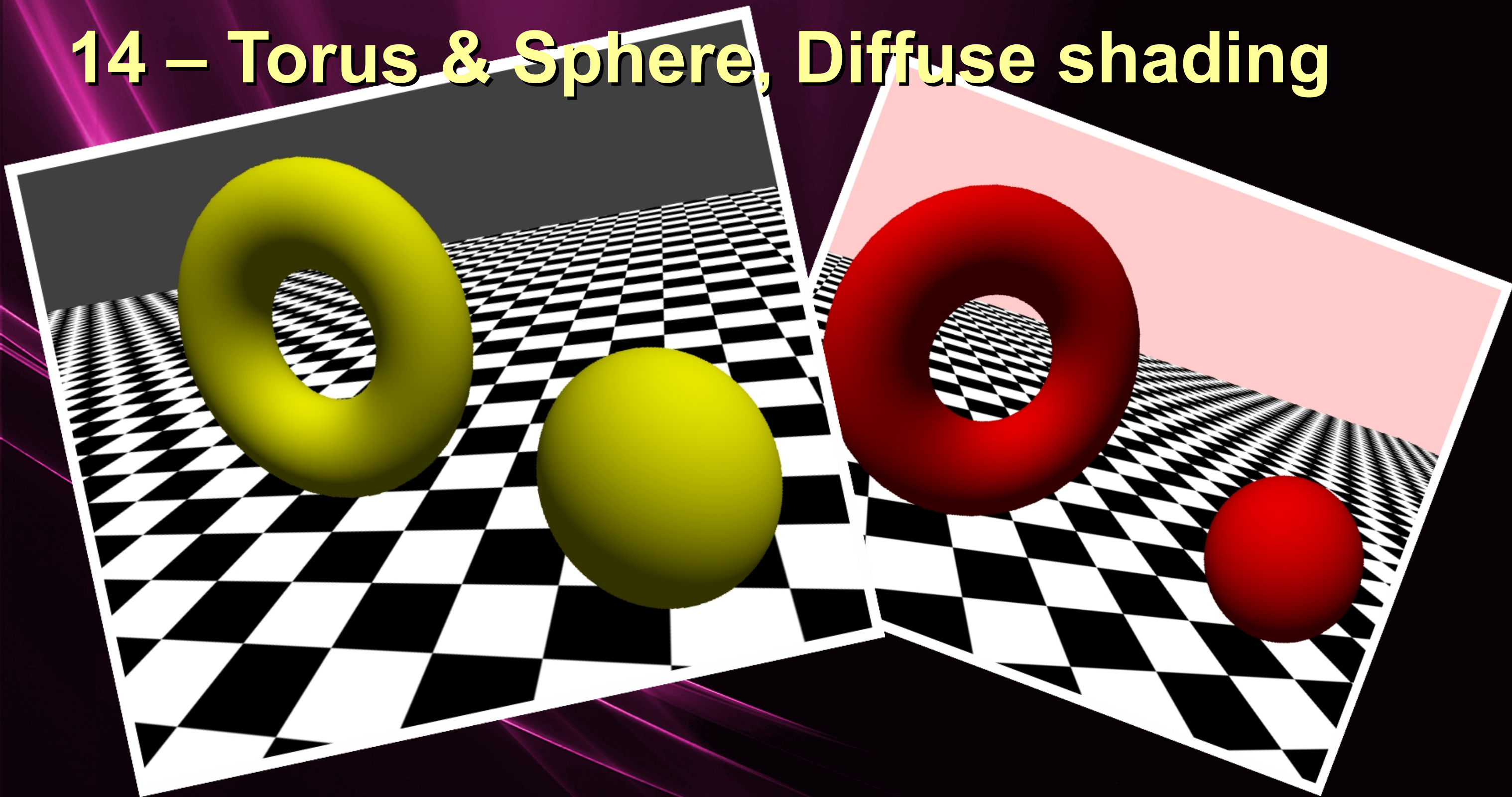


# 13 – Cube

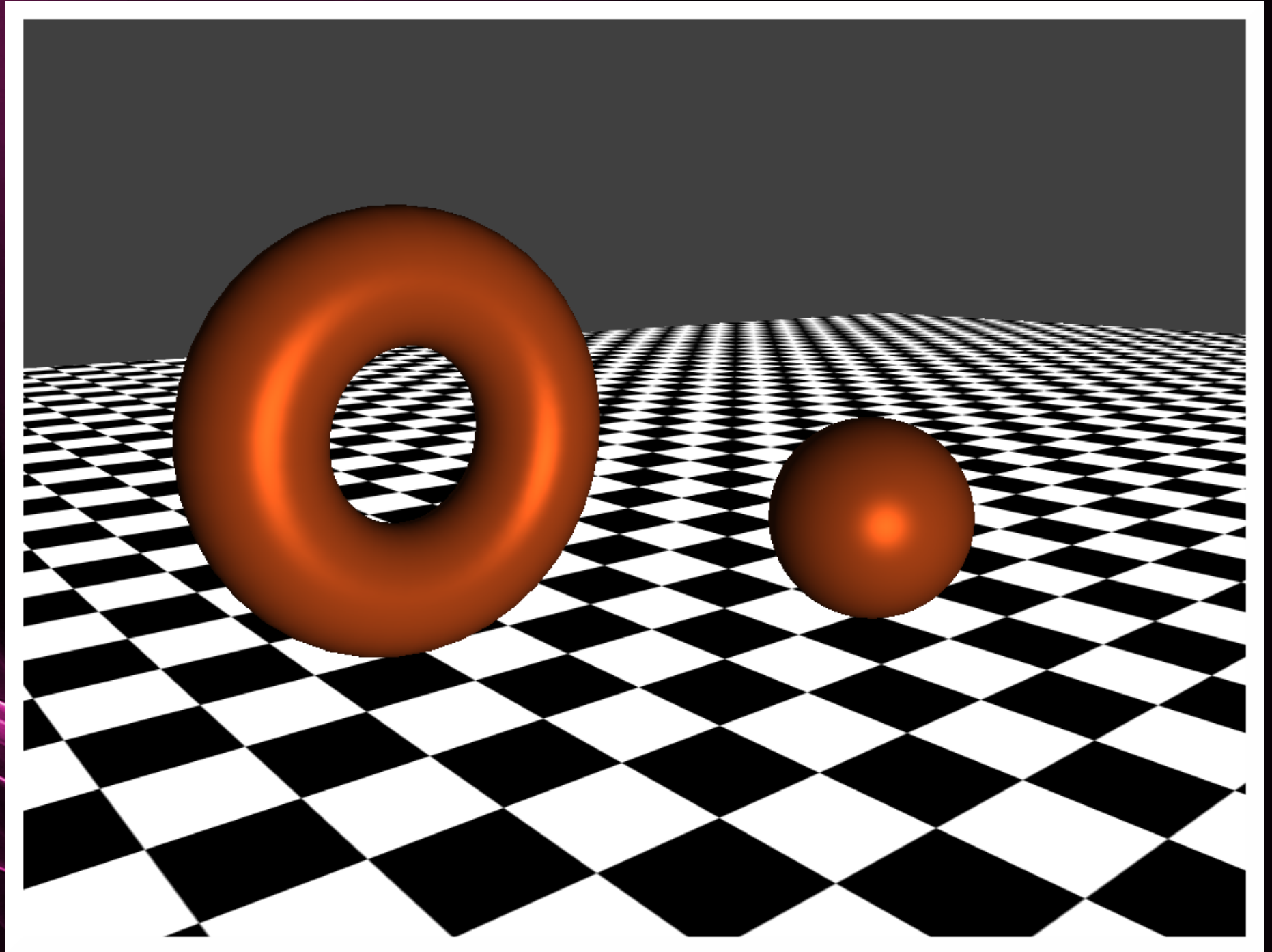




# 14 – Torus & Sphere, Diffuse shading

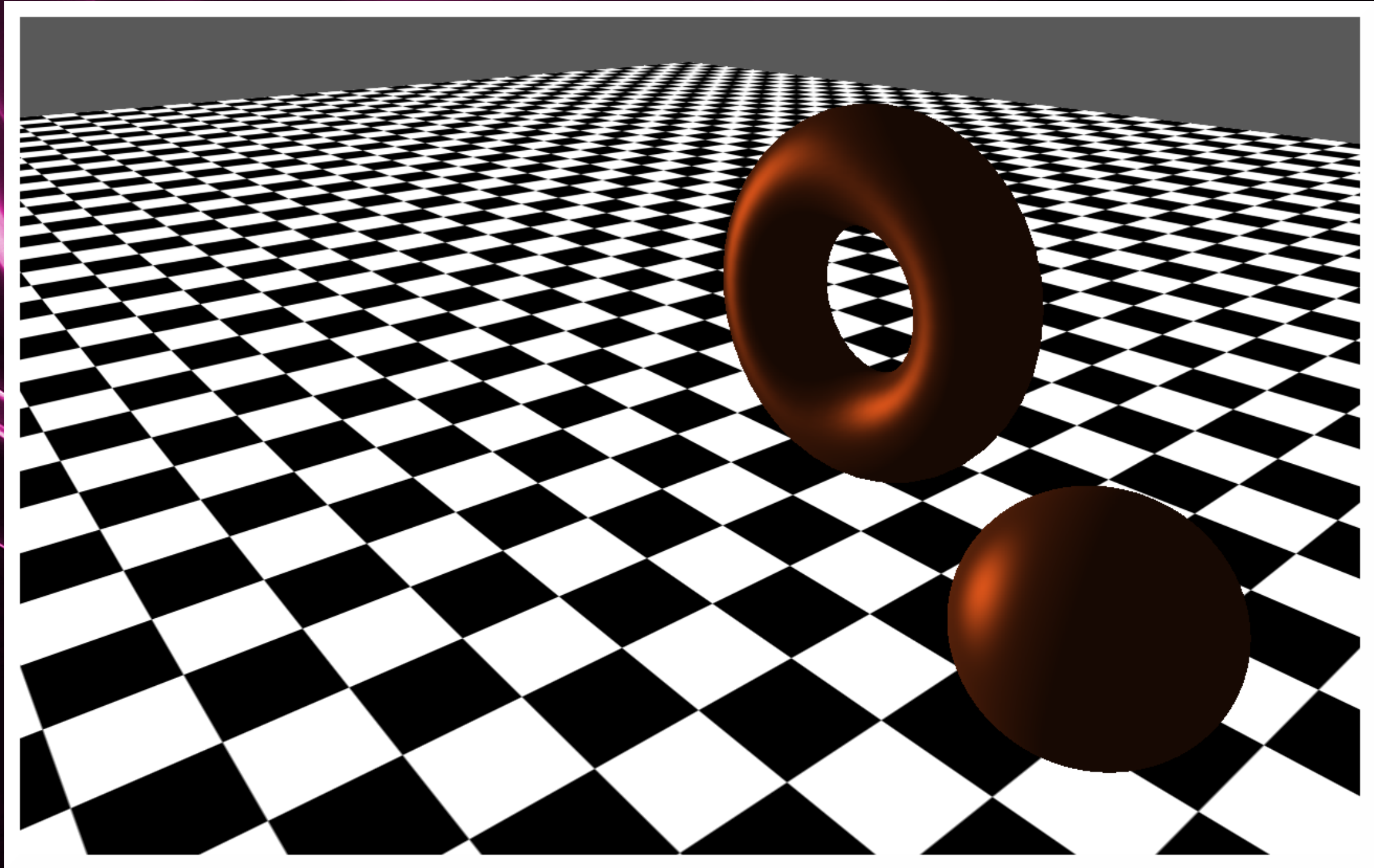


# 15 – Torus & Sphere, Phong reflection



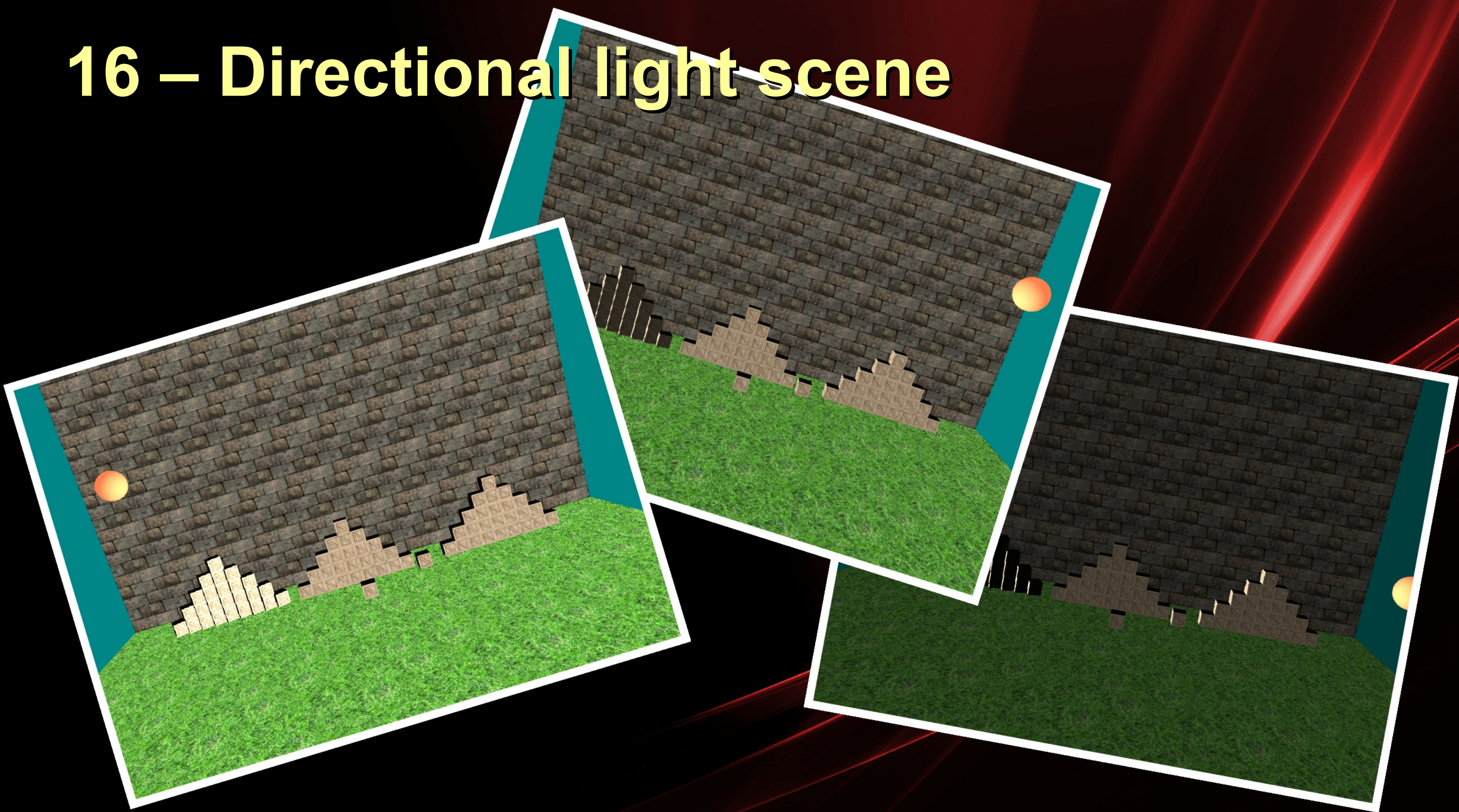


