

$\forall L \in \text{Formal_Systems } \text{Provable}(L, X) (\exists \Gamma \subset L (\Gamma \vdash X))$

01 \forall (2)(5)

02 \in (3)(4)

03 L

04 Formal Systems

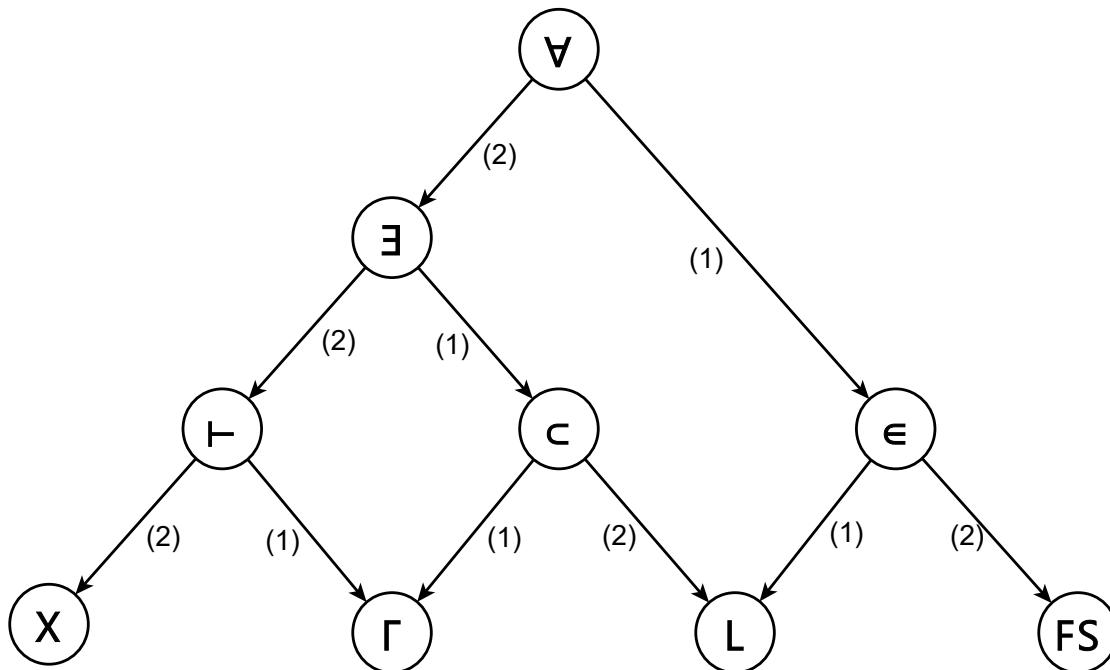
05 \exists (6)(9)

06 \subset (7)(3)

07 Γ

08 X

09 \vdash (7)(8)



Minimal Type Theory (MTT) shows exactly how all of the constituent parts of an expression relate to each other when this expression is formalized using a directed acyclic graph (DAG).

$\forall L \in \text{Formal_Systems } \text{Refutable}(L, X) (\exists \Gamma \subset L (\Gamma \vdash \sim X))$

01 \forall (2)(5)

02 \exists (3)(4)

03 L

04 Formal Systems

05 \exists (6)(10)

