NVIDIA | DEEP LEARNING INSTITUTE

MULTI-GPU PROGRAMMING FOR CUDA C++

INTRODUCTION

INTRODUCTION

Main Objectives

Concurrency Strategies

Workshop Structure

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Increase performance for Single-Node CUDA C/C++ applications by exploiting, and then combining, 2 concurrency strategies offered to CUDA programmers.

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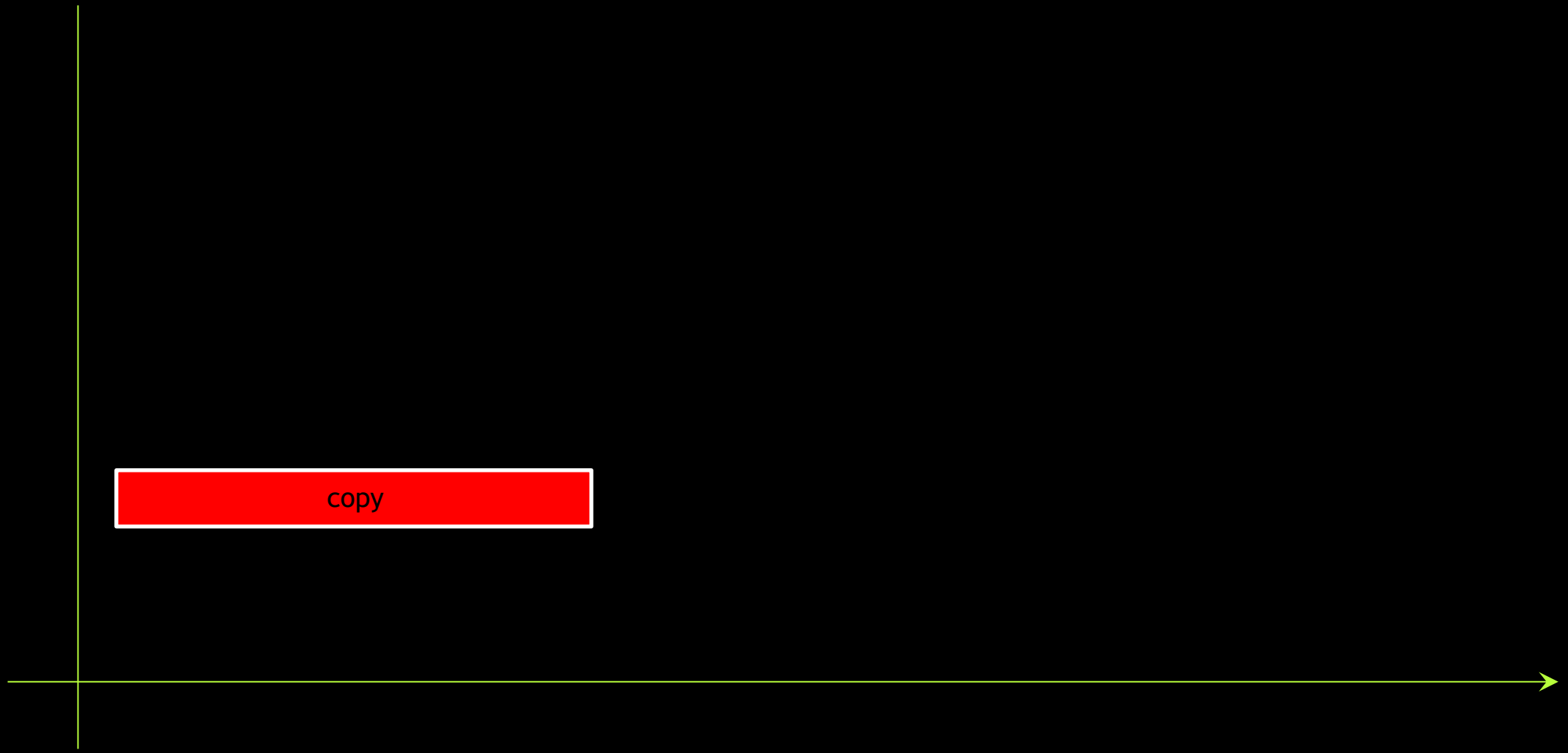
2) Performing computations concurrently on more than one GPU

