# Game Engine

Generated by Doxygen 1.8.13

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# Chapter 1

# **Hierarchical Index**

# 1.1 Class Hierarchy

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

CacheBase	7
ResourceCache < T >	28
EngineConfiguration	10
eng::input::Event	11
eng::input::KeyEvent	14
eng::input::MouseClickEvent	21
eng::input::MouseMoveEvent	
eng::input::ScrollEvent	31
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LoaderBase	19
Loader < T >	18
eng::input::Mods	20
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eng::input::MouseClickEvent	21
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RenderManager	
UpdateManager	
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Component	•
Renderable	
Triangle	
Updatable	
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GameObject	 12
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iformBase	 55
Uniform< float >	 45
Uniform< int >	 47
Uniform< Vec2 >	 49
Uniform < Vec3 >	 51
Uniform < Vec4 >	 53
c2	 59
c3	 59
c4	
ndow	 61
ndowConfiguration	63

# Chapter 2

# **Class Index**

# 2.1 Class List

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

AsyncResourceManager	5
CacheBase	7
Component	8
EngineConfiguration	10
eng::input::Event	11
GameObject	12
eng::input::Key	14
	14
Lifetime	16
Loader < T >	18
LoaderBase	19
eng::input::Mods	20
eng::input::MouseClickEvent	21
	23
Renderable	24
	26
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ThreadPool	39
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Uniform < int >	47
Uniform < Vec2 >	49
Uniform < Vec3 >	51

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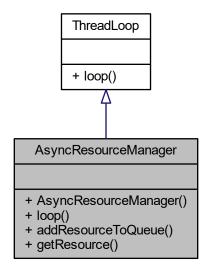
m< Vec4 >	53
mBase	55
able	56
eManager	58
	59
	59
	60
OW	61
owConfiguration	63

# **Chapter 3**

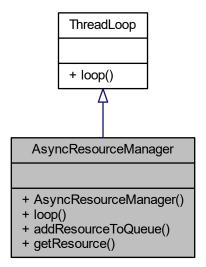
# **Class Documentation**

# 3.1 AsyncResourceManager Class Reference

Inheritance diagram for AsyncResourceManager:



Collaboration diagram for AsyncResourceManager:



#### **Public Member Functions**

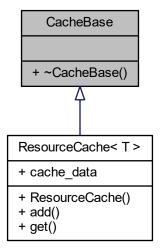
- AsyncResourceManager (uint32\_t)
- void loop ()
- template<typename T >
   bool addResourceToQueue (std::string name, std::string filepath, std::function< void(std::shared\_ptr< T >)> onLoad, std::function< void(void)> onFail)

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

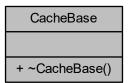
- include/core/managers/resource.h
- src/core/managers/resource.cpp

#### 3.2 CacheBase Class Reference

Inheritance diagram for CacheBase:



Collaboration diagram for CacheBase:

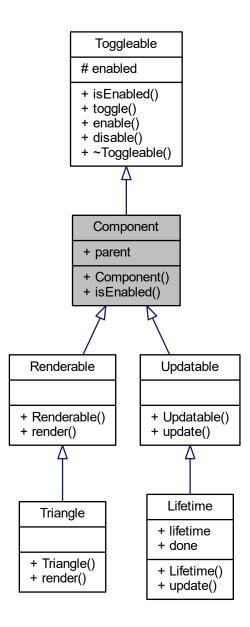


The documentation for this class was generated from the following file:

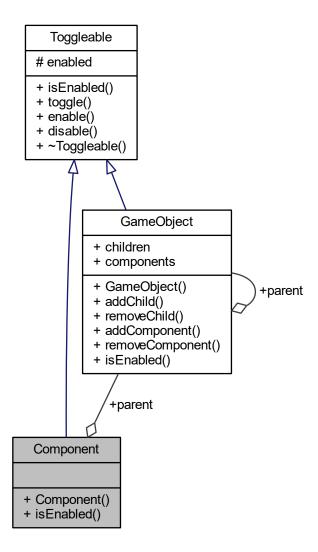
• include/core/managers/resource.h

# 3.3 Component Class Reference

Inheritance diagram for Component:



Collaboration diagram for Component:



#### **Public Member Functions**

- Component (GameObject &)
- bool isEnabled ()

