fmocdmac — FM's OCD LaTeX Macro*

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Released 2023/02/16

Abstract

This package contains almost all the latex macros I heavily use in my tcs research activity and, in particular, in the writing of conference and journal articles. As few of my co-authors have kindly pointed out, and probably many have thought, they are somehow a clear expression of an underlying ocd-like behavior... hence the name!

1 Implementation & Usage

1 ⟨*package⟩

Required external packages:

```
2
3 \RequirePackage{etoolbox}
4
5 \RequirePackage{xargs}
6 \RequirePackage{xspace}
7 \RequirePackage{stringstrings}
8
```

Package options:

```
9
10 %% Auxiliary packages
11 \newif\ifaux@ \aux@false
12 \DeclareOption{aux}{\aux@true}
13 \DeclareOption{noaux}{\aux@false}
14
15 %% AMS defaults
16 \newif\ifamsdef@ \amsdef@true
17 \DeclareOption{noamsdef}{\amsdef@false}
18
19 %% AMS theorem tools
20 \newif\ifamsthm@ \amsthm@true
21 \DeclareOption{noamsthm}{\amsthm@false}
22
23 %% Extended Theorem tools
24 \newif\ifthmtls@ \thmtls@true
25 \DeclareOption{nothmtls}{\thmtls@false}
26
27 %% Enumeration tools
28 \newif\ifenmtls@ \enmtls@true
29 \DeclareOption{noenmtls}{\enmtls@false}
30
31 %% Hyper reference
32 \newif\ifhypref@ \hypref@true
33 \DeclareOption{nohypref}{\hypref@false}
34
```

*This document describes version v0.16 of the fmocdmac package, last revised 2023/02/16.

```
%% Font tools
\newif\iffnttls@ \fnttls@true
\DeclareOption{nofnttls}{\fnttls@false}

%% Camera-ready version
\newif\ifcrv@ \crv@false
\DeclareOption{crv}{\crv@true}

%% Change bars
\newif\ifchgbar@ \chgbar@false
\DeclareOption{chgbar}{\chgbar@true}

%% Line numbers
\newif\iflinnum@ \linnum@false
\DeclareOption{linnum}{\linnum@true}


%% Text macro generation
\newif\iftxtgen@ \txtgen@false
\DeclareOption{txtgen}{\txtgen@true}
\DeclareOption{notxtgen}
  {\txtgen@false\txt@false\com@false\gam@false\log@false\aut@false}

%% Math macro generation
\newif\ifmthgen@ \mthgen@false
\DeclareOption{mthgen}{\mthgen@true}
\DeclareOption{nomthgen}
  {\mthgen@false\mth@false\gam@false\log@false\aut@false}


%% Elementary macros for text
\newif\iftxt@ \txt@false
\DeclareOption{txt}{\txt@true\txtgen@true}
\DeclareOption{notxt}{\txt@false}

%% Elementary macros for math
\newif\ifmth@ \mth@false
\DeclareOption{mth}{\mth@true\mthgen@true}
\DeclareOption{nomth}{\mth@false}


%% Macros for computational-complexity classes
\newif\ifcom@ \com@false
\DeclareOption{com}{\com@true\txtgen@true}
\DeclareOption{nocom}{\com@false}


%% Macros for games
\newif\ifgam@ \gam@false
\DeclareOption{gam}{\gam@true\txtgen@true\mthgen@true}
\DeclareOption{nogam}{\gam@false}

%% Macros for logics
\newif\iflog@ \log@false
\DeclareOption{log}{\log@true\txtgen@true\mthgen@true}
\DeclareOption{nolog}{\log@false}

%% Macros for automata
\newif\ifaut@ \aut@false
\DeclareOption{aut}{\aut@true\txtgen@true\mthgen@true}
\DeclareOption{noaut}{\aut@false}


