

Demanding Nisan's PRG

- Need to fool $O(\log n)$ space algorithm and require $\text{poly}(n)$ length bitstring

- Require $l, t \equiv \Omega(\log n)$

- Seed of size $O(\log^2 n)$

- Need to evaluate $O(\log n)$ hash functions to retrieve a block

- We use $\Omega(n^{1-2/p})$ bits to store the sketch

- Can we use a larger seed for the PRG to decrease $\mathcal{O}(\log n)$ hash evaluations?

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Derandomizing using Nisan's PRG

- Need to fool $O(\log n)$ space algorithm and require $\text{poly}(n)$ length bitstring
 - Require $l, t = \Omega(\log n)$
 - Seed of size $O(\log^2 n)$
 - Need to evaluate $O(\log n)$ hash functions to retrieve a block
- We use $\Omega(n^{1-2/p})$ bits to store the sketch
 - Can we use a larger seed for the PRG to decrease $O(\log n)$ hash evaluations?

HashPRG : Our Construction