Logiweb sequent calculus, Chores

Klaus Grue

GRD-2006-03-06.UTC:13:37:57.803308

Contents

1   Test cases

$[[\lceil\overline{x}\rceil\#^0\lceil\overline{y}=\overline{z}\Rightarrow\forall_{\mathrm{obj}}\overline{x}\colon\overline{x}=\overline{y}\rceil\ \text{'ijcar}]^{\cdot}$

$[[\lceil\overline{x}\rceil\#^0\lceil\overline{x}=\overline{z}\Rightarrow\forall_{\mathrm{obj}}\overline{x}\colon\overline{x}=\overline{y}\rceil\ \text{'ijcar}]^{-}$

$[[\lceil\overline{x}\rceil\#^0\lceil\overline{y}=\overline{x}\Rightarrow\forall_{\mathrm{obj}}\overline{x}\colon\overline{x}=\overline{y}\rceil\ \text{'ijcar}]^{-}$

$[[\lceil\overline{x}\rceil\#^0\lceil\overline{y}=\overline{z}\Rightarrow\forall_{\mathrm{obj}}\overline{y}\colon\overline{x}=\overline{y}\rceil\ \text{'ijcar}]^{-}$

$[\langle\lceil\overline{a}\rceil\equiv^0\lceil\overline{a}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{\cdot}$

$[\langle\lceil\overline{b}\rceil\equiv^0\lceil\overline{a}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{-}$

$[\langle\lceil\overline{c}\rceil\equiv^0\lceil\overline{a}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{-}$

$[\langle\lceil\overline{a}\rceil\equiv^0\lceil\overline{b}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{-}$

$[\langle\lceil\overline{b}\rceil\equiv^0\lceil\overline{b}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{-}$

$[\langle\lceil\overline{c}\rceil\equiv^0\lceil\overline{b}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{\cdot}$

$[\langle\lceil\forall_{\mathrm{obj}}\overline{a}\colon\overline{a}=\overline{b}\rceil\equiv^0\lceil\forall_{\mathrm{obj}}\overline{a}\colon\overline{a}=\overline{b}\rceil|\lceil\overline{a}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{\cdot}$

$[\langle\lceil\forall_{\mathrm{obj}}\overline{a}\colon\overline{a}=\overline{c}\rceil\equiv^0\lceil\forall_{\mathrm{obj}}\overline{a}\colon\overline{a}=\overline{b}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\rceil\rangle\ \text{'ijcar}]^{\cdot}$

$[\langle\lceil\forall_{\mathrm{obj}}\overline{a}\colon\overline{a}=0+\overline{a}\Rightarrow\overline{c}\cdot\overline{d}=0+\overline{c}\cdot\overline{d}\rceil\equiv^0\lceil\forall_{\mathrm{obj}}\overline{a}\colon\overline{a}=0+\overline{a}\Rightarrow\overline{b}=0+\overline{b}\rceil|\lceil\overline{b}\rceil\colon=\lceil\overline{c}\cdot\overline{d}\rceil\rangle\ \text{'ijcar}]^{\cdot}$

$[\langle\lceil\forall_{\mathrm{obj}}\overline{\mathsf{a}}\colon\overline{\mathsf{a}}=0+\overline{\mathsf{a}}\Rightarrow\overline{\mathsf{b}}=0+\overline{\mathsf{b}}\rceil\equiv^0\lceil\forall_{\mathrm{obj}}\overline{\mathsf{a}}\colon\overline{\mathsf{a}}=0+\overline{\mathsf{a}}\Rightarrow\overline{\mathsf{b}}=0+\overline{\mathsf{b}}\rceil|\lceil\overline{\mathsf{a}}\rceil:=\lceil\overline{\mathsf{c}}\rceil\rangle\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil 0\rceil,\lceil 0\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil 0\rceil,\lceil 1\rceil)\text{'ijcar}]^{-}$

$[\mathrm{Ded}_8(\lceil\forall\underline{\mathsf{a}}\colon\underline{\mathsf{a}}\rceil,\mathsf{T})]^{\cdot}$

$[\mathrm{Ded}_7(\lceil\forall\underline{\mathsf{a}}\colon\underline{\mathsf{a}}\rceil)\overset{\mathrm{t}}{=}\lceil\underline{\mathsf{a}}\rceil]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\underline{\mathsf{a}}\rceil,\lceil\underline{\mathsf{a}}\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\underline{\mathsf{a}}\rceil,\lceil\underline{\mathsf{b}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\underline{\mathsf{a}}\rceil,\lceil\underline{\mathsf{b}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\forall\underline{\mathsf{b}}\colon\underline{\mathsf{a}}\vdash\underline{\mathsf{b}}\rceil,\lceil\underline{\mathsf{a}}\Rightarrow\underline{\mathsf{b}}\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\forall\underline{\mathsf{b}}\colon\underline{\mathsf{a}}\vdash\underline{\mathsf{b}}\rceil,\lceil\underline{\mathsf{a}}\Rightarrow\underline{\mathsf{a}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\forall\underline{\mathsf{b}}\colon\underline{\mathsf{a}}\vdash\underline{\mathsf{b}}\rceil,\lceil\underline{\mathsf{b}}\Rightarrow\underline{\mathsf{b}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\forall\underline{\mathsf{b}}\colon\underline{\mathsf{a}}\vdash\underline{\mathsf{b}}\rceil,\lceil 0\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil 0\rceil,\lceil\underline{\mathsf{a}}\Rightarrow\underline{\mathsf{a}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\forall\underline{\mathsf{b}}\colon\forall\underline{\mathsf{c}}\colon\underline{\mathsf{a}}\vdash\underline{\mathsf{b}}\vdash\underline{\mathsf{c}}\rceil,\lceil\underline{\mathsf{a}}\Rightarrow\underline{\mathsf{b}}\Rightarrow\underline{\mathsf{c}}\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\forall\underline{\mathsf{b}}\colon\underline{\mathsf{a}}\vdash\underline{\mathsf{b}}\vdash\underline{\mathsf{a}}\rceil,\lceil\underline{\mathsf{a}}\Rightarrow\underline{\mathsf{b}}\Rightarrow\underline{\mathsf{c}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall\underline{\mathsf{a}}\colon\forall\underline{\mathsf{b}}\colon\forall\underline{\mathsf{c}}\colon\underline{\mathsf{a}}\vdash\underline{\mathsf{b}}\vdash\underline{\mathsf{c}}\rceil,\lceil\underline{\mathsf{a}}\Rightarrow\underline{\mathsf{b}}\Rightarrow\underline{\mathsf{c}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil 0\rceil,\lceil\overline{\mathsf{x}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\overline{\mathsf{x}}\rceil,\lceil 0\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\overline{\mathsf{x}}\rceil,\lceil\overline{\mathsf{x}}\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall_{\mathrm{obj}}\overline{\mathsf{x}}\colon\overline{\mathsf{x}}\rceil,\lceil\overline{\mathsf{x}}\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\overline{\mathsf{x}}\rceil,\lceil\forall_{\mathrm{obj}}\overline{\mathsf{y}}\colon\overline{\mathsf{z}}\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\forall_{\mathrm{obj}}\overline{\mathsf{x}}\colon\overline{\mathsf{x}}\rceil,\lceil\forall_{\mathrm{obj}}\overline{\mathsf{x}}\colon\overline{\mathsf{x}}\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil 0\vdash 0\rceil,\lceil 0\Rightarrow 0\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\overline{\mathsf{x}}\vdash 0\rceil,\lceil 0\Rightarrow 0\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil 0\vdash\overline{\mathsf{x}}\rceil,\lceil 0\Rightarrow 0\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\overline{\mathsf{x}}\vdash\overline{\mathsf{x}}\rceil,\lceil 0\Rightarrow 0\rceil)\text{'ijcar}]^{-}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil 0\vdash 0\rceil,\lceil\forall_{\mathrm{obj}}\overline{\mathsf{x}}\colon 0\Rightarrow 0\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda\mathrm{x}.\mathrm{Ded}_0(\lceil\overline{\mathsf{x}}\vdash 0\rceil,\lceil\forall_{\mathrm{obj}}\overline{\mathsf{x}}\colon\overline{\mathsf{x}}\Rightarrow 0\rceil)\text{'ijcar}]^{\cdot}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner 0 \vdash \overline{x}\urcorner, \ulcorner \forall_{\mathrm{obj}}\overline{x}: 0 \Rightarrow \overline{x}\urcorner) \,'\,\mathrm{ijcar}]^{\cdot}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} \vdash \overline{x}\urcorner, \ulcorner \forall_{\mathrm{obj}}\overline{x}: \overline{x} \Rightarrow \overline{x}\urcorner) \,'\,\mathrm{ijcar}]^{\cdot}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner 0 \vdash 0\urcorner, \ulcorner 0 \Rightarrow \forall_{\mathrm{obj}}\overline{x}: 0\urcorner) \,'\,\mathrm{ijcar}]^{-}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} \vdash 0\urcorner, \ulcorner 0 \Rightarrow \forall_{\mathrm{obj}}\overline{x}: 0\urcorner) \,'\,\mathrm{ijcar}]^{-}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner 0 \vdash \overline{x}\urcorner, \ulcorner 0 \Rightarrow \forall_{\mathrm{obj}}\overline{y}: \overline{z}\urcorner) \,'\,\mathrm{ijcar}]^{\cdot}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} \vdash \overline{x}\urcorner, \ulcorner 0 \Rightarrow \forall_{\mathrm{obj}}\overline{x}: \overline{x}\urcorner) \,'\,\mathrm{ijcar}]^{-}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner 0 \vdash 0\urcorner, \ulcorner \forall_{\mathrm{obj}}\overline{x}: 0 \Rightarrow \forall_{\mathrm{obj}}\overline{x}: 0\urcorner) \,'\,\mathrm{ijcar}]^{-}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} \vdash 0\urcorner, \ulcorner \forall_{\mathrm{obj}}\overline{x}: \overline{x} \Rightarrow \forall_{\mathrm{obj}}\overline{x}: 0\urcorner) \,'\,\mathrm{ijcar}]^{-}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner 0 \vdash \overline{x}\urcorner, \ulcorner \forall_{\mathrm{obj}}\overline{x}: 0 \Rightarrow 2\urcorner) \,'\,\mathrm{ijcar}]^{\cdot}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} \vdash \overline{x}\urcorner, \ulcorner \forall_{\mathrm{obj}}\overline{x}: \overline{x} \Rightarrow 3\urcorner) \,'\,\mathrm{ijcar}]^{\cdot}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} + \overline{y} = \overline{y} + \overline{x}\urcorner, \ulcorner 2 + 3 = 3 + 2\urcorner) \,'\,\mathrm{ijcar}]^{\cdot}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} + \overline{y} = \overline{y} + \overline{x}\urcorner, \ulcorner 2 + 3 = 2 + 3\urcorner) \,'\,\mathrm{ijcar}]^{-}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} + \overline{y} = \overline{y} + \overline{x}\urcorner, \ulcorner 2 + 3 = 2 + 2\urcorner) \,'\,\mathrm{ijcar}]^{-}$

