

Vulkan Tutorial

What do I expect to learn

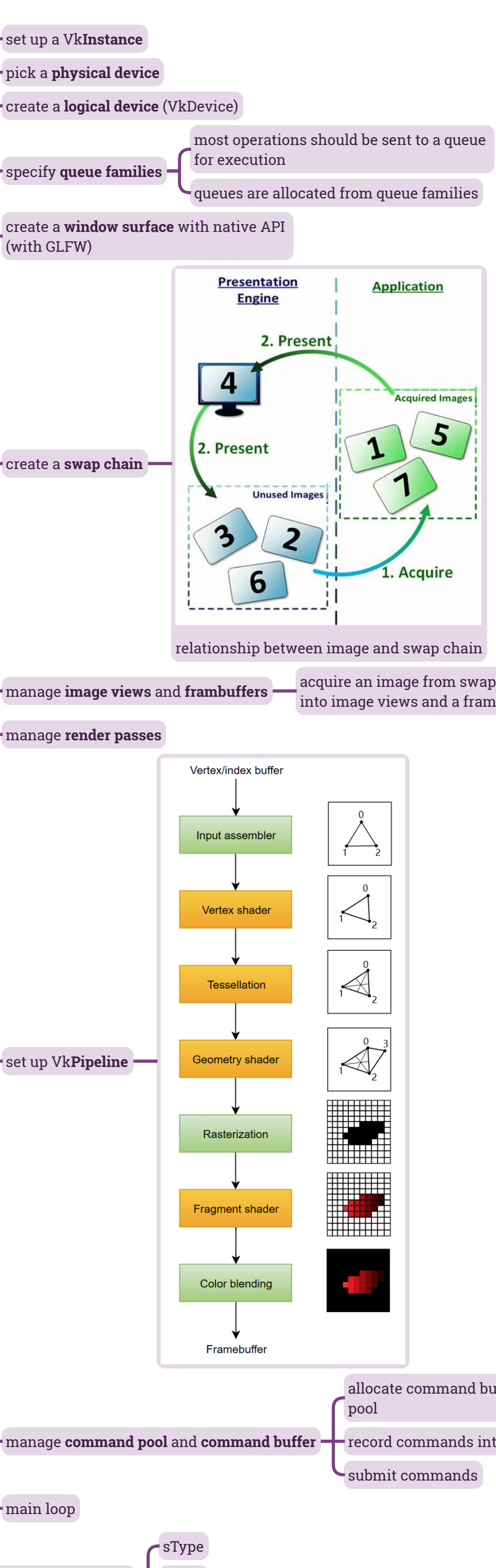
- overview and some simple details of Vulkan API
- draw a scene with Vulkan
- write vulkan codes on my own for simple cases
- learn it within a week

Why Vulkan

- cross platform
- more control over the hardware
 - mobile
 - multi-thread support
- lower overhead

