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

- On update (i, Δ) :

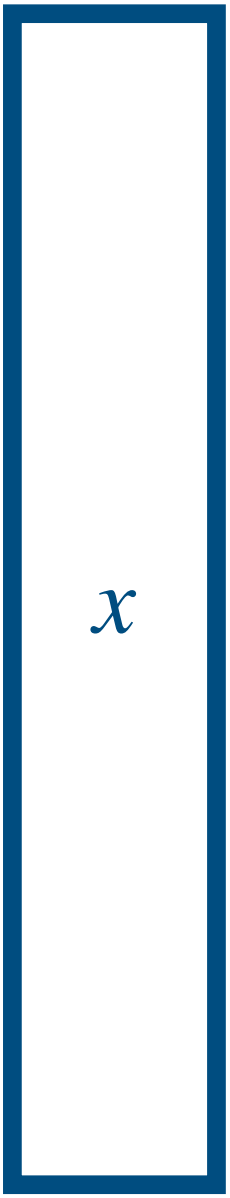
- Set $x[i] \leftarrow x[i] + \Delta$

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

- What was $\|x\|_\infty$ or $x[i]$ or $\|x\|_2$ ...

- **Update time**: Time to process a new update

Turnstile Streaming


x

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

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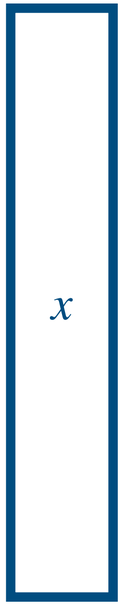

Updates: (i_1, Δ_1) (i_2, Δ_2) … (i_m, Δ_m)

Our Results