

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:

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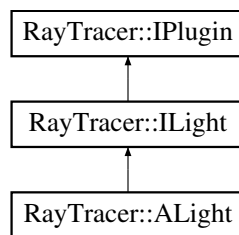


## Chapter 3

# Class Documentation

### 3.1 RayTracer::ALight Class Reference

Inheritance diagram for RayTracer::ALight:



#### Public Member Functions

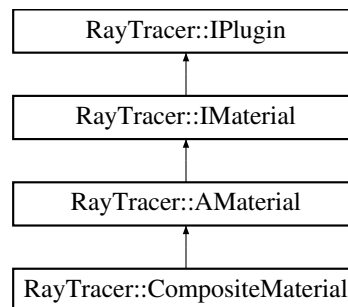
- void **setType** (const LightType &type) override
- void **setIntensity** (const float &intensity) override
- const LightType & **getType** () const override
- **Vector** & **getPosition** () override
- **Vector** & **getDirection** () override
- **Color** & **getColor** () override
- float & **getIntensity**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

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

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

## 3.2 RayTracer::AMaterial Class Reference

Inheritance diagram for RayTracer::AMaterial:



### Public Member Functions

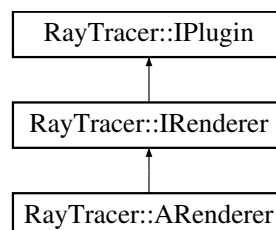
- void **setType** (const MaterialType &type) override
- void **setReflectivity** (const float &reflectivity) override
- void **setTransparency** (const float &transparency) override
- const MaterialType & **getType** () const override
- [Color](#) & **getColor** () override
- const float & **getReflectivity** () 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 RayTracer::ARenderer Class Reference

Inheritance diagram for RayTracer::ARenderer:



### Public Member Functions

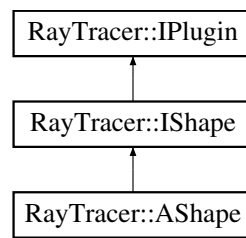
- void **setType** (const Renderertype &renderertype) override
- void **setName** (const std::string &name) override
- const Renderertype & **getType** () const override
- [Resolution](#) & **getResolution** () override
- [Color](#) & **getBackgroundColor** () override
- const std::string & **getName** () const override

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

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

## 3.4 RayTracer::AShape Class Reference

Inheritance diagram for RayTracer::AShape:



### Public Member Functions

- void **setType** (const ShapeType &type) override
- void **setRadius** (const int16\_t &radius) override
- void **setMaterial** (std::unique\_ptr< [AMaterial](#) > material) override
- const ShapeType & **getType** () const override
- const [AMaterial](#) & **getMaterial** () const override
- [Vector](#) & **getPosition** () override
- [Vector](#) & **getRotation** () override
- int16\_t **getRadius** () const override

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

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

## 3.5 RayTracer::Camera Class Reference

### Public Member Functions

- **Camera** (uint16\_t fov, [Vector](#) position, [Vector](#) direction, [Vector](#) up)
- void **setFov** (const uint16\_t &fov)
- const uint16\_t & **getFov** () const
- const [Vector](#) & **getOrigin** () const
- const [Vector](#) & **getDirection** () const
- const [Vector](#) & **getUp** () const

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

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

## 3.6 RayTracer::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

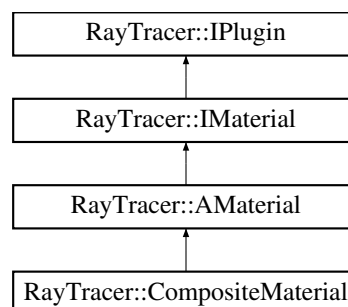
- static color\_t **customColor** (const uint8\_t &r, const uint8\_t &g, const uint8\_t &b)
- static constexpr color\_t **getRed** ()
- static constexpr color\_t **getGreen** ()
- static constexpr color\_t **getBlue** ()
- static constexpr color\_t **getWhite** ()
- static constexpr color\_t **getBlack** ()
- 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 RayTracer::CompositeMaterial Class Reference

Inheritance diagram for RayTracer::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 RayTracer::Core Class Reference

### Classes

- class [CoreException](#)

