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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2 Hierarchical Index

Chapter 2

Class Index

2.1 Class List

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

RayTracer::ALight
RayTracer::AMaterial
RayTracer::ARenderer
RayTracer::AShape
RayTracer::Camera
Arcade::Clock
RayTracer::Core
RayTracer::Core::CoreException
RayTracer::ILight
RayTracer::IMaterial
RayTracer::IRenderer
RayTracer::IShape
RayTracer::MaterialsFactory
RayTracer::Parser
RayTracer::ParserException
RayTracer::PluginLoader
RayTracer::RendererFactory
RayTracer::RunTimeException
RayTracer::Scene
RayTracer::ShapesFactory
AradouTime

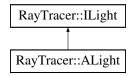
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Chapter 3

Class Documentation

3.1 RayTracer::ALight Class Reference

Inheritance diagram for RayTracer::ALight:



Public Member Functions

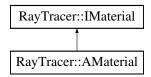
- void setType (const LightType &type) override
- void **setPosition** (const std::tuple< uint16_t, uint16_t, uint16_t > &position) override
- LightType getType () const override
- $std::tuple < uint16_t, uint16_t, uint16_t > getPosition$ () const override

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

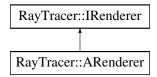
- void setType (const MaterialType &type) override
- void setColor (const Color_t &color) override
- void setReflectivity (const uint8_t &reflectivity) override
- void **setTransparency** (const uint8 t &transparency) override
- MaterialType getType () const override
- · Color t getColor () const override
- 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

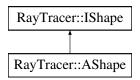
- void **setType** (const RendererType &rendererType) override
- void setResolution (const std::pair< uint16_t, uint16_t > &resolution) override
- void setName (const std::string &name) override
- RendererType getType () const override
- std::pair< uint16_t, uint16_t > getResolution () const override
- 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 ${f setColor}$ (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

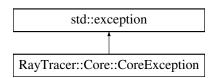
• static void runRayTracer (Scene &scene)

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

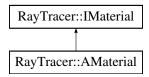
- virtual void **setType** (const LightType &type)=0
- virtual void setPosition (const std::tuple < uint16_t, uint16_t, uint16_t > &position)=0
- virtual LightType **getType** () const =0
- virtual std::tuple < uint16_t, uint16_t, uint16_t > getPosition () const =0

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

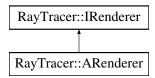
- virtual void setType (const MaterialType &type)=0
- virtual void setColor (const Color_t &color)=0
- virtual void **setReflectivity** (const uint8_t &reflectivity)=0
- virtual void **setTransparency** (const uint8_t &transparency)=0
- virtual MaterialType getType () const =0
- virtual Color_t getColor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

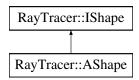
- virtual void render ()=0
- virtual void **setType** (const RendererType &rendererType)=0
- virtual void setResolution (const std::pair< uint16_t, uint16_t > &resolution)=0
- virtual void **setName** (const std::string &name)=0
- virtual RendererType getType () const =0
- virtual std::pair< uint16_t,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

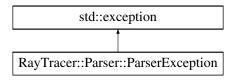
- static int parseArgs (const std::string &filePath)
- static std::unique_ptr< RayTracer::Scene > parseFile (const std::string &filePath)
- static void parseRenderer (const libconfig::Setting &renderer, Scene &scene)

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

 $\bullet \ \ \, App/include/RayTracer/Parser.hpp$

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

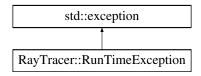
- static std::unique_ptr< ALights > createLights (const LightType &type, const std::tuple< uint16_t, uint16_t, uint16_t > &position)
- static std::unique_ptr< ARenderer > createRenderer (const RendererType &type)

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< AShapes > 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< AShapes > 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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