

Demanding with PRG

- Indyk '00 showed a black-box way to decrease memory for such a construction using PRGs for small space algorithms

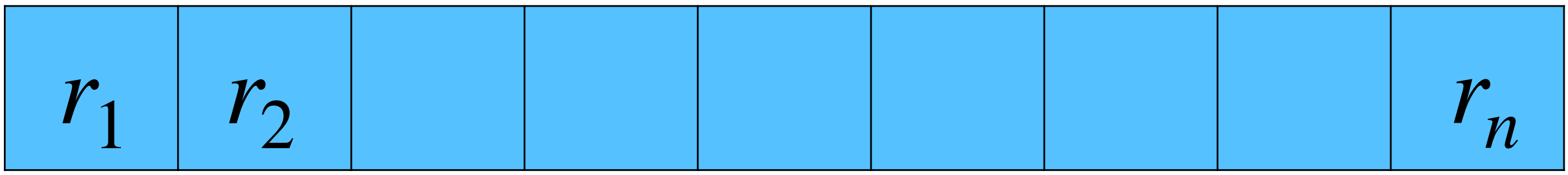
• Output distribution changes by amount

- Consider the **one-pass** algorithm parameterized by x which takes as input a random string with n blocks

• Initialize $sk \leftarrow 0$

- Use r_i to generate S_{*i}

- Update $sk \leftarrow sk + x_i \cdot S_{*i}$



r_1

r_2

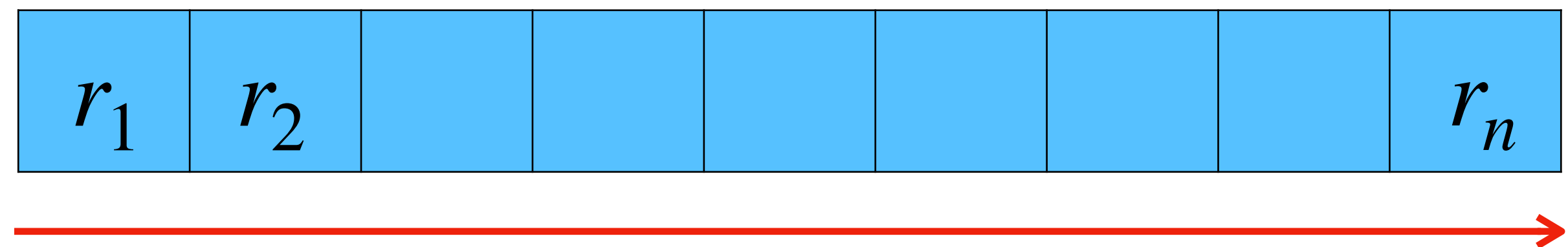
r_n





Derandomizing with PRG

- Indyk '00 showed a black-box way to decrease memory for such a construction using PRGs for small space algorithms
 - Output distribution changes by a small amount
- Consider the **one-pass** algorithm parameterized by x which takes as input a random string with n blocks



- Initialize $sk \leftarrow 0$
- Use r_i to generate S_{*i}
- Update $sk \leftarrow sk + x_i \cdot S_{*i}$

Nisan's PRG