### Static Public Member Functions

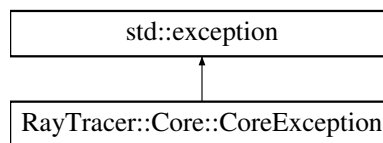
- static void **runRayTracer** (const [Scene](#) &scene)

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

- App/include/RayTracer/Core.hpp

## 3.9 RayTracer::Core::CoreException Class Reference

Inheritance diagram for RayTracer::Core::CoreException:



### Public Member Functions

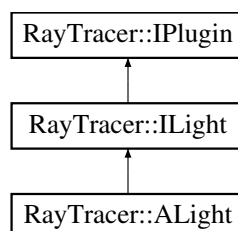
- **CoreException** (std::string msg)
- **CoreException** (const [CoreException](#) &)=delete
- [CoreException](#) & **operator=** (const [CoreException](#) &)=delete
- **CoreException** (const [CoreException](#) &&)=delete
- [CoreException](#) & **operator=** (const [CoreException](#) &&)=delete
- const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

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

- App/include/RayTracer/Core.hpp

## 3.10 RayTracer::ILight Class Reference

Inheritance diagram for RayTracer::ILight:



## Public Member Functions

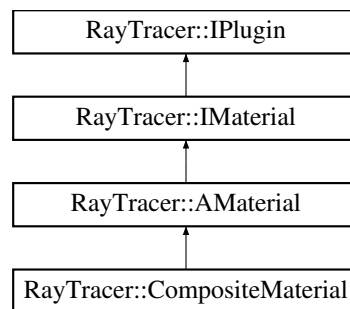
- virtual void **setType** (const LightType &type)=0
- virtual void **setIntensity** (const float &intensity)=0
- virtual const LightType & **getType** () const =0
- virtual **Vector** & **getPosition** ()=0
- virtual **Vector** & **getDirection** ()=0
- virtual **Color** & **getColor** ()=0
- virtual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

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

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

## 3.11 RayTracer::IMaterial Class Reference

Inheritance diagram for RayTracer::IMaterial:



## Public Member Functions

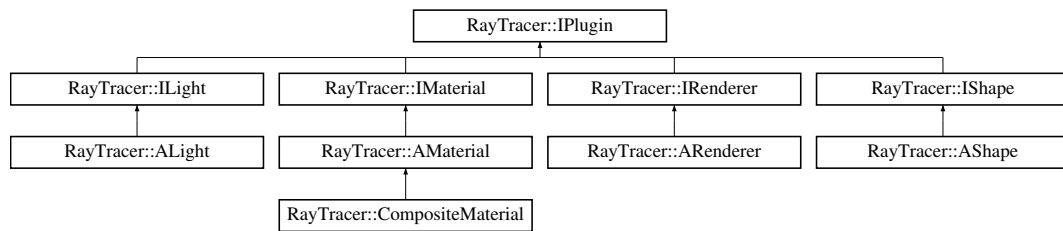
- virtual void **applyMaterial** (**Color** \*color)=0
- virtual void **setType** (const MaterialType &type)=0
- virtual void **setReflectivity** (const float &reflectivity)=0
- virtual void **setTransparency** (const float &transparency)=0
- virtual const MaterialType & **getType** () const =0
- virtual **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 RayTracer::IPlugin Class Reference

Inheritance diagram for RayTracer::IPlugin:



### Public Member Functions

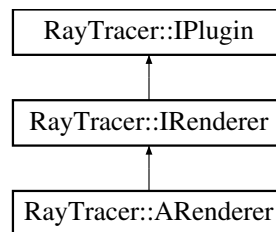
- virtual std::string **getPluginName** () const =0

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

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

## 3.13 RayTracer::IRenderer Class Reference

Inheritance diagram for RayTracer::IRenderer:



### Public Member Functions

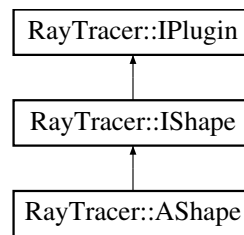
- virtual void **render** ()=0
- virtual void **setType** (const RendererType &rendererType)=0
- virtual void **setName** (const std::string &name)=0
- virtual const RendererType & **getType** () const =0
- virtual const std::string & **getName** () const =0
- virtual [Resolution](#) & **getResolution** ()=0
- virtual [Color](#) & **getBackgroundColor** ()=0

