תרגיל בית1 מאיצים:

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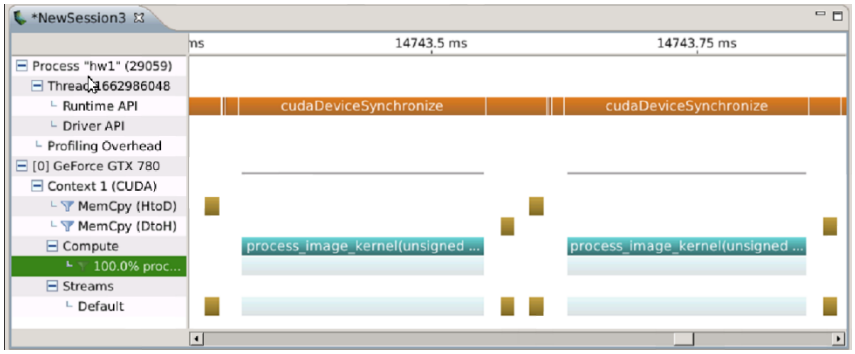
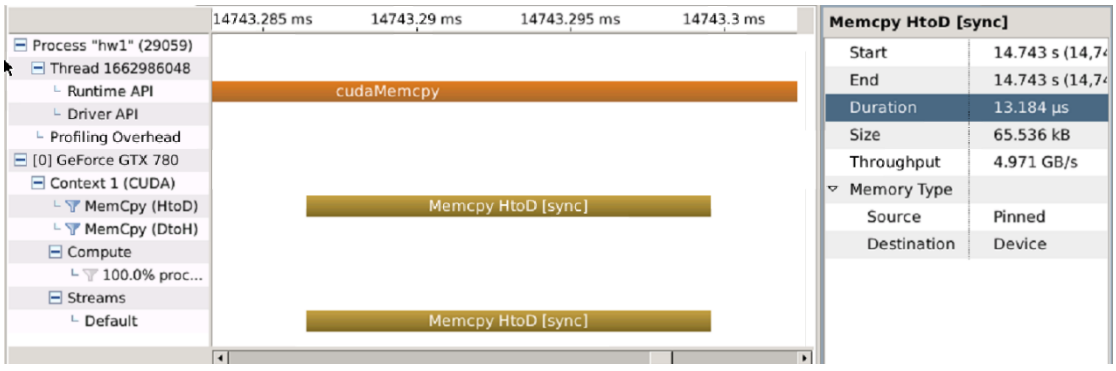
1. **Knowing the system:**
   a. The version is: Cuda compilation tools, release 7.0, V7.0.27
   b. The GPU name is: GeForce GTX 780
   c. There are 12 Multiprocessors
2. **Implement device functions**:
   a. Code
   b. Code
3. **Implement a task serial version:**
   a. Code
   b. code
   c. atomicAdd is needed because any cell in the histogram can be accessed by any thread, so by using atomicAdd we avoid sync conflicts.
   d. Code
   e. We chose 256 threads, such that each thread run on specific column, and allow simpler parallelization work at the hist/CDF arr.
   f. Total run time: 2824.814209 [msec]
      latency: $\frac{10000}{2824.814209*10^{-3}} = 3517.641[\frac{img}{sec}]$
   g.



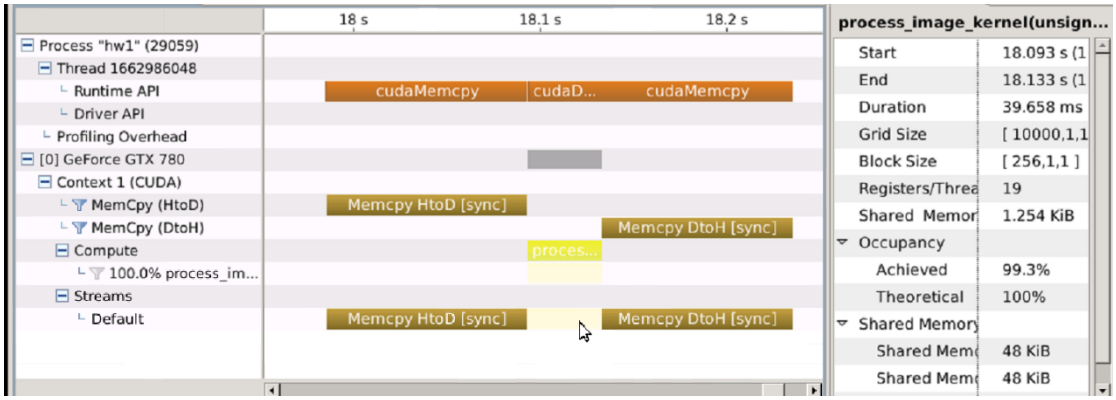
   h. The duration of one hostToDev memcpy is: $13.184\mu sec$



4. **Implement a bulk synchronous version:**
    a. Code
    b. Code
    c. Code
    d. Total run time: 250.391 [msec]

    speed up: $\frac{t_{old}}{t_{new}} = \frac{2824.814209*10^{-3}}{250.391*10^{-3}} = 11.28$

    e.



    f. The duration of one hostToDev memcpy is: $107.134 msec$
    the data was increased by 10000 times and the duration increased by 8200 times, so the time increased better than linear.
    conclusion: larger copies are more efficient than small copies.