$[\lambda x.\mathrm{Ded}_0(\ulcorner \overline{x} + \overline{y} = \overline{y} + \overline{x}\urcorner, \ulcorner 2 + 3 = 3 + 3\urcorner) \,'\,\mathrm{ijcar}]^{-}$

2   Pyk definitions

$[[x \overset{\circ}{=} y] \overset{\mathrm{pyk}}{\mapsto}$ "general macro define $*$ as $*$ end define"$]$

$[\mathrm{RootVisible}(x) \overset{\mathrm{pyk}}{\mapsto}$ "make root visible $*$ end visible"$]$

$[\mathrm{ijcar} \overset{\mathrm{pyk}}{\mapsto}$ "ijcar"$]$

$[x^{\mathrm{hide}} \overset{\mathrm{pyk}}{\mapsto}$ "$*$ hide"$]$

$[x' \overset{\mathrm{pyk}}{\mapsto}$ "$*$ suc"$]$

$[x = y \overset{\mathrm{pyk}}{\mapsto}$ "$*$ equal $*$"$]$

$[x \neq y \overset{\mathrm{pyk}}{\mapsto}$ "$*$ unequal $*$"$]$

$[x \Rightarrow y \overset{\mathrm{pyk}}{\mapsto}$ "$*$ imply $*$"$]$

$[x \Leftrightarrow y \overset{\mathrm{pyk}}{\mapsto}$ "$*$ if and only if $*$"$]$

$[x \mid y \overset{\mathrm{pyk}}{\mapsto}$ "$*$ alternative $*$"$]$

$[\exists x: y \overset{\text{pyk}}{\to} \text{“exist} * \text{indeed} *\text{”}]$

$[\forall x: y \overset{\text{pyk}}{\to} \text{“for all} * \text{indeed} *\text{”}]$

$[\forall_{\text{obj}} x: y \overset{\text{pyk}}{\to} \text{“for all objects} * \text{indeed} *\text{”}]$

$[\Pi x: y \overset{\text{pyk}}{\to} \text{“for all terms} * \text{indeed} *\text{”}]$

$[\text{Arbitrary} \gg i; p \overset{\text{pyk}}{\to} \text{“any term} * \text{end line} *\text{”}]$

$[x\backslash\backslash y \overset{\text{pyk}}{\to} \text{“} * \text{safe row} *\text{”}]$

$[A \overset{\text{pyk}}{\to} \text{“ijcar example axiom”}]$

$[R \overset{\text{pyk}}{\to} \text{“ijcar example rule”}]$

$[C \overset{\text{pyk}}{\to} \text{“ijcar example contradiction”}]$

$[T \overset{\text{pyk}}{\to} \text{“ijcar example theory”}]$

$[L \overset{\text{pyk}}{\to} \text{“ijcar example lemma”}]$

$[\{x\} \overset{\text{pyk}}{\to} \text{“set} * \text{end set”}]$

$[S \overset{\text{pyk}}{\to} \text{“system s”}]$

$[\text{Neg} \overset{\text{pyk}}{\to} \text{“double negation”}]$

$[S1 \overset{\text{pyk}}{\to} \text{“axiom s one”}]$

$[S2 \overset{\text{pyk}}{\to} \text{“axiom s two”}]$

$[S3 \overset{\text{pyk}}{\to} \text{“axiom s three”}]$

$[S4 \overset{\text{pyk}}{\to} \text{“axiom s four”}]$

$[S5 \overset{\text{pyk}}{\to} \text{“axiom s five”}]$

$[S6 \overset{\text{pyk}}{\to} \text{“axiom s six”}]$

$[S7 \overset{\text{pyk}}{\to} \text{“axiom s seven”}]$

$[S8 \overset{\text{pyk}}{\to} \text{“axiom s eight”}]$

$[S9 \overset{\text{pyk}}{\to} \text{“axiom s nine”}]$

$[MP \overset{\text{pyk}}{\to} \text{“rule mp”}]$

$[\text{Gen} \overset{\text{pyk}}{\to} \text{"rule gen"}]$

$[\text{Ded} \overset{\text{pyk}}{\to} \text{"deduction"}]$

$[\text{Repetition} \overset{\text{pyk}}{\to} \text{"repetition"}]$

$[\text{A1}' \overset{\text{pyk}}{\to} \text{"lemma a one"}]$

$[\text{A2}' \overset{\text{pyk}}{\to} \text{"lemma a two"}]$

$[\text{A4}' \overset{\text{pyk}}{\to} \text{"lemma a four"}]$

$[\text{A5}' \overset{\text{pyk}}{\to} \text{"lemma a five"}]$

$[\mathsf{x}^{\text{var}} \overset{\text{pyk}}{\to} \text{"} * \text{ is object var"}]$

$[\mathsf{x \# y} \overset{\text{pyk}}{\to} \text{"} * \text{ avoid } * \text{"}]$

$[\mathsf{x \#^0 y} \overset{\text{pyk}}{\to} \text{"} * \text{ avoid zero } * \text{"}]$

$[\mathsf{x \#^1 y} \overset{\text{pyk}}{\to} \text{"} * \text{ avoid one } * \text{"}]$

$[\mathsf{x \#^* y} \overset{\text{pyk}}{\to} \text{"} * \text{ avoid star } * \text{"}]$

$[\langle \mathsf{x \equiv y | z := u} \rangle \overset{\text{pyk}}{\to} \text{"sub } * \text{ is } * \text{ where } * \text{ is } * \text{ end sub"}]$

$[\langle \mathsf{x \equiv^0 y | z := u} \rangle \overset{\text{pyk}}{\to} \text{"sub zero } * \text{ is } * \text{ where } * \text{ is } * \text{ end sub"}]$

$[\langle \mathsf{x \equiv^1 y | z := u} \rangle \overset{\text{pyk}}{\to} \text{"sub one } * \text{ is } * \text{ where } * \text{ is } * \text{ end sub"}]$

$[\langle \mathsf{x \equiv^* y | z := u} \rangle \overset{\text{pyk}}{\to} \text{"sub star } * \text{ is } * \text{ where } * \text{ is } * \text{ end sub"}]$

