

KMP-MATCHER( $T, P, n, m$ )

```
1   $\pi$  = COMPUTE-PREFIX-FUNCTION( $P, m$ )
2   $q = 0$  // number of characters matched
3  for  $i = 1$  to  $n$  // scan the text from left to right
4      while  $q > 0$  and  $P[q + 1] \neq T[i]$ 
5           $q = \pi[q]$  // next character does not match
6      if  $P[q + 1] == T[i]$ 
7           $q = q + 1$  // next character matches
8      if  $q == m$  // is all of  $P$  matched?
9          print "Pattern occurs with shift"  $i - m$ 
10      $q = \pi[q]$  // look for the next match
```

COMPUTE-PREFIX-FUNCTION( $P, m$ )

```
1  let  $\pi[1 : m]$  be a new array
2   $\pi[1] = 0$ 
3   $k = 0$ 
4  for  $q = 2$  to  $m$ 
5      while  $k > 0$  and  $P[k + 1] \neq P[q]$ 
6           $k = \pi[k]$ 
7      if  $P[k + 1] == P[q]$ 
8           $k = k + 1$ 
9       $\pi[q] = k$ 
10 return  $\pi$ 
```