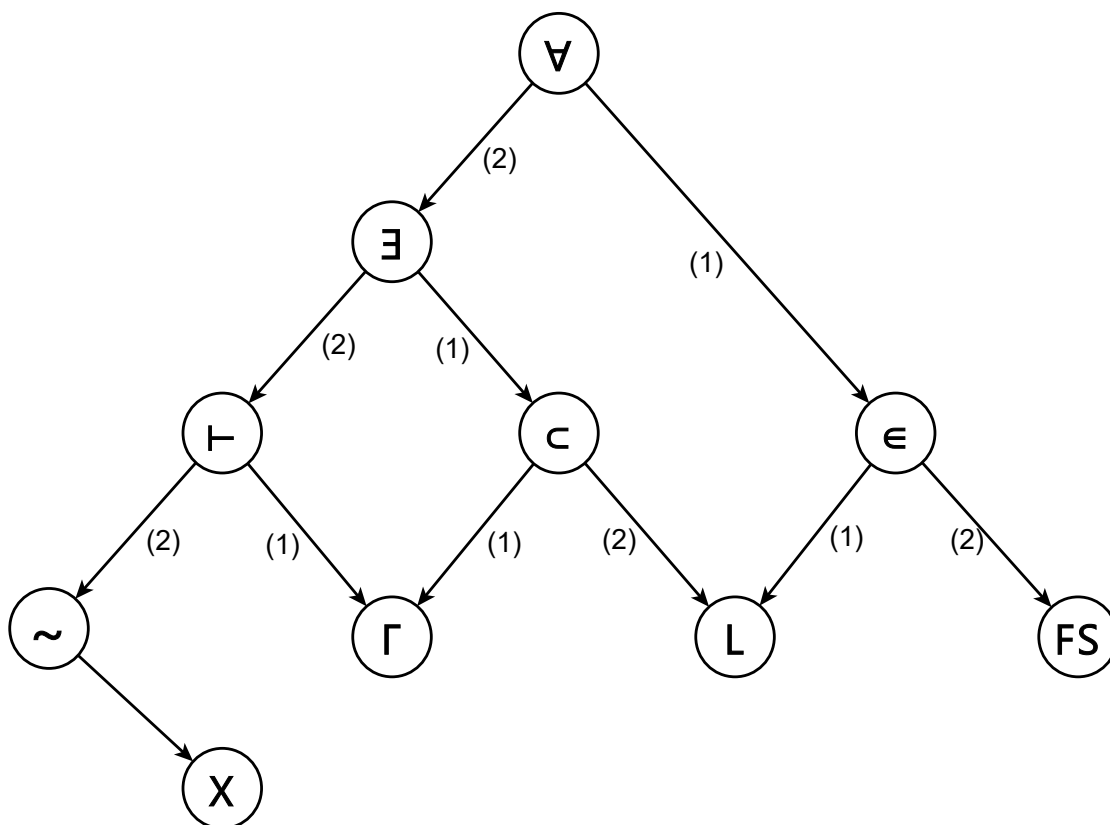
06 \subset (7)(3)

07 Γ

08 \sim (9)

09 X

10 \vdash (7)(8)



$\forall L \in \text{Formal_Systems } \sim\text{Provable}(L, X) (\sim\exists \Gamma \subset L (\Gamma \vdash X))$

01 \forall (2)(5)

02 \in (3)(4)

03 L

04 Formal Systems

05 \sim (6)

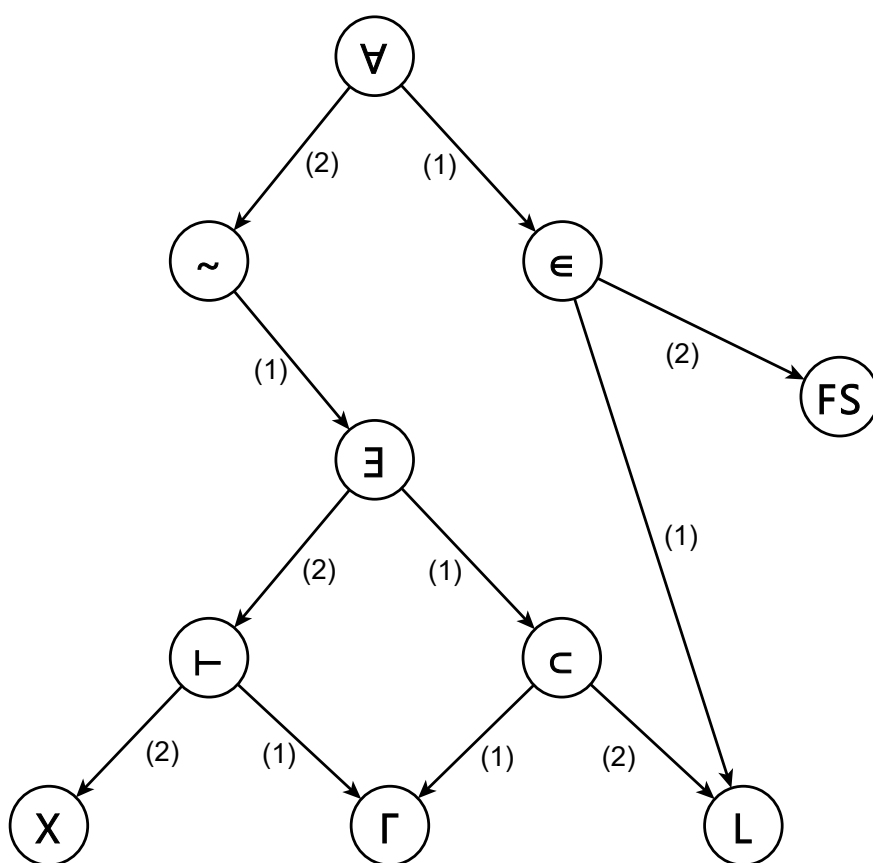
06 \exists (7)(10)

