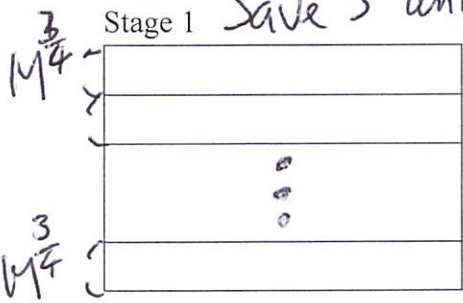


Computing all  $\Delta$ -points in  $O(MN)$  time and  $O(M^{1/4}N)$  working space

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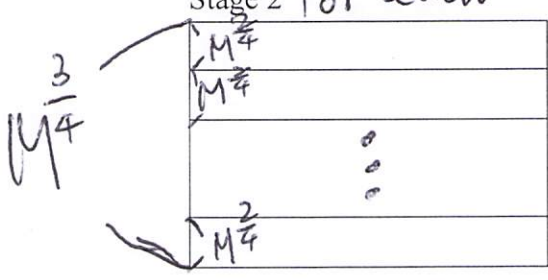
Save  $S^-$  and  $S^+$  once every  $M^{3/4}$  rows.



Time =  $O(MN)$   
 Space =  $O(M^{1/4}N)$

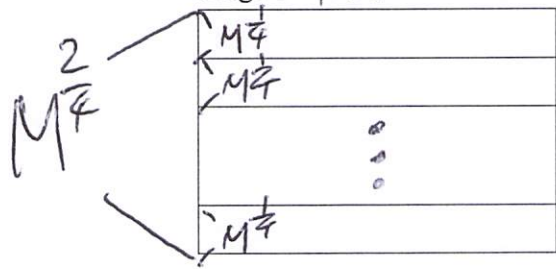
*the number of partition rows*

For each  $M^{3/4}$  block, save  $S^-$  and  $S^+$  once every  $M^{3/4}$  rows.

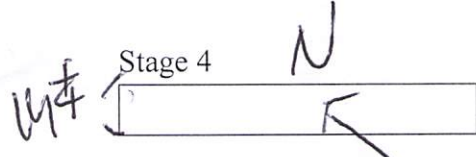


Time =  $O(MN)$  *for all blocks*  
 Space =  $O(M^{1/4}N)$

For each  $M^{2/4}$  block, save  $S^-$  and  $S^+$  once every  $M^{1/4}$  rows.



Time =  $O(MN)$  *for all blocks*  
 Space =  $O(M^{1/4}N)$



Solve it directly. Time =  $O(MN)$  *for all blocks*  
 Space =  $O(M^{1/4}N)$

Time:  $4 \times O(MN) = O(MN)$

Space:  $4 \times O(M^{1/4}N) = O(M^{1/4}N)$