overview

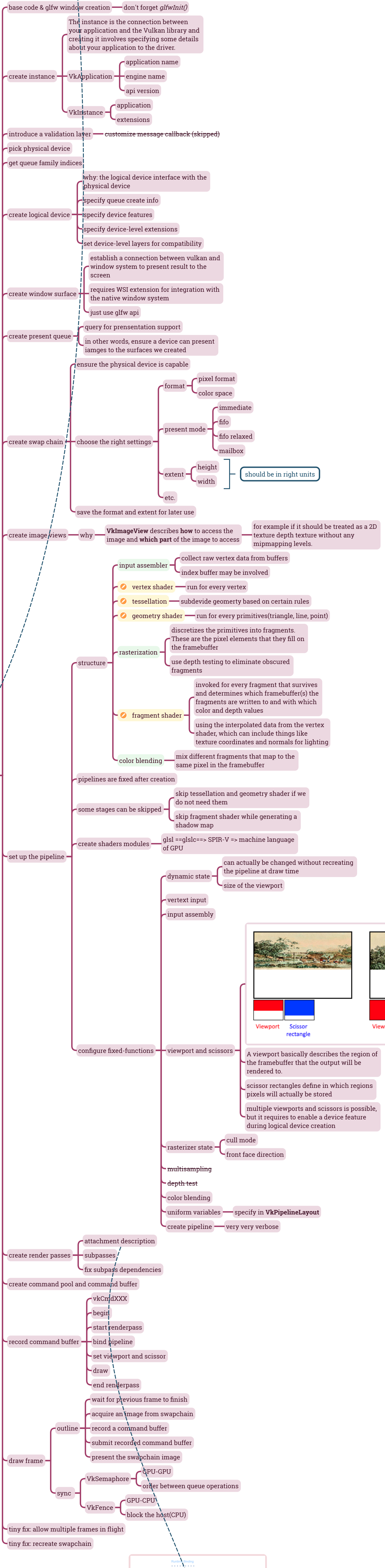
Big picture of drawing a triangle



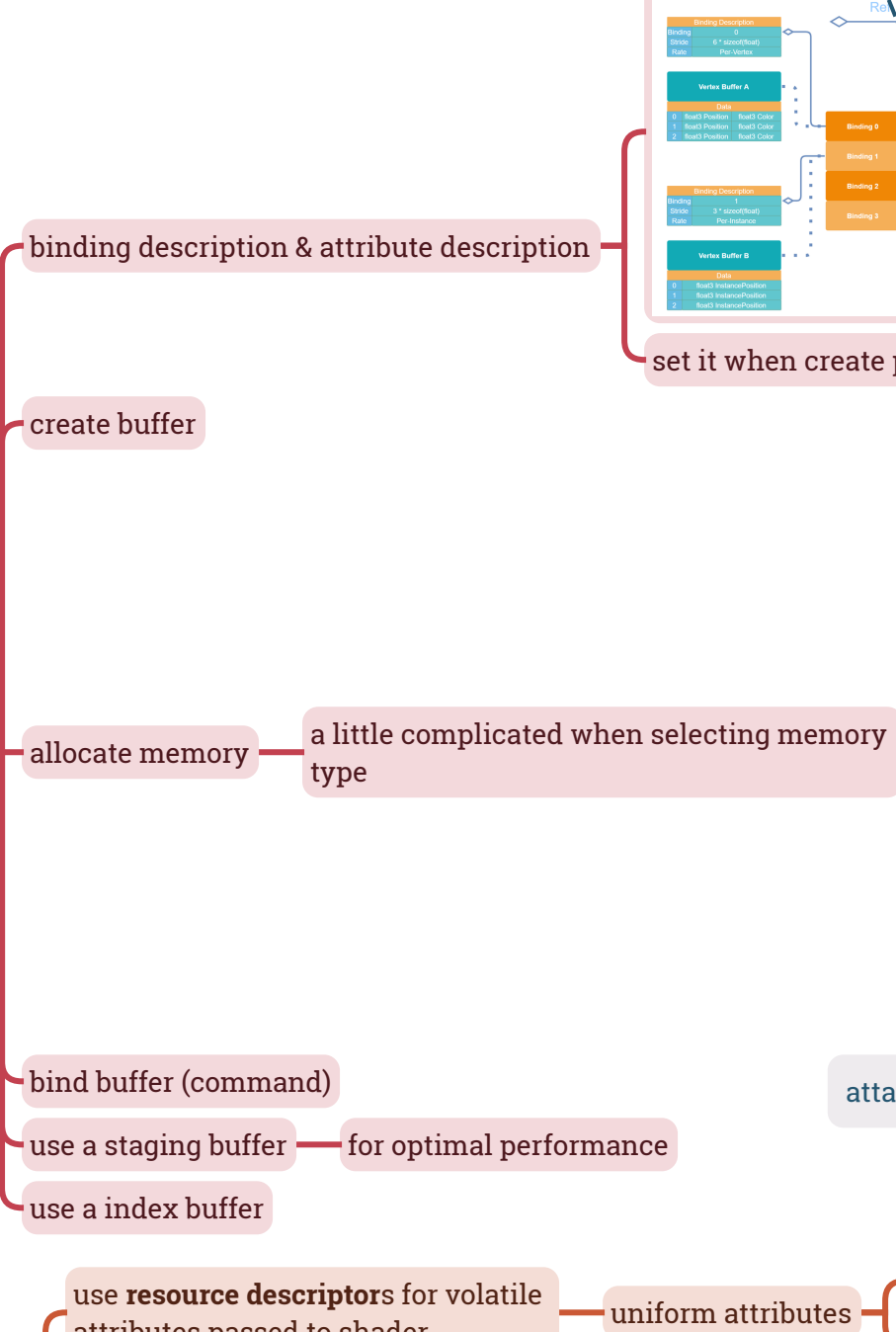
coding conventions

- use structs to pass parameters
 - sType
 - pNext
 - VkResult
- validation layers
- extensions
 - vkCreateXXX/vkAllocateXXX -> vkDestroyXXX/vkFreeXXX
 - pass a pointer to the number to get the number of items
 - vkGetXXX/vkEnumerateXXX
 - invoke the function again to retrieve data

