

CO316-Assignment2

Hardik Rana-16CO138

Harshal Shinde-16CO223

QUESTION1 - VECTOR ADDITION USING THRUST

1.How many floating operations are being performed in your vector add kernel?

Ans: There are total **N floating operations** being performed in our vector add kernel for the addition of N numbers

2.How many global memory reads are being performed by your kernel?

Ans: There are total **2*N global memory reads**[N reads for one vector] being performed by our kernel.

3.How many global memory writes are being performed by your kernel?

Ans: There are total **N writes**[for the final vector] being performed by our kernel.

4.In what ways did Thrust make developing a functional vector addition code easier or harder?

Ans: Thrust allows you to implement high performance parallel applications with minimal programming effort through a high-level interface that is fully interoperable with CUDA C.

QUESTION2 - IMAGE BLURRING

1.How many floating operations are being performed in your color conversion kernel?

Ans: We will have approximately

9*width*height*(No of channels) additions and
width*height*(No of channels) divisions operations.

2.How many global memory reads are being performed by your kernel?

Ans: There are total $9 \times \text{width} \times \text{height}$ global memory reads being performed by our kernel.If each color read separately then we will have $9 \times \text{width} \times \text{height} \times (\text{No of channels})$ global memory reads.

3.How many global memory writes are being performed by your kernel?

Ans: There are total $\text{width} \times \text{heights}$ writes being performed by our kernel.

4.Describe what possible optimizations can be implemented to your kernel to achieve a performance speedup.

Ans: Shared memory can be used to reduce global memory accesses.The stencil can be stored in shared memory.