Turnstile Streaming

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

- On update (i, Δ) :

- Set $x_i \leftarrow x_i + \Delta$

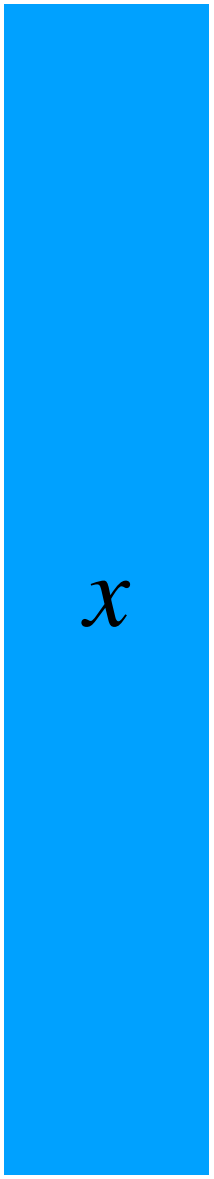
- Answer queries about x using **small space**

- $\max_i |x_i| = \|x\|_\infty$

- $\sum_i |x_i|^p$ (F_p moments)

- Useful to characterize the distribution

- $p \in (0,2)$ to approximate the entropy of the distirbution


x

Updates: (i_1, Δ_1) (i_2, Δ_2) $\ldots$ (i_m, Δ_m)

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A Major Technique: Linear Sketching