#### **Public Attributes**

• GameObject \* parent = nullptr

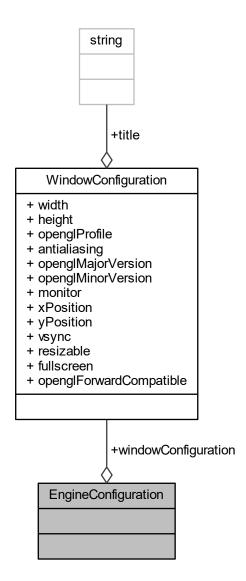
#### **Additional Inherited Members**

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

- include/core/object/gameobject.h
- src/core/object/gameobject.cpp

# 3.4 EngineConfiguration Struct Reference

Collaboration diagram for EngineConfiguration:



#### **Public Attributes**

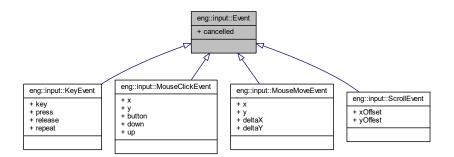
• WindowConfiguration windowConfiguration

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

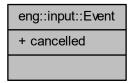
· include/core/engine.h

# 3.5 eng::input::Event Struct Reference

Inheritance diagram for eng::input::Event:



Collaboration diagram for eng::input::Event:



#### **Public Attributes**

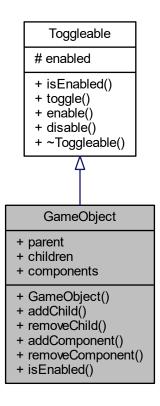
• bool cancelled = false

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

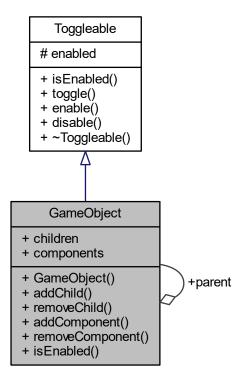
• include/core/managers/input.h

# 3.6 GameObject Class Reference

Inheritance diagram for GameObject:



Collaboration diagram for GameObject:



#### **Public Member Functions**

- GameObject (GameObject \*parent=nullptr)
- void addChild (GameObject &)
- void removeChild (GameObject &)
- void addComponent (Component &)
- void removeComponent (Component &)
- bool isEnabled ()

#### **Public Attributes**

- GameObject \* parent
- std::unordered\_set< GameObject \* > children
- std::unordered\_set< Component \* > components

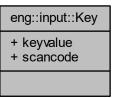
#### **Additional Inherited Members**

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

- include/core/object/gameobject.h
- src/core/object/gameobject.cpp

# 3.7 eng::input::Key Struct Reference

Collaboration diagram for eng::input::Key:



#### **Public Attributes**

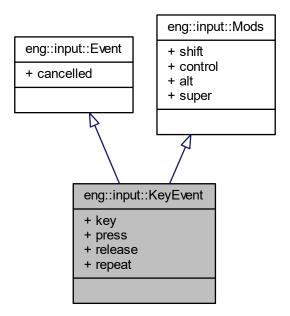
- int keyvalue
- · int scancode

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

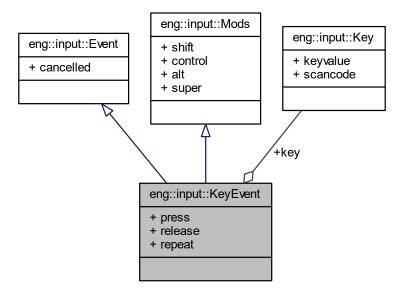
• include/core/managers/input.h

# 3.8 eng::input::KeyEvent Struct Reference

Inheritance diagram for eng::input::KeyEvent:



Collaboration diagram for eng::input::KeyEvent:



#### **Public Attributes**

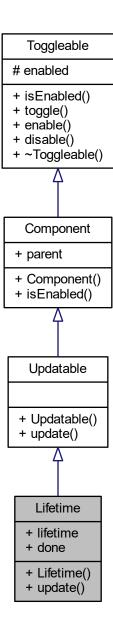
- Key key
- bool press
- bool release
- bool repeat

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

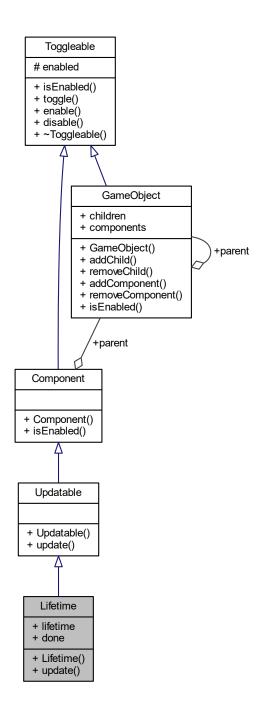
• include/core/managers/input.h

### 3.9 Lifetime Class Reference

Inheritance diagram for Lifetime:



Collaboration diagram for Lifetime:



#### **Public Member Functions**

- Lifetime (GameObject &parent, double lifetime)
- void **update** (double delta)

#### **Public Attributes**

· double lifetime

• bool done = false

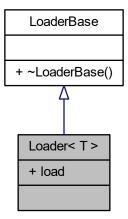
#### **Additional Inherited Members**

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

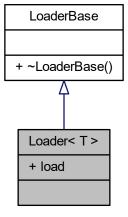
• src/main.cpp

# 3.10 Loader < T > Class Template Reference

Inheritance diagram for Loader< T >:



Collaboration diagram for Loader< T >:



#### **Public Attributes**

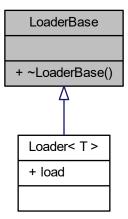
•  $std::function < std::shared\_ptr < T > std::string) > load$ 

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

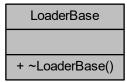
• include/core/managers/resource.h

#### 3.11 LoaderBase Class Reference

Inheritance diagram for LoaderBase:



Collaboration diagram for LoaderBase:

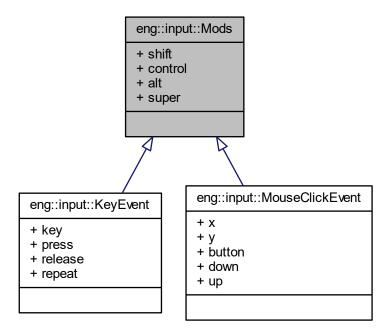


The documentation for this class was generated from the following file:

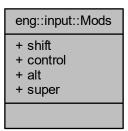
• include/core/managers/resource.h

# 3.12 eng::input::Mods Struct Reference

Inheritance diagram for eng::input::Mods:



Collaboration diagram for eng::input::Mods:



#### **Public Attributes**

- bool shift
- bool control
- bool alt

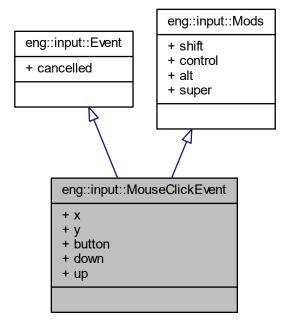
• bool super

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

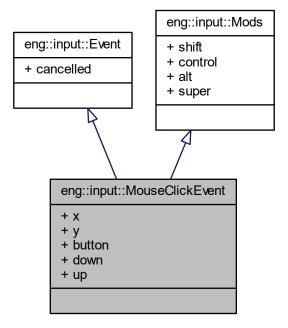
• include/core/managers/input.h

# 3.13 eng::input::MouseClickEvent Struct Reference

Inheritance diagram for eng::input::MouseClickEvent:



Collaboration diagram for eng::input::MouseClickEvent:



#### **Public Attributes**

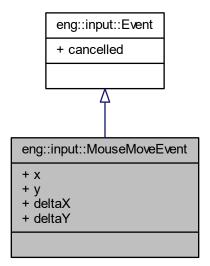
- double **x**
- double **y**
- int button
- bool down
- bool up

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

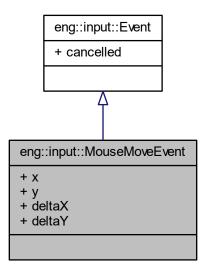
• include/core/managers/input.h

# 3.14 eng::input::MouseMoveEvent Struct Reference

Inheritance diagram for eng::input::MouseMoveEvent:



Collaboration diagram for eng::input::MouseMoveEvent:



#### **Public Attributes**

• double **x** 

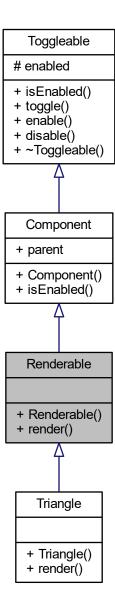
- double y
- · double deltaX
- · double deltaY

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

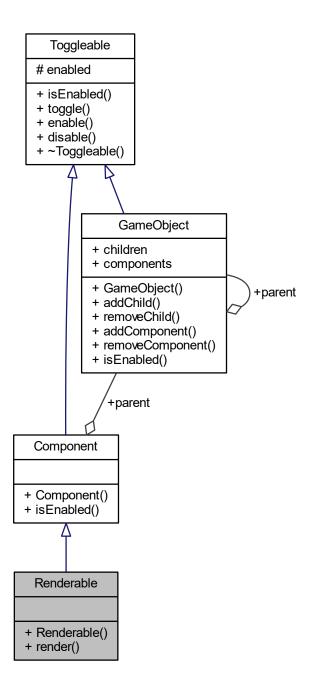
• include/core/managers/input.h

#### 3.15 Renderable Class Reference

Inheritance diagram for Renderable:



Collaboration diagram for Renderable:



#### **Public Member Functions**

- Renderable (GameObject &parent)
- virtual void render ()=0

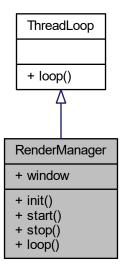
#### **Additional Inherited Members**

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

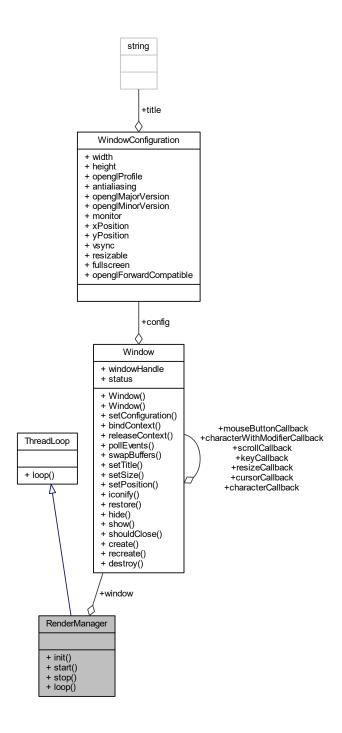
• include/core/object/gameobject.h

## 3.16 RenderManager Class Reference

Inheritance diagram for RenderManager:



Collaboration diagram for RenderManager:



#### **Public Member Functions**

- void init (WindowConfiguration)
- · void start ()
- · void stop ()
- void loop ()

#### **Public Attributes**

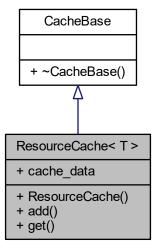
• Window window

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

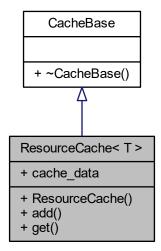
- include/core/managers/render.h
- src/core/managers/render.cpp

# 3.17 ResourceCache< T> Class Template Reference

Inheritance diagram for ResourceCache < T >:



Collaboration diagram for ResourceCache< T >:



#### **Public Member Functions**

- void add (std::string name, std::shared\_ptr< T > res)
- std::shared\_ptr< T > get (std::string name)

#### **Public Attributes**

- std::unordered\_map< std::string, std::shared\_ptr< T >> cache\_data

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

• include/core/managers/resource.h

## 3.18 ResourceManager Class Reference

Collaboration diagram for ResourceManager:

# ResourceManager + loaders + loadResource() + getResource() + registerLoader()

#### **Public Member Functions**

```
    template<typename T >
        std::shared_ptr< T > loadResource (std::string name, std::string filepath)
    template<typename T >
```

```
std::shared_ptr< T > getResource (std::string name)
```

#### **Static Public Member Functions**

```
    template<typename T >
        static void registerLoader (std::function< std::shared_ptr< T >(std::string)> loaderFunction)
```

#### **Static Public Attributes**

• static std::unordered\_map< std::type\_index, std::shared\_ptr< LoaderBase > > loaders

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

- · include/core/managers/resource.h
- src/core/managers/resource.cpp

#### 3.19 Scene Class Reference

Collaboration diagram for Scene:

#### Scene

- + rootGameObjects
- + renderables
- + updatables
- + addRootGameObject()
- + removeRootGameObject()
- + registerGameObject()
- + unregisterGameObject()
- + registerComponent()
- + unregisterComponent()

#### **Public Member Functions**

- void addRootGameObject (GameObject &)
- void removeRootGameObject (GameObject &)
- void registerGameObject (GameObject \*)
- void unregisterGameObject (GameObject &)
- void registerComponent (Component \*)
- void unregisterComponent (Component &)

#### **Public Attributes**

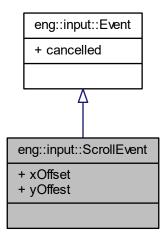
- std::vector < GameObject \* > rootGameObjects
- std::unordered\_set< Renderable \* > renderables
- std::unordered\_set< Updatable \* > updatables

