Homework 2

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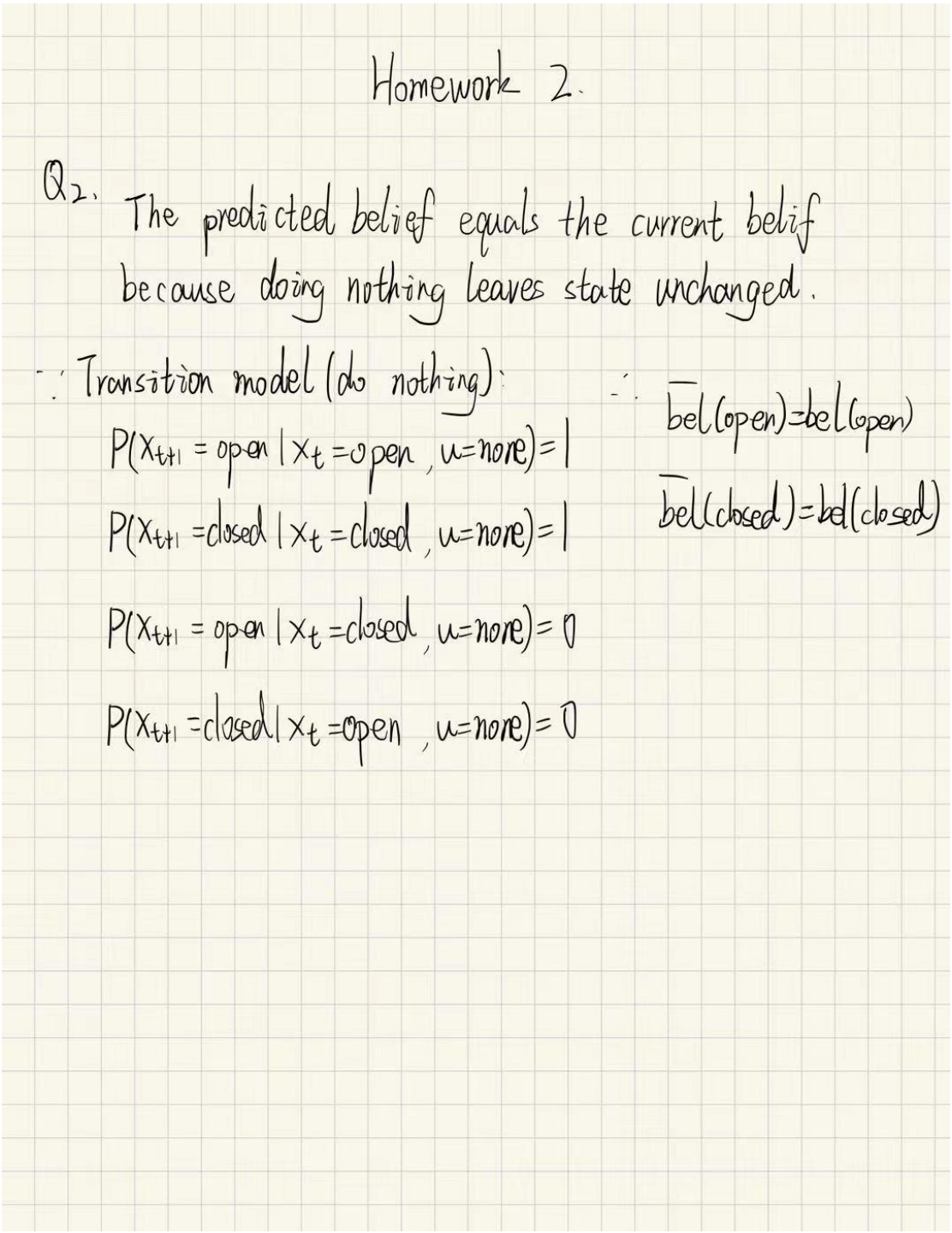
qh2297

Q1.



Q2.