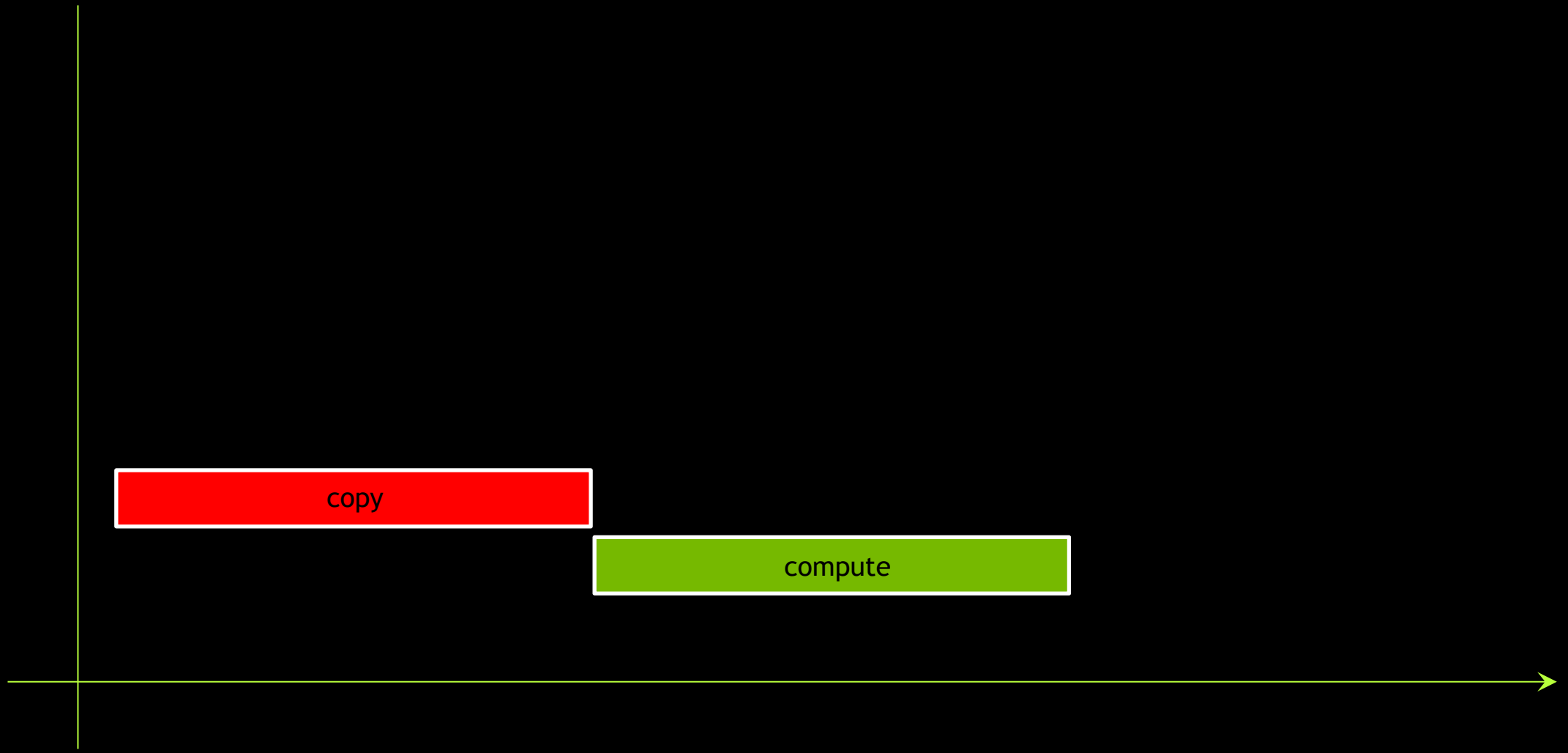
CONCURRENCY STRATEGIES

GPU programming is usually a 3-step process

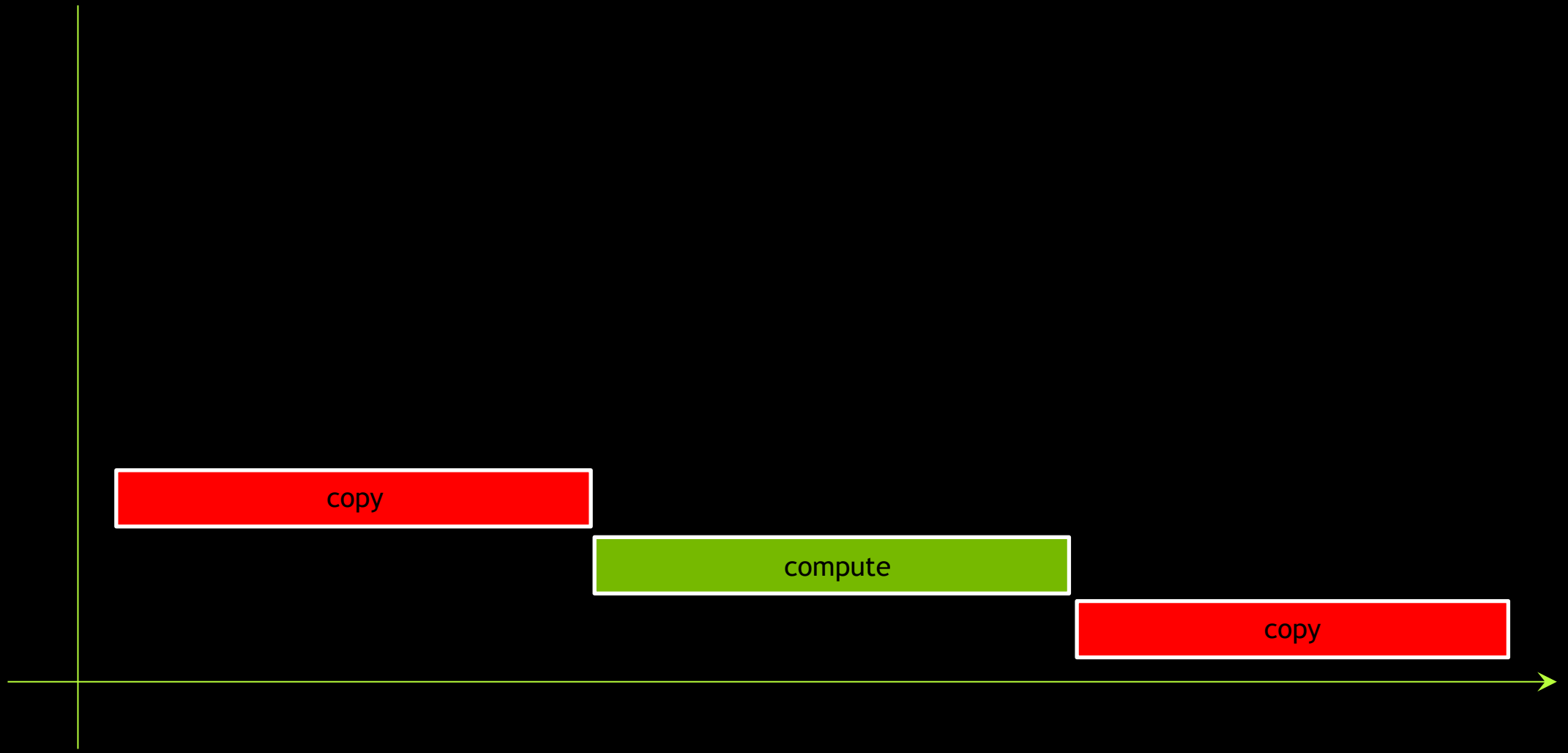
1. Transfer data to GPU device(s)



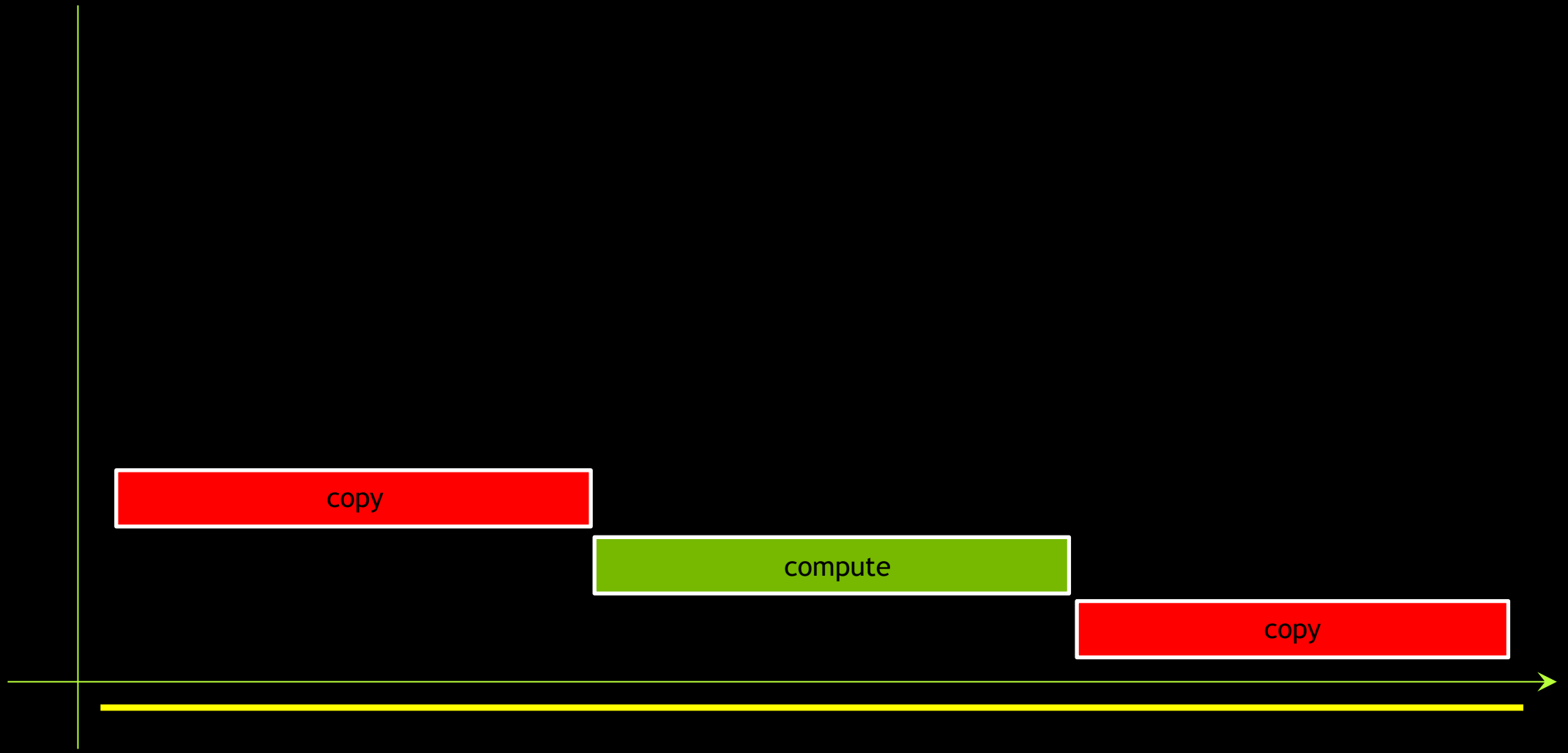
2. Perform computation on GPU device(s)



