Computer Graphics COMP3271
Programming Assignment 3: Ray Tracing

Due Date: 23:59 Dec 05th, 2022

General Description

In this assignment you will implement ray tracing which is a useful technique to generate realistic image of 3D scene.

Requirements

- Diffuse, specular and ambient color shading.
- Shadow and reflection.
- Ray-quadratic intersection.
- Ray-triangle intersection.
- Phong interpolation.

Template

A project template is prepared for you to help you focus on the interface design.

Implementation

There are five functions need to be implemented.

TraceRay(…) (in main.cpp): Given a ray, calculate the color at the nearest intersection point.

Shade(…) (in main.cpp): Given the ray-surface intersection information, calculate the corresponding color.

Triangle::Hit(…) (in hittable.cpp): Perform intersection calculation between a ray and a triangle.

Sphere::Hit(…) (in hittable.cpp): Perform intersection calculation between a ray and a sphere.

Quadric::Hit(…) (in hittable.cpp): Perform intersection calculation between a ray and a quadric surface.

Hand in

Hand-in your 'main.cpp' and 'Hittable.cpp'.

Necessary comments to explain your code is required.

For any modifications of the framework, please email the tutor in advance: qindafei@connect.hku.hk