Chapter 4

String Matching Algorithm

string-matching algorithms, sometimes called **string-searching algorithms**, are an important class of string algorithms that try to find a place where one or several strings (also called patterns) are found within a larger string or text.

T → Text

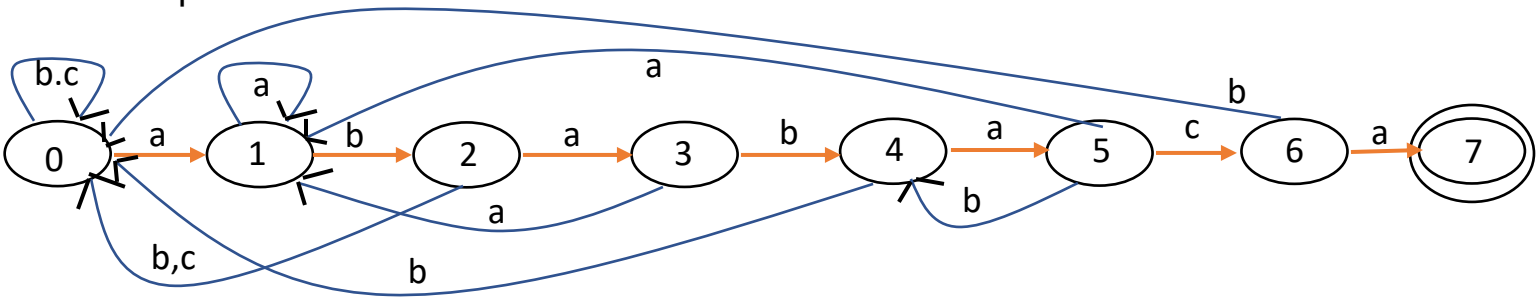
aabbcdabbcay

P → bca : Pattern

Algorithm

```
n ← length( T )
m ← length( P )
for ( s = 0; s <= ( n-m); s++)
    if ( p[1..m] = T[ s+1 … s+m ]
        print " pattern found"
    end if
end for
```

p = a b a b a c a



Transition Table

State	A	b	c
0	1	0	0
1	1	2	0
2	3	0	0
3	1	4	0
4	5	0	0
5	1	4	6
6	7	0	0
7	1/0	2/0	0/0

With loop without loop

Find_Shift_Key (T, R, P)

// T: text, R: Transition Table, P: Pattern

n ← length(T)

q ← 0 // state number

for (i = 0; I <= n; i++)

q = R [q , T [i+1]);

if (q == m) // m: Final state

s = i – m ;

print " Pattern is at position ",s

end if

end for

Example:

T = a b a c a b a a c b a b a b a c a b a …

P = a b a b a c a

q = 0

q = R [0, a] = 1

q = R [1, b] = 2

q = R [2, a] = 3

q = R [3, c] = 0

q = R [0, a] = 1

q = R [1, b] = 2

q = R [2, a] = 3

q = R [3, a] = 1

q = R [1, c] = 0

q = R [0, b] = 0

q = R [0, a] = 1

q = R [1, b] = 2

q = R [2, a] = 3

q = R [3, b] = 4

q = R [4, a] = 5

q = R [5, c] = 6

q = R [6, a] = 7

q = R [7, b] = 2

q = R [2, a] = 3