Hashing

Sunday, January 21, 2024 9:00 PM

Overview

Hashing → Hash কাকে?

$f(x) = 5x + 3$

a → $f(a) \rightarrow H_a$

$f(1) = 8 \rightarrow H_1 = 8$

$f(2) = 13 \rightarrow H_2 = 13$

$f(x, y) = 5x + y$

$(2, 0) \rightarrow 10$

$(1, 5) \rightarrow 10$

$H(S2) \rightarrow Value_2$

$H(\underbrace{Anything}_{S}) = Value$ ই

String

$(Value = Value_2)$

$(S = S_2)$

Problem: Main String S $(|S| < 10^5)$

Sub String, Sub $(|Sub| < 10^5)$

is Sub is sub string of S

prefix

ASCII

$O(|S| \cdot |Sub|)$

S: 1 2 3 2 4 6 5 5 6 7 — $O(|S|)$

Sub: 2 4 6 → int → 246 — $O(1)$

int P = 1

int $P_0 = 1$

$P_1 = 10 \cdot P_0 = 10 \times 1 = 10 + 2 = 12$

$P_2 = 10 \cdot P_1 = 10 \times 12 = 120 + 3 = 123$

$P_3 = 10 \cdot P_2 = 10 \times 123 = 1230 + 2 = 1232$

$P_4 = 12324$

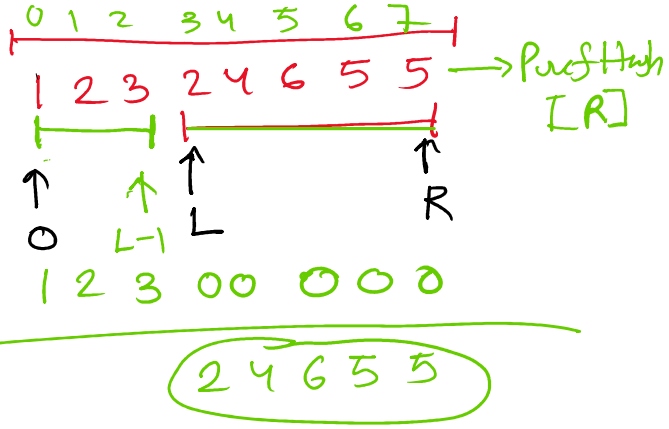
$P_5 = 123246$

1232465

12324655

123246556

1232465567



7 − 3 = 4

24655

prefHash[R] − prefixHash[L-1] × 10^{R-L+1}

$[0 \text{ — } 10^7 + 9]$

X X