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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » GPU Architectures and Programming (course)

Announcements (announcements)

About the Course (https://swayam.gov.in/nd1_noc20_cs41/preview) Ask a Question (forum)

Progress (student/home) Mentor (student/mentor)

Due on 2020-02-28, 23:59 IST

Given one-dimensional arrays you have to implement three kernel routines:

- **process_kernel1(float *input1, float *input2 float *output, int datasize):** This function takes as arguments two 1-D arrays named `input1` and `input2` of total size `datasize`, processes them and writes to array named `output`. Your objective would be to compute for each data point of the two arrays the following operation
 - **output[i]=sin(input1[i])+cos(input2[i])**
You will have to use a 3 Dimensional Grid of dimensions `<<<4,2,2>>>` with 2-Dimensional blocks with `<32,32,1>`. Accordingly ascertain the number of elements of the input arrays and output array.
- **process_kernel2(float *input, float *output, int datasize):** This function takes as argument one 1-D array named `input` of total size `datasize`, processes and writes to array named `output`. Your input array to this function will be the output array obtained as a result of `process_kernel1`. The following operation needs to be performed here
 - **output[i]=log(input[i])**
You will have to use a 2 Dimensional Grid of dimensions `<<<2,?,1>>>` with 3-Dimensional blocks with `<8,8,?>`. Accordingly fill in the blanks.
- **process_kernel3(float *input, float *output, int datasize):** This function takes as argument one 1-D array named `input` of total size `datasize`, processes and writes to array named `output`. Your input array to this function will be the output array obtained as a result of `process_kernel2`. The following operation needs to be performed here
 - **output[i]=sqrt(input[i])**

You will have to use a 1 Dimensional Grid of dimensions `<<< ?,1,1 >>>` with 2-Dimensional blocks with `<128,?,1>`. Accordingly fill in the blanks while implementing the program. The input will be two floating point arrays and the output would be one floating point output array The final output array should be printed as a single line of space separated floating point values.

Complete the incomplete CUDA code : Programming Skeleton for solving the above problem (<https://drive.google.com/open?id=1oNsRfuVMV7QSTR3YIW4Z0XojbOEJelmM>)

Test the Program with sample input (https://drive.google.com/open?id=13Dgf5QnHk-wcRNP37SyhAe4_RTCjru1V) and check your results with sample output (https://drive.google.com/open?id=1XUf-S_ggxuMZynlrsAwlBBtGgwDKrFVv).

Please upload the completed CUDA code in **.cu file**.

Please note we will not consider any other formats.

Your Submission:

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

