Transition: CUDA ↔ OpenCL

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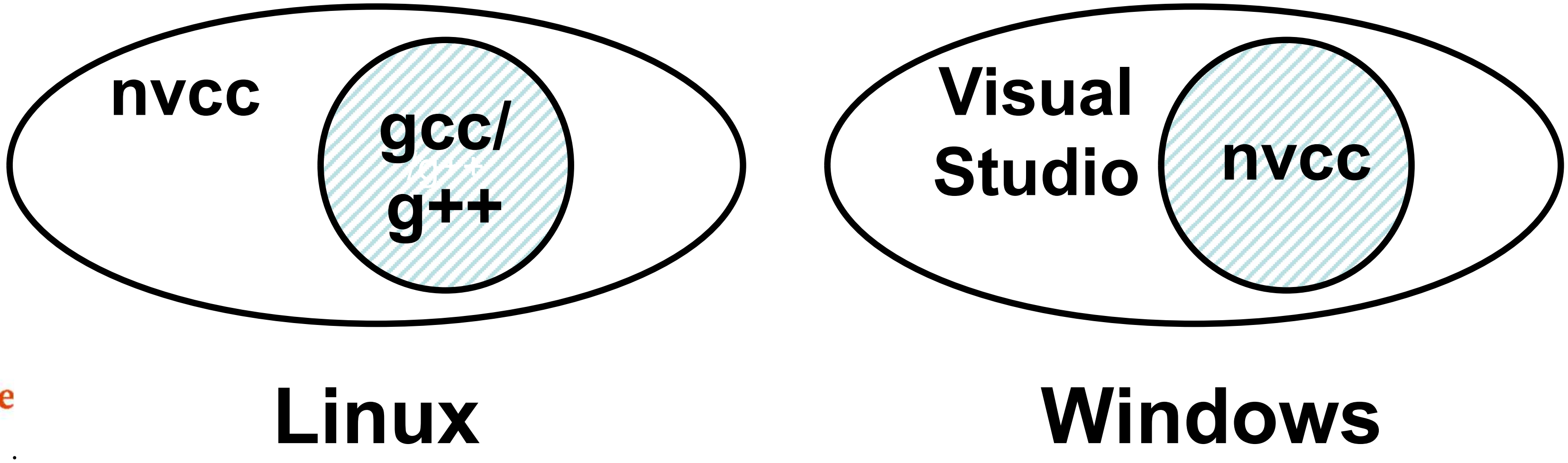
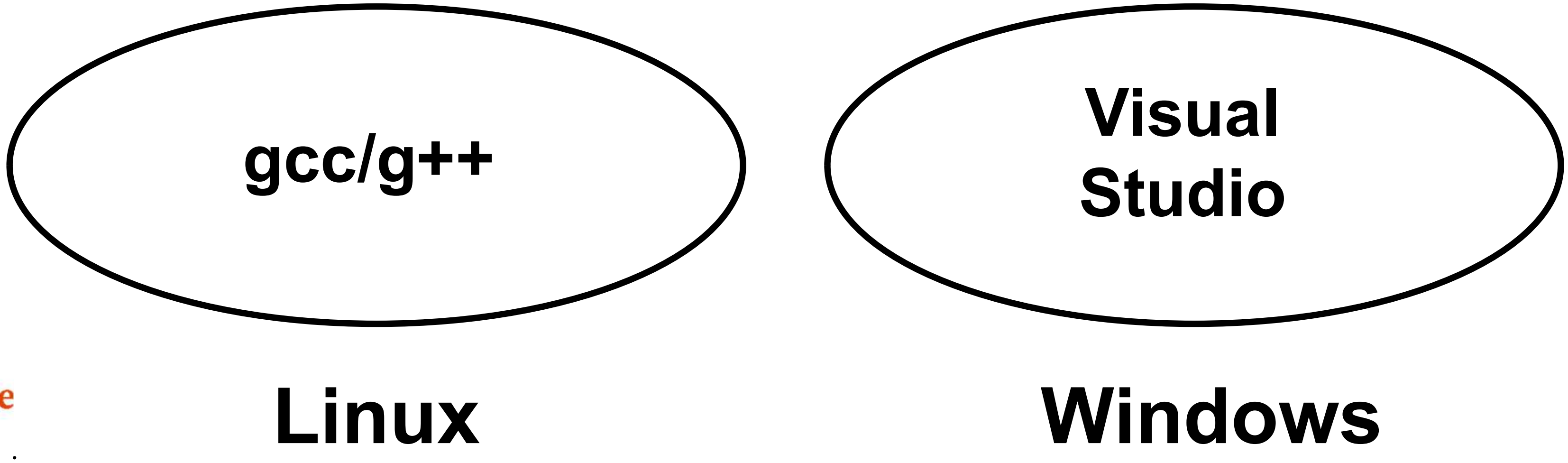
CUDA Summary

