

$T = y a b b a d a b b c d p \$$
 1 2 3 4 5 6 7 8 9 10 11 12 13

(2)

SA

	1	2	3	4	5	6	7	8	9	10	11	12	13
	13	2	7	5	10	4	9	3	8	6	11	12	1

$P = a b b$

X A A X + X X

9: $b > a$

←

← ← ← ← ← ←

4: $b > a$

←

10: $ad > ab$

←

5: $ad > ab$

←

7: $abb = abb$

←

2: $abb = abb$

←

13: $\$ < a$

$[2, 7]$

$O(P \log T)$

↑

P letter

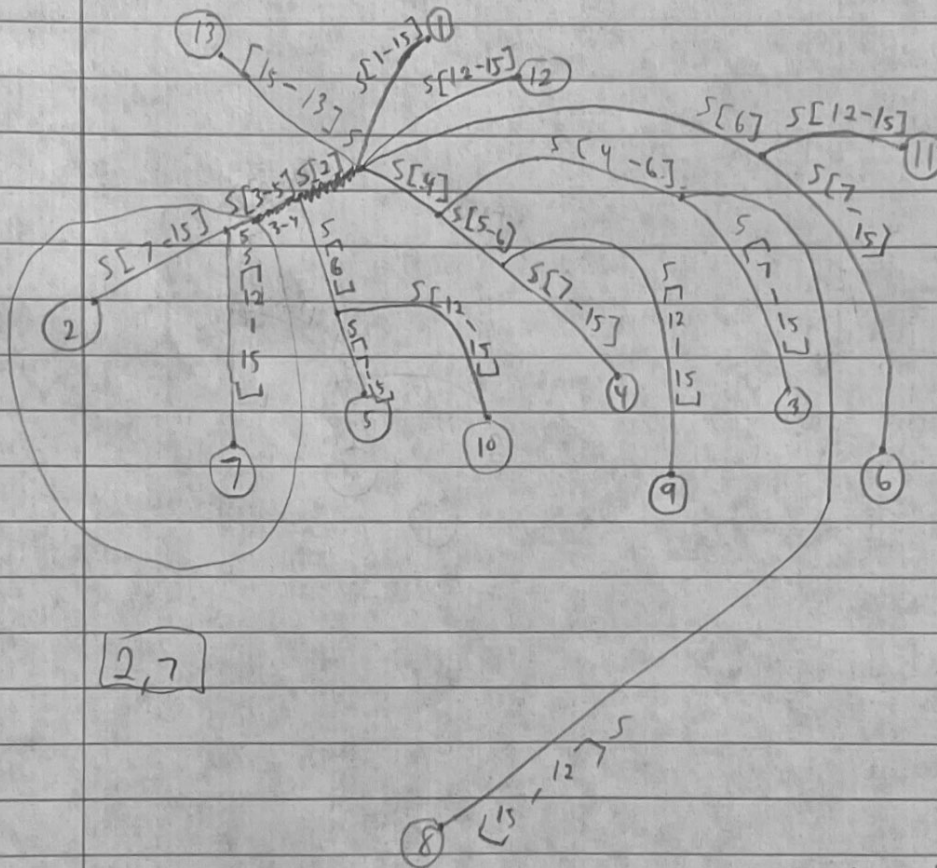
comparisons

T is the length of the array

Assumption not suffix tree with letters because that is not with LCP
just SA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
(3) T = y a b b a d a b b a d p s s s

SA = 13, 2, 7, 5, 10, 4, 9, 3, 8, 6, 11, 12, 1
LCP X 0, 5, 1, 2, 0, 3, 1, 4, 0, 1, 0, 0



13 s s s
2 a b b a d a b b a d p s s s
7 a b b a d p s s s
5 a d a b b a d p s s s
10 a d p s s s
4 b a d a b b a d p s s s
9 b a d p s s s
3 b b a d a b b a d p s s s
8 b b a d p s s s
6 d a b b a d p s s s
11 d p s s s
12 p s s s
1 y a b b a d a b b a d p s s s

