Computer Graphics Lecture 1

CPU vs GPU

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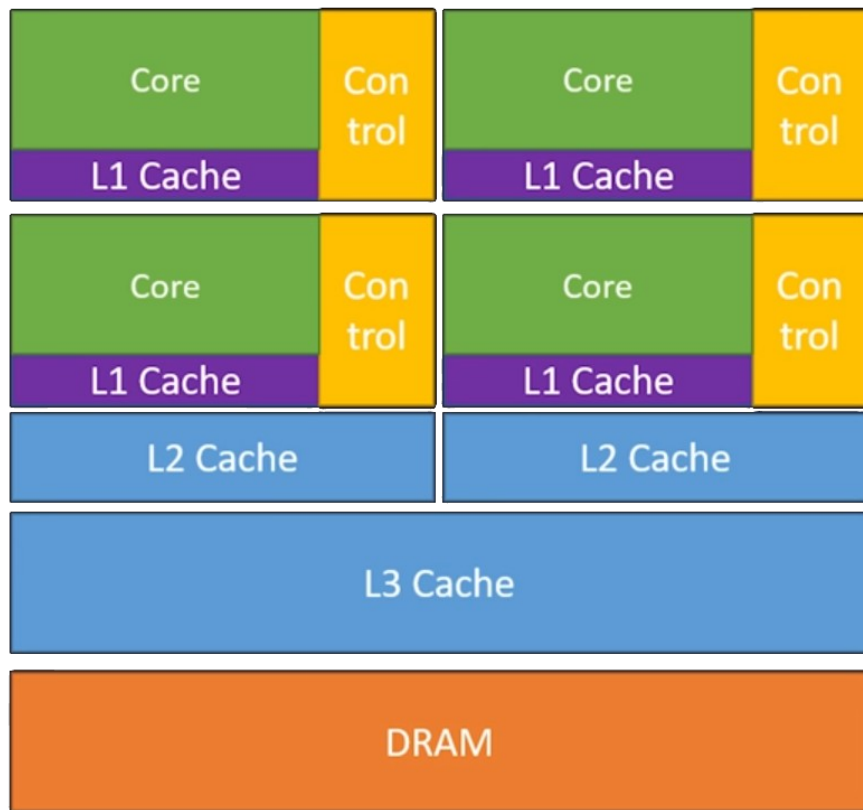
CPU   **GPU**
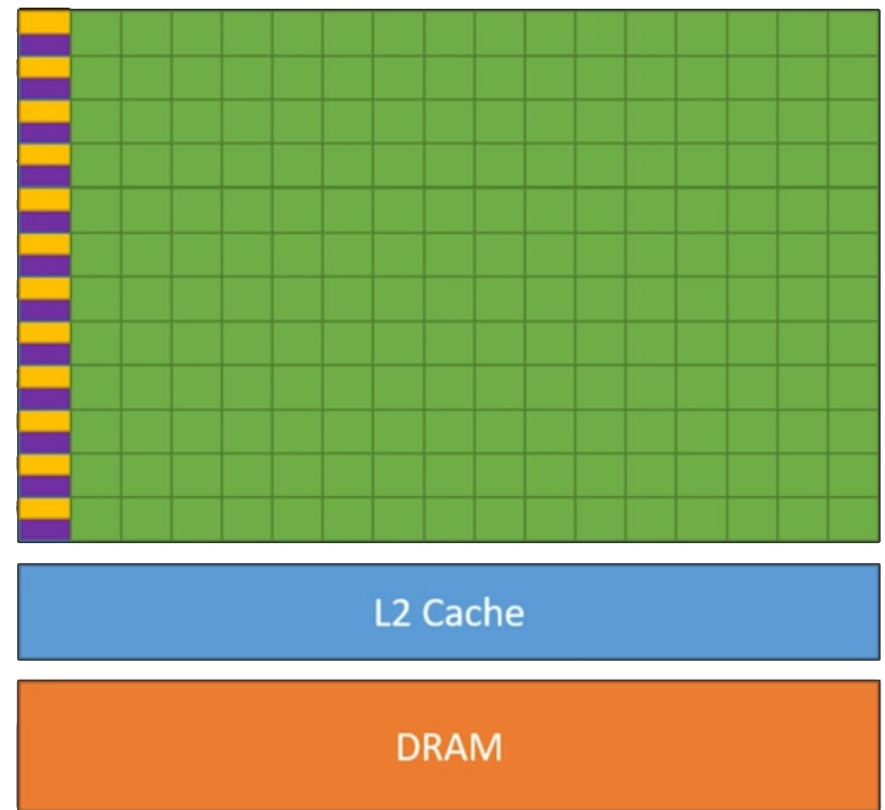
Graphics APIs

Graphics API calls life-cycle

Software	→	GPU Driver	→	GPU
Uses graphics API		Translates the graphics API calls into the corresponding GPU instructions		Actual execution on hardware
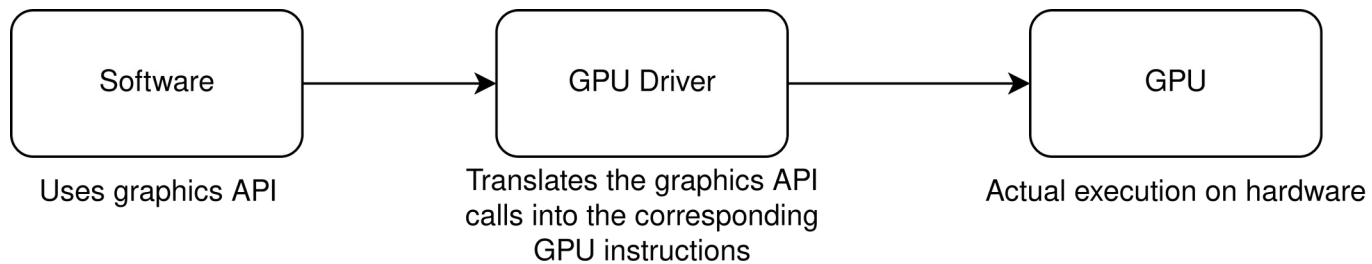
Common graphics APIs

- OpenGL (High-Level, Open Standard)

- Vulkan (Low-Level, Open Standard)

- Direct3D (Windows & Xbox only)

- Metal (macOS & iOS only)

OpenGL

OpenGL Pros & Cons

Pros

Easy to learn

Extensive documentation

Cons

Performance depends on BOTH the understanding of API and the driver

Cannot be used for lower level if needed

Delegates GPU selection for either the window manager or the OS

Support Libraries

- Window Management: SDL (C), SFML (C++), GLFW (C)

- Math: GLM (C++)

- Models Loaders: ASSIMP (C++)

C++, Git & OOP

Why do we rarely see people using it?

Useful links

- https://www.youtube.com/watch?v=Axd50ew4pco

- https://www.youtube.com/watch?v=r5NQecwZs1A

Documentation

- https://docs.gl/

- https://registry.khronos.org/OpenGL-Refpages/gl4/

Useful Books

- https://www.amazon.com/OpenGL-Programming-Guide-Official-Learning/dp/0134495497/khongrou-20

- https://www.amazon.com/Fundamentals-of-Computer-Graphics/dp/1032122862/