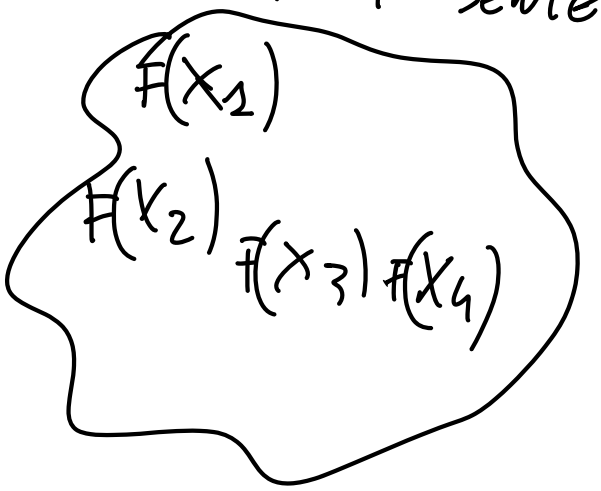
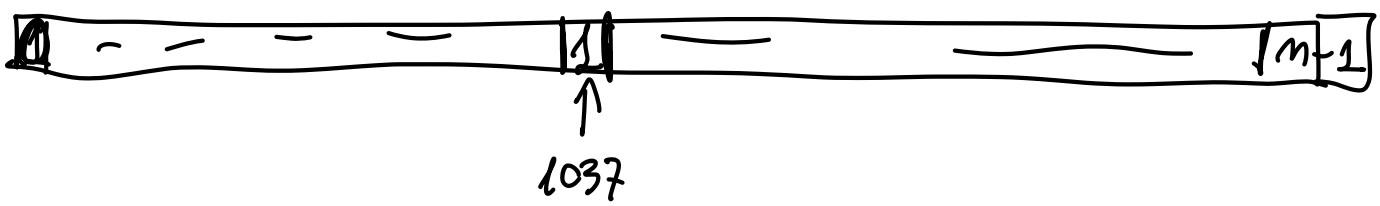
SET OF SENTENCES



if $y \notin S$

1. y GENERATED RANDOM STRING
   ↓
   $F(y)$ → CHECK IF COLLISION OCCURS
2. GENERATE RANDOM FINGERPRINTS (OF CORRECT SIZE!)

