

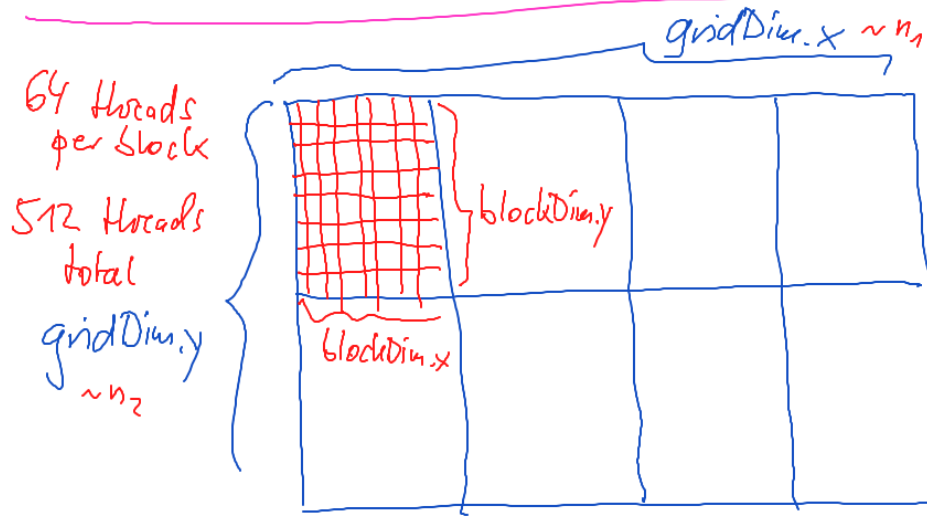
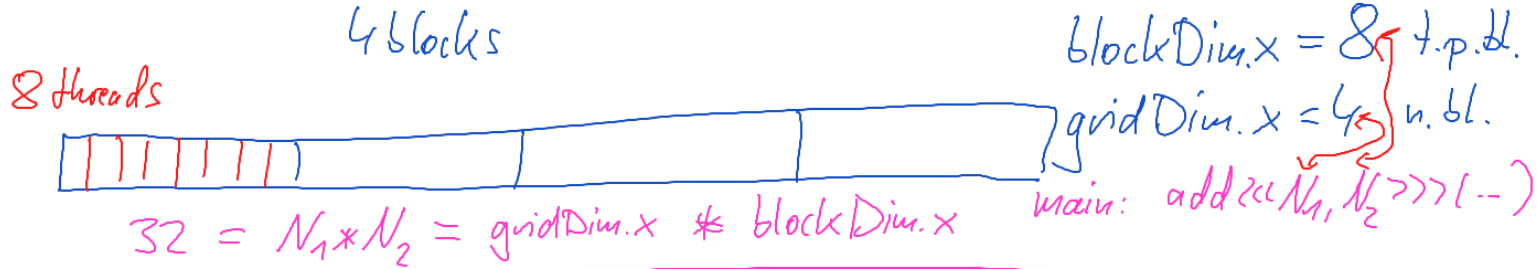
Matrix Multiplication, Histograms,

Wrap-Up

2d grid's
(Wen-mei Hwu)

fat threads
Profiling

Debugging (theoretical)

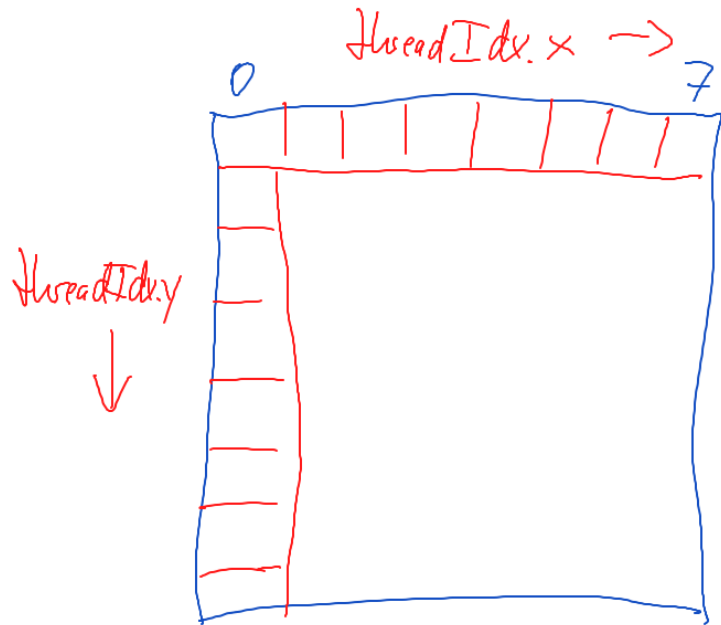


gridDim.x = 4, gridDim.y = 2
 blockDim.x = 8, blockDim.y = 8

Total: 8 blocks * 64 threads = 512

total # threads: $(\text{blockDim.x} * \text{gridDim.x}) * (\text{blockDim.y} * \text{gridDim.y})$

8 4 8 2



$$\text{ThreadIdx.x} = 0, \dots, \text{blockDim.x} - 1$$

$$\text{ThreadIdx.y} = 0, \dots, \text{blockDim.y} - 1$$

$$\text{blockIdx.x} = 0, \dots, \text{gridDim.x} - 1$$

$$\text{blockIdx.y} = 0, \dots, \text{gridDim.y} - 1$$

$$\text{index1} = \text{ThreadIdx.x} + \text{blockIdx.x} * \text{blockDim.x}$$

$$\text{index2} = \text{ThreadIdx.y} + \text{blockIdx.y} * \text{blockDim.y}$$

$$\text{index1} = 0, \dots, (\text{blockDim.x} - 1) + \text{gridDim.x} - 1$$

Vector Addition: $c[\text{index1}, \text{index2}] = a[\text{index1}, \text{index2}] + b[\text{index1}, \text{index2}]$

How to call such a kernel using $\dots x, \dots y$ variables?

Call Kernel $\langle\langle\langle x_1, x_2 \rangle\rangle\rangle (\dots)$

x_1, x_2 can be of dim3 type:

$$x_1 = (n_1, n_2, 1)$$

$$n_1 \hat{=} \text{gridDim.x} ; n_2 \hat{=} \text{gridDim.y}$$

$$x_2 = (m_1, m_2, 1)$$

$$m_1 \hat{=} \text{blockDim.x} ; m_2 \hat{=} \text{blockDim.y}$$

The 3rd element of x_1, x_2 refers to $\dots z$ quantities, but currently not useful