

RABIN-KARP-MATCHER(T, P, n, m, d, q)

```
1   $h = d^{m-1} \bmod q$ 
2   $p = 0$ 
3   $t_0 = 0$ 
4  for  $i = 1$  to  $m$                                 // preprocessing
5       $p = (dp + P[i]) \bmod q$ 
6       $t_0 = (dt_0 + T[i]) \bmod q$ 
7  for  $s = 0$  to  $n - m$                                 // matching—try all possible shifts
8      if  $p == t_s$                                     // a hit?
9          if  $P[1:m] == T[s+1:s+m]$                     // valid shift?
10             print “Pattern occurs with shift”  $s$ 
11  if  $s < n - m$ 
12       $t_{s+1} = (d(t_s - T[s+1]h) + T[s+m+1]) \bmod q$ 
```