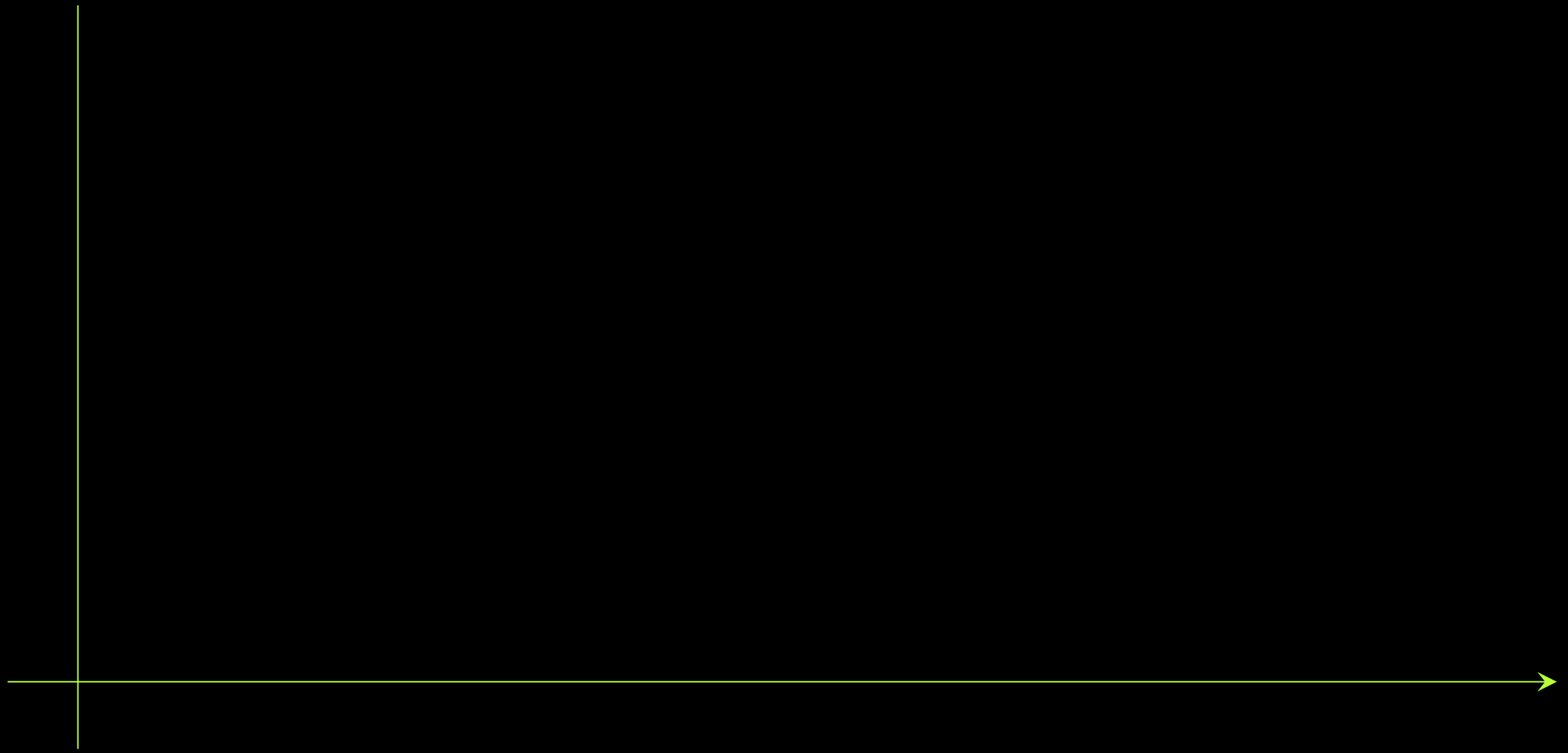
3. Transfer data back to the host



Total runtime is the sum



If we can overlap memory transfer and compute…



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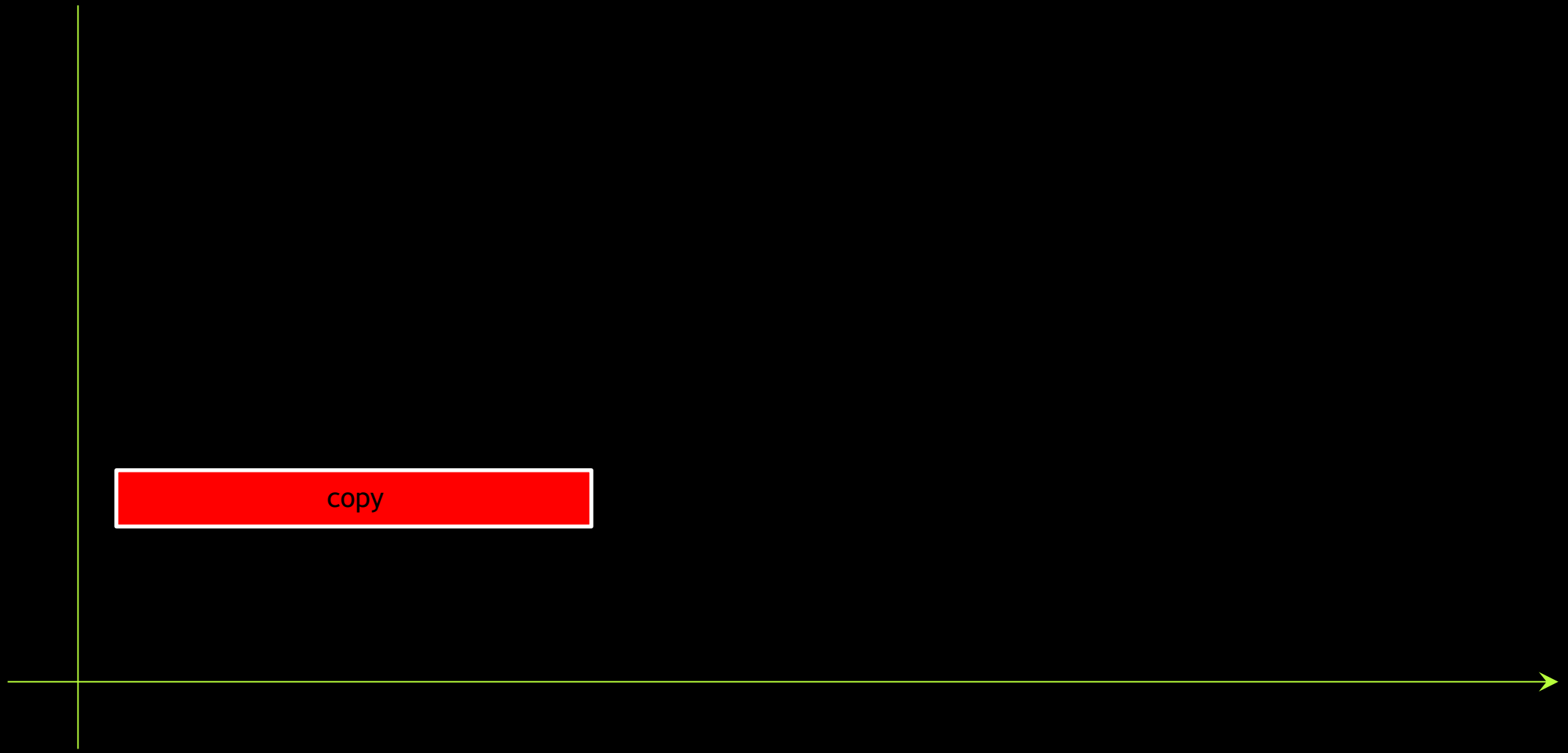