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

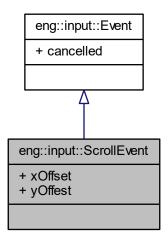
- include/core/managers/scene.h
- src/core/managers/scene.cpp

# 3.20 eng::input::ScrollEvent Struct Reference

Inheritance diagram for eng::input::ScrollEvent:



Collaboration diagram for eng::input::ScrollEvent:



#### **Public Attributes**

- double **xOffset** = 0
- double **yOffest** = 0

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

• include/core/managers/input.h

#### 3.21 Shader Class Reference

Collaboration diagram for Shader:

Shader
+ state + glHandle + uniforms
+ Shader() + ~Shader() + use() + setUniform() + load()

### **Public Member Functions**

- void use ()
- template<typename T > void setUniform (string name, T value)

### **Static Public Member Functions**

static std::shared\_ptr< Shader > load (string filepath)

### **Public Attributes**

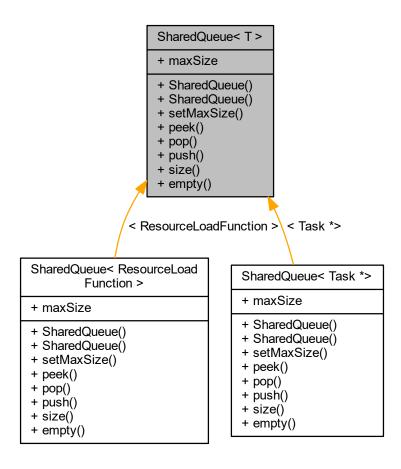
- ShaderState state = SHADER\_UNINITIALIZED
- int glHandle = 0
- std::unordered\_map< string, UniformBase \*> uniforms

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

- include/core/resources/shader.h
- src/core/resources/shader.cpp

## 3.22 SharedQueue < T > Class Template Reference

Inheritance diagram for SharedQueue < T >:



3.23 Task Class Reference 35

Collaboration diagram for SharedQueue < T >:

# SharedQueue< T >

- + maxSize
- + SharedQueue()
- + SharedQueue()
- + setMaxSize()
- + peek()
- + pop()
- + push()
- + size()
- + empty()

### **Public Member Functions**

- SharedQueue (int size)
- void setMaxSize (int size)
- bool peek (T \*ptr)
- bool pop (T \*ptr)
- bool push (T val)
- int size ()
- bool empty ()

### **Public Attributes**

• int maxSize = 0

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

• include/core/threads/thread\_safe\_container.h

#### 3.23 **Task Class Reference**

Collaboration diagram for Task:

Task + status + execute + Task()

### **Public Member Functions**

Task (void(\*)(void))

### **Public Attributes**

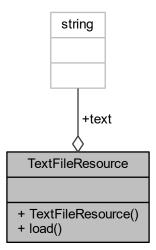
- int status = TASK\_FREE
- void(\* **execute** )(void) = []() {}

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

- include/core/threads/threadpool.h
- src/core/threads/threadpool.cpp

### 3.24 TextFileResource Class Reference

Collaboration diagram for TextFileResource:



### **Static Public Member Functions**

- static std::shared\_ptr< TextFileResource > load (std::string filepath)

### **Public Attributes**

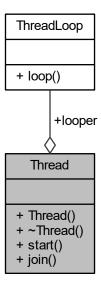
· std::string text

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

- include/core/resources/textfile.h
- src/core/resources/textfile.cpp

### 3.25 Thread Class Reference

Collaboration diagram for Thread:



### **Public Member Functions**

- Thread (ThreadLoop &looper)
- void start ()
- void **join** ()

### **Public Attributes**

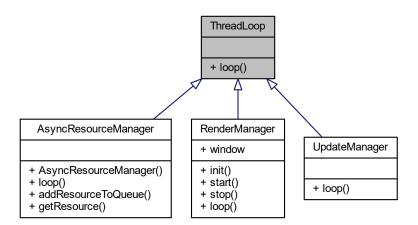
• ThreadLoop \* looper

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

- include/core/threads/mythread.h
- src/core/threads/mythread.cpp

### 3.26 ThreadLoop Class Reference

Inheritance diagram for ThreadLoop:



Collaboration diagram for ThreadLoop:



### **Public Member Functions**

• virtual void **loop** ()=0

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

• include/core/threads/mythread.h

### 3.27 ThreadPool Class Reference

Collaboration diagram for ThreadPool:

### ThreadPool

- + running
- + ThreadPool()
- + ~ThreadPool()
- + submit()
- + consume()