$[\text{Ded}(\mathsf{x, y}) \overset{\text{pyk}}{\to} \text{"deduction } * \text{ conclude } * \text{ end deduction"}]$

$[\text{Ded}_0(\mathsf{x, y}) \overset{\text{pyk}}{\to} \text{"deduction zero } * \text{ conclude } * \text{ end deduction"}]$

$[\text{Ded}_1(\mathsf{x, y, z}) \overset{\text{pyk}}{\to} \text{"deduction one } * \text{ conclude } * \text{ condition } * \text{ end deduction"}]$

$[\text{Ded}_2(\mathsf{x, y, z}) \overset{\text{pyk}}{\to} \text{"deduction two } * \text{ conclude } * \text{ condition } * \text{ end deduction"}]$

$[\text{Ded}_3(\mathsf{x, y, z, u}) \overset{\text{pyk}}{\to} \text{"deduction three } * \text{ conclude } * \text{ condition } * \text{ bound } * \text{ end deduction"}]$

$[\text{Ded}_4(\mathsf{x, y, z, u}) \overset{\text{pyk}}{\to} \text{"deduction four } * \text{ conclude } * \text{ condition } * \text{ bound } * \text{ end deduction"}]$

$[\text{Ded}_4^*(\mathsf{x}, \mathsf{y}, \mathsf{z}, \mathsf{u}) \overset{\text{pyk}}{\mapsto}$ "deduction four star $*$ conclude $*$ condition $*$ bound $*$ end deduction"]

$[\text{Ded}_5(\mathsf{x}, \mathsf{y}, \mathsf{z}) \overset{\text{pyk}}{\mapsto}$ "deduction five $*$ condition $*$ bound $*$ end deduction"]

$[\text{Ded}_6(\mathsf{p}, \mathsf{c}, \mathsf{e}, \mathsf{b}) \overset{\text{pyk}}{\mapsto}$ "deduction six $*$ conclude $*$ exception $*$ bound $*$ end deduction"]

$[\text{Ded}_6^*(\mathsf{p}, \mathsf{c}, \mathsf{e}, \mathsf{b}) \overset{\text{pyk}}{\mapsto}$ "deduction six star $*$ conclude $*$ exception $*$ bound $*$ end deduction"]

$[\text{Ded}_7(\mathsf{p}) \overset{\text{pyk}}{\mapsto}$ "deduction seven $*$ end deduction"]

$[\text{Ded}_8(\mathsf{p}, \mathsf{b}) \overset{\text{pyk}}{\mapsto}$ "deduction eight $*$ bound $*$ end deduction"]

$[\text{Ded}_8^*(\mathsf{p}, \mathsf{b}) \overset{\text{pyk}}{\mapsto}$ "deduction eight $*$ bound $*$ end deduction"]

$[\text{Begin}\,\mathsf{b};\mathsf{l}:\text{End};\mathsf{p} \overset{\text{pyk}}{\mapsto}$ "block $*$ line $*$ end block $*$"]

$[\text{Last block line}\,\mathsf{l} \gg \mathsf{i}\,; \overset{\text{pyk}}{\mapsto}$ "because $*$ indeed $*$ end line"]

$[\mathsf{x} \trianglerighteq \mathsf{y} \overset{\text{pyk}}{\mapsto}$ "$*$ object modus ponens $*$"]

$[\text{Prop 3.2a} \overset{\text{pyk}}{\mapsto}$ "prop three two a"]

$[\text{Prop 3.2b} \overset{\text{pyk}}{\mapsto}$ "prop three two b"]

$[\text{Prop 3.2c} \overset{\text{pyk}}{\mapsto}$ "prop three two c"]

$[\text{Prop 3.2d} \overset{\text{pyk}}{\mapsto}$ "prop three two d"]

$[\text{Prop 3.2e}_1 \overset{\text{pyk}}{\mapsto}$ "prop three two e one"]

$[\text{Prop 3.2e}_2 \overset{\text{pyk}}{\mapsto}$ "prop three two e two"]

$[\text{Prop 3.2e} \overset{\text{pyk}}{\mapsto}$ "prop three two e"]

$[\text{Prop 3.2f}_1 \overset{\text{pyk}}{\mapsto}$ "prop three two f one"]

$[\text{Prop 3.2f}_2 \overset{\text{pyk}}{\mapsto}$ "prop three two f two"]

$[\text{Prop 3.2f} \overset{\text{pyk}}{\mapsto}$ "prop three two f"]

$[\text{Prop 3.2g}_1 \overset{\text{pyk}}{\mapsto}$ "prop three two g one"]

$[\text{Prop 3.2g}_2 \overset{\text{pyk}}{\mapsto}$ "prop three two g two"]

[Prop 3.2g $\overset{\text{pyk}}{\rightarrow}$ "prop three two g"]

[Prop 3.2h$_1$ $\overset{\text{pyk}}{\rightarrow}$ "prop three two h one"]

[Prop 3.2h$_2$ $\overset{\text{pyk}}{\rightarrow}$ "prop three two h two"]

[Prop 3.2h $\overset{\text{pyk}}{\rightarrow}$ "prop three two h"]

[MacroIndent(x) $\overset{\text{pyk}}{\rightarrow}$ "macro indent $*$"]

[Block$_1$(t, s, c) $\overset{\text{pyk}}{\rightarrow}$ "block one $*$ state $*$ cache $*$ end block"]

[Block$_2$(b) $\overset{\text{pyk}}{\rightarrow}$ "block two $*$ end block"]

[$\rightarrow$ $\overset{\text{pyk}}{\rightarrow}$ "evaluates to"]

3   T$_E$X definitions

[[x $\overset{\circ}{=}$ y] $\overset{\text{tex}}{\rightarrow}$ "
          [#1/tex name/tex.
          \stackrel {\circ}{=}#2.
          ]"]

[RootVisible(x) $\overset{\text{tex}}{\rightarrow}$ "#1/tex name/tex."]

[RootVisible(x) $\overset{\text{name}}{\rightarrow}$ "
          RootVisible(#1.
)"]

[x$^{\text{hide}}$ $\overset{\text{tex}}{\rightarrow}$ "#1.
          {}^{hide}"]

[x′ $\overset{\text{tex}}{\rightarrow}$ "#1.
          {}'"]

[x = y $\overset{\text{tex}}{\rightarrow}$ "#1.
          = #2."]

[x $\neq$ y $\overset{\text{tex}}{\rightarrow}$ "#1.
          \neq #2."]

[x $\Rightarrow$ y $\overset{\text{tex}}{\rightarrow}$ "#1.
          \Rightarrow #2."]

[x $\Leftrightarrow$ y $\overset{\text{tex}}{\rightarrow}$ "#1.
          \Leftrightarrow #2."]

7

[x | y $\overset{\text{tex}}{\rightarrow}$ "#1.
            \mathrel{|} #2."]

[∃x: y $\overset{\text{tex}}{\rightarrow}$ "
            \exists #1.
            \colon #2."]

[∀x: y $\overset{\text{tex}}{\rightarrow}$ "
            \forall #1.
            \colon #2."]

[∀$_{\text{obj}}$x: y $\overset{\text{tex}}{\rightarrow}$ "
            \forall_{obj} #1.
            \colon #2."]

[Πx: y $\overset{\text{tex}}{\rightarrow}$ "
            \Pi #1.
            \colon #2."]

[Arbitrary ≫ i; p $\overset{\text{tex}}{\rightarrow}$ "
            \newline \makebox [0.1\textwidth][l]{$
            \if \relax \csname lgwprooflinep\endcsname L_? \else
            \global \advance \lgwproofline by 1
            L\ifnum \lgwproofline <10 0\fi \number \lgwproofline
            \fi
            $:}\makebox [0.4\textwidth][l]{$Arbitrary{}\gg{}$}\quad
            \parbox [t]{0.4\textwidth }{$#1.
            $\hfill \makebox [0mm][l]{\quad ;}}#2."]

[Arbitrary ≫ i; p $\overset{\text{name}}{\rightarrow}$ "
            Arbitrary \gg #1.
            ; #2."]

[x\\y $\overset{\text{tex}}{\rightarrow}$ "#1.
            \\{}#2."]

[x\\y $\overset{\text{name}}{\rightarrow}$ "#1.
            \backslash \backslash #2."]

