

# KMP dry run

string= "abcxabcdabxabcdabcbcdabcy"

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

pattern="abcdabcy"

lps: 0 0 0 0 1 2 3 0

0 1 2 3 4 5 6 7

$x' \neq y' \Rightarrow j \leftarrow \text{lps}[j-1]$   
 $j \neq 0$

miro

string= "abcxabcdabxabcdabcbcdabcy"

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

pattern="abcdabcy"

lps: 0 0 0 0 1 2 3 0

0 1 2 3 4 5 6 7

$x' \neq y' \Rightarrow \text{but } j=0 \Rightarrow i \leftarrow i+1$

miro



string= "abcxabcdabxabcdabcbcy"

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

pattern="abcdabcy"

lps: 0 0 0 0 1 2 3 0

0 1 2 3 4 5 6 7

$$s[i] \neq s[j] \Rightarrow (j \neq 0) \Rightarrow j = \text{lps}[j-1]$$

5  
2

string= "abcxabcdabxabcdabcbcy"

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

pattern="abcdabcy"

lps: 0 0 0 0 1 2 3 0

0 1 2 3 4 5 6 7

$$s[i] \neq s[j] \Rightarrow (j \neq 0) \Rightarrow j = \text{lps}[j-1]$$

1  
0



string= "abcxabcdabxabcdabcdabcy"

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

pattern= "abcdabcy"

lps: 0 0 0 0 1 2 3 0

0 1 2 3 4 5 6 7

$s[i] \neq s[j] \xrightarrow{(j=0)} i \leftarrow i+1$

miro

string= "abcxabcdabxabcdabcdabcy"

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

pattern= "abcdabcy"

lps: 0 0 0 0 1 2 3 0

0 1 2 3 4 5 6 7

$s[i] \neq c \xrightarrow{(j \neq 0)} j \leftarrow \text{lps}[j-1]$   
6  
3

miro

string= "abcxabcdabxabcdabcdabcy"

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

pattern= "abcdabcy"

lps: 0 0 0 0 1 2 3 0

0 1 2 3 4 5 6 7

23  
j=8

We have a match at  $i-8=23-8=15$

miro