BOYER MOORE HORSPOOL

Pattern Matching Algorithm

Algorithm

- Construct “Bad Match Table”
- Compare pattern to text, starting from rightmost character in pattern
- If mismatch, move pattern forward corresponding to value in the Bad Match Table.

Bad Match Table

- Construct Bad Match Table
- Value = length – index – 1

Word	T	O	O	T	H
Index	0	1	2	3	4

Table

Letter	T	O	H	*
Value				

Word	T	O	O	T	H
Index	0	1	2	3	4

Table

Letter	T	O	H	*
Value	4			

T = 5 – 0 – 1 = 4

Word	T	O	O	T	H
Index	0	1	2	3	4

Table

Letter	T	O	H	*
Value	4	3		

0 = 5 – 1 – 1 = 3

Word	T	O	O	T	H
Index	0	1	2	3	4

Table

Letter	T	O	H	*
Value	4	2		

O = 5 – 2 – 1 = 2

Word	T	O	O	T	H
Index	0	1	2	3	4

Table

Letter	T	O	H	*
Value	1	2		

T = 5 – 3 – 1 = 1

Word	T	O	O	T	H
Index	0	1	2	3	4

Table

Letter	T	O	H	*
Value	1	2	5	5

Last letter = length if not already used

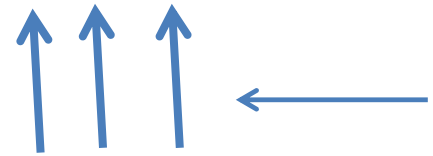
T R U S T H A R D T O O T H B R U S H E S

T O O T H

Letter	T	O	H	*
Value	1	2	5	5

- Start comparing with right-most character at length.
- T != H
- Lookup T in table and shift right 1

T R U S T H A R D T O O T H B R U S H E S



T O O T H

Letter	T	O	H	*
Value	1	2	5	5

- H == H, T == T, O != S.
- S not in table so shift right 5

T R U S T H A R D T O O T H B R U S H E S

T O O T H

Letter	T	O	H	*
Value	1	2	5	5

- H != O
- Lookup O in table and shift right 2

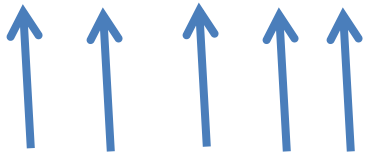
T R U S T H A R D T O O T H B R U S H E S

T O O T H

Letter	T	O	H	*
Value	1	2	5	5

- H != T
- Lookup T in table and shift right 1

T R U S T H A R D T O O T H B R U S H E S



T O O T H

Letter	T	O	H	*
Value	1	2	5	5

- H == H, T == T, O == O, 0 == 0, T == T
- Match

Analysis

- Length of Text N
- Length of Pattern M
- Worst case is O(N * M) = O(N^2)
- Best case is O(M / N)
- Average case O(M / Σ)