[A $\overset{\text{tex}}{\rightarrow}$ "
            A"]

[R $\overset{\text{tex}}{\rightarrow}$ "
            R"]

[C $\overset{\text{tex}}{\rightarrow}$ "
            C"]

$[\text{T} \xrightarrow{\text{tex}} \text{``}$
$\text{T''}]$

$[\text{L} \xrightarrow{\text{tex}} \text{``}$
$\text{L''}]$

$[\{\mathsf{x}\} \xrightarrow{\text{tex}} \text{``}$
$\backslash\{\#1.$
$\backslash\}\text{''}]$

$[\text{S} \xrightarrow{\text{tex}} \text{``}$
$\text{S''}]$

$[\text{Neg} \xrightarrow{\text{tex}} \text{``}$
$\text{Neg''}]$

$[\text{S1} \xrightarrow{\text{tex}} \text{``}$
$\text{S1''}]$

$[\text{S2} \xrightarrow{\text{tex}} \text{``}$
$\text{S2''}]$

$[\text{S3} \xrightarrow{\text{tex}} \text{``}$
$\text{S3''}]$

$[\text{S4} \xrightarrow{\text{tex}} \text{``}$
$\text{S4''}]$

$[\text{S5} \xrightarrow{\text{tex}} \text{``}$
$\text{S5''}]$

$[\text{S6} \xrightarrow{\text{tex}} \text{``}$
$\text{S6''}]$

$[\text{S7} \xrightarrow{\text{tex}} \text{``}$
$\text{S7''}]$

$[\text{S8} \xrightarrow{\text{tex}} \text{``}$
$\text{S8''}]$

$[\text{S9} \xrightarrow{\text{tex}} \text{``}$
$\text{S9''}]$

$[\text{MP} \xrightarrow{\text{tex}} \text{``}$
$\text{MP''}]$

$[\text{Gen} \xrightarrow{\text{tex}} \text{``}$
$\text{Gen''}]$

$[\text{Ded} \overset{\text{tex}}{\to} \text{``}$
$\qquad \text{Ded''}]$

$[\text{Repetition} \overset{\text{tex}}{\to} \text{``}$
$\qquad \text{Repetition''}]$

$[\text{A1}' \overset{\text{tex}}{\to} \text{``}$
$\qquad \text{A1'''}]$

$[\text{A2}' \overset{\text{tex}}{\to} \text{``}$
$\qquad \text{A2'''}]$

$[\text{A4}' \overset{\text{tex}}{\to} \text{``}$
$\qquad \text{A4'''}]$

$[\text{A5}' \overset{\text{tex}}{\to} \text{``}$
$\qquad \text{A5'''}]$

$[\mathsf{x}^{\text{var}} \overset{\text{tex}}{\to} \text{``}\#1.$
$\qquad \{\}\hat{}\,\{\text{var}\}\text{''}]$

$[\mathsf{x}\#\mathsf{y} \overset{\text{tex}}{\to} \text{``}\#1.$
$\qquad \backslash\#.\#2.\text{''}]$

$[\mathsf{x}\#^0\mathsf{y} \overset{\text{tex}}{\to} \text{``}\#1.$
$\qquad \backslash\#.\hat{}\,0\#2.\text{''}]$

$[\mathsf{x}\#^1\mathsf{y} \overset{\text{tex}}{\to} \text{``}\#1.$
$\qquad \backslash\#.\hat{}\,1\#2.\text{''}]$

$[\mathsf{x}\#^*\mathsf{y} \overset{\text{tex}}{\to} \text{``}\#1.$
$\qquad \backslash\#.\hat{}\,*\#2.\text{''}]$

$[\langle\mathsf{x}\equiv\mathsf{y}|\mathsf{z}{:=}\mathsf{u}\rangle \overset{\text{tex}}{\to} \text{``}$
$\qquad \backslash\text{langle } \#1.$
$\qquad \{\backslash\text{equiv}\}\ \#2.$
$\qquad |\ \#3.$
$\qquad \{{:=}\}\ \#4.$
$\qquad \backslash\text{rangle ''}]$

$[\langle\mathsf{x}\equiv^0\mathsf{y}|\mathsf{z}{:=}\mathsf{u}\rangle \overset{\text{tex}}{\to} \text{``}$
$\qquad \backslash\text{langle } \#1.$
$\qquad \{\backslash\text{equiv}\}\hat{}\,0\ \#2.$
$\qquad |\ \#3.$
$\qquad \{{:=}\}\ \#4.$
$\qquad \backslash\text{rangle ''}]$

$[\langle \mathsf{x} \equiv^1 \mathsf{y} | \mathsf{z} := \mathsf{u} \rangle \overset{\text{tex}}{\to}$ "
$\qquad$ \langle #1.
$\qquad$ {\equiv}^1 #2.
$\qquad$ | #3.
$\qquad$ {:=} #4.
$\qquad$ \rangle "]

$[\langle \mathsf{x} \equiv^* \mathsf{y} | \mathsf{z} := \mathsf{u} \rangle \overset{\text{tex}}{\to}$ "
$\qquad$ \langle #1.
$\qquad$ {\equiv}^* #2.
$\qquad$ | #3.
$\qquad$ {:=} #4.
$\qquad$ \rangle "]

$[\mathrm{Ded}(\mathsf{x}, \mathsf{y}) \overset{\text{tex}}{\to}$ "
$\qquad$ Ded(#1.
$\qquad$, #2.
$\qquad$)"]

$[\mathrm{Ded}_0(\mathsf{x}, \mathsf{y}) \overset{\text{tex}}{\to}$ "
$\qquad$ Ded_0(#1.
$\qquad$, #2.
$\qquad$)"]

$[\mathrm{Ded}_1(\mathsf{x}, \mathsf{y}, \mathsf{z}) \overset{\text{tex}}{\to}$ "
$\qquad$ Ded_1(#1.
$\qquad$, #2.
$\qquad$, #3.
$\qquad$)"]

$[\mathrm{Ded}_2(\mathsf{x}, \mathsf{y}, \mathsf{z}) \overset{\text{tex}}{\to}$ "
$\qquad$ Ded_2(#1.
$\qquad$, #2.
$\qquad$, #3.
$\qquad$)"]

$[\mathrm{Ded}_3(\mathsf{x}, \mathsf{y}, \mathsf{z}, \mathsf{u}) \overset{\text{tex}}{\to}$ "
$\qquad$ Ded_3(#1.
$\qquad$, #2.
$\qquad$, #3.
$\qquad$, #4.
$\qquad$)"]

$[\mathrm{Ded}_4(\mathsf{x}, \mathsf{y}, \mathsf{z}, \mathsf{u}) \overset{\text{tex}}{\to}$ "
$\qquad$ Ded_4(#1.
$\qquad$, #2.
$\qquad$, #3.

$$, \#4.$$
$$)"]$$

$$[\mathrm{Ded}_4^*(\mathsf{x}, \mathsf{y}, \mathsf{z}, \mathsf{u}) \overset{\text{tex}}{\to} ``$$
$$\mathrm{Ded\_4}\hat{\ }*(\#1.$$
$$, \#2.$$
$$, \#3.$$
$$, \#4.$$
$$)"]$$

$$[\mathrm{Ded}_5(\mathsf{x}, \mathsf{y}, \mathsf{z}) \overset{\text{tex}}{\to} ``$$
$$\mathrm{Ded\_5}(\#1.$$
$$, \#2.$$
$$, \#3.$$
$$)"]$$

$$[\mathrm{Ded}_6(\mathsf{p}, \mathsf{c}, \mathsf{e}, \mathsf{b}) \overset{\text{tex}}{\to} ``$$
$$\mathrm{Ded\_6}(\#1.$$
$$, \#2.$$
$$, \#3.$$
$$, \#4.$$
$$)"]$$

$$[\mathrm{Ded}_6^*(\mathsf{p}, \mathsf{c}, \mathsf{e}, \mathsf{b}) \overset{\text{tex}}{\to} ``$$
$$\mathrm{Ded\_6}\hat{\ }*(\#1.$$
$$, \#2.$$
$$, \#3.$$
$$, \#4.$$
$$)"]$$

$$[\mathrm{Ded}_7(\mathsf{p}) \overset{\text{tex}}{\to} ``$$
$$\mathrm{Ded\_7}(\#1.$$
$$)"]$$

$$[\mathrm{Ded}_8(\mathsf{p}, \mathsf{b}) \overset{\text{tex}}{\to} ``$$
$$\mathrm{Ded\_8}(\#1.$$
$$, \#2.$$
$$)"]$$

$$[\mathrm{Ded}_8^*(\mathsf{p}, \mathsf{b}) \overset{\text{tex}}{\to} ``$$
$$\mathrm{Ded\_8}\hat{\ }*(\#1.$$
$$, \#2.$$
$$)"]$$

$$[\mathrm{Begin}\ \mathsf{b}; \mathsf{l} : \mathrm{End}; \mathsf{p} \overset{\text{tex}}{\to} ``$$
$$\backslash\text{newline} \backslash\text{makebox } [0.1\backslash\text{textwidth}]\{\}\%$$
$$\backslash\text{parbox } [b]\{0.4\backslash\text{textwidth }\}\{\backslash\text{raggedright}$$

\setlength {\parindent }{-0.1\textwidth }%
            \makebox [0.1\textwidth][l]{$
            \if \relax \csname lgwprooflinep\endcsname L_? \else
            \global \advance \lgwproofline by 1
            L\ifnum \lgwproofline <10 0\fi \number \lgwproofline
            \fi
            $:}$Block {}\gg {}$\quad
            \parbox [t]{0.4\textwidth }{$Begin
            $\hfill \makebox [0mm][l]{\quad ;}}#1.
            \newline \makebox [0.1\textwidth]{}%
            \parbox [b]{0.4\textwidth }{\raggedright
            \setlength {\parindent }{-0.1\textwidth }%
            \makebox [0.1\textwidth][l]{$#2.
            $:}$Block {}\gg {}$\quad
            \parbox [t]{0.4\textwidth }{$End
            $\hfill \makebox [0mm][l]{\quad ;}}#3."]

