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Saving cuda_code.cu to cuda_code (1).cu

```
!apt-get install --no-install-recommends nvidia-cuda-toolkit
```

```

Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libaccinj64-11.5 libcub-dev libcublas11 libcublaslt11 libcudart11.0 libcufft10 libcufftw10
  libcuinj64-11.5 libcupti-dev libcupti11.5 libcurand10 libcusolver11 libcusolvermg11 libcusparse11
  libnppc11 libnppial11 libnppicc11 libnppidei11 libnppif11 libnppig11 libnppim11 libnppist11
  libnppisu11 libnppitc11 libnpps11 libnvblas11 libnvblas11 libnvcompute-495 libnvcompute-510
  libnvcompute-525 libnvcompute-ml-dev libnvjpeg11 libnVRTC-builtins11.5 libnVRTC11.2
  libnvtolsext1 libnvvm4 libthrust-dev nvidia-cuda-dev nvidia-profiler
Recommended packages:
  libcupti-doc libgl1-mesa-dev | libgl-dev libvdpau-dev libnvcuvid1 nvidia-cuda-toolkit-doc
  nvidia-cuda-gdb nvidia-visual-profiler nsight-compute nsight-systems
The following NEW packages will be installed:
  libaccinj64-11.5 libcub-dev libcublas11 libcublaslt11 libcudart11.0 libcufft10 libcufftw10
  libcuinj64-11.5 libcupti-dev libcupti11.5 libcurand10 libcusolver11 libcusolvermg11 libcusparse11
  libnppc11 libnppial11 libnppicc11 libnppidei11 libnppif11 libnppig11 libnppim11 libnppist11
  libnppisu11 libnppitc11 libnpps11 libnvblas11 libnvblas11 libnvcompute-495 libnvcompute-510
  libnvcompute-525 libnvcompute-ml-dev libnvjpeg11 libnVRTC-builtins11.5 libnVRTC11.2
  libnvtolsext1 libnvvm4 libthrust-dev nvidia-cuda-dev nvidia-cuda-toolkit nvidia-profiler
0 upgraded, 39 newly installed, 0 to remove and 38 not upgraded.
Need to get 1,395 MB of archives.
After this operation, 3,993 MB of additional disk space will be used.
Get:1 https://developer.download.nvidia.com/compute/cuda/repos/ubuntu2204/x86\_64 libnvcompute-525 525.147.05-0ubuntu1 [50.4 MB]
Get:2 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcupti11.5 amd64 11.5.114~11.5.1-1ubuntu1 [7,696 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libaccinj64-11.5 amd64 11.5.114~11.5.1-1ubuntu1 [845 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy/universe amd64 libcub-dev all 1.15.0-3 [217 kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcublaslt11 amd64 11.7.4.6~11.5.1-1ubuntu1 [148 MB]
Get:6 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcublas11 amd64 11.7.4.6~11.5.1-1ubuntu1 [78.2 MB]
Get:7 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcudart11.0 amd64 11.5.117~11.5.1-1ubuntu1 [178 kB]
Get:8 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcufft10 amd64 11.1.1+~10.6.0.107~11.5.1-1ubuntu1 [70.4 MB]
Get:9 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcufftw10 amd64 11.1.1+~10.6.0.107~11.5.1-1ubuntu1 [211 kB]
Get:10 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 libnvcompute-510 amd64 525.147.05-0ubuntu0.22.04.1 [7,194
Get:11 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 libnvcompute-495 amd64 510.108.03-0ubuntu0.22.04.1 [7,378
Get:12 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcuinj64-11.5 amd64 11.5.114~11.5.1-1ubuntu1 [1,004 kB]
Get:13 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcurand10 amd64 11.1.1+~10.2.7.107~11.5.1-1ubuntu1 [41.8 MB]
Get:14 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcusolver11 amd64 11.3.2.107~11.5.1-1ubuntu1 [31.3 MB]
Get:15 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcusolvermg11 amd64 11.3.2.107~11.5.1-1ubuntu1 [17.8 MB]
Get:16 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcusparse11 amd64 11.7.0.107~11.5.1-1ubuntu1 [96.2 MB]