# 15a – Torus & Sphere, Phong reflection



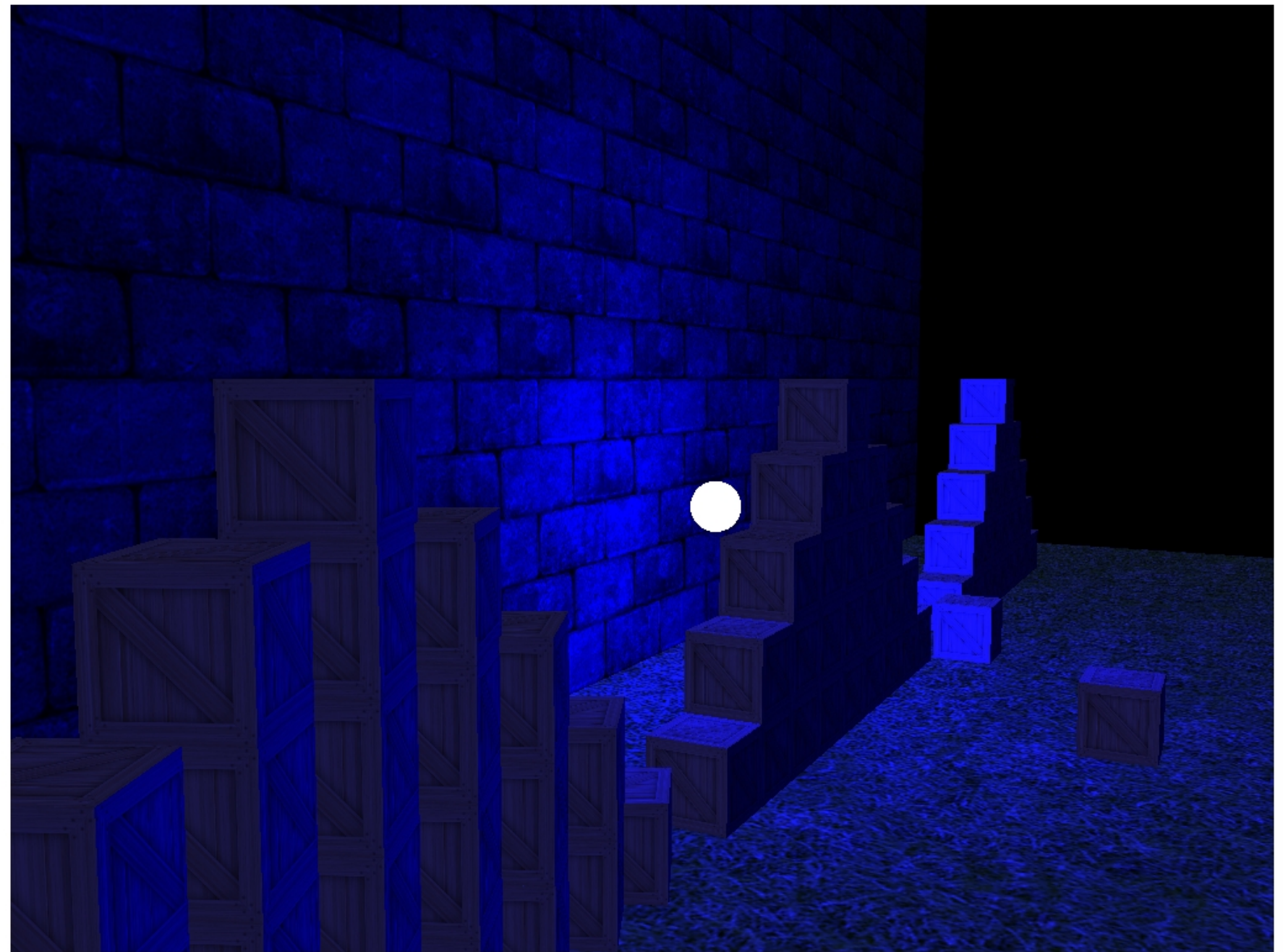


# 16 – Directional light scene



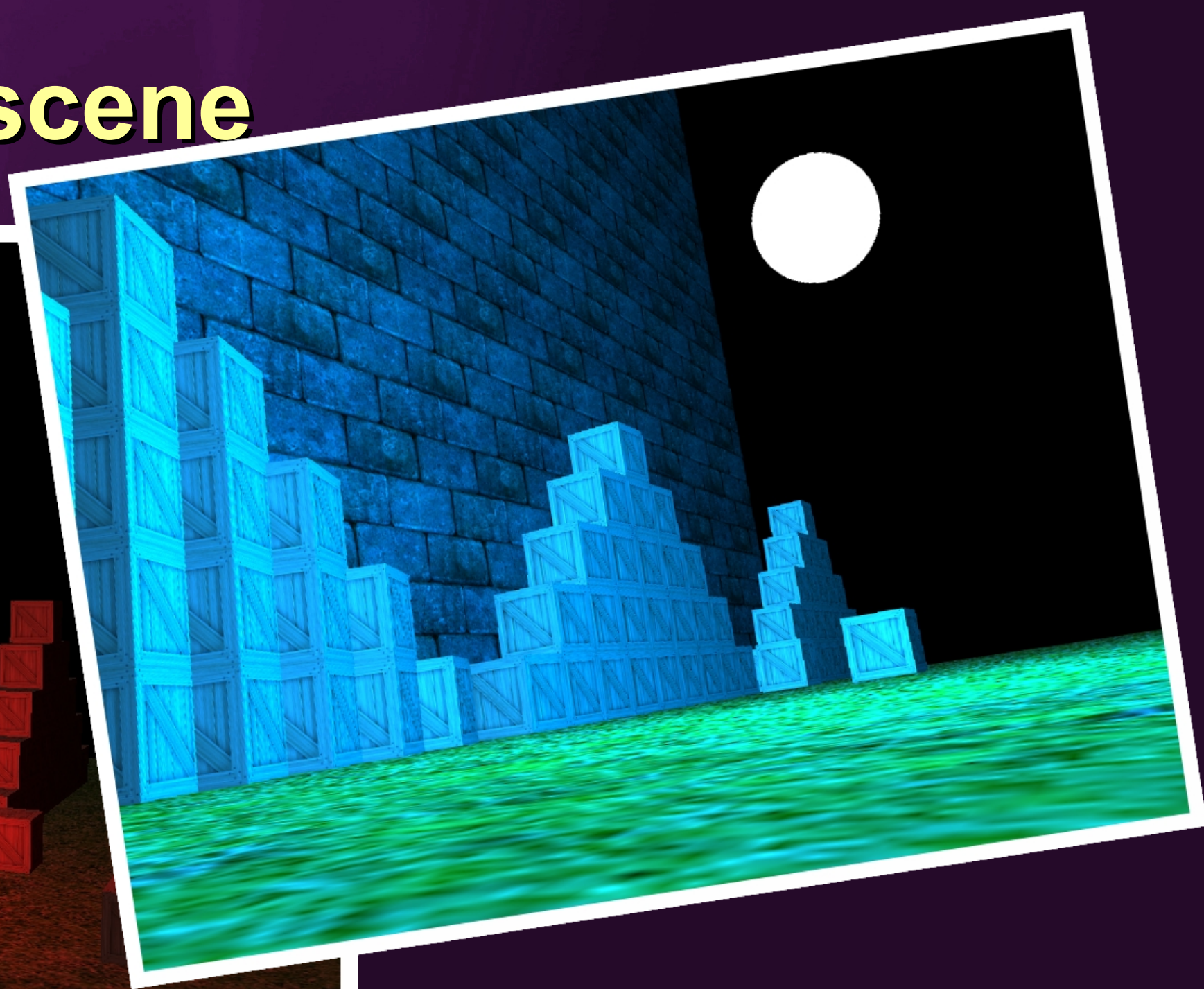
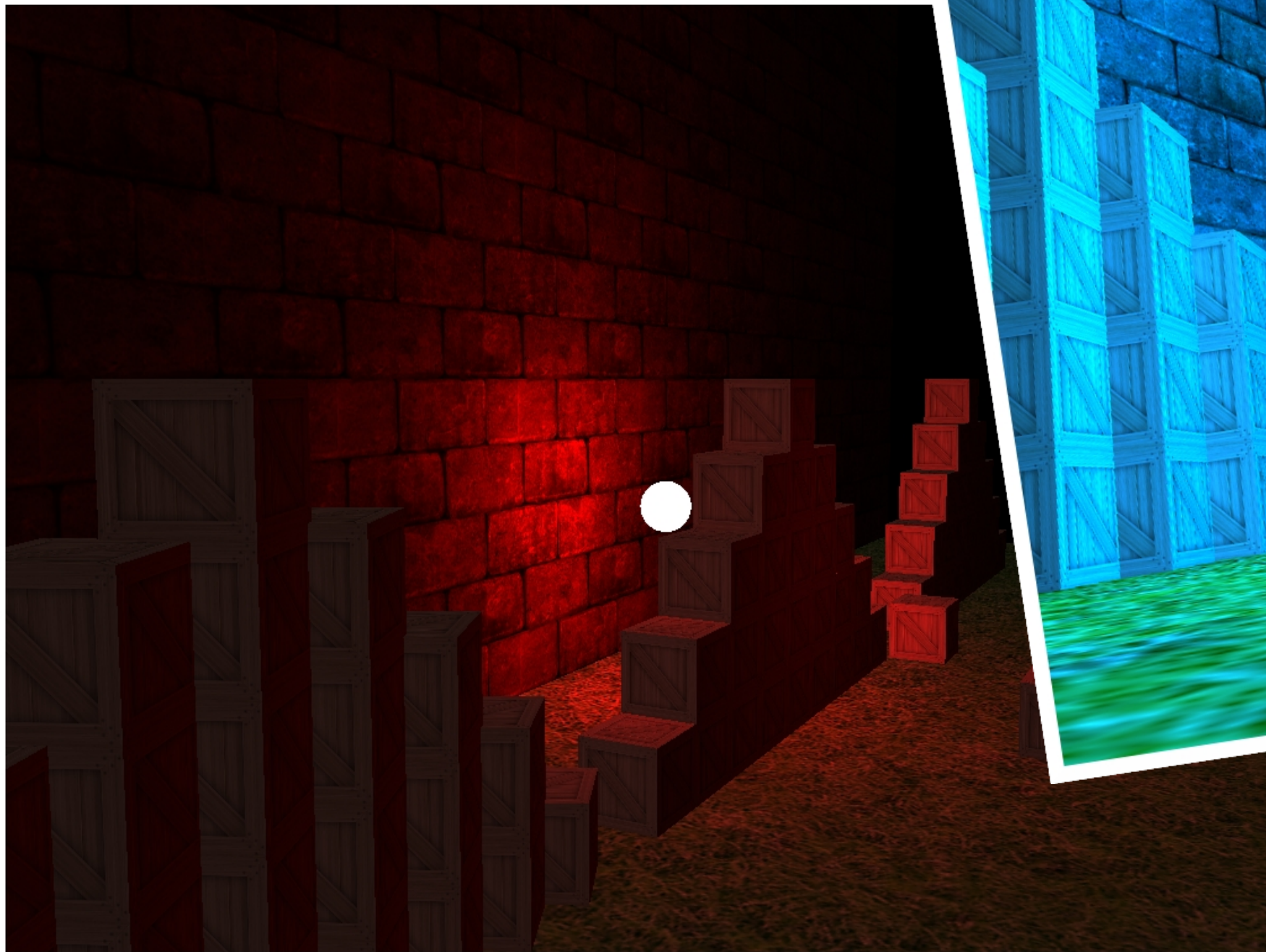