[Begin b; l : End; p $\stackrel{\mathrm{name}}{\rightarrow}$ "
            Begin \, #1.
            ; #2.
            : End ; #3."]

[Last block line a $\gg$ i ; $\stackrel{\mathrm{tex}}{\rightarrow}$ "
            \newline \makebox [0.1\textwidth]{}%
            \parbox [b]{0.4\textwidth }{\raggedright
            \setlength {\parindent }{-0.1\textwidth }%
            \makebox [0.1\textwidth][l]{$
            \if \relax \csname lgwprooflinep\endcsname L_? \else
            \global \advance \lgwproofline by 1
            L\ifnum \lgwproofline <10 0\fi \number \lgwproofline
            \fi
            $:}$#1.
            {}\gg {}$\quad
            \parbox [t]{0.4\textwidth }{$#2.
            $\hfill \makebox [0mm][l]{\quad ;}}"]

            [Last block line a $\gg$ i ; $\stackrel{\mathrm{name}}{\rightarrow}$ "
            Last\ block\ line \, #1.
            \gg #2.
            \, ;"]

[x $\unrhd$ y $\stackrel{\mathrm{tex}}{\rightarrow}$ "#1.
            \unrhd #2."]

[Prop 3.2a $\stackrel{\mathrm{tex}}{\rightarrow}$ "
            Prop\ 3.2a"]

[Prop 3.2b $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2b"]

[Prop 3.2c $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2c"]

[Prop 3.2d $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2d"]

[Prop 3.2e$_1$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2e_1"]

[Prop 3.2e$_2$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2e_2"]

[Prop 3.2e $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2e"]

[Prop 3.2f$_1$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2f_1"]

[Prop 3.2f$_2$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2f_2"]

[Prop 3.2f $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2f"]

[Prop 3.2g$_1$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2g_1"]

[Prop 3.2g$_2$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2g_2"]

[Prop 3.2g $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2g"]

[Prop 3.2h$_1$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2h_1"]

[Prop 3.2h$_2$ $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2h_2"]

[Prop 3.2h $\overset{\text{tex}}{\to}$ "
            Prop\ 3.2h"]

[MacroIndent(x) $\overset{\text{tex}}{\to}$ "
            $%
            \leftskip=1em%
            $#1."]

$[\text{MacroIndent}(\mathsf{x}) \overset{\text{name}}{\to} ``$
$\quad\quad\quad \text{MacroIndent}(\#1.$
$\quad\quad\quad)"]$

$[\text{Block}_1(\mathsf{t},\mathsf{s},\mathsf{c}) \overset{\text{tex}}{\to} ``$
$\quad\quad\quad \text{Block\_1}(\#1.$
$\quad\quad\quad ,\#2.$
$\quad\quad\quad ,\#3.$
$\quad\quad\quad)"]$

$[\text{Block}_2(\mathsf{b}) \overset{\text{tex}}{\to} ``$
$\quad\quad\quad \text{Block\_2}(\#1.$
$\quad\quad\quad)"]$

$[\to \overset{\text{tex}}{\to} ``$
$\quad\quad\quad \backslash\text{rightarrow }"]$

3.1 Variables

$[\overline{\mathsf{x}} \overset{\text{pyk}}{\to} \text{``object var} * \text{end var"}]$
$\quad [\overline{\mathsf{x}} \overset{\text{tex}}{\to} ``\backslash\text{overline}\{\#1.\}"]$
$\quad [a \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[a \doteq \overline{\mathsf{a}}]\rceil)]$
$\quad [b \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[b \doteq \overline{\mathsf{b}}]\rceil)]$
$\quad [c \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[c \doteq \overline{\mathsf{c}}]\rceil)]$
$\quad [d \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[d \doteq \overline{\mathsf{d}}]\rceil)]$
$\quad [e \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[e \doteq \overline{\mathsf{e}}]\rceil)]$
$\quad [f \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[f \doteq \overline{\mathsf{f}}]\rceil)]$
$\quad [g \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[g \doteq \overline{\mathsf{g}}]\rceil)]$
$\quad [h \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[h \doteq \overline{\mathsf{h}}]\rceil)]$
$\quad [i \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[i \doteq \overline{\mathsf{i}}]\rceil)]$
$\quad [j \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[j \doteq \overline{\mathsf{j}}]\rceil)]$
$\quad [k \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[k \doteq \overline{\mathsf{k}}]\rceil)]$
$\quad [l \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[l \doteq \overline{\mathsf{l}}]\rceil)]$
$\quad [m \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[m \doteq \overline{\mathsf{m}}]\rceil)]$
$\quad [n \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[n \doteq \overline{\mathsf{n}}]\rceil)]$
$\quad [o \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[o \doteq \overline{\mathsf{o}}]\rceil)]$
$\quad [p \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[p \doteq \overline{\mathsf{p}}]\rceil)]$
$\quad [q \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[q \doteq \overline{\mathsf{q}}]\rceil)]$
$\quad [r \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[r \doteq \overline{\mathsf{r}}]\rceil)]$
$\quad [s \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[s \doteq \overline{\mathsf{s}}]\rceil)]$
$\quad [t \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[t \doteq \overline{\mathsf{t}}]\rceil)]$
$\quad [u \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[u \doteq \overline{\mathsf{u}}]\rceil)]$
$\quad [v \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[v \doteq \overline{\mathsf{v}}]\rceil)]$
$\quad [w \overset{\text{macro}}{\to} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[w \doteq \overline{\mathsf{w}}]\rceil)]$

$[x \overset{\text{macro}}{\rightarrow} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[x \doteq \overline{\mathsf{x}}]\rceil)]$

$[y \overset{\text{macro}}{\rightarrow} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[y \doteq \overline{\mathsf{y}}]\rceil)]$

$[z \overset{\text{macro}}{\rightarrow} \lambda\mathsf{t}.\lambda\mathsf{s}.\lambda\mathsf{c}.\tilde{\mathcal{M}}_4(\mathsf{t},\mathsf{s},\mathsf{c},\lceil[z \doteq \overline{\mathsf{z}}]\rceil)]$