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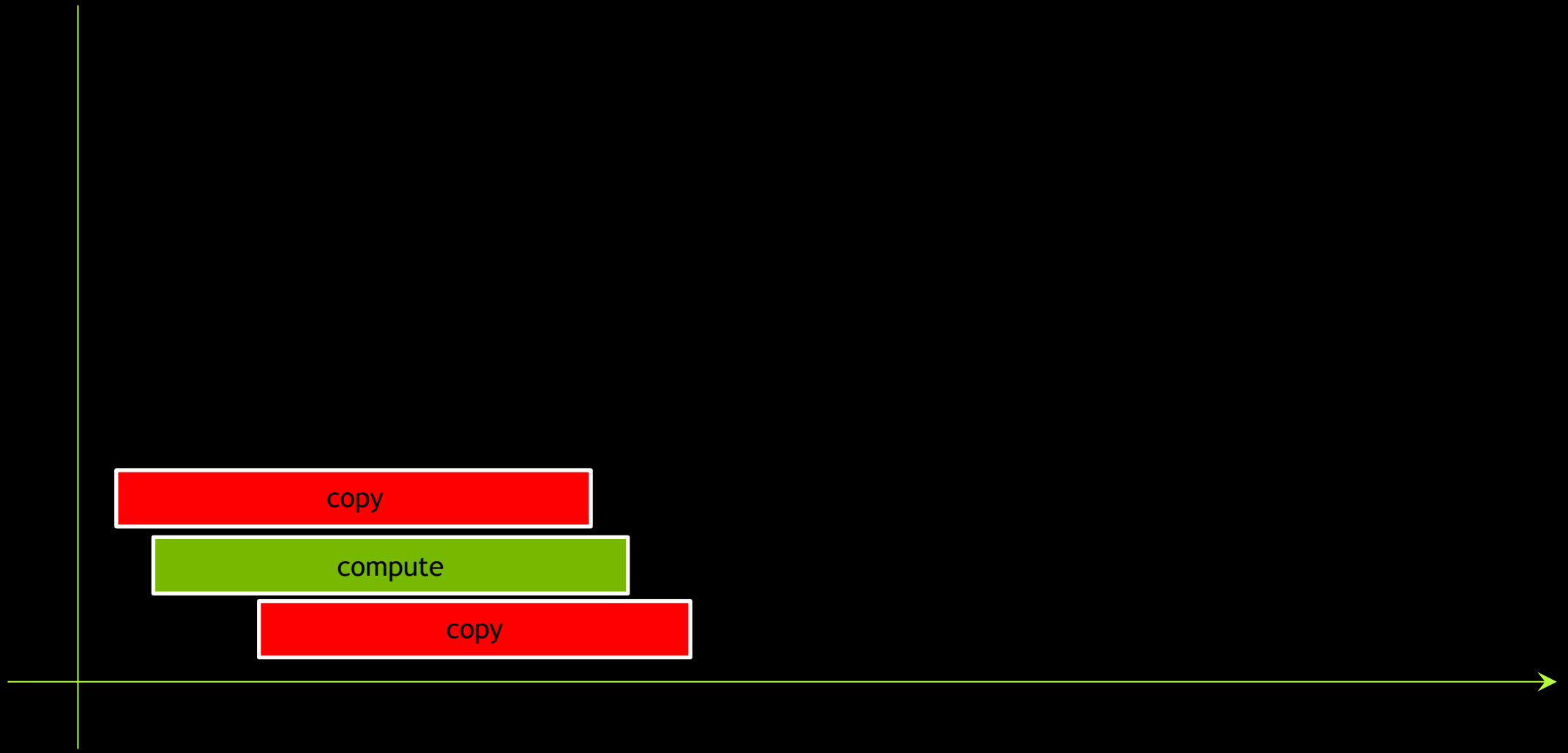
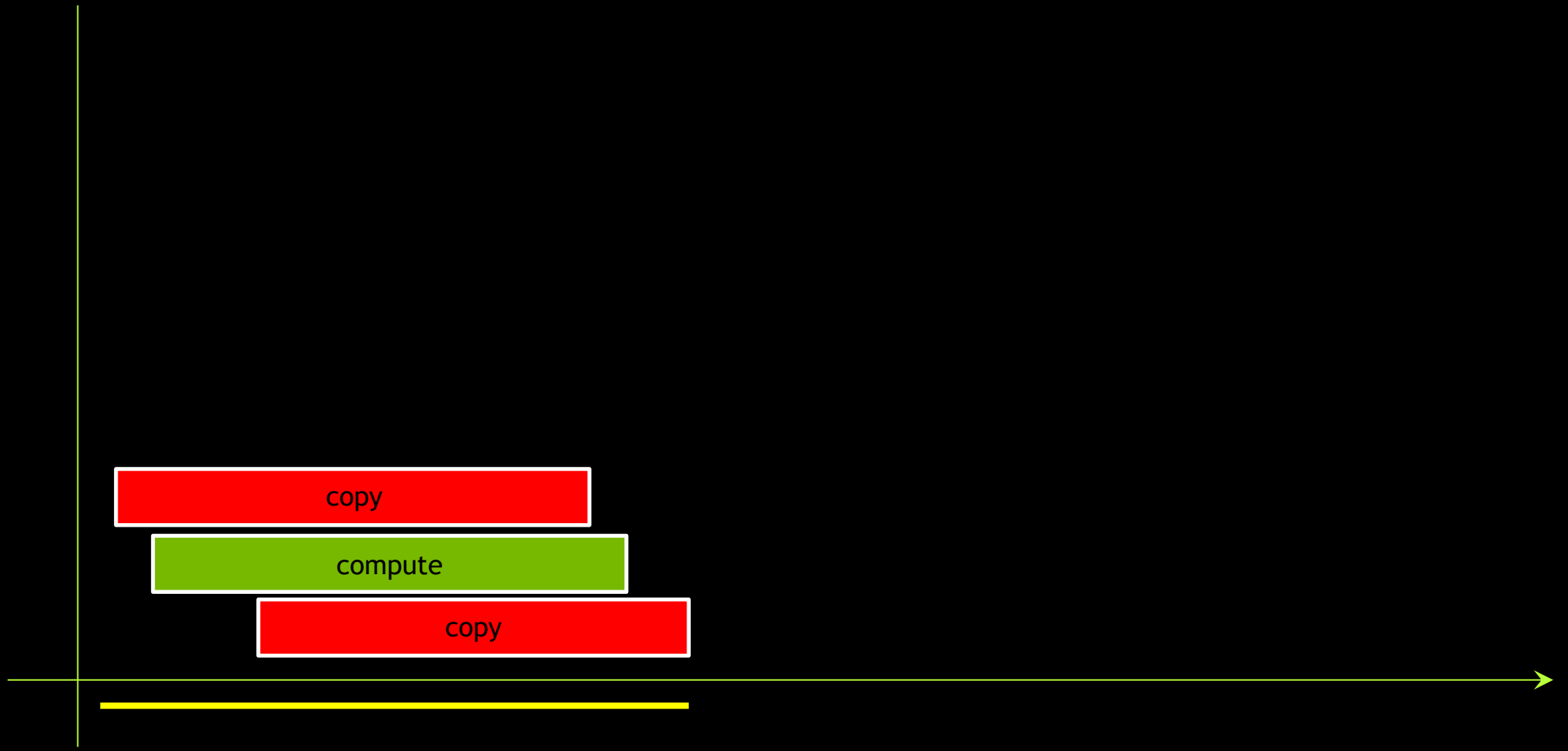
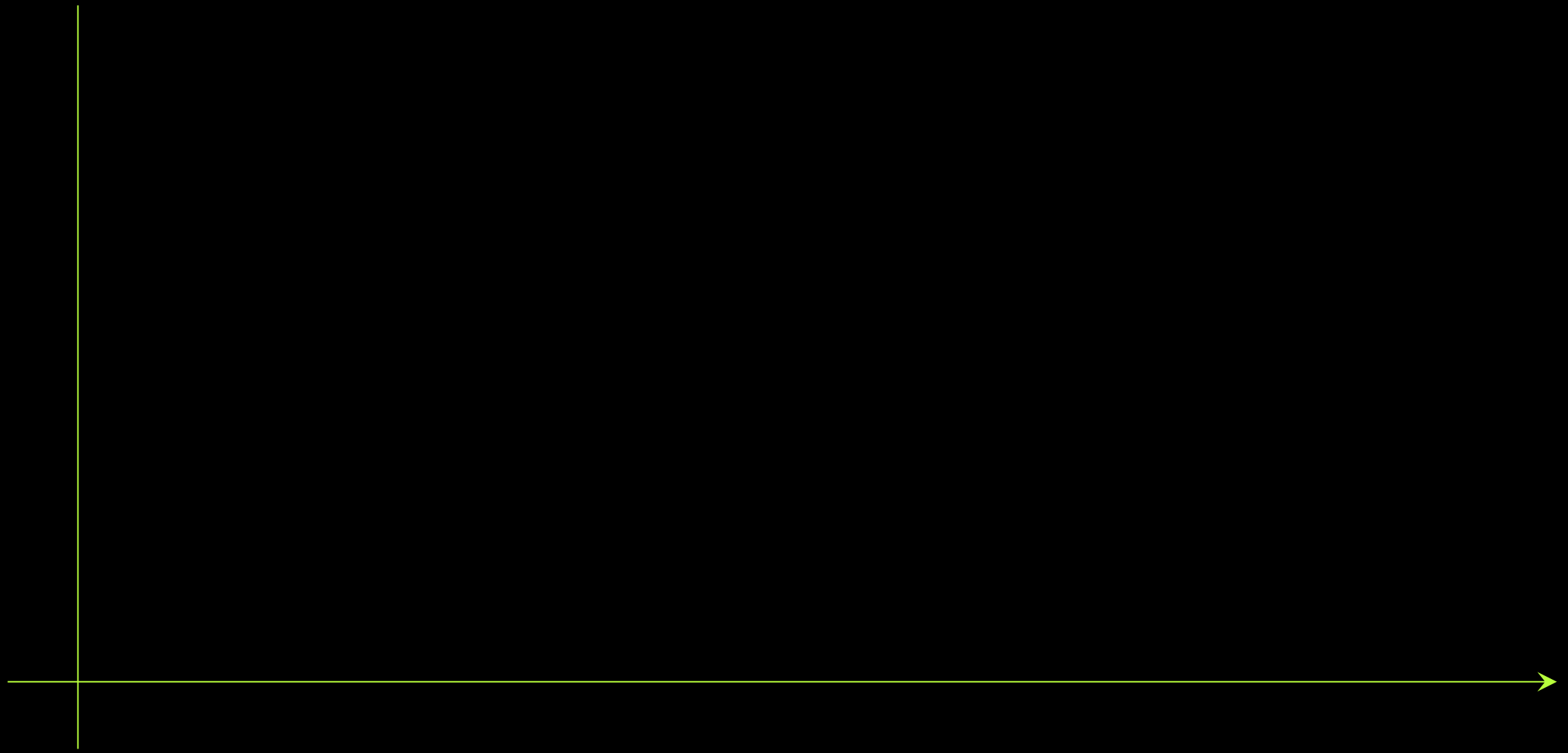