# 17 – Point light scene



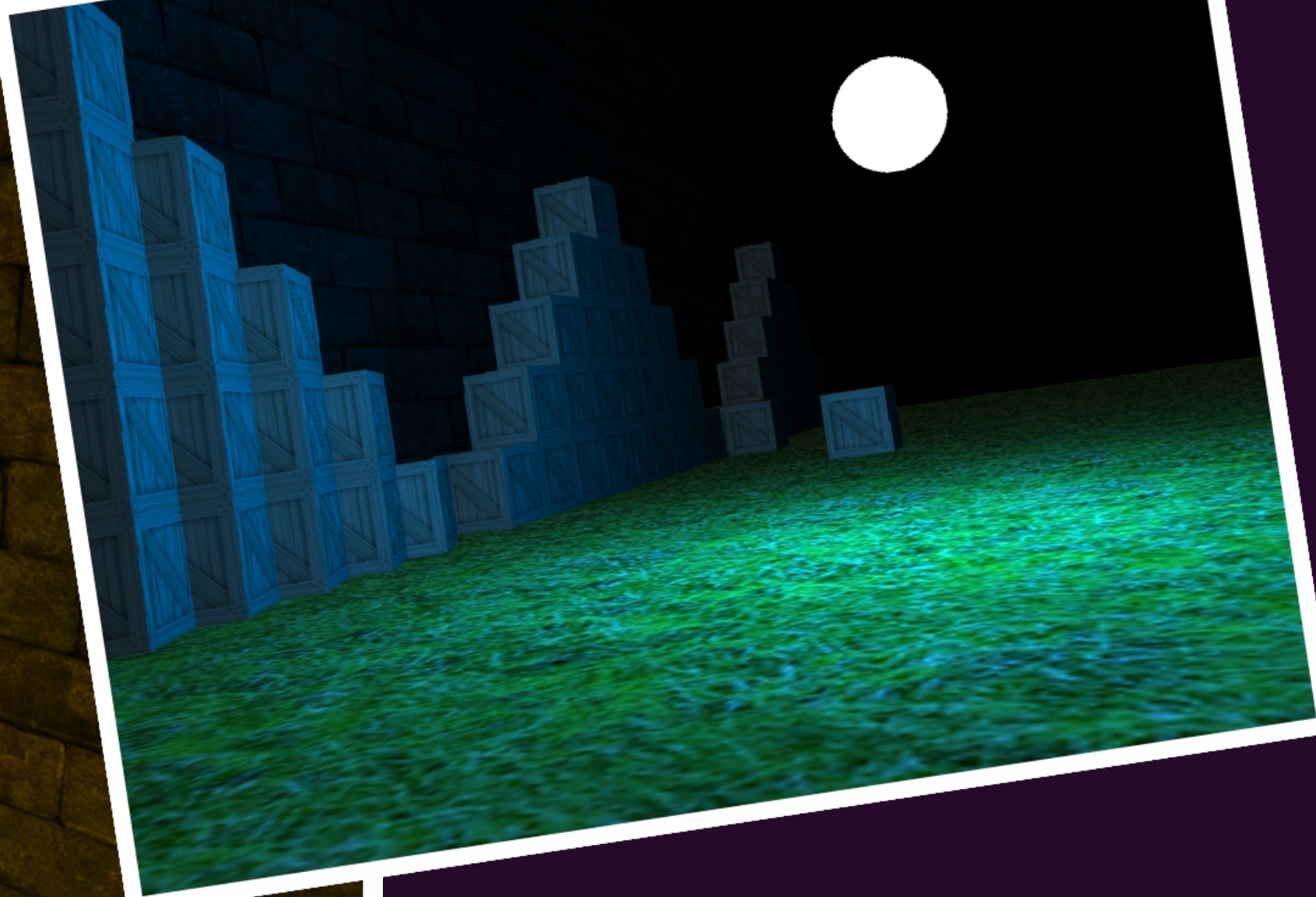
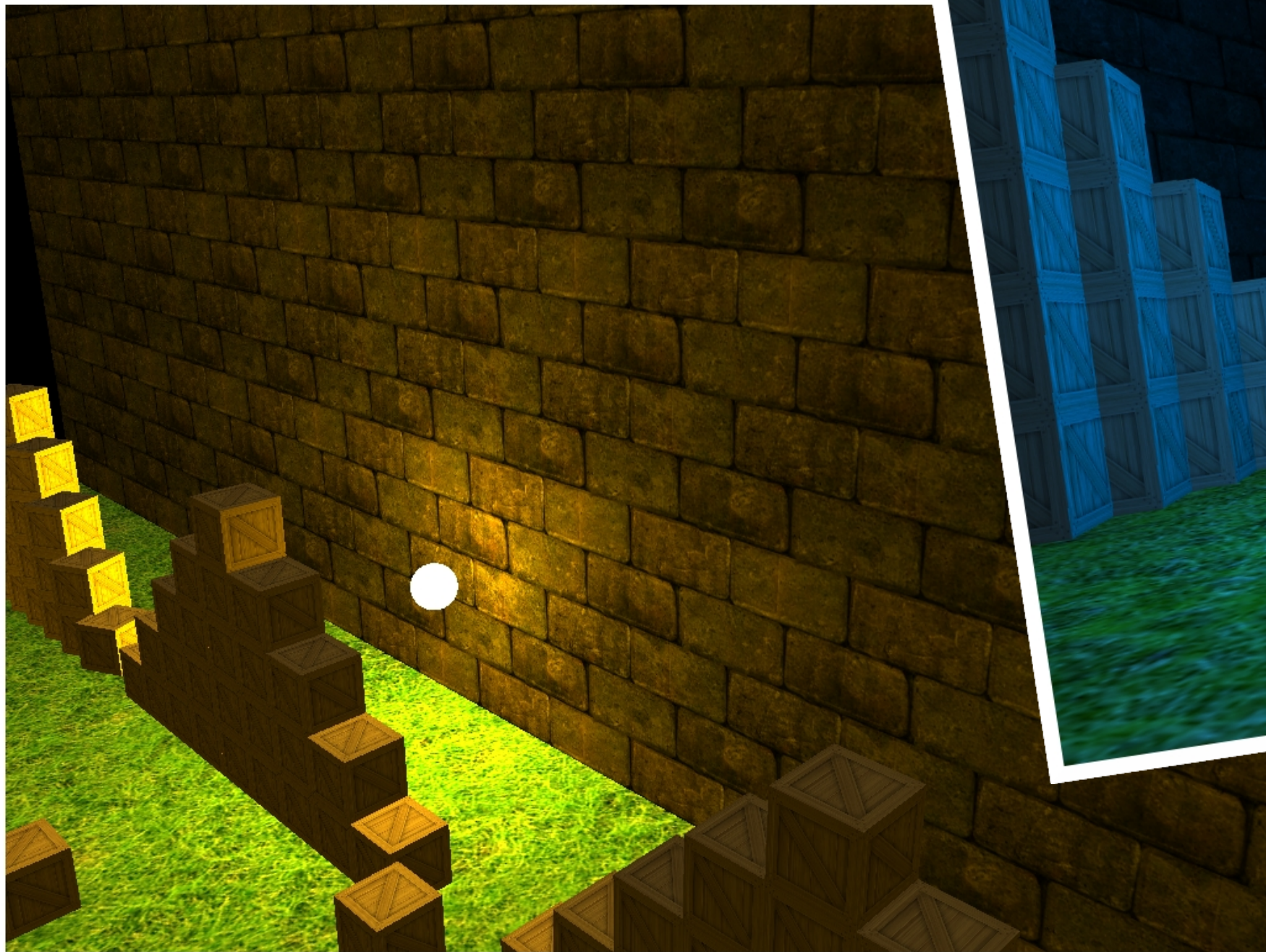


# 17a – Point light scene



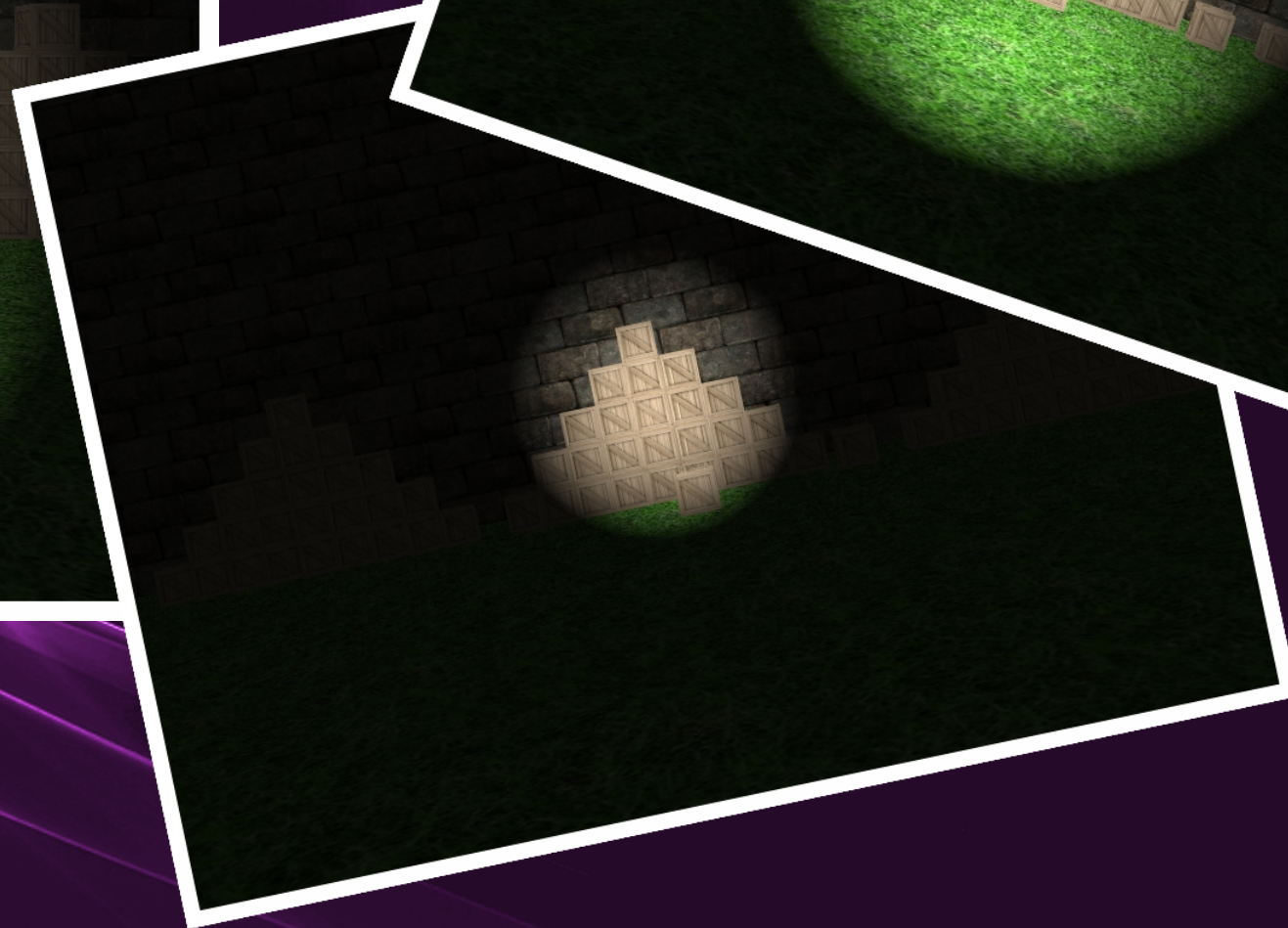
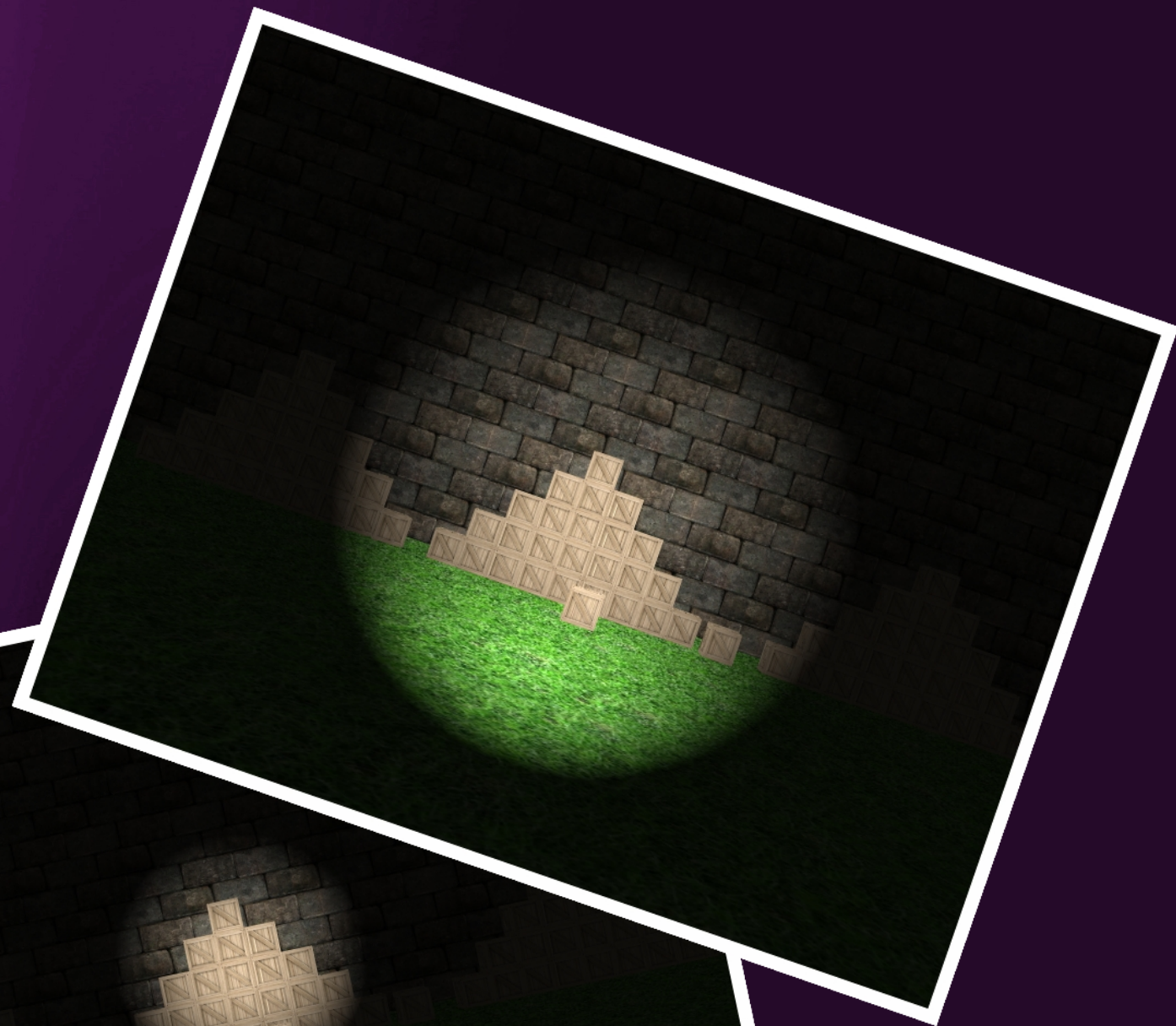
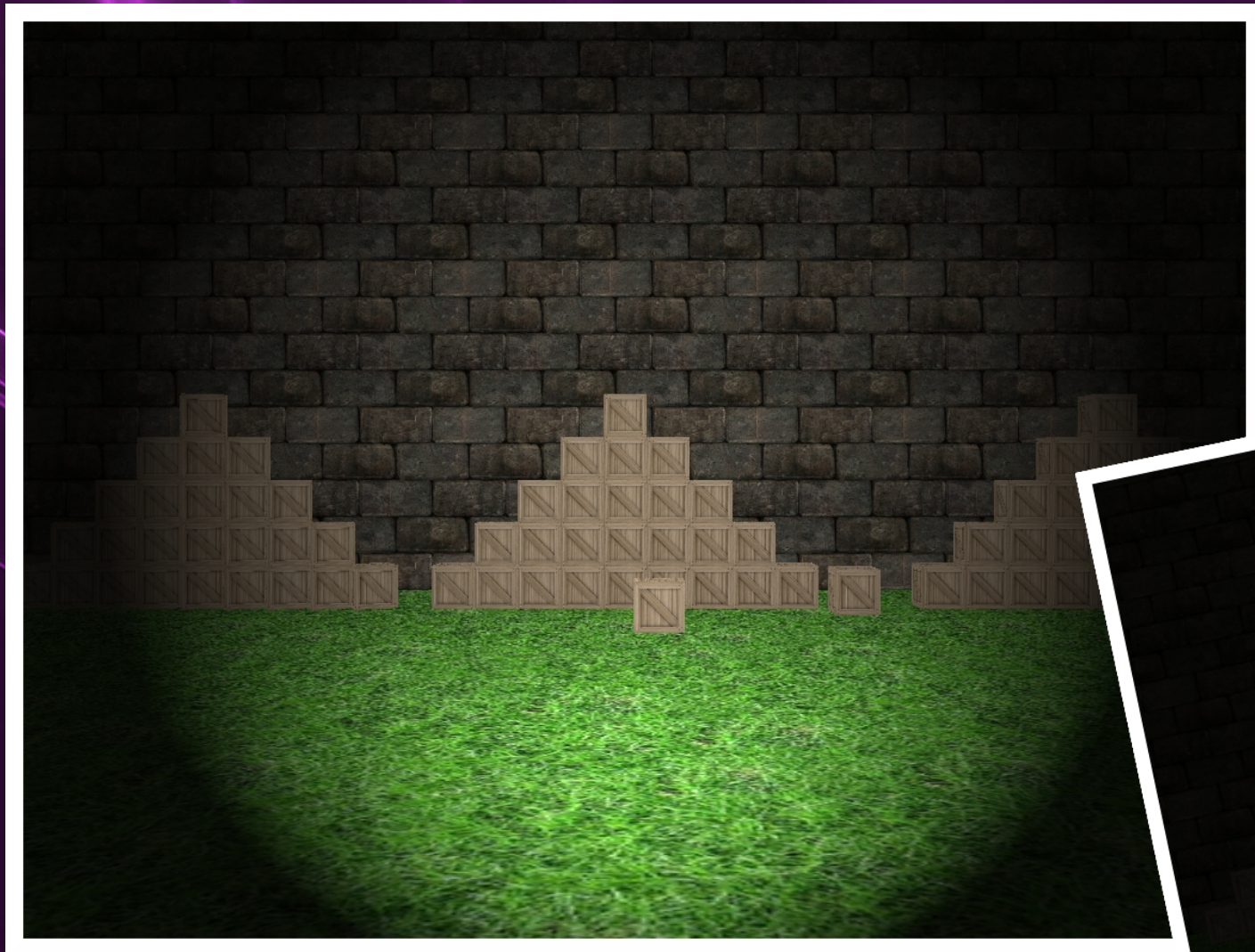


