

raytracer

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

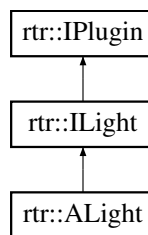
rtr::ALight	5
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Chapter 3

Class Documentation

3.1 rtr::ALight Class Reference

Inheritance diagram for rtr::ALight:



Public Member Functions

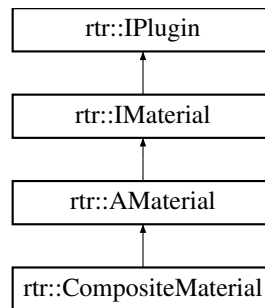
- void **setType** (const LightType &type) override
- void **setIntensity** (const float &intensity) override
- const LightType & **getType** () const override
- **Vector** & **getPosition** () override
- **Vector** & **getDirection** () override
- **Color** & **getColor** () override
- float & **getIntensity** () override

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/ALight.hpp

3.2 rtr::AMaterial Class Reference

Inheritance diagram for rtr::AMaterial:



Public Member Functions

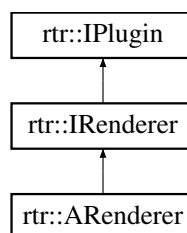
- void **setType** (const MaterialType &type) override
- void **setReflectivity** (const float &reflectivity) override
- void **setTransparency** (const float &transparency) override
- const MaterialType & **getType** () const override
- **Color** & **getColor** () override
- const float & **getReflectivity** () const override
- const float & **getTransparency** () const override

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/AMaterial.hpp

3.3 rtr::ARenderer Class Reference

Inheritance diagram for rtr::ARenderer:



Public Member Functions

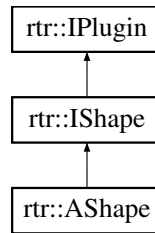
- void **setType** (const RendererType &rendererType) override
- void **setName** (const std::string &name) override
- const RendererType & **getType** () const override
- **Resolution** & **getResolution** () override
- **Color** & **getBackgroundColor** () override
- const std::string & **getName** () const override
- std::vector< std::vector< **rtr::Color** > > & **getPixels** () override
- void **setPixels** (const std::vector< std::vector< **rtr::Color** > > &pixels) override

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/ARenderer.hpp

3.4 rtr::AShape Class Reference

Inheritance diagram for rtr::AShape:



Public Member Functions

- void **setType** (const ShapeType &type) override
- void **setRadius** (const double &radius) override
- void **setHeight** (const double &height) override
- void **setMaterial** (std::unique_ptr< [AMaterial](#) > material) override
- const ShapeType & **getType** () const override
- [AMaterial](#) & **getMaterial** () override
- [Vector](#) & **getPosition** () override
- [Vector](#) & **getNormal** () override
- [Vector](#) & **getRotation** () override
- const double & **getRadius** () const override
- const double & **getHeight** () const override
- [Vector](#) **getDistance** (const [Vector](#) &point) override

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/AShape.hpp

3.5 rtr::Camera Class Reference

Public Member Functions

- **Camera** (uint16_t fov, [Vector](#) origin, [Vector](#) direction)
- void **setFov** (const uint16_t &fov)
- void **setCameraScreen** (const [Rectangle3D](#) &cameraScreen)
- const uint16_t & **getFov** () const
- const [Vector](#) & **getOrigin** () const
- const [Vector](#) & **getDirection** () const
- const [Rectangle3D](#) & **getCameraScreen** () const
- std::pair< [Vector](#), [Vector](#) > **ray** (double u, double v) const

The documentation for this class was generated from the following file:

- App/include/RayTracer/Scene/Camera.hpp

3.6 rtr::Color Class Reference

Public Member Functions

- **Color** (const uint8_t &r, const uint8_t &g, const uint8_t &b)
- **Color** (const color_t &color)
- void **setColor** (const uint8_t &r, const uint8_t &g, const uint8_t &b)
- void **setColor** (const color_t &color)
- color_t **getValue** () const

Static Public Member Functions

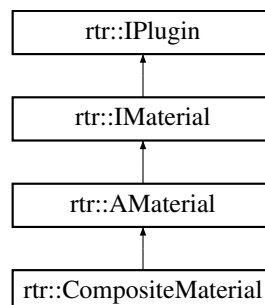
- static color_t **customColor** (const uint8_t &r, const uint8_t &g, const uint8_t &b)
- static constexpr color_t **getRed** ()
- static constexpr color_t **getGreen** ()
- static constexpr color_t **getBlue** ()
- static constexpr color_t **getWhite** ()
- static constexpr color_t **getBlack** ()
- static constexpr color_t **getYellow** ()
- static constexpr color_t **getMagenta** ()
- static constexpr color_t **getCyan** ()
- static constexpr color_t **getGray** ()
- static constexpr color_t **getOrange** ()
- static constexpr color_t **getBrown** ()
- static constexpr color_t **getLightBlue** ()
- static constexpr color_t **getLightGreen** ()
- static constexpr color_t **getLightPink** ()
- static constexpr color_t **getLightYellow** ()
- static constexpr color_t **getLightGray** ()
- static constexpr color_t **getDarkGray** ()
- static constexpr color_t **getDarkRed** ()
- static constexpr color_t **getDarkGreen** ()
- static constexpr color_t **getDarkBlue** ()
- static constexpr color_t **getDarkYellow** ()

