

Shadow Mapping

CSCI 4229/5229

Computer Graphics

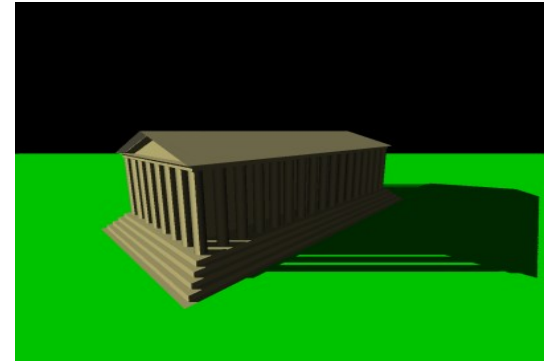
Fall 2026

Shader based shadows

- Shadow volume requires major code refactoring to implement shadows
 - Requires hardware stencil buffer
- Shadow Mapping
 - Requires no code refactoring
 - Implemented using per pixel lighting shader
 - Depth texture tied generated with framebuffer
 - Provides second Z-buffer
 - Use in *Toy Story* and many games

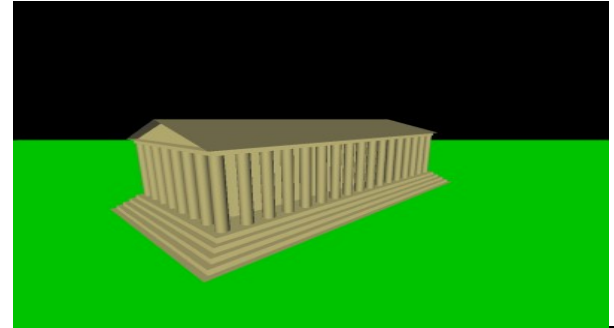
Shadow Mapping

- Project with light as viewpoint
- Depth buffer from light
- Light/shadow determined just like visibility
 - Objects in light foremost in depth buffer
 - Objects in shadow depth obscured
- Requires second depth buffer
 - Write depth to texture
 - Compare R to texture
- Used in *Toy Story* etc.

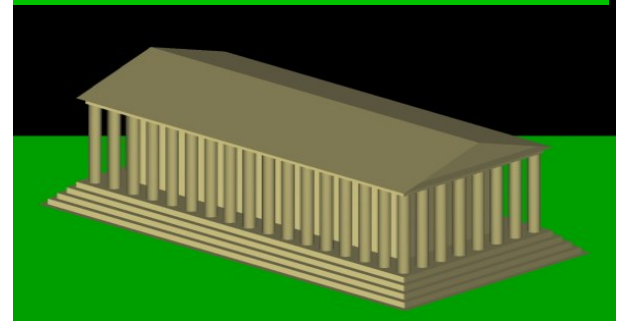


Shadow Map Example

No Shadows



Light View



Light View Depth