BIT STRING ARRAY

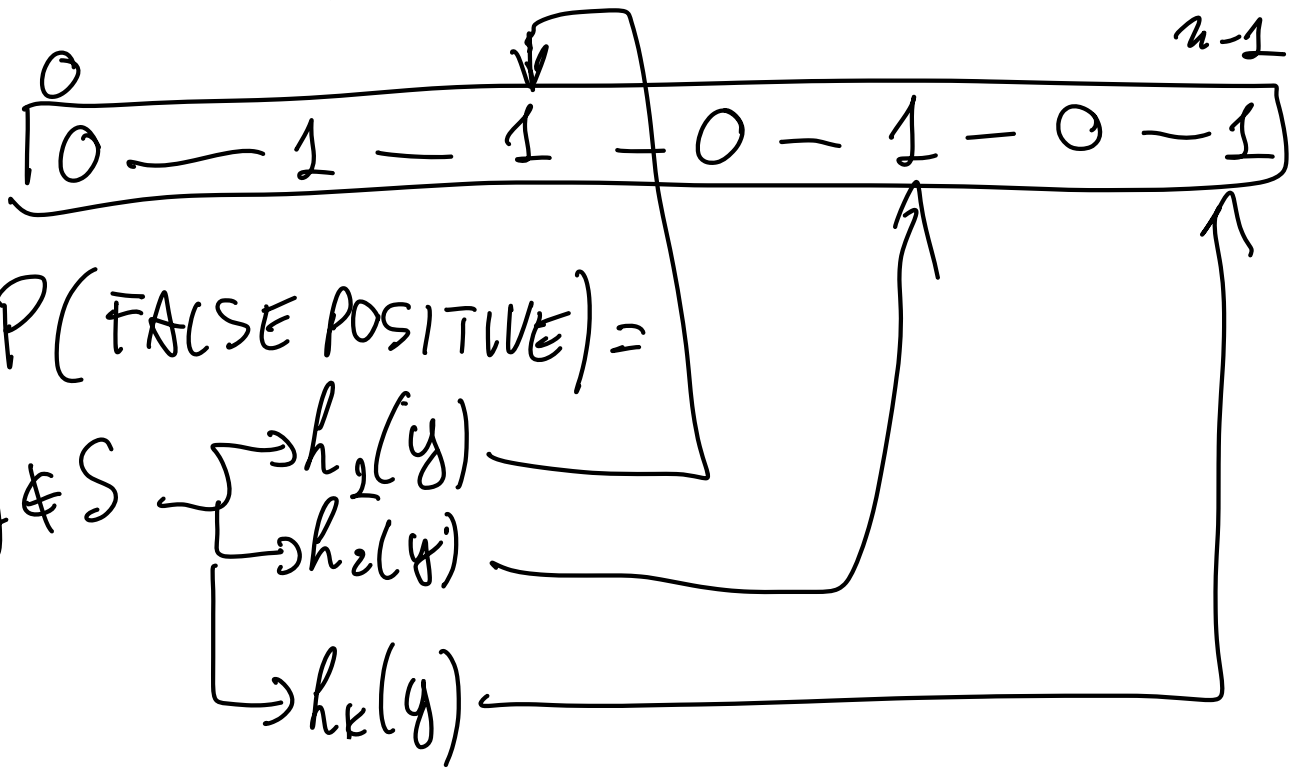


$\underline{x} = (\text{Nel mezzo} \ldots) \rightarrow F(\underline{x}) = 1037$

$y \notin S \rightarrow F(y) \in RND(0, n-1)$

3) $P(\text{FALSE POSITIVE}) = \left(\frac{\#ONES}{n}\right)$

BLOOM FILTERS



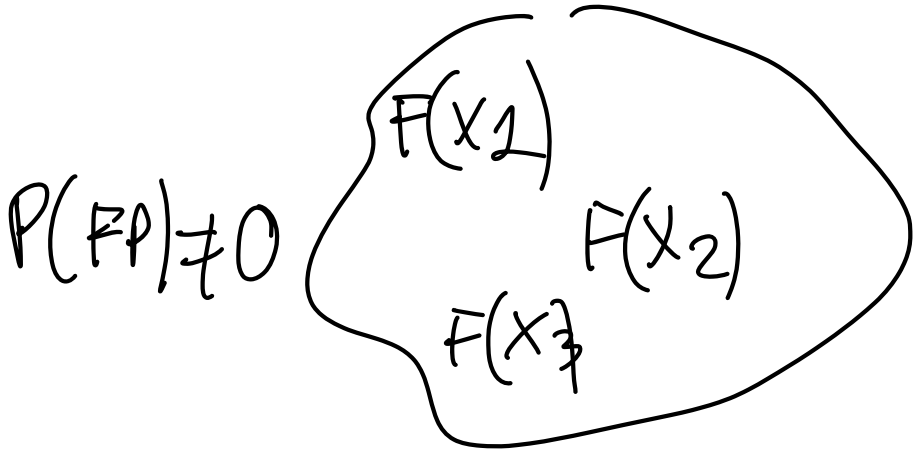
4) $P(\text{FALSE POSITIVE}) = \left(\frac{\#ONES}{n}\right)^k$