# 17b – Point light scene



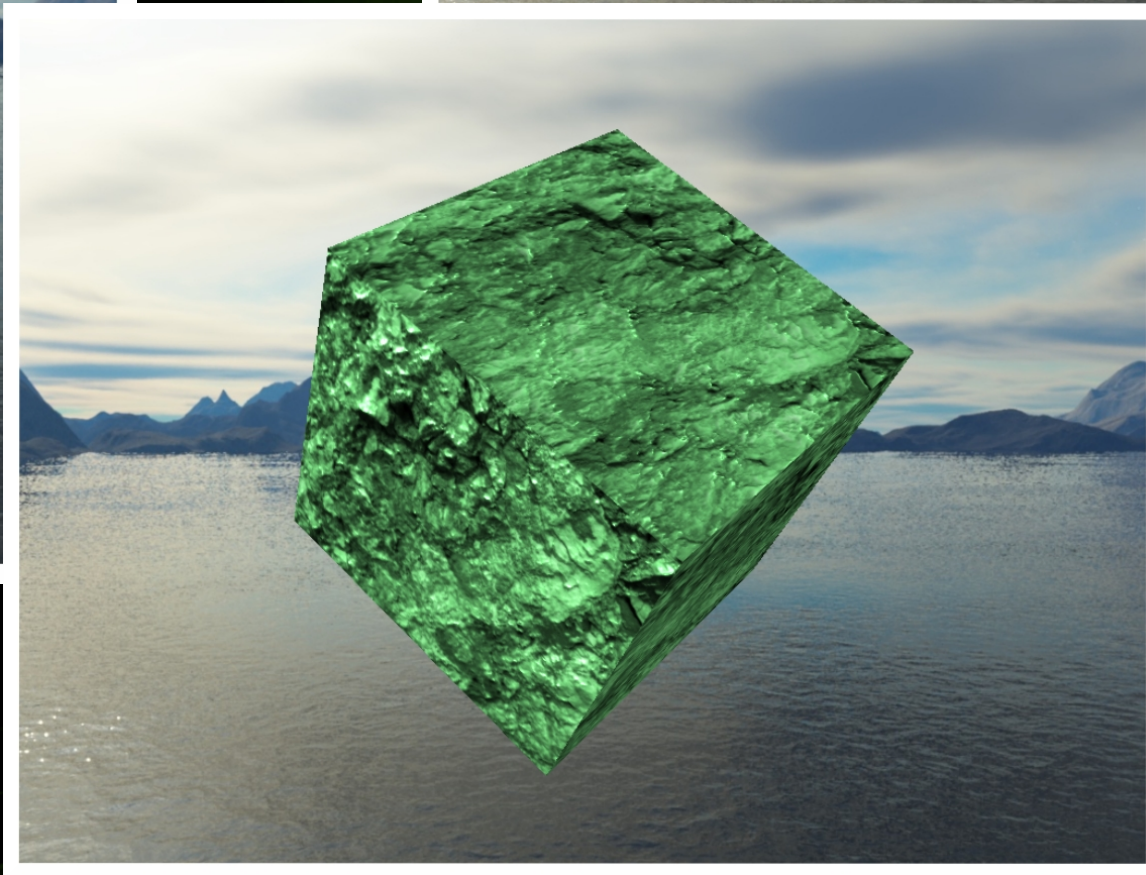
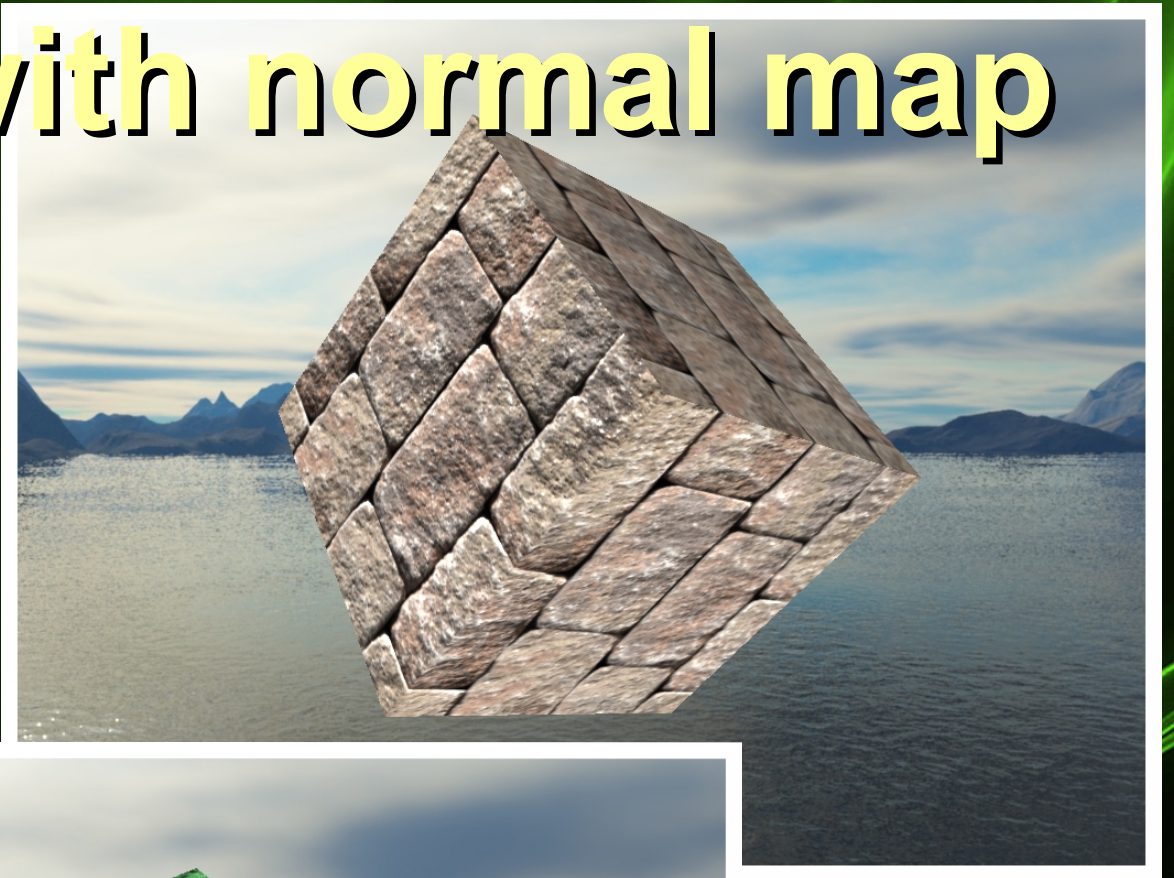
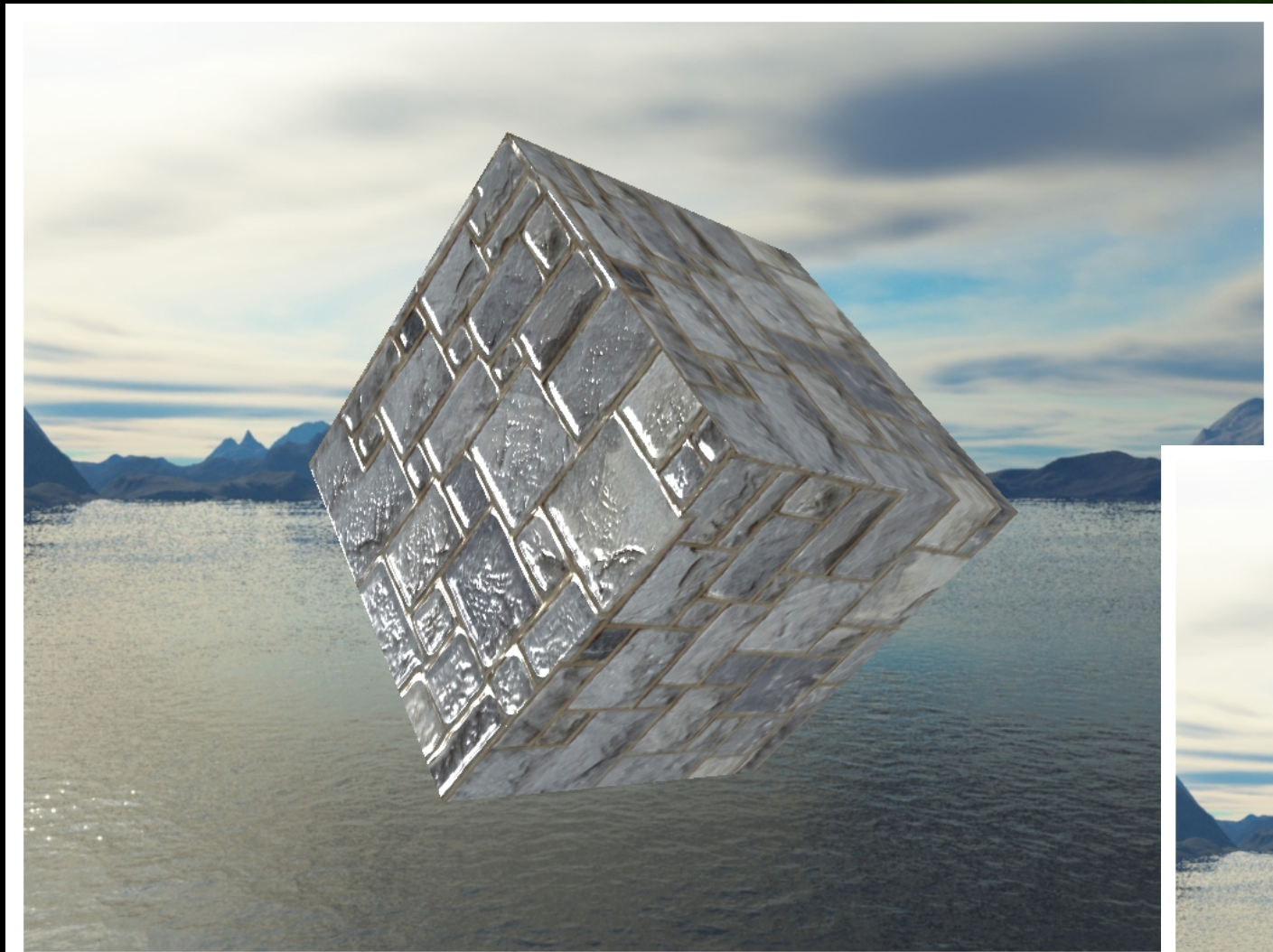


