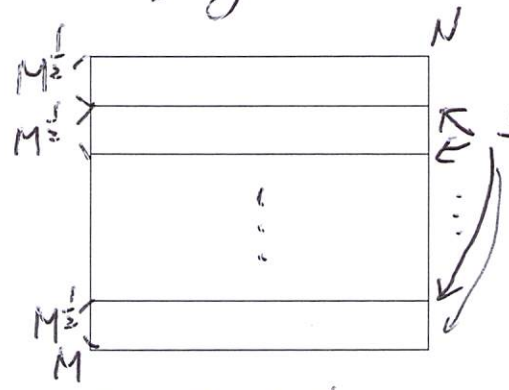


A note for Method 7

Kun-Mao @
Rainy-Saturday
2017/12/2

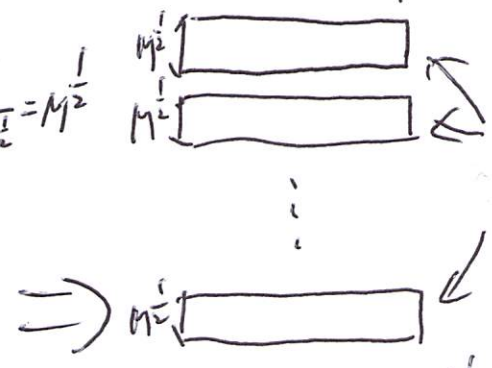
Stage 1



Save S^- and S^+ once every $M^{1/2}$ rows.

Time: $O(MN)$
Space: $O(\underbrace{M^{1/2}}_{\text{the number of partition rows}} N)$

Stage 2

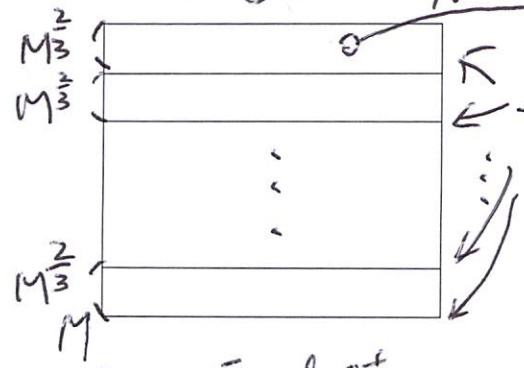


Solve $M^{1/2} \times N$ directly using $O(M^{1/2} N)$ time and $O(M^{1/2} N)$ space

In total, $M^{1/2} * O(M^{1/2} N)$ time. \uparrow
" $O(MN)$ recycled for each block"

Time: $2 * O(MN) = O(2MN) = O(MN)$
Space: $2 * O(M^{1/2} N) = O(2M^{1/2} N) = O(M^{1/2} N)$

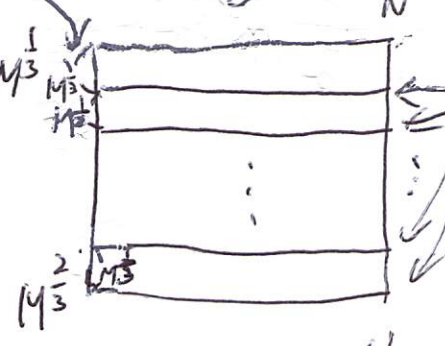
Stage 1



Save S^- and S^+ once every $M^{2/3}$ rows.

Time: $O(MN)$
Space: $O(M^{1/3} N)$

Stage 2



For each $M^{2/3} \times N$, save S^- and S^+ once every $M^{1/3}$ rows.

Time: $O(MN)$
Space: $O(M^{1/3} N)$

Stage 3

Solve it directly using $O(M^{1/3} N)$ time and $O(M^{1/3} N)$ space

In total, recycled
Time: $M^{1/3} * M^{1/3} * O(M^{1/3} N)$
 $= O(MN)$

Time: $3 * O(MN) = O(3MN) = O(MN)$

Space: $3 * O(M^{1/3} N) = O(3 * M^{1/3} N) = O(M^{1/3} N)$

of blocks at stage 1
of blocks at stage 2