…total application time will be less



If we can overlap computation on multiple devices…



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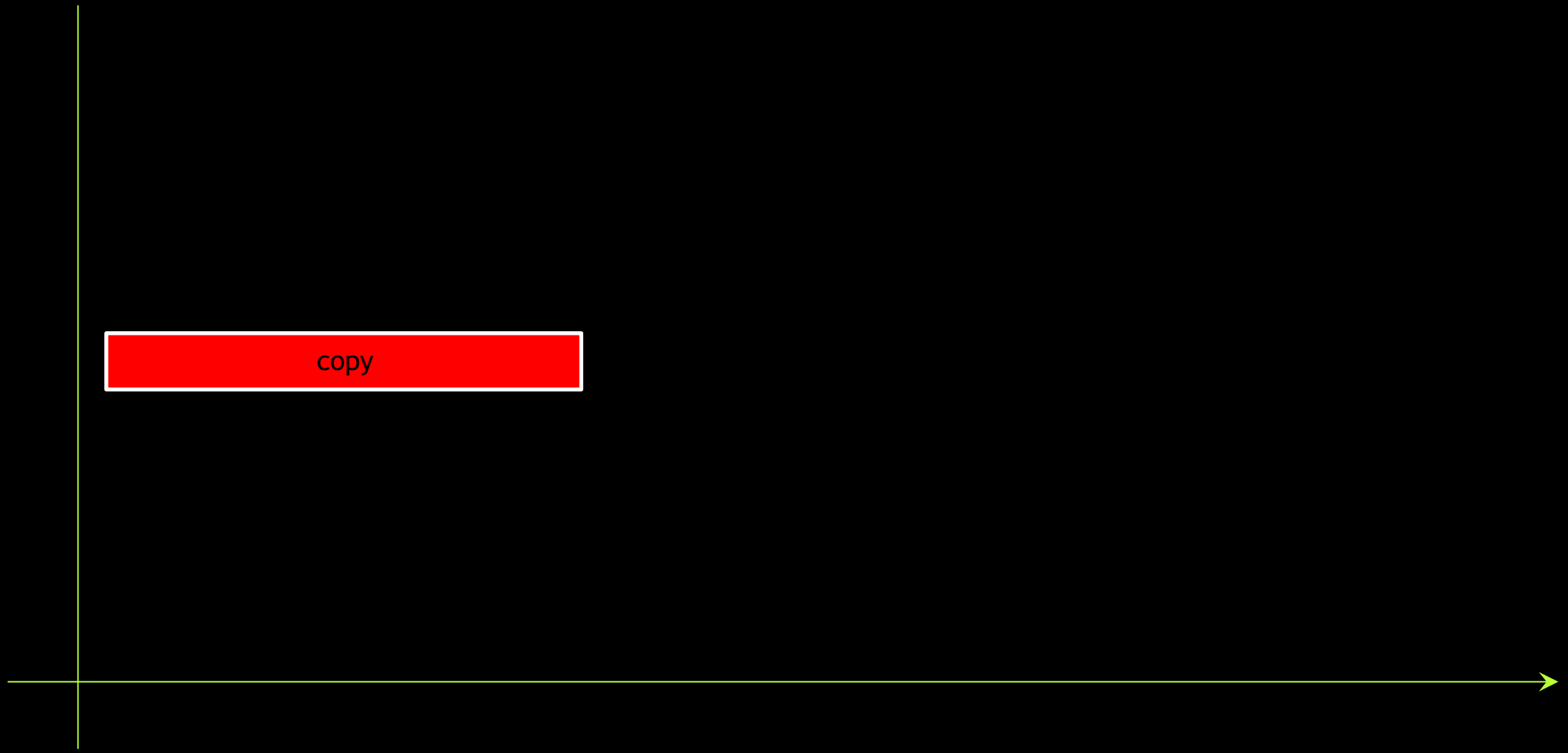

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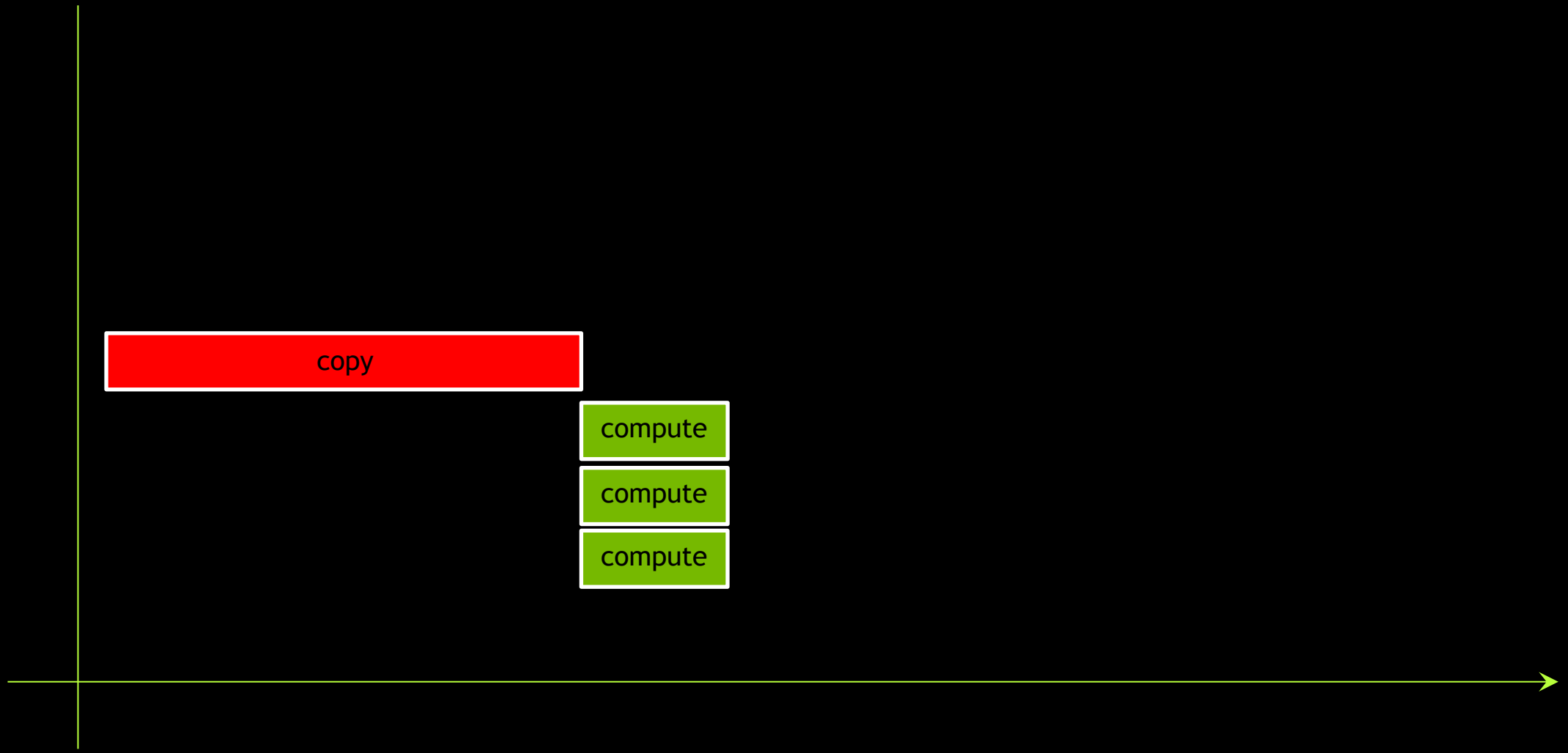