```

```
%% Format-related tricks
\newif\iffrm@ \frm@false
\DeclareOption{frm}{\frm@true}
\DeclareOption{nofrm}{\frm@false}


%% Figure-related tricks
\newif\iffig@ \fig@false
\DeclareOption{fig}{\fig@true}
\DeclareOption{nofig}{\fig@false}

%% Wrapfig package
\newif\ifwrpfig@ \wrpfig@true
\DeclareOption{nowrpfig}{\wrpfig@false}


%% Table-related tricks
\newif\iftab@ \tab@false
\DeclareOption{tab}{\tab@true}
\DeclareOption{notab}{\tab@false}


%% Algorithm-related tricks
\newif\ifalg@ \alg@false
\DeclareOption{alg}{\alg@true}
\DeclareOption{noalg}{\alg@false}
```

Option-processing code:

```
\DeclareOption*{\PackageWarning{fmocdmac}{Unknown~`\CurrentOption'}}%

\ExecuteOptions{aux,txtgen,mthgen,txt,mth,com,gam,log,aut}%

\ProcessOptions\relax%

\ifcsdef{if@twocolumn}{}{\newif\if@twocolumn}
```

Package main body:

```
%%****************************************************************************%%
%%** Auxiliary Alphabet Letters **********************************************%%
%%****************************************************************************%%
```

`\omicron` **Auxiliary Greek lowercase letter:** ... to do!

```
\csdef{omicron}{o}
```

`\Alpha, ...` **Auxiliary Greek uppercase letters:** ... to do!

```
\csdef{Alpha}{A} \csdef{Beta}{B} \csdef{Epsilon}{E} \csdef{varEpsilon}{E}
\csdef{Zeta}{Z} \csdef{Eta}{H} \csdef{Iota}{I} \csdef{Kappa}{K}
\csdef{varKappa}{K} \csdef{Mu}{M} \csdef{Nu}{N} \csdef{Omicron}{O}
\csdef{Rho}{P} \csdef{varRho}{P} \csdef{Tau}{T} \csdef{Chi}{X}
```

```
%%****************************************************************************%%
```

```
%%****************************************************************************%%
%%** Tools *******************************************************************%%
%%****************************************************************************%%
```

`\empchk` **Emptiness check:** `\empchk{`$\langle A\rangle$`}{`$\langle B\rangle$`}` evaluates to the empty string, if Argument $\langle A\rangle$ is empty, and to Argument $\langle B\rangle$, otherwise.

- `\empchk{}{B}` = “”
- `\empchk{A}{B}` = “B”

```
\newcommand{\empchk}[2]
  {\if&#1&\else#2\fi}
```

\defval **Default value:** `\defval{`⟨*A*⟩`}{`⟨*B*⟩`}` evaluates to Argument ⟨*B*⟩, if Argument ⟨*A*⟩ is empty, and to Argument ⟨*A*⟩ itself, otherwise.

- `\defval{}{B}` = "B"
- `\defval{A}{B}` = "A"

```
\newcommand{\defval}[2]
  {\if&#1&#2\else#1\fi}
```

```
%%*****************************************************************************%%
```

\arglef **Left extension:** `\arglef{`⟨*A*⟩`}{`⟨*B*⟩`}` evaluates to the concatenation ⟨*AB*⟩ of the two arguments, if Argument ⟨*B*⟩ is non-empty, and to the empty string, otherwise.

- `\arglef{A}{}` = ""
- `\arglef{A}{B}` = "AB"

```
\newcommand{\arglef}[2]
  {\empchk{#2}{#1#2}}
```

\argrig **Right extension:** `\argrig{`⟨*A*⟩`}{`⟨*B*⟩`}` evaluates to the concatenation ⟨*AB*⟩ of the two arguments, if Argument ⟨*A*⟩ is non-empty, and to the empty string, otherwise.

- `\argrig{}{B}` = ""
- `\argrig{A}{B}` = "AB"

```
\newcommand{\argrig}[2]
  {\empchk{#1}{#1#2}}
```

\argmid **Middle extension:** `\argmid{`⟨*A*⟩`}{`⟨*B*⟩`}{`⟨*C*⟩`}` evaluates to the concatenation ⟨*ABC*⟩ of the three arguments, if Argument ⟨*B*⟩ is non-empty, and to the empty string, otherwise.