Q2.

step1. $\because bel(open) = 0.878 < 0.9 \therefore u = push$

$\overline{bel}(open) = 0.878 \cdot 1 + 0.122 \cdot 0.6 = 0.878 + 0.0732 = 0.9512$

$\overline{bel}(c|sd) = 0.878 \cdot 0 + 0.122 \cdot 0.4 = 0.0488$

$p(z) = 0.9 \cdot 0.9512 + 0.5 \cdot 0.0488 = 0.85608 + 0.0244 = 0.88048$

$bel^+(open) = \frac{0.85608}{0.88048} = 0.97229 \approx 0.972$

$bel^+(c|sd) = \frac{0.0244}{0.88048} = 0.02771 \approx 0.028$

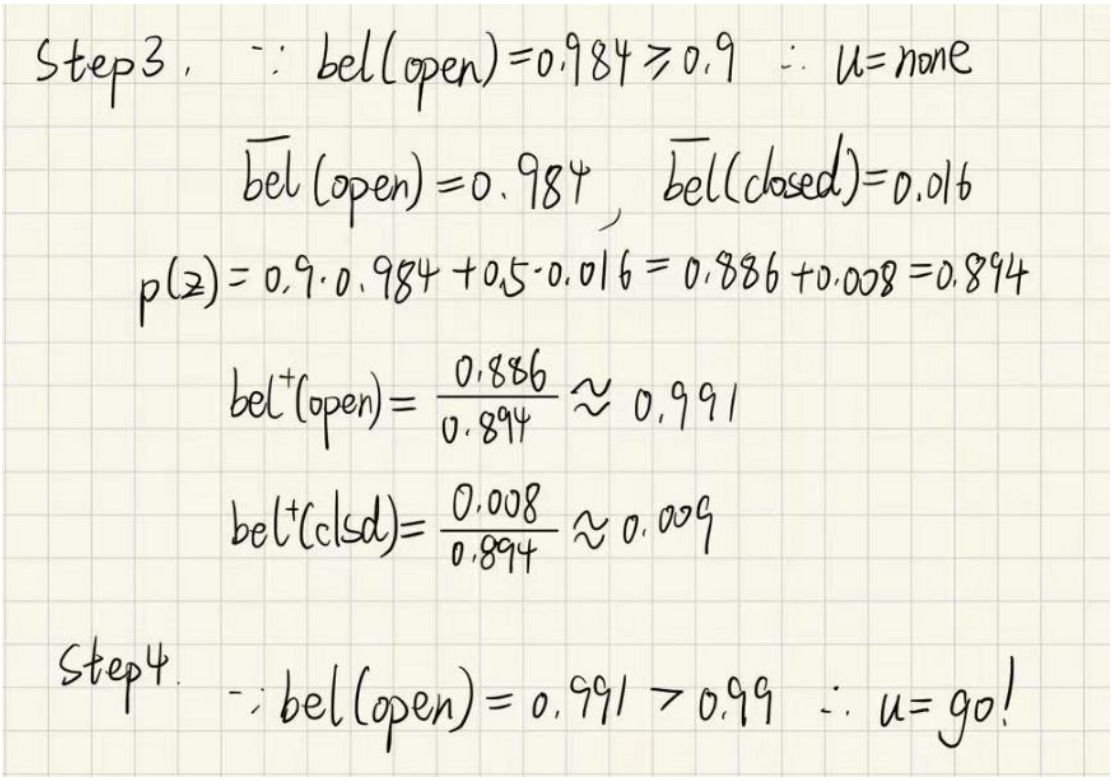
step2. $\because bel(open) = 0.972 \geq 0.9 \therefore u = none$