$h_1(x) = h(x)$

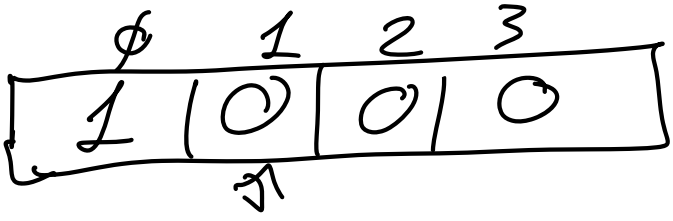
$h_2(x) = h(x + '1')$

$h_{100}(x) = h(x + '100')$

FINGERPRINT SET B_{exp}



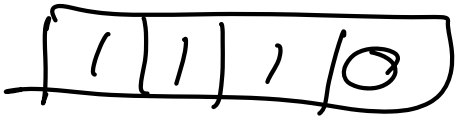
BIT STRING ARRAY



$1000 \times \frac{1}{4} = \#\text{HOLES}$

$\frac{1}{4}$

$P(FP) = \frac{1}{4}$



$P(FP) = \frac{3}{4}$

$y \notin S \rightarrow F(y)$

$y_1 \rightarrow F(y_1) = \phi \Rightarrow$ FP

$y_2 \rightarrow F(y_2) = 2 \Rightarrow$

$y_3 \rightarrow F(y_3) = 2 \Rightarrow$ } NO FP

$y_4 \rightarrow F(y_4) = 3 \Rightarrow$

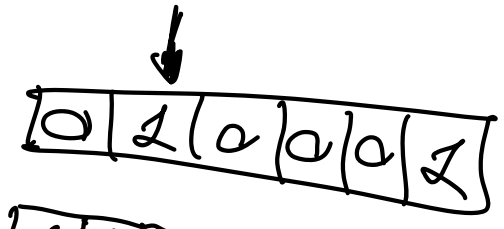
FOR ~~RUNS~~ IN 1000

$F = RND(0,3)$

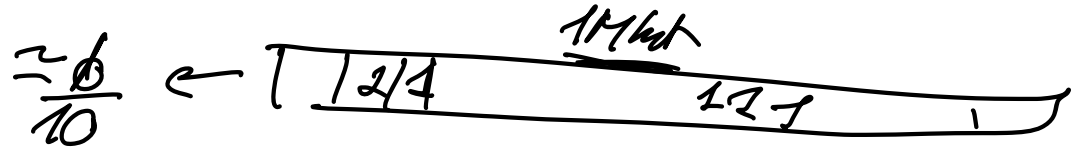
→ FOR EACH SENTENCE S

BSA.INSERT(S)

