## - ID3D11Device \* device - ID3D11DeviceContext \* deviceContext - IDXGISwapChain \* swapChain - ID3D11RenderTargetView \* renderTargetView - ID3D11DepthStencilView \* depthStencilView - ID3D11Texture2D \* depthStencilBuffer - int windowWidth - int windowHeight - HWND hWnd + woid Initialize(HWND hWnd, int width, int height) + void ResizeBuffersAndViews(int width, int height) + ID3D11Device \* GetDevice() const + ID3D11DeviceContext \* GetDeviceContext() const + IDXGISwapChain \* GetSwapChain() const + ID3D11RenderTargetView \* GetRenderTargetView() const + ID3D11DepthStencilView \* GetDepthStencilView() const + int GetWindowWidth() + int GetWindowHeight() + HWND GetHWND() -graphicsDevice -graphicsDevice ShaderProgram - ID3D11VertexShader \* vertexShader - ID3D11PixelShader \* pixelShader - ID3D11InputLayout \* inputLayout - ID3D11Buffer \* constantBuffer + ShaderProgram(GraphicsDevice \*graphicsDevice) + void LoadShader(LPCSTR VSFilename, LPCSTR PSFilename) + void ClearResources() + void UpdateBuffers(ConstantBuffer cb) + void Bind() bool CompileHLSL(const std::string &filename, ShaderType shaderType) - std::vector< byte > LoadShaderFile(const std::string &filename, ShaderType shaderType) RenderState - ID3D11RasterizerState \* rasterizerState - ID3D11BlendState \* blendState - ID3D11DepthStencilState \* depthStencilState - ID3D11SamplerState \* samplerState - float blendFactor + RenderState(GraphicsDevice \*graphicsDevice) -graphics Device +ptr + ~RenderState() + void CreateRasterizerState(const D3D11\_RASTERIZER\_DESC &rasterDesc) + void CreateBlendState(const D3D11\_BLEND\_DESC &blendDesc) + void CreateBlendFactor(float, float, float, float) + void CreateDepthStencilState(const D3D11\_DEPTH\_STENCIL\_DESC &dsDesc) + void CreateSamplerState(const D3D11 SAMPLER DESC &sampDesc) + void SetState() std::shared ptr< ShaderProgram > -renderState + ShaderProgram \* operator->() -shader Material - ID3D11ShaderResourceView \* textureSRV - bool transparent + Material(GraphicsDevice \*graphicsDevice, std::shared \_ptr< ShaderProgram > shader, RenderState \*renderState, bool transparent) + void LoadTexture(LPCSTR filename) + void SetConstantBuffer(ConstantBuffer cb) + void Setup() + bool isTransparent() + std::shared\_ptr< ShaderProgram > GetShaderProgram() const

+ RenderState \* GetRenderState() const

**Graphics Device**