luna engine

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1 luna software engine

1.1 goals

to create a simple to use software engine capable of running commercial software.

1. add support for linux
2. add support for mac

1.2 buildrequirements

- `visual studio 2022`
- c++ build tools
- `premake5`.

1.3 instalation

1. clone recursive with visual studio (vs code not supported).
2. create the folder vendor in the sln directory.
3. open the downloaded zip folder and copy premake5.exe in the vendor folder.
4. build thirdparty projects (`GLFW`)
5. build the engine project.
6. build and run the sanbox project.

1.4 website:

- `engine source documentation`
- `egine website`

1.5 enjoy :)

2 Namespace Documentation

2.1 luna Namespace Reference

Namespaces

- namespace application
- namespace gui
- namespace input
- namespace Mouse
- namespace renderer
- namespace utils
- namespace vulkan

Classes

- class appRenderEvent
- class appTickEvent
- class appUpdateEvent
- class Event
- class eventDispatcher
- class keyEvent
- class keyPressedEvent
- class keyReleasedEvent
- class keyTypedEvent
- class Log
- class mouseButtonEvent
- class mouseButtonPressedEvent
- class mouseButtonReleasedEvent
- class mouseMovedEvent
- class mouseScrolledEvent
- class uuid

  a general purpose uuid class with a maximum number of 2^64 uuid's the uuid class does not check for duplicates!
- class windowCloseEvent
- class windowResizeEvent

Typedefs

- template<typename T >
  using scope = std::unique_ptr< T >
- template<typename T >
  using ref = std::shared_ptr< T >
- using keyCode = uint16_t
- using mouseCode = uint16_t

Enumerations

- enum class eventType {
  None = 0 , WindowClose , WindowResize , WindowFocus ,
  WindowLostFocus , WindowMoved , AppTick , AppUpdate ,
  AppRender , KeyPressed , KeyReleased , KeyTyped ,
  MouseButtonPressed , MouseButtonReleased , MouseMoved , MouseScrolled }
- enum eventCategory {
  None = 0 , eventCategoryApplication = BIT(0) , eventCategoryInput = BIT(1) , eventCategoryKeyboard = BIT(2) ,
  eventCategoryMouse = BIT(3) , eventCategoryMouseButton = BIT(4) }

Functions

- template<typename T , typename ... Args>
  constexpr scope< T > createScope (Args &&... args)
- template<typename T , typename ... Args>
  constexpr ref< T > createRef (Args &&... args)
- static std::mt19937_64 engine (randomDevice())
- std::ostream & operator<< (std::ostream &os, const Event &e)

Variables

- static std::random_device randomDevice
- static std::uniform_int_distribution< uint64_t > uniformDistr

2.1.1 Typedef Documentation

2.1.1.1 keyCode

```
using luna::keyCode = typedef uint16_t
```

2.1.1.2 mouseCode

```
using luna::mouseCode = typedef uint16_t
```

2.1.1.3 ref

```
template<typename T >
using luna::ref = typedef std::shared_ptr<T>
```

2.1.1.4 scope

```
template<typename T >
using luna::scope = typedef std::unique_ptr<T>
```

2.1.2 Enumeration Type Documentation

2.1.2.1 eventCategory

```
enum luna::eventCategory
```

Enumerator

None	
eventCategoryApplication	
eventCategoryInput	
eventCategoryKeyboard	
eventCategoryMouse	
eventCategoryMouseButton	

2.1.2.2 eventType `enum class luna::eventType [strong]`

Enumerator

None	
WindowClose	
WindowResize	
WindowFocus	
WindowLostFocus	
WindowMoved	
AppTick	
AppUpdate	
AppRender	
KeyPressed	
KeyReleased	
KeyTyped	
MouseButtonPressed	
MouseButtonReleased	
MouseMoved	
MouseScrolled	

2.1.3 Function Documentation

2.1.3.1 createRef()

```
template<typename T , typename ... Args>
constexpr ref< T > luna::createRef (
            Args &&... args ) [constexpr]
```

2.1.3.2 createScope()

```
template<typename T , typename ... Args>
constexpr scope< T > luna::createScope (
            Args &&... args ) [constexpr]
```

2.1.3.3 engine()

```
static std::mt19937_64 luna::engine (
    randomDevice() ) [static]
```

2.1.3.4 operator<<()

```
std::ostream & luna::operator<< (
    std::ostream & os,
    const Event & e ) [inline]
```

2.1.4 Variable Documentation

2.1.4.1 randomDevice

```
std::random_device luna::randomDevice [static]
```

2.1.4.2 uniformDistr

```
std::uniform_int_distribution<uint64_t> luna::uniformDistr [static]
```

2.2 luna::application Namespace Reference

Classes

- class application

Functions

- application * createApplication ()

  creates the application and returns a pointer to the appliccation.

2.2.1 Function Documentation

2.2.1.1 createApplication()

```
luna::application::application * luna::application::createApplication
( )
```

creates the application and returns a pointer to the appliccation.

2.3 luna::gui Namespace Reference

Classes

- class vulkanImgui

2.4 luna::input Namespace Reference

Enumerations

- enum : keyCode {
  Space = 32 , Apostrophe = 39 , Comma = 44 , Minus = 45 ,
  Period = 46 , Slash = 47 , D0 = 48 , D1 = 49 ,
  D2 = 50 , D3 = 51 , D4 = 52 , D5 = 53 ,
  D6 = 54 , D7 = 55 , D8 = 56 , D9 = 57 ,
  Semicolon = 59 , Equal = 61 , A = 65 , B = 66 ,
  C = 67 , D = 68 , E = 69 , F = 70 ,
  G = 71 , H = 72 , I = 73 , J = 74 ,
  K = 75 , L = 76 , M = 77 , N = 78 ,
  O = 79 , P = 80 , Q = 81 , R = 82 ,
  S = 83 , T = 84 , U = 85 , V = 86 ,
  W = 87 , X = 88 , Y = 89 , Z = 90 ,
  LeftBracket = 91 , Backslash = 92 , RightBracket = 93 , GraveAccent = 96 ,
  World1 = 161 , World2 = 162 , Escape = 256 , Enter = 257 ,
  Tab = 258 , Backspace = 259 , Insert = 260 , Delete = 261 ,
  Right = 262 , Left = 263 , Down = 264 , Up = 265 ,
  PageUp = 266 , PageDown = 267 , Home = 268 , End = 269 ,
  CapsLock = 280 , ScrollLock = 281 , NumLock = 282 , PrintScreen = 283 ,
  Pause = 284 , F1 = 290 , F2 = 291 , F3 = 292 ,
  F4 = 293 , F5 = 294 , F6 = 295 , F7 = 296 ,
  F8 = 297 , F9 = 298 , F10 = 299 , F11 = 300 ,
  F12 = 301 , F13 = 302 , F14 = 303 , F15 = 304 ,
  F16 = 305 , F17 = 306 , F18 = 307 , F19 = 308 ,
  F20 = 309 , F21 = 310 , F22 = 311 , F23 = 312 ,
  F24 = 313 , F25 = 314 , KP0 = 320 , KP1 = 321 ,
  KP2 = 322 , KP3 = 323 , KP4 = 324 , KP5 = 325 ,
  KP6 = 326 , KP7 = 327 , KP8 = 328 , KP9 = 329 ,
  KPDecimal = 330 , KPDivide = 331 , KPMultiply = 332 , KPSubtract = 333 ,
  KPAdd = 334 , KPEnter = 335 , KPEqual = 336 , LeftShift = 340 ,
  LeftControl = 341 , LeftAlt = 342 , LeftSuper = 343 , RightShift = 344 ,
  RightControl = 345 , RightAlt = 346 , RightSuper = 347 , Menu = 348 }

2.4.1 Enumeration Type Documentation

2.4.1.1 anonymous enum `anonymous enum : keyCode`

Enumerator

Space	
Apostrophe	
Comma	
Minus	
Period	
Slash	
D0	
D1	
D2	
D3	

Enumerator

D4	
D5	
D6	
D7	
D8	
D9	
Semicolon	
Equal	
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
L	
M	
N	
O	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	
Z	
LeftBracket	
Backslash	
RightBracket	
GraveAccent	
World1	
World2	
Escape	
Enter	
Tab	
Backspace	
Insert	
Delete	
Right	
Left	
Down	
Up	

Enumerator

PageUp	
PageDown	
Home	
End	
CapsLock	
ScrollLock	
NumLock	
PrintScreen	
Pause	
F1	
F2	
F3	
F4	
F5	
F6	
F7	
F8	
F9	
F10	
F11	
F12	
F13	
F14	
F15	
F16	
F17	
F18	
F19	
F20	
F21	
F22	
F23	
F24	
F25	
KP0	
KP1	
KP2	
KP3	
KP4	
KP5	
KP6	
KP7	
KP8	
KP9	
KPDecimal	
KPDivide	
KPMultiply	
KPSubtract	
KPAdd	
KPEnter	
KPEqual	

Enumerator

LeftShift	
LeftControl	
LeftAlt	
LeftSuper	
RightShift	
RightControl	
RightAlt	
RightSuper	
Menu	

2.5 luna::Mouse Namespace Reference

Enumerations

- enum : mouseCode {
  Button0 = 0 , Button1 = 1 , Button2 = 2 , Button3 = 3 ,
  Button4 = 4 , Button5 = 5 , Button6 = 6 , Button7 = 7 ,
  ButtonLast = Button7 , ButtonLeft = Button0 , ButtonRight = Button1 , ButtonMiddle = Button2 }

2.5.1 Enumeration Type Documentation

2.5.1.1 anonymous enum `anonymous enum : mouseCode`

Enumerator

Button0	
Button1	
Button2	
Button3	
Button4	
Button5	
Button6	
Button7	
ButtonLast	
ButtonLeft	
ButtonRight	
ButtonMiddle	

2.6 luna::renderer Namespace Reference

Classes

- class bufferElement

- class bufferLayout
- class device

  the device class is the code representation of the physical device or GPU.
- class indexBuffer
- class pipeline
- struct pipelineLayout
- class renderer
- class shader
- struct shaderResource
- class vertexArray
- class vertexBuffer

Typedefs

- typedef void(∗ drawCommand) (const ref< vertexArray > &vertexArray, int indexCount)

Enumerations

- enum typeClass {
  uniformBuffers , storageBuffers , stageInputs , stageOutputs ,
  subpassInputs , storageImages , sampledImages , atomicCounters ,
  accelerationStructures , pushConstantBuffers , separateImages , separateSsamplers ,
  builtinInputs , builtinOutputs }
- enum typeId {
  Unknown , Void , Boolean , SByte ,
  UByte , Short , UShort , Int ,
  UInt , Int64 , UInt64 , AtomicCounter ,
  Half , Float , Double , Struct ,
  Image , SampledImage , Sampler , AccelerationStructure ,
  RayQuery , ControlPointArray , Interpolant , Char ,
  Uniform , PushConstant , StorageBuffer , Vec2 ,
  Vec3 , Vec4 , mat2 , mat3 ,
  mat4 }
- enum shaderStage {
  shaderStageVertex , shaderStageTessellationControl , shaderStageTessellationEvaluation , shaderStageGeometry
  ,
  shaderStageFragment , shaderStageCompute }

2.6.1 Typedef Documentation

2.6.1.1 drawCommand `typedef void(* luna::renderer::drawCommand) (const ref< vertexArray > &vertexArray, int indexCount)`

2.6.2 Enumeration Type Documentation

2.6.2.1 shaderStage `enum luna::renderer::shaderStage`

Enumerator

shaderStageVertex	
shaderStageTessellationControl	
shaderStageTessellationEvaluation	
shaderStageGeometry	
shaderStageFragment	
shaderStageCompute	

2.6.2.2 typeClass `enum luna::renderer::typeClass`

Enumerator

uniformBuffers	
storageBuffers	
stageInputs	
stageOutputs	
subpassInputs	
storageImages	
sampledImages	
atomicCounters	
accelerationStructures	
pushConstantBuffers	
separateImages	
separateSsamplers	
builtinInputs	
builtinOutputs	

2.6.2.3 typeId `enum luna::renderer::typeId`

Enumerator

Unknown	
Void	
Boolean	
SByte	
UByte	
Short	
UShort	
Int	
UInt	
Int64	
UInt64	
AtomicCounter	

Enumerator

Half	
Float	
Double	
Struct	
Image	
SampledImage	
Sampler	
AccelerationStructure	
RayQuery	
ControlPointArray	
Interpolant	
Char	
Uniform	
PushConstant	
StorageBuffer	
Vec2	
Vec3	
Vec4	
mat2	
mat3	
mat4	

2.7 luna::utils Namespace Reference

Classes

- struct compileSpec
- class objectStorage

  cached object memory class with a key handle.
- class shaderCompiler
- class shaderLibrary
- class vectorCache

  a pretty optimal multithreaded vector cahce headeronly class.
- class vulkanAllocator
- class vulkanObjectFactory

  static class that creates vulkan objects like buffers and images.

Typedefs

- typedef uint64_t storageObject
- typedef uint64_t cacheObject
- typedef uint64_t allocationHandle

Enumerations

- enum storageResult { storageInvalidHandle = 0 , storageOpSucces = 1 , storageOpFailed = 2 }
- enum compileLanguage { SPIR = 0 , SPIR_V = 1 , GLSL = 2 }
- enum cacheResult {
  cacheMiss = 0 , cacheHit = 1 , cacheInvalidHandle = 2 , cacheOpSucces = 3 ,
  cacheOpFailed = 4 , CACHE_MAX_ENUM = 5 }

2.7.1 Typedef Documentation

2.7.1.1 allocationHandle `typedef uint64_t luna::utils::allocationHandle`

2.7.1.2 cacheObject `typedef uint64_t luna::utils::cacheObject`

2.7.1.3 storageObject `typedef uint64_t luna::utils::storageObject`

2.7.2 Enumeration Type Documentation

2.7.2.1 cacheResult `enum luna::utils::cacheResult`

Enumerator

cacheMiss	
cacheHit	
cacheInvalidHandle	
cacheOpSucces	
cacheOpFailed	
CACHE_MAX_ENUM	

2.7.2.2 compileLanguage `enum luna::utils::compileLanguage`

Enumerator

SPIR	
SPIR↩ _V	
GLSL	

2.7.2.3 storageResult `enum luna::utils::storageResult`

Enumerator

storageInvalidHandle	
storageOpSucces	
storageOpFailed	

2.8 luna::vulkan Namespace Reference

Classes

- struct commandPoolSubmitInfo

  struct with all the submit info. this is the same except VkCommandBuffer -> virtualCmdBuffer*. for more information: https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/↩ VkSubmitInfo.html*
- struct queueFamilyIndices
- struct swapchainSpec
- class vulkanCmdPool

  abbstraction class around the vulkan commandbuffer and pool to introduce increased workflow safety and usability and to decrease bugs. all a VkCommandBuffer has been changed out by virtualCmdBuffer type.
- struct vulkanCmdPoolSpec
- class vulkanDevice
- class vulkanFeatureSupport
- class vulkanIndexBuffer
- class vulkanPipeline

  vulkan pipline implementation class.
- class vulkanShader
- class vulkanSwapchain

  the vulkanSwapchain is a collection of vulkan frambuffers and image views to wich the scene will be .
- class vulkanVertexArray
- class vulkanVertexBuffer
- class window
- struct windowSpec
- class windowsWindow

Typedefs

- typedef uint64_t virtualCmdBuffer

Enumerations

- enum Api { NONE = 0 , VULKAN = 1 , OPENGL = 2 }

Variables

- static bool isGlfwInit

2.8.1 Typedef Documentation

2.8.1.1 virtualCmdBuffer `typedef uint64_t luna::vulkan::virtualCmdBuffer`

2.8.2 Enumeration Type Documentation

2.8.2.1 Api `enum luna::vulkan::Api`

Enumerator

NONE	
VULKAN	
OPENGL	

2.8.3 Variable Documentation

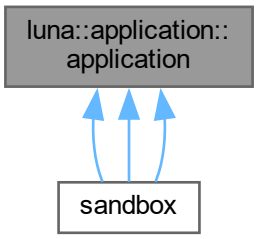
2.8.3.1 isGlfwInit `bool luna::vulkan::isGlfwInit [static]`

3 Class Documentation

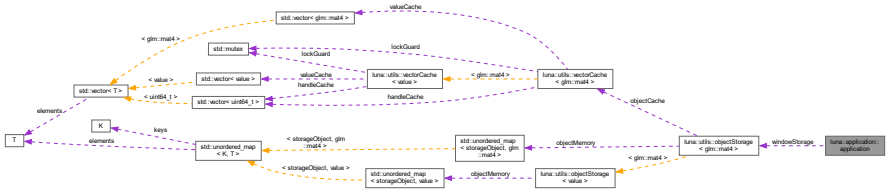
3.1 luna::application::application Class Reference

```
#include <application.h>
```

Inheritance diagram for luna::application::application:



Collaboration diagram for luna::application::application:



Public Member Functions

- application ()

  application constructor, initializes the application and engine.
- virtual ~application ()
- void run ()

  the main loop of the application.
- void onEvent (Event &e)

  the main event callback of the application.

Private Attributes

- ref< vulkan::window > mWindow
- utils::objectStorage< glm::mat4 > windowStorage
- bool running = true

3.1.1 Constructor & Destructor Documentation

3.1.1.1 application() `luna::application::application::application ( )`

application constructor, initializes the application and engine.

3.1.1.2 ~application() `luna::application::application::~application ( ) [virtual]`

3.1.2 Member Function Documentation

3.1.2.1 onEvent() `void luna::application::application::onEvent ( Event & e )`

the main event callback of the application.

Parameters

e	

3.1.2.2 run() `void luna::application::application::run ( )`

the main loop of the application.

3.1.3 Member Data Documentation

3.1.3.1 mWindow `ref<vulkan::window> luna::application::application::mWindow [private]`

3.1.3.2 running `bool luna::application::application::running = true [private]`

3.1.3.3 windowStorage `utils::objectStorage<glm::mat4> luna::application::application::windowStorage [private]`

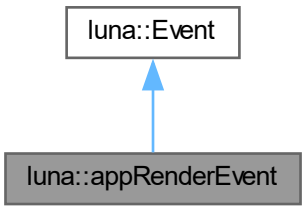
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/application.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/application.cpp

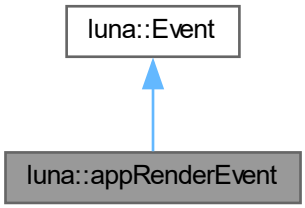
3.2 luna::appRenderEvent Class Reference

`#include <applicationEvent.h>`

Inheritance diagram for luna::appRenderEvent:



Collaboration diagram for luna::appRenderEvent:



Public Member Functions

- appRenderEvent ()=default

Additional Inherited Members

3.2.1 Constructor & Destructor Documentation

3.2.1.1 appRenderEvent() `luna::appRenderEvent::appRenderEvent ( ) [default]`

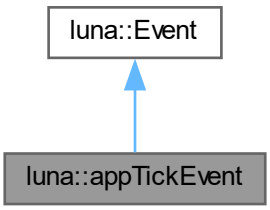
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/applicationEvent.h

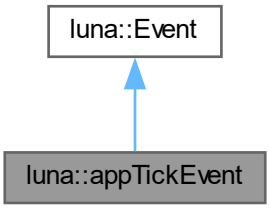
3.3 luna::appTickEvent Class Reference

```
#include <applicationEvent.h>
```

Inheritance diagram for luna::appTickEvent:



Collaboration diagram for luna::appTickEvent:



Public Member Functions

- appTickEvent ()=default

Additional Inherited Members

3.3.1 Constructor & Destructor Documentation

3.3.1.1 appTickEvent() `luna::appTickEvent::appTickEvent ( ) [default]`

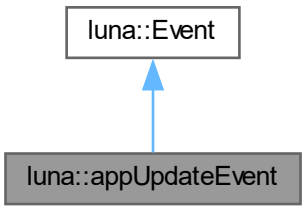
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/applicationEvent.h

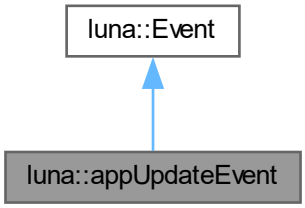
3.4 luna::appUpdateEvent Class Reference

```
#include <applicationEvent.h>
```

Inheritance diagram for luna::appUpdateEvent:



Collaboration diagram for luna::appUpdateEvent:



Public Member Functions

- appUpdateEvent ()=default

Additional Inherited Members

3.4.1 Constructor & Destructor Documentation

3.4.1.1 appUpdateEvent() `luna::appUpdateEvent::appUpdateEvent ( ) [default]`

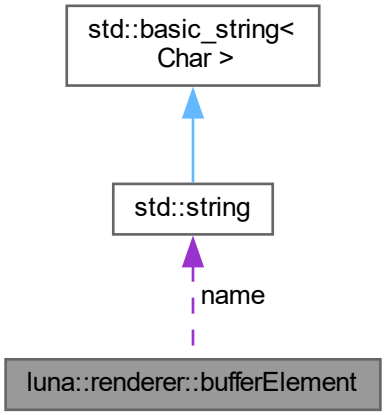
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/applicationEvent.h

3.5 luna::renderer::bufferElement Class Reference

```
#include <buffer.h>
```

Collaboration diagram for luna::renderer::bufferElement:



Public Member Functions

- bufferElement ()
- bufferElement (const shaderResource &resource)
- bufferElement (const std::string &Name, const typeId &Id, const uint32_t &Offset, const uint32_t &Size)
- bufferElement (const bufferElement &element)

Private Attributes

- std::string name
- typeId type
- uint32_t offset
- uint32_t size

3.5.1 Constructor & Destructor Documentation

3.5.1.1 bufferElement() [1/4] `luna::renderer::bufferElement::bufferElement ( )`

3.5.1.2 bufferElement() [2/4] `luna::renderer::bufferElement::bufferElement ( const shaderResource & resource ) [inline]`

3.5.1.3 bufferElement() [3/4]

```
luna::renderer::bufferElement::bufferElement (
    const std::string & Name,
    const typeId & Id,
    const uint32_t & Offset,
    const uint32_t & Size ) [inline]
```

3.5.1.4 bufferElement() [4/4]

```
luna::renderer::bufferElement::bufferElement (
    const bufferElement & element ) [inline]
```

3.5.2 Member Data Documentation

3.5.2.1 name

```
std::string luna::renderer::bufferElement::name [private]
```

3.5.2.2 offset

```
uint32_t luna::renderer::bufferElement::offset [private]
```

3.5.2.3 size

```
uint32_t luna::renderer::bufferElement::size [private]
```

3.5.2.4 type

```
typeId luna::renderer::bufferElement::type [private]
```

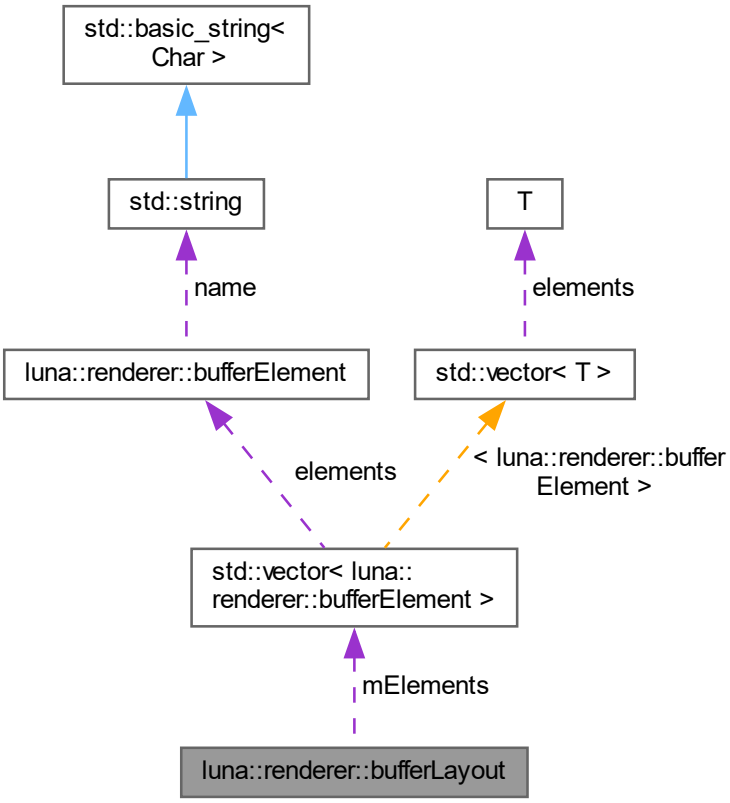
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.h

3.6 luna::renderer::bufferLayout Class Reference

```
#include <buffer.h>
```

Collaboration diagram for luna::renderer::bufferLayout:



Public Member Functions

- bufferLayout ()
- bufferLayout (std::initializer_list< bufferElement > elements)
- bufferLayout (std::vector< shaderResource > shaderLayout)
- virtual ~bufferLayout ()=default

Private Attributes

- std::vector< bufferElement > mElements

3.6.1 Constructor & Destructor Documentation

3.6.1.1 bufferLayout() [1/3] luna::renderer::bufferLayout::bufferLayout ( )

3.6.1.2 bufferLayout() [2/3] luna::renderer::bufferLayout::bufferLayout (std::initializer_list< bufferElement > *elements*) [inline]

3.6.1.3 bufferLayout() [3/3] luna::renderer::bufferLayout::bufferLayout (std::vector< shaderResource > *shaderLayout*) [inline]

3.6.1.4 ~bufferLayout() virtual luna::renderer::bufferLayout::~bufferLayout ( ) [virtual], [default]

3.6.2 Member Data Documentation

3.6.2.1 mElements std::vector<bufferElement> luna::renderer::bufferLayout::mElements [private]

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.h

3.7 luna::vulkan::commandPoolSubmitInfo Struct Reference

struct with all the submit info. this is the same except VkCommandBuffer* ->virtualCmdBuffer*. for more information: https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/↩VkSubmitInfo.html

```
#include <vulkanCmdPool.h>
```

Public Attributes

- const void * pNext
- uint32_t waitSemaphoreCount
- const VkSemaphore * pWaitSemaphores
- const VkPipelineStageFlags * pWaitDstStageMask
- uint32_t commandBufferCount
- const virtualCmdBuffer * pCommandBuffers
- uint32_t signalSemaphoreCount
- const VkSemaphore * pSignalSemaphores

3.7.1 Detailed Description

struct with all the submit info. this is the same except VkCommandBuffer* ->virtualCmdBuffer*. for more information: https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/↩VkSubmitInfo.html

3.7.2 Member Data Documentation

3.7.2.1 commandBufferCount `uint32_t luna::vulkan::commandPoolSubmitInfo::commandBufferCount`

3.7.2.2 pCommandBuffers `const virtualCmdBuffer* luna::vulkan::commandPoolSubmitInfo::p↩CommandBuffers`

3.7.2.3 pNext `const void* luna::vulkan::commandPoolSubmitInfo::pNext`

3.7.2.4 pSignalSemaphores `const VkSemaphore* luna::vulkan::commandPoolSubmitInfo::pSignal↩Semaphores`

3.7.2.5 pWaitDstStageMask `const VkPipelineStageFlags* luna::vulkan::commandPoolSubmitInfo↩::pWaitDstStageMask`

3.7.2.6 pWaitSemaphores `const VkSemaphore* luna::vulkan::commandPoolSubmitInfo::pWaitSemaphores`

3.7.2.7 signalSemaphoreCount `uint32_t luna::vulkan::commandPoolSubmitInfo::signalSemaphore↩Count`

3.7.2.8 waitSemaphoreCount `uint32_t luna::vulkan::commandPoolSubmitInfo::waitSemaphoreCount`

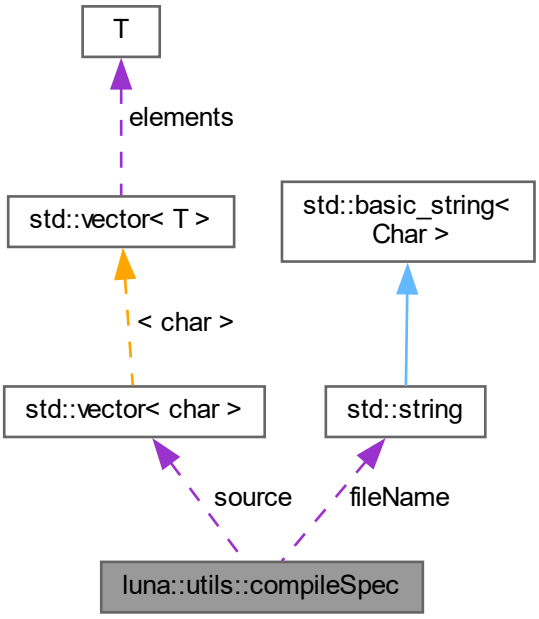
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanCmdPool.h

3.8 luna::utils::compileSpec Struct Reference

```
#include <shaderCompiler.h>
```

Collaboration diagram for luna::utils::compileSpec:



Public Attributes

- bool reflect = false
- std::vector< char > source
- std::string fileName
- shaderc_shader_kind shaderKind
- compileLanguage language = SPIR_V
- shaderc::CompileOptions compileOptions

3.8.1 Member Data Documentation

3.8.1.1 compileOptions `shaderc::CompileOptions luna::utils::compileSpec::compileOptions`

3.8.1.2 fileName `std::string luna::utils::compileSpec::fileName`

3.8.1.3 language `compileLanguage luna::utils::compileSpec::language = SPIR_V`

3.8.1.4 reflect `bool luna::utils::compileSpec::reflect = false`

3.8.1.5 shaderKind `shaderc_shader_kind luna::utils::compileSpec::shaderKind`

3.8.1.6 source `std::vector<char> luna::utils::compileSpec::source`

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

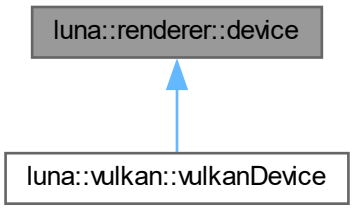
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderCompiler.h

3.9 luna::renderer::device Class Reference

the device class is the code representation of the physical device or GPU.

`#include <device.h>`

Inheritance diagram for luna::renderer::device:



Public Member Functions

- virtual ~device ()
- virtual void createContext ()=0
- virtual void destroyContext ()=0

Public Attributes

- ref< vulkan::window > window

  this is the reference to the main window.

3.9.1 Detailed Description

the device class is the code representation of the physical device or GPU.
`ref<device> device = std::make_shared(new device());`

3.9.2 Constructor & Destructor Documentation

3.9.2.1 ~device() `virtual luna::renderer::device::~device ( ) [inline], [virtual]`

3.9.3 Member Function Documentation

3.9.3.1 createContext() `virtual void luna::renderer::device::createContext ( ) [pure virtual]`

Implemented in luna::vulkan::vulkanDevice.

3.9.3.2 destroyContext() `virtual void luna::renderer::device::destroyContext ( ) [pure virtual]`

Implemented in luna::vulkan::vulkanDevice.

3.9.4 Member Data Documentation

3.9.4.1 window `ref<vulkan::window> luna::renderer::device::window`

this is the reference to the main window.

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/device.h

3.10 luna::vulkan::vulkanDevice::deviceHandles Struct Reference

```
#include <vulkanDevice.h>
```

Public Attributes

- VkApplicationInfo appInfo {}
- vkb::Instance instance
- vkb::Device device
- vkb::PhysicalDevice physicalDevice

3.10.1 Member Data Documentation

3.10.1.1 appInfo `VkApplicationInfo luna::vulkan::vulkanDevice::deviceHandles::appInfo {}`

3.10.1.2 device `vkb::Device luna::vulkan::vulkanDevice::deviceHandles::device`

3.10.1.3 instance `vkb::Instance luna::vulkan::vulkanDevice::deviceHandles::instance`

3.10.1.4 physicalDevice `vkb::PhysicalDevice luna::vulkan::vulkanDevice::deviceHandles::physical↩ Device`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanDevice.h

3.11 luna::vulkan::vulkanPipeline::drawCommand Struct Reference

Public Attributes

- ref< renderer::vertexArray > vertexArray
- int indexCount = 0

3.11.1 Member Data Documentation

3.11.1.1 indexCount `int luna::vulkan::vulkanPipeline::drawCommand::indexCount = 0`

3.11.1.2 vertexArray `ref<renderer::vertexArray> luna::vulkan::vulkanPipeline::drawCommand↩ ::vertexArray`

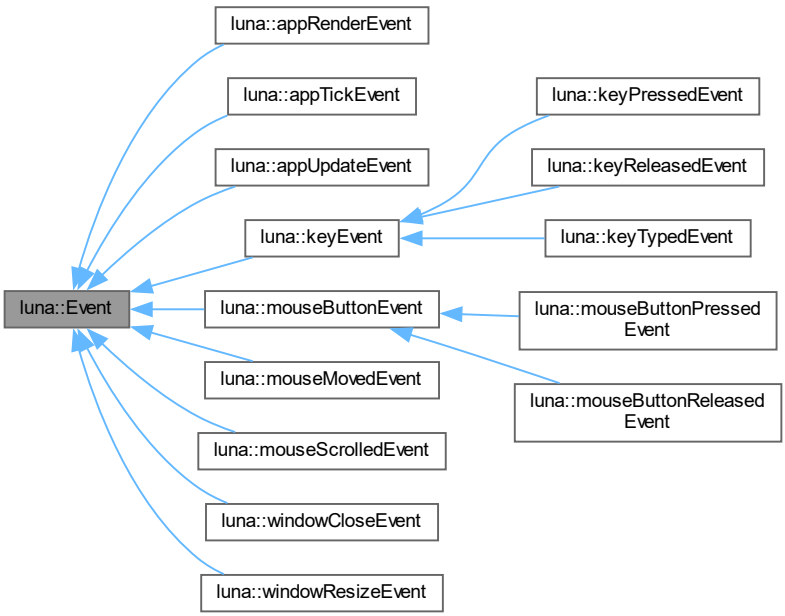
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanPipeline.h

3.12 luna::Event Class Reference

`#include <event.h>`

Inheritance diagram for luna::Event:



Public Member Functions

- virtual ~Event ()=default
- virtual eventType getEventType () const =0
- virtual const char * getName () const =0
- virtual int getCategoryFlags () const =0
- virtual std::string toString () const
- bool IsInCategory (eventCategory category)

Public Attributes

- bool Handled = false

3.12.1 Constructor & Destructor Documentation

3.12.1.1 ~Event() `virtual luna::Event::~Event ( ) [virtual], [default]`

3.12.2 Member Function Documentation

3.12.2.1 getCategoryFlags() `virtual int luna::Event::getCategoryFlags ( ) const [pure virtual]`

3.12.2.2 getEventType() `virtual eventType luna::Event::getEventType ( ) const [pure virtual]`

3.12.2.3 getName() `virtual const char * luna::Event::getName ( ) const [pure virtual]`

3.12.2.4 IsInCategory() `bool luna::Event::IsInCategory ( eventCategory category ) [inline]`

3.12.2.5 toString() `virtual std::string luna::Event::toString ( ) const [inline], [virtual]`

Reimplemented in luna::windowResizeEvent, luna::keyPressedEvent, luna::keyReleasedEvent, luna::keyTypedEvent, luna::mouseMovedEvent, luna::mouseScrolledEvent, luna::mouseButtonPressedEvent, and luna::mouseButtonReleasedEvent.

3.12.3 Member Data Documentation

3.12.3.1 Handled `bool luna::Event::Handled = false`

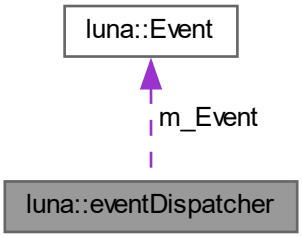
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/event.h

3.13 luna::eventDispatcher Class Reference

```
#include <event.h>
```

Collaboration diagram for luna::eventDispatcher:



Public Member Functions

- eventDispatcher (Event &event)
- template<typename T , typename F >
  bool dispatch (const F &func)

Private Attributes

- Event & m_Event

3.13.1 Constructor & Destructor Documentation

3.13.1.1 eventDispatcher()

```
luna::eventDispatcher::eventDispatcher (
        Event & event ) [inline]
```

3.13.2 Member Function Documentation

3.13.2.1 dispatch()

```
template<typename T , typename F >
bool luna::eventDispatcher::dispatch (
        const F & func ) [inline]
```

3.13.3 Member Data Documentation

3.13.3.1 m_Event `Event& luna::eventDispatcher::m_Event [private]`

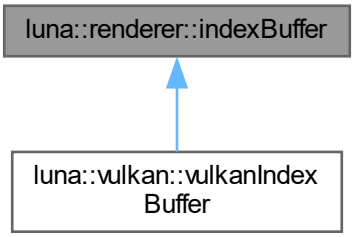
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/event.h

3.14 luna::renderer::indexBuffer Class Reference

```
#include <buffer.h>
```

Inheritance diagram for luna::renderer::indexBuffer:



Public Member Functions

- virtual ~indexBuffer ()=default
- virtual void bind () const =0
- virtual void unbind () const =0
- virtual uint32_t getCount () const =0

Static Public Member Functions

- static ref< indexBuffer > create (uint32_t *indices, uint32_t count)

Public Attributes

- void * data = nullptr
- uint32_t size = 0

3.14.1 Constructor & Destructor Documentation

3.14.1.1 ~indexBuffer() `virtual luna::renderer::indexBuffer::~indexBuffer ( ) [virtual], [default]`

3.14.2 Member Function Documentation

3.14.2.1 bind() `virtual void luna::renderer::indexBuffer::bind ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanIndexBuffer.

3.14.2.2 create() `ref< indexBuffer > luna::renderer::indexBuffer::create ( uint32_t * indices, uint32_t count ) [static]`

3.14.2.3 getCount() `virtual uint32_t luna::renderer::indexBuffer::getCount ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanIndexBuffer.

3.14.2.4 unbind() `virtual void luna::renderer::indexBuffer::unbind ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanIndexBuffer.