- `\argmid{A}{}{C}` = ""
- `\argmid{A}{B}{C}` = "ABC"

```
\newcommand{\argmid}[3]
  {\empchk{#2}{#1#2#3}}
```

\argsep **Separators:** `\argsep{`⟨*A*⟩`}{`⟨*B*⟩`}{`⟨*C*⟩`}` evaluates to Argument ⟨*C*⟩, if Argument ⟨*A*⟩ is empty, to Argument ⟨*A*⟩, if Argument ⟨*C*⟩ is empty, and to the concatenation ⟨*ABC*⟩, otherwise.

- `\argsep{}{B}{C}` = "C"
- `\argsep{A}{B}{}` = "A"
- `\argsep{A}{}{C}` = "AC"
- `\argsep{A}{B}{C}` = "ABC"

```
\newcommand{\argsep}[3]
  {\if&#1&#3\else#1\arglef{#2}{#3}\fi}
```

```
%%*****************************************************************************%%
```

\varcmd **Variadic commands:** `\varcmd{`⟨*A*⟩`}{`⟨*B*⟩`}{`⟨*C*⟩`}{`⟨*D*⟩`}{`⟨*E*⟩`}{`⟨*F*⟩`}` ... to do!

```
\newcommand{\varcmd}[6]
  {\expandafter\newcommand\csname gobble#1arg\endcsname[2]
    {\csname check#1arg\endcsname{\argsep{##1}{#4}{\empchk{##2}{{##2}}}}}%
  \expandafter\newcommand\csname check#1arg\endcsname[1]
    {\csname @ifnextchar\endcsname%
      \bgroup{\csname gobble#1arg\endcsname{##1}}{#2{##1#5}#6}}%
  \expandafter\newcommand\csname#1\endcsname[1]
    {\csname check#1arg\endcsname{#3##1}}}
```

```
%%*****************************************************************************%%
```

\seqoftag **Sequence of tags:** \seqoftag{⟨A⟩}{⟨B⟩}{⟨C⟩} ... to do!

```
\newcommand{\seqoftag}[3]
  {\@for\itr:={#1}\do%
    {\expandafter\csedef{\itr#2}%
      {\noexpand\csname #3\endcsname{\itr}}}}
```

\seqofcmd **Sequence of commands:** \seqofcmd{⟨A⟩}{⟨B⟩}{⟨C⟩} ... to do!

```
\newcommand{\seqofcmd}[3]
  {\@for\itr:={#1}\do%
    {\expandafter\csedef{\itr#2}%
      {\noexpand\csname #3\endcsname{\csname \itr\endcsname}}}}
```

```
%%*************************************************************************%%
```

\seqoflatlow **Sequence of Latin lowercase letters:** \seqoflatlow{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqoflatlow}
  {\seqoftag{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}}
```

\seqoflatupp **Sequence of Latin uppercase letters:** \seqoflatupp{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqoflatupp}
  {\seqoftag{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}}
```

\seqoflatlet **Sequence of Latin letters:** \seqoflatlet{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqoflatlet}[2]
  {\seqoflatlow{#1}{#2}\seqoflatupp{#1}{#2}}
```

```
%%*************************************************************************%%
```

\seqofgrklow **Sequence of Greek lowercase letters:** \seqofgrklow{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqofgrklow}
  {\seqofcmd{alpha,beta,gamma,delta,epsilon,varepsilon,zeta,eta,theta,vartheta,%
  iota,kappa,varkappa,lambda,mu,nu,xi,omicron,pi,varpi,rho,varrho,sigma,%
  varsigma,tau,upsilon,phi,varphi,chi,psi,omega}}
```