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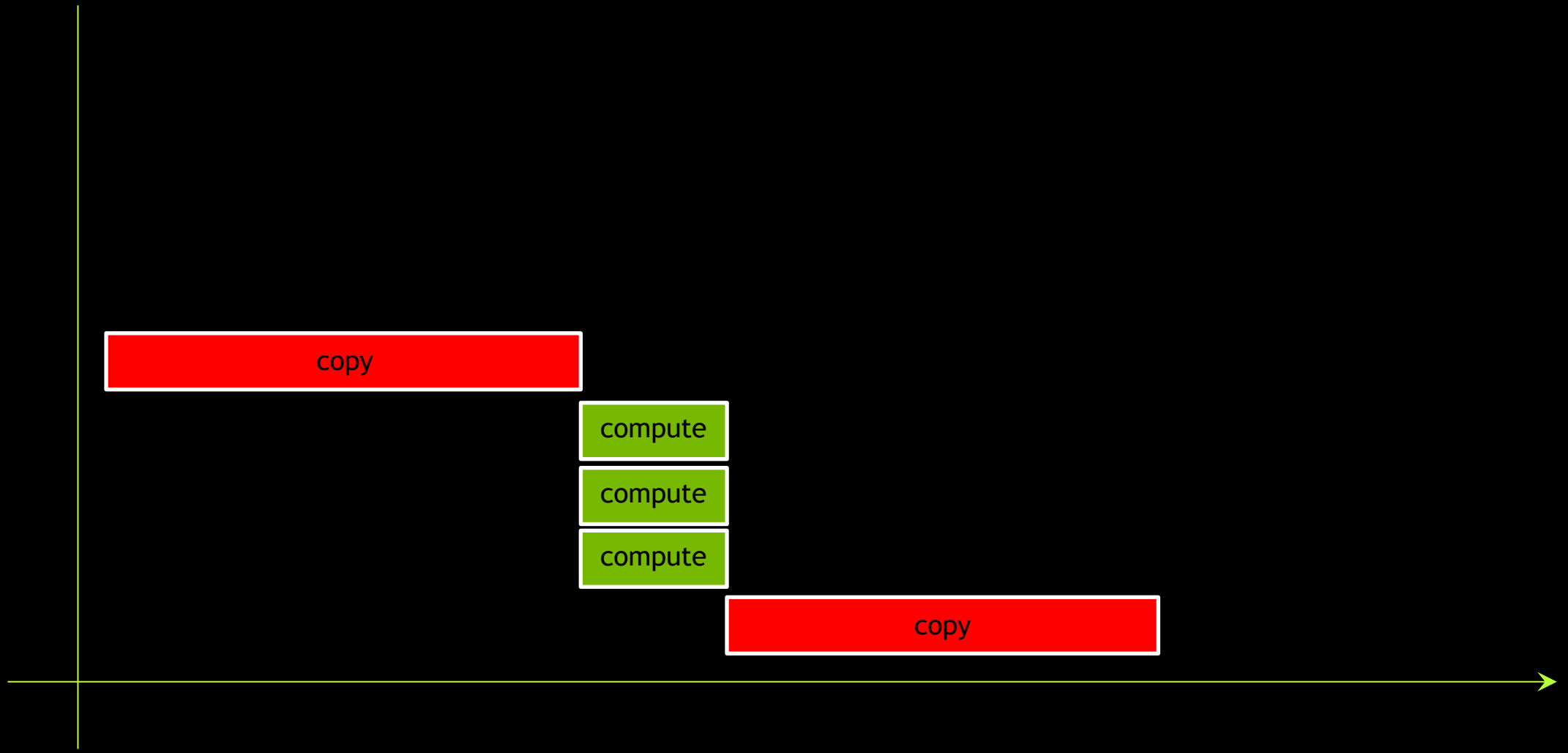
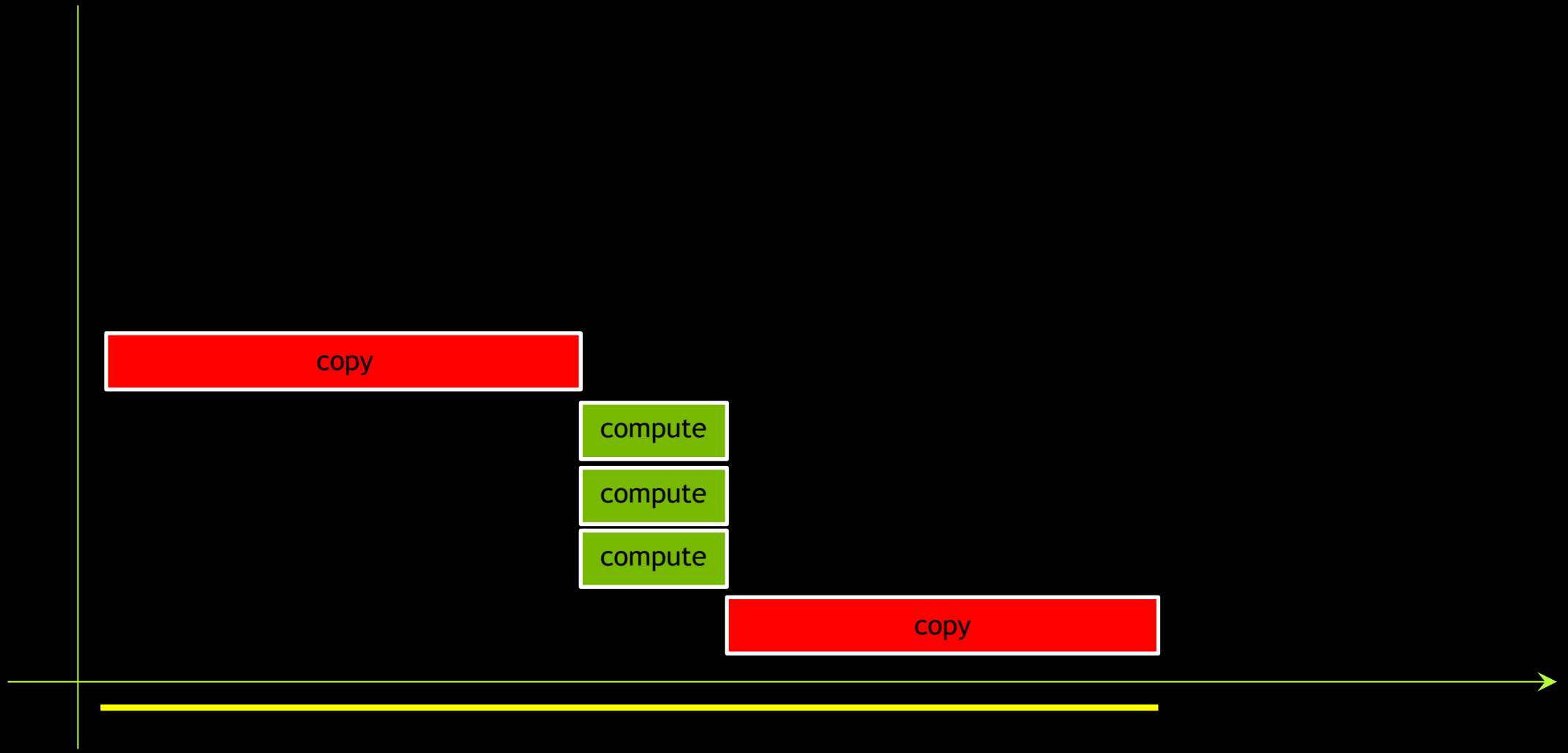
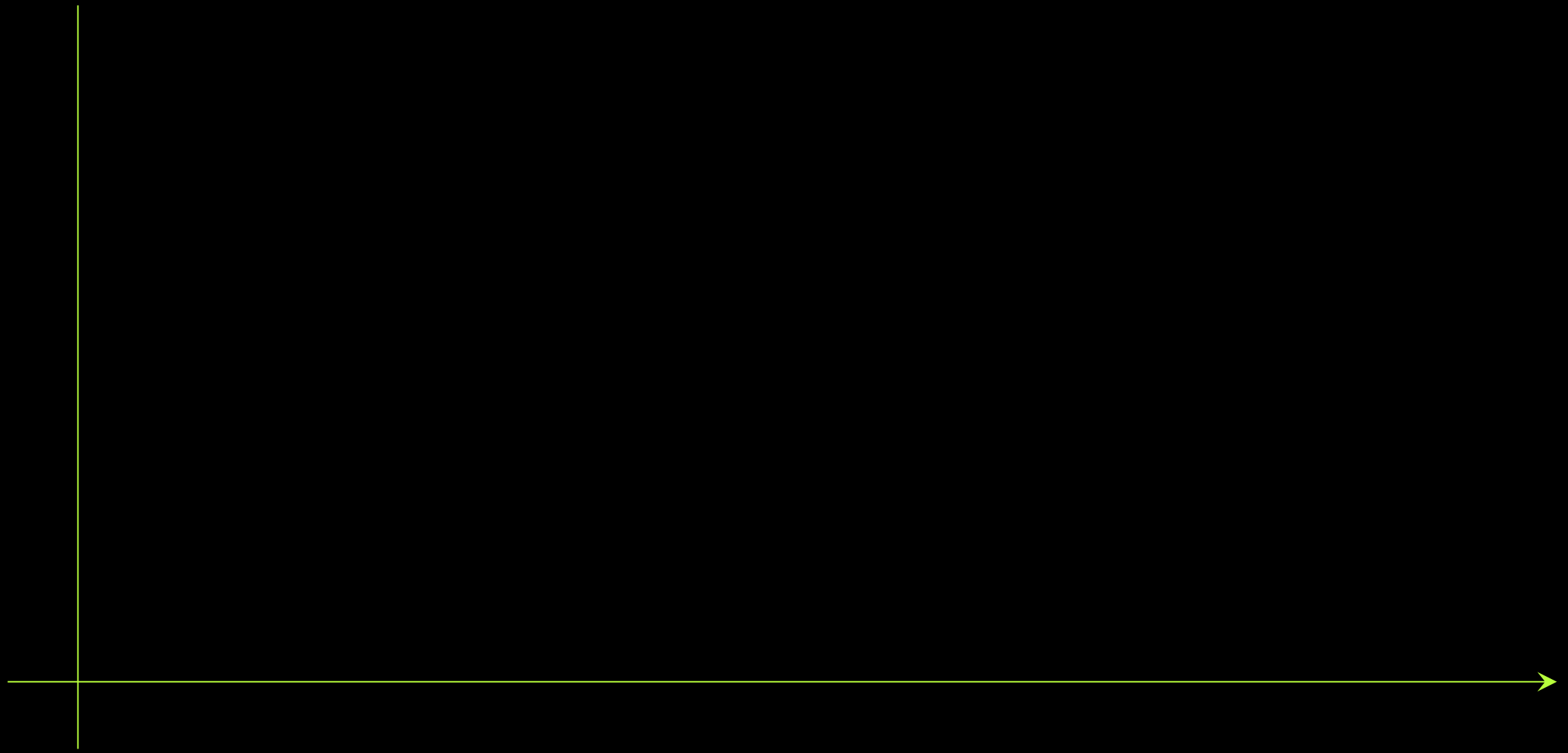