Get:17 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppc11 amd64 11.5.1.107~11.5.1-1ubuntu1 [430 kB]
Get:18 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppial11 amd64 11.5.1.107~11.5.1-1ubuntu1 [5,234 kB]
Get:19 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppicc11 amd64 11.5.1.107~11.5.1-1ubuntu1 [2,373 kB]
Get:20 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppidei11 amd64 11.5.1.107~11.5.1-1ubuntu1 [2,587 kB]
Get:21 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppif11 amd64 11.5.1.107~11.5.1-1ubuntu1 [33.8 MB]
Get:22 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppig11 amd64 11.5.1.107~11.5.1-1ubuntu1 [14.5 MB]
Get:23 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppim11 amd64 11.5.1.107~11.5.1-1ubuntu1 [3,037 kB]
Get:24 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppist11 amd64 11.5.1.107~11.5.1-1ubuntu1 [13.7 MB]
Get:25 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppisu11 amd64 11.5.1.107~11.5.1-1ubuntu1 [177 kB]
Get:26 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnppitc11 amd64 11.5.1.107~11.5.1-1ubuntu1 [1,292 kB]
Get:27 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnpps11 amd64 11.5.1.107~11.5.1-1ubuntu1 [7,116 kB]
Get:28 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnvblas11 amd64 11.7.4.6~11.5.1-1ubuntu1 [191 kB]
Get:29 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnvcompute-ml-dev amd64 11.5.50~11.5.1-1ubuntu1 [69.1 kB]
Get:30 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnvjpeg11 amd64 11.5.4.107~11.5.1-1ubuntu1 [1,858 kB]
Get:31 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnVRTC-builtins11.5 amd64 11.5.119~11.5.1-1ubuntu1 [116 kB]
Get:32 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnVRTC11.2 amd64 11.5.119~11.5.1-1ubuntu1 [15.7 MB]
Get:33 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libnvvm4 amd64 11.5.119~11.5.1-1ubuntu1 [8,675 kB]
Get:34 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 libcupti-dev amd64 11.5.114~11.5.1-1ubuntu1 [7,915 kB]

```

```
!ln -snf /usr/lib/x86_64-linux-gnu/libnvidia-ptxjitcompiler.so.1 /usr/lib/x86_64-linux-gnu/libnvidia-ptxjitcompiler.so
```

```
!nvcc --version
```

```
nvcc: NVIDIA (R) Cuda compiler driver  
Copyright (c) 2005-2023 NVIDIA Corporation  
Built on Tue_Aug_15_22:02:13_PDT_2023  
Cuda compilation tools, release 12.2, V12.2.140  
Build cuda_12.2.r12.2/compiler.33191640_0
```

```
!ls /content/
```

```
'cuda_code (1).cu'  sample_data
```

```
# Define the CUDA code as a string
cuda_code = """
#include <iostream>
#include <cuda_runtime.h>

__global__ void addVectors(int* A, int* B, int* C, int n) {
    int i = blockIdx.x * blockDim.x + threadIdx.x;
    if (i < n) {
        C[i] = A[i] + B[i];
    }
}

int main() {
    int n = 1000000;
    int* A, * B, * C;
    int size = n * sizeof(int);
```

Start coding or [generate](#) with AI.

```
    cudaMallocHost(&A, size);
    cudaMallocHost(&B, size);
    cudaMallocHost(&C, size);

    // Initialize the vectors
    for (int i = 0; i < n; i++) {
        A[i] = i;
        B[i] = i * 2;
    }

    // Allocate memory on the device
    int* dev_A, * dev_B, * dev_C;
    cudaMalloc(&dev_A, size);
    cudaMalloc(&dev_B, size);
    cudaMalloc(&dev_C, size);

    // Copy data from host to device
    cudaMemcpy(dev_A, A, size, cudaMemcpyHostToDevice);
    cudaMemcpy(dev_B, B, size, cudaMemcpyHostToDevice);

    // Launch the kernel
    int blockSize = 256;
    int numBlocks = (n + blockSize - 1) / blockSize;
```