$\therefore \overline{bel}(open) = 0.972$, $\overline{bel}(c|sd) = 0.028$

$p(z) = 0.9 \cdot 0.972 + 0.5 \cdot 0.028 = 0.875 + 0.014 = 0.889$

$bel^+(open) = \frac{0.875}{0.889} \approx 0.984$

$bel^+(c|sd) = \frac{0.014}{0.889} \approx 0.016$

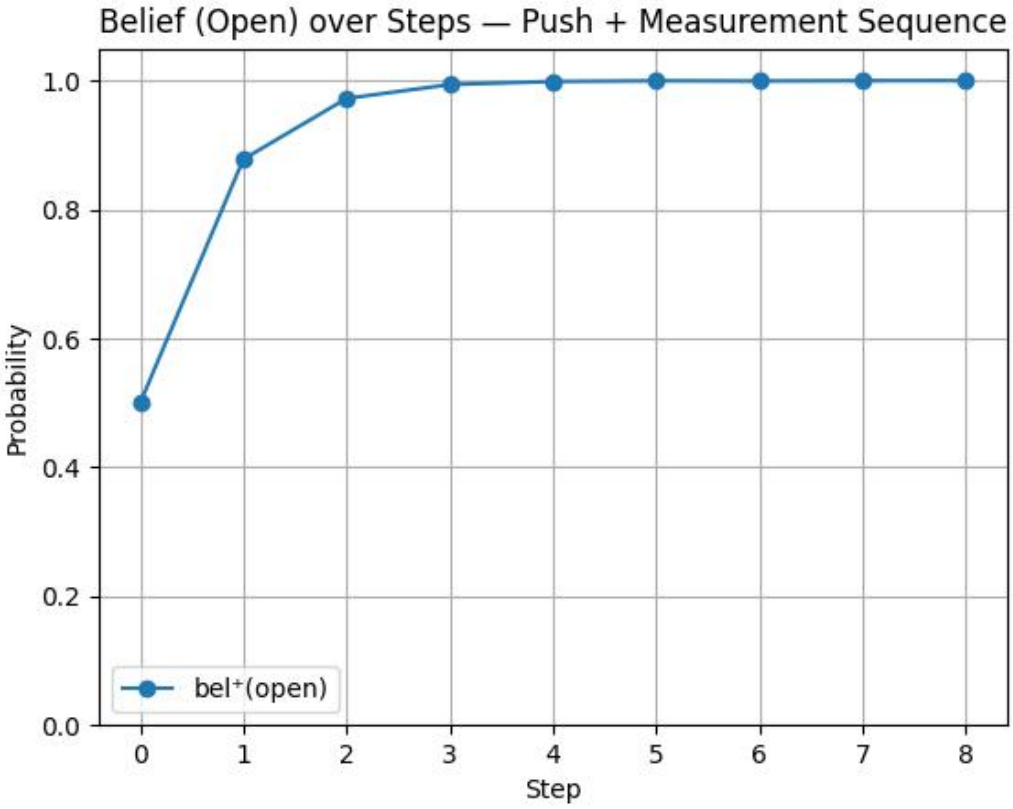


step	bel(open)	bel(clsd)	action	bel(open)	bel(clsd)	bel+(open)	bel+(clsd)
0	0.5	0.5	push	0.800	0.200	0.878	0.122
1	0.878	0.122	push	0.951	0.049	0.972	0.028
2	0.972	0.028	measure	0.972	0.028	0.984	0.016
3	0.984	0.016	measure	0.984	0.016	0.991	0.009
4	0.991	0.009	go!				

Q3.

Code link:

add h2 code • White8848/Probability-Robot@4969b10



step	bel_o	bel_c	bbar_o	bbar_c	z	b+_o	b+_c
0	0.500	0.500				0.500	0.500
1	0.500	0.500	0.800	0.200	open	0.878	0.122
2	0.878	0.122	0.951	0.049	open	0.972	0.028
3	0.972	0.028	0.989	0.011	open	0.994	0.006
4	0.994	0.006	0.998	0.002	open	0.999	0.001
5	0.999	0.001	0.999	0.001	open	1.000	0.000
6	1.000	0.000	1.000	0.000	closed	0.999	0.001
7	0.999	0.001	1.000	0.000	open	1.000	0.000
8	1.000	0.000	1.000	0.000	open	1.000	0.000