# 18 – Spot light scene



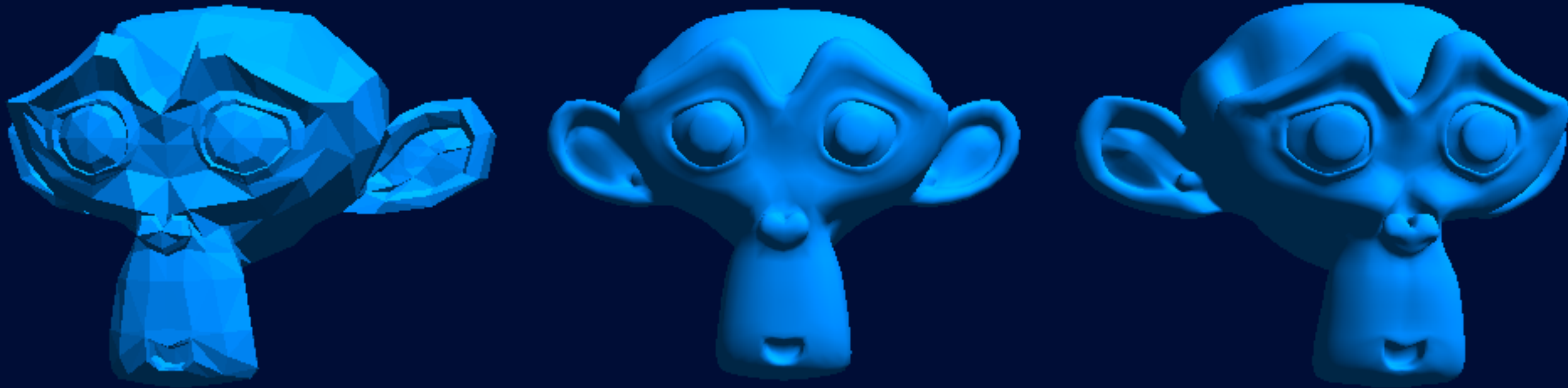


# 19 – Skybox and cube with normal map



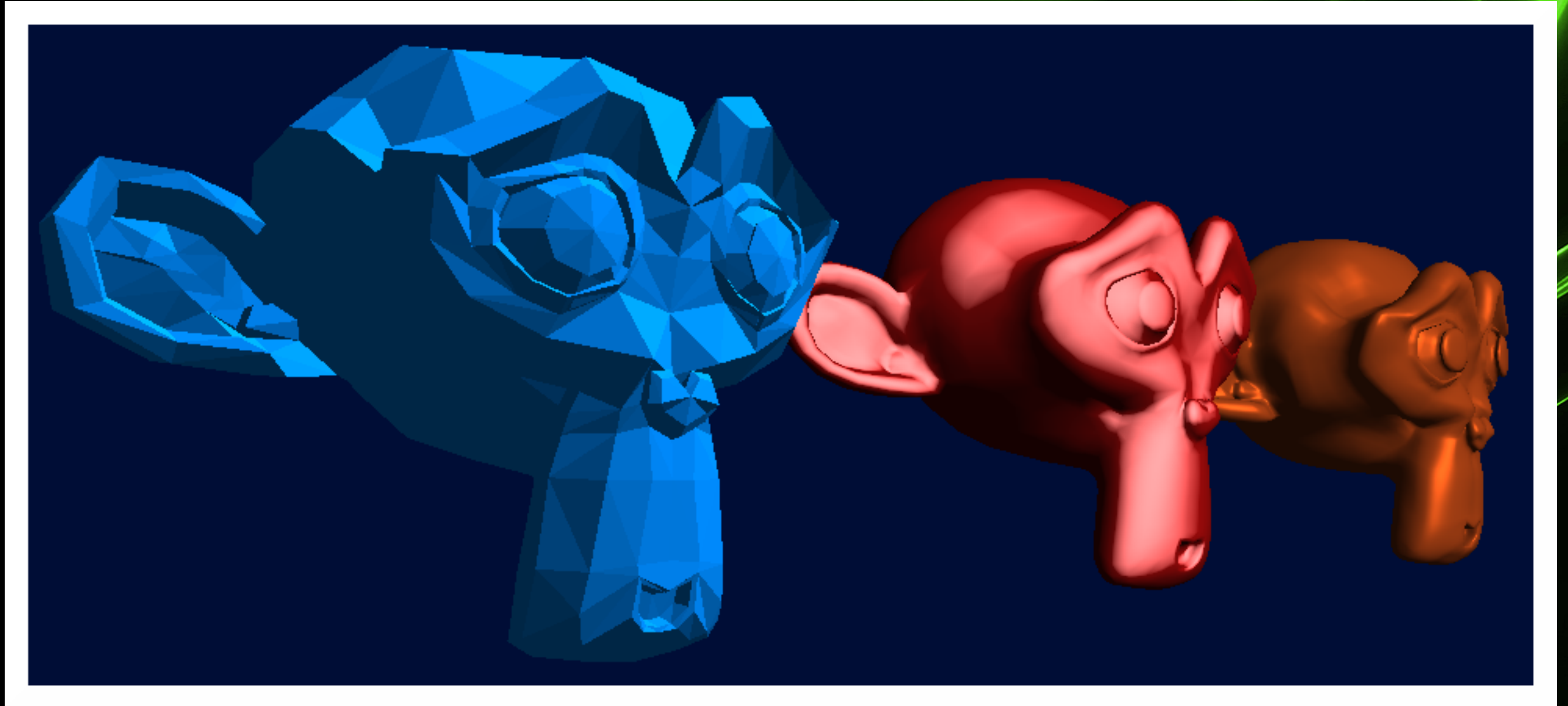


## 20 – Suzanne model diffuse shading

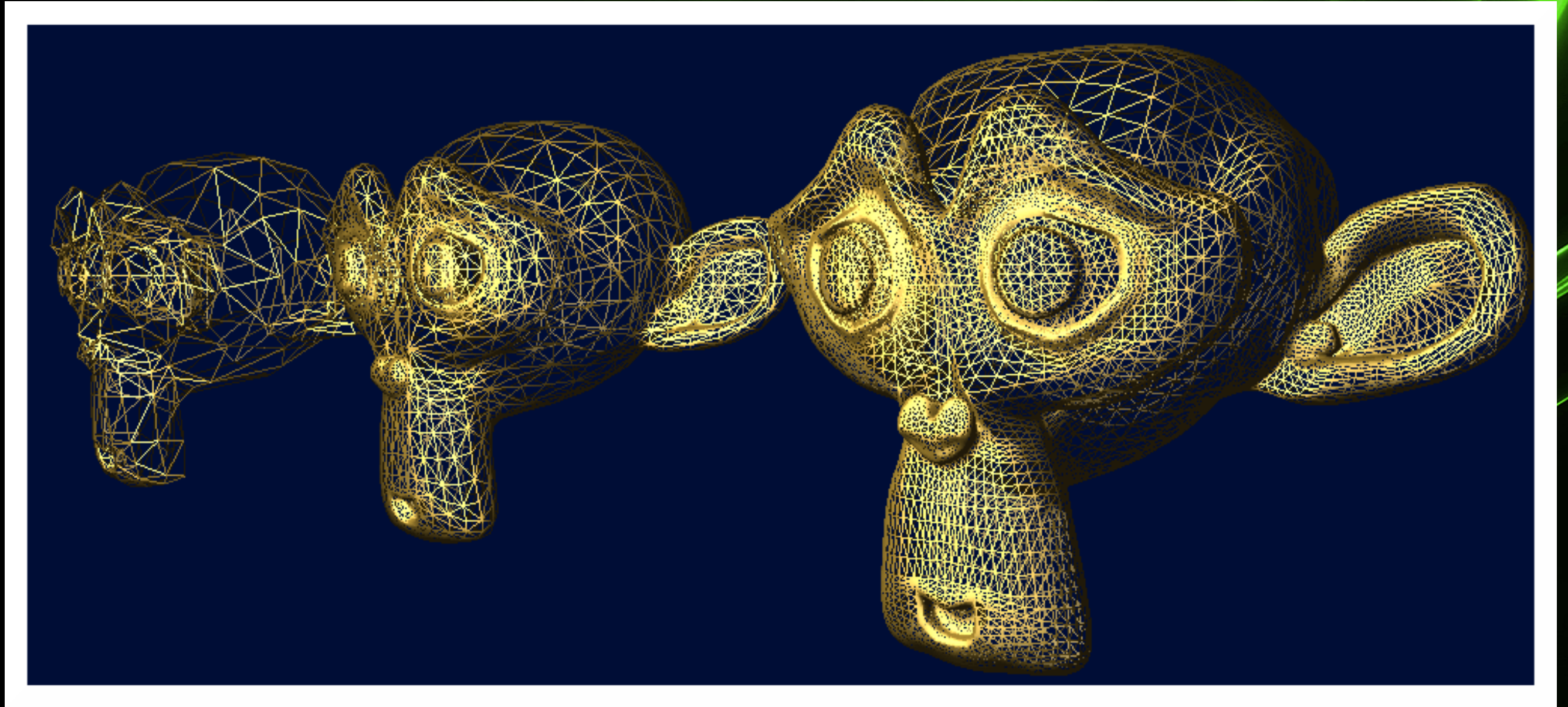




## 20a – Suzanne model diffuse shading

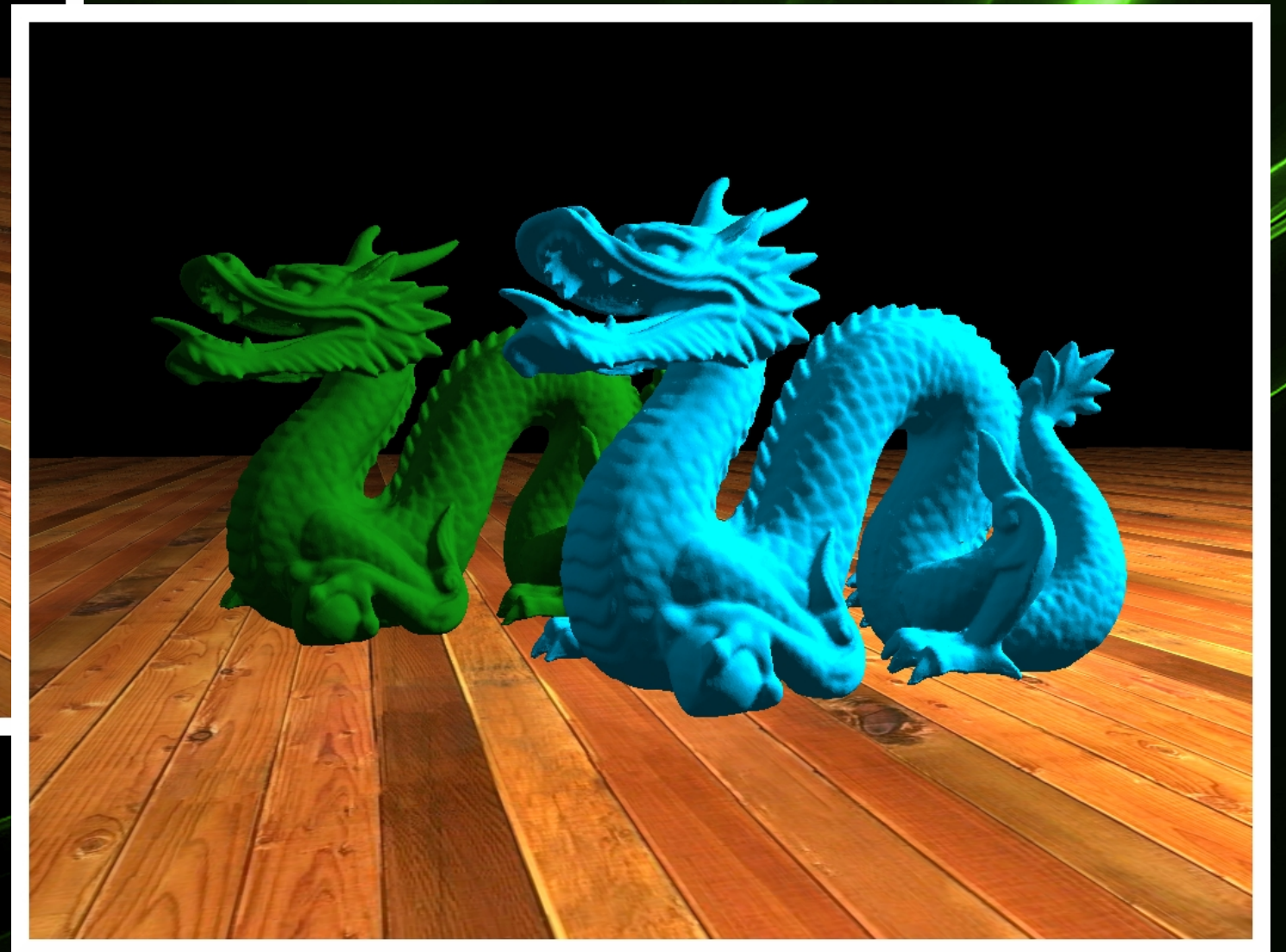
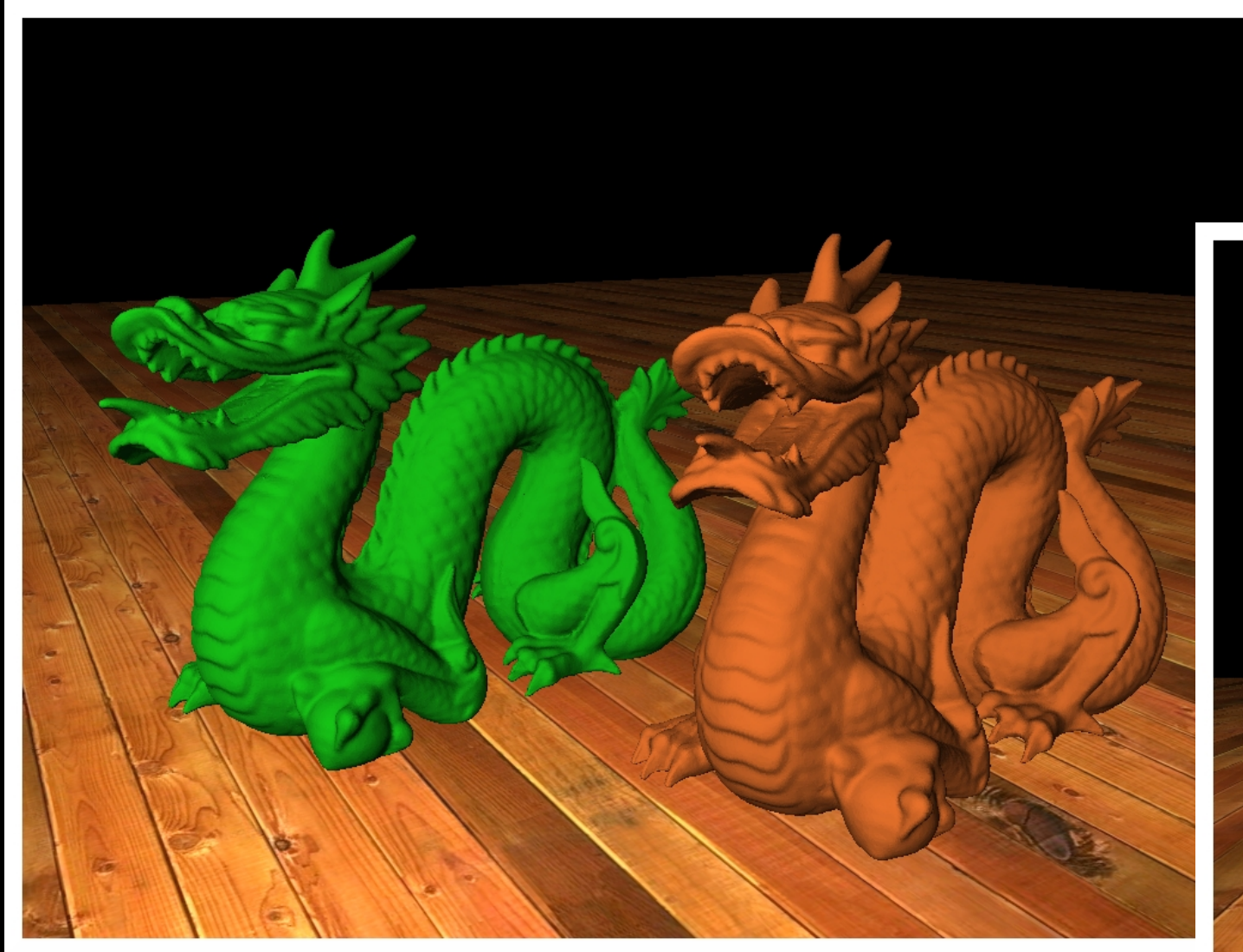