$[a \overset{\text{pyk}}{\rightarrow}$ "object a"$]$

$[b \overset{\text{pyk}}{\rightarrow}$ "object b"$]$

$[c \overset{\text{pyk}}{\rightarrow}$ "object c"$]$

$[d \overset{\text{pyk}}{\rightarrow}$ "object d"$]$

$[e \overset{\text{pyk}}{\rightarrow}$ "object e"$]$

$[f \overset{\text{pyk}}{\rightarrow}$ "object f"$]$

$[g \overset{\text{pyk}}{\rightarrow}$ "object g"$]$

$[h \overset{\text{pyk}}{\rightarrow}$ "object h"$]$

$[i \overset{\text{pyk}}{\rightarrow}$ "object i"$]$

$[j \overset{\text{pyk}}{\rightarrow}$ "object j"$]$

$[k \overset{\text{pyk}}{\rightarrow}$ "object k"$]$

$[l \overset{\text{pyk}}{\rightarrow}$ "object l"$]$

$[m \overset{\text{pyk}}{\rightarrow}$ "object m"$]$

$[n \overset{\text{pyk}}{\rightarrow}$ "object n"$]$

$[o \overset{\text{pyk}}{\rightarrow}$ "object o"$]$

$[p \overset{\text{pyk}}{\rightarrow}$ "object p"$]$

$[q \overset{\text{pyk}}{\rightarrow}$ "object q"$]$

$[r \overset{\text{pyk}}{\rightarrow}$ "object r"$]$

$[s \overset{\text{pyk}}{\rightarrow}$ "object s"$]$

$[t \overset{\text{pyk}}{\rightarrow}$ "object t"$]$

$[u \overset{\text{pyk}}{\rightarrow}$ "object u"$]$

$[v \overset{\text{pyk}}{\rightarrow}$ "object v"$]$

$[w \overset{\text{pyk}}{\rightarrow}$ "object w"$]$

$[x \overset{\text{pyk}}{\rightarrow}$ "object x"$]$

$[y \overset{\text{pyk}}{\rightarrow}$ "object y"$]$

$[z \overset{\text{pyk}}{\rightarrow}$ "object z"$]$

$[a \overset{\text{tex}}{\rightarrow}$ "
\mathit{a}"$]$

$[b \overset{\text{tex}}{\rightarrow}$ "
\mathit{b}"$]$

$[c \overset{\text{tex}}{\rightarrow}$ "
\mathit{c}"$]$

$[d \overset{\text{tex}}{\rightarrow}$ "
\mathit{d}"$]$

$$[e \xrightarrow{\text{tex}} \text{``}$$
\mathit{e}"]
$$[f \xrightarrow{\text{tex}} \text{``}$$
\mathit{f}"]
$$[g \xrightarrow{\text{tex}} \text{``}$$
\mathit{g}"]
$$[h \xrightarrow{\text{tex}} \text{``}$$
\mathit{h}"]
$$[i \xrightarrow{\text{tex}} \text{``}$$
\mathit{i}"]
$$[j \xrightarrow{\text{tex}} \text{``}$$
\mathit{j}"]
$$[k \xrightarrow{\text{tex}} \text{``}$$
\mathit{k}"]
$$[l \xrightarrow{\text{tex}} \text{``}$$
\mathit{l}"]
$$[m \xrightarrow{\text{tex}} \text{``}$$
\mathit{m}"]
$$[n \xrightarrow{\text{tex}} \text{``}$$
\mathit{n}"]
$$[o \xrightarrow{\text{tex}} \text{``}$$
\mathit{o}"]
$$[p \xrightarrow{\text{tex}} \text{``}$$
\mathit{p}"]
$$[q \xrightarrow{\text{tex}} \text{``}$$
\mathit{q}"]
$$[r \xrightarrow{\text{tex}} \text{``}$$
\mathit{r}"]
$$[s \xrightarrow{\text{tex}} \text{``}$$
\mathit{s}"]
$$[t \xrightarrow{\text{tex}} \text{``}$$
\mathit{t}"]
$$[u \xrightarrow{\text{tex}} \text{``}$$
\mathit{u}"]
$$[v \xrightarrow{\text{tex}} \text{``}$$
\mathit{v}"]
$$[w \xrightarrow{\text{tex}} \text{``}$$
\mathit{w}"]
$$[x \xrightarrow{\text{tex}} \text{``}$$
\mathit{x}"]

$$[y \overset{\text{tex}}{\to} \text{``}$$
$$\backslash\text{mathit}\{\text{y}\}\text{''}]$$
$$[z \overset{\text{tex}}{\to} \text{``}$$
$$\backslash\text{mathit}\{\text{z}\}\text{''}]$$

4 Priority table

$[\text{ijcar} \overset{\text{prio}}{\to}$

Preassociative

[ijcar], [ijcar base], [bracket $*$ end bracket], [big bracket $*$ end bracket], [\$ $*$ \$],
[**flush left** [$*$]], [x], [y], [z], [[$* \bowtie *$]], [[$* \overset{*}{\to} *$]], [pyk], [tex], [name], [prio], [$*$], [T],
[if$(*, *, *)$], [[$* \overset{*}{\Rightarrow} *$]], [val], [claim], [$\bot$], [f$(*)$], [$(*)^{\text{I}}$], [F], [$\underline{0}$], [$\underline{1}$], [$\underline{2}$], [$\underline{3}$], [$\underline{4}$], [$\underline{5}$], [$\underline{6}$],
[$\underline{7}$], [$\underline{8}$], [$\underline{9}$], [0], [1], [2], [3], [4], [5], [6], [7], [8], [9], [a], [b], [c], [d], [e], [f], [g], [h], [i], [j],
[k], [l], [m], [n], [o], [p], [q], [r], [s], [t], [u], [v], [w], [$(*)^{\text{M}}$], [If$(*, *, *)$],
[array$\{*\}$ $*$ end array], [l], [c], [r], [empty], [$\langle * \mid * := * \rangle$], [$\mathcal{M}(*)$], [$\tilde{\mathcal{U}}(*)$], [$\mathcal{U}(*)$],
[$\mathcal{U}^{\text{M}}(*)$], [**apply**$(*, *)$], [**apply**$_1(*, *)$], [identifier$(*)$], [identifier$_1(*, *)$], [array-
plus$(*, *)$], [array-remove$(*, *, *)$], [array-put$(*, *, *, *)$], [array-add$(*, *, *, *, *)$],
[bit$(*, *)$], [bit$_1(*, *)$], [rack], ["vector"], ["bibliography"], ["dictionary"],
["body"], ["codex"], ["expansion"], ["code"], ["cache"], ["diagnose"], ["pyk"],
["tex"], ["texname"], ["value"], ["message"], ["macro"], ["definition"],
["unpack"], ["claim"], ["priority"], ["lambda"], ["apply"], ["true"], ["if"],
["quote"], ["proclaim"], ["define"], ["introduce"], ["hide"], ["pre"], ["post"],
[$\mathcal{E}(*, *, *)$], [$\mathcal{E}_2(*, *, *, *, *)$], [$\mathcal{E}_3(*, *, *, *)$], [$\mathcal{E}_4(*, *, *, *)$], [**lookup**$(*, *, *)$],
[**abstract**$(*, *, *, *)$], [[$*$]], [$\mathcal{M}(*, *, *)$], [$\mathcal{M}_2(*, *, *, *)$], [$\mathcal{M}^*(*, *, *)$], [macro],
[s$_0$], [**zip**$(*, *)$], [**assoc**$_1(*, *, *)$], [$(*)^{\text{P}}$], [self], [[$* \overset{..}{=} *$]], [[$* \overset{.}{=} *$]], [[$* \doteq *$]],
[[$* \overset{\text{pyk}}{=} *$]], [[$* \overset{\text{tex}}{=} *$]], [[$* \overset{\text{name}}{=} *$]], [**Priority table**[$*$]], [$\tilde{\mathcal{M}}_1$], [$\tilde{\mathcal{M}}_2(*)$], [$\tilde{\mathcal{M}}_3(*)$],
[$\tilde{\mathcal{M}}_4(*, *, *, *)$], [$\tilde{\mathcal{M}}(*, *, *)$], [$\tilde{\mathcal{Q}}(*, *, *)$], [$\tilde{\mathcal{Q}}_2(*, *, *)$], [$\tilde{\mathcal{Q}}_3(*, *, *, *)$], [$\tilde{\mathcal{Q}}^*(*, *, *)$],
[$(*)$], [$(*)$], [display$(*)$], [statement$(*)$], [[$*$]·], [[$*$]$^-$], [**aspect**$(*, *)$],
[**aspect**$(*, *, *)$], [$\langle * \rangle$], [**tuple**$_1(*)$], [**tuple**$_2(*)$], [let$_2(*, *)$], [let$_1(*, *)$],
[[$* \overset{\text{claim}}{=} *$]], [checker], [**check**$(*, *)$], [**check**$_2(*, *, *)$], [**check**$_3(*, *, *)$],
[**check**$^*(*, *)$], [**check**$_2^*(*, *, *)$], [[$*$]·], [[$*$]$^-$], [[$*$]$^\circ$], [msg], [[$* \overset{\text{msg}}{=} *$]], [<stmt>],
[stmt], [[$* \overset{\text{stmt}}{=} *$]], [HeadNil$'$], [HeadPair$'$], [Transitivity$'$], [$\perp\!\!\!\perp$], [Contra$'$], [T$'_{\text{E}}$],
[L$_1$], [$\underline{*}$], [$\mathcal{A}$], [$\mathcal{B}$], [$\mathcal{C}$], [$\mathcal{D}$], [$\mathcal{E}$], [$\mathcal{F}$], [$\mathcal{G}$], [$\mathcal{H}$], [$\mathcal{I}$], [$\mathcal{J}$], [$\mathcal{K}$], [$\mathcal{L}$], [$\mathcal{M}$], [$\mathcal{N}$], [$\mathcal{O}$], [$\mathcal{P}$], [$\mathcal{Q}$],
[$\mathcal{R}$], [$\mathcal{S}$], [$\mathcal{T}$], [$\mathcal{U}$], [$\mathcal{V}$], [$\mathcal{W}$], [$\mathcal{X}$], [$\mathcal{Y}$], [$\mathcal{Z}$], [$\langle * \mid * := * \rangle$], [$\langle^* * \mid * := * \rangle$], [$\emptyset$], [Remainder],
[$(*)^{\mathbf{v}}$], [intro$(*, *, *, *)$], [intro$(*, *, *)$], [error$(*, *)$], [error$_2(*, *)$], [proof$(*, *, *)$],
[proof$_2(*, *)$], [$\mathcal{S}(*, *)$], [$\mathcal{S}^{\text{I}}(*, *)$], [$\mathcal{S}^{\triangleright}(*, *)$], [$\mathcal{S}_1^{\triangleright}(*, *, *)$], [$\mathcal{S}^{\text{E}}(*, *)$], [$\mathcal{S}_1^{\text{E}}(*, *, *)$],
[$\mathcal{S}^+(*, *)$], [$\mathcal{S}_1^+(*, *, *)$], [$\mathcal{S}^-(*, *)$], [$\mathcal{S}_1^-(*, *, *)$], [$\mathcal{S}^*(*, *)$], [$\mathcal{S}_1^*(*, *, *)$],
[$\mathcal{S}_2^*(*, *, *, *)$], [$\mathcal{S}^@(*, *)$], [$\mathcal{S}_1^@(*, *, *)$], [$\mathcal{S}^{\vdash}(*, *)$], [$\mathcal{S}_1^{\vdash}(*, *, *, *)$], [$\mathcal{S}^{\Vdash}(*, *)$],
[$\mathcal{S}_1^{\Vdash}(*, *, *, *)$], [$\mathcal{S}^{\text{i.e.}}(*, *)$], [$\mathcal{S}_1^{\text{i.e.}}(*, *, *, *)$], [$\mathcal{S}_2^{\text{i.e.}}(*, *, *, *, *)$], [$\mathcal{S}^{\forall}(*, *)$],
[$\mathcal{S}_1^{\forall}(*, *, *, *)$], [$\mathcal{S}^{\text{:}}(*, *)$], [$\mathcal{S}_1^{\text{:}}(*, *, *)$], [$\mathcal{S}_2^{\text{:}}(*, *, *, *, *)$], [$\mathcal{T}(*)$], [claims$(*, *, *)$],
[claims$_2(*, *, *)$], [<proof>], [proof], [[**Lemma** $* : *$]], [[**Proof of** $* : *$]],
[[$*$ **lemma** $* : *$]], [[$*$ **antilemma** $* : *$]], [[$*$ **rule** $* : *$]], [[$*$ **antirule** $* : *$]],
[verifier], [$\mathcal{V}_1(*)$], [$\mathcal{V}_2(*, *)$], [$\mathcal{V}_3(*, *, *, *)$], [$\mathcal{V}_4(*, *)$], [$\mathcal{V}_5(*, *, *, *)$], [$\mathcal{V}_6(*, *, *, *)$],

