Mahbod Afarin – 862186340 – Lab 4:

1- How many global memory reads are performed during the histogram kernel?

The answer is **N** because we need to read each elements of the input array.

2- How many global memory writes are performed during the histogram kernel?

The answer is $16 \times 1024 =$ **16384** because we need to update every 16 blocks with 1024 bins.

3- How many total atomic operations are performed?

The answer is $N + 1024 \times 16 =$ $\boldsymbol{N + 16384}$ because first of all, it will read N elements from input array and updating the bins in private histogram memory and it means that it will need N atomic operation, then it needs to update each block with 1024 bins which means that it means 16384 atomic operations. Therefore, in total, we have $N + 16384$ atomic operations.