3.14.3 Member Data Documentation

3.14.3.1 data `void* luna::renderer::indexBuffer::data = nullptr`

3.14.3.2 size `uint32_t luna::renderer::indexBuffer::size = 0`

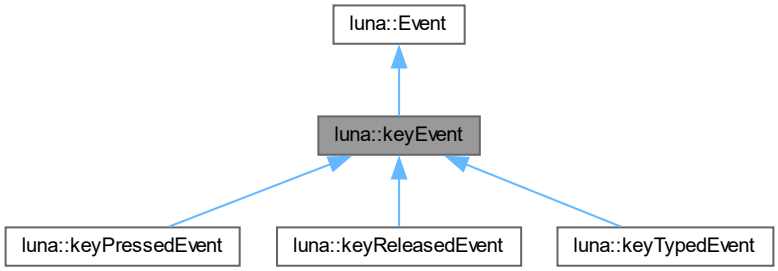
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.cpp

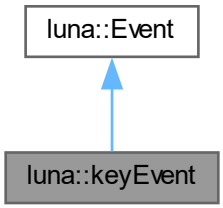
3.15 luna::keyEvent Class Reference

```
#include <keyEvent.h>
```

Inheritance diagram for luna::keyEvent:



Collaboration diagram for luna::keyEvent:



Public Member Functions

- keyCode getkeyCode () const

Protected Member Functions

- keyEvent (const keyCode keyCode)

Protected Attributes

- keyCode m_keyCode

Additional Inherited Members

3.15.1 Constructor & Destructor Documentation

3.15.1.1 keyEvent() `luna::keyEvent::keyEvent ( const keyCode keyCode ) [inline], [protected]`

3.15.2 Member Function Documentation

3.15.2.1 getkeyCode() `keyCode luna::keyEvent::getkeyCode ( ) const [inline]`

3.15.3 Member Data Documentation

3.15.3.1 m_keyCode `keyCode luna::keyEvent::m_keyCode [protected]`

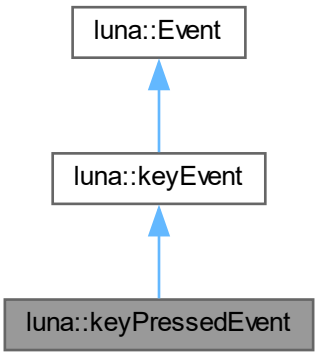
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/keyEvent.h

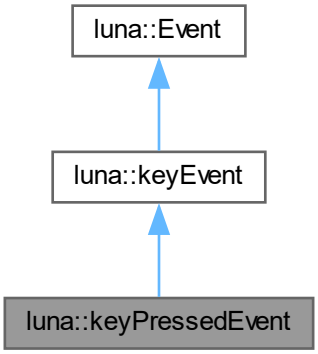
3.16 luna::keyPressedEvent Class Reference

```
#include <keyEvent.h>
```

Inheritance diagram for luna::keyPressedEvent:



Collaboration diagram for luna::keyPressedEvent:



Public Member Functions

- keyPressedEvent (const keyCode keyCode, bool isRepeat=false)
- bool isRepeat () const
- std::string toString () const override

Private Attributes

- bool m_IsRepeat

Additional Inherited Members

3.16.1 Constructor & Destructor Documentation

3.16.1.1 keyPressedEvent()

```
luna::keyPressedEvent::keyPressedEvent (
    const keyCode keyCode,
    bool isRepeat = false ) [inline]
```

3.16.2 Member Function Documentation

3.16.2.1 isRepeat()

```
bool luna::keyPressedEvent::isRepeat ( ) const [inline]
```

3.16.2.2 toString() `std::string luna::keyPressedEvent::toString ( ) const [inline], [override], [virtual]`

Reimplemented from luna::Event.

3.16.3 Member Data Documentation

3.16.3.1 m_IsRepeat `bool luna::keyPressedEvent::m_IsRepeat [private]`

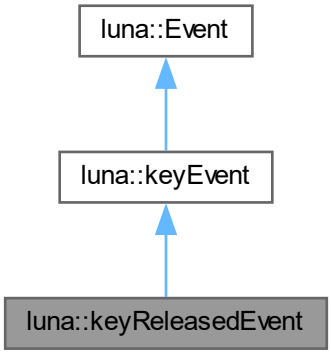
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/keyEvent.h

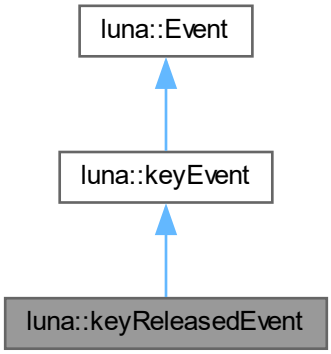
3.17 luna::keyReleasedEvent Class Reference

```
#include <keyEvent.h>
```

Inheritance diagram for luna::keyReleasedEvent:



Collaboration diagram for luna::keyReleasedEvent:



Public Member Functions

- keyReleasedEvent (const keyCode keyCode)
- std::string toString () const override

Additional Inherited Members

3.17.1 Constructor & Destructor Documentation

3.17.1.1 keyReleasedEvent() `luna::keyReleasedEvent::keyReleasedEvent ( const keyCode keyCode ) [inline]`

3.17.2 Member Function Documentation

3.17.2.1 toString() `std::string luna::keyReleasedEvent::toString ( ) const [inline], [override], [virtual]`

Reimplemented from luna::Event.

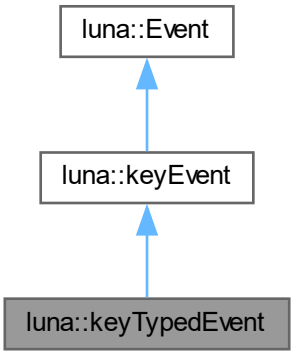
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/keyEvent.h

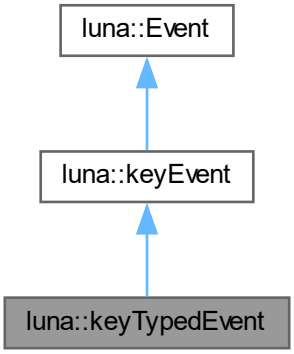
3.18 luna::keyTypedEvent Class Reference

```
#include <keyEvent.h>
```

Inheritance diagram for luna::keyTypedEvent:



Collaboration diagram for luna::keyTypedEvent:



Public Member Functions

- keyTypedEvent (const keyCode keyCode)
- std::string toString () const override

Additional Inherited Members

3.18.1 Constructor & Destructor Documentation

3.18.1.1 keyTypedEvent() `luna::keyTypedEvent::keyTypedEvent ( const keyCode keyCode ) [inline]`

3.18.2 Member Function Documentation

3.18.2.1 toString() `std::string luna::keyTypedEvent::toString ( ) const [inline], [override], [virtual]`

Reimplemented from luna::Event.

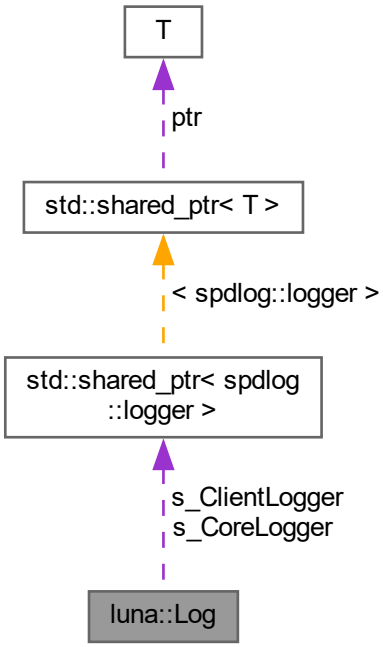
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/keyEvent.h

3.19 luna::Log Class Reference

```
#include <log.h>
```

Collaboration diagram for luna::Log:



Static Public Member Functions

- static void Init ()
- static std::shared_ptr< spdlog::logger > GetCoreLogger ()
- static std::shared_ptr< spdlog::logger > GetClientLogger ()

Static Private Attributes

- static std::shared_ptr< spdlog::logger > s_CoreLogger
- static std::shared_ptr< spdlog::logger > s_ClientLogger

3.19.1 Member Function Documentation

3.19.1.1 GetClientLogger() `static std::shared_ptr< spdlog::logger > luna::Log::GetClientLogger ( ) [inline], [static]`

3.19.1.2 GetCoreLogger() `static std::shared_ptr< spdlog::logger > luna::Log::GetCoreLogger ( ) [inline], [static]`

3.19.1.3 Init() `void luna::Log::Init ( ) [static]`

3.19.2 Member Data Documentation

3.19.2.1 s_ClientLogger `std::shared_ptr< spdlog::logger > luna::Log::s_ClientLogger [static], [private]`

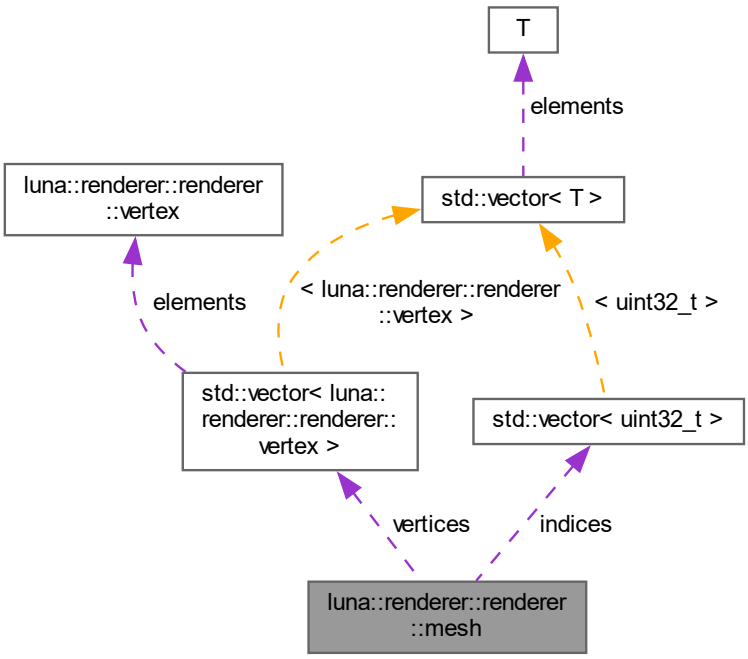
3.19.2.2 s_CoreLogger `std::shared_ptr< spdlog::logger > luna::Log::s_CoreLogger [static], [private]`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/log.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/log.cpp

3.20 luna::renderer::renderer::mesh Struct Reference

Collaboration diagram for luna::renderer::renderer::mesh:



Public Attributes

- std::vector< vertex > vertices
- std::vector< uint32_t > indices

3.20.1 Member Data Documentation

3.20.1.1 indices `std::vector<uint32_t> luna::renderer::renderer::mesh::indices`

3.20.1.2 vertices `std::vector<vertex> luna::renderer::renderer::mesh::vertices`

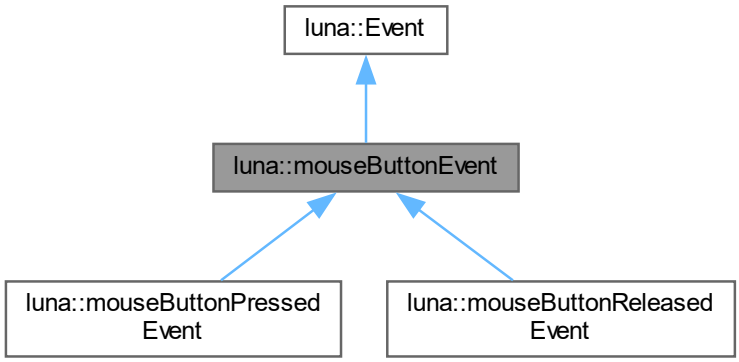
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/renderer.h

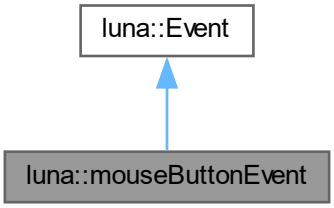
3.21 luna::mouseButtonEvent Class Reference

```
#include <mouseEvent.h>
```

Inheritance diagram for luna::mouseButtonEvent:



Collaboration diagram for luna::mouseButtonEvent:



Public Member Functions

- mouseCode getMouseButton () const

Protected Member Functions

- mouseButtonEvent (const mouseCode button)

Protected Attributes

- mouseCode m_Button

Additional Inherited Members

3.21.1 Constructor & Destructor Documentation

3.21.1.1 mouseButtonEvent()

```
luna::mouseButtonEvent::mouseButtonEvent (
    const mouseCode button ) [inline], [protected]
```

3.21.2 Member Function Documentation

3.21.2.1 getMouseButton()

```
mouseCode luna::mouseButtonEvent::getMouseButton ( ) const [inline]
```

3.21.3 Member Data Documentation

3.21.3.1 m_Button

```
mouseCode luna::mouseButtonEvent::m_Button [protected]
```

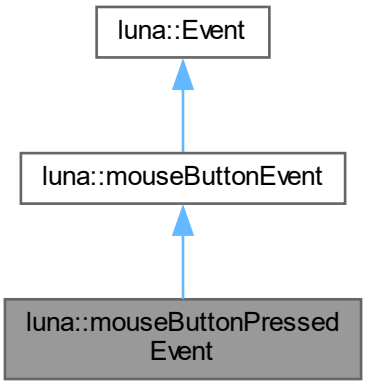
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/mouseEvent.h

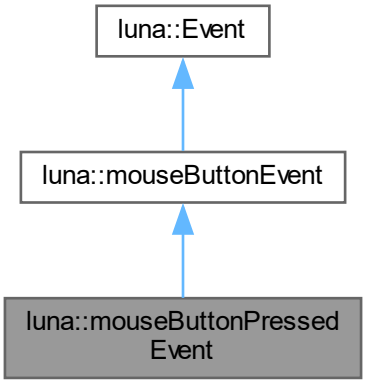
3.22 luna::mouseButtonPressedEvent Class Reference

```
#include <mouseEvent.h>
```

Inheritance diagram for luna::mouseButtonPressedEvent:



Collaboration diagram for luna::mouseButtonPressedEvent:



Public Member Functions

- mouseButtonPressedEvent (const mouseCode button)
- std::string toString () const override

Additional Inherited Members

3.22.1 Constructor & Destructor Documentation

3.22.1.1 mouseButtonPressedEvent() `luna::mouseButtonPressedEvent::mouseButtonPressedEvent ( const mouseCode button ) [inline]`

3.22.2 Member Function Documentation

3.22.2.1 toString() `std::string luna::mouseButtonPressedEvent::toString ( ) const [inline], [override], [virtual]`

Reimplemented from luna::Event.

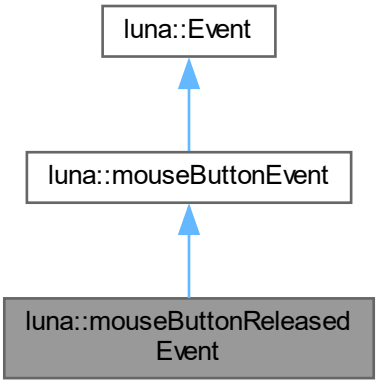
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/mouseEvent.h

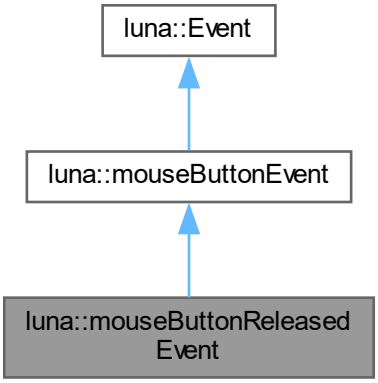
3.23 luna::mouseButtonReleasedEvent Class Reference

```
#include <mouseEvent.h>
```

Inheritance diagram for luna::mouseButtonReleasedEvent:



Collaboration diagram for luna::mouseButtonReleasedEvent:



Public Member Functions

- mouseButtonReleasedEvent (const mouseCode button)
- std::string toString () const override

Additional Inherited Members

3.23.1 Constructor & Destructor Documentation

3.23.1.1 mouseButtonReleasedEvent() `luna::mouseButtonReleasedEvent::mouseButtonReleasedEvent ( const mouseCode button ) [inline]`

3.23.2 Member Function Documentation

3.23.2.1 toString() `std::string luna::mouseButtonReleasedEvent::toString ( ) const [inline], [override], [virtual]`

Reimplemented from luna::Event.

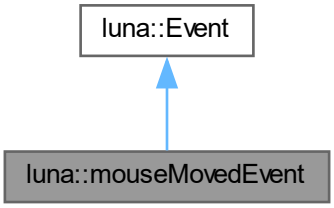
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/mouseEvent.h

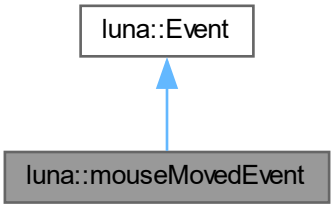
3.24 luna::mouseMovedEvent Class Reference

```
#include <mouseEvent.h>
```

Inheritance diagram for luna::mouseMovedEvent:



Collaboration diagram for luna::mouseMovedEvent:



Public Member Functions

- mouseMovedEvent (const float x, const float y)
- float GetX () const
- float GetY () const
- std::string toString () const override

Private Attributes

- float m_MouseX
- float m_MouseY

Additional Inherited Members

3.24.1 Constructor & Destructor Documentation

3.24.1.1 mouseMovedEvent()

```
luna::mouseMovedEvent::mouseMovedEvent (
    const float x,
    const float y ) [inline]
```

3.24.2 Member Function Documentation

3.24.2.1 GetX()

```
float luna::mouseMovedEvent::GetX ( ) const [inline]
```

3.24.2.2 GetY() `float luna::mouseMovedEvent::GetY ( ) const [inline]`

3.24.2.3 toString() `std::string luna::mouseMovedEvent::toString ( ) const [inline], [override], [virtual]`

Reimplemented from luna::Event.

3.24.3 Member Data Documentation

3.24.3.1 m_MouseX `float luna::mouseMovedEvent::m_MouseX [private]`

3.24.3.2 m_MouseY `float luna::mouseMovedEvent::m_MouseY [private]`

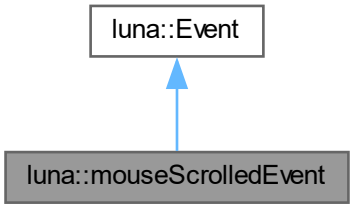
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/mouseEvent.h

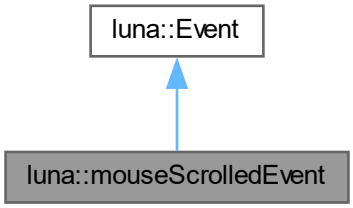
3.25 luna::mouseScrolledEvent Class Reference

```
#include <mouseEvent.h>
```

Inheritance diagram for luna::mouseScrolledEvent:



Collaboration diagram for luna::mouseScrolledEvent:



Public Member Functions

- mouseScrolledEvent (const float xOffset, const float yOffset)
- float getXOffset () const
- float getYOffset () const
- std::string toString () const override

Private Attributes

- float m_XOffset
- float m_YOffset

Additional Inherited Members

3.25.1 Constructor & Destructor Documentation

3.25.1.1 mouseScrolledEvent()

```
luna::mouseScrolledEvent::mouseScrolledEvent (
    const float xOffset,
    const float yOffset ) [inline]
```

3.25.2 Member Function Documentation

3.25.2.1 getXOffset()

```
float luna::mouseScrolledEvent::getXOffset ( ) const [inline]
```

3.25.2.2 getYOffset() `float luna::mouseScrolledEvent::getYOffset ( ) const [inline]`

3.25.2.3 toString() `std::string luna::mouseScrolledEvent::toString ( ) const [inline], [override], [virtual]`

Reimplemented from luna::Event.

3.25.3 Member Data Documentation

3.25.3.1 m_XOffset `float luna::mouseScrolledEvent::m_XOffset [private]`

3.25.3.2 m_YOffset `float luna::mouseScrolledEvent::m_YOffset [private]`

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

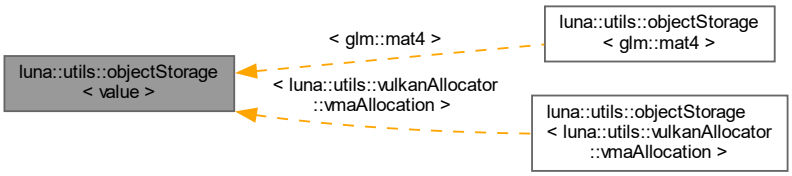
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/mouseEvent.h

3.26 luna::utils::objectStorage< value > Class Template Reference

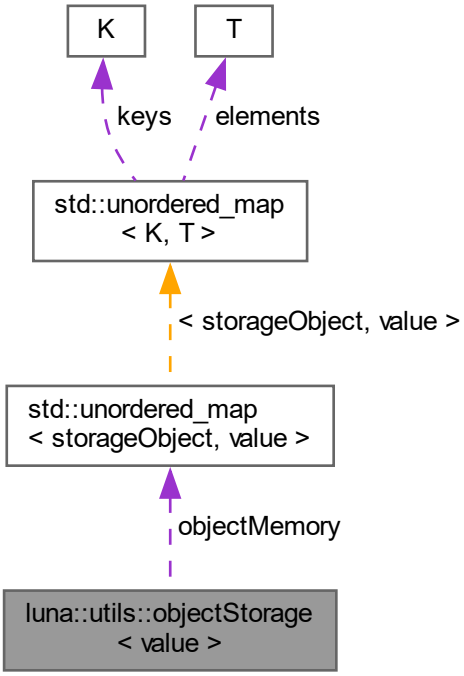
cached object memory class with a key handle.

```
#include <objectStorage.h>
```

Inheritance diagram for luna::utils::objectStorage< value >:



Collaboration diagram for luna::utils::objectStorage< value >:



Public Member Functions

- std::pair< storageResult, value > operator[ ] (const storageObject &key)
- objectStorage ()

  deafult constructor whith default cache size of 200.
- objectStorage (size_t cacheSize)

  constructor with custom cache size.
- std::pair< storageResult, value > putValue (storageObject *key, const value &_value)

  puts a value in the object storage.
- std::pair< storageResult, value > getValue (const storageObject &key, const value &_value)

  gets a value from the object storage.
- std::pair< storageResult, value > setValue (const storageObject &key, const value &_value)

  sets the value of a given key.
- std::pair< storageResult, value > eraseValue (const storageObject &key)

Private Attributes

- vectorCache< value > objectCache
- std::unordered_map< storageObject, value > objectMemory

3.26.1 Detailed Description

template<typename value>
class luna::utils::objectStorage< value >

cached object memory class with a key handle.

3.26.2 Constructor & Destructor Documentation

3.26.2.1 objectStorage() [1/2] template<typename value >

```
luna::utils::objectStorage< value >::objectStorage ( ) [inline]
```

deafult constructor whith default cache size of 200.

Note

this constructor is recommended for dafult use.

3.26.2.2 objectStorage() [2/2] template<typename value >

```
luna::utils::objectStorage< value >::objectStorage (
            size_t cacheSize ) [inline]
```

constructor with custom cache size.

Note

recommended to not go above cacheSize of 1000 else cache could become slow!

recommended to use the deafult constructor unless you know what you are doing!

Parameters

size_t	cacheSize

3.26.3 Member Function Documentation

3.26.3.1 eraseValue() template<typename value >

```
std::pair< storageResult, value > luna::utils::objectStorage< value >::eraseValue (
            const storageObject & key ) [inline]
```

3.26.3.2 getValue()

```
template<typename value >
std::pair< storageResult, value > luna::utils::objectStorage< value >::getValue (
            const storageObject & key,
            const value & _value )  [inline]
```

gets a value from the object storage.

Parameters

storageObject	key
value	_value

Returns

std::pair<storageResult, value> value is the input value.

See also

storageResult

3.26.3.3 operator[]()

```
template<typename value >
std::pair< storageResult, value > luna::utils::objectStorage< value >::operator[] (
            const storageObject & key )  [inline]
```

3.26.3.4 putValue()

```
template<typename value >
std::pair< storageResult, value > luna::utils::objectStorage< value >::putValue (
            storageObject * key,
            const value & _value )  [inline]
```

puts a value in the object storage.

Note

if the value of *key != it whill use this value instead of generating one.

Parameters

*storageObject**	key pointer to key
value	_value value/object to be stored.

Returns

std::pair<storageResult, value> value is the input value.

See also

storageResult

3.26.3.5 setValue()

```
template<typename value >
std::pair< storageResult, value > luna::utils::objectStorage< value >::setValue (
            const storageObject & key,
            const value & _value )  [inline]
```

sets the value of a given key.

Parameters

storageObject	key
value	_value

Returns

std::pair<storageResult, value> value is the input value.

See also

storageResult

3.26.4 Member Data Documentation

3.26.4.1 objectCache

```
template<typename value >
vectorCache<value> luna::utils::objectStorage< value >::objectCache  [private]
```

3.26.4.2 objectMemory

```
template<typename value >
std::unordered_map<storageObject, value> luna::utils::objectStorage< value >::objectMemory
[private]
```

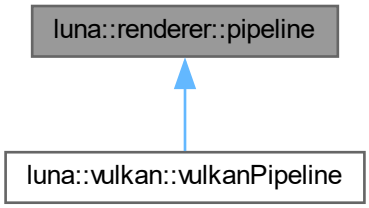
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/objectStorage.h

3.27 luna::renderer::pipeline Class Reference

```
#include <pipeline.h>
```

Inheritance diagram for luna::renderer::pipeline:



Public Member Functions

- virtual ~pipeline ()
- virtual void createPipeline (const pipelineLayout &layout)=0

  creates graphics a pipeline.
- virtual void destroyPipeline ()=0

  destroys the graphics pipeline.
- virtual void createCommands ()=0
- virtual void begin () const =0

  starts recording pipeline input.
- virtual void end () const =0

  ends recording end.
- virtual void flush ()=0

  flush the renderer pipline and render a frame.
- virtual void drawIndexed (const ref< vertexArray > &vertexArray, int indexCount)=0

  draw vertexBuffer with and indexBuffer.

Public Attributes

- int test

3.27.1 Constructor & Destructor Documentation

3.27.1.1 ~pipeline() `virtual luna::renderer::pipeline::~pipeline ( ) [inline], [virtual]`

3.27.2 Member Function Documentation

3.27.2.1 begin() `virtual void luna::renderer::pipeline::begin ( ) const [pure virtual]`

starts recording pipeline input.

Implemented in luna::vulkan::vulkanPipeline.

3.27.2.2 createCommands() `virtual void luna::renderer::pipeline::createCommands ( ) [pure virtual]`

Implemented in luna::vulkan::vulkanPipeline.

3.27.2.3 createPipeline() `virtual void luna::renderer::pipeline::createPipeline ( const pipelineLayout & layout ) [pure virtual]`

creates graphics a pipeline.

Parameters

layout	

Implemented in luna::vulkan::vulkanPipeline.

3.27.2.4 destroyPipeline() `virtual void luna::renderer::pipeline::destroyPipeline ( ) [pure virtual]`

destroys the graphics pipeline.

Implemented in luna::vulkan::vulkanPipeline.

3.27.2.5 drawIndexed() `virtual void luna::renderer::pipeline::drawIndexed ( const ref< vertexArray > & vertexArray, int indexCount ) [pure virtual]`

draw vertexBuffer with and indexBuffer.

Parameters

ref<renderer::vertexArray>	vertexArray ref to vertexarray containing vertexBuffers and inexBuffer;
indexCount	indexCount tp be rendered;

3.27.2.6 end() `virtual void luna::renderer::pipeline::end ( ) const [pure virtual]`

ends recording end.

Implemented in luna::vulkan::vulkanPipeline.

3.27.2.7 flush() `virtual void luna::renderer::pipeline::flush ( ) [pure virtual]`

flush the renderer pipline and render a frame.

Implemented in luna::vulkan::vulkanPipeline.

3.27.3 Member Data Documentation

3.27.3.1 test `int luna::renderer::pipeline::test`

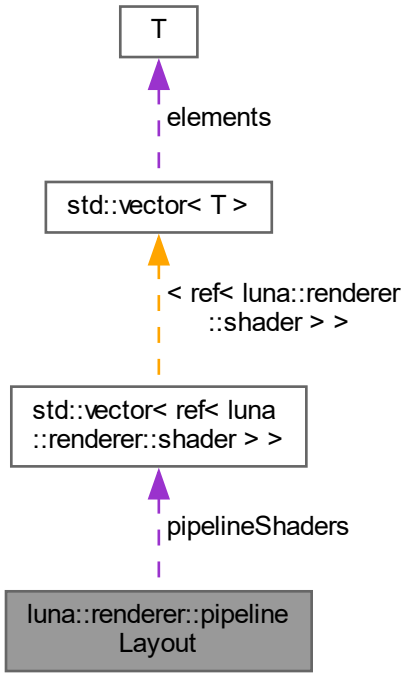
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/pipeline.h

3.28 luna::renderer::pipelineLayout Struct Reference

`#include <pipeline.h>`

Collaboration diagram for luna::renderer::pipelineLayout:



Public Attributes

- std::vector< ref< shader > > pipelineShaders
- ref< device > device

3.28.1 Member Data Documentation

3.28.1.1 device `ref<device> luna::renderer::pipelineLayout::device`

3.28.1.2 pipelineShaders `std::vector<ref<shader> > luna::renderer::pipelineLayout::pipeline↩ Shaders`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/pipeline.h

3.29 luna::vulkan::queueFamilyIndices Struct Reference

```
#include <vulkanSwapchain.h>
```

Public Member Functions

- bool isComplete ()

Public Attributes

- std::optional< uint32_t > graphicsFamily
- std::optional< uint32_t > transferFamily
- std::optional< uint32_t > presentFamily

3.29.1 Member Function Documentation

3.29.1.1 isComplete() `bool luna::vulkan::queueFamilyIndices::isComplete ( ) [inline]`

3.29.2 Member Data Documentation

3.29.2.1 graphicsFamily `std::optional<uint32_t> luna::vulkan::queueFamilyIndices::graphics↩ Family`

3.29.2.2 presentFamily `std::optional<uint32_t> luna::vulkan::queueFamilyIndices::presentFamily`

3.29.2.3 transferFamily `std::optional<uint32_t> luna::vulkan::queueFamilyIndices::transfer↩ Family`

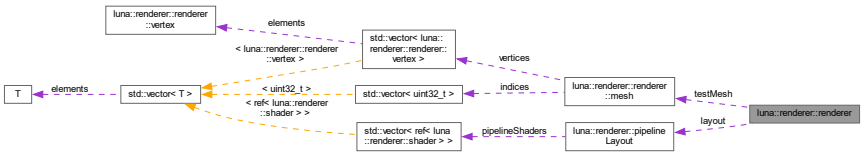
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanSwapchain.h

3.30 luna::renderer::renderer Class Reference

```
#include <renderer.h>
```

Collaboration diagram for luna::renderer::renderer:



Classes

- struct mesh
- struct vertex

Static Public Member Functions

- static void init (const ref< vulkan::window > &window)

  the main renderer class.
- static void createFrame ()

  create a frame in the render pipline based on the given input.
- static void newFrame ()

  renders a new frame.
- static void beginScene ()

  starts recording a new scene.
- static void Submit (const ref< vertexArray > &vertexArray, const uint64_t &indexCount=0)

  submits a vertexArray to be rendered containing vertexBuffers and 1 indexBuffer.
- static void endScene ()

Static Private Attributes

- static ref< device > rendererDevice
- static ref< pipeline > rendererPipeline
- static renderer::pipelineLayout layout
- static ref< gui::vulkanImgui > gui
- static bool Selected
- static mesh testMesh
- static ref< vertexArray > vertArray

3.30.1 Member Function Documentation

3.30.1.1 beginScene() `void luna::renderer::renderer::beginScene ( ) [static]`

starts recording a new scene.

3.30.1.2 createFrame() `void luna::renderer::renderer::createFrame ( ) [static]`

create a frame in the render pipline based on the given input.

3.30.1.3 endScene() `void luna::renderer::renderer::endScene ( ) [static]`

brief ends the scene.

3.30.1.4 init() `void luna::renderer::renderer::init ( const ref< vulkan::window > & window ) [static]`

the main renderer class.

Parameters

window	a ref to the main window

3.30.1.5 newFrame() `void luna::renderer::renderer::newFrame ( ) [static]`

renders a new frame.

3.30.1.6 Submit()

```
void luna::renderer::renderer::Submit (
    const ref< vertexArray > & vertexArray,
    const uint64_t & indexCount = 0 ) [static]
```

submits a vertexArray to be rendered containing vertexBuffers and 1 indexBuffer.

Note

vertexArray generation is done by the 2D/3D renderer api's respectevly.

Parameters

vertexArray	

3.30.2 Member Data Documentation

3.30.2.1 gui

`ref<gui::vulkanImgui> luna::renderer::renderer::gui [inline], [static], [private]`

3.30.2.2 layout

`renderer::pipelineLayout luna::renderer::renderer::layout [inline], [static], [private]`

3.30.2.3 rendererDevice

`ref<device> luna::renderer::renderer::rendererDevice [inline], [static], [private]`

3.30.2.4 rendererPipeline

`ref<pipeline> luna::renderer::renderer::rendererPipeline [inline], [static], [private]`

3.30.2.5 Selected

`bool luna::renderer::renderer::Selected [inline], [static], [private]`

3.30.2.6 testMesh

`mesh luna::renderer::renderer::testMesh [inline], [static], [private]`

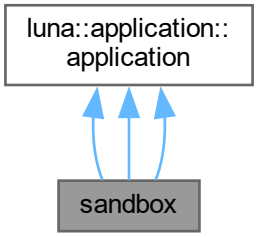
3.30.2.7 vertArray `ref<vertexArray> luna::renderer::renderer::vertArray [inline], [static], [private]`

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

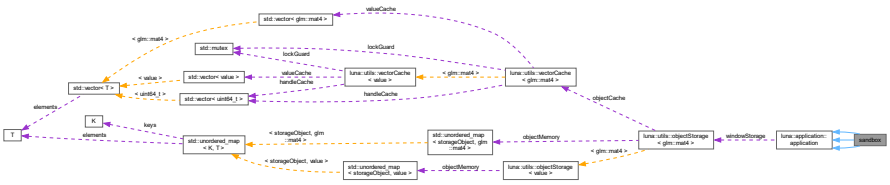
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/renderer.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/renderer.cpp

3.31 sandbox Class Reference

Inheritance diagram for sandbox:



Collaboration diagram for sandbox:



Public Member Functions

- sandbox ()
- virtual ~sandbox ()
- sandbox ()
- virtual ~sandbox ()
- sandbox ()
- virtual ~sandbox ()

3.31.1 Constructor & Destructor Documentation

3.31.1.1 sandbox() [1/3] `sandbox::sandbox ( ) [inline]`

3.31.1.2 ~sandbox() [1/3] `virtual sandbox::~sandbox ( ) [inline], [virtual]`

3.31.1.3 sandbox() [2/3] `sandbox::sandbox ( ) [inline]`

3.31.1.4 ~sandbox() [2/3] `virtual sandbox::~sandbox ( ) [inline], [virtual]`

3.31.1.5 sandbox() [3/3] `sandbox::sandbox ( ) [inline]`

3.31.1.6 ~sandbox() [3/3] `virtual sandbox::~sandbox ( ) [inline], [virtual]`

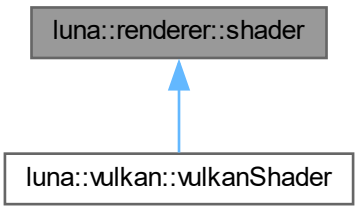
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/bin/debug-windows-x86_64/x64/sandbox/src/sandbox.cpp
- C:/Users/robbe/source/repos/lolrobbe2/luna/bin/release-windows-x86_64/x64/sandbox/src/sandbox.cpp
- C:/Users/robbe/source/repos/lolrobbe2/luna/sandbox/src/sandbox.cpp

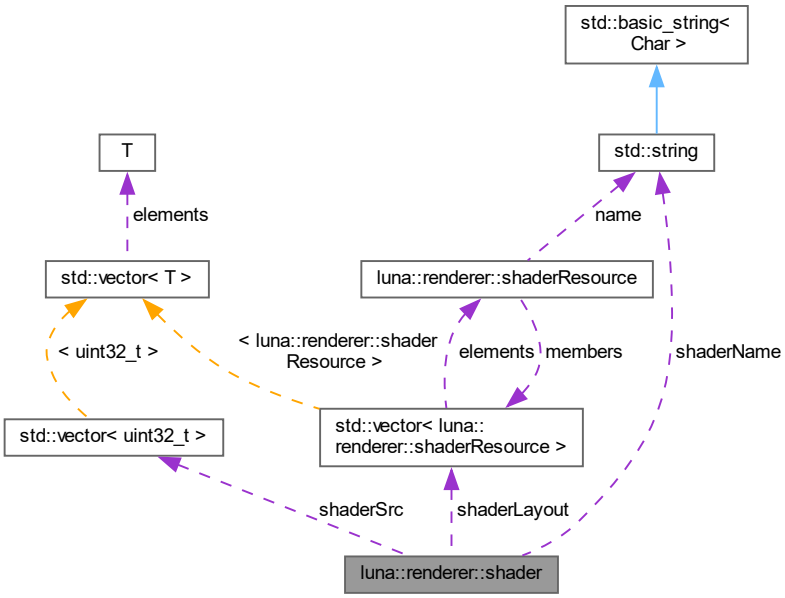
3.32 luna::renderer::shader Class Reference

```
#include <shader.h>
```

Inheritance diagram for luna::renderer::shader:



Collaboration diagram for luna::renderer::shader:



Public Member Functions

- virtual ~shader ()=default
- virtual void bind () const =0
- virtual void unbind () const =0
- virtual void createLayout ()=0
- std::vector< uint32_t > self ()

  returns the shader compiled source.