→ EVALUATE #ONES



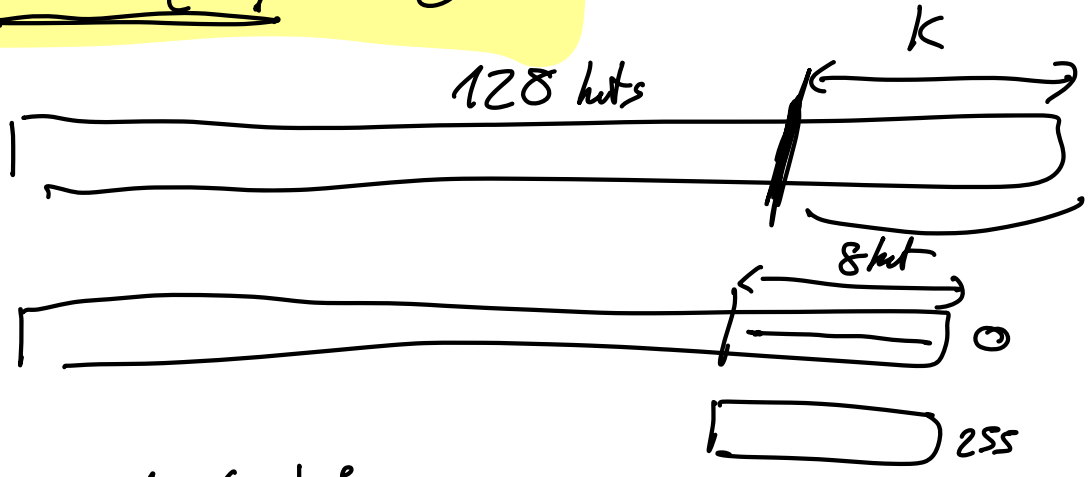
→ 1



$\simeq \frac{6}{10}$ ←

F (K bits) → RANGE

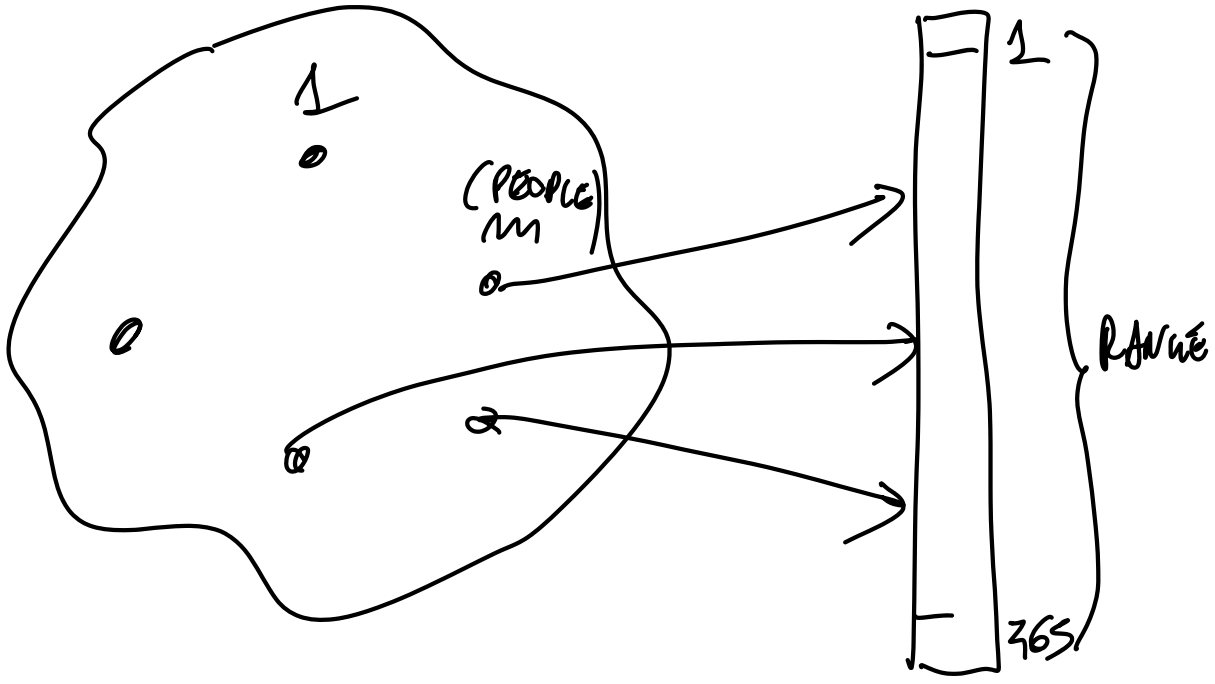
$$mds(x) \;\%\; 2^K$$



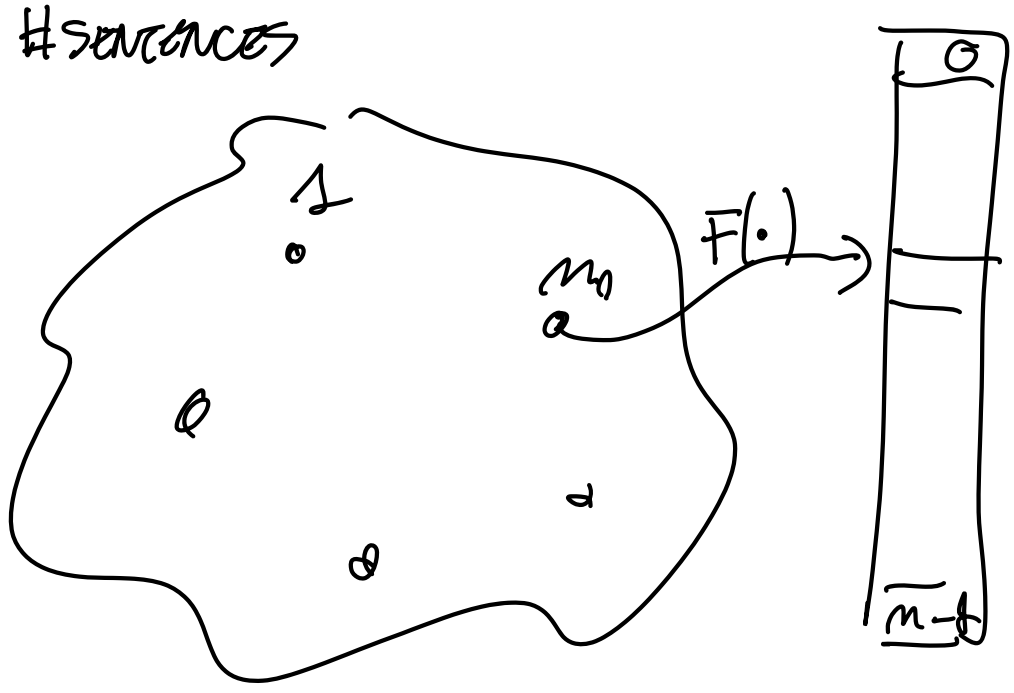
$$mds(x) \;\%\; 256$$

K = 10 bit ⇒ RANGE = 1024

$mds(\_\_) \;\%\; 1024 = \{$ 512 → 1023 50%



M = #SENTENCES



$$F(\text{SENTENCE}) \in [0, M)$$

$$B_{tea} \Rightarrow M = 2^{B_{tea}}$$