## 20b – Suzanne model wireframe



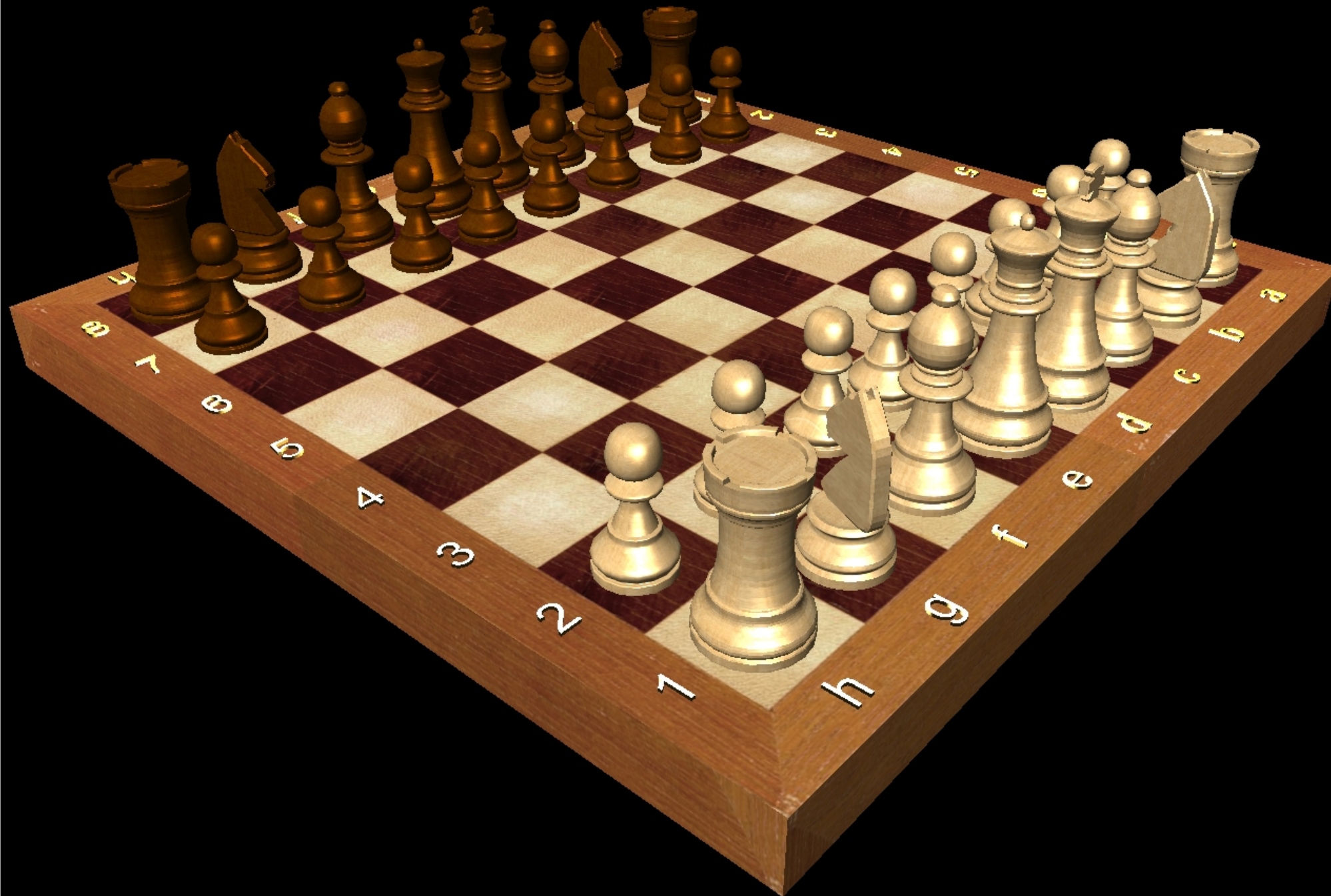


# 21 – Stanford dragon diffuse shading



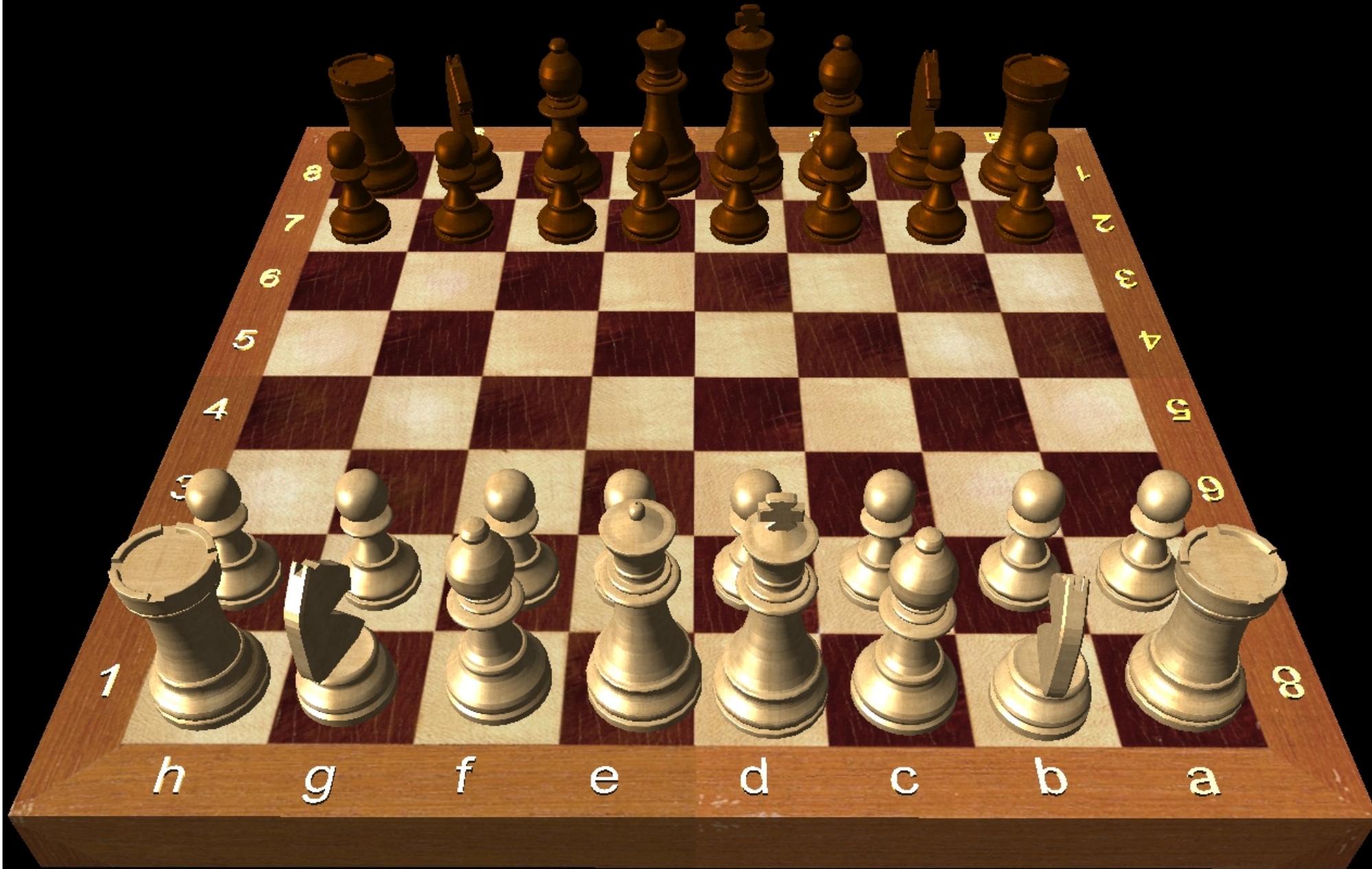


# 22 – Chess Phong reflection





# 22a – Chess Phong reflection





## 22b – Chess Phong reflection



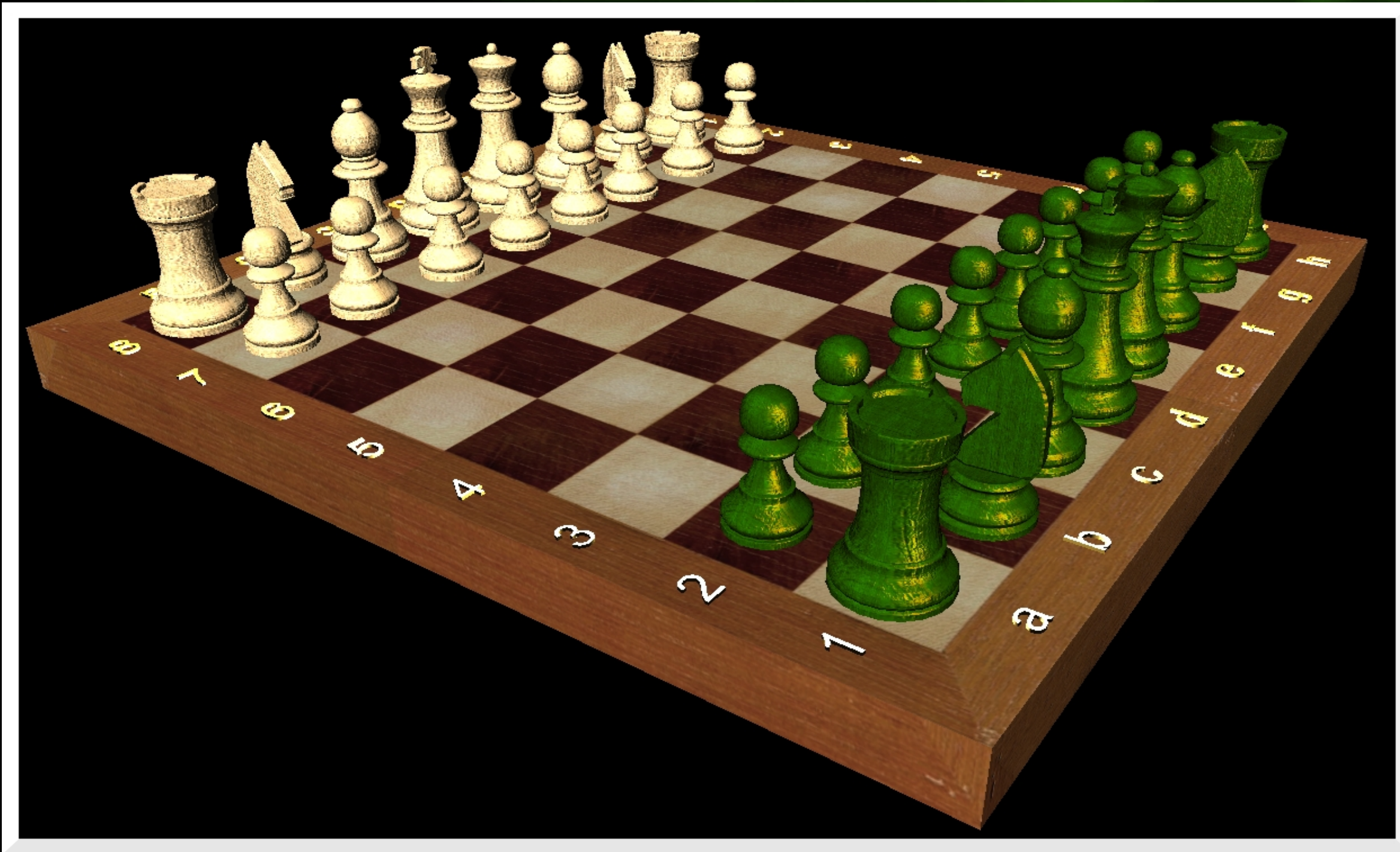


## 22c – Chess Phong reflection



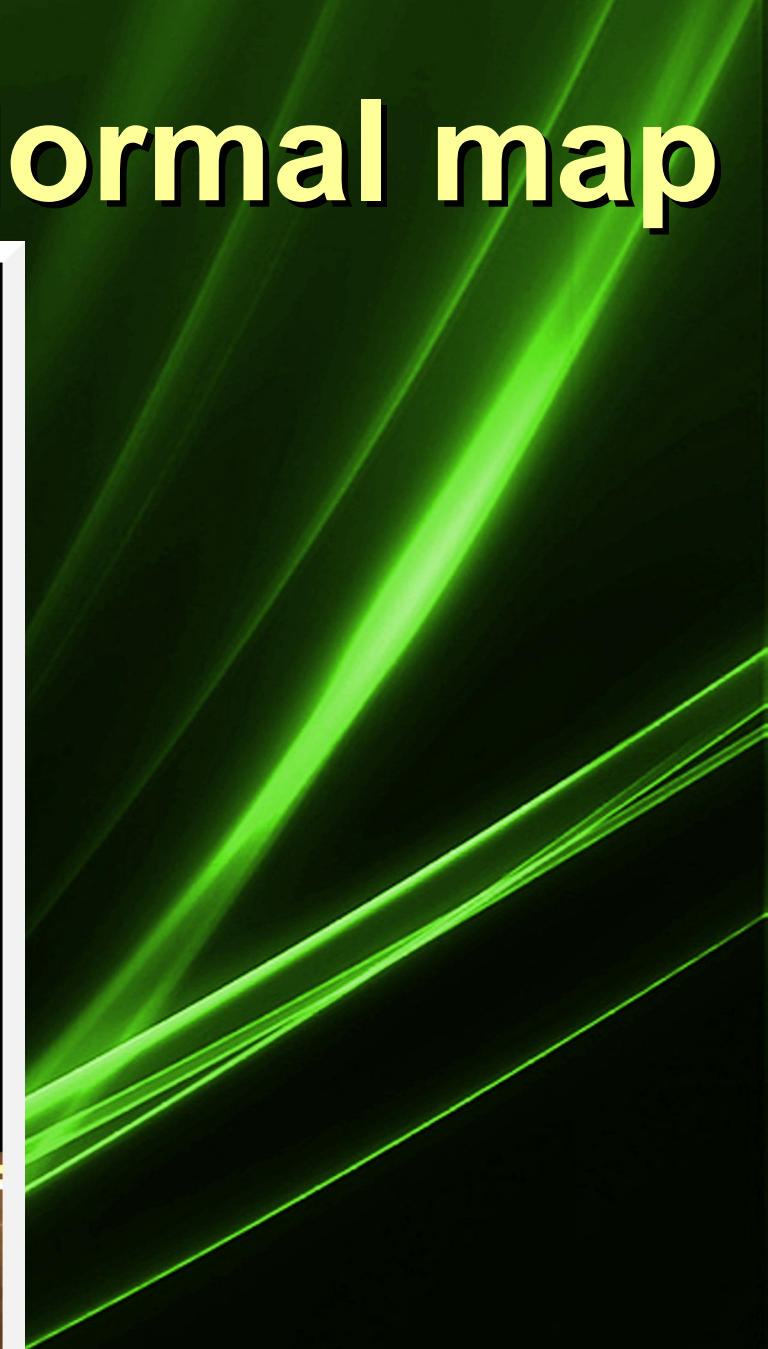
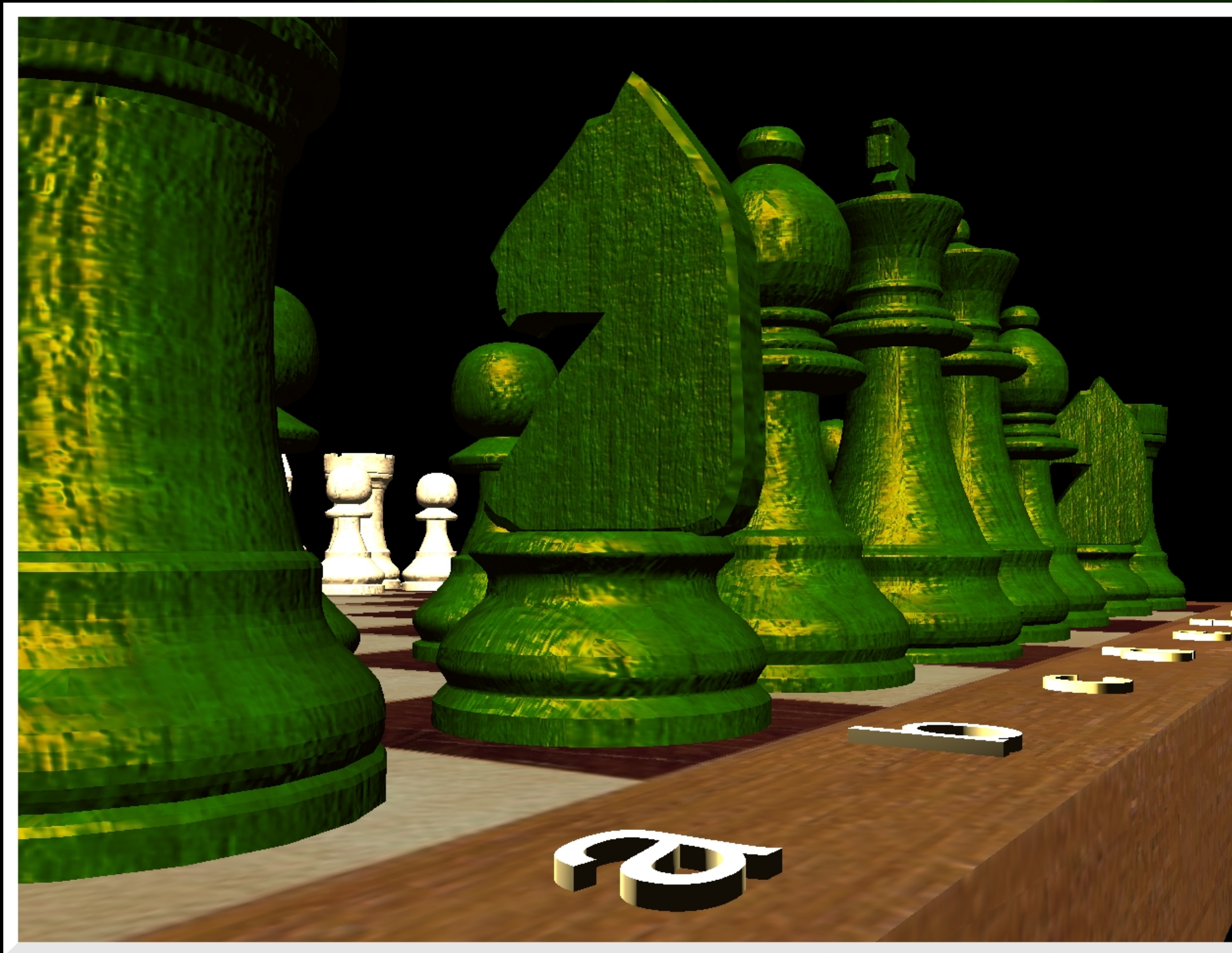