$[\mathcal{V}_7(*,*,*,*)], [\mathrm{Cut}(*,*)], [\mathrm{Head}_\oplus(*)], [\mathrm{Tail}_\oplus(*)], [\mathrm{rule}_1(*,*)], [\mathrm{rule}(*,*)],$
$[\mathrm{Rule\ tactic}], [\mathrm{Plus}(*,*)], [[\mathbf{Theory}\ *]], [\mathrm{theory}_2(*,*)], [\mathrm{theory}_3(*,*)],$
$[\mathrm{theory}_4(*,*,*)], [\mathrm{HeadNil}''], [\mathrm{HeadPair}''], [\mathrm{Transitivity}''], [\mathrm{Contra}''], [\mathrm{HeadNil}],$
$[\mathrm{HeadPair}], [\mathrm{Transitivity}], [\mathrm{Contra}], [\mathrm{T_E}], [\mathrm{ragged\ right}],$
$[\mathrm{ragged\ right\ expansion}\ ], [\mathrm{parm}(*,*,*)], [\mathrm{parm}^*(*,*,*)], [\mathrm{inst}(*,*)],$
$[\mathrm{inst}^*(*,*)], [\mathrm{occur}(*,*,*)], [\mathrm{occur}^*(*,*,*)], [\mathrm{unify}(*=*,*)], [\mathrm{unify}^*(*=*,*)],$
$[\mathrm{unify}_2(*=*,*)], [\mathrm{L_a}], [\mathrm{L_b}], [\mathrm{L_c}], [\mathrm{L_d}], [\mathrm{L_e}], [\mathrm{L_f}], [\mathrm{L_g}], [\mathrm{L_h}], [\mathrm{L_i}], [\mathrm{L_j}], [\mathrm{L_k}], [\mathrm{L_l}], [\mathrm{L_m}],$
$[\mathrm{L_n}], [\mathrm{L_o}], [\mathrm{L_p}], [\mathrm{L_q}], [\mathrm{L_r}], [\mathrm{L_s}], [\mathrm{L_t}], [\mathrm{L_u}], [\mathrm{L_v}], [\mathrm{L_w}], [\mathrm{L_x}], [\mathrm{L_y}], [\mathrm{L_z}], [\mathrm{L_A}], [\mathrm{L_B}], [\mathrm{L_C}],$
$[\mathrm{L_D}], [\mathrm{L_E}], [\mathrm{L_F}], [\mathrm{L_G}], [\mathrm{L_H}], [\mathrm{L_I}], [\mathrm{L_J}], [\mathrm{L_K}], [\mathrm{L_L}], [\mathrm{L_M}], [\mathrm{L_N}], [\mathrm{L_O}], [\mathrm{L_P}], [\mathrm{L_Q}], [\mathrm{L_R}],$
$[\mathrm{L_S}], [\mathrm{L_T}], [\mathrm{L_U}], [\mathrm{L_V}], [\mathrm{L_W}], [\mathrm{L_X}], [\mathrm{L_Y}], [\mathrm{L_Z}], [\mathrm{L_?}], [\mathrm{Reflexivity}], [\mathrm{Reflexivity}_1],$
$[\mathrm{Commutativity}], [\mathrm{Commutativity}_1], [<\mathrm{tactic}>], [\mathrm{tactic}], [[*\overset{\mathrm{tactic}}{=}*]], [\mathcal{P}(*,*,*)],$
$[\mathcal{P}^*(*,*,*)], [\mathrm{p}_0], [\mathrm{conclude}_1(*,*)], [\mathrm{conclude}_2(*,*,*)], [\mathrm{conclude}_3(*,*,*,*)],$
$[\mathrm{conclude}_4(*,*)], [[*\overset{\circ}{=}*]], [\mathrm{RootVisible}(*)], [\mathrm{A}], [\mathrm{R}], [\mathrm{C}], [\mathrm{T}], [\mathrm{L}], [\{*\}], [\overline{\ast}], [a], [b],$
$[c], [d], [e], [f], [g], [h], [i], [j], [k], [l], [m], [n], [o], [p], [q], [r], [s], [t], [u], [v], [w], [x],$
$[y], [z], [\langle *\equiv *\mid * :=*\rangle], [\langle *\equiv^0 *\mid * :=*\rangle], [\langle *\equiv^1 *\mid * :=*\rangle], [\langle *\equiv^* *\mid * :=*\rangle],$
$[\mathrm{Ded}(*,*)], [\mathrm{Ded}_0(*,*)], [\mathrm{Ded}_1(*,*,*)], [\mathrm{Ded}_2(*,*,*)], [\mathrm{Ded}_3(*,*,*,*)],$
$[\mathrm{Ded}_4(*,*,*,*)], [\mathrm{Ded}_4^*(*,*,*,*)], [\mathrm{Ded}_5(*,*,*)], [\mathrm{Ded}_6(*,*,*,*)],$
$[\mathrm{Ded}_6^*(*,*,*,*)], [\mathrm{Ded}_7(*)], [\mathrm{Ded}_8(*,*)], [\mathrm{Ded}_8^*(*,*)], [\mathrm{S}], [\mathrm{Neg}], [\mathrm{MP}], [\mathrm{Gen}],$
$[\mathrm{Ded}], [\mathrm{S1}], [\mathrm{S2}], [\mathrm{S3}], [\mathrm{S4}], [\mathrm{S5}], [\mathrm{S6}], [\mathrm{S7}], [\mathrm{S8}], [\mathrm{S9}], [\mathrm{Repetition}], [\mathrm{A1}'], [\mathrm{A2}'], [\mathrm{A4}'],$
$[\mathrm{A5}'], [\mathrm{Prop\ 3.2a}], [\mathrm{Prop\ 3.2b}], [\mathrm{Prop\ 3.2c}], [\mathrm{Prop\ 3.2d}], [\mathrm{Prop\ 3.2e}_1], [\mathrm{Prop\ 3.2e}_2],$
$[\mathrm{Prop\ 3.2e}], [\mathrm{Prop\ 3.2f}_1], [\mathrm{Prop\ 3.2f}_2], [\mathrm{Prop\ 3.2f}], [\mathrm{Prop\ 3.2g}_1], [\mathrm{Prop\ 3.2g}_2],$
$[\mathrm{Prop\ 3.2g}], [\mathrm{Prop\ 3.2h}_1], [\mathrm{Prop\ 3.2h}_2], [\mathrm{Prop\ 3.2h}], [\mathrm{Block}_1(*,*,*)], [\mathrm{Block}_2(*)];$

