

$j \rightarrow 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6$
a b c a d b d $n=6$ given

prev

0	0	0	-1	-1	-1	-1	-	a	0	0
---	---	---	----	----	----	----	---	---	---	---

$\text{str}[0] = 'a'$

① $j=0$

$i = \max(0, \text{prev}['a'] + 1) = 0$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 0 - 0 + 1 = 1$

$\text{res} = \max(0, 1) = 1$

$\text{prev}['a'] = 0$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	-1	-1	-1	-	a	0	0
---	---	---	---	----	----	----	---	---	---	---

$\text{str}[1] = 'b'$

② $j=1$

$i = \max(0, \text{prev}['b'] + 1) = 0$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 1 - 0 + 1 = 2$

$\text{res} = \max(1, 2) = 2$

$\text{prev}['b'] = 1$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	1	-1	-1	-	a	0	0
---	---	---	---	---	----	----	---	---	---	---

$\text{str}[2] = 'c'$

③ $j=2$

$i = \max(0, \text{prev}['c'] + 1) = 0$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 2 - 0 + 1 = 3$

$\text{res} = \max(2, 3) = 3$

$\text{prev}['c'] = 2$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	1	2	-1	-	a	0	0
---	---	---	---	---	---	----	---	---	---	---

$\text{str}[3] = 'a'$

$i = \max(0, \text{prev}['a'] + 1) = 1$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 3 - 0 + 1 = 4$

$\text{res} = \max(3, 4) = 4$

$\text{prev}['a'] = 3$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	1	2	3	-	a	0	0
---	---	---	---	---	---	---	---	---	---	---

$\text{str}[4] = 'd'$

$i = \max(0, \text{prev}['d'] + 1) = 0$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 4 - 0 + 1 = 5$

$\text{res} = \max(4, 5) = 5$

$\text{prev}['d'] = 4$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	1	2	3	4	a	0	0
---	---	---	---	---	---	---	---	---	---	---

$\text{str}[5] = 'b'$

$i = \max(0, \text{prev}['b'] + 1) = 2$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 5 - 1 + 1 = 5$

$\text{res} = \max(5, 5) = 5$

$\text{prev}['b'] = 5$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	1	2	3	4	5	a	0
---	---	---	---	---	---	---	---	---	---	---

$\text{str}[6] = 'd'$

$i = \max(0, \text{prev}['d'] + 1) = 5$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 5 - 4 + 1 = 5$

$\text{res} = \max(5, 5) = 5$

$\text{prev}['d'] = 6$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	1	2	3	4	5	6	a
---	---	---	---	---	---	---	---	---	---	---

$\text{str}[7] = 'd'$

$i = \max(0, \text{prev}['d'] + 1) = 6$ $i = \max(i, \text{prev}[\text{str}[j]] + 1);$

$\text{maxEnd} = 5 - 6 + 1 = 0$

$\text{res} = \max(5, 0) = 5$

$\text{prev}['d'] = 7$ $\text{prev}[\text{str}[j]] = j;$

0	0	0	0	1	2	3	4	5	6	7
---	---	---	---	---	---	---	---	---	---	---

Final result: 5

$prev[c] = 2$ $prev[str[j]] = j;$

0	0	0	...	0	1	2	...	0	0	0
				c	b	c	d			

④ ~~3~~

$j = 3$ $str[3] = 'a'$ $i = \max(i, prev[str[j]] + 1)$
 $i = \max(0, prev[a] + 1) = 1$

$maxEnd = 3 - 1 + 1 = 3$

$res = \max(2, 3) = 3$

$prev[a] = 3$ $prev[str[j]] = j;$

a b c a d b d

removed

0	0	0	...	0	1	2	...	0	0	0
				a	b	c	d			

③ $j = 4$ $str[4] = 'd'$
 $i = \max(i, prev[d] + 1) = 4$ $i = \max(i, prev[str[j]] + 1);$
 $maxEnd = 4 - 1 + 1 = 4$
 $res = \max(3, 4) = 4$

a b c a d b d

$$prev[4] = 4$$

$prev[str[j]] = j;$

0	0	0	...	3	4	2	4	...	0	0
---	---	---	-----	---	---	---	---	-----	---	---

'a' 'b' 'c' 'd'

~~6~~ $j = 5$

$$str[5] = b$$

$$i = \max(1, prev[b] + 1) = 2$$

$i = \max(i, prev[str[j]] + 1);$

$$maxEnd = 5 - 2 + 1 = 4$$

$$res = \max(4, 4) = 4$$

$$prev[b] = 5$$

$prev[str[j]] = j;$

a b c a d b d

removed

0	0	0	...	3	5	2	4	...	0	0
---	---	---	-----	---	---	---	---	-----	---	---

'a' 'b' 'c' 'd'

~~7~~ $j = 6$

$$str[6] = d$$

$$i = \max(2, prev[d] + 1) = 5$$

$i = \max(i, prev[str[j]] + 1);$

$$maxEnd = 6 - 5 + 1 = 2$$

$$res = \max(4, 2) = 4$$

$$prev[d] = 6$$

$prev[str[j]] = j;$

$res = 4$

a b c a d b d

removed