So You Want to Write a Ray Tracer

Checkpoint 2 – Camera

Ray Tracing Assignment

• Seven checkpoints
  1. Setting the Scene
  2. Camera Modeling
  3. Basic Shading
  4. Procedural Shading
  5. Recursive Ray Tracing – Reflection
  6. Recursive Ray Tracing – Transmission
  7. Tone Reproduction

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Camera

• Using the scene setup discovered in Checkpoint #1,
  – Trace rays though the camera to produce an image
  – Non-recursive ray tracing
    • Visible surface determination
    • If no intersection, use background color.

Camera

• Will need to know,
  – Values from checkpoint #1.
  – The “size” of the image frame
    • In world units
    • In pixels
    • Use whatever seems appropriate
    • Don’t hard code…Define as constant or parameter.
Camera

Setting the Scene

• Deliverables:
  – Place the resultant image on your assignment Web site
  – Due Date:
    • Thursday, September 22nd.

Setting the Scene

• Helpful hints:
  – Code up ray generation / intersection calculations in separate module/function/object
    • Will be spawning more rays later
    • Will be modifying the calculation of the “color” coming from a ray.

Vectors

• Need a good vector library
  – See Blinn paper on READING list and on mycourses.

Setting the Scene

• Due date:
  – Must be posted to Web site by Midnight September 22.

  – Recall:
    • 10% penalty per day
  – Having trouble?
    • Let me know EARLY.

  • Questions?
Extra, Extra

• For 5 points (each):
  – Add another object type to your scene
    • E.g. cone, torus, cylinder
    • http://www.realtimerendering.com/int/
  – Do supersampling
    • Rather than 1 ray per pixel, spawn n rays per pixel
      and average.
• In either case, post image with no-extras and one with extras.