CSC 540: Graduate Research Seminar
HW1.A: String Matching

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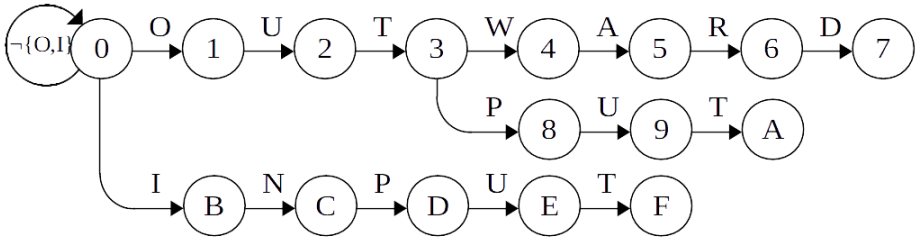
Purpose: To develop a string searching machine similar to the one proposed by Aho, et al.[1] The pattern matching machine designed for this exercise operates for the keyword set {outward, output, input}. The keyword set could be expanded to include {out,ward,put,in} without any changes to the finite state machine or failure function by addition to the output function.



(a) Goto function

i	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
$f(i)$	0	0	0	0	0	0	0	0	2	3	0	0	8	2	3

(b) Failure function

i	$output(i)$
7	{outward}
A	{output}
F	{input}

(c) Output function

i	$output(i)$
3	{out}
7	{outward, ward}
A	{output, put}
C	{in}
F	{input, put}

(d) Expanded output function

References

[1] A. V. Aho and M. J. Corasick, "Efficient String Matching: An Aid to Bibliographic Search," *Communications of the ACM*, vol. 18, no. 6, pp. 333–340, 1975.