\seqofgrkupp **Sequence of Greek uppercase letters:** \seqofgrkupp{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqofgrkupp}
  {\seqofcmd{Alpha,Beta,Gamma,Delta,Epsilon,varEpsilon,Zeta,Eta,Theta,varTheta,%
  Iota,Kappa,varKappa,Lambda,Mu,Nu,Xi,Omicron,Pi,varPi,Rho,varRho,Sigma,%
  varSigma,Tau,Upsilon,Phi,varPhi,Chi,Psi,Omega}}
```

\seqofgrklet **Sequence of Greek letters:** \seqofgrklet{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqofgrklet}[2]
  {\seqofgrklow{#1}{#2}\seqofgrkupp{#1}{#2}}
```

```
%%*************************************************************************%%
```

\seqoflow **Sequence of lowercase letters:** \seqoflow{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqoflow}[2]
  {\seqoflatlow{#1}{#2}\seqofgrklow{#1}{#2}}
```

\seqofupp **Sequence of uppercase letters:** \seqofupp{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqofupp}[2]
  {\seqoflatupp{#1}{#2}\seqofgrkupp{#1}{#2}}
```

\seqoflet **Sequence of all letters:** \seqoflet{⟨A⟩}{⟨B⟩} ... to do!

```
\newcommand{\seqoflet}[2]
  {\seqoflow{#1}{#2}\seqofupp{#1}{#2}}
```

```
%%*************************************************************************%%
```

```
%%*************************************************************************%%
%%** Auxiliary Packages ****************************************************%%
%%*************************************************************************%%
\ifaux@

\ifamsdef@
  % AMS Packages
  \RequirePackage{mathtools}
  \RequirePackage{amssymb}
  \RequirePackage{stmaryrd}
  \interdisplaylinepenalty=2500
\fi

\ifamsthm@
  % AMS Theorem Tools
  \RequirePackage{amsthm}
\fi

\ifthmtls@
  % Extended Theorem Tools
  \RequirePackage{thmtools, thm-restate}
\fi

\ifenmtls@
  % Enumeration Tools
  \RequirePackage{paralist}
\fi

\ifhypref@
  % Hyper References
  \RequirePackage{hyperref}
  \hypersetup {
    pdfsubject    = {},
    pdfkeywords   = {},
    pdfproducer   = {},
    pdfcreator    = {},
    pdfpagemode   = {UseNone},
    pdfstartview  = {FitH},
    urlcolor      = {blue},
    colorlinks
  }
\fi

\iffnttls@
  % Font Tools
  \RequirePackage[final]{microtype}
\fi

\ifcrv@
  % Camera-Ready Version

  %%...

\else
  % Draft Version

  %%...

  \ifchgbar@
    % Change Bars
    \RequirePackage{changebar}
  \fi

```

```
  \iflinnum@
    % Line Numbers
    \if@twocolumn
      \RequirePackage[switch, columnwise, mathlines]{lineno}\linenumbers
    \else
      \RequirePackage[columnwise, mathlines]{lineno}\linenumbers
    \fi
  \fi

  %%...

\fi

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Auxiliary Font Declarations ***********************************************%%
%%*****************************************************************************%%
```

\mathbbo **Bbo Math Font:** ... to do!

```
\ifdef{\mathbbo}{}{\DeclareMathAlphabet{\mathbbo}{U}{bbold}{m}{n}}
```

\matheus **Eus Math Font:** ... to do!

```
\ifdef{\matheus}{}{\DeclareMathAlphabet{\matheus}{U}{eus}{m}{n}}
```

\mathpzc **Pzc Math Font:** ... to do!

```
\ifdef{\mathpzc}{}{\DeclareMathAlphabet{\mathpzc}{T1}{pzc}{m}{it}}
```

\mathscr **Scr Math Font:** ... to do!

```
\ifdef{\mathscr}{}{\DeclareMathAlphabet{\mathscr}{U}{rsfs}{m}{n}}
```

```
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Text Meta Commands ********************************************************%%
%%*****************************************************************************%%
```

\newtxt ... to do!

