SNLP Assignment 4

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1. Forward Algorithm HMM

t	o_t	$\alpha_t(\text{start})$	$\alpha_t(\text{hot})$	$\alpha_t(\text{cold})$	$\alpha_t(\text{end})$
0	$-$	100%	0%	0%	0%
1	3	0%	32%	2%	0%
2	1	0%	4%	5.3%	0%
3	3	0%	1.808%	0.385%	0%
4	1	0%	0.247760%	0.367450%	0%
5	1	0%	0.059127%	0.129027%	0%
6	1	0%	0.017417%	0.041126%	0%
7	1	0%	0.005380%	0.012894%	0%
8	3	0%	0.003354%	0.000806%	0%
9	$-$	0%	0%	0%	0.000416%

The probablility of observing the sequence is $P(31311113 \mid \lambda) = \alpha_9(\text{end}) = 0.000416\%$