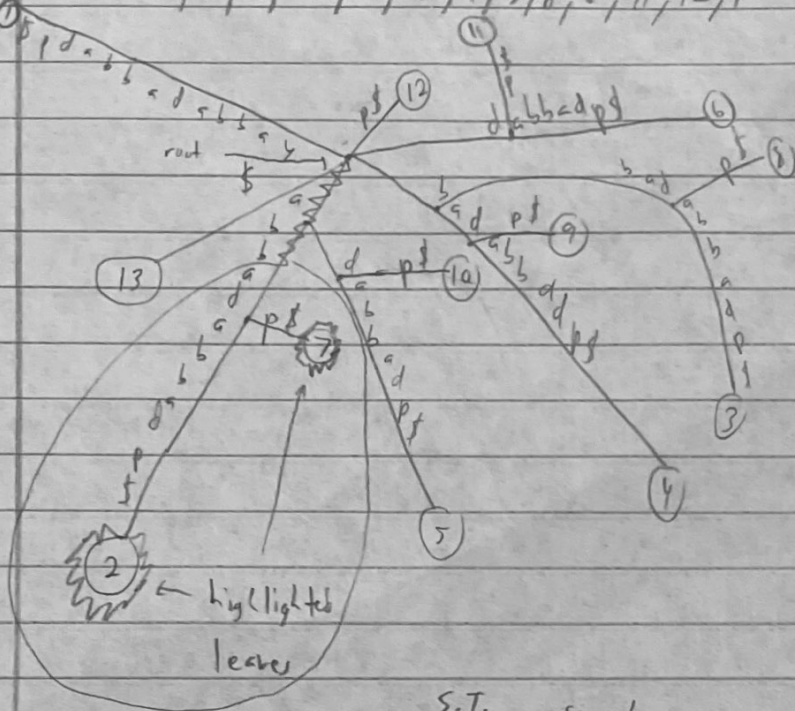
P = a b b

LCP + Suffix + Search + DFS
B.F. Tree
↓ ↓ ↓ ↓
 $O(n^2) + O(n) + O(P) + O(n) \Rightarrow O(n^2)$

1 2 3 4 5 6 7 8 9 10 11 12 13
 $T = y a b b c d a b b c d p f$

(4) SA = 13, 2, 7, 5, 10, 4, 9, 3, 8, 6, 11, 12, 1

P = a b b

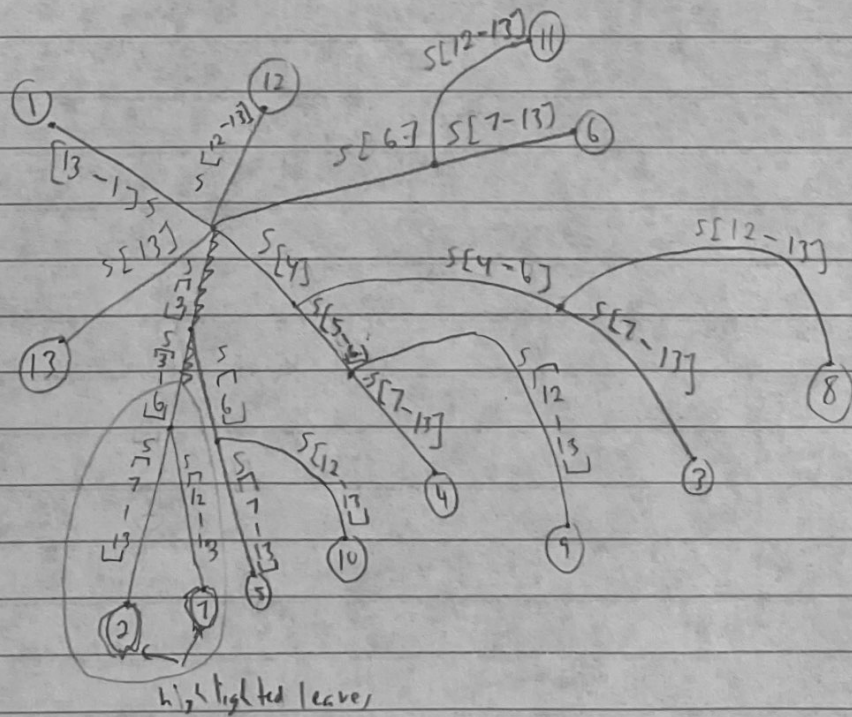


13 y
 2 $a b b c d a b b c d p f$
 7 $a b b c d p f$
 5 $a b b c d a b b c d p f$
 10 $a b b c d p f$
 4 $b c d a b b c d p f$
 9 $b c d p f$
 3 $b b c d a b b c d p f$
 8 $b b c d p f$
 6 $d a b b c d p f$
 11 $d p f$
 12 $p f$
 1 $y a b b c d a b b c d p f$

2, 7

S.T. search
 $O(n^2) + O(p)$

not needed



2, 7

S.T. search
 $O(n) + O(p)$

(5)

$$\square \quad \frac{n}{2}$$

$$\boxed{3} \quad \frac{n}{2}$$

$$\boxed{1} \quad n$$

$$V = \sum_{i=0}^{\log_2 n} \frac{n}{2^i} \leq n \sum_{i=0}^{\log_2 n} \left(\frac{1}{2}\right)^i$$
$$\leq \frac{3n}{2}$$

$$\frac{1}{1-\frac{1}{2}} = \frac{1}{\frac{1}{2}} = 2$$

$$\text{nodes} = V = \frac{3n}{2}$$

$$\text{edges} = \text{nodes} - 1$$

$$= \frac{3n}{2} - 1$$