



How is Sketching Useful?

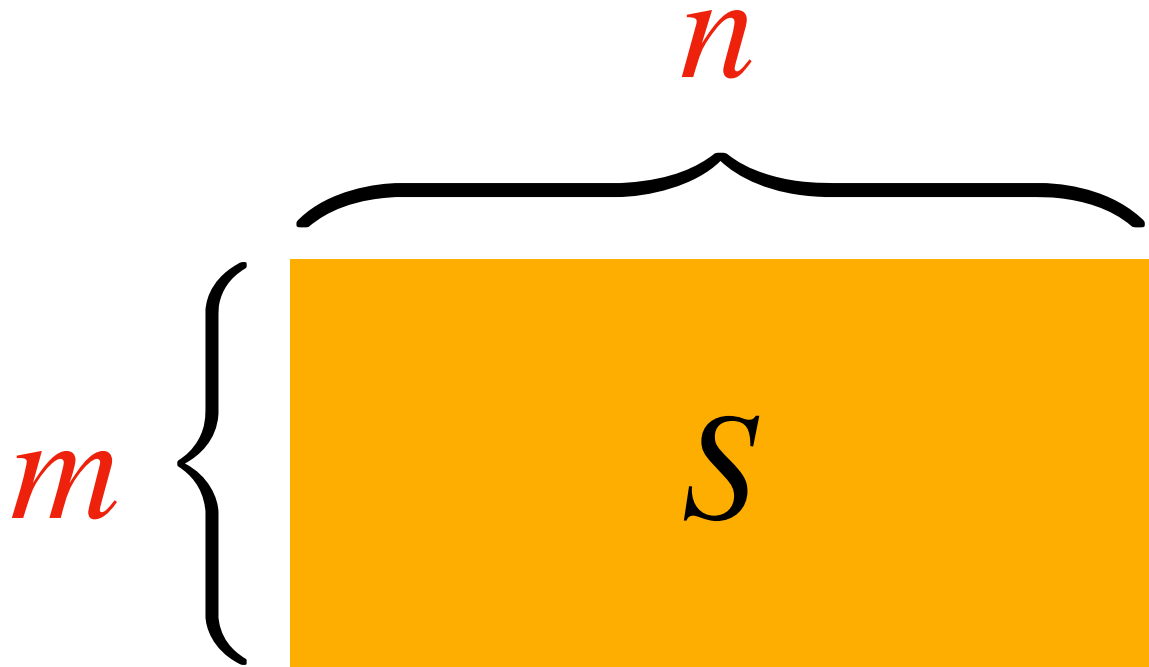
**Turnstile Streaming**

- $S$  can be stored using small space and  $n$  small  $\Rightarrow$  Small space streaming algorithms!

- $S_{*i}$  can be retrieved quickly  $\Rightarrow$  Fast update times

- We will discuss how to obtain space-optimal algorithms with fast update times

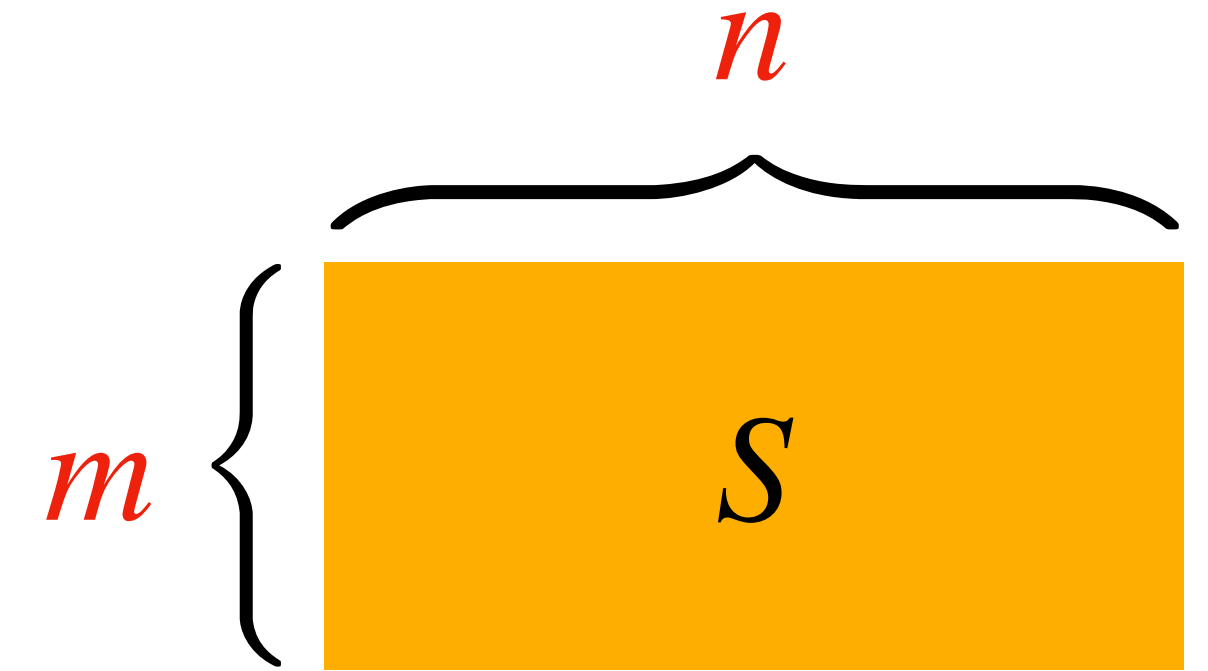






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## Turnstile Streaming



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# Complexity Measures