Static Public Member Functions

- static ref< shader > create (const std::string &filepath, const shaderStage &stage)

  creates a shader from a filepath.
- static ref< shader > create (const std::vector< uint8_t > &shaderSrc, const shaderStage &stage)

  creates a shader from compiled code.

Public Attributes

- std::string shaderName
- std::vector< shaderResource > shaderLayout
- shaderStage stage
- std::vector< uint32_t > shaderSrc

Friends

- class vulkanDevice

3.32.1 Constructor & Destructor Documentation

3.32.1.1 ~shader() `virtual luna::renderer::shader::~shader ( ) [virtual], [default]`

3.32.2 Member Function Documentation

3.32.2.1 bind() `virtual void luna::renderer::shader::bind ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanShader.

3.32.2.2 create() [1/2]

```
ref< shader > luna::renderer::shader::create (
    const std::string & filepath,
    const shaderStage & stage ) [static]
```

creates a shader from a filepath.

Parameters

filepath	

Returns

a shader reference.

3.32.2.3 create() [2/2]

```
ref< shader > luna::renderer::shader::create (
    const std::vector< uint8_t > & shaderSrc,
    const shaderStage & stage ) [static]
```

creates a shader from compiled code.

Parameters

shaderSrc	the shader compiled src code

Returns

a shader reference.

3.32.2.4 createLayout() `virtual void luna::renderer::shader::createLayout ( ) [pure virtual]`

Implemented in luna::vulkan::vulkanShader.

3.32.2.5 self() `std::vector< uint32_t > luna::renderer::shader::self ( ) [inline]`

returns the shader compiled source.

3.32.2.6 unbind() `virtual void luna::renderer::shader::unbind ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanShader.

3.32.3 Friends And Related Function Documentation

3.32.3.1 vulkanDevice `friend class vulkanDevice [friend]`

3.32.4 Member Data Documentation

3.32.4.1 shaderLayout `std::vector<shaderResource> luna::renderer::shader::shaderLayout`

3.32.4.2 shaderName `std::string luna::renderer::shader::shaderName`

3.32.4.3 shaderSrc `std::vector<uint32_t> luna::renderer::shader::shaderSrc`

3.32.4.4 stage `shaderStage luna::renderer::shader::stage`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/shader.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/shader.cpp

3.33 luna::utils::shaderCompiler Class Reference

```
#include <shaderCompiler.h>
```

Public Member Functions

- shaderCompiler ()

  constructor does nothing at the moment.
- virtual ~shaderCompiler ()
- std::vector< uint32_t > compile (compileSpec compileSpec)

  compile a shader from source GLSL to specified.

Private Member Functions

- bool reflect (const std::vector< uint32_t > &shaderData, bool reflect)

  reflects on the compiled shader and shows a text based dissasambly of the shader.
- std::string getResourceTypeName (const spirv_cross::Resource &resource, const spirv_cross::Compiler &compiler)

  returns the resource type name ex mat4 returns "Mat4".

3.33.1 Constructor & Destructor Documentation

3.33.1.1 shaderCompiler() `luna::utils::shaderCompiler::shaderCompiler ( )`

constructor does nothing at the moment.

3.33.1.2 ~shaderCompiler() `virtual luna::utils::shaderCompiler::~shaderCompiler ( ) [inline], [virtual]`

3.33.2 Member Function Documentation

3.33.2.1 compile() `std::vector< uint32_t > luna::utils::shaderCompiler::compile ( compileSpec compileSpec )`

compile a shader from source GLSL to specified.

Parameters

compileSpec	struct with compile specifications

Returns

compiled shadersource.

3.33.2.2 getResourceTypeName()

```
std::string luna::utils::shaderCompiler::getResourceTypeName (
    const spirv_cross::Resource & resource,
    const spirv_cross::Compiler & compiler ) [private]
```

returns the resource type name ex mat4 returns "Mat4".

Parameters

resource	to get the typename of.
compiler	the compiler wich contains the compiled shader.

Returns

the type name of the resource as an std::string.

3.33.2.3 reflect()

```
bool luna::utils::shaderCompiler::reflect (
    const std::vector< uint32_t > & shaderData,
    bool reflect ) [private]
```

reflects on the compiled shader and shows a text based dissasambly of the shader.

Parameters

shaderData	compiled shaderData.
reflect	reflect yes or no.

Returns

param reflect.

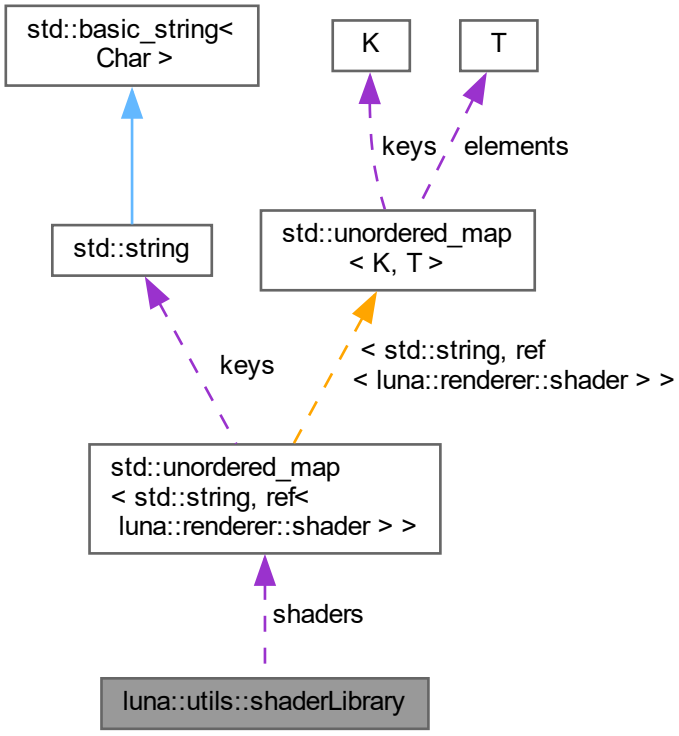
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderCompiler.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderCompiler.cpp

3.34 luna::utils::shaderLibrary Class Reference

```
#include <shaderLibrary.h>
```

Collaboration diagram for luna::utils::shaderLibrary:



Static Public Member Functions

- static void init ()
- static void load (const std::string &filePath, const renderer::shaderStage &stage)
- static ref< renderer::shader > get (const std::string &shaderName)

Static Private Attributes

- static std::unordered_map< std::string, ref< renderer::shader > > shaders

3.34.1 Member Function Documentation

3.34.1.1 get()

```
ref< renderer::shader > luna::utils::shaderLibrary::get (
    const std::string & shaderName ) [static]
```

3.34.1.2 init() `void luna::utils::shaderLibrary::init ( ) [static]`

3.34.1.3 load() `void luna::utils::shaderLibrary::load ( const std::string & filePath, const renderer::shaderStage & stage ) [static]`

3.34.2 Member Data Documentation

3.34.2.1 shaders `std::unordered_map<std::string, ref<renderer::shader> > luna::utils::shaderLibrary::shaders [inline], [static], [private]`

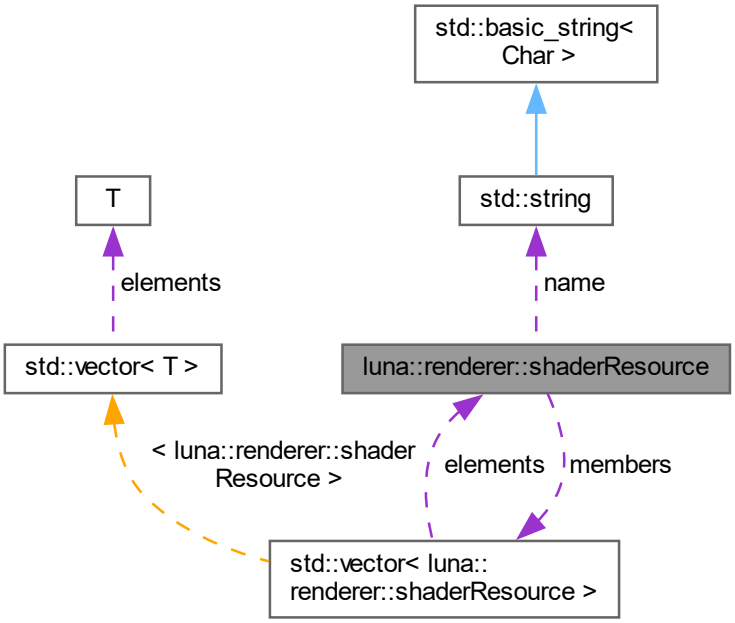
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderLibrary.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderLibrary.cpp

3.35 luna::renderer::shaderResource Struct Reference

`#include <shader.h>`

Collaboration diagram for luna::renderer::shaderResource:



Public Attributes

- typeClass resourceClass = uniformBuffers
- typeId type = Unknown
- uint32_t location = 0
- uint32_t set = 0
- uint32_t binding = 0
- uint32_t stride = 0
- uint32_t offset = 0
- std::string name
- std::vector< shaderResource > members {}

3.35.1 Member Data Documentation

3.35.1.1 binding `uint32_t luna::renderer::shaderResource::binding = 0`

3.35.1.2 location `uint32_t luna::renderer::shaderResource::location = 0`

3.35.1.3 members `std::vector<shaderResource> luna::renderer::shaderResource::members {}`

3.35.1.4 name `std::string luna::renderer::shaderResource::name`

3.35.1.5 offset `uint32_t luna::renderer::shaderResource::offset = 0`

3.35.1.6 resourceClass `typeClass luna::renderer::shaderResource::resourceClass = uniformBuffers`

3.35.1.7 set `uint32_t luna::renderer::shaderResource::set = 0`

3.35.1.8 stride `uint32_t luna::renderer::shaderResource::stride = 0`

3.35.1.9 type `typeId luna::renderer::shaderResource::type = Unknown`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/shader.h

3.36 luna::vulkan::vulkanPipeline::shaderStage Struct Reference

Public Attributes

- VkPipelineShaderStageCreateInfo stageInfo
- VkShaderModule shaderModule

3.36.1 Member Data Documentation

3.36.1.1 shaderModule `VkShaderModule luna::vulkan::vulkanPipeline::shaderStage::shaderModule`

3.36.1.2 stageInfo `VkPipelineShaderStageCreateInfo luna::vulkan::vulkanPipeline::shaderStage↩ ::stageInfo`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanPipeline.h

3.37 shared_ptr< window > Class Reference

this is the window class en creates an os window windowSpec));

3.37.1 Detailed Description

this is the window class en creates an os window windowSpec));

Warning

use as an std::shared_ptr /ref

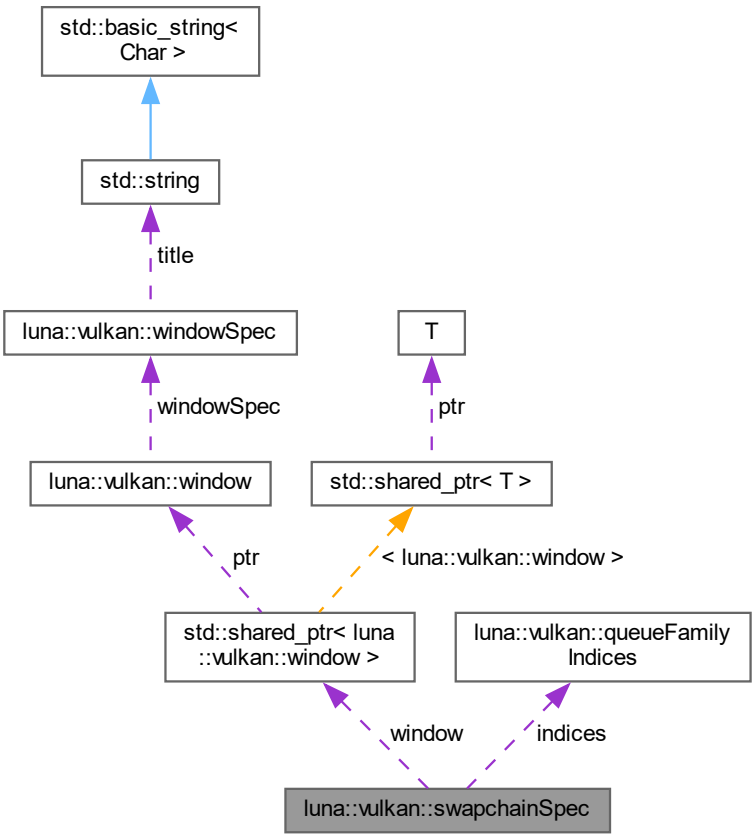
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/window/window.h

3.38 luna::vulkan::swapchainSpec Struct Reference

```
#include <vulkanSwapchain.h>
```

Collaboration diagram for luna::vulkan::swapchainSpec:



Public Attributes

- vkb::PhysicalDevice physicalDevice
- VkDevice device
- std::shared_ptr< vulkan::window > window = nullptr
- VkExtent2D swapchainExtent = {0,0}
- VkSurfaceKHR surface = VK_NULL_HANDLE
- queueFamilyIndices indices

3.38.1 Member Data Documentation

3.38.1.1 device `VkDevice luna::vulkan::swapchainSpec::device`

3.38.1.2 indices `queueFamilyIndices luna::vulkan::swapchainSpec::indices`

3.38.1.3 physicalDevice `vkb::PhysicalDevice luna::vulkan::swapchainSpec::physicalDevice`

3.38.1.4 surface `VkSurfaceKHR luna::vulkan::swapchainSpec::surface = VK_NULL_HANDLE`

3.38.1.5 swapchainExtent `VkExtent2D luna::vulkan::swapchainSpec::swapchainExtent = {0,0}`

3.38.1.6 window `std::shared_ptr<vulkan::window> luna::vulkan::swapchainSpec::window = nullptr`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanSwapchain.h

3.39 luna::uuid Class Reference

a general purpose uuid class with a maximum number of 2^64 uuid's the uuid class does not check for duplicates!

```
#include <uuid.h>
```

Public Member Functions

- uuid ()

  creates/generates a uuid.
- uuid (uint64_t uuid)

  generates a uuid from a uint64_t.
- uint64_t getId ()

  returns the uuid as uint64_t.
- operator uint64_t ()

Private Attributes

- uint64_t _uuid

3.39.1 Detailed Description

a general purpose uuid class with a maximum number of 2^64 uuid's the uuid class does not check for duplicates!

3.39.2 Constructor & Destructor Documentation

3.39.2.1 uuid() [1/2] luna::uuid::uuid ( )

creates/generates a uuid.

3.39.2.2 uuid() [2/2] luna::uuid::uuid (uint64_t *uuid*)

generates a uuid from a uint64_t.

Parameters

uuid	

3.39.3 Member Function Documentation

3.39.3.1 getId() uint64_t luna::uuid::getId ( ) [inline]

returns the uuid as uint64_t.

3.39.3.2 operator uint64_t() luna::uuid::operator uint64_t ( ) [inline]

3.39.4 Member Data Documentation

3.39.4.1 _uuid uint64_t luna::uuid::_uuid [private]

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

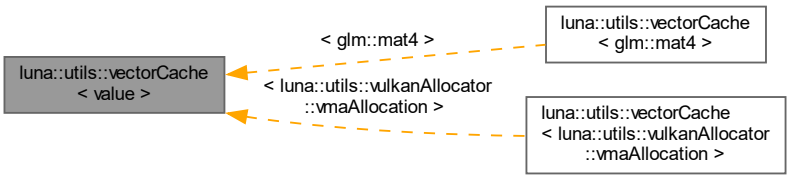
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/uuid.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/uuid.cpp

3.40 luna::utils::vectorCache< value > Class Template Reference

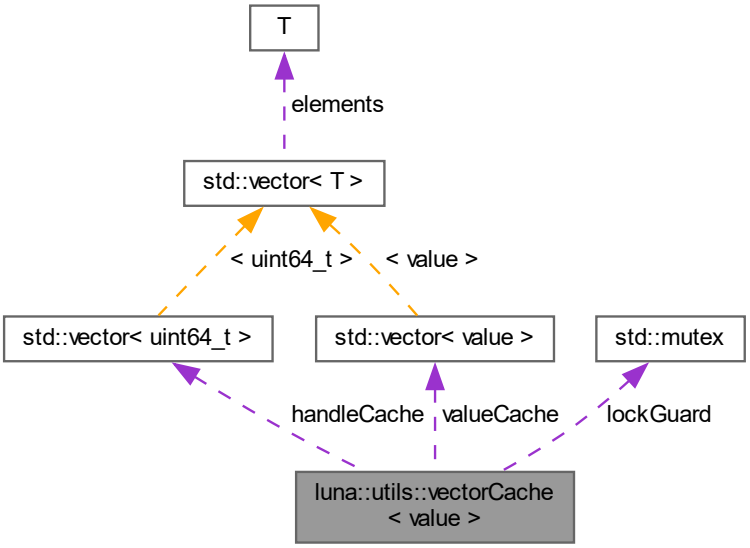
a pretty optimal multithreaded vector cahce headeronly class.

```
#include <vectorCache.h>
```

Inheritance diagram for luna::utils::vectorCache< value >:



Collaboration diagram for luna::utils::vectorCache< value >:



Public Member Functions

- vectorCache ()

  creates vectorCache with default cache size is of 200
- vectorCache (size_t maxCacheSize)

  creates vectorcache with defined size (recommended to have size less then 1000 objects.
- ~vectorCache ()

  destroys/deletes the cache :).

- std::pair< cacheObject, value > putValue (cacheObject *key, value _value)

  returns a object in a vector cache using a key handle.
- std::pair< cacheResult, value > getValue (cacheObject key)

  gets a stored cahe value using the key handle.
- std::pair< cacheResult, value > setValue (cacheObject key, value _value)

  sets the current value of the given cacheObject key.
- std::pair< cacheResult, value > eraseValue (cacheObject key)

  erases value of the given key.

Protected Attributes

- uint64_t maxCacheSize
- std::vector< uint64_t > handleCache
- std::vector< value > valueCache
- std::mutex lockGuard

3.40.1 Detailed Description

template<typename value>
class luna::utils::vectorCache< value >

a pretty optimal multithreaded vector cahce headeronly class.

Note

the vectorcache does not check for duplicate value's

3.40.2 Constructor & Destructor Documentation

3.40.2.1 vectorCache() [1/2] template<typename value >

luna::utils::vectorCache< value >::vectorCache ( ) [inline]

creates vectorCache with default cache size is of 200

3.40.2.2 vectorCache() [2/2] template<typename value >

luna::utils::vectorCache< value >::vectorCache (
size_t *maxCacheSize*) [inline]

creates vectorcache with defined size (recommended to have size less then 1000 objects.

Parameters

maxCacheSize	

3.40.2.3 ~vectorCache() `template<typename value >`

`luna::utils::vectorCache< value >::~vectorCache ( ) [inline]`

destroys/deletes the cache :).

3.40.3 Member Function Documentation

3.40.3.1 eraseValue() `template<typename value >`

```
std::pair< cacheResult, value > luna::utils::vectorCache< value >::eraseValue (
            cacheObject key ) [inline]
```

erases value of the given key.

Parameters

cacheObject	key
value	_value

Returns

cacheOpSucces when value whas succesfully erased

cacheOpFailed when value could not be found or some other operation failed

3.40.3.2 getValue() `template<typename value >`

```
std::pair< cacheResult, value > luna::utils::vectorCache< value >::getValue (
            cacheObject key ) [inline]
```

gets a stored cahe value using the key handle.

Parameters

key	

Returns

3.40.3.3 putValue() `template<typename value >`

```
std::pair< cacheObject, value > luna::utils::vectorCache< value >::putValue (
```

```
            cacheObject * key,
            value _value )  [inline]
```

returns a object in a vector cache using a key handle.

Parameters

key	a handle to the cahce object
_value	the cache object to store

Returns

std::pair<bool, value> when succesful returs overFlowKey and the overFLow cache value.

3.40.3.4 setValue()

```
template<typename value >
std::pair< cacheResult, value > luna::utils::vectorCache< value >::setValue (
            cacheObject key,
            value _value )  [inline]
```

sets the current value of the given cacheObject key.

Parameters

cacheObject	key the key to overwite
_value	the value to overwrite the current value

Returns

3.40.4 Member Data Documentation

3.40.4.1 handleCache

```
template<typename value >
std::vector<uint64_t> luna::utils::vectorCache< value >::handleCache  [protected]
```

3.40.4.2 lockGuard

```
template<typename value >
std::mutex luna::utils::vectorCache< value >::lockGuard  [mutable], [protected]
```

3.40.4.3 maxCacheSize

```
template<typename value >
uint64_t luna::utils::vectorCache< value >::maxCacheSize  [protected]
```

3.40.4.4 valueCache `template<typename value > std::vector<value> luna::utils::vectorCache< value >::valueCache [protected]`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/vectorCache.h

3.41 luna::renderer::renderer::vertex Struct Reference

Public Attributes

- glm::vec3 vert

3.41.1 Member Data Documentation

3.41.1.1 vert `glm::vec3 luna::renderer::renderer::vertex::vert`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/renderer.h

3.42 luna::vulkan::vulkanPipeline::Vertex Struct Reference

Public Attributes

- glm::vec2 position
- glm::vec3 normal
- glm::vec2 color

3.42.1 Member Data Documentation

3.42.1.1 color `glm::vec2 luna::vulkan::vulkanPipeline::Vertex::color`

3.42.1.2 normal `glm::vec3 luna::vulkan::vulkanPipeline::Vertex::normal`

3.42.1.3 position `glm::vec2 luna::vulkan::vulkanPipeline::Vertex::position`

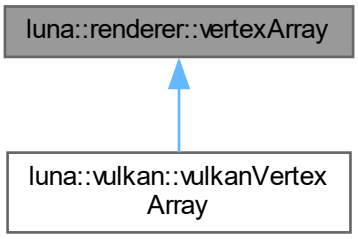
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanPipeline.h

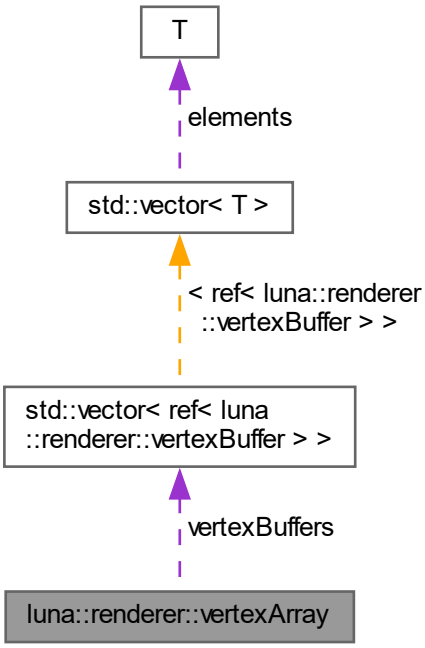
3.43 luna::renderer::vertexArray Class Reference

```
#include <vertexArray.h>
```

Inheritance diagram for luna::renderer::vertexArray:



Collaboration diagram for luna::renderer::vertexArray:



Public Member Functions

- virtual ~vertexArray ()
- virtual void bind () const =0
- virtual void unbind () const =0
- virtual void addVertexBuffer (const ref< vertexBuffer > &VertexBuffer)=0
- virtual void setIndexBuffer (const ref< indexBuffer > &IndexBuffer)=0
- virtual const std::vector< ref< vertexBuffer > > & getVertexBuffers () const =0
- virtual const ref< indexBuffer > & getIndexBuffer () const =0

Protected Attributes

- std::vector< ref< vertexBuffer > > vertexBuffers
- ref< indexBuffer > indexBuffer

3.43.1 Constructor & Destructor Documentation

3.43.1.1 ~vertexArray() `virtual luna::renderer::vertexArray::~vertexArray ( ) [inline], [virtual]`

3.43.2 Member Function Documentation

3.43.2.1 addVertexBuffer() `virtual void luna::renderer::vertexArray::addVertexBuffer ( const ref< vertexBuffer > & VertexBuffer ) [pure virtual]`

3.43.2.2 bind() `virtual void luna::renderer::vertexArray::bind ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanVertexArray.

3.43.2.3 getIndexBuffer() `virtual const ref< indexBuffer > & luna::renderer::vertexArray::getIndexBuffer ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanVertexArray.

3.43.2.4 getVertexBuffers() `virtual const std::vector< ref< vertexBuffer > > & luna::renderer::vertexArray::getVertexBuffers ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanVertexArray.

3.43.2.5 setIndexBuffer()

```
virtual void luna::renderer::vertexArray::setIndexBuffer (
    const ref< indexBuffer > & IndexBuffer ) [pure virtual]
```

3.43.2.6 unbind()

```
virtual void luna::renderer::vertexArray::unbind ( ) const [pure virtual]
```

Implemented in luna::vulkan::vulkanVertexArray.

3.43.3 Member Data Documentation

3.43.3.1 indexBuffer

```
ref<indexBuffer> luna::renderer::vertexArray::indexBuffer [protected]
```

3.43.3.2 vertexBuffers

```
std::vector<ref<vertexBuffer> > luna::renderer::vertexArray::vertex↩
Buffers [protected]
```

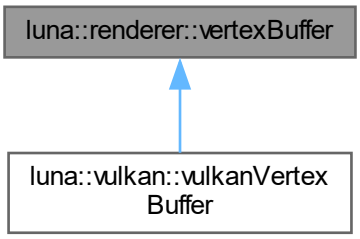
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/vertexArray.h

3.44 luna::renderer::vertexBuffer Class Reference

```
#include <buffer.h>
```

Inheritance diagram for luna::renderer::vertexBuffer:



Public Member Functions

- virtual ~vertexBuffer ()=default
- virtual void bind () const =0
- virtual void unbind () const =0
- virtual void setData (const void *data, uint32_t size)=0
- template<typename mesh >
  mesh & getIndex (uint32_t index)
- template<typename mesh >
  mesh operator[ ] (int index)

Static Public Member Functions

- static ref< vertexBuffer > create (uint32_t size)
- static ref< vertexBuffer > create (float *vertices, uint32_t size)

Public Attributes

- void * data = nullptr
- uint32_t size = 0

Private Attributes

- ref< shader > srcShader

3.44.1 Constructor & Destructor Documentation

3.44.1.1 ~vertexBuffer() `virtual luna::renderer::vertexBuffer::~vertexBuffer ( ) [virtual], [default]`

3.44.2 Member Function Documentation

3.44.2.1 bind() `virtual void luna::renderer::vertexBuffer::bind ( ) const [pure virtual]`

Implemented in luna::vulkan::vulkanVertexBuffer.

3.44.2.2 create() [1/2] `ref< vertexBuffer > luna::renderer::vertexBuffer::create ( float * vertices, uint32_t size ) [static]`

3.44.2.3 create() [2/2]

```
ref< vertexBuffer > luna::renderer::vertexBuffer::create (
    uint32_t size ) [static]
```

3.44.2.4 getIndex()

```
template<typename mesh >
mesh & luna::renderer::vertexBuffer::getIndex (
    uint32_t index ) [inline]
```

3.44.2.5 operator[]()

```
template<typename mesh >
mesh luna::renderer::vertexBuffer::operator[] (
    int index ) [inline]
```

3.44.2.6 setData()

```
virtual void luna::renderer::vertexBuffer::setData (
    const void * data,
    uint32_t size ) [pure virtual]
```

Implemented in luna::vulkan::vulkanVertexBuffer.

3.44.2.7 unbind()

```
virtual void luna::renderer::vertexBuffer::unbind ( ) const [pure virtual]
```

Implemented in luna::vulkan::vulkanVertexBuffer.

3.44.3 Member Data Documentation

3.44.3.1 data

```
void* luna::renderer::vertexBuffer::data = nullptr
```

3.44.3.2 size

```
uint32_t luna::renderer::vertexBuffer::size = 0
```

3.44.3.3 srcShader

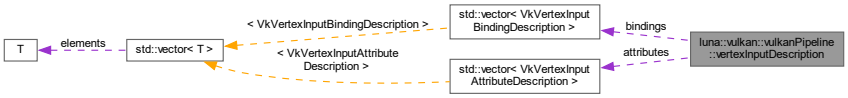
```
ref<shader> luna::renderer::vertexBuffer::srcShader [private]
```

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.cpp

3.45 luna::vulkan::vulkanPipeline::vertexInputDescription Struct Reference

Collaboration diagram for luna::vulkan::vulkanPipeline::vertexInputDescription:



Public Attributes

- std::vector< VkVertexInputBindingDescription > bindings
- std::vector< VkVertexInputAttributeDescription > attributes
- VkPipelineVertexInputStateCreateFlags flags = 0

3.45.1 Member Data Documentation

3.45.1.1 attributes `std::vector<VkVertexInputAttributeDescription> luna::vulkan::vulkanPipeline↩ ::vertexInputDescription::attributes`

3.45.1.2 bindings `std::vector<VkVertexInputBindingDescription> luna::vulkan::vulkanPipeline↩ ::vertexInputDescription::bindings`

3.45.1.3 flags `VkPipelineVertexInputStateCreateFlags luna::vulkan::vulkanPipeline::vertex↩ InputDescription::flags = 0`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanPipeline.h

3.46 luna::utils::vulkanAllocator::vmaAllocation Struct Reference

Public Attributes

- VmaAllocation allocation
- VmaAllocationInfo allocationInfo

3.46.1 Member Data Documentation

3.46.1.1 allocation `VmaAllocation luna::utils::vulkanAllocator::vmaAllocation::allocation`

3.46.1.2 allocationInfo `VmaAllocationInfo luna::utils::vulkanAllocator::vmaAllocation::allocation↩ Info`

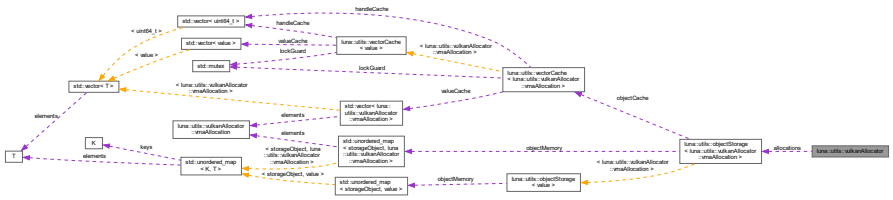
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkanAllocator.h

3.47 luna::utils::vulkanAllocator Class Reference

`#include <vulkanAllocator.h>`

Collaboration diagram for luna::utils::vulkanAllocator:



Classes

- struct vmaAllocation

Static Public Member Functions

- static void init (ref< renderer::device > device)

  allocator constructor.
- static void shutdown ()

  destroys the allocator.
- static VmaAllocationInfo getAllocationInfo (const uint64_t &handle)

  returns the allocation info from the given handle.
- static VkResult createImage (VkImage *pImage, const VkImageUsageFlags &usageFlags, const Vma↩ MemoryUsage &memoryUsage, const VkExtent3D &extent, const VkFormat &format)

  creates a VkImage object.
- static VkResult destroyImage (const VkImage &image)

  destroys the VkImage object.
- static VkResult createImageView (VkImageView *pImageView, const VkImage &image, const VkFormat &format, const VkImageAspectFlags &imageAspectFlags)

  creates a VkImageView object.
- static VkResult destroyImageView (const VkImageView &imageView)

  destroys the VkImageView.
- static VkResult createBuffer (VkBuffer *pBuffer, size_t allocSize, VkBufferUsageFlags usage, VmaMemory↩ Usage memoryUsage, VmaAllocationCreateFlags allocFlags=0)

  creates a VkBuffer object.
- static void destroyBuffer (VkBuffer buffer)

  destroys the VkBuffer object.

Private Attributes

- VkQueue transferQueue

Static Private Attributes

- static ref< renderer::device > pDevice
- static VmaAllocator sAllocator
- static objectStorage< vmaAllocation > allocations

3.47.1 Member Function Documentation

3.47.1.1 createBuffer()

```
VkResult luna::utils::vulkanAllocator::createBuffer (
    VkBuffer * pBuffer,
    size_t allocSize,
    VkBufferUsageFlags usage,
    VmaMemoryUsage memoryUsage,
    VmaAllocationCreateFlags allocFlags = 0 )  [static]
```

creates a VkBuffer object.

Parameters

pBuffer	pointer to the buffer handle
allocSize	
usage	
memoryUsage	

Returns

3.47.1.2 createImage()

```
VkResult luna::utils::vulkanAllocator::createImage (
    VkImage * pImage,
    const VkImageUsageFlags & usageFlags,
    const VmaMemoryUsage & memoryUsage,
    const VkExtent3D & extent,
    const VkFormat & format )  [static]
```

creates a VkImage object.

Parameters

pImage	pointer to the image handle
usageFlags	
memoryUsage	VMA_MEMORY_USAGE
extent	image extend
format	VkImageFormat

Returns

3.47.1.3 createImageView()

```
VkResult luna::utils::vulkanAllocator::createImageView (
    VkImageView * pImageView,
    const VkImage & image,
    const VkFormat & format,
    const VkImageAspectFlags & imageAspectFlags ) [static]
```

creates a VkImageView object.

Parameters

pImageView	pointer to imageView handle
image	VkImage handle
format	
imageAspectFlags	

Returns

3.47.1.4 destroyBuffer()

```
void luna::utils::vulkanAllocator::destroyBuffer (
    VkBuffer buffer ) [static]
```

destroys the VkBuffer object.

Parameters

buffer	

3.47.1.5 destroyImage()

```
VkResult luna::utils::vulkanAllocator::destroyImage (
    const VkImage & image ) [static]
```

destroys the VkImage object.

Parameters

image	

Returns

3.47.1.6 destroyImageView() `VkResult luna::utils::vulkanAllocator::destroyImageView ( const VkImageView & imageView ) [static]`

destroys the VkImageView.

Parameters

imageView	

Returns

3.47.1.7 getAllocationInfo() `VmaAllocationInfo luna::utils::vulkanAllocator::getAllocationInfo ( const uint64_t & handle ) [static]`

returns the allocation info from the given handle.

Parameters

handle	

Returns

VmaAllocationInfo

3.47.1.8 init() `void luna::utils::vulkanAllocator::init ( ref< renderer::device > device ) [static]`

allocator constructor.

Parameters

ref<renderer::device>	device reference to the device

3.47.1.9 shutdown() `void luna::utils::vulkanAllocator::shutdown ( ) [static]`

destroys the allocator.

3.47.2 Member Data Documentation

3.47.2.1 allocations `objectStorage<vmaAllocation> luna::utils::vulkanAllocator::allocations [inline], [static], [private]`

3.47.2.2 pDevice `ref<renderer::device> luna::utils::vulkanAllocator::pDevice [inline], [static], [private]`

3.47.2.3 sAllocator `VmaAllocator luna::utils::vulkanAllocator::sAllocator [inline], [static], [private]`

3.47.2.4 transferQueue `VkQueue luna::utils::vulkanAllocator::transferQueue [private]`

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

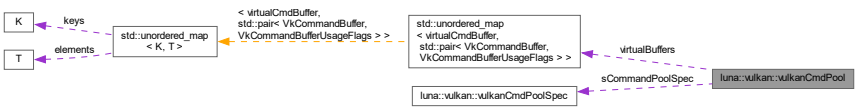
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkanAllocator.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkanAllocator.cpp

3.48 luna::vulkan::vulkanCmdPool Class Reference

abbstraction class around the vulkan commandbuffer and pool to introduce increased workflow safety and usability and to decrease bugs. all a VkCommandBuffer has been changed out by virtualCmdBuffer type.

`#include <vulkanCmdPool.h>`

Collaboration diagram for luna::vulkan::vulkanCmdPool:



Public Member Functions

- VkCommandBuffer vulkanCmdPool::operator[ ] (const virtualCmdBuffer commandBuffer)
- VkCommandBuffer operator= (const virtualCmdBuffer commandBuffer)
- vulkanCmdPool (const vulkanCmdPoolSpec &commandBufferSPec)

  vulkanCmdPool constructor
- virtual ~vulkanCmdPool ()

  commandPool destructor, does nothing at the moment
- VkResult createNewBuffer (virtualCmdBuffer *commandBuffer, const uint32_t &commandBufferCount, const VkCommandBufferLevel &commandBufferLevel)

  createNewBuffer creates a proteceted commandBuffer that is bound to the pool it is created with.
- VkResult begin (virtualCmdBuffer commandBuffer, const VkCommandBufferUsageFlags &usageFlags)

  starts recording a commandBuffer.
- VkResult end (virtualCmdBuffer commandBuffer)

  stops recording the commandBuffer.
- VkResult flush (VkQueue queue, uint64_t submitCount, const commandPoolSubmitInfo *pCommandPool↩ SubmitInfo, VkFence waitFence)

  flush executes all flushed/submitted commandBuffers.
- void freeCommandBuffer (virtualCmdBuffer *pCommandBuffers, uint32_t count)

  frees commandbuffers to be able to rerecord them.

Private Attributes

- std::unordered_map< virtualCmdBuffer, std::pair< VkCommandBuffer, VkCommandBufferUsageFlags > > virtualBuffers
- VkCommandPool commandPool
- vulkanCmdPoolSpec sCommandPoolSpec

3.48.1 Detailed Description

abbstraction class around the vulkan commandbuffer and pool to introduce increased workflow safety and usability and to decrease bugs. all a VkCommandBuffer has been changed out by virtualCmdBuffer type.

3.48.2 Constructor & Destructor Documentation

3.48.2.1 vulkanCmdPool()

```
luna::vulkan::vulkanCmdPool::vulkanCmdPool (
    const vulkanCmdPoolSpec & commandBufferSPec )
```

vulkanCmdPool constructor

Parameters

vulkanCmdPoolSpec	commandPoolSpecefication;

3.48.2.2 ~vulkanCmdPool() `luna::vulkan::vulkanCmdPool::~vulkanCmdPool ( ) [virtual]`

commandPool destructor, does nothing at the moment

3.48.3 Member Function Documentation

3.48.3.1 begin()

```
VkResult luna::vulkan::vulkanCmdPool::begin (
    virtualCmdBuffer commandBuffer,
    const VkCommandBufferUsageFlags & usageFlags )
```

starts recording a commandBuffer.