07 \subset (8)(3)

08 Γ

09 X

10 \vdash (8)(9)



$G @ \forall L \in \text{Formal_Systems}, \sim \exists \Gamma \subset L (\Gamma \vdash G)$

"@" means the LHS is assigned as an alias for the RHS .

There is no referencing / dereferencing needed, G is one and the same thing as the expression that refers to G. (Unlike Tarski naming) G is not referring to its name, G is referring to itself.

01 \forall (2)(5) // G is an alias for this node

02 \in (3)(4)

03 L

04 Formal Systems

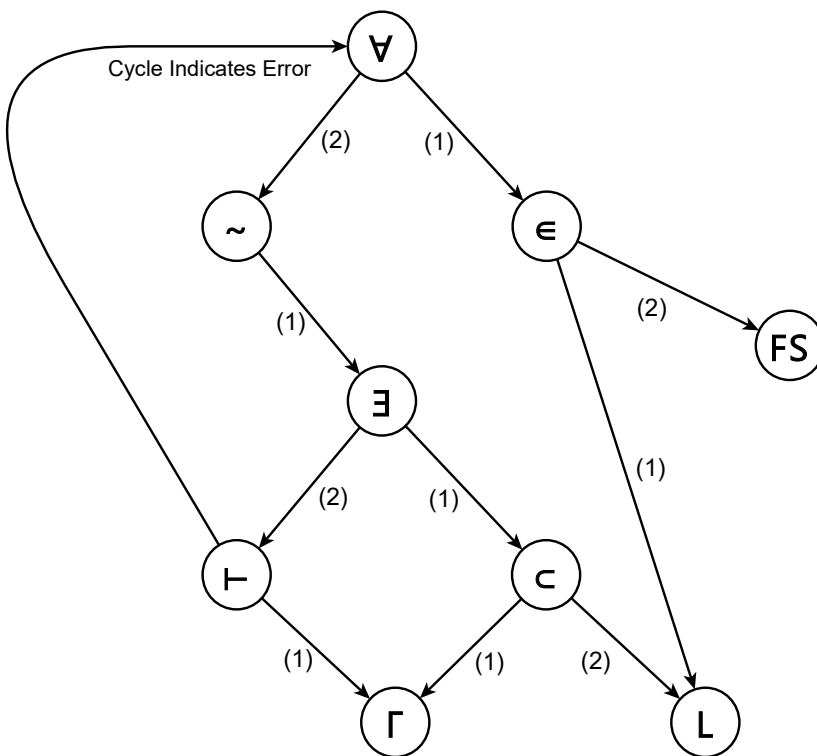
05 \sim (6)

06 \exists (7)(9)

07 \subset (8)(3)

08 Γ

09 \vdash (8)(1) // cycle indicates infinite evaluation loop error



In the case of Pathological Self-Reference (PSR) the second argument to the \vdash predicate forms and infinite loop cycle instead of ever reaching its expected sentential variable. (see prior page example). This prevents the evaluation of the above expression from ever completing.

Example of Provable(L, R)

Axioms of L

P

$P \rightarrow Q$

$Q \rightarrow R$

Proof (using finite string rewrite rules)

Logical_Inference("P", " $P \rightarrow Q$ ") \therefore "Q"

Logical_Inference("Q", " $Q \rightarrow R$ ") \therefore "R"

\therefore Provable("R")

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