Preassociative

$[*_-\{*\}], [*/\mathrm{indexintro}(*,*,*,*)], [*/\mathrm{intro}(*,*,*)], [*/\mathrm{bothintro}(*,*,*,*,*)],$
$[*/\mathrm{nameintro}(*,*,*,*)], [*'], [*[\ *\ ]], [*[*\to*]], [*[*\Rightarrow*]], [*0], [*1], [0\mathrm{b}], [*\text{-color}(*)],$
$[*\text{-color}^*(*)], [*^\mathrm{H}], [*^\mathrm{T}], [*^\mathrm{U}], [*^\mathrm{h}], [*^\mathrm{t}], [*^\mathrm{s}], [*^\mathrm{c}], [*^\mathrm{d}], [*^\mathrm{a}], [*^\mathrm{C}], [*^\mathrm{M}], [*^\mathrm{B}], [*^\mathrm{r}], [*^\mathrm{i}],$
$[*^\mathrm{d}], [*^\mathrm{R}], [*^0], [*^1], [*^2], [*^3], [*^4], [*^5], [*^6], [*^7], [*^8], [*^9], [*^\mathrm{E}], [*^\mathcal{V}], [*^\mathcal{C}], [*^{\mathcal{C}^*}],$
$[*^\mathrm{hide}];$

Preassociative

$[``\,*\,"], [\,], [(*)^\mathbf{t}], [\mathrm{string}(*)+*], [\mathrm{string}(*)++*], [$
$*], [\ *], [!*], [''*], [\#*], [\$*], [\%*], [\&*], ['*], [(*], [)*], [**], [+*], [,*], [-*], [.*], [/*],$
$[0*], [1*], [2*], [3*], [4*], [5*], [6*], [7*], [8*], [9*], [:*], [;*], [<*], [=*], [>*], [?*],$
$[@*], [\mathrm{A}*], [\mathrm{B}*], [\mathrm{C}*], [\mathrm{D}*], [\mathrm{E}*], [\mathrm{F}*], [\mathrm{G}*], [\mathrm{H}*], [\mathrm{I}*], [\mathrm{J}*], [\mathrm{K}*], [\mathrm{L}*], [\mathrm{M}*], [\mathrm{N}*],$
$[\mathrm{O}*], [\mathrm{P}*], [\mathrm{Q}*], [\mathrm{R}*], [\mathrm{S}*], [\mathrm{T}*], [\mathrm{U}*], [\mathrm{V}*], [\mathrm{W}*], [\mathrm{X}*], [\mathrm{Y}*], [\mathrm{Z}*], [[*], [\backslash*], []*], [\,\hat{}\,*],$
$[\_*], [`*], [\mathrm{a}*], [\mathrm{b}*], [\mathrm{c}*], [\mathrm{d}*], [\mathrm{e}*], [\mathrm{f}*], [\mathrm{g}*], [\mathrm{h}*], [\mathrm{i}*], [\mathrm{j}*], [\mathrm{k}*], [\mathrm{l}*], [\mathrm{m}*], [\mathrm{n}*], [\mathrm{o}*],$
$[\mathrm{p}*], [\mathrm{q}*], [\mathrm{r}*], [\mathrm{s}*], [\mathrm{t}*], [\mathrm{u}*], [\mathrm{v}*], [\mathrm{w}*], [\mathrm{x}*], [\mathrm{y}*], [\mathrm{z}*], [\{*], [|*], [\}*], [\tilde{}\,*],$
$[\mathbf{Preassociative}\ *;*], [\mathbf{Postassociative}\ *;*], [[*], *], [\mathrm{priority}\ *\ \mathrm{end}],$
$[\mathrm{newline}\ *], [\mathrm{macro\ newline}\ *], [\mathrm{MacroIndent}(*)];$

Preassociative

$[*\ '\ *], [*\ `\ *];$

Preassociative

$[*'];$

Preassociative

$[*\cdot*], [*\cdot_0*];$

Preassociative

$[* + *], [* +_0 *], [* +_1 *], [* - *], [* -_0 *], [* -_1 *];$
Preassociative
$[* \cup \{*\}], [* \cup *], [*\backslash\{*\}];$
Postassociative
$[* \therefore *], [* \underaccent{\dot}{\therefore} *], [* \underaccent{\dots}{:} *], [* \underline{+2*} *], [* :: *], [* +2* *];$
Postassociative
$[*, *];$
Preassociative
$[* \overset{\text{B}}{\approx} *], [* \overset{\text{D}}{\approx} *], [* \overset{\text{C}}{\approx} *], [* \overset{\text{P}}{\approx} *], [* \approx *], [* = *], [* \overset{+}{\to} *], [* \overset{\text{t}}{=} *], [* \overset{\text{t}^*}{=} *], [* \overset{\text{r}}{=} *],$
$[* \in_{\text{t}} *], [* \subseteq_{\text{T}} *], [* \overset{\text{T}}{=} *], [* \overset{\text{s}}{=} *], [* \text{ free in } *], [* \text{ free in}^* *], [* \text{ free for } * \text{ in } *],$
$[* \text{ free for}^* * \text{ in } *], [* \in_{\text{c}} *], [* < *], [* <' *], [* \leq' *], [* = *], [* \neq *], [*^{\text{var}}],$
$[*\#^0*], [*\#^1*], [*\#^**];$
Preassociative
$[\neg *];$
Preassociative
$[* \wedge *], [* \ddot{\wedge} *], [* \tilde{\wedge} *], [* \wedge_{\text{c}} *];$
Preassociative
$[* \vee *], [* \| *], [* \ddot{\vee} *];$
Preassociative
$[\exists *{:}\, *], [\forall *{:}\, *], [\forall_{\text{obj}} *{:}\, *];$
Postassociative
$[* \ddot{\Rightarrow} *], [* \Rightarrow *], [* \Leftrightarrow *];$
Postassociative
$[* : *], [* \text{ spy } *], [*!*];$
Preassociative
$[* \left\{ \begin{array}{c} * \\ * \end{array} \right.];$
Preassociative
$[\lambda * .*], [\Lambda * .*], [\Lambda *], [\textbf{if } * \textbf{ then } * \textbf{ else } *], [\textbf{let } * = * \textbf{ in } *], [\textbf{let } * \overset{.}{=} * \text{ in } *];$
Preassociative
$[*\#*];$
Preassociative
$[*^{\text{I}}], [*^{\triangleright}], [*^{\text{V}}], [*^{+}], [*^{-}], [*^{*}];$
Preassociative
$[* @ *], [* \triangleright *], [* \blacktriangleright *], [* \gg *], [* \trianglerighteq *];$
Postassociative
$[* \vdash *], [* \Vdash *], [* \text{ i.e. } *];$
Preassociative
$[\forall *{:}\, *], [\Pi *{:}\, *];$
Postassociative
$[* \oplus *];$
Postassociative
$[*; *];$
Preassociative
$[* \text{ proves } *];$

Preassociative
[∗ **proof of** ∗ : ∗], [Line ∗ : ∗ ≫ ∗; ∗], [Last line ∗ ≫ ∗ □],
[Line ∗ : Premise ≫ ∗; ∗], [Line ∗ : Side-condition ≫ ∗; ∗], [Arbitrary ≫ ∗; ∗],
[Local ≫ ∗ = ∗; ∗], [Begin ∗; ∗ : End; ∗], [Last block line ∗ ≫ ∗ ;],
[Arbitrary ≫ ∗; ∗];
Postassociative
[∗ | ∗];
Postassociative
[∗ then ∗], [∗[∗]∗];
Preassociative
[∗&∗], [→];
Preassociative
[∗\\∗], [∗\\∗];]