$\simeq$ 100K words $\Rightarrow$ $\simeq$ 100K sentences (given size)

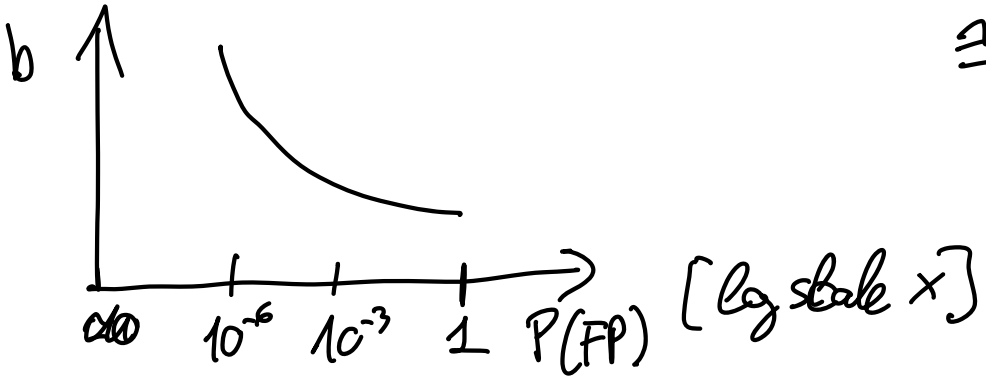
↳ $\log_2(100K) \cong$ **17 bits**

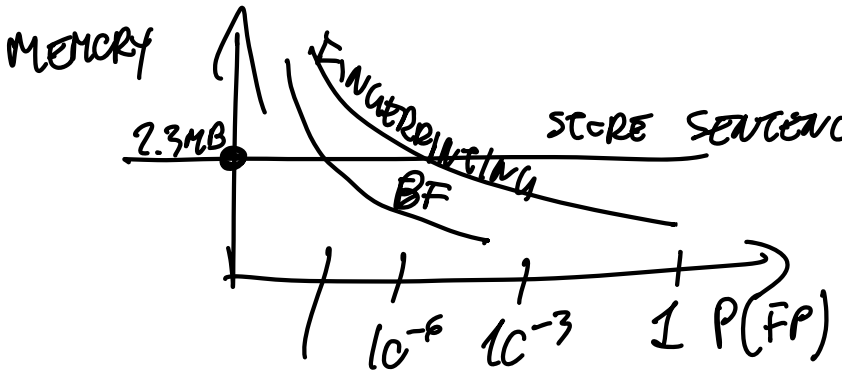
$P(FP) \simeq 10^{-4} \Rightarrow$

$b \geq \log_2\left(\frac{m}{\varepsilon}\right) = \underline{30 \text{ bits}}$ → 30 bits × 100K = 29...

= 3000K bit

$\cong$ 500KB





MEMORY $\simeq b \times m$

ORIGINAL FILE $\simeq$ 500KB → 5B/word

WORD $\simeq$ 900KB

↳ #SENTENCES $\simeq$ 100K

EACH SENTENCE $\simeq$ 23 BYTE → 2.3 MB

Sentence = (word1, word2)

10

- F(sentence) → P(FP)
- F(word1) + F(word2) → F(sentences)

10 10 20

send

$S = (w_1, w_2)$

$S \rightarrow F_k(S)$ | k bit

$S \rightarrow F_{k/2}(w_1) + F_{k/2}(w_2) \rightarrow F_k(\ldots)$ | k bits

$S \rightarrow F_2(w_1) + F_2(w_2) \rightarrow F_k(\ldots)$

00
01
10
11