### **Public Member Functions**

- ThreadPool (uint32\_t, uint32\_t)
- void submit (Task \*)
- bool consume (Task \*\*)

### **Public Attributes**

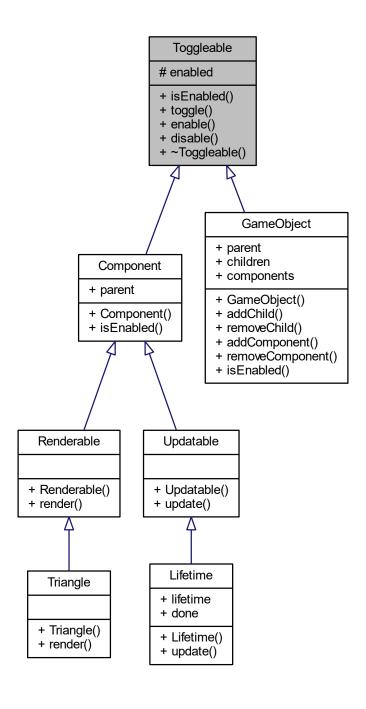
• bool running = true

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

- include/core/threads/threadpool.h
- src/core/threads/threadpool.cpp

### 3.28 Toggleable Class Reference

Inheritance diagram for Toggleable:



Collaboration diagram for Toggleable:

### Toggleable

### # enabled

- + isEnabled()
- + toggle()
- + enable()
- + disable()
- + ~Toggleable()

### **Public Member Functions**

- bool isEnabled ()
- void toggle ()
- void enable ()
- void disable ()

### **Protected Attributes**

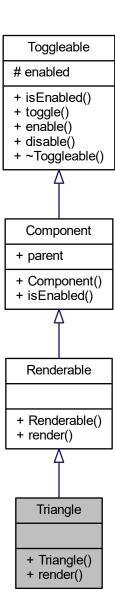
• bool enabled = true

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

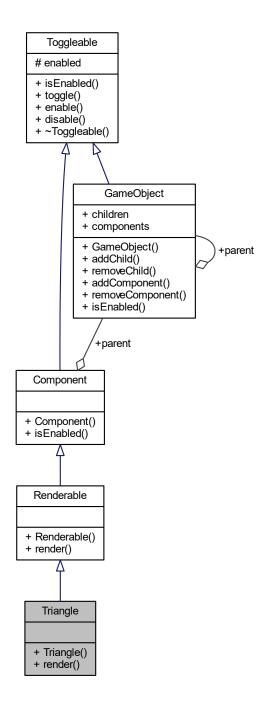
- include/core/object/gameobject.h
- src/core/object/gameobject.cpp

## 3.29 Triangle Class Reference

Inheritance diagram for Triangle:



Collaboration diagram for Triangle:



### **Public Member Functions**

- Triangle (GameObject &parent)
- · void render ()

### **Additional Inherited Members**

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

• src/main.cpp

### 3.30 TypeIndependentCache Class Reference

Collaboration diagram for TypeIndependentCache:

### TypeIndependentCache

- + caches
- + ~TypeIndependentCache()
- + cacheResource()
- + getResource()

### **Public Member Functions**

- template<typename T > void **cacheResource** (std::string name, std::shared\_ptr< T > res)
- template<typename T >
   std::shared ptr< T > getResource (std::string name)

### **Public Attributes**

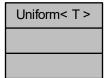
std::unordered\_map< std::type\_index, CacheBase \* > caches

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

• include/core/managers/resource.h

## 3.31 Uniform < T > Class Template Reference

Collaboration diagram for Uniform< T >:

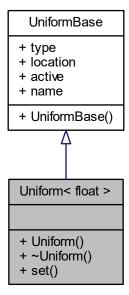


The documentation for this class was generated from the following file:

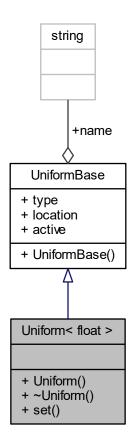
• include/core/resources/shader.h

## 3.32 Uniform < float > Class Template Reference

Inheritance diagram for Uniform< float >:



Collaboration diagram for Uniform < float >:



### **Public Member Functions**

- **Uniform** (std::shared\_ptr< Shader > parent, const string name)
- · void set (float value)

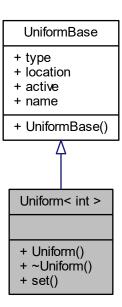
### **Additional Inherited Members**

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

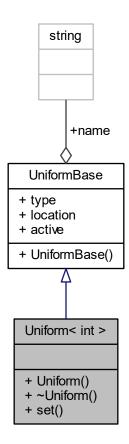
• include/core/resources/shader.h

## 3.33 Uniform < int > Class Template Reference

Inheritance diagram for Uniform < int >:



Collaboration diagram for Uniform< int >:



### **Public Member Functions**

- **Uniform** (std::shared\_ptr< Shader > parent, const string name)
- · void set (int value)

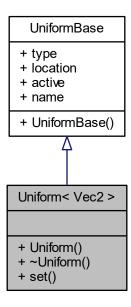
### **Additional Inherited Members**

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

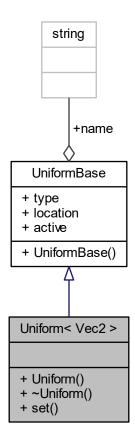
• include/core/resources/shader.h

## ${\bf 3.34}\quad {\bf Uniform}{\bf < Vec 2} > {\bf Class\ Template\ Reference}$

Inheritance diagram for Uniform< Vec2 >:



Collaboration diagram for Uniform< Vec2 >:



### **Public Member Functions**

- **Uniform** (std::shared\_ptr< Shader > parent, const string name)
- void set (Vec2 value)

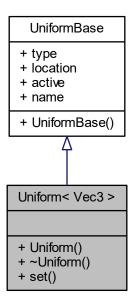
### **Additional Inherited Members**

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

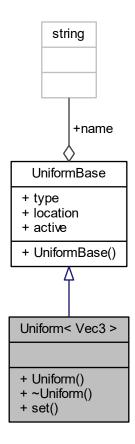
• include/core/resources/shader.h

## 3.35 Uniform < Vec3 > Class Template Reference

Inheritance diagram for Uniform < Vec3 >:



Collaboration diagram for Uniform< Vec3 >:



### **Public Member Functions**

- **Uniform** (std::shared\_ptr< Shader > parent, const string name)
- void set (Vec3 value)

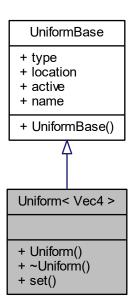
### **Additional Inherited Members**

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

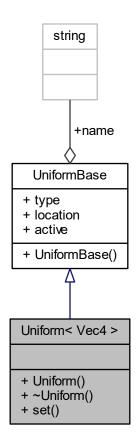
• include/core/resources/shader.h

## ${\bf 3.36}\quad {\bf Uniform}{\bf < Vec 4} > {\bf Class\ Template\ Reference}$

Inheritance diagram for Uniform< Vec4 >:



Collaboration diagram for Uniform< Vec4 >:



### **Public Member Functions**

- **Uniform** (std::shared\_ptr< Shader > parent, const string name)
- void set (Vec4 value)

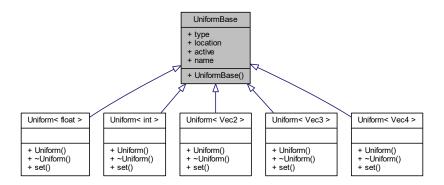
### **Additional Inherited Members**

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

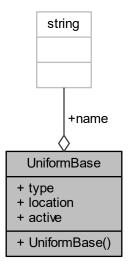
• include/core/resources/shader.h

### 3.37 UniformBase Class Reference

Inheritance diagram for UniformBase:



Collaboration diagram for UniformBase:



### **Public Member Functions**

• UniformBase (std::type\_index type, const std::string name)

### **Public Attributes**

std::type\_index type

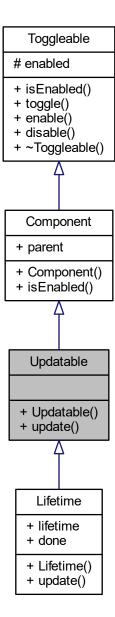
- · int location
- · bool active
- std::string name

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

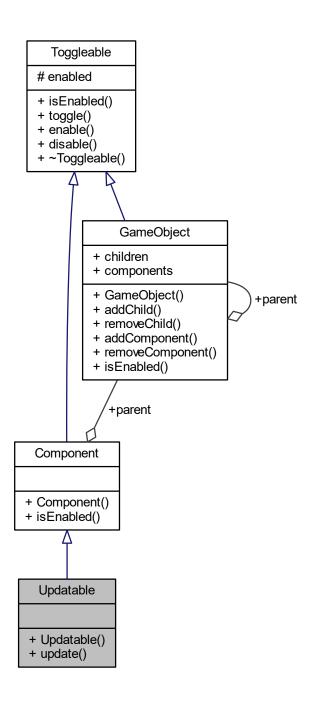
• include/core/resources/shader.h

### 3.38 Updatable Class Reference

Inheritance diagram for Updatable:



Collaboration diagram for Updatable:



### **Public Member Functions**

- Updatable (GameObject &parent)
- virtual void **update** (double delta)=0

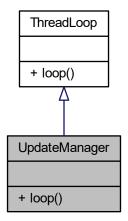
### **Additional Inherited Members**

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

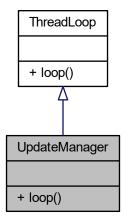
• include/core/object/gameobject.h

## 3.39 UpdateManager Class Reference

Inheritance diagram for UpdateManager:



Collaboration diagram for UpdateManager:



3.40 Vec2 Struct Reference 59

### **Public Member Functions**

• void loop ()

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

- · include/core/managers/update.h
- src/core/managers/update.cpp

### 3.40 Vec2 Struct Reference

Collaboration diagram for Vec2:



### **Public Attributes**

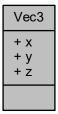
- float x
- float y

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

• include/core/resources/shader.h

### 3.41 Vec3 Struct Reference

Collaboration diagram for Vec3:



### **Public Attributes**

- float x
- float y
- float z

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

• include/core/resources/shader.h

### 3.42 Vec4 Struct Reference

Collaboration diagram for Vec4:



### **Public Attributes**

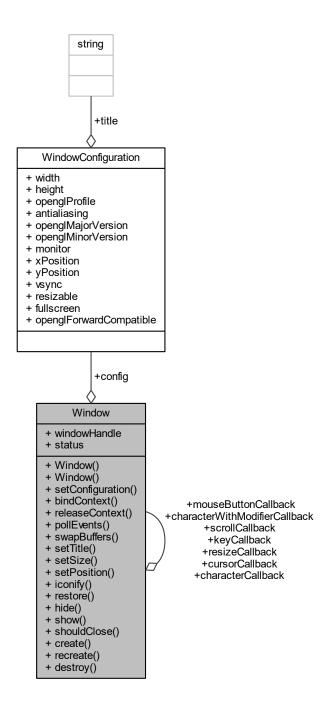
- float x
- float y
- float z
- float w

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

• include/core/resources/shader.h

### 3.43 Window Class Reference

Collaboration diagram for Window:



### **Public Member Functions**

- Window (WindowConfiguration &)
- void setConfiguration (WindowConfiguration &)

- · void bindContext ()
- void releaseContext ()
- void pollEvents ()
- void swapBuffers ()
- void setTitle (std::string)
- void **setSize** (unsigned width, unsigned height)
- void **setPosition** (unsigned x, unsigned y)
- · void iconify ()
- void restore ()
- · void hide ()
- void show ()
- bool shouldClose ()
- · void create ()
- · void recreate ()
- · void destroy ()

#### **Public Attributes**

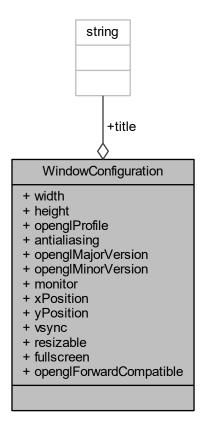
- WindowConfiguration & config
- GLFWwindow \* windowHandle
- · WindowStatus status
- ResizeCallback resizeCallback = nullptr
- KeyCallback keyCallback = nullptr
- CharacterCallback characterCallback = nullptr
- CharacterWithModifierCallback characterWithModifierCallback = nullptr
- CursorPositionCallback cursorCallback = nullptr
- MouseButtonCallback mouseButtonCallback = nullptr
- ScrollCallback scrollCallback = nullptr

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

- · include/core/graphics/window.h
- src/core/graphics/window.cpp

### 3.44 WindowConfiguration Struct Reference

Collaboration diagram for WindowConfiguration:



### **Public Attributes**

- std::string title = "Default window name"
- unsigned width = 1280
- unsigned **height** = 720
- unsigned openglProfile = GLFW\_OPENGL\_ANY\_PROFILE
- unsigned antialiasing = 0
- unsigned openglMajorVersion = 1
- unsigned openglMinorVersion = 1
- unsigned monitor = 0
- unsigned **xPosition** = 0
- unsigned **yPosition** = 0
- bool vsync = true
- bool resizable = true
- bool fullscreen = false
- bool openglForwardCompatible = false

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

• include/core/graphics/window.h

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