Parameters

virtualCommandBuffer	commandBuffer handle.
const	VkCommandBufferUsageFlags& usageFlags

3.48.3.2 createNewBuffer()

```
VkResult luna::vulkan::vulkanCmdPool::createNewBuffer (
    virtualCmdBuffer * commandBuffer,
    const uint32_t & commandBufferCount,
    const VkCommandBufferLevel & commandBufferLevel )
```

createNewBuffer creates a proteceted commandBuffer that is bound to the pool it is created with.

Parameters

*virtualCmdBuffer**	a command buffer array pointer or std::vector pointer.
const	uint32_t& commandBufferCount number of commandBuffers to be created.
const	VkCommandBufferLevel& commandBufferLevel specifies the commandBuffer type.

3.48.3.3 end()

```
VkResult luna::vulkan::vulkanCmdPool::end (
    virtualCmdBuffer commandBuffer )
```

stops recording the commandBuffer.

Parameters

virtualCommandBuffer	commandBuffer handle.

3.48.3.4 flush()

```
VkResult luna::vulkan::vulkanCmdPool::flush (
    VkQueue queue,
    uint64_t submitCount,
    const commandPoolSubmitInfo * pCommandPoolSubmitInfo,
    VkFence waitFence )
```

flush executes all flushed/submitted commandBuffers.

Parameters

VkQueue	queue
submiCount	the amount of commandPoolSubmitInfos
const	commandPoolSubmitInfo∗ pCommandPoolSubmitInfo

3.48.3.5 freeCommandBuffer()

```
void luna::vulkan::vulkanCmdPool::freeCommandBuffer (
    virtualCmdBuffer * pCommandBuffers,
    uint32_t count )
```

frees commandbuffers to be able to rerecord them.

Parameters

pCommandBuffers	a command buffer array pointer or std::vector pointer.
count	

3.48.3.6 operator=()

```
VkCommandBuffer luna::vulkan::vulkanCmdPool::operator= (
    const virtualCmdBuffer commandBuffer )  [inline]
```

3.48.3.7 vulkanCmdPool::operator[]()

```
VkCommandBuffer luna::vulkan::vulkanCmdPool::vulkanCmd↩
Pool::operator[] (
    const virtualCmdBuffer commandBuffer )
```

3.48.4 Member Data Documentation

3.48.4.1 commandPool

```
VkCommandPool luna::vulkan::vulkanCmdPool::commandPool  [private]
```

3.48.4.2 sCommandPoolSpec `vulkanCmdPoolSpec luna::vulkan::vulkanCmdPool::sCommandPoolSpec [private]`

3.48.4.3 virtualBuffers `std::unordered_map<virtualCmdBuffer, std::pair<VkCommandBuffer, VkCommandBufferUsageFlags> > luna::vulkan::vulkanCmdPool::virtualBuffers [private]`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanCmdPool.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanCmdPool.cpp

3.49 luna::vulkan::vulkanCmdPoolSpec Struct Reference

`#include <vulkanCmdPool.h>`

Public Attributes

- VkDevice device
- VkCommandPoolCreateFlags flags
- uint32_t queueFamilyIndex

3.49.1 Member Data Documentation

3.49.1.1 device `VkDevice luna::vulkan::vulkanCmdPoolSpec::device`

3.49.1.2 flags `VkCommandPoolCreateFlags luna::vulkan::vulkanCmdPoolSpec::flags`

3.49.1.3 queueFamilyIndex `uint32_t luna::vulkan::vulkanCmdPoolSpec::queueFamilyIndex`

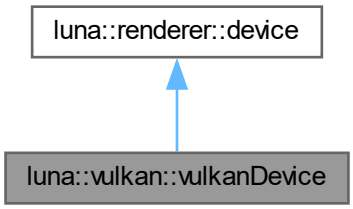
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanCmdPool.h

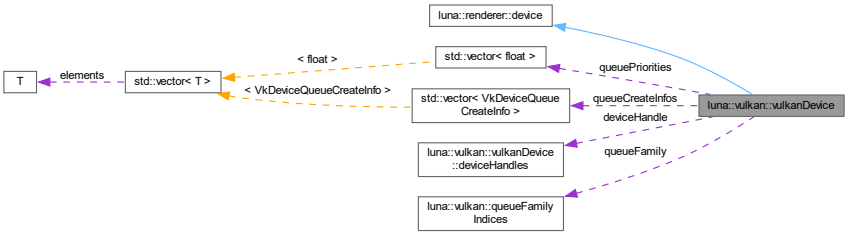
3.50 luna::vulkan::vulkanDevice Class Reference

```
#include <vulkanDevice.h>
```

Inheritance diagram for luna::vulkan::vulkanDevice:



Collaboration diagram for luna::vulkan::vulkanDevice:



Classes

- struct deviceHandles

Public Member Functions

- vulkanDevice (const ref< vulkan::window > &Window)
- virtual ~vulkanDevice ()
- void createContext () override

  creates the device context.
- void destroyContext () override
- VkViewport getViewport ()

  returns the swapchain viewport.
- VkRect2D getScissor ()

  returns the swapchain scissor.
- VkFormat getSwapFormat ()

  returns the swapchain format.
- uint32_t getQueueIndex (const vkb::QueueType &type)

returns the queue index.

- VkQueue getQueue (const vkb::QueueType &type)

  returns a queue based on the requested type .
- VkResult createFramebuffers (VkRenderPass renderPass)

  creates the appropriate framebuffers for the swapchain.
- deviceHandles getDeviceHandles ()

Public Attributes

- ref< vulkan::vulkanSwapchain > swapchain

Private Member Functions

primaryHelperFunctions helper functions used to create the device

- VkResult createInstance ()

  creates the vulkan instance.
- VkResult pickPhysicalDevice ()

  picks the most powerful rendering device.
- VkResult createLogicalDevice ()

  creates the logical device.

Private Attributes

- std::vector< float > queuePriorities = { 0.99f }
- VkSurfaceKHR surface = VK_NULL_HANDLE
- deviceHandles deviceHandle
- vulkan::queueFamilyIndices queueFamily
- std::vector< VkDeviceQueueCreateInfo > queueCreateInfos

secondaryHelperFunctions helper functions used by the primary helper functions

- std::vector< const char * > getRequiredExtensions ()

  checks if all requested validation layers are supported.
- VkDeviceQueueCreateInfo * createQueues ()

  rates the gpu based on expected performance with a score.
- static VKAPI_ATTR VkBool32 VKAPI_CALL vulkanDevice::debugCallback (VkDebugUtilsMessageSeverity↩FlagBitsEXT messageSeverity, VkDebugUtilsMessageTypeFlagsEXT messageTypes, const VkDebugUtils↩MessengerCallbackDataEXT *pCallbackData, void *pUserData)

  the debug callback function for vulkan debug and error catching.

3.50.1 Detailed Description

this is the vulkan device class and creates a rendering context.

```
ref<device> rederingDevice = std::make_shared<device>(new vulkanDevice(window));
```

3.50.2 Constructor & Destructor Documentation

3.50.2.1 vulkanDevice()

```
luna::vulkan::vulkanDevice::vulkanDevice (
    const ref< vulkan::window > & Window )
```

@creates a vulkan device using the ref to the main window.

Parameters

Window	

3.50.2.2 ~vulkanDevice() `luna::vulkan::vulkanDevice::~vulkanDevice ( ) [virtual]`

3.50.3 Member Function Documentation

3.50.3.1 createContext() `void luna::vulkan::vulkanDevice::createContext ( ) [override], [virtual]`

creates the device context.

Implements luna::renderer::device.

3.50.3.2 createFramebuffers() `VkResult luna::vulkan::vulkanDevice::createFramebuffers ( VkRenderPass renderPass )`

creates the appropriate framebuffers for the swapchain.

Parameters

renderPass	

Returns

VK_SUCCESS when buffer creation whas succesful

3.50.3.3 createInstance() `VkResult luna::vulkan::vulkanDevice::createInstance ( ) [private]`

creates the vulkan instance.

Returns

VK_SUCCESS when creation whas succesful.

VK_ERROR_LAYER_NOT_PRESENT when a requested validation layer is not supported

3.50.3.4 createLogicalDevice() `VkResult luna::vulkan::vulkanDevice::createLogicalDevice ( ) [private]`

creates the logical device.

Returns

VK_SUCCES

for VK_ERROR look at the vulkan documentation: https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/vkCreateDevice.html

3.50.3.5 createQueues() `VkDeviceQueueCreateInfo * luna::vulkan::vulkanDevice::createQueues ( ) [private]`

rates the gpu based on expected performance with a score.

Parameters

device	the physicalDevice(GPU) to be rated

Returns

int the score the physical device has.

3.50.3.6 destroyContext() `void luna::vulkan::vulkanDevice::destroyContext ( ) [override], [virtual]`

detroys the device context.

Implements luna::renderer::device.

3.50.3.7 getDeviceHandles() `vulkanDevice::deviceHandles luna::vulkan::vulkanDevice::getDeviceHandles ( )`

#brief returns the device subhandles.

Returns

deviceHandles struct

3.50.3.8 getQueue() `VkQueue luna::vulkan::vulkanDevice::getQueue ( const vkb::QueueType & type ) [inline]`

returns a queue based on the requested type .

Parameters

vkb::QueueType	type

3.50.3.9 getQueueIndex() `uint32_t luna::vulkan::vulkanDevice::getQueueIndex ( const vkb::QueueType & type ) [inline]`

returns the queue index.

Parameters

vkb:QueueType	type

3.50.3.10 getRequiredExtensions() `std::vector< const char * > luna::vulkan::vulkanDevice↩ ::getRequiredExtensions ( ) [private]`

checks if all requested validation layers are supported.

Parameters

validationLayers	requested validation layers.

Returns

VK_SUCCES when all requested validation layers are supported.

VK_ERROR_LAYER_NOT_PRESENT when a requested validation layer is not supported.

3.50.3.11 getScissor() `VkRect2D luna::vulkan::vulkanDevice::getScissor ( ) [inline]`

returns the swapchain scissor.

3.50.3.12 getSwapFormat() `VkFormat luna::vulkan::vulkanDevice::getSwapFormat ( ) [inline]`

returns the swapchain format.

3.50.3.13 getViewport() `VkViewport luna::vulkan::vulkanDevice::getViewport ( ) [inline]`

returns the swapchain viewport.

3.50.3.14 pickPhysicalDevice() `VkResult luna::vulkan::vulkanDevice::pickPhysicalDevice ( ) [private]`

picks the most powerful rendering device.

Returns

VK_SUCCES when suitable physical device(GPU) was found.

VK_ERROR_DEVICE_LOST when no suitable physical device(GPU) could be found.

VK_ERROR_INCOMPATIBLE_DRIVER when the driver version is outdated or incompatible.

3.50.3.15 vulkanDevice::debugCallback()

```
static VKAPI_ATTR VkBool32 VKAPI_CALL luna::vulkan↩
::vulkanDevice::vulkanDevice::debugCallback (
            VkDebugUtilsMessageSeverityFlagBitsEXT messageSeverity,
            VkDebugUtilsMessageTypeFlagsEXT messageTypes,
            const VkDebugUtilsMessengerCallbackDataEXT * pCallbackData,
            void * pUserData )  [static], [private]
```

the debug callback function for vulkan debug and error catching.

Parameters

messageSeverity	
messageTypes	
pCallbackData	
pUserData	

Returns

3.50.4 Member Data Documentation

3.50.4.1 deviceHandle `deviceHandles luna::vulkan::vulkanDevice::deviceHandle [private]`

3.50.4.2 queueCreateInfos `std::vector<VkDeviceQueueCreateInfo> luna::vulkan::vulkanDevice↩ ::queueCreateInfos [private]`

3.50.4.3 queueFamily `vulkan::queueFamilyIndices luna::vulkan::vulkanDevice::queueFamily [private]`

3.50.4.4 queuePriorities `std::vector<float> luna::vulkan::vulkanDevice::queuePriorities = { 0.99f }  [private]`

3.50.4.5 surface `VkSurfaceKHR luna::vulkan::vulkanDevice::surface = VK_NULL_HANDLE  [private]`

3.50.4.6 swapchain `ref<vulkan::vulkanSwapchain> luna::vulkan::vulkanDevice::swapchain`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanDevice.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanDevice.cpp

3.51 luna::vulkan::vulkanFeatureSupport Class Reference

`#include <vulkanFeatureSupport.h>`

Static Public Member Functions

- static VkResult init (const VkPhysicalDevice &physicalDevice)
- static std::pair< VkResult, VkFormatFeatureFlags > getFormatFeatures (const VkFormat &format, Vk↩ FormatFeatureFlags requestedFeatures)

Static Private Attributes

- static VkPhysicalDevice sPhysicalDevice

3.51.1 Detailed Description

not used yet.

3.51.2 Member Function Documentation

3.51.2.1 getFormatFeatures()

```
std::pair< VkResult, VkFormatFeatureFlags > luna::vulkan::vulkan↩
FeatureSupport::getFormatFeatures (
            const VkFormat & format,
            VkFormatFeatureFlags requestedFeatures )  [static]
```

3.51.2.2 init() `VkResult luna::vulkan::vulkanFeatureSupport::init ( const VkPhysicalDevice & physicalDevice ) [static]`

3.51.3 Member Data Documentation

3.51.3.1 sPhysicalDevice `VkPhysicalDevice luna::vulkan::vulkanFeatureSupport::sPhysicalDevice [inline], [static], [private]`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/vulkanFeatureSupport.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/vulkanFeatureSupport.cpp

3.52 luna::gui::vulkanImgui Class Reference

```
#include <vulkanImgui.h>
```

Public Member Functions

- vulkanImgui (ref< renderer::pipeline > pipeline)

  initializes imgui for vulkan.
- ~vulkanImgui ()

Private Attributes

- ref< renderer::pipeline > pipeline
- VkDescriptorPool imguiPool

3.52.1 Constructor & Destructor Documentation

3.52.1.1 vulkanImgui() `luna::gui::vulkanImgui::vulkanImgui ( ref< renderer::pipeline > pipeline )`

initializes imgui for vulkan.

Parameters

ref<renderer::pipeline>	pipeline reference to the vulkan pipeline in base class form

3.52.1.2 ~vulkanImgui() `luna::gui::vulkanImgui::~vulkanImgui ( )`

3.52.2 Member Data Documentation

3.52.2.1 imguiPool `VkDescriptorPool luna::gui::vulkanImgui::imguiPool [private]`

3.52.2.2 pipeline `ref<renderer::pipeline> luna::gui::vulkanImgui::pipeline [private]`

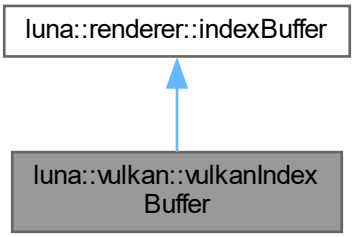
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/gui/vulkanImgui.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/gui/vulkanImgui.cpp

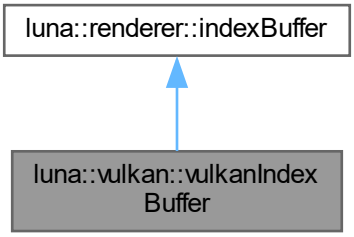
3.53 luna::vulkan::vulkanIndexBuffer Class Reference

`#include <vulkanIndexBuffer.h>`

Inheritance diagram for luna::vulkan::vulkanIndexBuffer:



Collaboration diagram for luna::vulkan::vulkanIndexBuffer:



Public Member Functions

- vulkanIndexBuffer (uint32_t *indices, uint32_t count)
- virtual ~vulkanIndexBuffer ()
- virtual void bind () const override
- virtual void unbind () const override
- virtual uint32_t getCount () const override

Protected Attributes

- VkBuffer vkIndexBuffer

Friends

- class vulkanPipeline

Additional Inherited Members

3.53.1 Constructor & Destructor Documentation

3.53.1.1 vulkanIndexBuffer()

```
luna::vulkan::vulkanIndexBuffer::vulkanIndexBuffer (
    uint32_t * indices,
    uint32_t count )
```

3.53.1.2 ~vulkanIndexBuffer()

```
luna::vulkan::vulkanIndexBuffer::~vulkanIndexBuffer ( ) [virtual]
```

3.53.2 Member Function Documentation

3.53.2.1 bind()

```
void luna::vulkan::vulkanIndexBuffer::bind ( ) const [override], [virtual]
```

Implements luna::renderer::indexBuffer.

3.53.2.2 getCount()

```
uint32_t luna::vulkan::vulkanIndexBuffer::getCount ( ) const [override],
[virtual]
```

Implements luna::renderer::indexBuffer.

3.53.2.3 unbind() `void luna::vulkan::vulkanIndexBuffer::unbind ( ) const [override], [virtual]`

Implements luna::renderer::indexBuffer.

3.53.3 Friends And Related Function Documentation

3.53.3.1 vulkanPipeline `friend class vulkanPipeline [friend]`

3.53.4 Member Data Documentation

3.53.4.1 vkIndexBuffer `VkBuffer luna::vulkan::vulkanIndexBuffer::vkIndexBuffer [protected]`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanIndexBuffer.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanIndexBuffer.cpp

3.54 luna::utils::vulkanObjectFactory Class Reference

static class that creates vulkan objects like buffers and images.

```
#include <vulkanObjectFactory.h>
```

Static Public Member Functions

- static VkResult init (ref< renderer::device > device)

  initializes the vulkan object factory.
- static VkResult createImage (VkImage *pImage, VkImageCreateInfo *pCreateInfo)

  creates a vulkan image.
- static VkResult createImage (VkImage *pImage, VkImageUsageFlags usageFlags, VkExtent3D extent, VkFormat format=VK_FORMAT_B8G8R8A8_UNORM)

  creates a vulkan image.
- static VkResult createImageView (VkImageView *pImageView, VkImageViewCreateInfo *pImageViewCreateInfo)

  creates a VkImageView.
- static VkResult createImageView (VkImageView *pImageView, const VkImage &image, const VkFormat &format, const VkImageAspectFlags &imageAspectFlags)

  creates a VkImageView.

Static Private Attributes

- static ref< renderer::device > pDevice

3.54.1 Detailed Description

static class that creates vulkan objects like buffers and images.

Note

this class is only meant to be included in the .cpp files not in the .h files

3.54.2 Member Function Documentation

3.54.2.1 createImage() [1/2]

```
VkResult luna::utils::vulkanObjectFactory::createImage (
    VkImage * pImage,
    VkImageCreateInfo * pCreateInfo = nullptr ) [static]
```

creates a vulkan image.

Parameters

VkImage∗	pImage pointer to the image handle
VkImageCreateInfo∗	pCreateInfo pointer to imageCreateInfo struct.

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImage.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/vkCreateImage.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImageCreateInfo.html

3.54.2.2 createImage() [2/2]

```
VkResult luna::utils::vulkanObjectFactory::createImage (
    VkImage * pImage,
    VkImageUsageFlags usageFlags,
    VkExtent3D extent,
    VkFormat format = VK_FORMAT_B8G8R8A8_UNORM ) [static]
```

creates a vulkan image.

Parameters

VkImage∗	pImage, pointer to the image handle
VkFormat	format, image format
VkImageUsageFlags,usageFlags	
VkExtent3D	extent, image extent (width height)

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImage.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/vkCreateImage.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImageCreateInfo.html

3.54.2.3 createImageView() [1/2]

```
VkResult luna::utils::vulkanObjectFactory::createImageView (
    VkImageView * pImageView,
    const VkImage & image,
    const VkFormat & format,
    const VkImageAspectFlags & imageAspectFlags ) [static]
```

creates a VkImageView.

Parameters

pImageView∗	pointer to the imageView.
VkImage	image handle
VkFormat	format image format
imageAspectFlags	

Returns

VK_SUCCES when creation was succesful.

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImageView.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/vkCreateImageView.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImageViewCreateInfo.html

3.54.2.4 createImageView() [2/2]

```
VkResult luna::utils::vulkanObjectFactory::createImageView (
    VkImageView * pImageView,
    VkImageViewCreateInfo * pImageViewCreateInfo = nullptr ) [static]
```

creates a VkImageView.

Parameters

pImageView∗	pointer to the imageView.
pImageViewCreateInfo∗	pointer to the creareInfoStruct

Returns

VK_SUCCES when creation was succesful.

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImageView.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/vkCreateImageView.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkImageViewCreateInfo.html

3.54.2.5 init()

```
VkResult luna::utils::vulkanObjectFactory::init (
    ref< renderer::device > device ) [static]
```

initializes the vulkan object factory.

3.54.3 Member Data Documentation

3.54.3.1 pDevice

```
ref<renderer::device> luna::utils::vulkanObjectFactory::pDevice [inline], [static], [private]
```

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

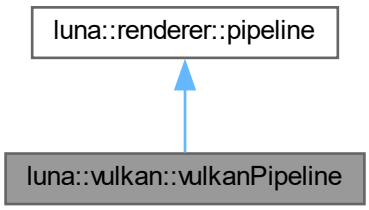
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkanObjectFactory.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkanObjectFactory.cpp

3.55 luna::vulkan::vulkanPipeline Class Reference

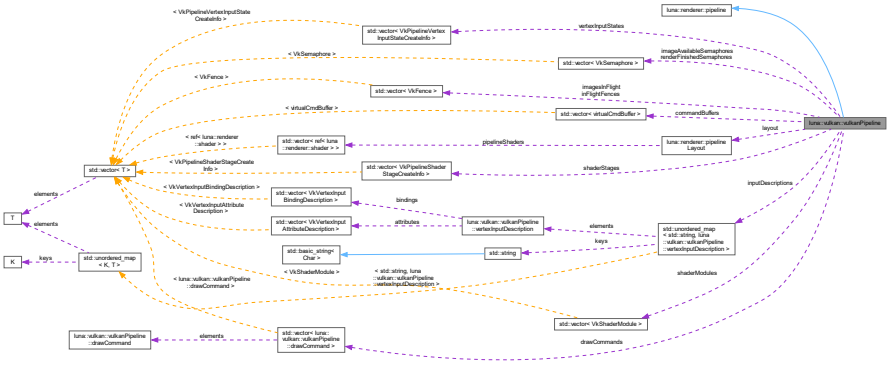
vulkan pipline implementation class.

```
#include <vulkanPipeline.h>
```

Inheritance diagram for luna::vulkan::vulkanPipeline:



Collaboration diagram for luna::vulkan::vulkanPipeline:



Classes

- struct drawCommand
- struct shaderStage
- struct Vertex
- struct vertexInputDescription

Public Member Functions

- vulkanPipeline (const renderer::pipelineLayout &layout)

  creates a vulkan pipeline.
- virtual ~vulkanPipeline ()

  pipeline destructor.
- virtual void createPipeline (const renderer::pipelineLayout &layout) override

  creates the vulkan pipeline.
- virtual void destroyPipeline () override

  destroys the vulkan pipeline.
- virtual void createCommands () override

  creates the renderer commands for the pipeline.
- virtual void begin () const override

  starts recording the pipline input.
- virtual void end () const override

  ends recording the pipline input.
- virtual void flush () override

  executes the pipeline commands.
- VkRenderPass getRenderPass ()

  return the pipeline renderpass.
- virtual void drawIndexed (const ref< renderer::vertexArray > &vertexArray, int indexCount=0) override
- void fnDrawIndexed (const ref< renderer::vertexArray > &vertexArray, int indexCount)

Public Attributes

- renderer::pipelineLayout layout
- uint32_t maxFramesInFlight = 0

Private Member Functions

- void createPipeLineLayout ()

  creates the pipeline layout.
- VkResult buildPipeline (VkDevice device, VkRenderPass pass)

  build the vulkan pipline.
- void createShaderStages ()

  creates the shader stages to be used in the pipeline.
- void createInputStates ()

  creates the vertex input.
- VkPipelineVertexInputStateCreateInfo createVertexInputState (const ref< renderer::shader > shader)

  creates the vertex input state for a single shader.
- void createBindingDescription (const ref< renderer::shader > shader)

  creates the binding descriptio for a single shader.
- void createAttributeDescription (const ref< renderer::shader > shader)

  creates the attribute description for a single shader.
- VkResult createShaderModule (ref< renderer::shader > shader, VkShaderModule *shaderModule)

  creates a shader module from a shader ref.
- VkFormat getResourceFormat (renderer::typeId resourceType)

  returns the corresponding resource type for a given .
- VkPipelineInputAssemblyStateCreateInfo inputAssemblyCreateInfo (VkPrimitiveTopology topology)

  creates the input Assembly
- VkPipelineRasterizationStateCreateInfo rasterizationStateCreateInfo (VkPolygonMode polygonMode)

  creates the rasterizer state create info.
- VkPipelineMultisampleStateCreateInfo multisamplingStateCreateInfo ()

  creates the multisampling info.
- VkPipelineColorBlendAttachmentState colorBlendAttachmentState ()

  the color blend attachment state(color writemask).
- VkPipelineLayoutCreateInfo pipelineLayoutCreateInfo ()

  creates the pipeline layout info.
- void initDefaultRenderpass ()

  initialzes the dafault pipeline renderPass.
- void initSyncStructures ()

  initializes the the pipeline syncronization structures. (VkFence and VkSemaphore)
- void destroySyncStructures ()

  destroys all pipeline sync structures. (VkFence and VkSemaphore)
- void transitionImageLayout (VkImage image, VkFormat format, VkImageLayout oldLayout, VkImageLayout newLayout, VkCommandBuffer commandBufffer)

  transitions the image layout.

Private Attributes

- VkRenderPass renderPass
- VkRenderPass imGuiRenderPass
- VkPipelineLayout pipelineLayout
- VkPipeline pipeline
- std::vector< VkPipelineShaderStageCreateInfo > shaderStages
- std::vector< VkShaderModule > shaderModules
- std::unordered_map< std::string, vertexInputDescription > inputDescriptions
- std::vector< VkPipelineVertexInputStateCreateInfo > vertexInputStates
- VkPipelineInputAssemblyStateCreateInfo inputAssemblyStateCreateInfo

- VkPipelineRasterizationStateCreateInfo pipelineRasterizationStateCreateInfo
- VkPipelineMultisampleStateCreateInfo pipelineMultisampleStateCreateInfo
- VkPipelineColorBlendAttachmentState pipelineColorBlendAttachementState
- std::vector< VkSemaphore > imageAvailableSemaphores
- std::vector< VkSemaphore > renderFinishedSemaphores
- std::vector< VkFence > inFlightFences
- std::vector< VkFence > imagesInFlight
- ref< vulkanCmdPool > commandPool = nullptr
- std::vector< virtualCmdBuffer > commandBuffers
- uint32_t swapchainImageIndex = 0
- uint32_t currentFrame = 0
- uint32_t prevFrame = 0
- VkQueue presentQueue
- uint64_t _frameNumber = 0
- bool justResized = false
- std::vector< drawCommand > drawCommands
- bool changedBoundBuffers

3.55.1 Detailed Description

vulkan pipline implementation class.

See also

renderer::pipeline.

3.55.2 Constructor & Destructor Documentation

3.55.2.1 vulkanPipeline()

```
luna::vulkan::vulkanPipeline::vulkanPipeline (
    const renderer::pipelineLayout & layout )
```

creates a vulkan pipeline.

Parameters

renderer::pipelineLayout	layout struct

3.55.2.2 ~vulkanPipeline()

```
virtual luna::vulkan::vulkanPipeline::~vulkanPipeline ( ) [inline], [virtual]
```

pipeline destructor.

3.55.3 Member Function Documentation

3.55.3.1 begin() `void luna::vulkan::vulkanPipeline::begin ( ) const [override], [virtual]`

starts recording the pipline input.

Implements luna::renderer::pipeline.

3.55.3.2 buildPipeline() `VkResult luna::vulkan::vulkanPipeline::buildPipeline ( VkDevice device, VkRenderPass pass ) [private]`

build the vulkan pipline.

Parameters

VkDevice	device
VkRenderPass	pass

Returns

VK_SUCCES when pipline was succesfully build

3.55.3.3 colorBlendAttachmentState() `VkPipelineColorBlendAttachmentState luna::vulkan::vulkan↩ Pipeline::colorBlendAttachmentState ( ) [private]`

the color blend attachment state(color writemask).

Returns

VkPipelineColorBlendAttachmentState struct

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/Vk↩ PipelineColorBlendAttachmentState.html

3.55.3.4 createAttributeDescription() `void luna::vulkan::vulkanPipeline::createAttributeDescription ( const ref< renderer::shader > shader ) [private]`

creates the attribute description for a single shader.

Parameters

ref<renderer::shader>	shader reference to a valid shader

3.55.3.5 createBindingDescription()

```
void luna::vulkan::vulkanPipeline::createBindingDescription (
        const ref< renderer::shader > shader ) [private]
```

creates the binding descriptio for a single shader.

Parameters

ref<renderer::shader>	shader reference to a valid shader

3.55.3.6 createCommands()

```
void luna::vulkan::vulkanPipeline::createCommands ( ) [override], [virtual]
```

creates the renderer commands for the pipeline.

Implements luna::renderer::pipeline.

3.55.3.7 createInputStates()

```
void luna::vulkan::vulkanPipeline::createInputStates ( ) [private]
```

creates the vertex input.

3.55.3.8 createPipeline()

```
void luna::vulkan::vulkanPipeline::createPipeline (
        const renderer::pipelineLayout & layout ) [override], [virtual]
```

creates the vulkan pipeline.

Parameters

renderer::pipelineLayout	layout struct

Implements luna::renderer::pipeline.

3.55.3.9 createPipeLineLayout()

```
void luna::vulkan::vulkanPipeline::createPipeLineLayout ( ) [private]
```

creates the pipeline layout.

3.55.3.10 createShaderModule()

```
VkResult luna::vulkan::vulkanPipeline::createShaderModule (
    ref< renderer::shader > shader,
    VkShaderModule * shaderModule ) [private]
```

creates a shader module from a shader ref.

Parameters

ref<renderer::shader>	shader the source shader
shaderModule	pointer to the vulkan shaderModule

Returns

VK_SUCCES when shaderModule was created sucessfully.

3.55.3.11 createShaderStages()

```
void luna::vulkan::vulkanPipeline::createShaderStages ( ) [private]
```

creates the shader stages to be used in the pipeline.

3.55.3.12 createVertexInputState()

```
VkPipelineVertexInputStateCreateInfo luna::vulkan::vulkan↩
Pipeline::createVertexInputState (
    const ref< renderer::shader > shader ) [private]
```

creates the vertex input state for a single shader.

Parameters

ref<renderer::shader>	shader reference to a valid shader

Returns

VkPipelineVertexInputStateCreateInfo

3.55.3.13 destroyPipeline()

```
void luna::vulkan::vulkanPipeline::destroyPipeline ( ) [override],
[virtual]
```

destroys the vulkan pipeline.

Implements luna::renderer::pipeline.

3.55.3.14 destroySyncStructures() `void luna::vulkan::vulkanPipeline::destroySyncStructures ( ) [private]`

destroys all pipeline sync structures. (VkFence and VkSemaphore)

3.55.3.15 drawIndexed() `void luna::vulkan::vulkanPipeline::drawIndexed ( const ref< renderer::vertexArray > & vertexArray, int indexCount = 0 ) [override], [virtual]`

3.55.3.16 end() `void luna::vulkan::vulkanPipeline::end ( ) const [override], [virtual]`

ends recording the pipline input.

Implements luna::renderer::pipeline.

3.55.3.17 flush() `void luna::vulkan::vulkanPipeline::flush ( ) [override], [virtual]`

executes the pipeline commands.

Implements luna::renderer::pipeline.

3.55.3.18 fnDrawIndexed() `void luna::vulkan::vulkanPipeline::fnDrawIndexed ( const ref< renderer::vertexArray > & vertexArray, int indexCount )`

3.55.3.19 getRenderPass() `VkRenderPass luna::vulkan::vulkanPipeline::getRenderPass ( ) [inline]`

return the pipeline renderpass.

3.55.3.20 getResourceFormat() `VkFormat luna::vulkan::vulkanPipeline::getResourceFormat ( renderer::typeId resourceType ) [private]`

returns the corresponding resource type for a given .

Parameters

renderer::typeId	resourceType

Returns

VkFormat the corresponding VkFormat for typeId

3.55.3.21 initDefaultRenderpass() `void luna::vulkan::vulkanPipeline::initDefaultRenderpass ( ) [private]`

initialzes the dafault pipeline renderPass.

3.55.3.22 initSyncStructures() `void luna::vulkan::vulkanPipeline::initSyncStructures ( ) [private]`

initializes the the pipeline syncronization structures. (VkFence and VkSemaphore)

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkFence.html

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkSemaphore.html

3.55.3.23 inputAssemblyCreateInfo() `VkPipelineInputAssemblyStateCreateInfo luna::vulkan::vulkanPipeline::inputAssemblyCreateInfo ( VkPrimitiveTopology topology ) [private]`

creates the input Assembly

Parameters

topology	

Returns

3.55.3.24 multisamplingStateCreateInfo() `VkPipelineMultisampleStateCreateInfo luna::vulkan::vulkanPipeline::multisamplingStateCreateInfo ( ) [private]`

creates the multisampling info.

Returns

VkPipelineMultisampleStateCreateInfo struct

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkPipelineMultisampleStateCreateInfo.html

3.55.3.25 pipelineLayoutCreateInfo()

```
VkPipelineLayoutCreateInfo luna::vulkan::vulkanPipeline::pipelineLayoutCreateInfo ( ) [private]
```

creates the pipeline layout info.

Returns

VkPipelineLayoutCreateInfo struct

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/vkCreatePipelineLayout.html

3.55.3.26 rasterizationStateCreateInfo()

```
VkPipelineRasterizationStateCreateInfo luna::vulkan::vulkanPipeline::rasterizationStateCreateInfo (
            VkPolygonMode polygonMode ) [private]
```

creates the rasterizer state create info.

Parameters

polygonMode	

Returns

VkPipelineRasterizationStateCreateInfo struct

See also

https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkPipelineRasterizationStateCreateInfo.html

3.55.3.27 transitionImageLayout()

```
void luna::vulkan::vulkanPipeline::transitionImageLayout (
            VkImage image,
            VkFormat format,
            VkImageLayout oldLayout,
            VkImageLayout newLayout,
            VkCommandBuffer commandBufffer ) [private]
```

transitions the image layout.

Parameters

VkImage	image imageHandle
VkFormat	format
VkImageLayout	oldLayout
VkImageLayout	newLayout
VkCommandBuffer	commandBufffer

3.55.4 Member Data Documentation

3.55.4.1 _frameNumber `uint64_t luna::vulkan::vulkanPipeline::_frameNumber = 0 [private]`

3.55.4.2 changedBoundBuffers `bool luna::vulkan::vulkanPipeline::changedBoundBuffers [private]`

3.55.4.3 commandBuffers `std::vector<virtualCmdBuffer> luna::vulkan::vulkanPipeline::commandBuffers [private]`

3.55.4.4 commandPool `ref<vulkanCmdPool> luna::vulkan::vulkanPipeline::commandPool = nullptr [private]`

3.55.4.5 currentFrame `uint32_t luna::vulkan::vulkanPipeline::currentFrame = 0 [private]`

3.55.4.6 drawCommands `std::vector<drawCommand> luna::vulkan::vulkanPipeline::drawCommands [private]`

3.55.4.7 imageAvailableSemaphores `std::vector<VkSemaphore> luna::vulkan::vulkanPipeline::imageAvailableSemaphores [private]`

3.55.4.8 imagesInFlight

`std::vector<VkFence> luna::vulkan::vulkanPipeline::imagesInFlight [private]`

3.55.4.9 imGuiRenderPass

`VkRenderPass luna::vulkan::vulkanPipeline::imGuiRenderPass [private]`

3.55.4.10 inFlightFences

`std::vector<VkFence> luna::vulkan::vulkanPipeline::inFlightFences [private]`

3.55.4.11 inputAssemblyStateCreateInfo

`VkPipelineInputAssemblyStateCreateInfo luna::vulkan↩ ::vulkanPipeline::inputAssemblyStateCreateInfo [private]`

3.55.4.12 inputDescriptions

`std::unordered_map<std::string,vertexInputDescription> luna↩ ::vulkan::vulkanPipeline::inputDescriptions [private]`

3.55.4.13 justResized

`bool luna::vulkan::vulkanPipeline::justResized = false [private]`

3.55.4.14 layout

`renderer::pipelineLayout luna::vulkan::vulkanPipeline::layout`

3.55.4.15 maxFramesInFlight

`uint32_t luna::vulkan::vulkanPipeline::maxFramesInFlight = 0`

3.55.4.16 pipeline

`VkPipeline luna::vulkan::vulkanPipeline::pipeline [private]`

3.55.4.17 pipelineColorBlendAttachementState

`VkPipelineColorBlendAttachmentState luna::vulkan↩ ::vulkanPipeline::pipelineColorBlendAttachementState [private]`

3.55.4.18 pipelineLayout

`VkPipelineLayout luna::vulkan::vulkanPipeline::pipelineLayout [private]`

3.55.4.19 pipelineMultisampleStateCreateInfo

`VkPipelineMultisampleStateCreateInfo luna::vulkan::vulkanPipeline::pipelineMultisampleStateCreateInfo [private]`

3.55.4.20 pipelineRasterizationStateCreateInfo

`VkPipelineRasterizationStateCreateInfo luna::vulkan::vulkanPipeline::pipelineRasterizationStateCreateInfo [private]`

3.55.4.21 presentQueue

`VkQueue luna::vulkan::vulkanPipeline::presentQueue [private]`

3.55.4.22 prevFrame

`uint32_t luna::vulkan::vulkanPipeline::prevFrame = 0 [private]`

3.55.4.23 renderFinishedSemaphores

`std::vector<VkSemaphore> luna::vulkan::vulkanPipeline::renderFinishedSemaphores [private]`

3.55.4.24 renderPass

`VkRenderPass luna::vulkan::vulkanPipeline::renderPass [private]`

3.55.4.25 shaderModules

`std::vector<VkShaderModule> luna::vulkan::vulkanPipeline::shaderModules [private]`

3.55.4.26 shaderStages

`std::vector<VkPipelineShaderStageCreateInfo> luna::vulkan::vulkanPipeline::shaderStages [private]`

3.55.4.27 swapchainImageIndex

`uint32_t luna::vulkan::vulkanPipeline::swapchainImageIndex = 0 [private]`

3.55.4.28 vertexInputStates `std::vector<VkPipelineVertexInputStateCreateInfo> luna::vulkan::vulkanPipeline::vertexInputStates [private]`

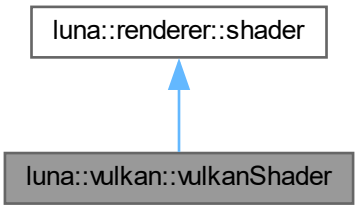
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanPipeline.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanPipeline.cpp

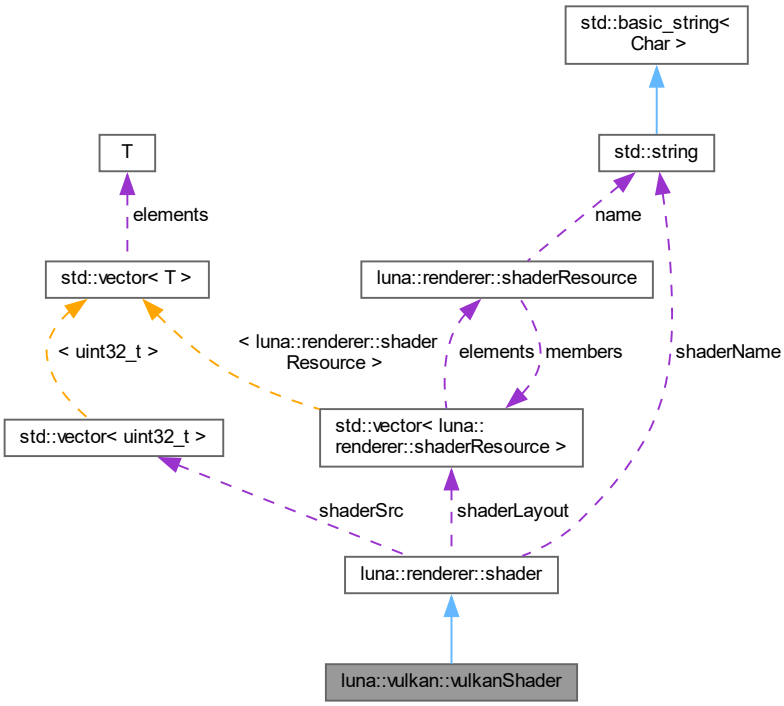
3.56 luna::vulkan::vulkanShader Class Reference

`#include <vulkanShader.h>`

Inheritance diagram for luna::vulkan::vulkanShader:



Collaboration diagram for luna::vulkan::vulkanShader:



Public Member Functions

- vulkanShader (const std::string &filepath, const renderer::shaderStage &stage)

  creates a vulkan shader from a filePath.
- virtual ~vulkanShader ()
- void bind () const override

  not implemented (reserved for future).
- void unbind () const override

  not implemented (reserved for future).
- void createLayout () override

  creates the shader layout.