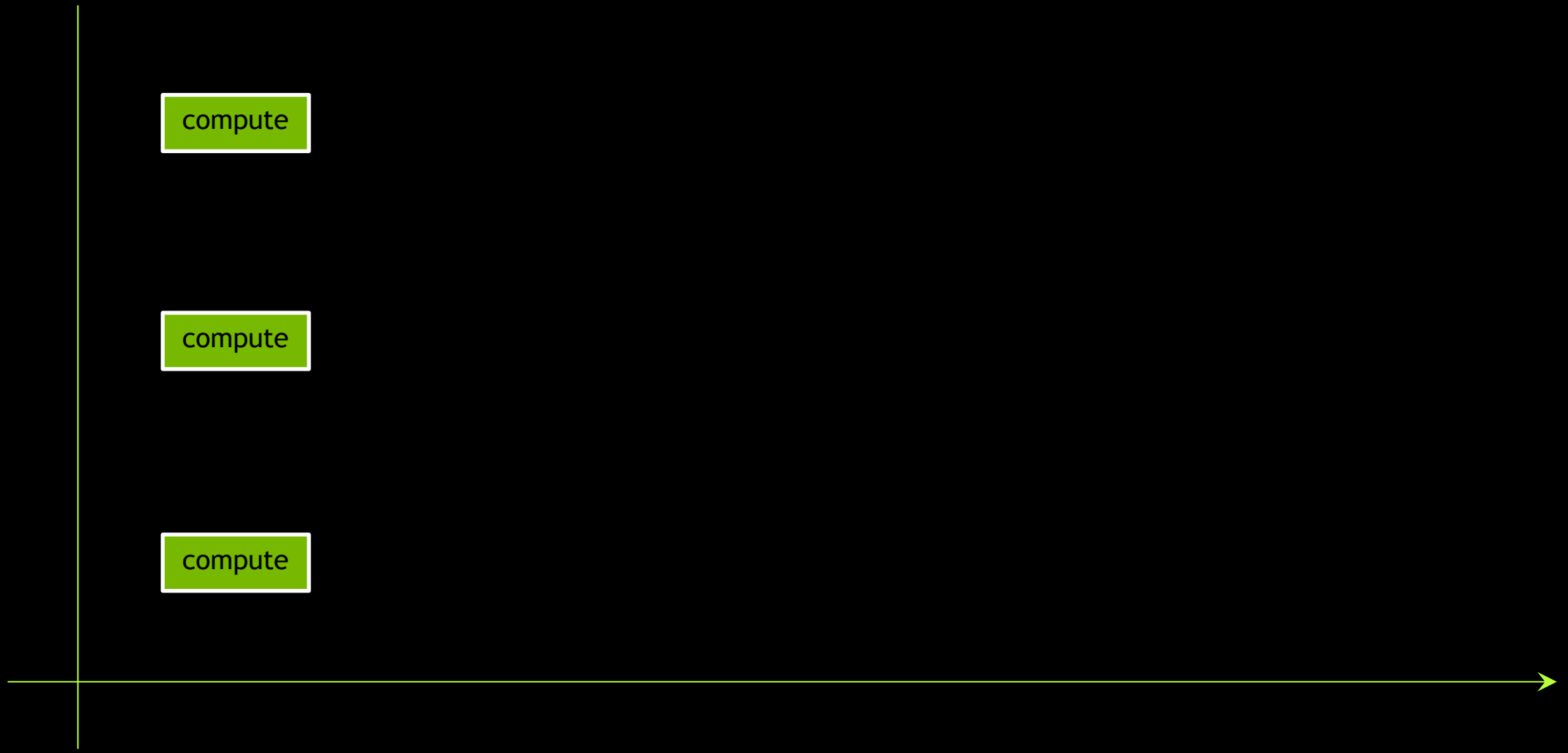
...total application time will also be less