# 23 – Chess Phong reflection&Normal map



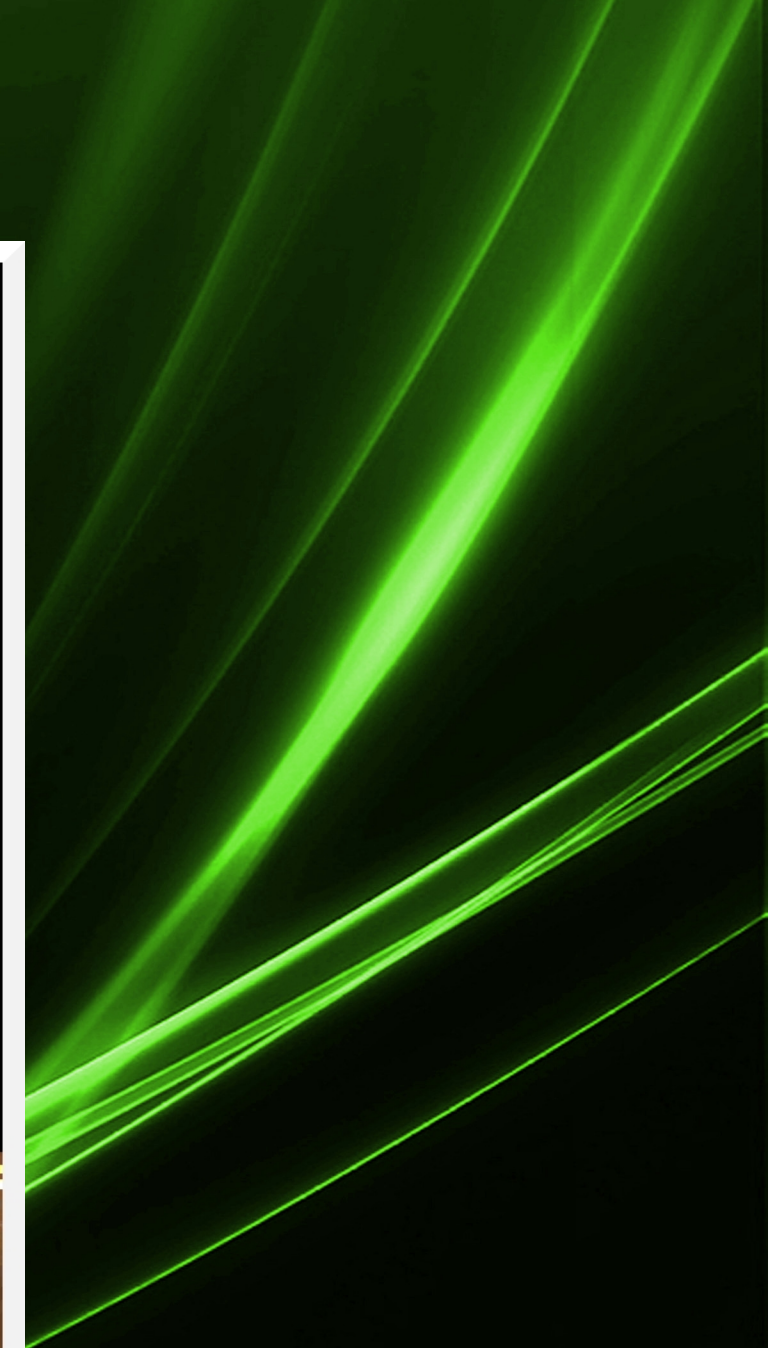
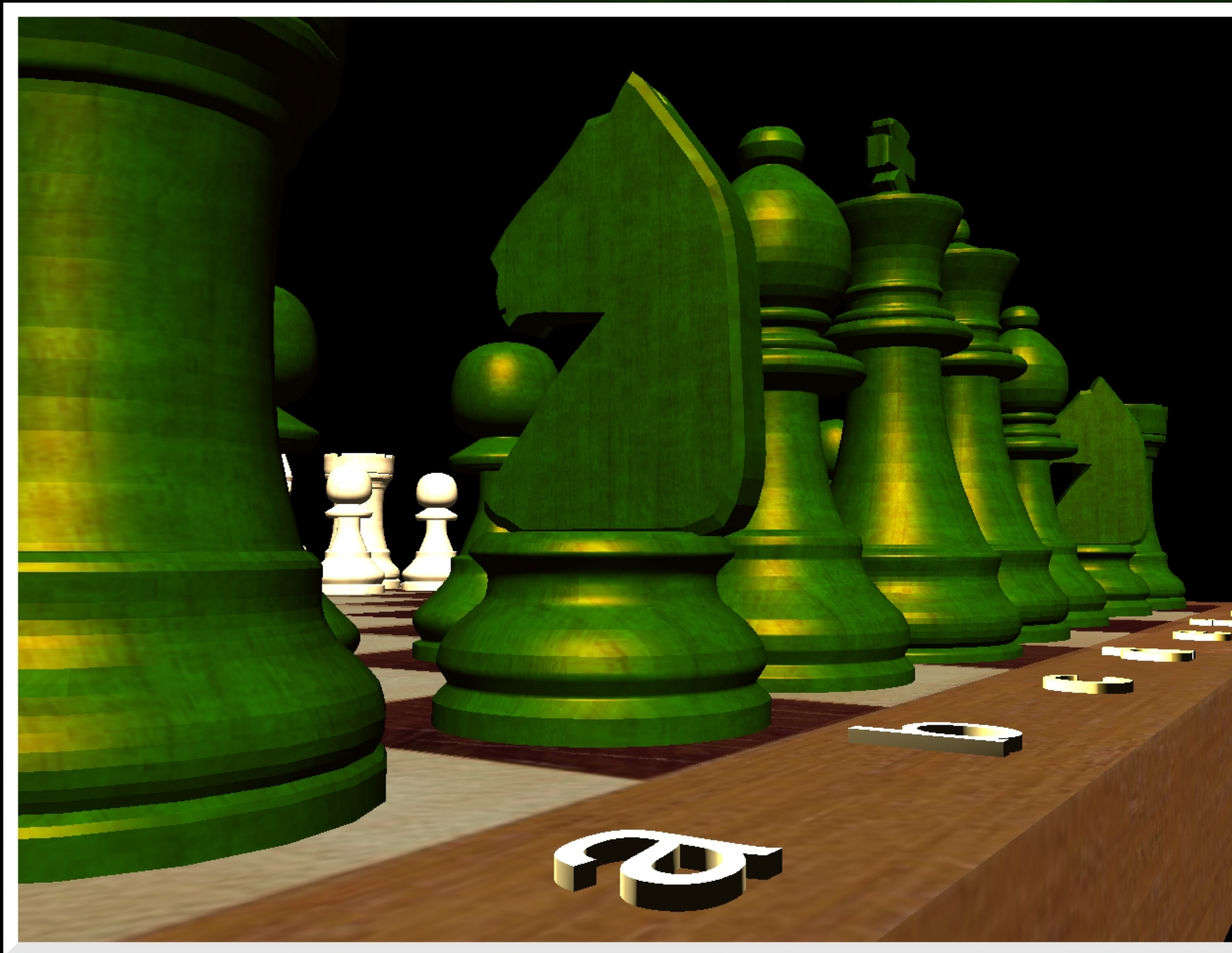