Private Member Functions

- renderer::shaderResource getShaderResource (const spirv_cross::Resource &_shaderResource, const std::vector< uint32_t > &shaderSource, renderer::typeClass typeClass)

  get the shderResource information and returns a corresponding engine shaderresource.

Friends

- class renderer::shader

Additional Inherited Members

3.56.1 Constructor & Destructor Documentation

3.56.1.1 vulkanShader()

```
luna::vulkan::vulkanShader::vulkanShader (
    const std::string & filepath,
    const renderer::shaderStage & stage )
```

creates a vulkan shader from a filePath.

Parameters

filepath	the path to the source .GLSL file.

3.56.1.2 ~vulkanShader()

```
virtual luna::vulkan::vulkanShader::~vulkanShader ( ) [inline], [virtual]
```

3.56.2 Member Function Documentation

3.56.2.1 bind() `void luna::vulkan::vulkanShader::bind ( ) const [override], [virtual]`

not implemented (reserved for future).

Implements luna::renderer::shader.

3.56.2.2 createLayout() `void luna::vulkan::vulkanShader::createLayout ( ) [override], [virtual]`

creates the shader layout.

Implements luna::renderer::shader.

3.56.2.3 getShaderResource() `renderer::shaderResource luna::vulkan::vulkanShader::getShader↩ Resource (`

```
const spirv_cross::Resource & _shaderResource,
const std::vector< uint32_t > & shaderSource,
renderer::typeClass typeClass ) [private]
```

get the shderResource information and returns a corresponding engine shaderresource.

Parameters

_shaderResource	
shaderSource	
typeClass	

Returns

3.56.2.4 unbind() `void luna::vulkan::vulkanShader::unbind ( ) const [override], [virtual]`

not implemented (reserved for future).

Implements luna::renderer::shader.

3.56.3 Friends And Related Function Documentation

3.56.3.1 renderer::shader `friend class renderer::shader [friend]`

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

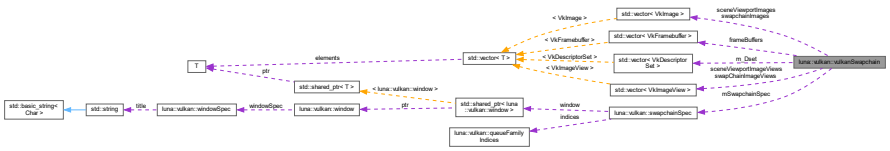
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanShader.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanShader.cpp

3.57 luna::vulkan::vulkanSwapchain Class Reference

the vulkanSwapchain is a collection of vulkan frambuffers and image views to wich the scene will be .

```
#include <vulkanSwapchain.h>
```

Collaboration diagram for luna::vulkan::vulkanSwapchain:



Public Member Functions

- vulkanSwapchain (const swapchainSpec &swapChainSpec)
- virtual ~vulkanSwapchain ()
- VkResult createSwapchain (const swapchainSpec &swapChainSpec)

  creates the swapchain.
- VkResult recreateSwapchain ()

  recreates the swapchain.
- VkViewport getViewport ()

  returns the main viewport handle.
- VkRect2D getScissor ()

  returns the viewport scissor.
- VkResult initViewport (uint32_t maxFramesInFlight)

  initializes the main viewport.
- VkResult recreateViewport (uint32_t maxFramesInFlight)

  recreates the swapchain.
- VkFormat getSurfaceFormat ()

  returns the surface format.
- VkFramebuffer getFrameBuffer (uint8_t index)

  returns the framebuffer given an index.
- VkDescriptorSet getViewportImage (uint8_t currentFrame)

  returns a ViewportImage descriptor.

Public Attributes

- std::vector< VkImage > sceneViewportImages
- vkb::Swapchain mSwapchain
- std::vector< VkFramebuffer > frameBuffers
- std::vector< VkDescriptorSet > m_Dset

Private Member Functions

- VkResult destroySwapchain ()

  destroys the device bound swapchain.

Private Attributes

- swapchainSpec mSwapchainSpec
- std::vector< VkImage > swapchainImages
- std::vector< VkImageView > swapChainImageViews
- VkFormat swapchainImageFormat
- bool init = false
- VkSampler viewportSampler
- VkSurfaceCapabilitiesKHR surfaceCapaBilities
- std::vector< VkImageView > sceneViewportImageViews

3.57.1 Detailed Description

the vulkanSwapchain is a collection of vulkan frambuffers and image views to wich the scene will be .

3.57.2 Constructor & Destructor Documentation

3.57.2.1 vulkanSwapchain()

```
luna::vulkan::vulkanSwapchain::vulkanSwapchain (
    const swapchainSpec & swapChainSpec )
```

3.57.2.2 ~vulkanSwapchain()

```
luna::vulkan::vulkanSwapchain::~vulkanSwapchain ( ) [virtual]
```

3.57.3 Member Function Documentation

3.57.3.1 createSwapchain()

```
VkResult luna::vulkan::vulkanSwapchain::createSwapchain (
    const swapchainSpec & swapChainSpec )
```

creates the swapchain.

Parameters

swapChainSpec	specification for the swapchain type.

Returns

VK_SUCCESS whe the swapchain was created succesfuly

for appropriate error info see: https://registry.khronos.org/vulkan/specs/1.↩3-extensions/man/html/vkCreateSwapchainKHR.html

3.57.3.2 destroySwapchain() `VkResult luna::vulkan::vulkanSwapchain::destroySwapchain ( ) [private]`

destroys the device bound swapchain.

Returns

VK_SUCCES

3.57.3.3 getFrameBuffer() `VkFramebuffer luna::vulkan::vulkanSwapchain::getFrameBuffer ( uint8_t index ) [inline]`

returns the framebuffer given an index.

Parameters

VkFrameBuffer	the framebuffer handle.

3.57.3.4 getScissor() `VkRect2D luna::vulkan::vulkanSwapchain::getScissor ( )`

returns the viewport scissor.

Returns

VkRect2D extent.

3.57.3.5 getSurfaceFormat() `VkFormat luna::vulkan::vulkanSwapchain::getSurfaceFormat ( ) [inline]`

returns the surface format.

Parameters

VkFormat	

3.57.3.6 getViewport() `VkViewport luna::vulkan::vulkanSwapchain::getViewport ( )`

returns the main viewport handle.

Returns

VkViewport main handle.

3.57.3.7 getViewportImage() `VkDescriptorSet luna::vulkan::vulkanSwapchain::getViewportImage ( uint8_t currentFrame ) [inline]`

returns a ViewportImage descriptor.

Parameters

VkDescriptorSet	image descriptor.

3.57.3.8 initViewport() `VkResult luna::vulkan::vulkanSwapchain::initViewport ( uint32_t maxFramesInFlight )`

initializes the main viewport.

Returns

VK_SUCCESS when the initialization was succesful.

3.57.3.9 recreateSwapchain() `VkResult luna::vulkan::vulkanSwapchain::recreateSwapchain ( )`

recreates the swapchain.

Returns

returns VK_SUCCESS on succesful creation.

3.57.3.10 recreateViewport() `VkResult luna::vulkan::vulkanSwapchain::recreateViewport ( uint32_t maxFramesInFlight )`

recreates the swapchain.

Parameters

maxFramesInFlight	

Returns

VK_SUCCES when recreation was succesful.

3.57.4 Member Data Documentation

3.57.4.1 frameBuffers

`std::vector<VkFramebuffer> luna::vulkan::vulkanSwapchain::frameBuffers`

3.57.4.2 init

`bool luna::vulkan::vulkanSwapchain::init = false [private]`

3.57.4.3 m_Dset

`std::vector<VkDescriptorSet> luna::vulkan::vulkanSwapchain::m_Dset`

3.57.4.4 mSwapchain

`vkb::Swapchain luna::vulkan::vulkanSwapchain::mSwapchain`

3.57.4.5 mSwapchainSpec

`swapchainSpec luna::vulkan::vulkanSwapchain::mSwapchainSpec [private]`

3.57.4.6 sceneViewportImages

`std::vector<VkImage> luna::vulkan::vulkanSwapchain::sceneViewportImages`

3.57.4.7 sceneViewportImageViews

`std::vector<VkImageView> luna::vulkan::vulkanSwapchain::sceneViewportImageViews [private]`

3.57.4.8 surfaceCapaBilities

`VkSurfaceCapabilitiesKHR luna::vulkan::vulkanSwapchain::surfaceCapaBilities [private]`

3.57.4.9 swapchainImageFormat

`VkFormat luna::vulkan::vulkanSwapchain::swapchainImageFormat [private]`

3.57.4.10 swapchainImages

`std::vector<VkImage> luna::vulkan::vulkanSwapchain::swapchainImages [private]`

3.57.4.11 swapChainImageViews `std::vector<VkImageView> luna::vulkan::vulkanSwapchain::swap↩ ChainImageViews [private]`

3.57.4.12 viewportSampler `VkSampler luna::vulkan::vulkanSwapchain::viewportSampler [private]`

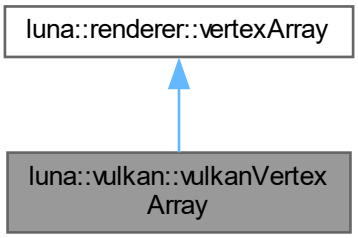
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanSwapchain.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanSwapchain.cpp

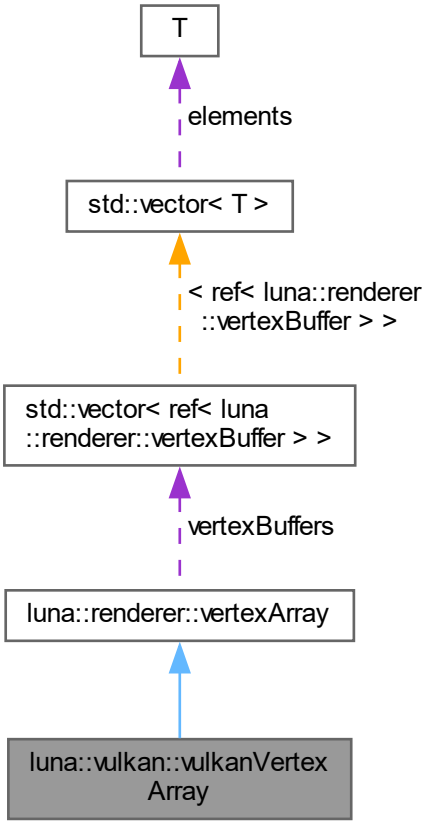
3.58 luna::vulkan::vulkanVertexArray Class Reference

```
#include <vulkanVertexArray.h>
```

Inheritance diagram for luna::vulkan::vulkanVertexArray:



Collaboration diagram for luna::vulkan::vulkanVertexArray:



Public Member Functions

- virtual void bind () const override
- virtual void unbind () const override
- virtual void addVertexBuffer (const ref< renderer::vertexBuffer > &vertexBuffer) override
- virtual void setIndexBuffer (const ref< renderer::indexBuffer > &indexBuffer) override
- virtual const std::vector< ref< renderer::vertexBuffer > > & getVertexBuffers () const override
- virtual const ref< renderer::indexBuffer > & getIndexBuffer () const override

Additional Inherited Members

3.58.1 Member Function Documentation

3.58.1.1 addVertexBuffer()

```
void luna::vulkan::vulkanVertexArray::addVertexBuffer (
    const ref< renderer::vertexBuffer > & vertexBuffer ) [override], [virtual]
```

3.58.1.2 bind() `void luna::vulkan::vulkanVertexArray::bind ( ) const [override], [virtual]`

Implements luna::renderer::vertexArray.

3.58.1.3 getIndexBuffer() `virtual const ref< renderer::indexBuffer > & luna::vulkan::vulkan↩ VertexArray::getIndexBuffer ( ) const [inline], [override], [virtual]`

Implements luna::renderer::vertexArray.

3.58.1.4 getVertexBuffers() `virtual const std::vector< ref< renderer::vertexBuffer > > & luna↩ ::vulkan::vulkanVertexArray::getVertexBuffers ( ) const [inline], [override], [virtual]`

Implements luna::renderer::vertexArray.

3.58.1.5 setIndexBuffer() `void luna::vulkan::vulkanVertexArray::setIndexBuffer ( const ref< renderer::indexBuffer > & indexBuffer ) [override], [virtual]`

3.58.1.6 unbind() `void luna::vulkan::vulkanVertexArray::unbind ( ) const [override], [virtual]`

Implements luna::renderer::vertexArray.

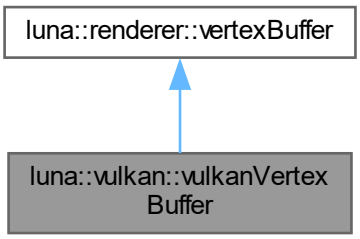
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanVertexArray.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanVertexArray.cpp

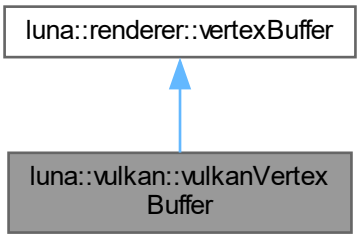
3.59 luna::vulkan::vulkanVertexBuffer Class Reference

`#include <vulkanVertexBuffer.h>`

Inheritance diagram for luna::vulkan::vulkanVertexBuffer:



Collaboration diagram for luna::vulkan::vulkanVertexBuffer:



Public Member Functions

- vulkanVertexBuffer (uint32_t size)
- vulkanVertexBuffer (const void *data, uint32_t size)
- virtual ~vulkanVertexBuffer ()
- virtual void bind () const override
- virtual void unbind () const override
- virtual void setData (const void *data, uint32_t size) override

Protected Attributes

- VkBuffer vkVertexBuffer

Friends

- class vulkanPipeline

Additional Inherited Members

3.59.1 Constructor & Destructor Documentation

3.59.1.1 vulkanVertexBuffer() [1/2]

```
luna::vulkan::vulkanVertexBuffer::vulkanVertexBuffer (
    uint32_t size )
```

3.59.1.2 vulkanVertexBuffer() [2/2]

```
luna::vulkan::vulkanVertexBuffer::vulkanVertexBuffer (
    const void * data,
    uint32_t size )
```

3.59.1.3 ~vulkanVertexBuffer() `luna::vulkan::vulkanVertexBuffer::~vulkanVertexBuffer ( ) [virtual]`

3.59.2 Member Function Documentation

3.59.2.1 bind() `void luna::vulkan::vulkanVertexBuffer::bind ( ) const [override], [virtual]`

Implements luna::renderer::vertexBuffer.

3.59.2.2 setData()

```
void luna::vulkan::vulkanVertexBuffer::setData (
    const void * data,
    uint32_t size ) [override], [virtual]
```

Implements luna::renderer::vertexBuffer.

3.59.2.3 unbind() `void luna::vulkan::vulkanVertexBuffer::unbind ( ) const [override], [virtual]`

Implements luna::renderer::vertexBuffer.

3.59.3 Friends And Related Function Documentation

3.59.3.1 vulkanPipeline `friend class vulkanPipeline [friend]`

3.59.4 Member Data Documentation

3.59.4.1 vkVertexBuffer `VkBuffer luna::vulkan::vulkanVertexBuffer::vkVertexBuffer [protected]`

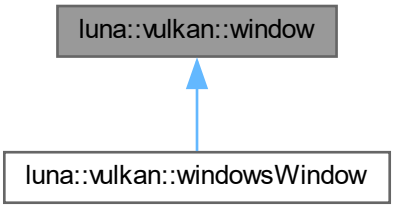
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanVertexBuffer.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanVertexBuffer.cpp

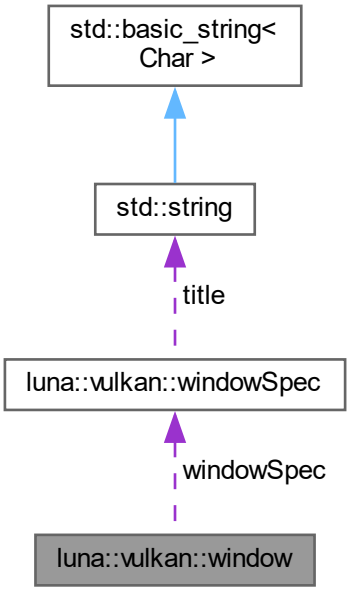
3.60 luna::vulkan::window Class Reference

```
#include <window.h>
```

Inheritance diagram for luna::vulkan::window:



Collaboration diagram for luna::vulkan::window:



Public Types

- using eventCallbackFn = std::function< void(Event &)>

Public Member Functions

- virtual ~window ()
- virtual void onUpdate ()=0
- virtual uint32_t getWidth () const =0
- virtual uint32_t getHeight () const =0
- virtual void setEventCallBack (const eventCallbackFn &callback)=0
- virtual void * getWindow ()=0

Static Public Member Functions

- static window * windowCreate (const windowSpec &WindowSpec=windowSpec::windowSpec())

Public Attributes

- windowSpec windowSpec

Static Public Attributes

- static Api graphicsApi = Api::VULKAN

3.60.1 Member Typedef Documentation

3.60.1.1 eventCallbackFn `using luna::vulkan::window::eventCallbackFn = std::function<void(Event&)>`

3.60.2 Constructor & Destructor Documentation

3.60.2.1 ~window() `virtual luna::vulkan::window::~window ( ) [inline], [virtual]`

3.60.3 Member Function Documentation

3.60.3.1 getHeight() `virtual uint32_t luna::vulkan::window::getHeight ( ) const [pure virtual]`

Implemented in luna::vulkan::windowsWindow.

3.60.3.2 getWidth() `virtual uint32_t luna::vulkan::window::getWidth ( ) const [pure virtual]`

Implemented in luna::vulkan::windowsWindow.

3.60.3.3 getWindow() `virtual void * luna::vulkan::window::getWindow ( ) [pure virtual]`

Implemented in luna::vulkan::windowsWindow.

3.60.3.4 onUpdate() `virtual void luna::vulkan::window::onUpdate ( ) [pure virtual]`

Implemented in luna::vulkan::windowsWindow.

3.60.3.5 setEventCallBack() `virtual void luna::vulkan::window::setEventCallBack ( const eventCallbackFn & callback ) [pure virtual]`

Implemented in luna::vulkan::windowsWindow.

3.60.3.6 windowCreate() `window * luna::vulkan::window::windowCreate ( const windowSpec & WindowSpec = windowSpec::windowSpec() ) [static]`

3.60.4 Member Data Documentation

3.60.4.1 graphicsApi `Api luna::vulkan::window::graphicsApi = Api::VULKAN [static]`

3.60.4.2 windowSpec `windowSpec luna::vulkan::window::windowSpec`

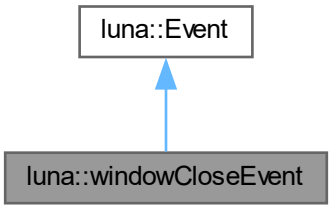
The documentation for this class was generated from the following files:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/window/window.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/platform/windows/windowsWindow.cpp

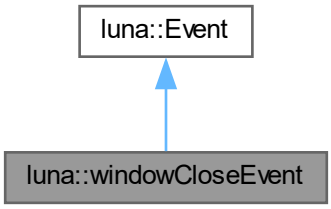
3.61 luna::windowCloseEvent Class Reference

```
#include <applicationEvent.h>
```

Inheritance diagram for luna::windowCloseEvent:



Collaboration diagram for luna::windowCloseEvent:



Public Member Functions

- windowCloseEvent ()=default

Additional Inherited Members

3.61.1 Constructor & Destructor Documentation

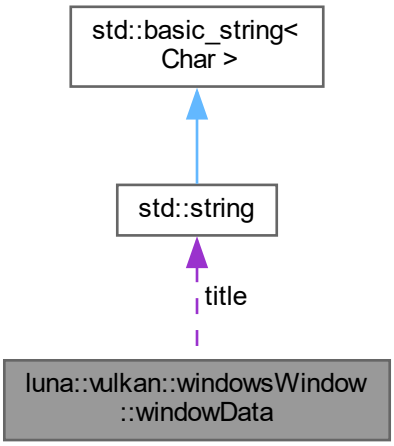
3.61.1.1 windowCloseEvent() `luna::windowCloseEvent::windowCloseEvent ( ) [default]`

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

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/applicationEvent.h

3.62 luna::vulkan::windowsWindow::windowData Struct Reference

Collaboration diagram for luna::vulkan::windowsWindow::windowData:



Public Attributes

- uint32_t width = 0
- uint32_t height = 0
- std::string title {}
- eventCallbackFn eventCallbackFn

3.62.1 Member Data Documentation

3.62.1.1 eventCallbackFn `eventCallbackFn luna::vulkan::windowsWindow::windowData::event↩ CallbackFn`

3.62.1.2 height `uint32_t luna::vulkan::windowsWindow::windowData::height = 0`

3.62.1.3 title `std::string luna::vulkan::windowsWindow::windowData::title {}`

3.62.1.4 width `uint32_t luna::vulkan::windowsWindow::windowData::width = 0`

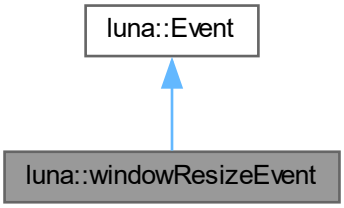
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/platform/windows/windowsWindow.h

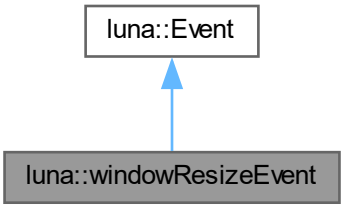
3.63 luna::windowResizeEvent Class Reference

`#include <applicationEvent.h>`

Inheritance diagram for luna::windowResizeEvent:



Collaboration diagram for luna::windowResizeEvent:



Public Member Functions

- windowResizeEvent (unsigned int width, unsigned int height)
- unsigned int getWidth () const
- unsigned int getHeight () const
- std::string toString () const override

Private Attributes

- unsigned int m_Width
- unsigned int m_Height

Additional Inherited Members

3.63.1 Constructor & Destructor Documentation

3.63.1.1 windowResizeEvent()

```
luna::windowResizeEvent::windowResizeEvent (
    unsigned int width,
    unsigned int height ) [inline]
```

3.63.2 Member Function Documentation

3.63.2.1 getHeight()

```
unsigned int luna::windowResizeEvent::getHeight ( ) const [inline]
```

3.63.2.2 getWidth()

```
unsigned int luna::windowResizeEvent::getWidth ( ) const [inline]
```

3.63.2.3 toString()

```
std::string luna::windowResizeEvent::toString ( ) const [inline], [override], [virtual]
```

Reimplemented from luna::Event.

3.63.3 Member Data Documentation

3.63.3.1 m_Height

```
unsigned int luna::windowResizeEvent::m_Height [private]
```

3.63.3.2 m_Width

```
unsigned int luna::windowResizeEvent::m_Width [private]
```

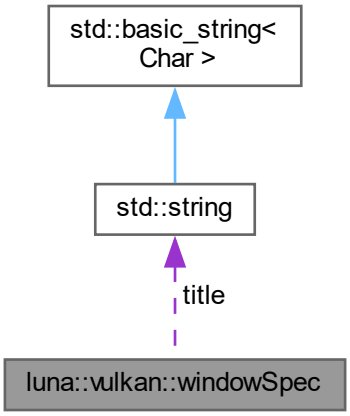
The documentation for this class was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/applicationEvent.h

3.64 luna::vulkan::windowSpec Struct Reference

```
#include <window.h>
```

Collaboration diagram for luna::vulkan::windowSpec:



Public Member Functions

- windowSpec (const std::string &Title="Luna Engine", uint32_t Width=1280, uint32_t Height=720)

Public Attributes

- uint32_t width
- uint32_t height
- std::string title

3.64.1 Constructor & Destructor Documentation

3.64.1.1 windowSpec()

```
luna::vulkan::windowSpec::windowSpec (
    const std::string & Title = "Luna Engine",
    uint32_t Width = 1280,
    uint32_t Height = 720 )  [inline]
```

3.64.2 Member Data Documentation

3.64.2.1 height `uint32_t luna::vulkan::windowSpec::height`

3.64.2.2 title `std::string luna::vulkan::windowSpec::title`

3.64.2.3 width `uint32_t luna::vulkan::windowSpec::width`

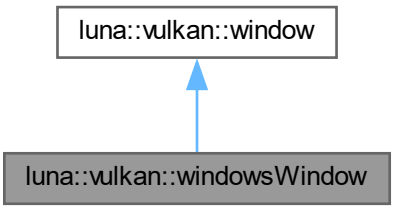
The documentation for this struct was generated from the following file:

- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/window/window.h

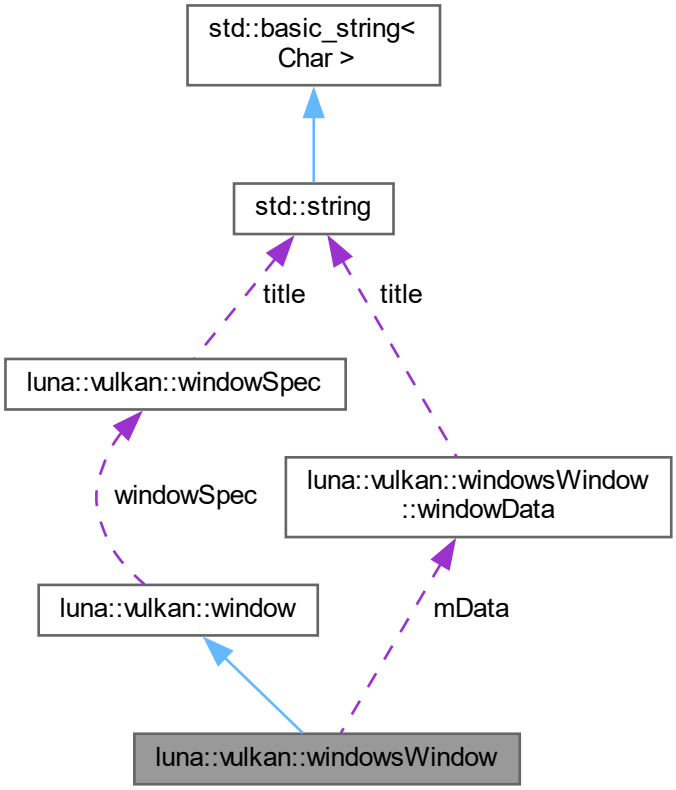
3.65 luna::vulkan::windowsWindow Class Reference

```
#include <windowsWindow.h>
```

Inheritance diagram for luna::vulkan::windowsWindow:



Collaboration diagram for luna::vulkan::windowsWindow:



Classes

- struct windowData

Public Member Functions

- windowsWindow (const vulkan::windowSpec &windowData)

  creates a windows window.
- virtual ~windowsWindow ()
- void onUpdate () override

  polls all the window and input events.
- uint32_t getWidth () const override

  returs the current width of the window.
- uint32_t getHeight () const override

  return the current height of the window.
- void setEventCallBack (const eventCallbackFn &callback) override

  set the window event callback function.
- void * getWindow () override

  returns the GLFW window pointer.

Private Member Functions

- virtual void init (const vulkan::windowSpec &windowInfo)
- virtual void shutDown ()

  shutsdown the window and GLFW.

Private Attributes

- GLFWwindow * _window
- windowData mData

Additional Inherited Members

3.65.1 Constructor & Destructor Documentation

3.65.1.1 windowsWindow() `luna::vulkan::windowsWindow::windowsWindow ( const vulkan::windowSpec & windowData )`

creates a windows window.

Parameters

windowData	windowSpec struct with the window data

3.65.1.2 ~windowsWindow() `luna::vulkan::windowsWindow::~windowsWindow ( ) [virtual]`

3.65.2 Member Function Documentation

3.65.2.1 getHeight() `uint32_t luna::vulkan::windowsWindow::getHeight ( ) const [inline], [override], [virtual]`

return the current height of the window.

Implements luna::vulkan::window.

3.65.2.2 getWidth() `uint32_t luna::vulkan::windowsWindow::getWidth ( ) const [inline], [override], [virtual]`

returs the current width of the window.

Implements luna::vulkan::window.

3.65.2.3 getWindow() `void * luna::vulkan::windowsWindow::getWindow ( ) [inline], [override], [virtual]`

returns the GLFW window pointer.

Returns

Implements luna::vulkan::window.

3.65.2.4 init() `void luna::vulkan::windowsWindow::init ( const vulkan::windowSpec & windowInfo ) [private], [virtual]`

initializes the window and also GLFW if need be.

Parameters

windowInfo	

3.65.2.5 onUpdate() `void luna::vulkan::windowsWindow::onUpdate ( ) [override], [virtual]`

polls all the window and input events.

Implements luna::vulkan::window.

3.65.2.6 setEventCallBack() `void luna::vulkan::windowsWindow::setEventCallBack ( const eventCallbackFn & callback ) [inline], [override], [virtual]`

set the window event callback function.

Implements luna::vulkan::window.

3.65.2.7 shutDown() `void luna::vulkan::windowsWindow::shutDown ( ) [private], [virtual]`

shutsdown the window and GLFW.

3.65.3 Member Data Documentation

3.65.3.1 _window `GLFWwindow* luna::vulkan::windowsWindow::_window [private]`

3.65.3.2 mData `windowData luna::vulkan::windowsWindow::mData [private]`

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

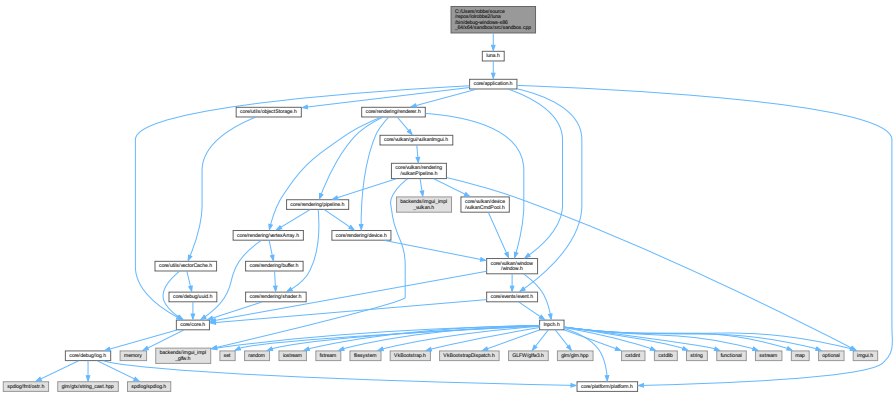
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/platform/windows/windowsWindow.h
- C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/platform/windows/windowsWindow.cpp

4 File Documentation

4.1 C:/Users/robbe/source/repos/lolrobbe2/luna/bin/debug-windows-x86_↩ 64/x64/sandbox/src/sandbox.cpp File Reference

`#include <luna.h>`

Include dependency graph for sandbox.cpp:



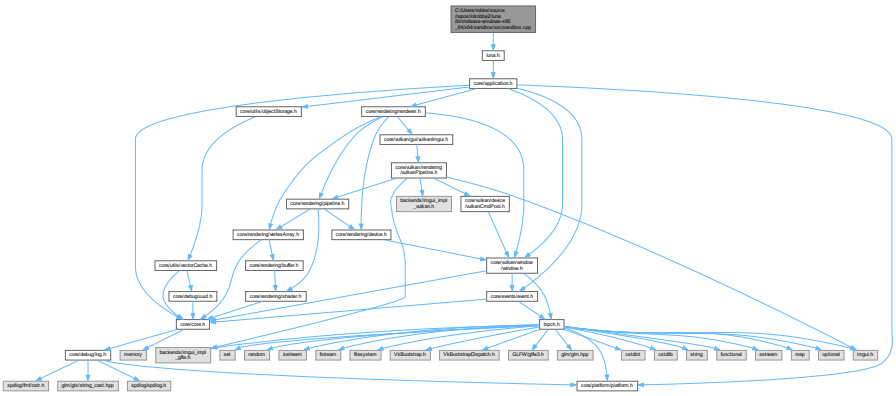
Classes

- class sandbox

4.2 C:/Users/robbe/source/repos/lolrobbe2/luna/bin/release-windows-x86_↩ 64/x64/sandbox/src/sandbox.cpp File Reference

`#include <luna.h>`

Include dependency graph for sandbox.cpp:



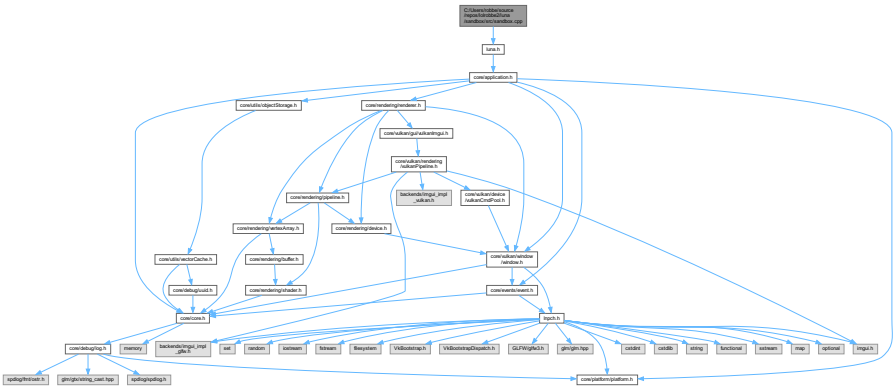
Classes

- class sandbox

4.3 C:/Users/robbe/source/repos/lolrobbe2/luna/sandbox/src/sandbox.cpp File Reference

`#include <luna.h>`

Include dependency graph for sandbox.cpp:



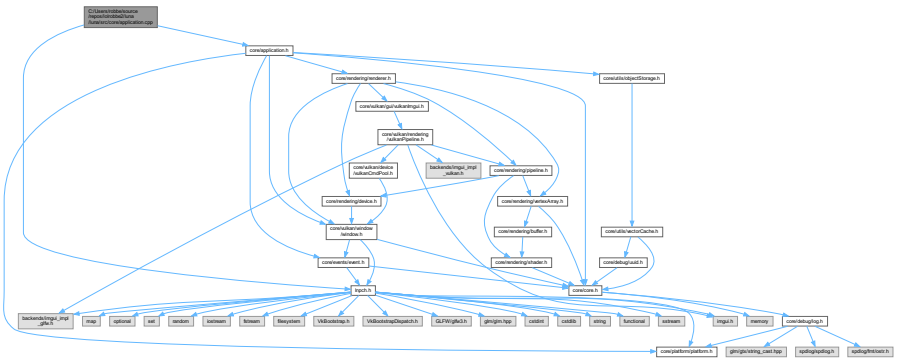
Classes

- class sandbox

4.4 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/application.cpp File Reference

```
#include <lnpch.h>
#include <core/application.h>
```

Include dependency graph for application.cpp:



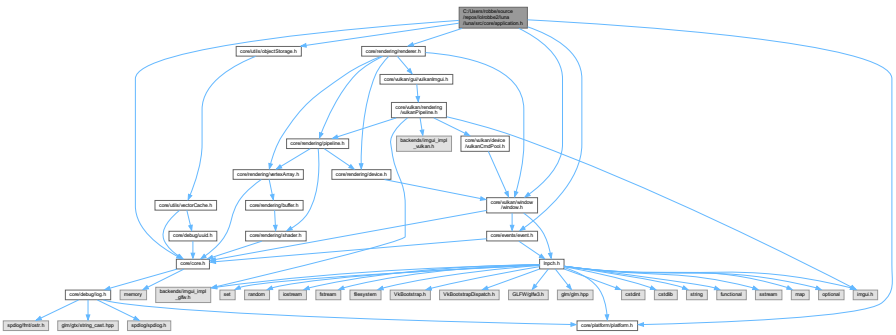
Namespaces

- namespace luna
- namespace luna::application

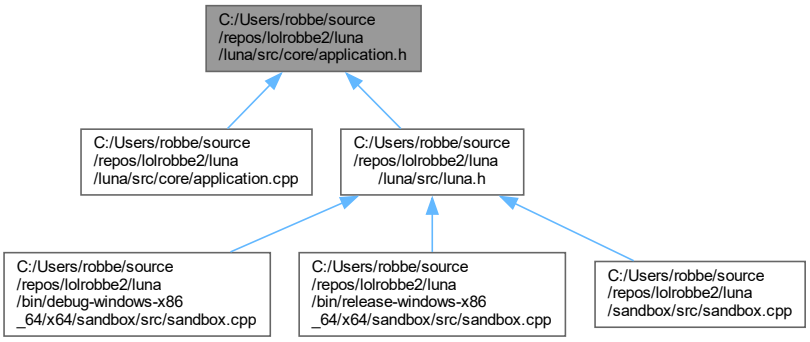
4.5 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/application.h File Reference

```
#include <core/core.h>
#include <core/platform/platform.h>
#include <core/vulkan/window/window.h>
#include <core/events/event.h>
#include <core/rendering/renderer.h>
#include <core/utils/objectStorage.h>
```

Include dependency graph for application.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::application::application

Namespaces

- namespace luna
- namespace luna::application

Functions

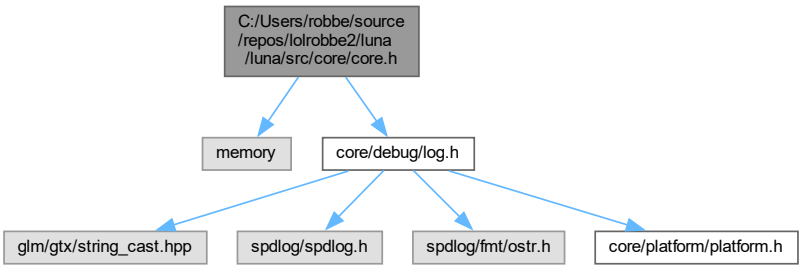
- application * luna::application::createApplication ()

  creates the application and returns a pointer to the appliccation.

