```
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)
                                 -mWindow
              VRE::VRE Device
      + const bool mEnableValidation
        Layers
      + VkPhysicalDeviceProperties
        mProperties
      - VkInstance mInstance
      - VkDebugUtilsMessengerEXT
         mDebugMessenger
      - VkPhysicalDevice mPhysical
        Device
      - VkCommandPool mCommandPool
      - VkDevice mVkDevice
      - VkSurfaceKHR mVkSurface
      - VkQueue mGraphicsQueue
      - VkQueue mPresentQueue
      const std::vector
        const char * > mValidation
        Layers
      const std::vector
         const 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
      + VkCommandPool GetCommand
                                                -mWindow
        Pool()
      + VkDevice GetVkDevice()
      + VkPhysicalDevice GetPhysical
        Device()
      + VkSurfaceKHR Surface()
        and 12 more...
      - void CreateInstance()
      - void SetupDebugMessenger()
      - void CreateSurface()
      - void PickPhysicalDevice()
      - void CreateLogicalDevice()
      - void CreateCommandPool()
      - bool IsDeviceSuitable
        (VkPhysicalDevice device)
      - std::vector< const
        char * > GetRequiredExtensions()
      - bool CheckValidationLayer
        Support()
        QueueFamilyIndices
         FindQueueFamilies(VkPhysical
        Device device)
        void PopulateDebugMessenger
        CreateInfo(VkDebugUtilsMessenger
        CreateInfoEXT &createInfo)

    void HasGflwRequiredInstance

        Extensions()
      - bool CheckDeviceExtension
        Support(VkPhysicalDevice
         device)
      - SwapChainSupportDetails
         QuerySwapChainSupport
        (VkPhysicalDevice device)
                                     -mDevice
                                       VRE::VRE_Renderer
                             - std::unique_ptr< VRE
                               SwapChain > mSwapChain
                             - std::vector< VkCommandBuffer
                               > mCommandBuffers
                             - uint32_t mCurrentImageIndex
                             - int mCurrentFrameIndex
                             - bool mDrawStarted
                             + VRE_Renderer(VRE_Window
                               &window, VRE_Device &device)
                             + ~VRE_Renderer()
                             + VRE_Renderer(const
                               VRE_Renderer &)=delete
                             + VRE_Renderer & operator
                               =(const VRE_Renderer &)
                               =delete
                             + VkCommandBuffer BeginDraw()
                 +mDevice
                             + void EndDraw()
                             + void BeginSwapChainRender
                               Pass(VkCommandBuffer commandBuffer)
                             + void EndSwapChainRenderPass
                               (VkCommandBuffer commandBuffer)

    bool IsDrawInProgress

                               () const
                             + VkRenderPass GetSwapChain
                               RenderPass() const
                             + float GetAspectRatio
                               () const
                             + VkCommandBuffer GetCurrent
                               CommandBuffer() const
                             + int GetFrameIndex()
                               const
                             - void CreateCommandBuffers()
                             void RecreateSwapChain()
                             void FreeCommandBuffers()
                            -mRenderer
      VRE::VRE_SharedContext
  + std::shared_ptr< VRE
    _DescriptorSetLayout
    > mGlobalDescSetLayout
  + std::vector< std::unique
    _ptr< VRE_DescriptorPool
    > > mObjectDescPools
  + std::vector< VkDescriptor
    Set > mSceneDescriptorSets
  + std::vector< VRE_PointLight
    > mPointLights
  + VRE GameObject::GameObjects
    Map * mGameObjMap
  + VRE SharedContext()
                   -mSharedContext
   VRE::VRE_GameObjectManager
- VRE_GameObject::GameObject
 ID mLastID
- VRE_GameObject::GameObjects
 Map mGameObjectsMap
- std::vector< std::unique
  _ptr< VRE_Buffer > > mUboBuffers
+ VRE_GameObjectManager
 (VRE_SharedContext *sharedContext)
+ ~VRE_GameObjectManager()
+ VRE_GameObjectManager
  (const VRE_GameObjectManager
  &)=delete
+ VRE_GameObjectManager
  & operator=(const VRE
  _GameObjectManager &)=delete
+ VRE_GameObjectManager
  (VRE_GameObjectManager
  &&)=delete
+ VRE_GameObjectManager
  & operator=(VRE_GameObject
 Manager &&)=delete
+ VRE_GameObject & CreateGame
 Object()
+ VkDescriptorBufferInfo
  GetBufferInfoForGameObject
  (VRE_GameObject::GameObjectID
  gObjectID) const
+ void Init()
```

VRE::VRE\_Window

- const std::string mWindowName

- bool mFrameBufferResized

- GLFWwindow \* mWindow + VRE Window(int width,

- int mWidth - int mHeight

+ VRE\_GameObject(VRE \_GameObject &&)=default + VRE\_GameObject(const VRE\_GameObject &)=delete + VRE\_GameObject & operator =(const VRE\_GameObject &)=delete + VRE\_GameObject & operator =(VRE\_GameObject &&)=delete

+ std::shared ptr< VRE \_glTFModel > mModel - GameObjectID mID

+mTransform

VRE::VRE\_GameObject

+ void Update(float deltaTime)

-mManager

+ VRE\_GameObject::GameObjects Map & GetGameObjectsMap()

VRE::Transform

+ glm::mat3 NormalMatrix()

+ glm::vec3 mTranslation

+ glm::vec3 mScale

+ glm::mat4 Mat4()

+ glm::vec3 mRotation

+ GameObjectID GetID () const

+ VkDescriptorBufferInfo GetBufferInfo() - VRE\_GameObject(GameObject

ID id, const VRE\_GameObjectManager &manager)