CSE 167:
Introduction to Computer Graphics
Lecture #9: Culling

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Midterm Results

Category	
Exams Submitted	98
Average Score	52.7
Median Score	54
Highest Score	80
Lowest Score	27.5
70-80 Points	7
60-70 Points	26
50-60 Points	29
40-50 Points	18
30-40 Points	16
20-30 Points	2

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Announcements

- Project 4 due Friday
- This Friday no late grading

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Lecture Overview

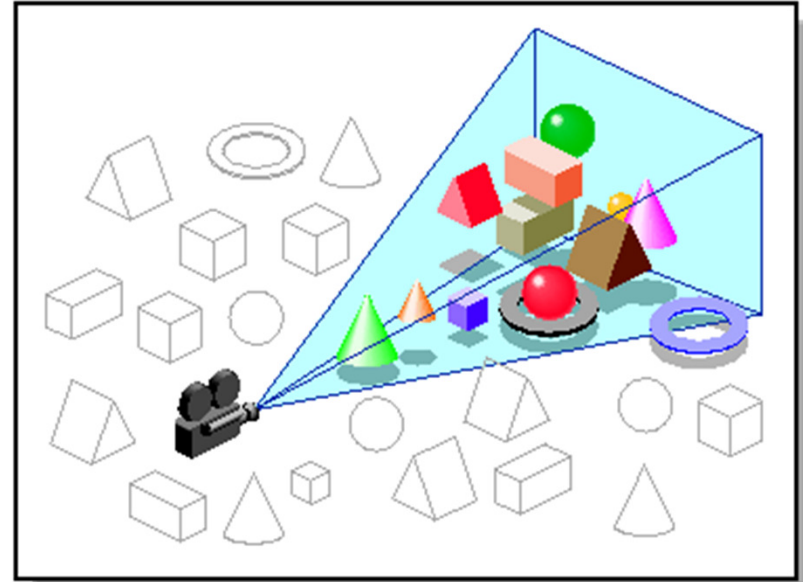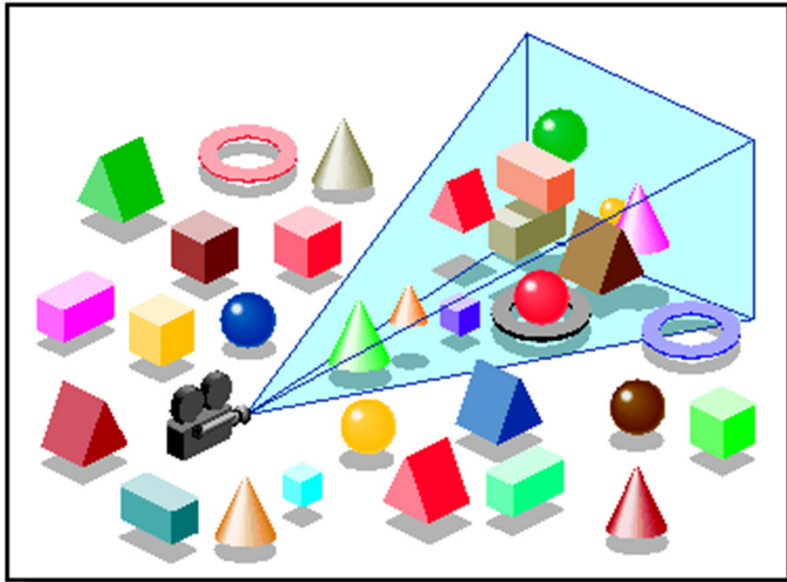- Culling

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Culling

▸ Goal:
Discard geometry that does not need to be drawn to speed up rendering

▸ Types of culling:

  ▸ View frustum culling

  ▸ Occlusion culling

  ▸ Small object culling

  ▸ Backface culling

  ▸ Degenerate culling

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View Frustum Culling

- **Triangles outside of view frustum are off-screen**
  - Done on canonical view volume

Images: SGI OpenGL Optimizer Programmer's Guide

Videos

- **Rendering Optimizations - Frustum Culling**
  - http://www.youtube.com/watch?v=kvVHp9wMAO8

- **View Frustum Culling Demo**
  - http://www.youtube.com/watch?v=bJrYTBGpwic

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Bounding Volumes

- Simple shape that completely encloses an object
- Generally a box or sphere
- We use spheres
  - Easiest to work with
  - But hard to calculate tight fits
- Intersect bounding volume with view frustum instead of each primitive

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