CSC418 Computer Graphics

- Scan conversion
- Simple Camera model
- Display techniques
  - Z Buffer
  - Ray Tracing

Scan Conversion

- Convex versus concave polygons?
- Triangulating a polygon
- Scan Converting a triangle
- Pattern Filling a polygon
- Flood filling a polygon
Camera model

- Pin hole camera

- Aperture and lens
Camera model

What is the difference between these images?
What is the difference between these images?

Orthographic
Perspective

Perspective Projection
Display Algorithms

Z-buffer

for each polygon in model
{
    project vertices of polygon onto viewing plane
    for each pixel inside the projected polygon
    {
        calculate pixel colour, pixel z-value
        compare pixel z-value to value stored for pixel in z-buffer
        if pixel is closer, draw it in frame-buffer and z-buffer
    }
}

Ray tracing

for each pixel on screen
{
    determine ray from eye through pixel
    find closest intersection of ray with an object
    cast off reflected and refracted ray
    recursively calculate pixel colour
    draw pixel
}
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Next Lecture....

- Polygon clipping
- Introduction to geometric transformations