INPUT DATA (HUMAN READABLE)

Log, $\mathscr{L}$
Trace Payload { id = "setup" }
A { x = 1, y = 2 }
B { x = -2, y = 10 }
C { x = 5, y = -3 }
A { y = 1 }
Trace Payload { id = "processing" }
B { x = 5, z = 2 }
A { x = -2, y = 10 }
Trace Payload { id = "processing" }
C { x = 30, y = 4 }
C { }
A { z = 2 }

Data Loading + Indexing

INDEXED TABLES

Counting Table

a	j	h
__trace__payload	1	1
__trace__payload	2	1
__trace__payload	3	1
A	1	2
A	2	1
A	3	1
B	1	1
B	2	1
C	1	1
C	1	1
C	3	2

Activity Table

REF	a	j	i	q	q'
#1	__trace__payload	1	1	NULL	#4
#2	__trace__payload	2	1	NULL	#9
#3	__trace__payload	3	1	NULL	#11
#4	A	1	2	#1	#8
#5	A	1	5	#10	NULL
#6	A	2	3	#9	NULL
#7	A	3	4	#12	NULL
#8	B	1	3	#4	#10
#9	B	2	2	#2	#6
#10	C	1	4	#8	#5
#11	C	3	2	#3	#12
#12	C	3	3	#11	#7

Attribute Table <x>

a	v	i
A	-2	#6
A	1	#4
B	-2	#8
B	5	#9
C	5	#10
C	30	#11

Attribute Table <z>

a	v	i
A	2	#6
B	2	#8

Attribute Table <id>

a	v	i
__trace_payload	"setup"	#0
__trace_payload	"processing"	#1
__trace_payload	"processing"	#2

Attribute Table <y>

a	v	i
A	1	#4
A	2	#3
A	10	#5
B	10	#7
C	-3	#9
C	4	#10

INPUT MODEL

Declare Model ($\mathbb{M}$)
Response(A, x > 5, B, y < 0)
Succession(A, x > 5, B, y < 0)
Choice(A, true, B, y < 0) where A.x < B.y

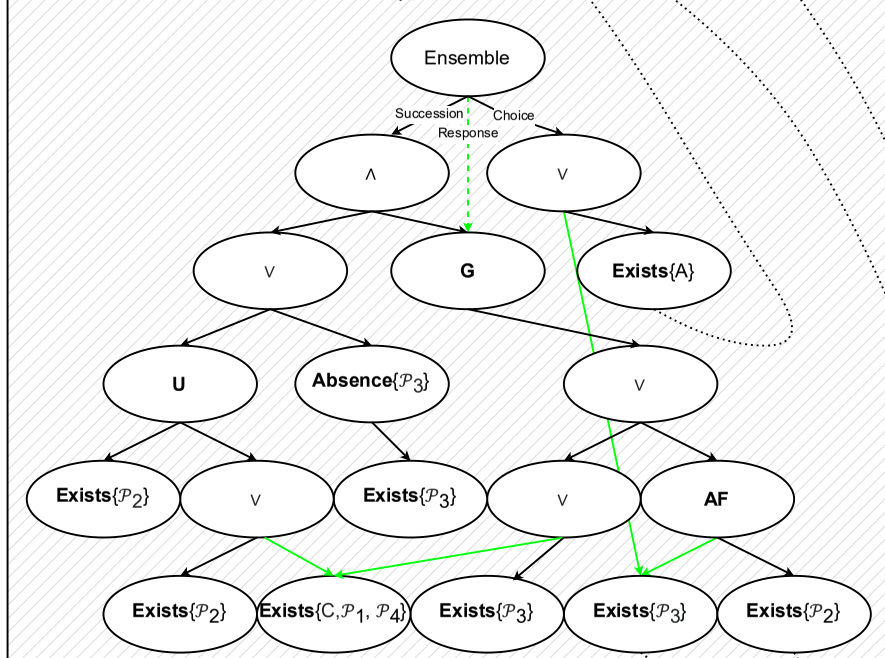
Atomization Pipeline

DECOMPOSED MODEL

Atomized Model

Atom	Constituents
$\mathcal{P}_1$	$-\infty \leq$ A.x ≤ 5
$\mathcal{P}_2$	$5 \leq$ A.x $\leq \infty$
$\mathcal{P}_3$	$-\infty \leq$ B.y ≤ 0
$\mathcal{P}_4$	$0 \leq$ B.y $\leq \infty$

xtLTLf Model ($\mathbb{M}$)
$\mathbf{G}((\neg\mathcal{P}_2) \vee (\mathcal{P}_2 \wedge \mathbf{F}(\mathcal{P}_3)))$
$\mathbf{G}((\neg\mathcal{P}_2) \vee (\mathcal{P}_2 \wedge \mathbf{F}((\mathcal{P}_3)))) \wedge ((\neg(\mathcal{P}_3)\ \mathbf{U}\ \mathcal{P}_2) \vee \mathbf{Absence}(\mathcal{P}_3))$
$\mathbf{Exists}$(A) $\vee$ $\mathbf{Exists}(\mathcal{P}_3)$ where A.x < B.y

Query Planner

QUERY PLAN