raytracer

0.1.0

Generated by Doxygen 1.9.1

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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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RayTracer::RunTimeException 13
RayTracer::Scene 13
RayTracer::ShapesFactory 14
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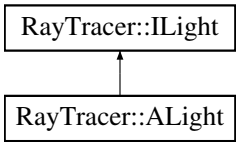
Chapter 3

Class Documentation

3.1 RayTracer::ALight Class Reference

Inheritance diagram for RayTracer::ALight:



Public Member Functions

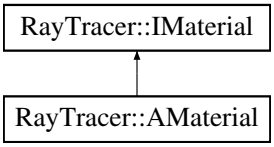
- void **setType** (const LightType &type) override
- void **setPosition** (const std::tuple< uint16_t, uint16_t, uint16_t > &position) override
- LightType **getType** () const override
- std::tuple< uint16_t, uint16_t, uint16_t > **getPosition** () const override

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

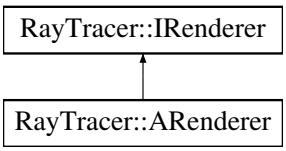
- void **setType** (const MaterialType &type) override
- void **setColor** (const Color_t &color) override
- void **setReflectivity** (const uint8_t &reflectivity) override
- void **setTransparency** (const uint8_t &transparency) override
- MaterialType **getType** () const override
- Color_t **getColor** () const override
- uint8_t **getReflectivity** () const override
- uint8_t **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

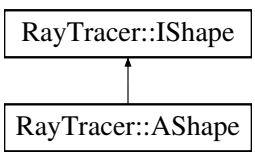
- void **setType** (const RendererType &rendererType) override
- void **setResolution** (const std::pair< uint16_t, uint16_t > &resolution) override
- void **setName** (const std::string &name) override
- RendererType **getType** () const override
- std::pair< uint16_t, uint16_t > **getResolution** () const override
- 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 **setColor** (const std::tuple< uint8_t, uint8_t, uint8_t > &color) override
- void **setPosition** (const std::tuple< uint16_t, uint16_t, uint16_t > &position) override
- void **setRadius** (float radius) override
- ShapeType **getType** () const override
- std::tuple< uint8_t, uint8_t, uint8_t > **getColor** () const override
- std::tuple< uint16_t, uint16_t, uint16_t > **getPosition** () const override
- float **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

- void **setFov** (uint16_t fov)
- void **setPosition** (std::tuple< uint16_t, uint16_t, uint16_t > position)
- uint16_t **getFov** () const
- std::tuple< uint16_t, uint16_t, uint16_t > **getPosition** () const

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

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

3.6 Arcade::Clock Class Reference

Public Types

- using TimePoint = std::chrono::time_point< std::chrono::high_resolution_clock >

  TimePoint is a type alias for a time point which is a very long and complicated type in the standard library.

Public Member Functions

- Clock ()

  Construct a new Clock object.
- void restart ()

  Restart the clock.
- void pause ()

  Pause the clock.
- void resume ()

  Resume the clock.
- Time getElapsedTime () const

  Get the elapsed time since the last restart.

3.6.1 Member Function Documentation

3.6.1.1 getElapsedTime()

```
Time Arcade::Clock::getElapsedTime ( ) const
```

Get the elapsed time since the last restart.

Returns

Time The elapsed time

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

- App/include/RayTracer/Clock/Clock.hpp

3.7 RayTracer::Core Class Reference

Classes

- class CoreException

Static Public Member Functions

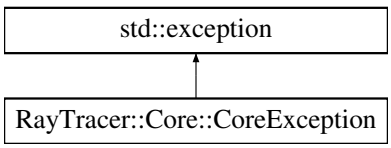
- static void **runRayTracer** (Scene &scene)

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

- App/include/RayTracer/Core.hpp

3.8 RayTracer::Core::CoreException Class Reference

Inheritance diagram for RayTracer::Core::CoreException:



Public Member Functions

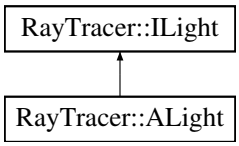
- **CoreException** (std::string msg)
- **CoreException** (const CoreException &)=delete
- CoreException & **operator=** (const CoreException &)=delete
- **CoreException** (const CoreException &&)=delete
- CoreException & **operator=** (const CoreException &&)=delete
- const char * **what** () const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

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

- App/include/RayTracer/Core.hpp

3.9 RayTracer::ILight Class Reference

Inheritance diagram for RayTracer::ILight:



Public Member Functions

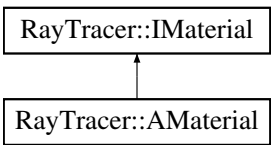
- virtual void **setType** (const LightType &type)=0
- virtual void **setPosition** (const std::tuple< uint16_t, uint16_t, uint16_t > &position)=0
- virtual LightType **getType** () const =0
- virtual std::tuple< uint16_t, uint16_t, uint16_t > **getPosition** () const =0

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

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

3.10 RayTracer::IMaterial Class Reference

Inheritance diagram for RayTracer::IMaterial:



Public Member Functions

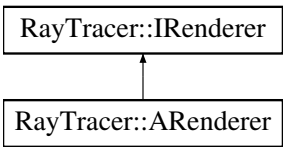
- virtual void **setType** (const MaterialType &type)=0
- virtual void **setColor** (const Color_t &color)=0
- virtual void **setReflectivity** (const uint8_t &reflectivity)=0
- virtual void **setTransparency** (const uint8_t &transparency)=0
- virtual MaterialType **getType** () const =0
- virtual Color_t **getColor** () const =0
- virtual uint8_t **getReflectivity** () const =0
- virtual uint8_t **getTransparency** () const =0

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

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

3.11 RayTracer::IRenderer Class Reference

Inheritance diagram for RayTracer::IRenderer:



Public Member Functions

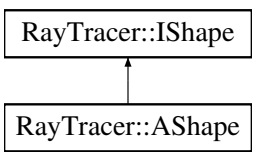
- virtual void **render** ()=0
- virtual void **setType** (const RendererType &rendererType)=0
- virtual void **setResolution** (const std::pair< uint16_t, uint16_t > &resolution)=0
- virtual void **setName** (const std::string &name)=0
- virtual RendererType **getType** () const =0
- virtual std::pair< uint16_t, uint16_t > **getResolution** () const =0
- virtual std::string **getName** () const =0

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

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

3.12 RayTracer::IShape Class Reference

Inheritance diagram for RayTracer::IShape:



Public Member Functions

- virtual void **setType** (const ShapeType &type)=0
- virtual void **setColor** (const std::tuple< uint8_t, uint8_t, uint8_t > &color)=0
- virtual void **setPosition** (const std::tuple< uint16_t, uint16_t, uint16_t > &position)=0
- virtual void **setRadius** (float radius)=0
- virtual ShapeType **getType** () const =0
- virtual std::tuple< uint8_t, uint8_t, uint8_t > **getColor** () const =0
- virtual std::tuple< uint16_t, uint16_t, uint16_t > **getPosition** () const =0
- virtual float **getRadius** () const =0

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

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

3.13 RayTracer::MaterialsFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< AMaterial > **createMaterials** (const MaterialType &type)

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

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

3.14 RayTracer::Parser Class Reference

Classes

- class ParserException

Static Public Member Functions

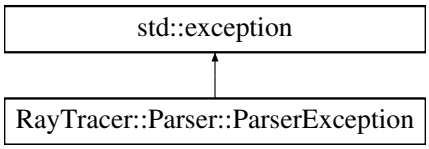
- static int **parseArgs** (const std::string &filePath)
- static std::unique_ptr< RayTracer::Scene > **parseFile** (const std::string &filePath)
- static void **parseRenderer** (const libconfig::Setting &renderer, Scene &scene)

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

- App/include/RayTracer/Parser.hpp

3.15 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

3.16 RayTracer::PluginLoader Class Reference

Static Public Member Functions

- template<typename T >
  static std::unique_ptr< T > **loadPlugin** (const std::string &libraryPath)

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

- App/include/RayTracer/PluginLoader.hpp

3.17 RayTracer::RendererFactory Class Reference

Static Public Member Functions

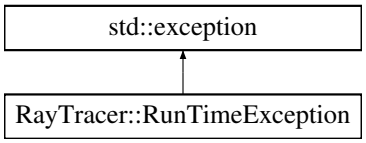
- static std::unique_ptr< ALight > **createLights** (const LightType &type, const std::tuple< uint16_t, uint16_t, uint16_t > &position)
- static std::unique_ptr< ARenderer > **createRenderer** (const RendererType &type)

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

- App/include/RayTracer/Factory/LightsFactory.hpp
- App/include/RayTracer/Factory/RendererFactory.hpp

3.18 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/Exceptions/RuntimeException.hpp

3.19 RayTracer::Scene Class Reference

Public Member Functions

- void **setName** (const std::string &name)
- void **setResolution** (std::pair< uint16_t, uint16_t > resolution)
- void **setCamera** (const Camera &camera)
- void **setRenderer** (const RendererType &rendererType)
- void **addShape** (std::unique_ptr< AShape > shape)
- void **addLight** (std::unique_ptr< ALight > light)
- std::pair< uint16_t, uint16_t > **getResolution** () 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

3.20 RayTracer::ShapesFactory Class Reference

Static Public Member Functions

- static std::unique_ptr< AShape > **createShape** (const ShapeType &type, const std::tuple< uint16_t, uint16_t, uint16_t > &position, const std::tuple< uint8_t, uint8_t, uint8_t > &color)
- static std::unique_ptr< AShape > **createShape** (const ShapeType &type, const std::tuple< uint16_t, uint16_t, uint16_t > &position, const std::tuple< uint8_t, uint8_t, uint8_t > &color, float radius)

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

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

3.21 Arcade::Time Class Reference

Public Member Functions

- Time (double seconds)

  Construct a new Time object.
- int asSeconds () const

  Transform the time to seconds.
- int asMilliseconds () const

  Transform the time to milliseconds.
- int asMicroseconds () const

  Transform the time to microseconds.

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

- App/include/RayTracer/Clock/Time.hpp

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