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cudaMalloc(&d_B.elements, size); cudaMemcpy(d_B.elements, B.elements, size, cudaMemcpyHostToDevice); // Allocate C in device memory Matrix d_C; d_C.width = d_C.stride = C.width; d_C.height = C.height; size = C.width * C.height * sizeof (float); cudaMalloc(&d_C.elements, size); // Invoke kernel dim3 dimBlock(BLOCK_SIZE, BLOCK_SIZE); dim3 dimGrid(B.width / dimBlock.x, A.height / dimBlock.y); MatMulKernel <<< dimGrid, dimBlock >>> (d_A, d_B, d_C); // Read C from device memory cudaMemcpy(C ...

CUDA C++ Programming Guide - Nvidia
ii CUDA C Programming Guide Version 4.2 Changes from Version 4.1 Updated Chapter 4, Chapter 5, and Appendix F to include information on devices of compute capability 3.0. Replaced each reference to "processor core" with "multiprocessor" in Section 1.3. Replaced Table A-1 by a reference to http://developer.nvidia.com/cuda-gpus.

NVIDIA CUDA Programming Guide
4 CUDA C Programming Guide Version 3.1.1 solve many complex computational problems in a more efficient way than on a CPU. CUDA comes with a software environment that allows developers to use C as a high-level programming language.

NVIDIA CUDA Programming Guide
CUDA C++ Programming Guide PG-02829-001_v11.1 | ii Changes from Version 11.0 ? Added documentation for Compute Capability 8.x. ? Updated section Arithmetic Instructions for compute capability 8.6. ? Updated section Features and Technical Specifications for compute capability 8.6.

CUDA C++ Programming Guide - Nvidia
ii CUDA C Programming Guide Version 4.0 Changes from Version 3.2 Replaced all mentions of the deprecated cudaThread* functions by the new cudaDevice* names. cudaTextureTypeUpdated all mentions of texture<…> to use the new * macros. Updated Sections 2.2, B.16, and F.1 now that three-dimensional grids are supported for devices of compute capability 2.0 and above.

NVIDIA CUDA Programming Guide
NVIDIA CUDA C Programming Guide ii CUDA C Programming Guide Version 3.2 Changes from Version 3.1.1 ? cuParamSetv()Simplified all the code samples that use to set a kernel parameter of type CUdeviceptrsince CUdeviceptris now of same size and alignment as void*, so there is no longer any need to go through an interneditate void*variable.

NVIDIA CUDA Programming Guide
CUDA C/C++ keyword __global__ indicates a function that: Runs on the device Is called from host code nvcc separates source code into host and device components Device functions (e.g. mykernel()) processed by NVIDIA compiler Host functions (e.g. main()) processed by standard host compiler - gcc, cl.exe

CUDA C/C++ Basics - Nvidia
This guide presents established parallelization and optimization techniques and explains coding metaphors and idioms that can greatly simplify programming for CUDA-capable GPU architectures. The intent is to provide guidelines for obtaining the best performance from NVIDIA GPUs using the CUDA Toolkit.

CUDA Toolkit Documentation - Nvidia
NVIDIA provides hands-on training in CUDA through a collection of self-paced and instructor-led courses. The self-paced online training, powered by GPU-accelerated workstations in the cloud, guides you step-by-step through editing and execution of code along with interaction with visual tools.

GPU Accelerated Computing with C and C++ | NVIDIA Developer
A comprehensive guide to understanding and developing and optiminzing code in the CUDA C++ programming environment. CUDA Fortran Programming Guide This guide describes how to program with CUDA Fortran, a small set of extensions to Fortran that supports and is built upon the NVIDIA CUDA programming model.

NVIDIA HPC SDK Version 20.9 Documentation
CUDA (Compute Unified Device Architecture) is a parallel computing platform and application programming interface (API) model created by Nvidia. It allows software developers and software engineers to use a CUDA-enabled graphics processing unit (GPU) for general purpose processing – an approach termed GPGPU (General-Purpose computing on Graphics Processing Units).

CUDA - Wikipedia
viii CUDA Programming Guide Version 2.1 List of Figures Figure 1-1. Floating-Point Operations per Second and Memory Bandwidth for the CPU and GPU 2 Figure 1-2. The GPU Devotes More Transistors to Data Processing ..... 3 Figure 1-3. CUDA is Designed to Support Various Languages or Application

NVIDIA CUDA Programming Guide
The CUDA programming model is a heterogeneous model in which both the CPU and GPU are used. In CUDA, the host refers to the CPU and its memory, while the device refers to the GPU and its memory. Code run on the host can manage memory on both the host and device, and also launches kernels which are functions executed on the device.

An Easy Introduction to CUDA C and C++ - NVIDIA Developer
CUDA provides C/C++ language extension and APIs for programming and managing GPUs. In CUDA programming, both CPUs and GPUs are used for computing. Typically, we refer to CPU and GPU system as host and device, respectively. CPUs and GPUs are separated platforms with their own memory space. Typically, we run serial workload on CPU and offload parallel computation to GPUs. A quick comparison between CUDA and C

Tutorial 01: Say Hello to CUDA - CUDA Tutorial
$ nvprof ./add_cuda ==3355== NVPROF is profiling process 3355, command: ./add_cuda Max error: 0 ==3355== Profiling application: ./add_cuda ==3355== Profiling result: Time(%) Time Calls Avg Min Max Name 100.00% 463.25ms 1 463.25ms 463.25ms 463.25ms add(int, float*, float*) ...

An Even Easier Introduction to CUDA | NVIDIA Developer Blog
CUDA C++ provides a simple path for users familiar with the C++ programming language to easily write programs for execution by the device. It consists of a minimal set of extensions to the C++ language and a runtime library.The core language extensions have been introduced in Programming Model.They allow programmers to define a kernel as a C++ function and use some new syntax to specify the ...

Nvidia Cuda C Programming Guide - 09/2020
NVIDIA cuDNN The NVIDIA CUDA® Deep Neural Network library (cuDNN) is a GPU-accelerated library of primitives for deep neural networks. cuDNN provides highly tuned implementations for standard routines such as forward and backward convolution, pooling, normalization, and activation layers. Deep learning researchers and framework developers worldwide rely on cuDNN for

NVIDIA cuDNN | NVIDIA Developer
This means that the data structures, APIs and code described in this section are subject to change in future CUDA releases. While cuBLAS and cuDNN cover many of the potential uses for Tensor Cores, you can also program them directly in CUDA C++. Tensor Cores are exposed in CUDA 9.0 via a set of functions and types in the nvcuda::wmma namespace. These allow you to load or initialize values into the special format required by the tensor cores, perform matrix multiply-accumulate (MMA) steps ...

Programming Tensor Cores in CUDA 9 | NVIDIA Developer Blog
http://docs.nvidia.com/cuda/cuda-c-programming-guide/index.html#synchronization-functions. Specifically for shared memory race conditions, the cuda-memcheck tool has some options to do race-condition checking. Use: cuda-memcheck --help. to learn the command line switches to use it. (–tool racecheck) Thanks for your advice.

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