## VRE::VRE\_Window

- int mWidth
- int mHeight
- bool mFrameBufferResized
- const std::string mWindowName
- GLFWwindow \* mWindow
- + VRE\_Window(int width, int height, std::string name)
- + ~VRE\_Window()
- + VRE\_Window(const VRE \_Window &)=delete+ VRE\_Window & operator
- =(const VRE\_Window &) =delete + bool ShouldClose()
- + void CreateWindowSurface
- (VkInstance instance, VkSurface KHR \*surface) + VkExtent2D GetExtent()
- + bool HasWindowResized()
- + void ResetWindowResizedFlag()
- + GLFWwindow \* GetGLFWwindow
- () const - void Init()
- static void FrameBufferResized
- Callback(GLFWwindow \*window, int width, int height)

VRE::VRE\_Device

-mWindow

## const bool mEnableValidation Layers

- Layers+ VkPhysicalDeviceProperties mProperties
- VkInstance mInstanceVkDebugUtilsMessengerEXT
- mDebugMessenger
- VkPhysicalDevice mPhysical DeviceVkCommandPool mCommandPool
- VkDevice mVkDeviceVkSurfaceKHR mVkSurface
- VkOugus mGraphics Quaus
- VkQueue mGraphicsQueue
- VkQueue mPresentQueue
- const char \* > mValidation Layers

const std::vector

- const std::vectorconst char \* > mDeviceExtensions+ VRE\_Device(VRE\_Window
- &window)
  + ~VRE\_Device()
- + VRE\_Device(const VRE \_Device &)=delete
- + VRE\_Device & operator =(const VRE\_Device &)
- =delete + VRE\_Device(VRE\_Device
- &&)=delete
  + VRE\_Device & operator
  =(VRE\_Device &&)=delete
- Pool()
  + VkDevice GetVkDevice()

+ VkCommandPool GetCommand

+ VkPhysicalDevice GetPhysical

- Device()
  + VkSurfaceKHR Surface()
- and 12 more...
   void CreateInstance()
- void SetupDebugMessenger()void CreateSurface()
- void Create-Surface()void PickPhysicalDevice()
- void CreateLogicalDevice()void CreateCommandPool()
- std::vector< const char \* > GetRequiredExtensions()

bool IsDeviceSuitable (VkPhysicalDevice device)

- bool CheckValidationLayer Support()QueueFamilyIndices
- FindQueueFamilies(VkPhysical Device device)

void PopulateDebugMessenger

void HasGflwRequiredInstance

CreateInfo(VkDebugUtilsMessenger CreateInfoEXT &createInfo)

Extensions()

- bool CheckDeviceExtension Support(VkPhysicalDevice device)
- SwapChainSupportDetails
  QuerySwapChainSupport
  (VkPhysicalDevice device)

VRE::VRE DescriptorSetLayout

uint32\_t, VkDescriptorSetLavoutBinding > mBindings

-mDevice

## LayoutBinding > mBindings + VRE DescriptorSetLayout

VkDescriptorSetLayout mDescriptorSetLayout std::unordered\_map

- + VRE\_DescriptorSetLayout (VRE\_Device &device, std ::unordered\_map< uint32\_t,
  - VkDescriptorSetLayoutBinding > bindings)

&)=delete

- + ~VRE\_DescriptorSetLayout()+ VRE\_DescriptorSetLayout (const VRE\_DescriptorSetLayout
- + VRE\_DescriptorSetLayout & operator=(const VRE
- \_DescriptorSetLayout &) =delete
- + VkDescriptorSetLayout
   GetDescriptorSetLayout
   () const