INPUT DATA (HUMAN READABLE)

Log, $\mathcal{L}$

Trace Payload { loc_po = "LN", p_id = "001A" }

p_ref { CA_15-3 = 69 }

op_mastectomy { CA_15-3 = 69, biopsy = true }

follow_up { CA_15-3 = 10 }

Trace Payload { loc_po = "NE", p_id = "002A" }

p_ref { CA_15-3 = 20 }

Trace Payload { loc_po = "YO", p_id = "003A" }

p_ref { CA_15-3 = 61 }

op_lumpectomy { CA_15-3 = 61, biopsy = true }

follow_up { CA_15-3 = 55 }

Data Loading + Indexing

INDEXED TABLES

Counting Table

a	j	h
__trace__payload	1	1
__trace__payload	2	1
__trace__payload	3	1
p_ref	1	1
p_ref	2	1
p_ref	3	1
follow_up	1	1
follow_up	2	0
follow_up	3	1
op_mastectomy	1	1
op_mastectomy	2	0
op_mastectomy	3	0
op_lumpectomy	1	0
op_lumpectomy	2	0
op_lumpectomy	3	1

Activity Table

REF	a	j	i	q	q'
#1	__trace__payload	1	1	NULL	#4
#2	__trace__payload	2	1	NULL	#5
#3	__trace__payload	3	1	NULL	#6
#4	p_ref	1	2	#1	#7
#5	p_ref	2	2	#2	NULL
#6	p_ref	2	2	#3	#8
#7	op_mastectomy	1	2	#4	#9
#8	op_lumpectomy	3	3	#6	#10
#9	follow_up	1	4	#7	NULL
#10	follow_up	3	4	#8	NULL

Attribute Table <p_id>

a	v	i
__trace_payload	"001A"	#0
__trace_payload	"002A"	#1
__trace_payload	"003A"	#2

Attribute Table <loc_po>

a	v	i
__trace_payload	"LN"	#0
__trace_payload	"NE"	#1
__trace_payload	"YO"	#2

Attribute Table <biopsy>

a	v	i
op_mastectomy	true	#7
op_lumpectomy	true	#8

Attribute Table <CA_15-3>

a	v	i
p_ref	69	#4
p_ref	20	#5
p_ref	61	#6
op_mastectomy	69	#7
op_lumpectomy	61	#8
follow_up	10	#9
follow_up	55	#10

INPUT MODEL

Declare Model ($\mathcal{M}$)

Response(p_ref, CA_15 >= 23.5, follow_up, CA_15 < 23.5) where p_ref.CA_15 > follow_up.CA_15

Succession(p_ref, CA_15 >= 23.5, follow_up, CA_15 < 23.5) where p_ref.CA_15 > follow_up.CA_15

Choice(op_mastectomy, CA_15-3 >= 50 && biopsy = true, op_lumpectomy, CA_15-3 >= 50 && biopsy = true)

Atomization Pipeline

DECOMPOSED MODEL

Atomized Model

Atom	Constituents
$\mathcal{P}_1$	$-\infty \leq$ p_ref.CA_15 < 23.5
$\mathcal{P}_2$	$23.5 \leq$ p_ref.CA_15 $\leq +\infty$
$\mathcal{P}_3$	$-\infty \leq$ follow_up.CA_15 < 23.5
$\mathcal{P}_4$	$23.5 \leq$ follow_up.CA_15 $\leq +\infty$
$\mathcal{P}_5$	$-\infty \leq$ op_mastectomy.CA_15 < 50, op_mastectomy.biopsy = false
$\mathcal{P}_6$	$-\infty \leq$ op_mastectomy.CA_15 < 50, op_mastectomy.biopsy = true
$\mathcal{P}_7$	$50 \leq$ op_mastectomy.CA_15 $\leq +\infty$, op_mastectomy.biopsy = false
$\mathcal{P}_8$	$50 \leq$ op_mastectomy.CA_15 $\leq +\infty$, op_mastectomy.biopsy = true
$\mathcal{P}_9$	$-\infty \leq$ op_lumpectomy.CA_15 < 50, op_lumpectomy.biopsy = false
$\mathcal{P}_{10}$	$-\infty \leq$ op_lumpectomy.CA_15 < 50, op_lumpectomy.biopsy = true
$\mathcal{P}_{11}$	$50 \leq$ op_lumpectomy.CA_15 $\leq +\infty$, op_lumpectomy.biopsy = false
$\mathcal{P}_{12}$	$50 \leq$ op_lumpectomy.CA_15 $\leq +\infty$, op_lumpectomy.biopsy = true

LTLf Model ($\mathcal{M}$)

$\mathbf{G}((\neg\mathcal{P}_2) \vee (\mathcal{P}_2 \wedge \mathbf{F}(\mathcal{P}_4)))$ where p_ref.CA_15 > follow_up.CA_15

$\mathbf{G}((\neg\mathcal{P}_2) \vee (\mathcal{P}_2 \wedge \mathbf{F}(\mathcal{P}_4))) \wedge ((\neg(\mathcal{P}_4)\ \mathbf{U}\ \mathcal{P}2) \vee \mathbf{Absence}(\mathcal{P}_4))$ where p_ref.CA_15 > follow_up.CA_15

$\mathbf{Exists}(\mathcal{P}_8) \vee \mathbf{Exists}(\mathcal{P}_{12})$

Query Planner

QUERY PLAN