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Abstract

The Graphics Pipeline enables the rendering of 2D and 3D images on various output devices, including computer monitors, mobile screens, and VR headsets. It is generally used in the Graphics Processing Unit (GPU). A graphic rendering pipeline includes stages of Application, Input Assembly, Shader Vertex, Tessellation, Shader Geometry, Rasterization, Shader Fragment, Depth & Stencil Testing, Blending Process, and Output Merger. The Graphics rendering pipeline is a main component in graphics systems that enable real-time rendering in gaming, VR, simulation, film production, and various visualization production. Current Graphics APIs including Metal, DirectX,

OpenGL, & Vulkan are essential tools for providing access to GPU hardware for

rendering 2D and 3d graphics efficiently. These APIs enable advanced graphics techniques for high-performance rendering and better resource management. It