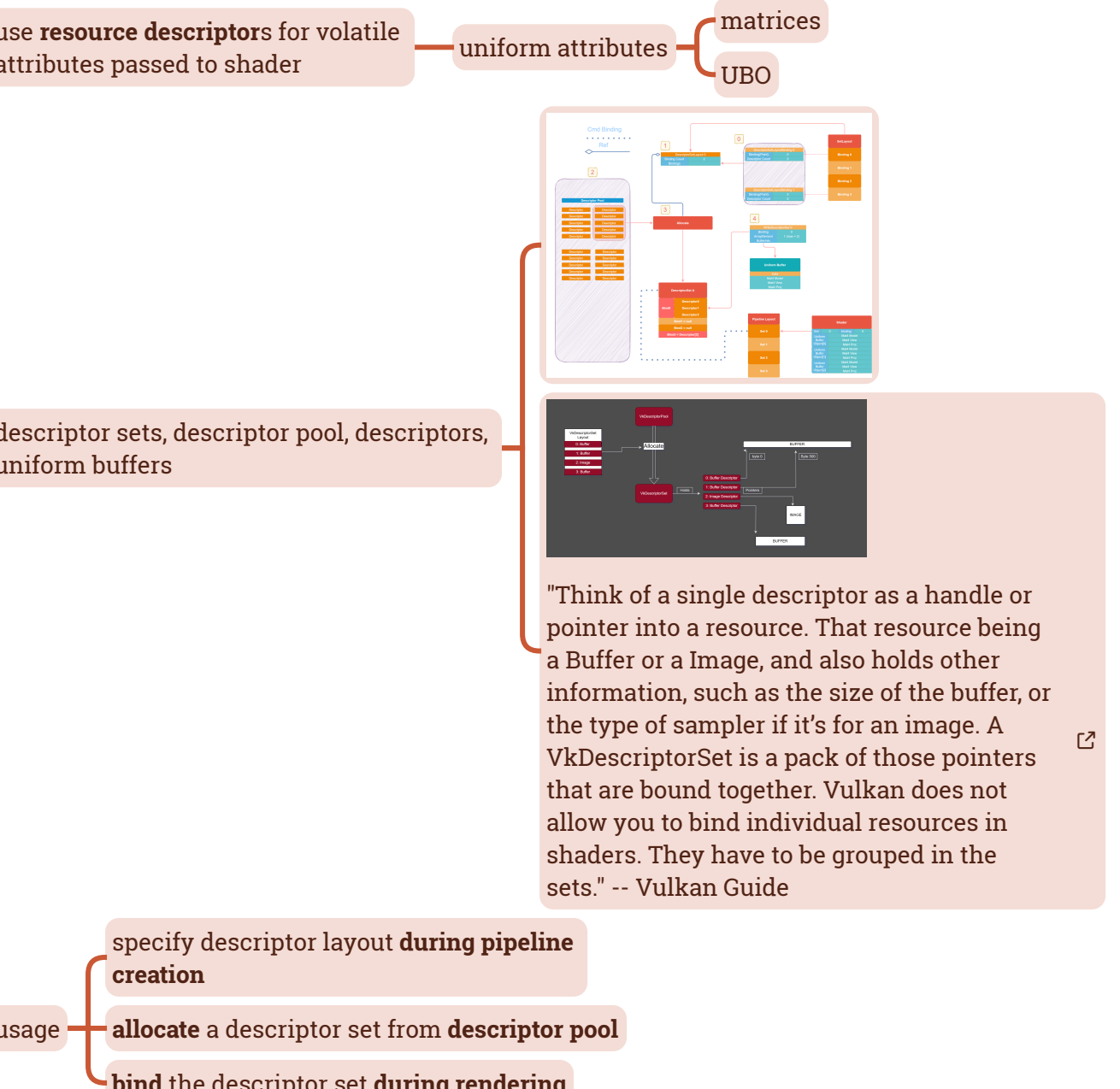
drawing a triangle



vertex buffer



uniform shader



texture

- create a staging buffer
- copy image data into the staging buffer
- create texture image and allocate memory for it (format, extent, mip levels, samplers, tiling, sharing mode, initial layout, etc.)
- transition image layout (use image memory barrier, vkCmdPipelineBarrier; srcAccessMask, dstAccessMask, srcStage, dstStage)
- create image view (repeat mode, anisotropy, filter)
- update descriptor set to reference image view and sampler
- update vertex data, vertex shader and fragment shader