# 23a – Chess Phong reflection&Normal map



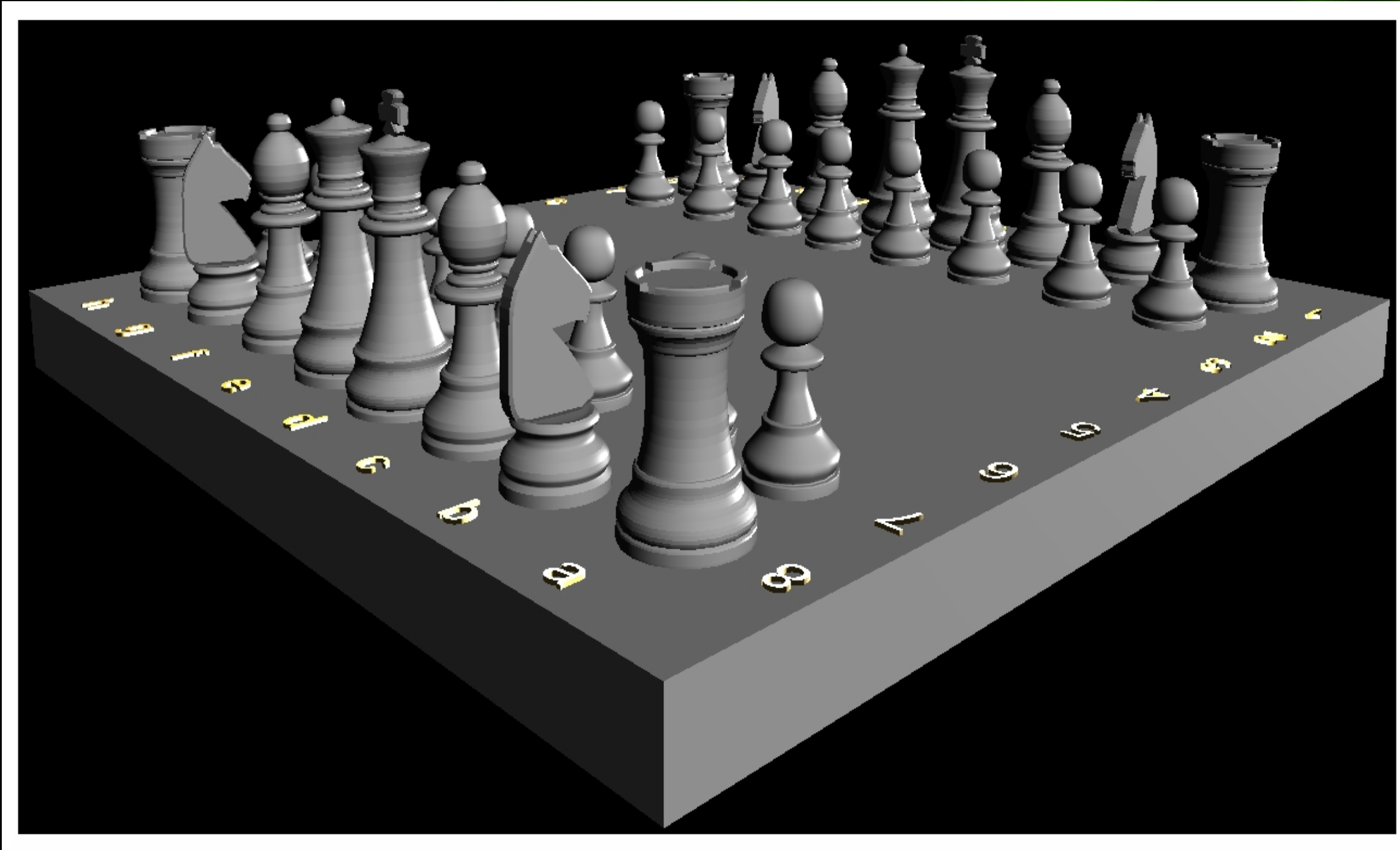


## 23a – Chess Phong reflection





# 24 – Chess Phong reflection&no textures





# 25 – Sponza Crytek

Rendered with diffuse shading, normal maps and two directional lights



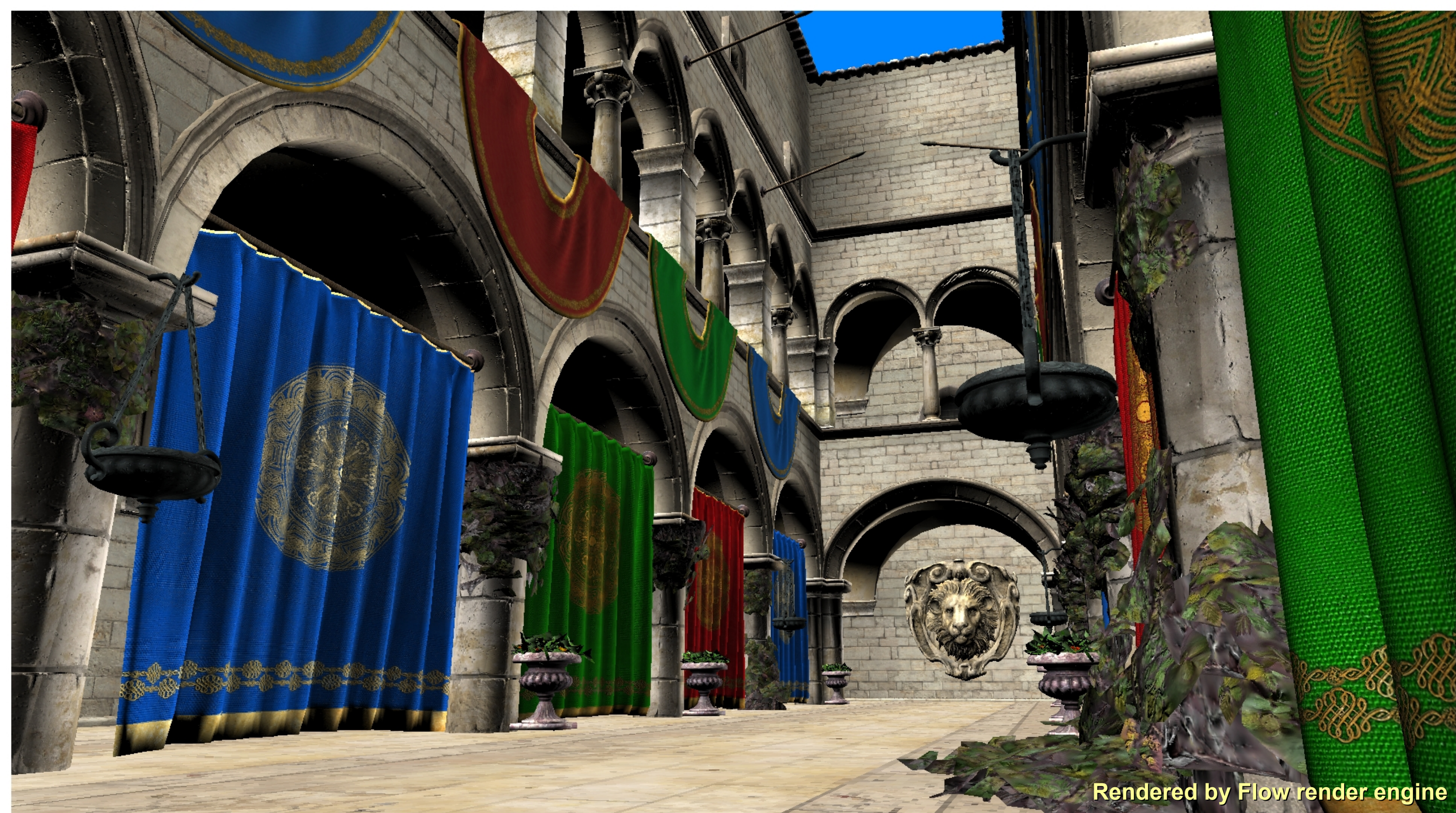
Rendered by Flow render engine





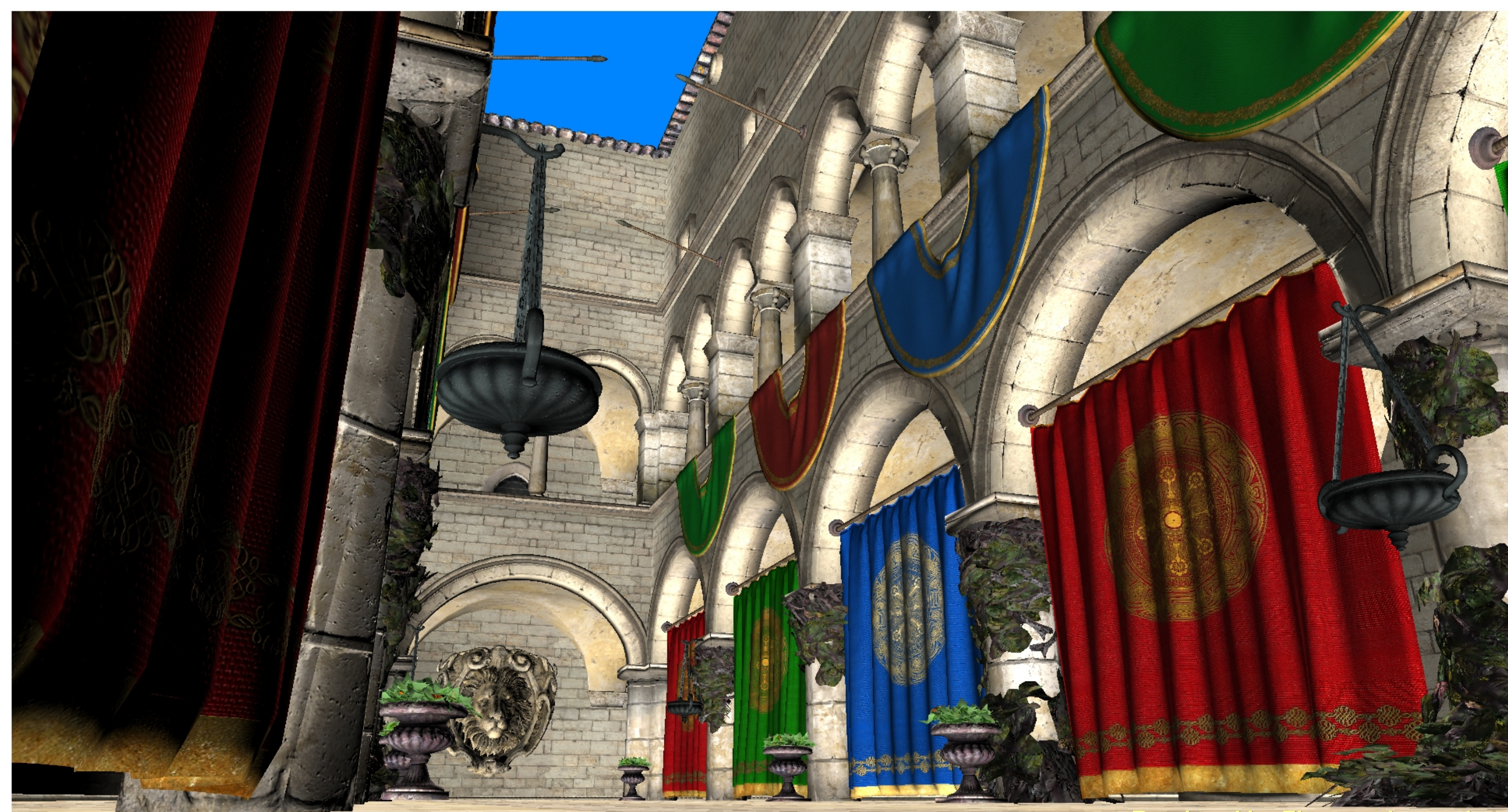
Rendered by Flow render engine





Rendered by Flow render engine





Rendered by Flow render engine





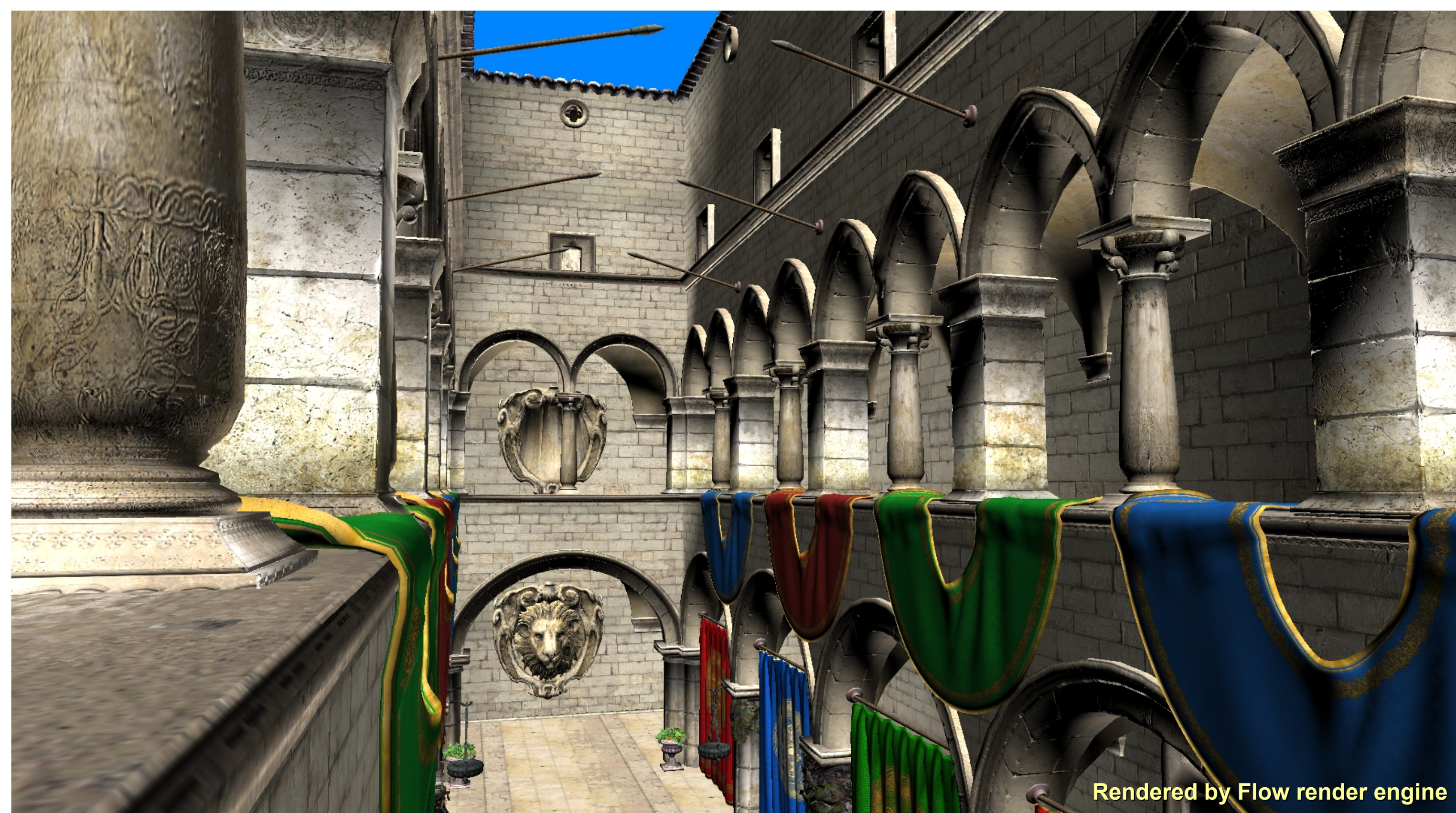
Rendered by Flow render engine





Rendered by Flow render engine





Rendered by Flow render engine









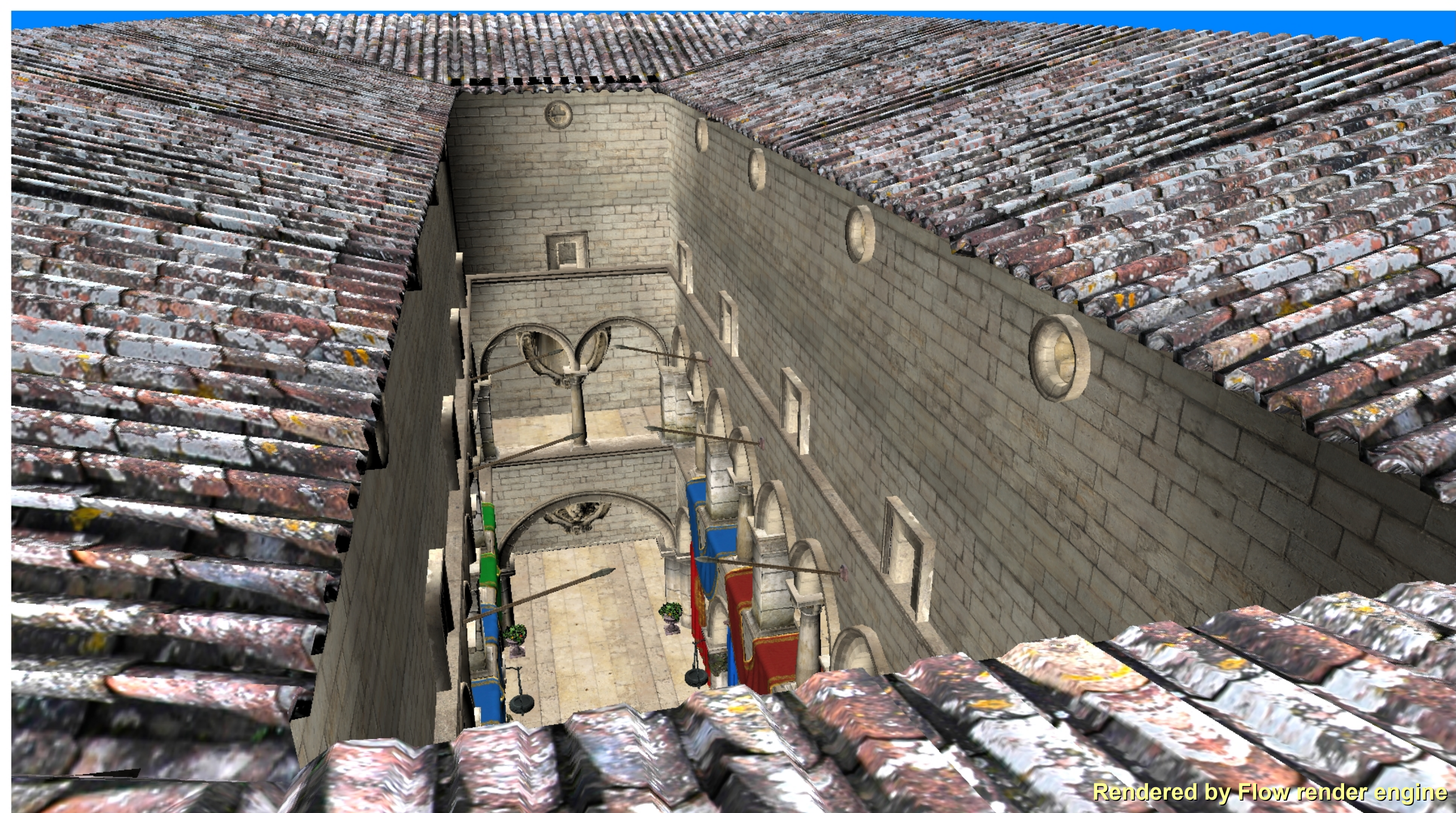
Rendered by Flow render engine





Rendered by Flow render engine





Rendered by Flow render engine



# Flow Render Engine

## *Real-Time Rendering Engine*

*with a modern graphics approach*

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