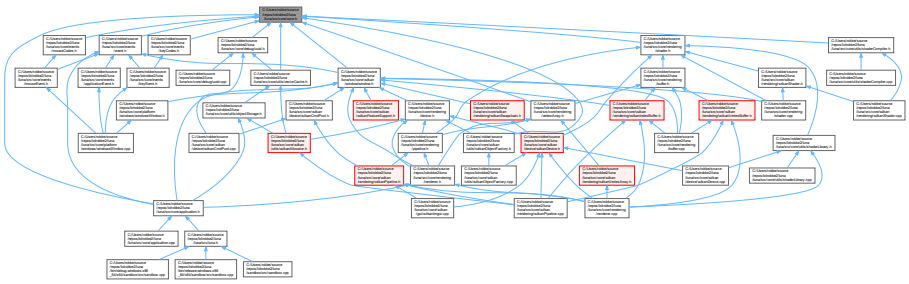
4.6 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/core.h File Reference

```
#include <memory>
#include <core/debug/log.h>
```

Include dependency graph for core.h:



This graph shows which files directly or indirectly include this file:



Namespaces

- namespace luna

Macros

- #define CORE
- #define BIT(x) (1<<x)
- #define LN_BIND_EVENT_FN(fn) [this](auto&&... args) -> decltype(auto) { return this->fn(std↩ ::forward<decltype(args)>(args)...); }

Typedefs

- template<typename T >
  using luna::scope = std::unique_ptr< T >
- template<typename T >
  using luna::ref = std::shared_ptr< T >

Functions

- template<typename T , typename ... Args>
  constexpr scope< T > luna::createScope (Args &&... args)
- template<typename T , typename ... Args>
  constexpr ref< T > luna::createRef (Args &&... args)

4.6.1 Macro Definition Documentation

4.6.1.1 BIT `#define BIT( x ) (1<<x)`

4.6.1.2 CORE `#define CORE`

4.6.1.3 LN_BIND_EVENT_FN

```
#define LN_BIND_EVENT_FN(
            fn ) [this](auto&&...  args) -> decltype(auto) { return this->fn(std::forward<decltype(args)>(a
}
```

4.7 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/log.cpp File Reference

```
#include <lnpch.h>
#include <core/debug/log.h>
#include <spdlog/sinks/stdout_color_sinks.h>
#include <spdlog/sinks/basic_file_sink.h>
```

Include dependency graph for log.cpp:

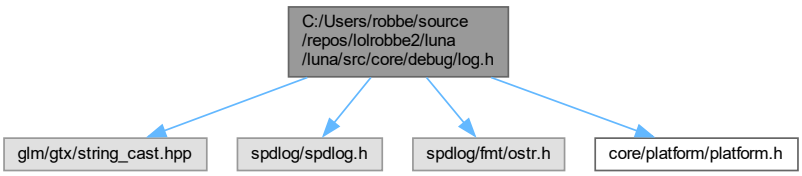
Namespaces

- namespace luna

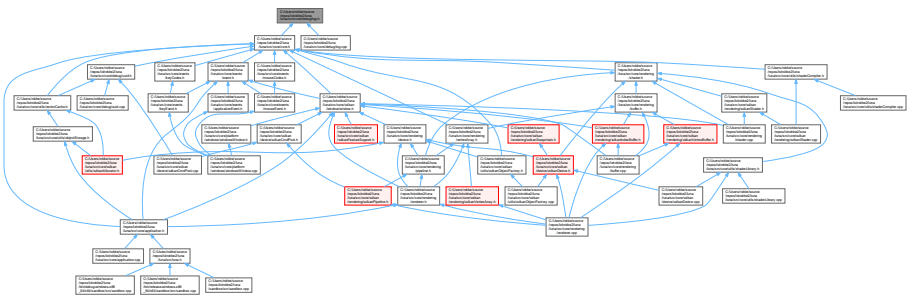
4.8 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/log.h File Reference

```
#include <glm/gtx/string_cast.hpp>
#include <spdlog/spdlog.h>
#include <spdlog/fmt/ostr.h>
#include <core/platform/platform.h>
```

Include dependency graph for log.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::Log

Namespaces

- namespace luna

Macros

- #define GLM_ENABLE_EXPERIMENTAL
- #define LN_CORE_TRACE(...) ::luna::Log::GetCoreLogger()->trace(__VA_ARGS__)
- #define LN_CORE_INFO(...) ::luna::Log::GetCoreLogger()->info(__VA_ARGS__)
- #define LN_CORE_WARN(...) ::luna::Log::GetCoreLogger()->warn(__VA_ARGS__)
- #define LN_CORE_ERROR(...) ::luna::Log::GetCoreLogger()->error(__VA_ARGS__)
- #define LN_CORE_CRITICAL(...) ::luna::Log::GetCoreLogger()->critical(__VA_ARGS__)
- #define LN_TRACE(...) ::luna::Log::GetClientLogger()->trace(__VA_ARGS__)
- #define LN_INFO(...) ::luna::Log::GetClientLogger()->info(__VA_ARGS__)
- #define LN_WARN(...) ::luna::Log::GetClientLogger()->warn(__VA_ARGS__)
- #define LN_ERROR(...) ::luna::Log::GetClientLogger()->error(__VA_ARGS__)
- #define LN_CRITICAL(...) ::luna::Log::GetClientLogger()->critical(__VA_ARGS__)

Functions

- template<typename OStream , glm::length_t L, typename T , glm::qualifier Q>
  OStream & operator<< (OStream &os, const glm::vec< L, T, Q > &vector)
- template<typename OStream , glm::length_t C, glm::length_t R, typename T , glm::qualifier Q>
  OStream & operator<< (OStream &os, const glm::mat< C, R, T, Q > &matrix)
- template<typename OStream , typename T , glm::qualifier Q>
  OStream & operator<< (OStream &os, glm::qua< T, Q > quaternion)

4.8.1 Macro Definition Documentation

4.8.1.1 GLM_ENABLE_EXPERIMENTAL `#define GLM_ENABLE_EXPERIMENTAL`

4.8.1.2 LN_CORE_CRITICAL

```
#define LN_CORE_CRITICAL(
    ...  ) ::luna::Log::GetCoreLogger()->critical(__VA_ARGS__)
```

4.8.1.3 LN_CORE_ERROR

```
#define LN_CORE_ERROR(
    ...  ) ::luna::Log::GetCoreLogger()->error(__VA_ARGS__)
```

4.8.1.4 LN_CORE_INFO

```
#define LN_CORE_INFO(
            ...  ) ::luna::Log::GetCoreLogger()->info(__VA_ARGS__)
```

4.8.1.5 LN_CORE_TRACE

```
#define LN_CORE_TRACE(
            ...  ) ::luna::Log::GetCoreLogger()->trace(__VA_ARGS__)
```

4.8.1.6 LN_CORE_WARN

```
#define LN_CORE_WARN(
            ...  ) ::luna::Log::GetCoreLogger()->warn(__VA_ARGS__)
```

4.8.1.7 LN_CRITICAL

```
#define LN_CRITICAL(
            ...  ) ::luna::Log::GetClientLogger()->critical(__VA_ARGS__)
```

4.8.1.8 LN_ERROR

```
#define LN_ERROR(
            ...  ) ::luna::Log::GetClientLogger()->error(__VA_ARGS__)
```

4.8.1.9 LN_INFO

```
#define LN_INFO(
            ...  ) ::luna::Log::GetClientLogger()->info(__VA_ARGS__)
```

4.8.1.10 LN_TRACE

```
#define LN_TRACE(
            ...  ) ::luna::Log::GetClientLogger()->trace(__VA_ARGS__)
```

4.8.1.11 LN_WARN

```
#define LN_WARN(
            ...  ) ::luna::Log::GetClientLogger()->warn(__VA_ARGS__)
```

4.8.2 Function Documentation

4.8.2.1 operator<<() [1/3]

```
template<typename OStream , glm::length_t C, glm::length_t R, typename
T , glm::qualifier Q>
OStream & operator<< (
            OStream & os,
            const glm::mat< C, R, T, Q > & matrix )  [inline]
```

4.8.2.2 operator<<() [2/3]

```
template<typename OStream , glm::length_t L, typename T , glm↩
::qualifier Q>
OStream & operator<< (
            OStream & os,
            const glm::vec< L, T, Q > & vector )  [inline]
```

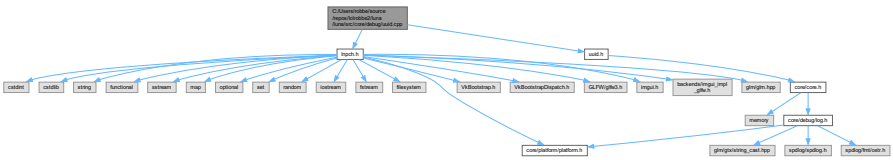
4.8.2.3 operator<<() [3/3]

```
template<typename OStream , typename T , glm::qualifier Q>
OStream & operator<< (
            OStream & os,
            glm::qua< T, Q > quaternion )  [inline]
```

4.9 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/uuid.cpp File Reference

```
#include "lnpch.h"
#include "uuid.h"
```

Include dependency graph for uuid.cpp:



Namespaces

- namespace luna

Functions

- static std::mt19937_64 luna::engine (randomDevice())

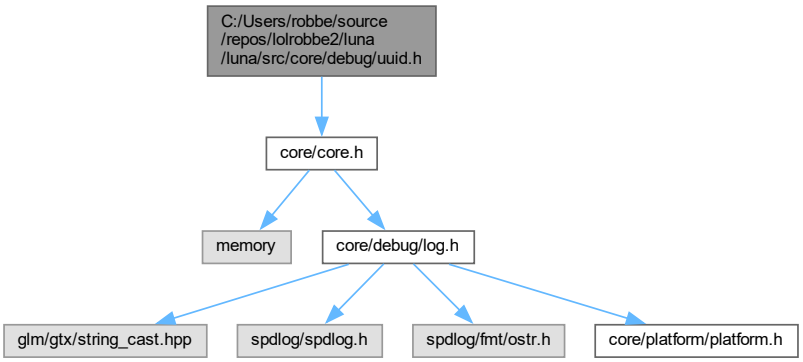
Variables

- static std::random_device luna::randomDevice
- static std::uniform_int_distribution< uint64_t > luna::uniformDistr

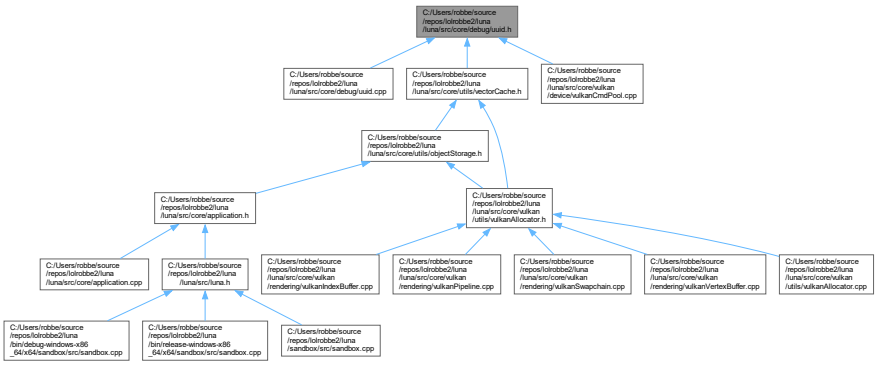
4.10 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/debug/uuid.h File Reference

`#include "core/core.h"`

Include dependency graph for uuid.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::uuid

  a general purpose uuid class with a maximum number of 2^64 uuid's the uuid class does not check for duplicates!

Namespaces

- namespace luna

Macros

- #define _UUID

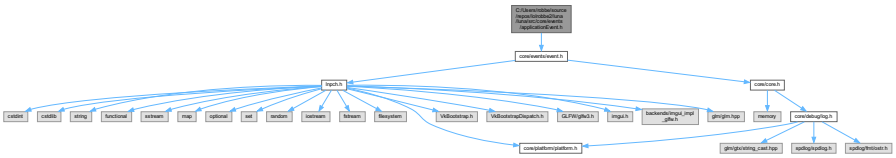
4.10.1 Macro Definition Documentation

4.10.1.1 _UUID `#define _UUID`

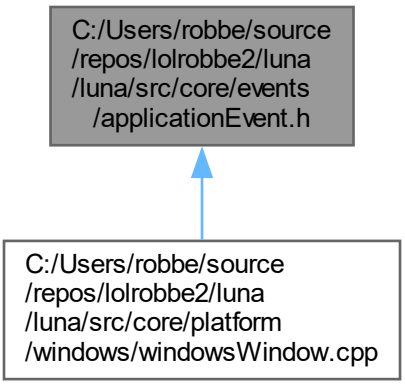
4.11 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/application↩ Event.h File Reference

`#include <core/events/event.h>`

Include dependency graph for applicationEvent.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::windowResizeEvent
- class luna::windowCloseEvent
- class luna::appTickEvent
- class luna::appUpdateEvent
- class luna::appRenderEvent

Namespaces

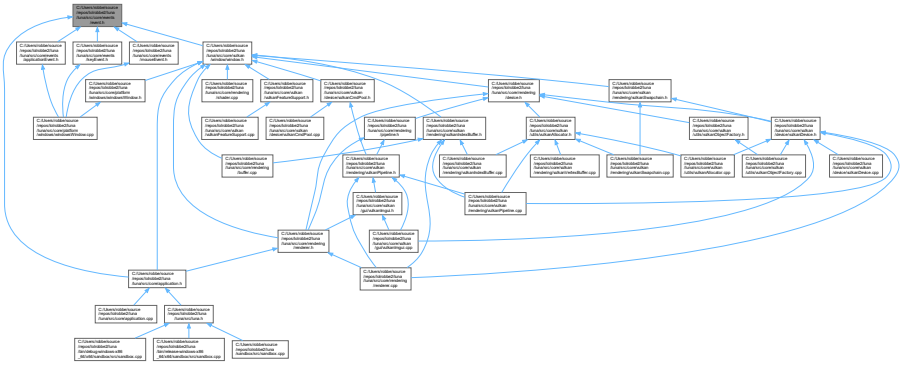
- namespace luna

4.12 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/event.h File Reference

```
#include <lnpch.h>
#include <core/core.h>
```

Include dependency graph for event.h:

This graph shows which files directly or indirectly include this file:



Classes

- class luna::Event
- class luna::eventDispatcher

Namespaces

- namespace luna

Macros

- #define EVENT_CLASS_TYPE(type)
- #define EVENT_CLASS_CATEGORY(category) virtual int getCategoryFlags() const override { return category; }

Enumerations

- enum class luna::eventType {
  luna::None = 0 , luna::WindowClose , luna::WindowResize , luna::WindowFocus ,
  luna::WindowLostFocus , luna::WindowMoved , luna::AppTick , luna::AppUpdate ,
  luna::AppRender , luna::KeyPressed , luna::KeyReleased , luna::KeyTyped ,
  luna::MouseButtonPressed , luna::MouseButtonReleased , luna::MouseMoved , luna::MouseScrolled }
- enum luna::eventCategory {
  luna::None = 0 , luna::eventCategoryApplication = BIT(0) , luna::eventCategoryInput = BIT(1) ,
  luna::eventCategoryKeyboard = BIT(2) ,
  luna::eventCategoryMouse = BIT(3) , luna::eventCategoryMouseButton = BIT(4) }

Functions

- std::ostream & luna::operator<< (std::ostream &os, const Event &e)

4.12.1 Macro Definition Documentation

4.12.1.1 EVENT_CLASS_CATEGORY

```
#define EVENT_CLASS_CATEGORY(
    category ) virtual int getCategoryFlags() const override { return category; }
```

4.12.1.2 EVENT_CLASS_TYPE

```
#define EVENT_CLASS_TYPE(
    type )
```

Value:

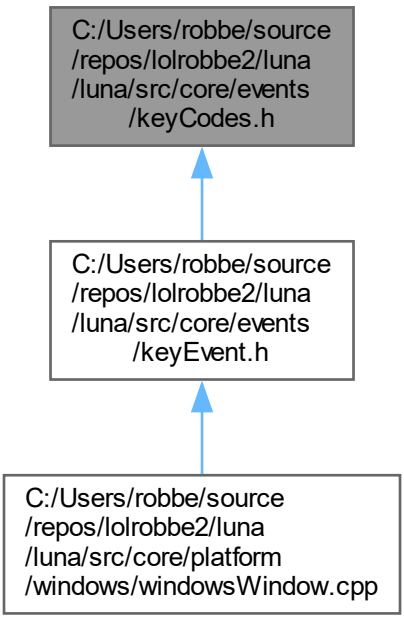
```
static eventType getStaticType() { return eventType::type; }\
virtual eventType getEventType()const override { return getStaticType(); }\
virtual const char* getName()const override { return #type; }
```

4.13 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/keyCodes.h File Reference

```
#include <lnpch.h>
#include <core/core.h>
```

Include dependency graph for keyCodes.h:

This graph shows which files directly or indirectly include this file:



Namespaces

- namespace luna
- namespace luna::input

Typedefs

- using luna::keyCode = uint16_t

Enumerations

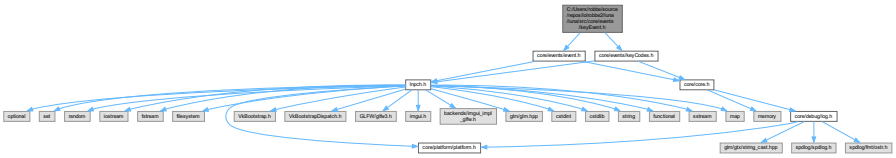
- enum : keyCode {
  luna::input::Space = 32 , luna::input::Apostrophe = 39 , luna::input::Comma = 44 , luna::input::Minus = 45 , luna::input::Period = 46 , luna::input::Slash = 47 , luna::input::D0 = 48 , luna::input::D1 = 49 , luna::input::D2 = 50 , luna::input::D3 = 51 , luna::input::D4 = 52 , luna::input::D5 = 53 , luna::input::D6 = 54 , luna::input::D7 = 55 , luna::input::D8 = 56 , luna::input::D9 = 57 , luna::input::Semicolon = 59 , luna::input::Equal = 61 , luna::input::A = 65 , luna::input::B = 66 , luna::input::C = 67 , luna::input::D = 68 , luna::input::E = 69 , luna::input::F = 70 , luna::input::G = 71 , luna::input::H = 72 , luna::input::I = 73 , luna::input::J = 74 , luna::input::K = 75 , luna::input::L = 76 , luna::input::M = 77 , luna::input::N = 78 , luna::input::O = 79 , luna::input::P = 80 , luna::input::Q = 81 , luna::input::R = 82 , luna::input::S = 83 , luna::input::T = 84 , luna::input::U = 85 , luna::input::V = 86 , luna::input::W = 87 , luna::input::X = 88 , luna::input::Y = 89 , luna::input::Z = 90 , luna::input::LeftBracket = 91 , luna::input::Backslash = 92 , luna::input::RightBracket = 93 , luna::input::GraveAccent = 96 ,

luna::input::World1 = 161 , luna::input::World2 = 162 , luna::input::Escape = 256 , luna::input::Enter = 257 , luna::input::Tab = 258 , luna::input::Backspace = 259 , luna::input::Insert = 260 , luna::input::Delete = 261 , luna::input::Right = 262 , luna::input::Left = 263 , luna::input::Down = 264 , luna::input::Up = 265 , luna::input::PageUp = 266 , luna::input::PageDown = 267 , luna::input::Home = 268 , luna::input::End = 269 , luna::input::CapsLock = 280 , luna::input::ScrollLock = 281 , luna::input::NumLock = 282 , luna::input::PrintScreen = 283 ,
luna::input::Pause = 284 , luna::input::F1 = 290 , luna::input::F2 = 291 , luna::input::F3 = 292 , luna::input::F4 = 293 , luna::input::F5 = 294 , luna::input::F6 = 295 , luna::input::F7 = 296 , luna::input::F8 = 297 , luna::input::F9 = 298 , luna::input::F10 = 299 , luna::input::F11 = 300 , luna::input::F12 = 301 , luna::input::F13 = 302 , luna::input::F14 = 303 , luna::input::F15 = 304 , luna::input::F16 = 305 , luna::input::F17 = 306 , luna::input::F18 = 307 , luna::input::F19 = 308 , luna::input::F20 = 309 , luna::input::F21 = 310 , luna::input::F22 = 311 , luna::input::F23 = 312 , luna::input::F24 = 313 , luna::input::F25 = 314 , luna::input::KP0 = 320 , luna::input::KP1 = 321 , luna::input::KP2 = 322 , luna::input::KP3 = 323 , luna::input::KP4 = 324 , luna::input::KP5 = 325 , luna::input::KP6 = 326 , luna::input::KP7 = 327 , luna::input::KP8 = 328 , luna::input::KP9 = 329 , luna::input::KPDecimal = 330 , luna::input::KPDivide = 331 , luna::input::KPMultiply = 332 , luna::input::KPSubtract = 333 ,
luna::input::KPAdd = 334 , luna::input::KPEnter = 335 , luna::input::KPEqual = 336 , luna::input::LeftShift = 340 ,
luna::input::LeftControl = 341 , luna::input::LeftAlt = 342 , luna::input::LeftSuper = 343 , luna::input::RightShift = 344 ,
luna::input::RightControl = 345 , luna::input::RightAlt = 346 , luna::input::RightSuper = 347 , luna::input::Menu = 348 }

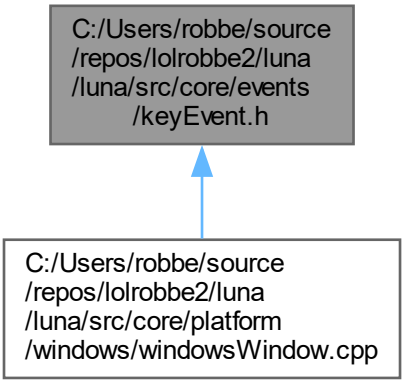
4.14 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/keyEvent.h File Reference

```
#include <core/events/event.h>
#include <core/events/keyCodes.h>
```

Include dependency graph for keyEvent.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::keyEvent
- class luna::keyPressedEvent
- class luna::keyReleasedEvent
- class luna::keyTypedEvent

Namespaces

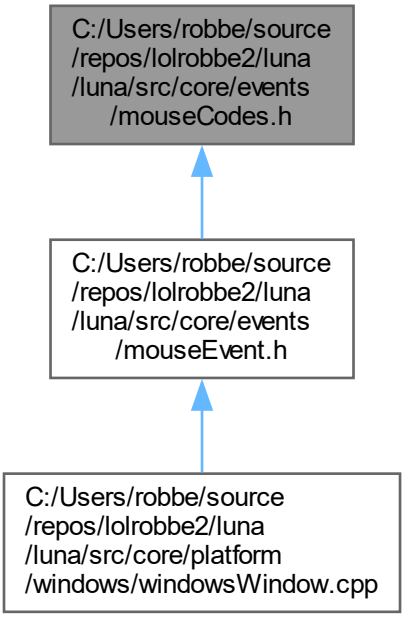
- namespace luna

4.15 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/mouseCodes.h File Reference

```
#include <lnpch.h>
#include <core/core.h>
```

Include dependency graph for mouseCodes.h:

This graph shows which files directly or indirectly include this file:



Namespaces

- namespace luna
- namespace luna::Mouse

Typedefs

- using luna::mouseCode = uint16_t

Enumerations

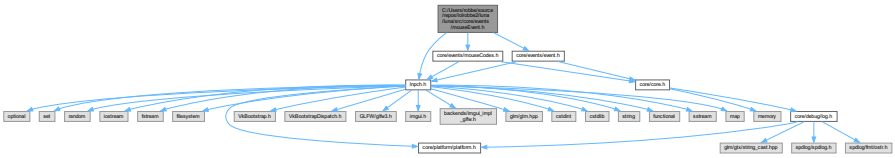
- enum : mouseCode {
  luna::Mouse::Button0 = 0 , luna::Mouse::Button1 = 1 , luna::Mouse::Button2 = 2 , luna::Mouse::Button3 = 3 , luna::Mouse::Button4 = 4 , luna::Mouse::Button5 = 5 , luna::Mouse::Button6 = 6 , luna::Mouse::Button7 = 7 , luna::Mouse::ButtonLast = Button7 , luna::Mouse::ButtonLeft = Button0 , luna::Mouse::ButtonRight = Button1 , luna::Mouse::ButtonMiddle = Button2 }

4.16 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/events/mouseEvent.h File Reference

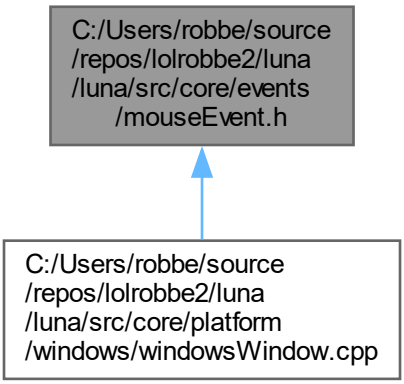
```
#include <lnpch.h>
#include <core/events/event.h>
```

```
#include <core/events/mouseCodes.h>
```

Include dependency graph for mouseEvent.h:



This graph shows which files directly or indirectly include this file:



Classes

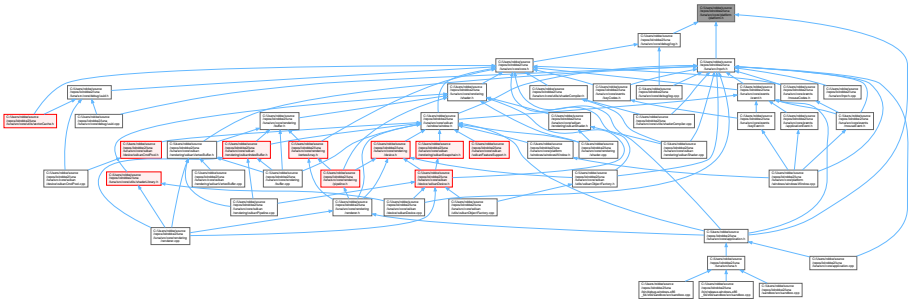
- class luna::mouseMovedEvent
- class luna::mouseScrolledEvent
- class luna::mouseButtonEvent
- class luna::mouseButtonPressedEvent
- class luna::mouseButtonReleasedEvent

Namespaces

- namespace luna

4.17 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/platform/platform.h File Reference

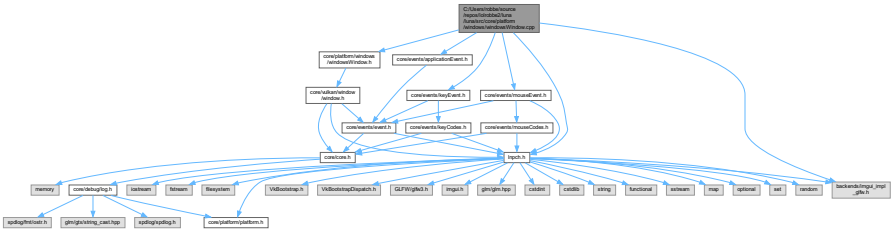
This graph shows which files directly or indirectly include this file:



4.18 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/platform/windows/windows↩ Window.cpp File Reference

```
#include <lnpch.h>
#include <core/platform/windows/windowsWindow.h>
#include <core/events/applicationEvent.h>
#include <core/events/keyEvent.h>
#include <core/events/mouseEvent.h>
#include <backends/imgui_impl_glfw.h>
```

Include dependency graph for windowsWindow.cpp:



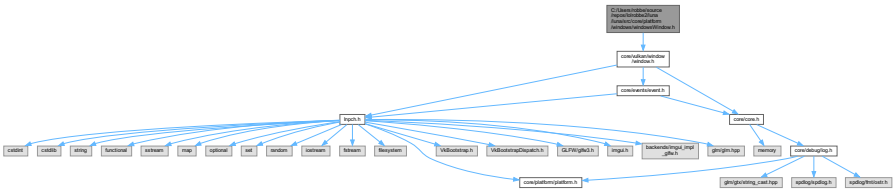
Namespaces

- namespace luna
- namespace luna::vulkan

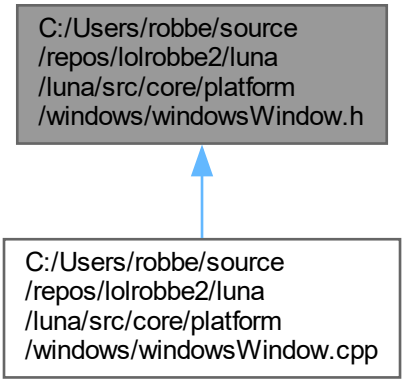
4.19 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/platform/windows/windows↩ Window.h File Reference

```
#include <core/vulkan/window/window.h>
```

Include dependency graph for windowsWindow.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::vulkan::windowsWindow
- struct luna::vulkan::windowsWindow::windowData

Namespaces

- namespace luna
- namespace luna::vulkan

Macros

- #define WINDOWS_WINDOW

Variables

- static bool luna::vulkan::isGlfwInit

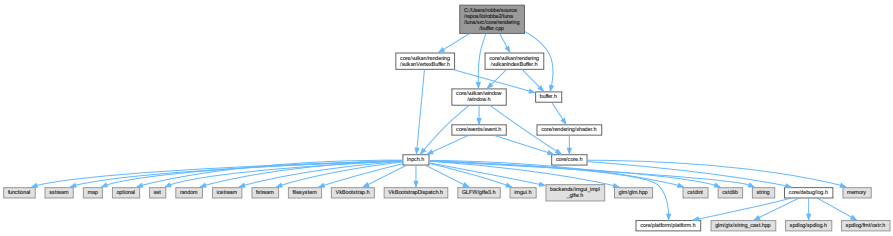
4.19.1 Macro Definition Documentation

4.19.1.1 WINDOWS_WINDOW `#define WINDOWS_WINDOW`

4.20 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.cpp File Reference

```
#include "buffer.h"
#include <core/vulkan/window/window.h>
#include <core/vulkan/rendering/vulkanVertexBuffer.h>
#include <core/vulkan/rendering/vulkanIndexBuffer.h>
```

Include dependency graph for buffer.cpp:



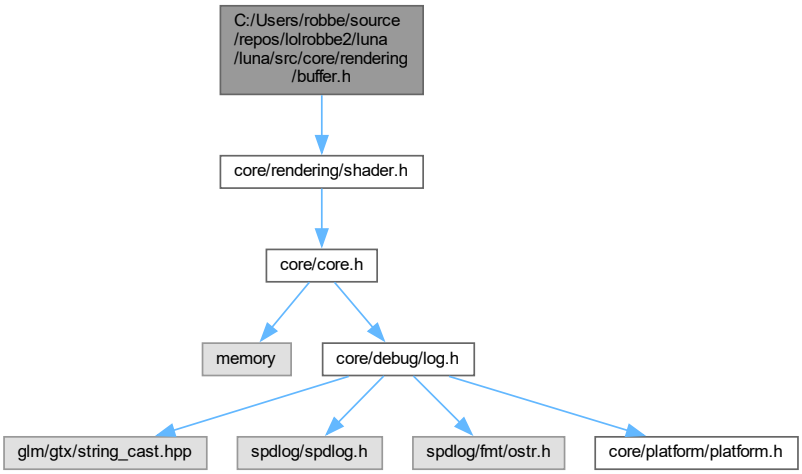
Namespaces

- namespace luna
- namespace luna::renderer

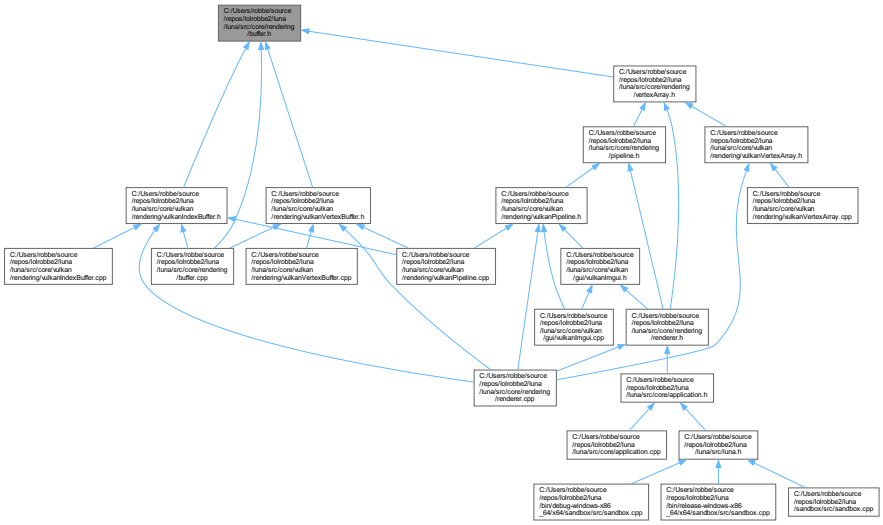
4.21 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/buffer.h File Reference

```
#include <core/rendering/shader.h>
```

Include dependency graph for buffer.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::renderer::bufferElement
- class luna::renderer::bufferLayout
- class luna::renderer::vertexBuffer
- class luna::renderer::indexBuffer

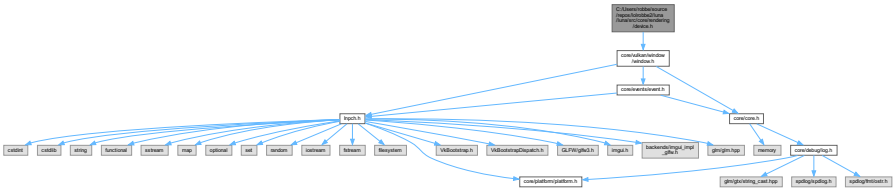
Namespaces

- namespace luna
- namespace luna::renderer

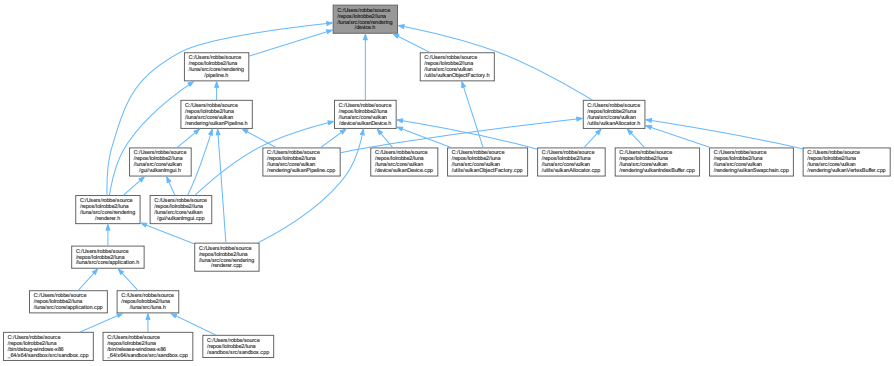
4.22 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/device.h File Reference

```
#include <core/vulkan/window/window.h>
```

Include dependency graph for device.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::renderer::device

  the device class is the code representation of the physical device or GPU.

