Ray Caster 3000

How to Use

Run RayCaster3000.exe from command line with parameters:

1. Address of the Input File
2. Address of the Output File (will be created if not found)

Input File Format

To form a valid input file, you must specify each object on the scene. Every line in the file should contain at least two arguments (rest of the line will be ignored, can be used for comments).

To create an object, type ‘+’ as the first parameter and then the name of the object\* you want to create. For the following lines write parameters of the object in name-value pairs (ex: position 10,8,6) Name is just for readability. All parameters should be in a specific order (can be seen in example scenes). Every object should get all the values it needs, extra values (lines) will be ignored and not cause an error.

After specifying all the parameters, an empty line will create the object (an extra empty line is necessary at the end of the file). Extra empty lines will not cause an error.

If there is a problem on the parameters it will be logged to console on the console and the process will end.

To render a scene, at least a camera and a settings object must be created else the program will crash.

There are example scenes you can see for parameters and which order you should write them.

\*Object Types:

* scene>settings
* camera>perspective
* light>point
* light>ambient
* modal>sphere

Parameters

Color and Vector requires 3 double (or integer) values separated by comas (ex: 10,8,6)

Color should be in range of 0-255.

Constant values should be between 0 and 1.

For **scene>settings**

resolution [width],[height] : Size of output bmp in pixels

background-color [color]

anti-aliasing [integer] : Will sample square times this parameter of rays for a single pixel

bounce-limit [integer] : Limits the bounce of a ray

For **camera>perspective**

position [vector] : Where the camera is

look-at [vector] : Where the camera is looking

up [vector] : Where the upside is for camera

For **light>point**

color [color] : Color of the light

intensity [number] : Strength of the light

position [vector] : Where the light is

For **light>ambient**

color [color] : Color of the light

intensity [number] : Strength of the light

For **modal>sphere**

shape-position [vector] : Where the sphere is

shape-radius [number] : Radius of sphere

material-color [vector] : Color of the sphere

material-ambient-reflectance [constant] : How much the sphere effects from ambient lights.

material-diffuse-reflectance [constant] : How much the sphere effects from point lights.

material-specular-reflectance [constant] : If this value is not zero, sphere will be glossy and shine depending on the lights. Bigger the value sharper the specular reflection.

material-mirror-reflectance [constant] : If this value is not zero, rays will bounce of this sphere. Bigger the value more opaque the mirror reflections.