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

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

### 3.14 RayTracer::IShape Class Reference

Inheritance diagram for RayTracer::IShape:



#### Public Member Functions

- virtual void **setType** (const ShapeType &type)=0
- virtual void **setRadius** (const int16\_t &radius)=0
- virtual void **setMaterial** (std::unique\_ptr< [AMaterial](#) > material)=0
- virtual const ShapeType & **getType** () const =0
- virtual const [AMaterial](#) & **getMaterial** () const =0
- virtual [Vector](#) & **getPosition** ()=0
- virtual [Vector](#) & **getRotation** ()=0
- virtual int16\_t **getRadius** () const =0

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

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

### 3.15 RayTracer::LightFactory Class Reference

#### Static Public Member Functions

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

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

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

### 3.16 RayTracer::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 RayTracer::Parser Class Reference

### Classes

- class [ParserException](#)

### Static Public Member Functions

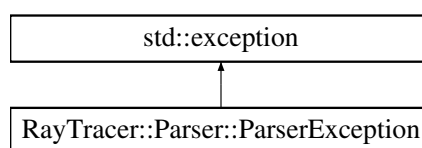
- static int **parseArgs** (const std::string &filePath)
- static std::unique\_ptr< [RayTracer::Scene](#) > **parseFile** (const std::string &filePath)
- static void **parseRenderer** (const libconfig::Setting &renderer, [Scene](#) &scene)
- static void **parseCamera** (const libconfig::Setting &camera, [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 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 RayTracer::Parser::ParserException Class Reference

Inheritance diagram for RayTracer::Parser::ParserException:



### Public Member Functions

- **ParserException** (std::string msg)
- **ParserException** (const [ParserException](#) &)=delete
- [ParserException](#) & **operator=** (const [ParserException](#) &)=delete
- **ParserException** (const [ParserException](#) &&)=delete
- [ParserException](#) & **operator=** (const [ParserException](#) &&)=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 RayTracer::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 RayTracer::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

## 3.21 RayTracer::Resolution Class Reference

### Public Member Functions

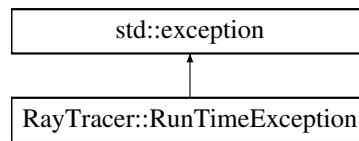
- **Resolution** (const uint16\_t &width, const uint16\_t &height)
- **Resolution** (const resolution\_t &resolution)
- void **setWidth** (const uint16\_t &width)
- void **setHeight** (const uint16\_t &height)
- void **setResolution** (const uint16\_t &width, const uint16\_t &height)
- void **setResolution** (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

## 3.22 RayTracer::RunTimeException Class Reference

Inheritance diagram for RayTracer::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

## 3.23 RayTracer::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)
- const [Camera](#) & **getCamera** () const
- 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

## 3.24 RayTracer::ShapeFactory Class Reference

### Static Public Member Functions

- static std::unique\_ptr< [AShape](#) > **createShape** (const [Vector](#) &position)
- static std::unique\_ptr< [AShape](#) > **createShape** (const [Vector](#) &position, const int16\_t &radius)
- static std::unique\_ptr< [AShape](#) > **createShape** (const ShapeType &type, const [Vector](#) &position, const [Vector](#) &rotation, const int16\_t &radius)

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

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

## 3.25 RayTracer::Vector Class Reference

### Public Member Functions

- **Vector** (const int16\_t &x, const int16\_t &y, const int16\_t &z)
- **Vector** (const vector\_t &position)
- void **setX** (const int16\_t &x)
- void **setY** (const int16\_t &y)
- void **setZ** (const int16\_t &z)
- void **setVector** (const int16\_t &x, const int16\_t &y, const int16\_t &z)
- void **setVector** (const vector\_t &position)
- int16\_t **getX** () const
- int16\_t **getY** () const
- int16\_t **getZ** () const
- vector\_t **getValue** () const
- **Vector operator+** (const **Vector** &other) const
- **Vector operator-** (const **Vector** &other) const
- double **length** () const
- int **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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