# Turnstile Streaming

- Initialize $x \leftarrow 0 \in \mathbb{R}^n$

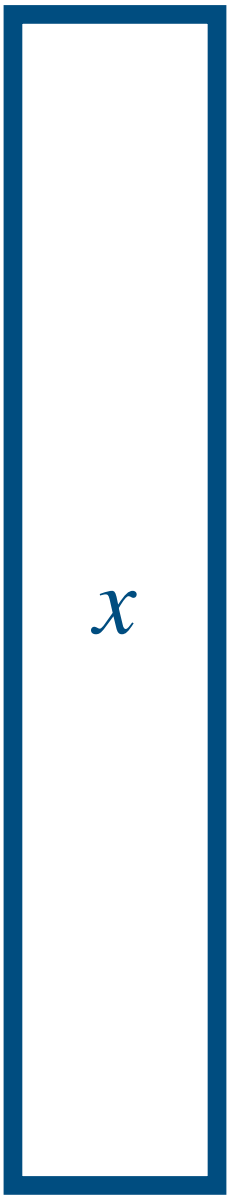
- On update $(i, \Delta)$ :

- Set $x[i] \leftarrow x[i] + \Delta$

- Answer queries about $x$ at the end of the stream using **small space**

$$\bullet \sum_{i} |x[i]|^{p}$$

- $\max_i |x[i]|$


x

Updates: $(i_1, \Delta_1)\ (i_2, \Delta_2)\ \ \ldots\ \ (i_m, \Delta_m)$

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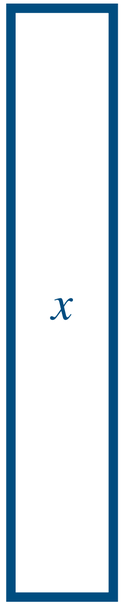


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# Challenges