The documentation for this class was generated from the following file:

- App/include/RayTracer/Utils/Color.hpp

3.7 rtr::CompositeMaterial Class Reference

Inheritance diagram for rtr::CompositeMaterial:



Public Member Functions

- `std::string getPluginName ()` const override
- `void addMaterial (std::unique_ptr< AMaterial > material)`
- `void applyMaterial (Color *color)` override

The documentation for this class was generated from the following file:

- `App/include/RayTracer/Composite/Material.hpp`

3.8 rtr::Core Class Reference

Classes

- class [CoreException](#)

Static Public Member Functions

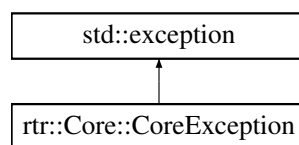
- `static void runRayTracer (Scene &scene)`

The documentation for this class was generated from the following file:

- `App/include/RayTracer/Core.hpp`

3.9 rtr::Core::CoreException Class Reference

Inheritance diagram for `rtr::Core::CoreException`:



Public Member Functions

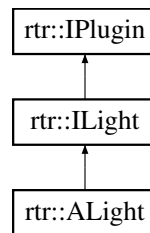
- `CoreException (std::string msg)`
- `CoreException (const CoreException &)=delete`
- `CoreException & operator= (const CoreException &)=delete`
- `CoreException (const CoreException &&)=delete`
- `CoreException & operator= (const CoreException &&)=delete`
- `const char * what ()` const noexcept override

The documentation for this class was generated from the following file:

- `App/include/RayTracer/Core.hpp`

3.10 rtr::ILight Class Reference

Inheritance diagram for rtr::ILight:



Public Member Functions

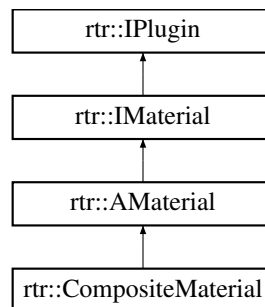
- virtual void **setType** (const LightType &type)=0
- virtual void **setIntensity** (const float &intensity)=0
- virtual **Color** **LightColor** (const **Vector** &normal, **Color** col)=0
- virtual const LightType & **getType** () const =0
- virtual **Vector** & **getPosition** ()=0
- virtual **Vector** & **getDirection** ()=0
- virtual **Color** & **getColor** ()=0
- virtual float & **getIntensity** ()=0

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/ILight.hpp

3.11 rtr::IMaterial Class Reference

Inheritance diagram for rtr::IMaterial:



Public Member Functions

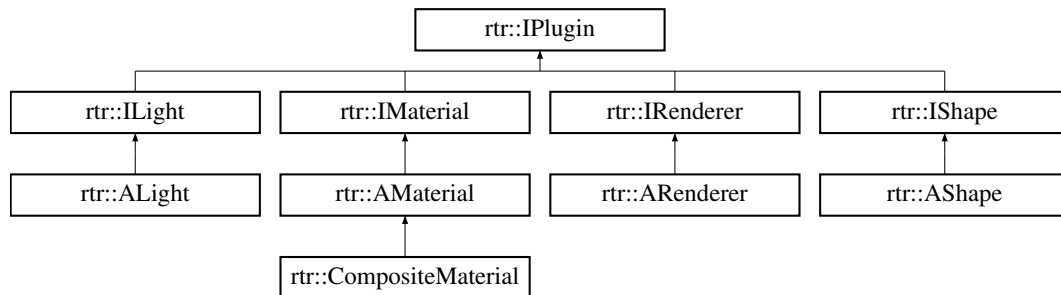
- virtual void **applyMaterial** (**Color** *color)=0
- virtual void **setType** (const MaterialType &type)=0
- virtual void **setReflectivity** (const float &reflectivity)=0
- virtual void **setTransparency** (const float &transparency)=0
- virtual const MaterialType & **getType** () const =0
- virtual **Color** & **getColor** ()=0
- virtual const float & **getReflectivity** () const =0
- virtual const float & **getTransparency** () const =0

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/IMaterial.hpp

3.12 rtr::IPlugin Class Reference

Inheritance diagram for rtr::IPlugin:



Public Member Functions

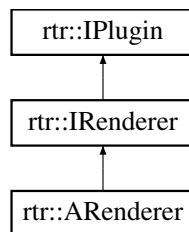
- virtual std::string **getPluginName** () const =0

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/IPlugin.hpp

3.13 rtr::IRenderer Class Reference

Inheritance diagram for rtr::IRenderer:



Public Member Functions

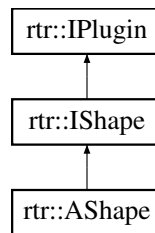
- virtual void **render** (const std::vector< [AShape](#) * > &shapes, const [Camera](#) &camera)=0
- virtual void **setType** (const RendererType &rendererType)=0
- virtual void **setName** (const std::string &name)=0
- virtual void **setPixels** (const std::vector< std::vector< [rtr::Color](#) > > &pixels)=0
- virtual const RendererType & **getType** () const =0
- virtual const std::string & **getName** () const =0
- virtual [Resolution](#) & **getResolution** ()=0
- virtual [Color](#) & **getBackgroundColor** ()=0
- virtual std::vector< std::vector< [rtr::Color](#) > > & **getPixels** ()=0

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/IRenderer.hpp

3.14 rtr::IShape Class Reference

Inheritance diagram for rtr::IShape:



Public Member Functions

- virtual void **setType** (const ShapeType &type)=0
- virtual void **setMaterial** (std::unique_ptr< [AMaterial](#) > material)=0
- virtual void **setRadius** (const double &radius)=0
- virtual void **setHeight** (const double &height)=0
- virtual const ShapeType & **getType** () const =0
- virtual [AMaterial](#) & **getMaterial** ()=0
- virtual [Vector](#) & **getPosition** ()=0
- virtual [Vector](#) & **getNormal** ()=0
- virtual [Vector](#) & **getRotation** ()=0
- virtual const double & **getRadius** () const =0
- virtual const double & **getHeight** () const =0
- virtual bool **hits** (std::pair< [Vector](#), [Vector](#) > ray)=0
- virtual [Vector](#) **getDistance** (const [Vector](#) &point)=0

The documentation for this class was generated from the following file:

- App/include/RayTracer/Abstraction/IShape.hpp

3.15 rtr::LightFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< [ALight](#) > **createLight** (const [Color](#) &color, const float &intensity)
- static std::unique_ptr< [ALight](#) > **createLight** (const [Color](#) &color, const float &intensity, const [Vector](#) &direction, const [Vector](#) &position)
- static std::unique_ptr< [ALight](#) > **createLight** (const [Color](#) &color, const float &intensity, const [Vector](#) &position)

The documentation for this class was generated from the following file:

- App/include/RayTracer/Factory/Light.hpp

3.16 rtr::MaterialFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< [AMaterial](#) > **createMaterial** (const MaterialType &type, const float &floatValue)

The documentation for this class was generated from the following file:

- App/include/RayTracer/Factory/Material.hpp

3.17 rtr::Parser Class Reference

Classes

- class [ParserException](#)

Static Public Member Functions

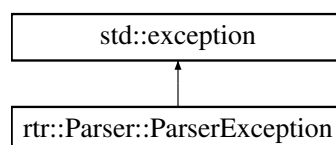
- static int **parseArgs** (const std::string &filePath)
- static std::unique_ptr< [rtr::Scene](#) > **parseFile** (const std::string &filePath)
- static void **parseRenderer** (const libconfig::Setting &renderer, [Scene](#) &scene)
- static void **parseCamera** (const libconfig::Setting &camera, [Scene](#) &scene)
- static ShapeType **parseShapeType** (const std::string &type)
- static void **parseShapes** (const libconfig::Setting &shapesSetting, [Scene](#) &scene)
- static std::unique_ptr< [AMaterial](#) > **parseMaterial** (const libconfig::Setting &materialSetting)
- static LightType **parseLightType** (const std::string &type)
- static void **parseLights** (const libconfig::Setting &lightsSetting, [Scene](#) &scene)
- template<typename T, typename ConversionFunc >
static T **getVector** (const libconfig::Setting &setting, ConversionFunc convert)
- template<typename T >
static T **convertInt** (const libconfig::Setting &setting)

The documentation for this class was generated from the following file:

- App/include/RayTracer/Parser.hpp

3.18 rtr::Parser::ParserException Class Reference

Inheritance diagram for rtr::Parser::ParserException:



Public Member Functions

- **ParseException** (std::string msg)
- **ParseException** (const [ParseException](#) &)=delete
- [ParseException](#) & **operator=** (const [ParseException](#) &)=delete
- **ParseException** (const [ParseException](#) &&)=delete
- [ParseException](#) & **operator=** (const [ParseException](#) &&)=delete
- const char * **what** () const noexcept override

The documentation for this class was generated from the following file:

- App/include/RayTracer/Parser.hpp

3.19 rtr::PluginLoader Class Reference

Public Types

- using **PluginCreator** = std::unique_ptr< [IPlugin](#) >(*)()

Public Member Functions

- template<typename T >
std::unique_ptr< T > **getPlugin** (const std::string &pluginName)

Static Public Member Functions

- static [PluginLoader](#) & **getInstance** ()

The documentation for this class was generated from the following file:

- App/include/RayTracer/Loader/Plugin.hpp

3.20 rtr::Rectangle3D Class Reference

Public Member Functions

- **Rectangle3D** (const [Vector](#) &origin, const [Vector](#) &bottom_side, const [Vector](#) &left_side)
- [Vector](#) **pointAt** (double u, double v) const

The documentation for this class was generated from the following file:

- App/include/RayTracer/Utils/Rectangle3D.hpp

3.21 rtr::RendererFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< [ARenderer](#) > **createRenderer** (const RendererType &type, const std::string &name, const [Resolution](#) &resolution, const [Color](#) &backgroundColor)

The documentation for this class was generated from the following file:

- App/include/RayTracer/Factory/Renderer.hpp

3.22 rtr::Resolution Class Reference

Public Member Functions

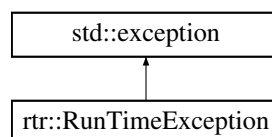
- **Resolution** (const uint16_t &width, const uint16_t &height)
- **Resolution** (const resolution_t &resolution)
- void **setWidth** (const uint16_t &width)
- void **setHeight** (const uint16_t &height)
- void **setResolution** (const uint16_t &width, const uint16_t &height)
- void **setResolution** (const resolution_t &resolution)
- uint16_t **getWidth** () const
- uint16_t **getHeight** () const
- resolution_t **getValue** () const

The documentation for this class was generated from the following file:

- App/include/RayTracer/Utils/Resolution.hpp

3.23 rtr::RunTimeException Class Reference

Inheritance diagram for rtr::RunTimeException:



Public Member Functions

- **RunTimeException** (std::string msg)
- **RunTimeException** (const [RunTimeException](#) &)=delete
- [RunTimeException](#) & **operator=** (const [RunTimeException](#) &)=delete
- **RunTimeException** (const [RunTimeException](#) &&)=delete
- [RunTimeException](#) & **operator=** (const [RunTimeException](#) &&)=delete
- const char * **what** () const noexcept override

The documentation for this class was generated from the following file:

- App/include/RayTracer/Exception/RunTime.hpp

3.24 rtr::Scene Class Reference

Public Member Functions

- void **setCamera** (const [Camera](#) &camera)
- void **setRenderer** (std::unique_ptr< [ARenderer](#) > renderer)
- void **addShape** (std::unique_ptr< [AShape](#) > shape)
- void **addLight** (std::unique_ptr< [ALight](#) > light)
- [Camera](#) & **getCamera** ()
- const std::unique_ptr< [ARenderer](#) > & **getRenderer** () const
- const std::vector< std::unique_ptr< [AShape](#) > > & **getShapes** () const
- const std::vector< std::unique_ptr< [ALight](#) > > & **getLights** () const

The documentation for this class was generated from the following file:

- App/include/RayTracer/Scene/Scene.hpp

3.25 rtr::ShapeFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< [AShape](#) > **createShape** (const [Vector](#) &position, const [Vector](#) &normal)
- static std::unique_ptr< [AShape](#) > **createShape** (const [Vector](#) &position, const double &radius)
- static std::unique_ptr< [AShape](#) > **createShape** (const ShapeType &type, const [Vector](#) &position, const [Vector](#) &rotation, const double &radius, const double &height)

The documentation for this class was generated from the following file:

- App/include/RayTracer/Factory/Shape.hpp

3.26 rtr::Vector Class Reference

Public Member Functions

- [Vector](#) (const double &x, const double &y, const double &z)
- [Vector](#) (const vector_t &position)
- void **setX** (const double &x)
- void **setY** (const double &y)
- void **setZ** (const double &z)
- void **setVector** (const double &x, const double &y, const double &z)
- void **setVector** (const vector_t &position)
- double **getX** () const
- double **getY** () const
- double **getZ** () const
- vector_t **getValue** () const
- [Vector](#) **operator+** (const [Vector](#) &other) const
- [Vector](#) **operator-** (const [Vector](#) &other) const
- [Vector](#) **operator*** (const [Vector](#) &other) const
- [Vector](#) **operator*** (const double &scalar) const
- [Vector](#) **operator/** (const double &scalar) const
- double **length** () const
- double **dot** (const [Vector](#) &other) const
- [Vector](#) **cross** (const [Vector](#) &other) const
- [Vector](#) **normalize** () const

The documentation for this class was generated from the following file:

- App/include/RayTracer/Utils/Vector.hpp

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