- CPU and GPU programs exist in the same file
  - Can share #defines
  - Can share information on the GPU function calling sequence
- Nvidia-only
- Much utility code provided (linear algebra, machine learning, etc.)
- Well-respected in the research community
- Need special compiler options



OpenCL Summary

- CPU and GPU programs exist in separate files
  - Must be sure to set #defines the same
  - You must provide information on the GPU function calling sequence
- Runs on Nvidia GPUs, AMD CPUs/GPUs, Intel CPUs/GPUs, FPGAs, …
- Little utility code provided
- Code looks a lot like GLSL compute shader code
- Well-respected in the production community
- Need no special compiler options (GPU code compiled in the driver)



gcc/g++

Linux

Visual Studio

Windows

What’s Unique and What's Common?

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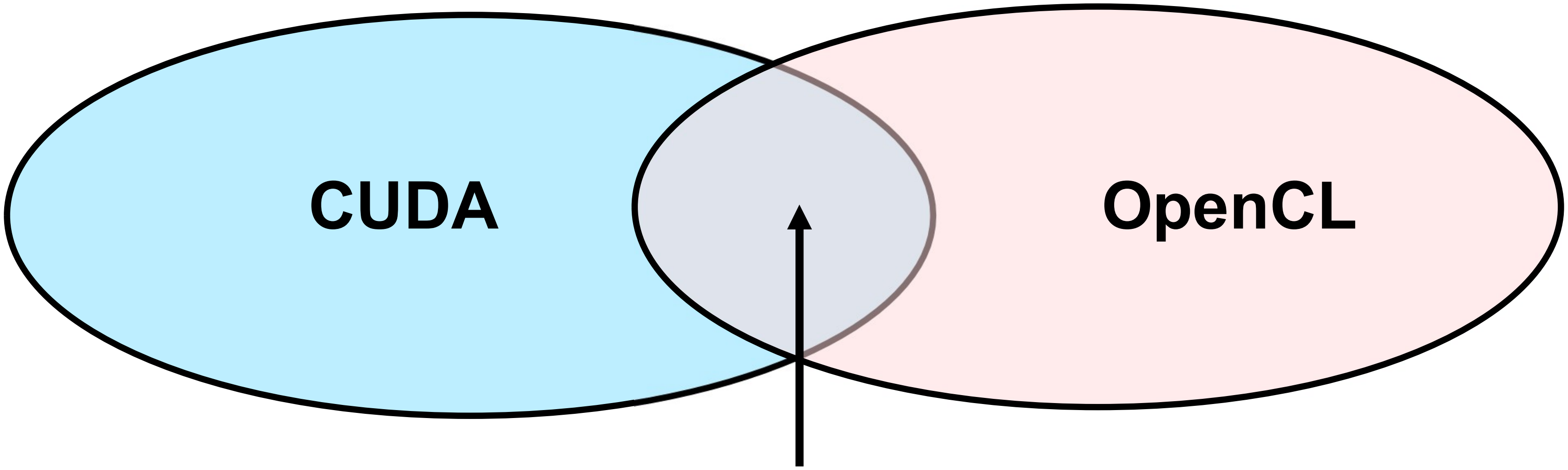

- Allocate data space in GPU memory
- Transfer data from CPU to GPU
- Execute a kernel to compute on that data
- Transfer data back from the GPU to the CPU