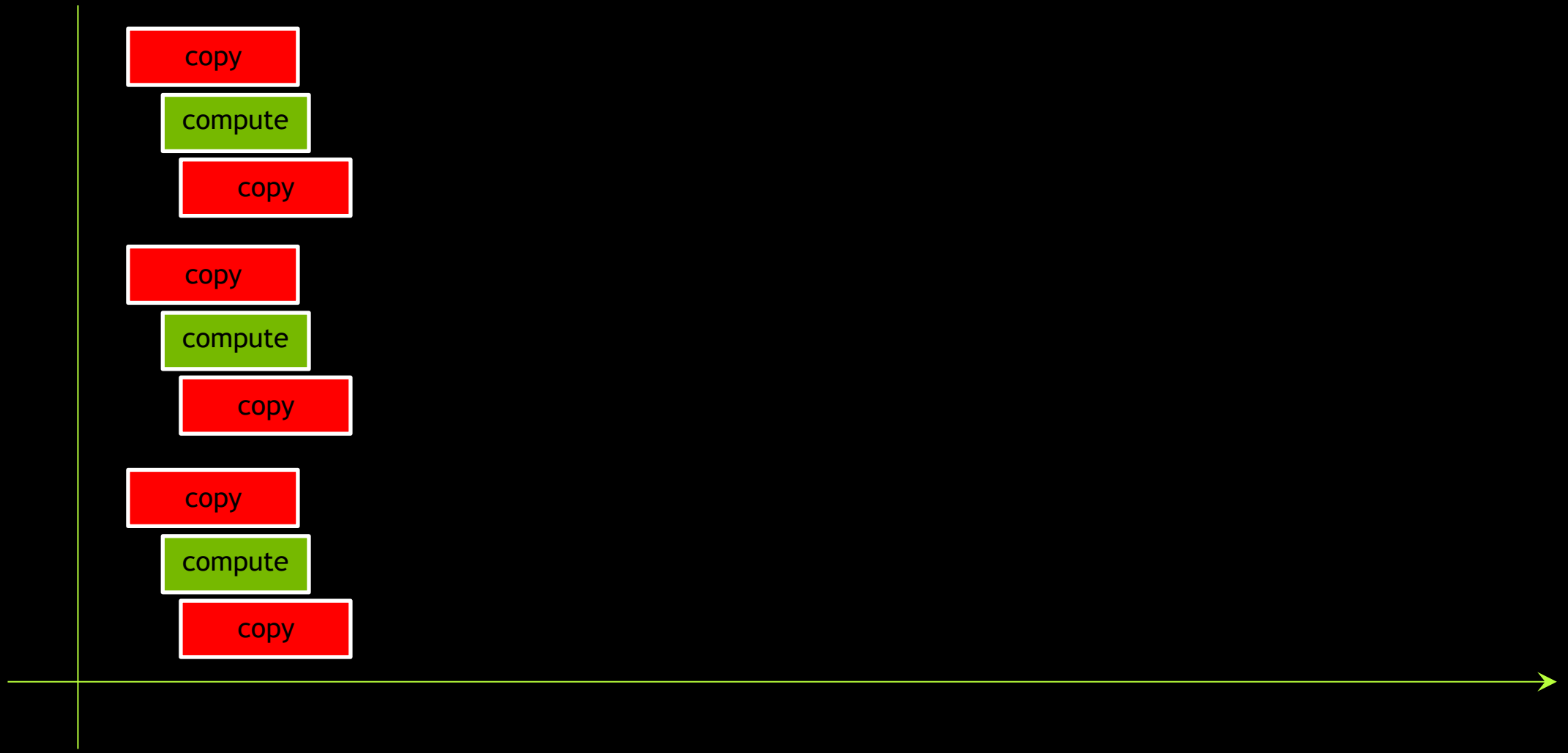
Combining the 2 strategies…



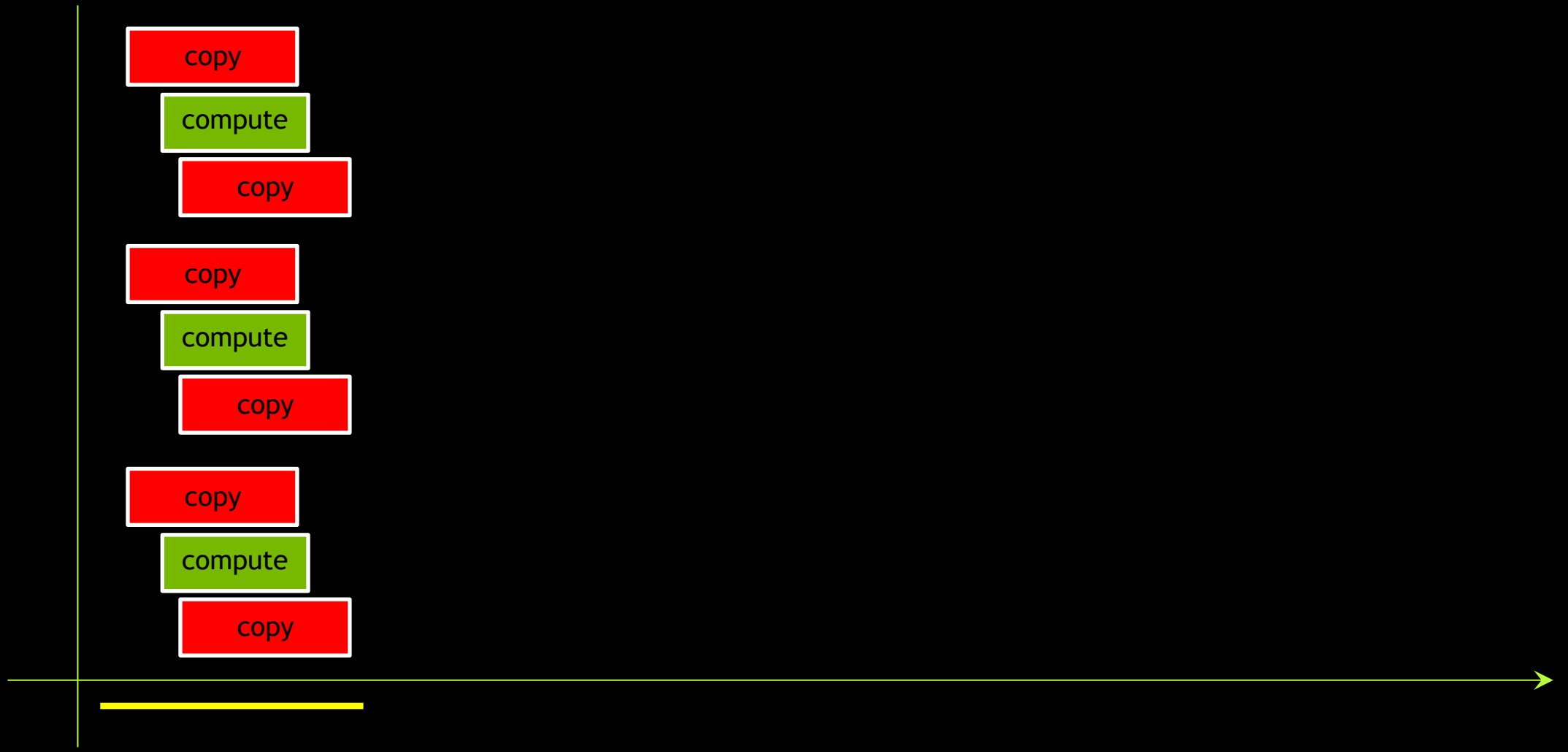
…overlapping compute on multiple devices



…and copy with each device’s compute



…total application time will be even less



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Introduction (this section)

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Using JupyterLab

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Introduction (this section)

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Cipher Application Overview

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Nsight Systems Setup

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

Multiple GPUs

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

Multiple GPUs

Considerations for Multiple GPUs

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

Multiple GPUs

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WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

Multiple GPUs

Considerations for Multiple GPUs

Exercise: Multiple GPUs

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WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

Multiple GPUs

Considerations for Multiple GPUs

Exercise: Multiple GPUs

Exercise: Multiple GPUs with Copy/Compute Overlap

Course Survey

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

Multiple GPUs

Considerations for Multiple GPUs

Exercise: Multiple GPUs

Exercise: Multiple GPUs with Copy/Compute Overlap

Course Survey

Course Assessment

WORKSHOP STRUCTURE

Introduction (this section)

Using JupyterLab

Cipher Application Overview

Nsight Systems Setup

CUDA Streams

Kernel Launches in Non-Default Streams

Memory Copies in Non-Default Streams

Considerations for Copy/Compute Overlap

Exercise: Copy/Compute Overlap

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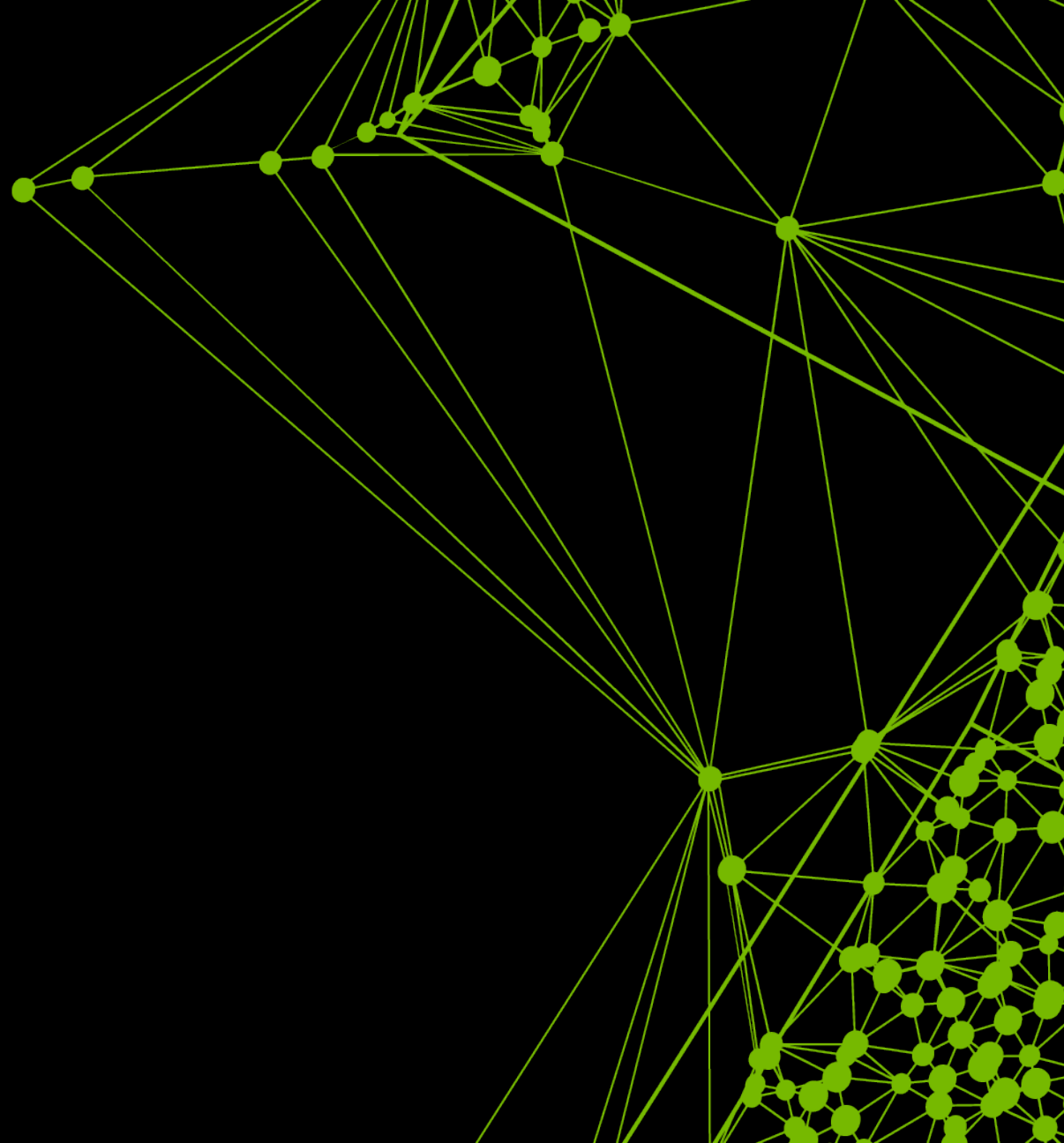
Next Steps



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