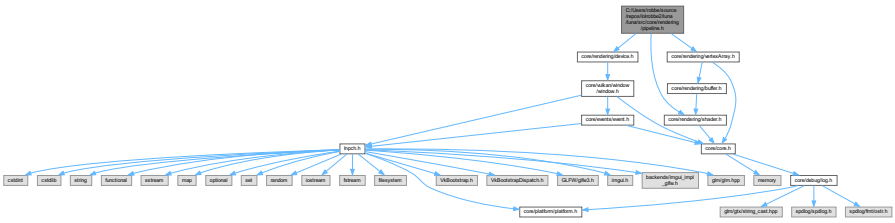
Namespaces

- namespace luna
- namespace luna::renderer

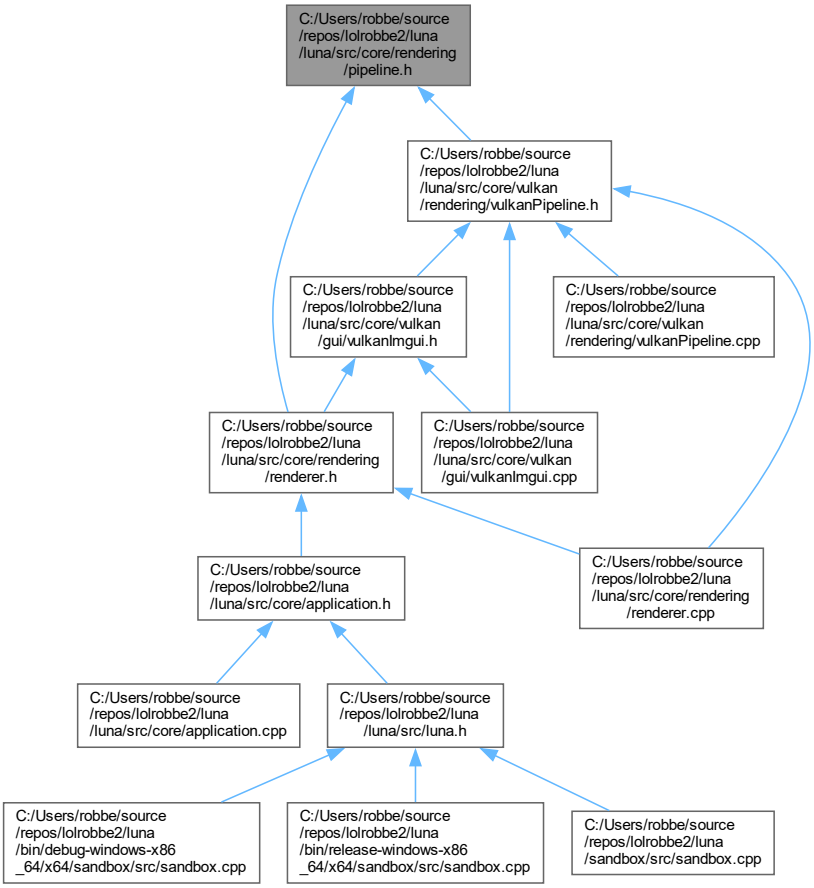
4.23 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/pipeline.h File Reference

```
#include <core/rendering/device.h>
#include <core/rendering/shader.h>
#include <core/rendering/vertexArray.h>
```

Include dependency graph for pipeline.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct luna::renderer::pipelineLayout
- class luna::renderer::pipeline

Namespaces

- namespace luna
- namespace luna::renderer

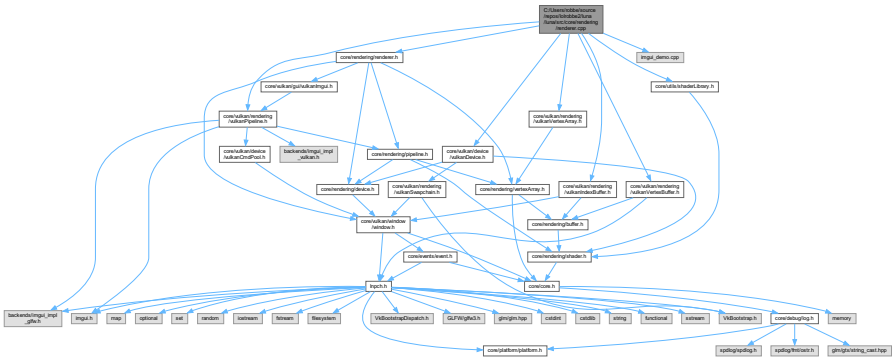
Typedefs

- typedef void(∗ luna::renderer::drawCommand) (const ref< vertexArray > &vertexArray, int indexCount)

4.24 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/renderer.cpp File Reference

```
#include <core/rendering/renderer.h>
#include <core/vulkan/device/vulkanDevice.h>
#include <core/vulkan/rendering/vulkanPipeline.h>
#include <core/vulkan/rendering/vulkanVertexArray.h>
#include <core/vulkan/rendering/vulkanVertexBuffer.h>
#include <core/vulkan/rendering/vulkanIndexBuffer.h>
#include <core/utils/shaderLibrary.h>
#include <imgui_demo.cpp>
```

Include dependency graph for renderer.cpp:



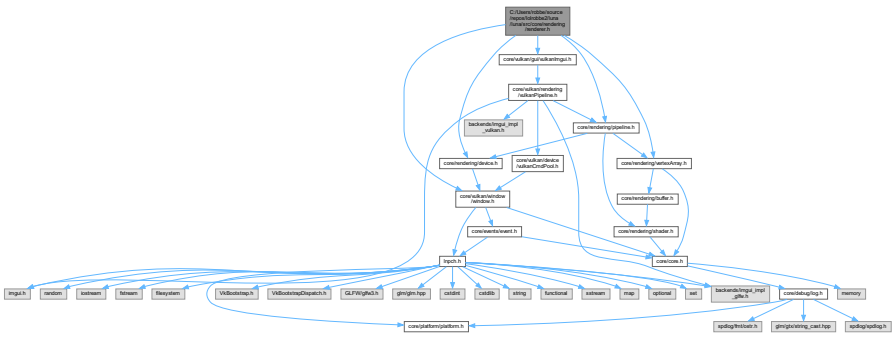
Namespaces

- namespace luna
- namespace luna::renderer

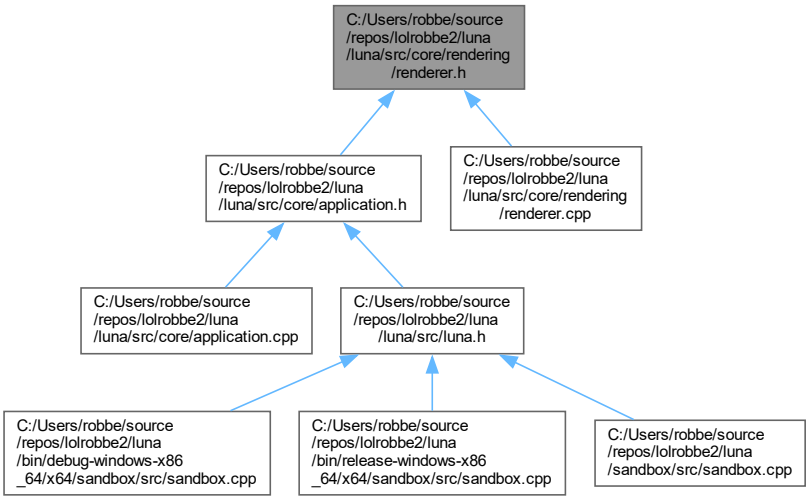
4.25 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/renderer.h File Reference

```
#include <core/vulkan/window/window.h>
#include <core/rendering/device.h>
#include <core/rendering/pipeline.h>
#include <core/vulkan/gui/vulkanImgui.h>
#include <core/rendering/vertexArray.h>
```

Include dependency graph for renderer.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::renderer::renderer
- struct luna::renderer::renderer::vertex
- struct luna::renderer::renderer::mesh

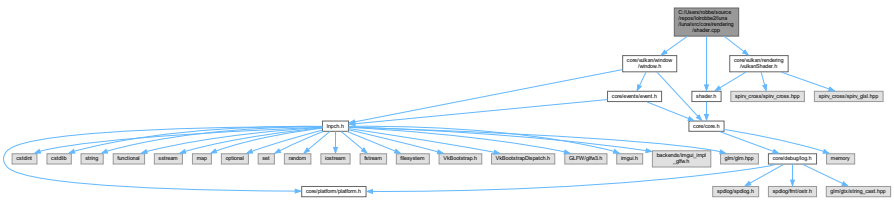
Namespaces

- namespace luna
- namespace luna::renderer

4.26 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/shader.cpp File Reference

```
#include "shader.h"
#include <core/vulkan/window/window.h>
#include <core/vulkan/rendering/vulkanShader.h>
```

Include dependency graph for shader.cpp:



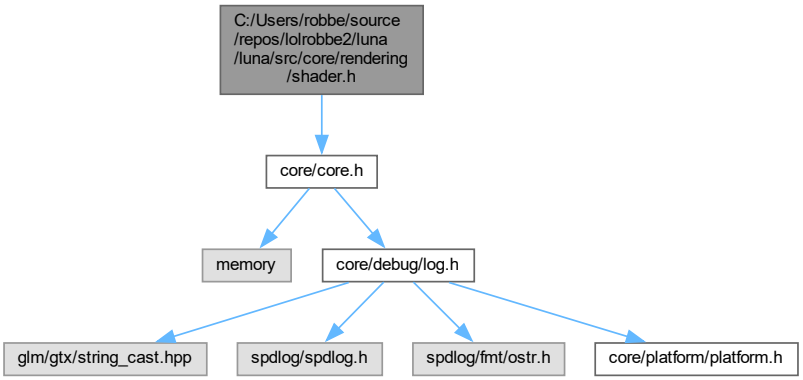
Namespaces

- namespace luna
- namespace luna::renderer

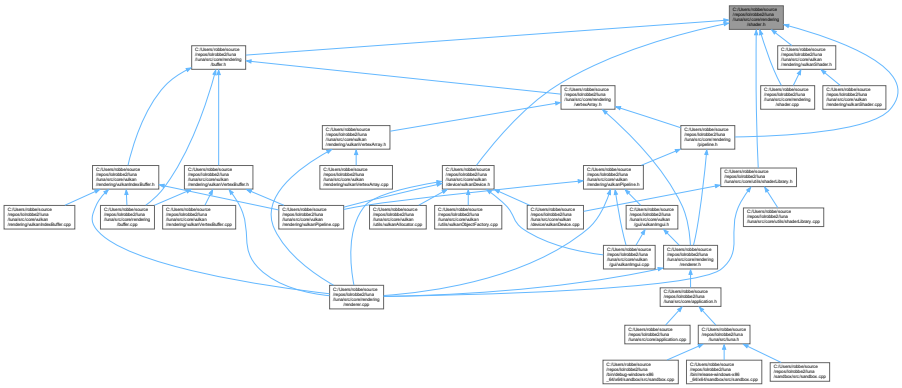
4.27 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/shader.h File Reference

```
#include <core/core.h>
```

Include dependency graph for shader.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct luna::renderer::shaderResource
- class luna::renderer::shader

Namespaces

- namespace luna
- namespace luna::renderer

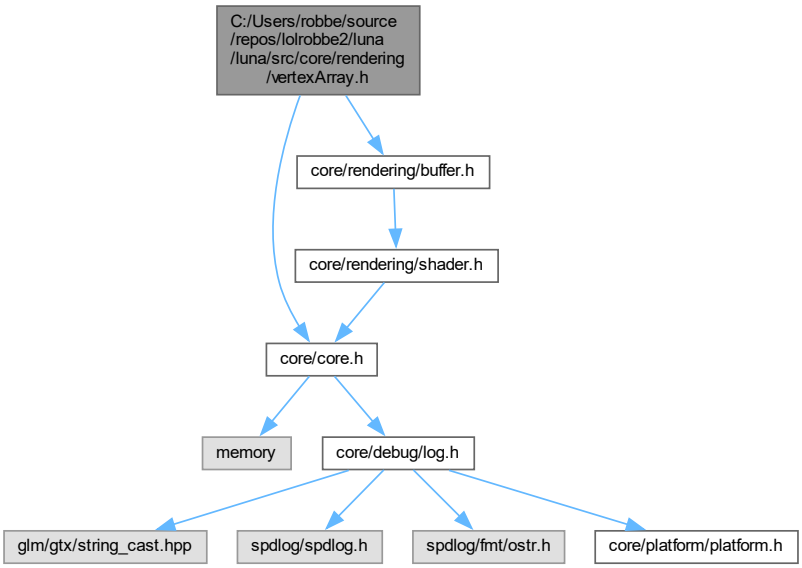
Enumerations

- enum luna::renderer::typeClass {
  luna::renderer::uniformBuffers , luna::renderer::storageBuffers , luna::renderer::stageInputs , luna::renderer::stageOutputs
  ,
  luna::renderer::subpassInputs , luna::renderer::storageImages , luna::renderer::sampledImages , luna::renderer::atomicCounter
  ,
  luna::renderer::accelerationStructures , luna::renderer::pushConstantBuffers , luna::renderer::separateImages
  , luna::renderer::separateSsamplers ,
  luna::renderer::builtinInputs , luna::renderer::builtinOutputs }
- enum luna::renderer::typeId {
  luna::renderer::Unknown , luna::renderer::Void , luna::renderer::Boolean , luna::renderer::SByte ,
  luna::renderer::UByte , luna::renderer::Short , luna::renderer::UShort , luna::renderer::Int ,
  luna::renderer::UInt , luna::renderer::Int64 , luna::renderer::UInt64 , luna::renderer::AtomicCounter ,
  luna::renderer::Half , luna::renderer::Float , luna::renderer::Double , luna::renderer::Struct ,
  luna::renderer::Image , luna::renderer::SampledImage , luna::renderer::Sampler , luna::renderer::AccelerationStructure
  ,
  luna::renderer::RayQuery , luna::renderer::ControlPointArray , luna::renderer::Interpolant , luna::renderer::Char
  ,
  luna::renderer::Uniform , luna::renderer::PushConstant , luna::renderer::StorageBuffer , luna::renderer::Vec2
  ,
  luna::renderer::Vec3 , luna::renderer::Vec4 , luna::renderer::mat2 , luna::renderer::mat3 ,
  luna::renderer::mat4 }
- enum luna::renderer::shaderStage {
  luna::renderer::shaderStageVertex , luna::renderer::shaderStageTessellationControl , luna::renderer::shaderStageTessellationE
  , luna::renderer::shaderStageGeometry ,
  luna::renderer::shaderStageFragment , luna::renderer::shaderStageCompute }

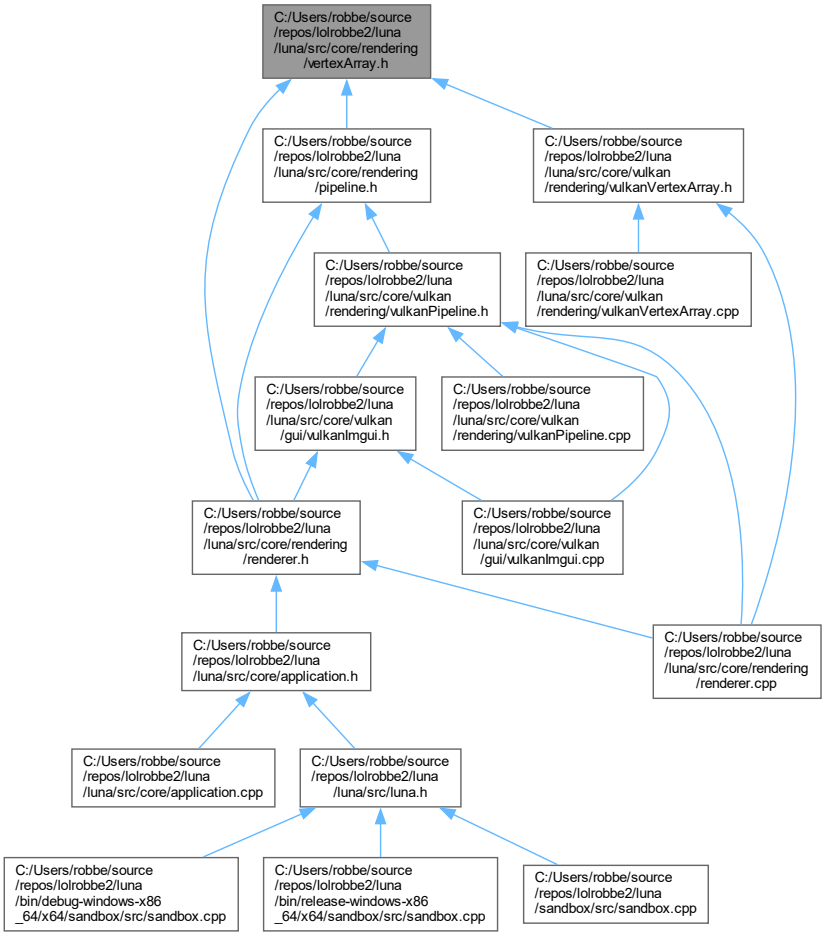
4.28 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/rendering/vertexArray.h File Reference

```
#include <core/core.h>
#include <core/rendering/buffer.h>
```

Include dependency graph for vertexArray.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::renderer::vertexArray

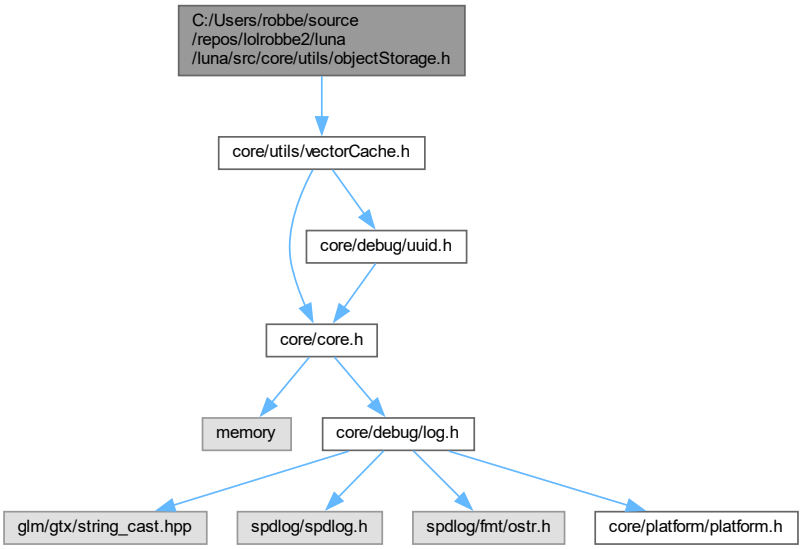
Namespaces

- namespace luna
- namespace luna::renderer

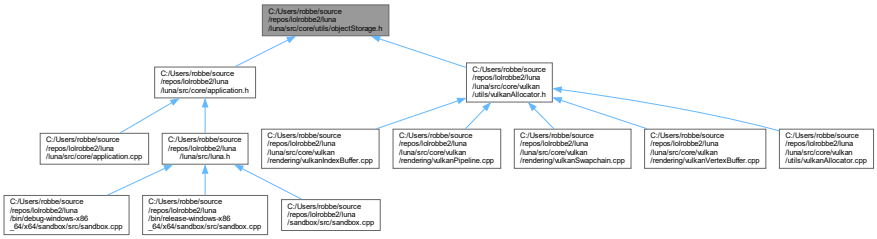
4.29 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/objectStorage.h File Reference

```
#include <core/utils/vectorCache.h>
```

Include dependency graph for objectStorage.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::utils::objectStorage< value >

  cached object memory class with a key handle.

Namespaces

- namespace luna
- namespace luna::utils

Typedefs

- typedef uint64_t luna::utils::storageObject

Enumerations

- enum luna::utils::storageResult { luna::utils::storageInvalidHandle = 0 , luna::utils::storageOpSucces = 1 , luna::utils::storageOpFailed = 2 }

4.30 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderCompiler.cpp File Reference

```
#include "shaderCompiler.h"
#include "lnpch.h"
```

Include dependency graph for shaderCompiler.cpp:

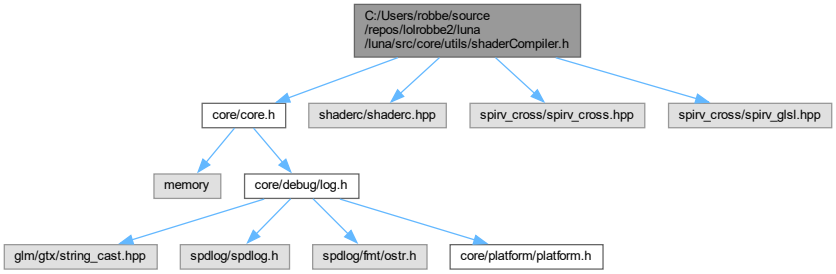
Namespaces

- namespace luna
- namespace luna::utils

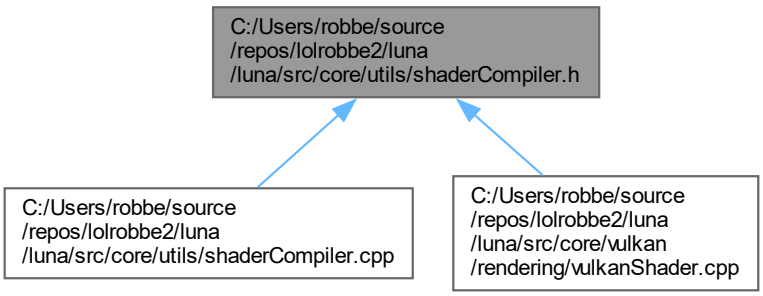
4.31 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderCompiler.h File Reference

```
#include <core/core.h>
#include <shaderc/shaderc.hpp>
#include <spirv_cross/spirv_cross.hpp>
#include <spirv_cross/spirv_glsl.hpp>
```

Include dependency graph for shaderCompiler.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct luna::utils::compileSpec
- class luna::utils::shaderCompiler

Namespaces

- namespace luna
- namespace luna::utils

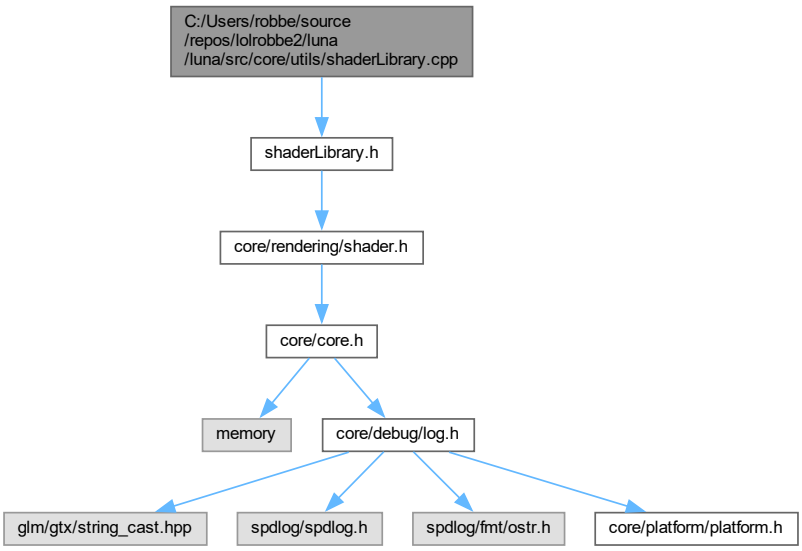
Enumerations

- enum luna::utils::compileLanguage { luna::utils::SPIR = 0 , luna::utils::SPIR_V = 1 , luna::utils::GLSL = 2 }

4.32 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderLibrary.cpp File Reference

```
#include "shaderLibrary.h"
```

Include dependency graph for shaderLibrary.cpp:



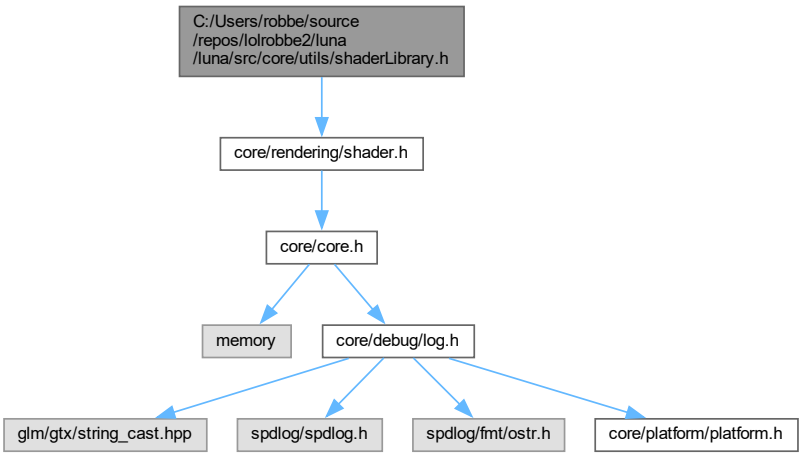
Namespaces

- namespace luna
- namespace luna::utils

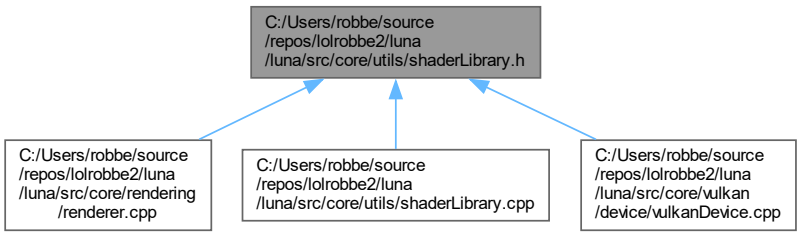
4.33 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/shaderLibrary.h File Reference

```
#include <core/rendering/shader.h>
```

Include dependency graph for shaderLibrary.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::utils::shaderLibrary

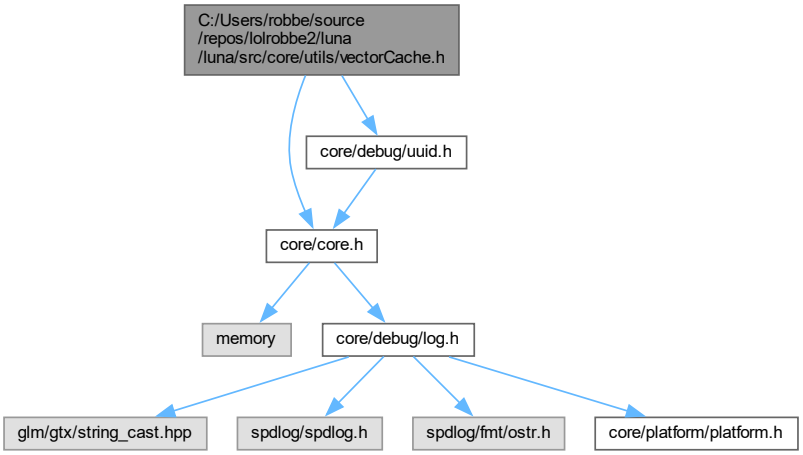
Namespaces

- namespace luna
- namespace luna::utils

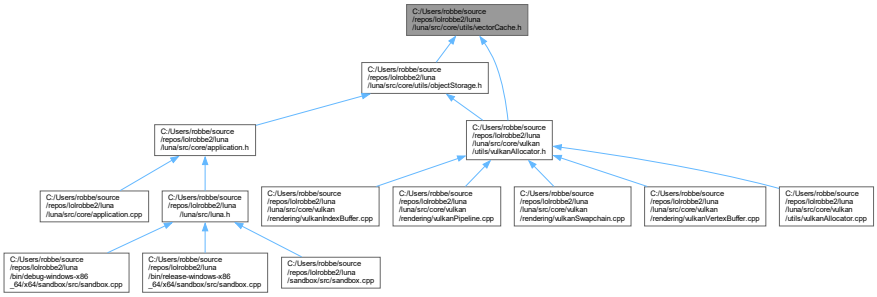
4.34 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/utils/vectorCache.h File Reference

```
#include <core/core.h>
#include <core/debug/uuid.h>
```

Include dependency graph for vectorCache.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::utils::vectorCache< value >

  a pretty optimal multithreaded vector cahce headeronly class.

Namespaces

- namespace luna
- namespace luna::utils

Typedefs

- typedef uint64_t luna::utils::cacheObject

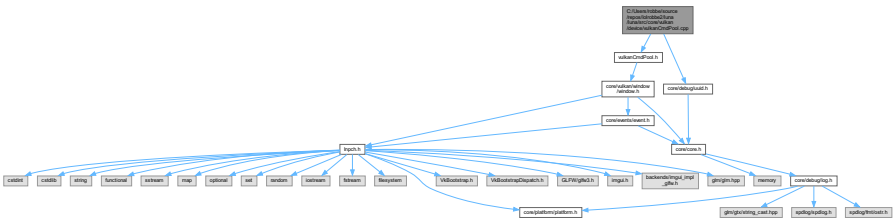
Enumerations

- enum luna::utils::cacheResult {
  luna::utils::cacheMiss = 0 , luna::utils::cacheHit = 1 , luna::utils::cacheInvalidHandle = 2 , luna::utils::cacheOpSucces = 3 ,
  luna::utils::cacheOpFailed = 4 , luna::utils::CACHE_MAX_ENUM = 5 }

4.35 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkan↩ CmdPool.cpp File Reference

```
#include "vulkanCmdPool.h"
#include <core/debug/uuid.h>
```

Include dependency graph for vulkanCmdPool.cpp:



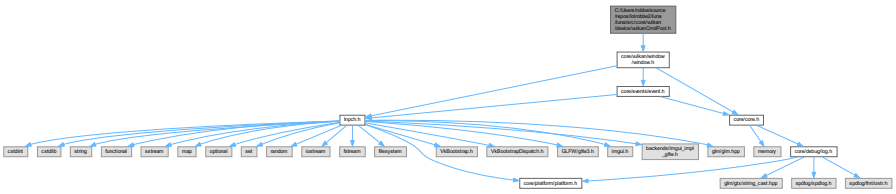
Namespaces

- namespace luna
- namespace luna::vulkan

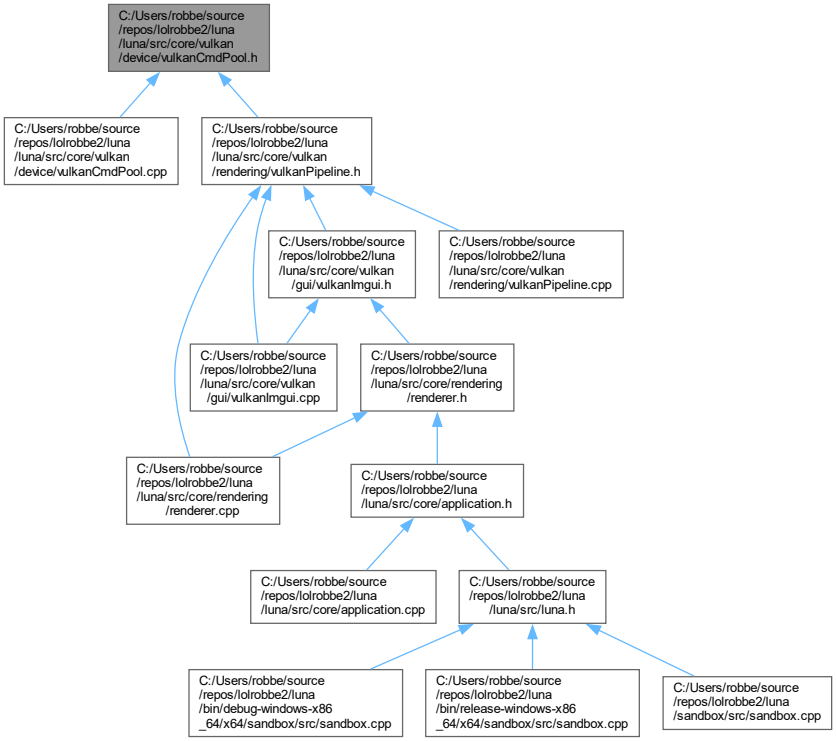
4.36 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkan↩ CmdPool.h File Reference

```
#include <core/vulkan/window/window.h>
```

Include dependency graph for vulkanCmdPool.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct luna::vulkan::vulkanCmdPoolSpec
- struct luna::vulkan::commandPoolSubmitInfo

struct with all the submit info. this is the same except VkCommandBuffer -> virtualCmdBuffer*. for more information: https://registry.khronos.org/vulkan/specs/1.3-extensions/man/html/VkSubmitInfo.html*

- class luna::vulkan::vulkanCmdPool

  abbstraction class around the vulkan commandbuffer and pool to introduce increased workflow safety and usability and to decrease bugs. all a VkCommandBuffer has been changed out by virtualCmdBuffer type.

Namespaces

- namespace luna
- namespace luna::vulkan

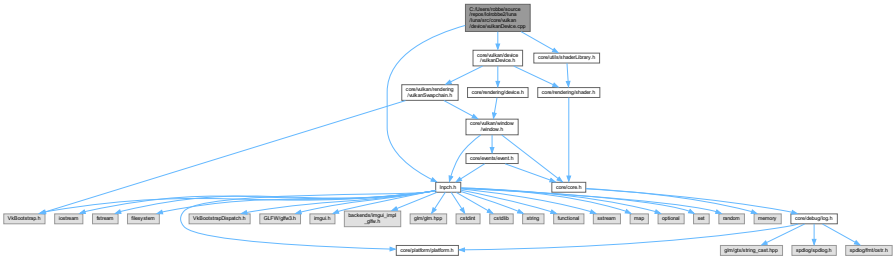
Typedefs

- typedef uint64_t luna::vulkan::virtualCmdBuffer

4.37 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanDevice.cpp File Reference

```
#include <lnpch.h>
#include <core/vulkan/device/vulkanDevice.h>
#include <core/utils/shaderLibrary.h>
```

Include dependency graph for vulkanDevice.cpp:



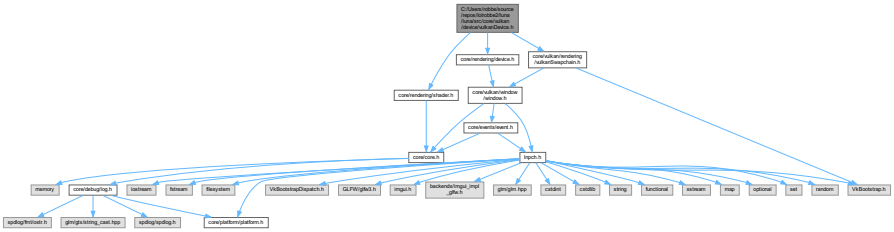
Namespaces

- namespace luna
- namespace luna::vulkan

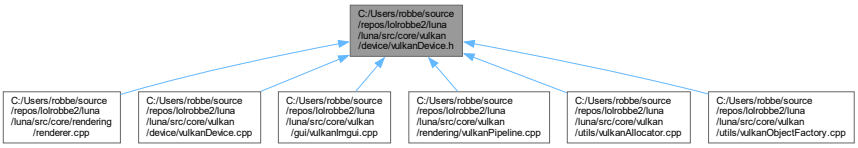
4.38 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/device/vulkanDevice.h File Reference

```
#include <core/rendering/device.h>
#include <core/vulkan/rendering/vulkanSwapchain.h>
```

`#include <core/rendering/shader.h>`
Include dependency graph for vulkanDevice.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::vulkan::vulkanDevice
- struct luna::vulkan::vulkanDevice::deviceHandles

Namespaces

- namespace luna
- namespace luna::vulkan

Macros

- #define GET_UNCODED_VERSION(version, variant, major, minor, patch) (uint32_t)variant = ((uint32_↩ t)(version) >> 29); (uint32_t)major = (((uint32_t)(version) >> 22) & 0x7FU); (uint32_t)minor = (((uint32↩ _t)(version) >> 12) & 0x3FFU) ;(uint32_t)patch = ((uint32_t)(version) & 0x3FFU);

4.38.1 Macro Definition Documentation

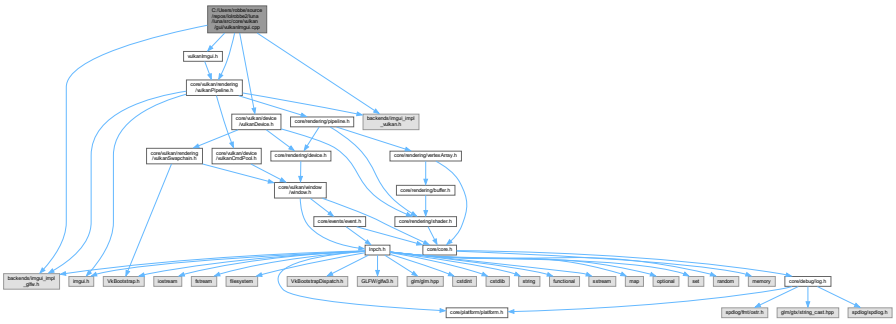
4.38.1.1 GET_UNCODED_VERSION

```
#define GET_UNCODED_VERSION(
            version,
            variant,
            major,
            minor,
            patch ) (uint32_t)variant = ((uint32_t)(version) >> 29); (uint32_t)major = (((uint32↩
_t)(version) >> 22) & 0x7FU); (uint32_t)minor = (((uint32_t)(version) >> 12) & 0x3FFU) ;(uint32↩
_t)patch = ((uint32_t)(version) & 0x3FFU);
```

4.39 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/gui/vulkan↩ Imgui.cpp File Reference

```
#include "vulkanImgui.h"
#include <core/vulkan/device/vulkanDevice.h>
#include <backends/imgui_impl_glfw.h>
#include <backends/imgui_impl_vulkan.h>
#include <core/vulkan/rendering/vulkanPipeline.h>
```

Include dependency graph for vulkanImgui.cpp:



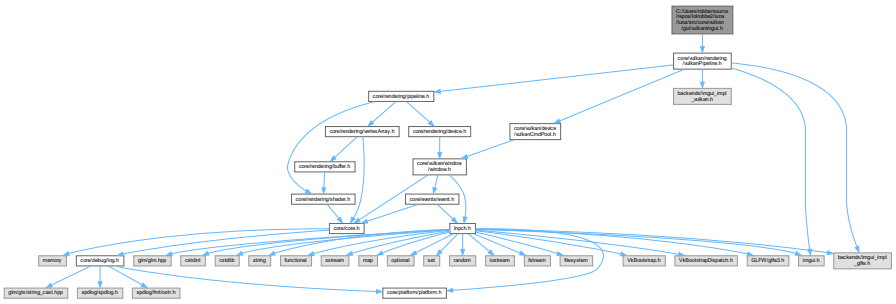
Namespaces

- namespace luna
- namespace luna::gui

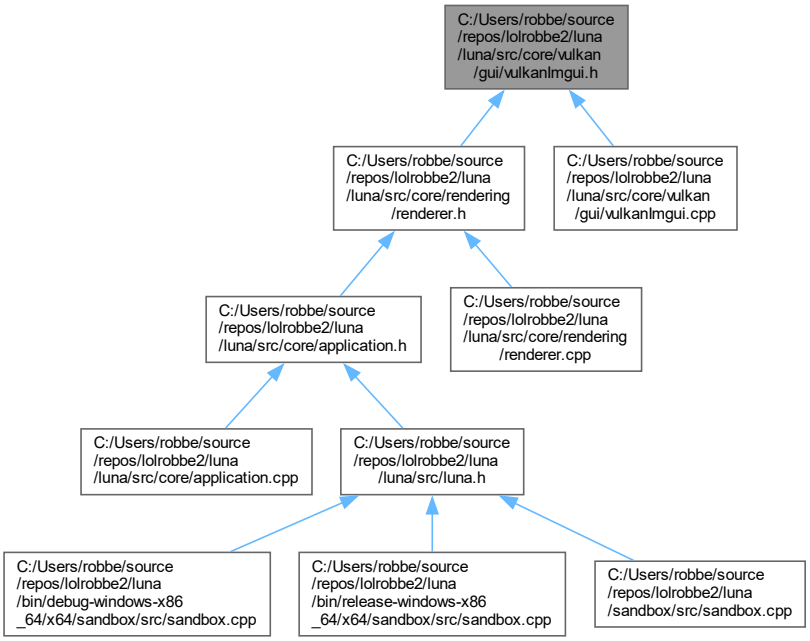
4.40 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/gui/vulkan↩ Imgui.h File Reference

```
#include <core/vulkan/rendering/vulkanPipeline.h>
```

Include dependency graph for vulkanImgui.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::gui::vulkanImgui

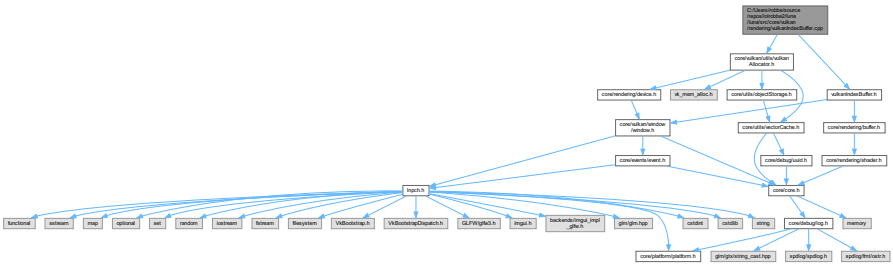
Namespaces

- namespace luna
- namespace luna::gui

4.41 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ IndexBuffer.cpp File Reference

```
#include "vulkanIndexBuffer.h"
#include <core/vulkan/utils/vulkanAllocator.h>
```

Include dependency graph for vulkanIndexBuffer.cpp:



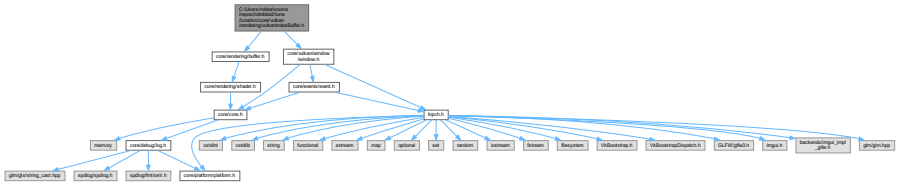
Namespaces

- namespace luna
- namespace luna::vulkan

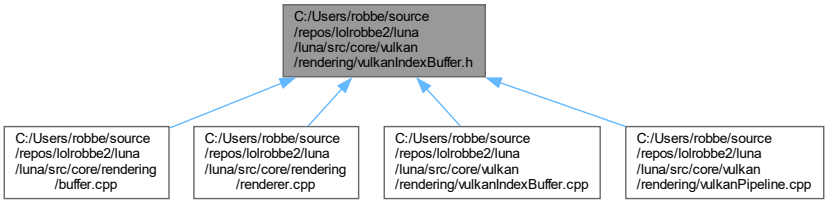
4.42 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ IndexBuffer.h File Reference

```
#include <core/rendering/buffer.h>
#include <core/vulkan/window/window.h>
```

Include dependency graph for vulkanIndexBuffer.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::vulkan::vulkanIndexBuffer

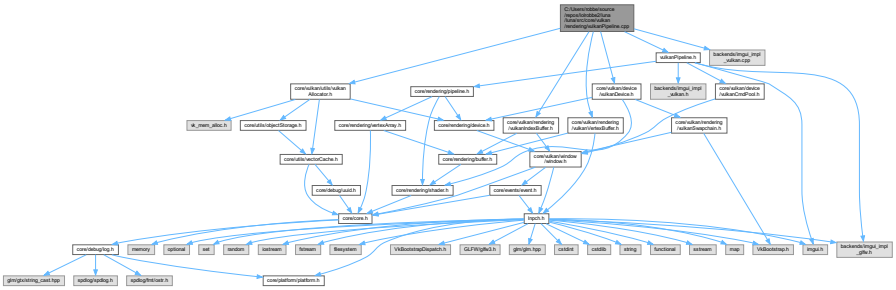
Namespaces

- namespace luna
- namespace luna::vulkan

4.43 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ Pipeline.cpp File Reference

```
#include "vulkanPipeline.h"
#include <core/vulkan/device/vulkanDevice.h>
#include <backends/imgui_impl_vulkan.cpp>
#include <core/vulkan/utils/vulkanAllocator.h>
#include <core/vulkan/rendering/vulkanVertexBuffer.h>
#include <core/vulkan/rendering/vulkanIndexBuffer.h>
```

Include dependency graph for vulkanPipeline.cpp:



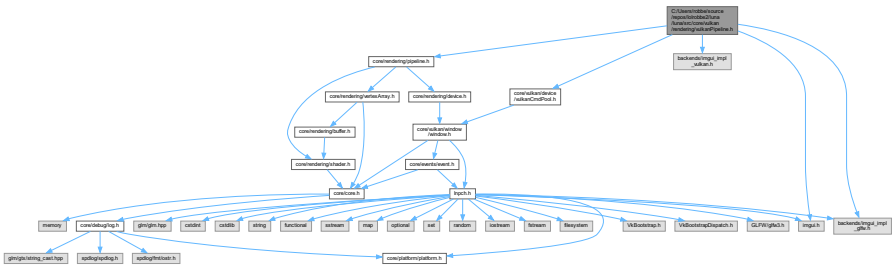
Namespaces

- namespace luna
- namespace luna::vulkan

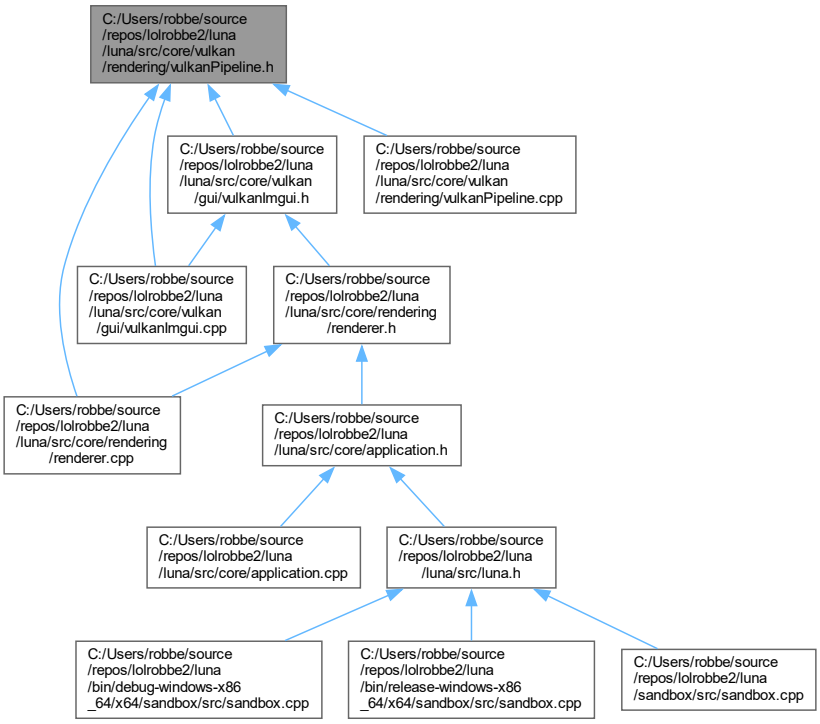
4.44 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ Pipeline.h File Reference

```
#include <imgui.h>
#include <backends/imgui_impl_glfw.h>
#include <backends/imgui_impl_vulkan.h>
#include <core/rendering/pipeline.h>
#include <core/vulkan/device/vulkanCmdPool.h>
```

Include dependency graph for vulkanPipeline.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::vulkan::vulkanPipeline

  vulkan pipline implementation class.
- struct luna::vulkan::vulkanPipeline::shaderStage
- struct luna::vulkan::vulkanPipeline::vertexInputDescription
- struct luna::vulkan::vulkanPipeline::Vertex
- struct luna::vulkan::vulkanPipeline::drawCommand

Namespaces

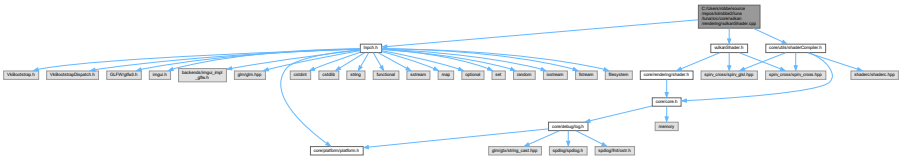
- namespace luna
- namespace luna::vulkan

4.45 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ Shader.cpp File Reference

```
#include "vulkanShader.h"
#include <core/utils/shaderCompiler.h>
```

```
#include "lnpch.h"
```

Include dependency graph for vulkanShader.cpp:



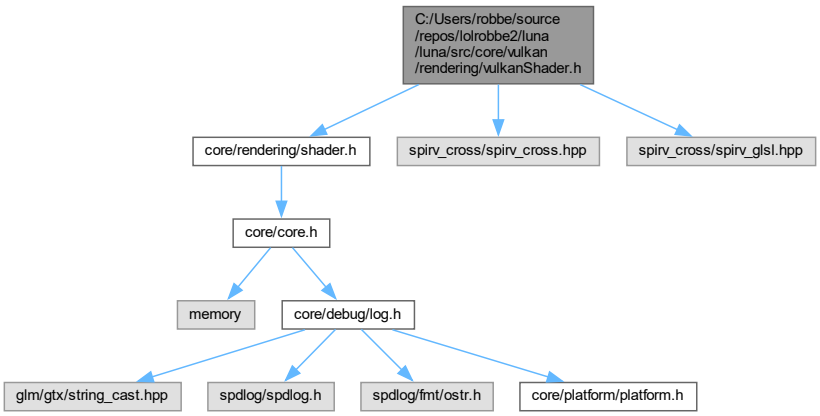
Namespaces

- namespace luna
- namespace luna::vulkan

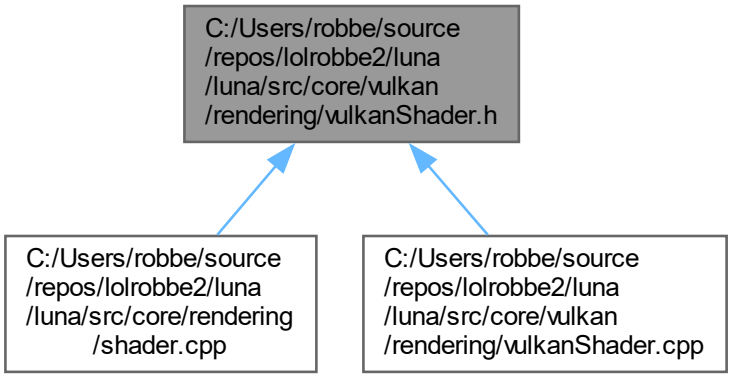
4.46 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ Shader.h File Reference

```
#include <core/rendering/shader.h>
#include <spirv_cross/spirv_cross.hpp>
#include <spirv_cross/spirv_glsl.hpp>
```

Include dependency graph for vulkanShader.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::vulkan::vulkanShader

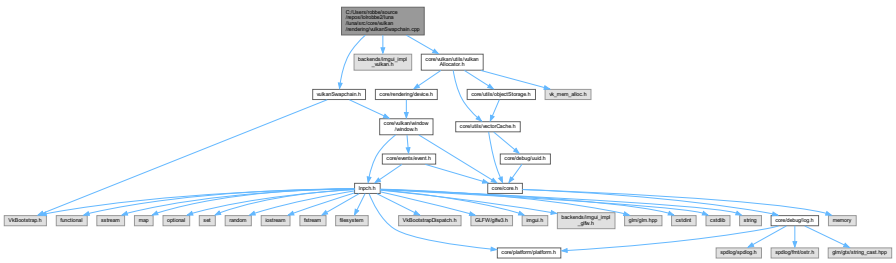
Namespaces

- namespace luna
- namespace luna::vulkan

4.47 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ Swapchain.cpp File Reference

```
#include "vulkanSwapchain.h"
#include <backends/imgui_impl_vulkan.h>
#include <core/vulkan/utils/vulkanAllocator.h>
```

Include dependency graph for vulkanSwapchain.cpp:



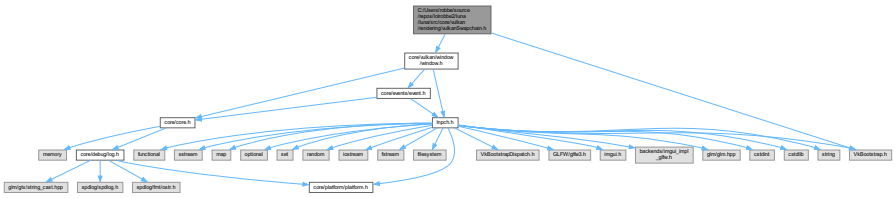
Namespaces

- namespace luna
- namespace luna::vulkan

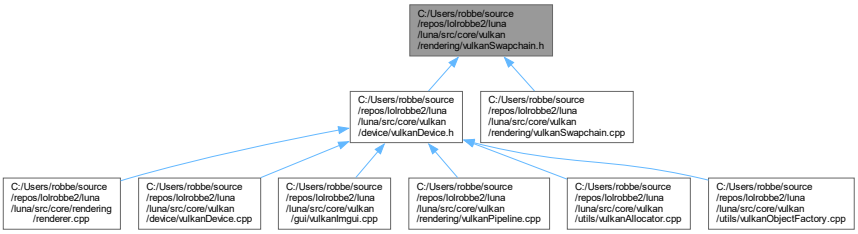
4.48 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ Swapchain.h File Reference

```
#include <core/vulkan/window/window.h>
#include <VkBootstrap.h>
```

Include dependency graph for vulkanSwapchain.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct luna::vulkan::queueFamilyIndices
- struct luna::vulkan::swapchainSpec
- class luna::vulkan::vulkanSwapchain

  the vulkanSwapchain is a collection of vulkan frambuffers and image views to wich the scene will be .

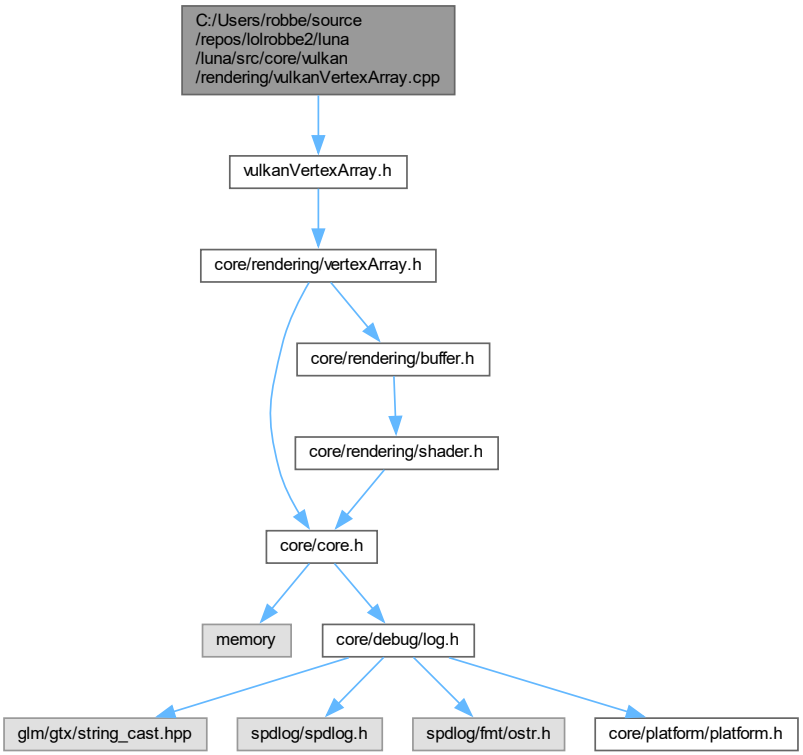
Namespaces

- namespace luna
- namespace luna::vulkan

4.49 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanVertexArray.cpp File Reference

```
#include "vulkanVertexArray.h"
```

Include dependency graph for vulkanVertexArray.cpp:



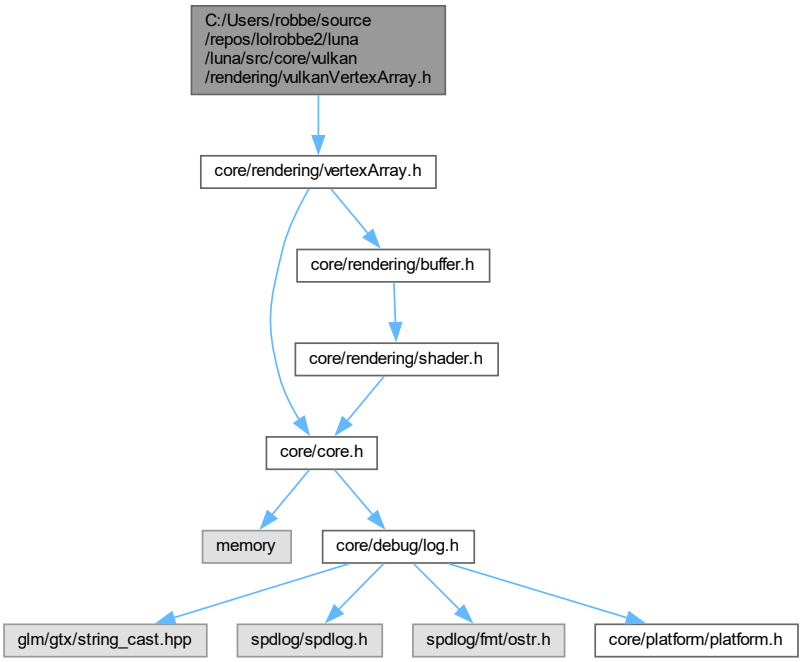
Namespaces

- namespace luna
- namespace luna::vulkan

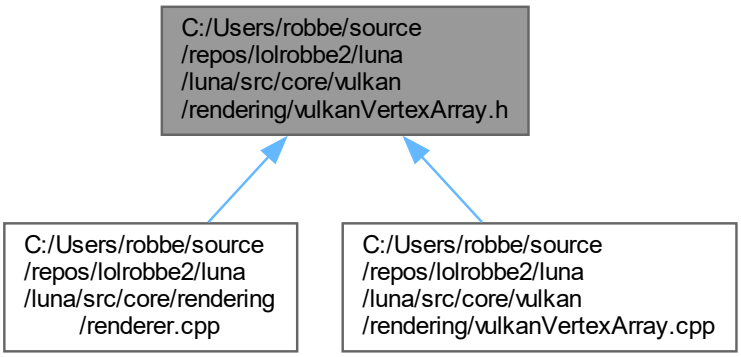
4.50 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkanVertexArray.h File Reference

```
#include <core/rendering/vertexArray.h>
```

Include dependency graph for vulkanVertexArray.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::vulkan::vulkanVertexArray

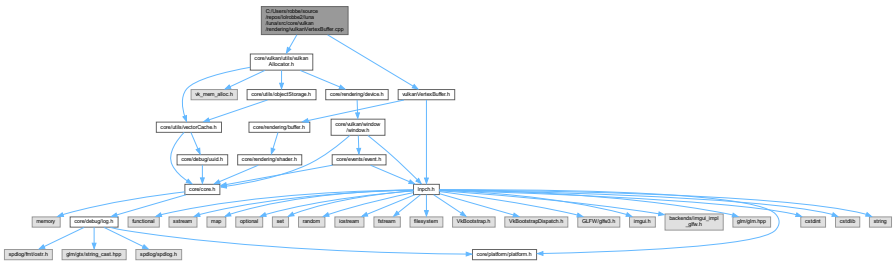
Namespaces

- namespace luna
- namespace luna::vulkan

4.51 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ VertexBuffer.cpp File Reference

```
#include "vulkanVertexBuffer.h"
#include <core/vulkan/utils/vulkanAllocator.h>
```

Include dependency graph for vulkanVertexBuffer.cpp:



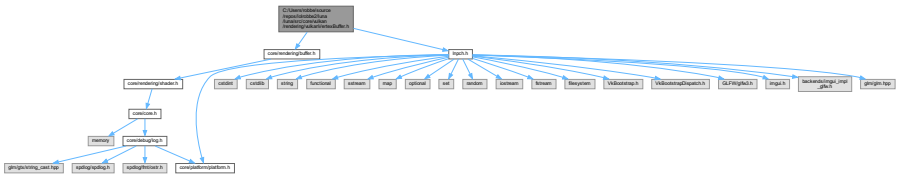
Namespaces

- namespace luna
- namespace luna::vulkan

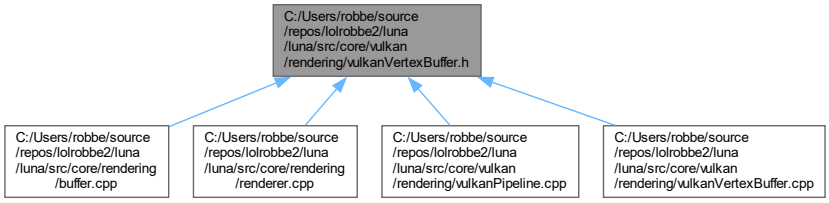
4.52 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/rendering/vulkan↩ VertexBuffer.h File Reference

```
#include <core/rendering/buffer.h>
#include <lnpch.h>
```

Include dependency graph for vulkanVertexBuffer.h:



This graph shows which files directly or indirectly include this file:



Classes

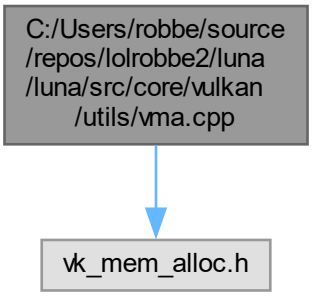
- class luna::vulkan::vulkanVertexBuffer

Namespaces

- namespace luna
- namespace luna::vulkan

4.53 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vma.cpp File Reference

`#include <vk_mem_alloc.h>`
Include dependency graph for vma.cpp:



Macros

- #define VMA_IMPLEMENTATION
- #define VMA_VULKAN_VERSION 1002000
- #define VMA_BIND_MEMORY2 0
- #define VMA_RECORDING_ENABLED

4.53.1 Macro Definition Documentation

4.53.1.1 VMA_BIND_MEMORY2 `#define VMA_BIND_MEMORY2 0`

4.53.1.2 VMA_IMPLEMENTATION `#define VMA_IMPLEMENTATION`

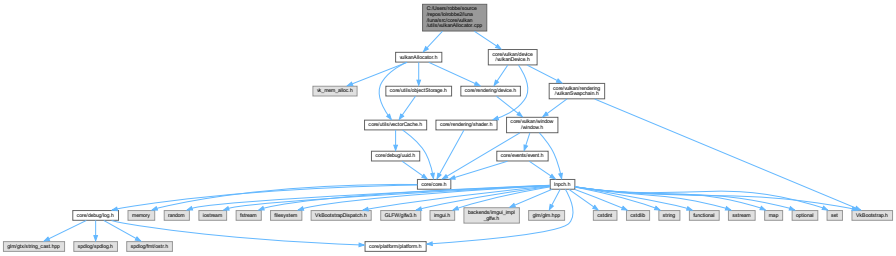
4.53.1.3 VMA_RECORDING_ENABLED `#define VMA_RECORDING_ENABLED`

4.53.1.4 VMA_VULKAN_VERSION `#define VMA_VULKAN_VERSION 1002000`

4.54 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkan↩ Allocator.cpp File Reference

```
#include "vulkanAllocator.h"
#include <core/vulkan/device/vulkanDevice.h>
```

Include dependency graph for vulkanAllocator.cpp:



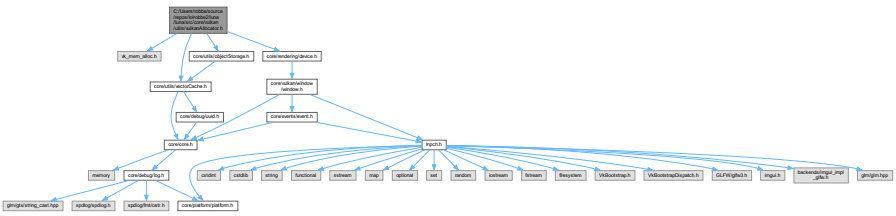
Namespaces

- namespace luna
- namespace luna::utils

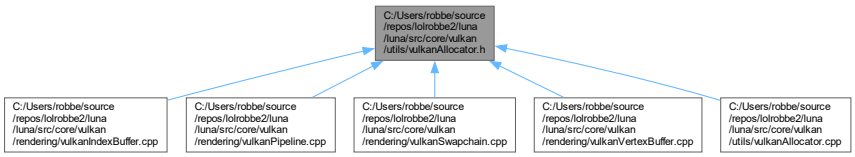
4.55 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkan↩ Allocator.h File Reference

```
#include <vk_mem_alloc.h>
#include <core/utils/vectorCache.h>
#include <core/rendering/device.h>
#include <core/utils/objectStorage.h>
```

Include dependency graph for vulkanAllocator.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::utils::vulkanAllocator
- struct luna::utils::vulkanAllocator::vmaAllocation

Namespaces

- namespace luna
- namespace luna::utils

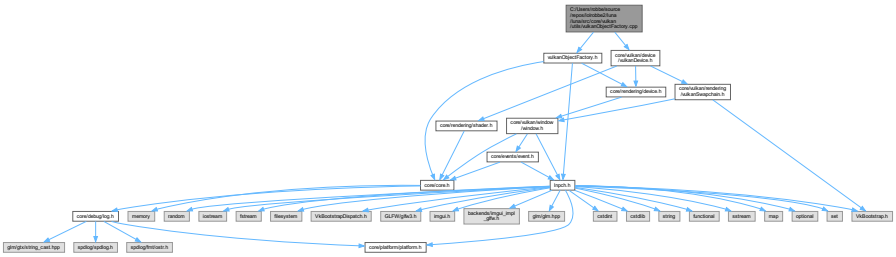
Typedefs

- typedef uint64_t luna::utils::allocationHandle

4.56 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkan↩ ObjectFactory.cpp File Reference

```
#include "vulkanObjectFactory.h"
#include <core/vulkan/device/vulkanDevice.h>
```

Include dependency graph for vulkanObjectFactory.cpp:



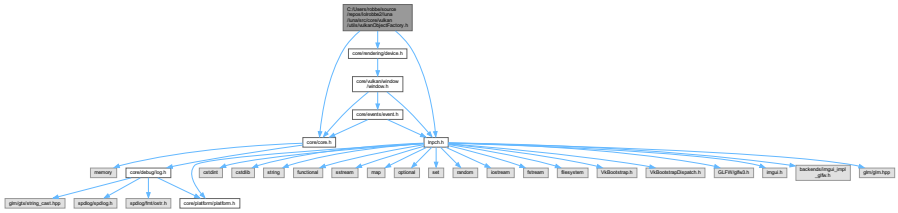
Namespaces

- namespace luna
- namespace luna::utils

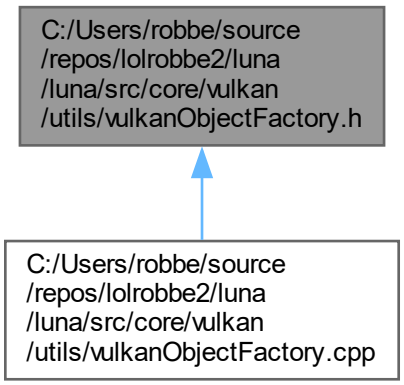
4.57 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/utils/vulkan↩ ObjectFactory.h File Reference

```
#include <core/core.h>
#include <core/rendering/device.h>
#include "lnpch.h"
```

Include dependency graph for vulkanObjectFactory.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::utils::vulkanObjectFactory

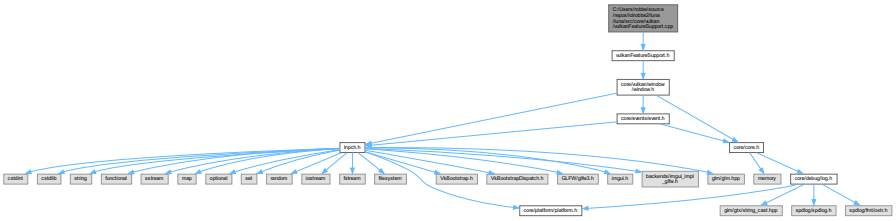
  static class that creates vulkan objects like buffers and images.

Namespaces

- namespace luna
- namespace luna::utils

4.58 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/vulkanFeature↩ Support.cpp File Reference

`#include "vulkanFeatureSupport.h"`
Include dependency graph for vulkanFeatureSupport.cpp:

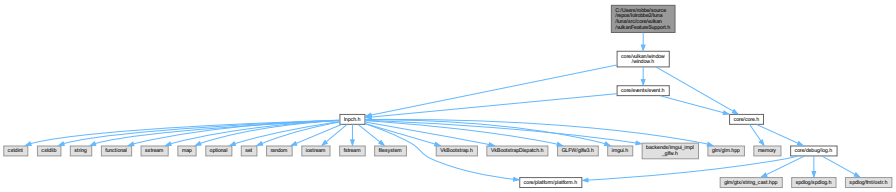


Namespaces

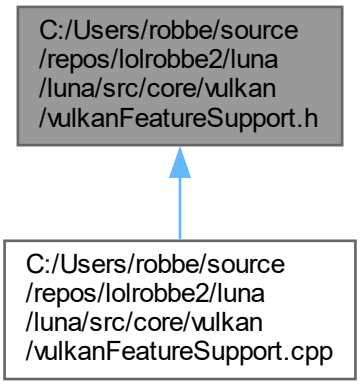
- namespace luna
- namespace luna::vulkan

4.59 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/vulkanFeature↩ Support.h File Reference

`#include <core/vulkan/window/window.h>`
Include dependency graph for vulkanFeatureSupport.h:



This graph shows which files directly or indirectly include this file:



Classes

- class luna::vulkan::vulkanFeatureSupport

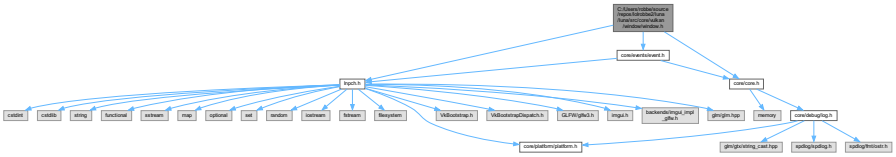
Namespaces

- namespace luna
- namespace luna::vulkan

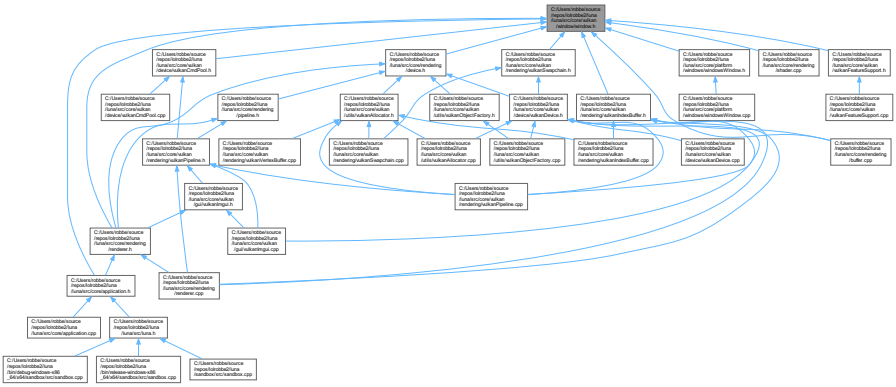
4.60 C:/↩ Users/robbe/source/repos/lolrobbe2/luna/luna/src/core/vulkan/window/window.h File Reference

```
#include <lnpch.h>
#include <core/core.h>
#include <core/events/event.h>
```

Include dependency graph for window.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct luna::vulkan::windowSpec
- class luna::vulkan::window

Namespaces

- namespace luna
- namespace luna::vulkan

Macros

- #define WINDOW

Enumerations

- enum luna::vulkan::Api { luna::vulkan::NONE = 0 , luna::vulkan::VULKAN = 1 , luna::vulkan::OPENGL = 2 }

4.60.1 Macro Definition Documentation

4.60.1.1 WINDOW `#define WINDOW`

4.61 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/lnpch.cpp File Reference

`#include <lnpch.h>`
Include dependency graph for lnpch.cpp:

Macros

- #define STB_IMAGE_IMPLEMENTATION

4.61.1 Macro Definition Documentation

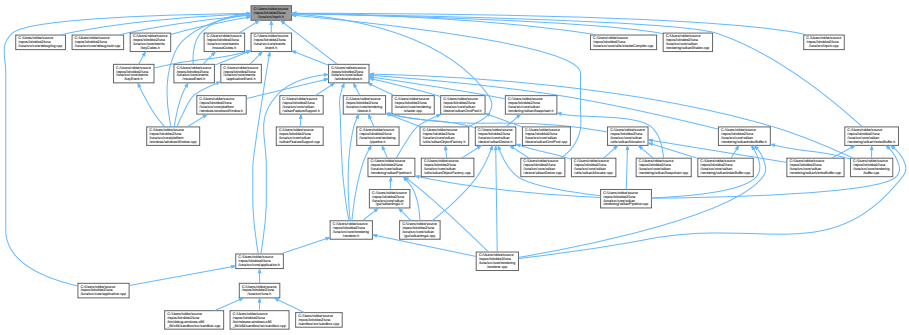
4.61.1.1 STB_IMAGE_IMPLEMENTATION `#define STB_IMAGE_IMPLEMENTATION`

4.62 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/lnpch.h File Reference

```
#include <cstdint>
#include <cstdlib>
#include <string>
#include <functional>
#include <sstream>
#include <map>
#include <optional>
#include <set>
#include <random>
#include <iostream>
#include <fstream>
#include <filesystem>
#include <core/platform/platform.h>
#include <VkBootstrap.h>
#include <VkBootstrapDispatch.h>
#include <GLFW/glfw3.h>
#include <imgui.h>
#include <backends/imgui_impl_glfw.h>
#include <glm/glm.hpp>
```

Include dependency graph for lnpch.h:

This graph shows which files directly or indirectly include this file:



Macros

- #define GLFW_INCLUDE_VULKAN

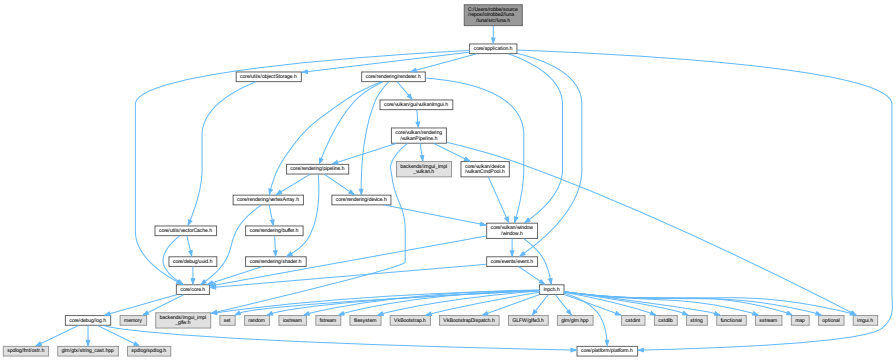
4.62.1 Macro Definition Documentation

4.62.1.1 GLFW_INCLUDE_VULKAN `#define GLFW_INCLUDE_VULKAN`

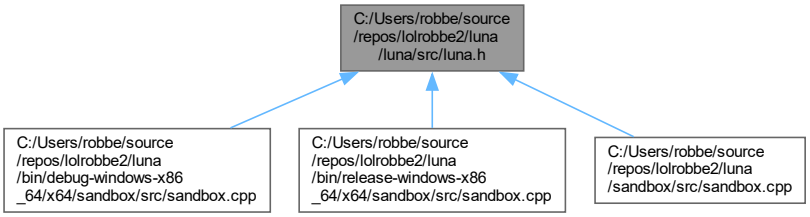
4.63 C:/Users/robbe/source/repos/lolrobbe2/luna/luna/src/luna.h File Reference

`#include <core/application.h>`

Include dependency graph for luna.h:



This graph shows which files directly or indirectly include this file:



Functions

- int main (int argc, char **argv)

4.63.1 Function Documentation

4.63.1.1 main()

```
int main (
    int argc,
    char ** argv )
```

4.64 C:/Users/robbe/source/repos/lolrobbe2/luna/README.md File Reference

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