- `\newtxt[\rmfamily]{Name}[sub][sup][Ext]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}\mathrm{Ext}$"
- `\newtxt[\sffamily]{Name}[sub][sup][Ext]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}\mathsf{Ext}$"
- `\newtxt[\ttfamily]{Name}[sub][sup][Ext]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext}$"

```
\newcommandx{\newtxt}[5][1=, 3=, 4=, 5=]
  {\text{#1#2\txtsubsup[#1]{#3}{#4}#5}\xspace}
```

\newtxtsty ... to do!

- `\newtxtsty{\rmfamily}{Name}[sub][sup][Ext]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}\mathrm{Ext}$"
- `\newtxtsty{\rmfamily}[\sffamily]{Name}[sub][sup][Ext]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}\mathsf{Ext}$"
- `\newtxtsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext}$"

```
\newcommandx{\newtxtsty}[2][2=]
  {\newtxt[\defval{#2}{#1}]}
```

\newtxtarg ... to do!

- `\newtxtarg[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}\mathrm{Ext1(Arg)Ext2}$"
- `\newtxtarg[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}\mathsf{Ext1(Arg)Ext2}$"
- `\newtxtarg[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext1(Arg)Ext2}$"

```
\newcommandx{\newtxtarg}[7][1=, 3=, 4=, 5=, 7=]
  {\newtxt[#1]{#2}[#3][#4][\argmid{#5(){#6}{)#7}]}
```

\newtxtargsty ... to do!

- `\newtxtargsty{\rmfamily}{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}\mathrm{Ext1(Arg)Ext2}$"

- `\newtxtargsty{\rmfamily}[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}$Ext1(Arg)Ext2"
- `\newtxtargsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}$Ext1(Arg)Ext2"

```
\newcommandx{\newtxtargsty}[2][2=]
  {\newtxtarg[\defval{#2}{#1}]}
```

`\newtxtoarg` ... to do!

- `\newtxtoarg[\rmfamily]{Name}[sub][sup][Arg]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}$(Arg)"
- `\newtxtoarg[\sffamily]{Name}[sub][sup][Arg]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}$(Arg)"
- `\newtxtoarg[\ttfamily]{Name}[sub][sup][Arg]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}$(Arg)"

```
\newcommandx{\newtxtoarg}[5][1=, 3=, 4=, 5=]
  {\newtxtarg[#1]{#2}[#3][#4][]{#5}[]}
```

`\newtxtoargsty` ... to do!

- `\newtxtoargsty{\rmfamily}{Name}[sub][sup][Arg]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}$(Arg)"
- `\newtxtoargsty{\rmfamily}[\sffamily]{Name}[sub][sup][Arg]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}$(Arg)"
- `\newtxtoargsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Arg]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}$(Arg)"

```
\newcommandx{\newtxtoargsty}[2][2=]
  {\newtxtoarg[\defval{#2}{#1}]}
```

`\newtxtpar` ... to do!

- `\newtxtpar[\rmfamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}$Ext1[Par]Ext2"
- `\newtxtpar[\sffamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}$Ext1[Par]Ext2"
- `\newtxtpar[\ttfamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}$Ext1[Par]Ext2"

```
\newcommandx{\newtxtpar}[7][1=, 3=, 4=, 5=, 7=]
  {\newtxt[#1]{#2}[#3][#4][\argmid{#5[}{#6}{]#7}]}
```

`\newtxtparsty` ... to do!

- `\newtxtparsty{\rmfamily}{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}$Ext1[Par]Ext2"
- `\newtxtparsty{\rmfamily}[\sffamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}$Ext1[Par]Ext2"
- `\newtxtparsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}$Ext1[Par]Ext2"

```
\newcommandx{\newtxtparsty}[2][2=]
  {\newtxtpar[\defval{#2}{#1}]}
```

`\newtxtopar` ... to do!

- `\newtxtopar[\rmfamily]{Name}[sub][sup][Par]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}$[Par]"
- `\newtxtopar[\sffamily]{Name}[sub][sup][Par]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}$[Par]"
- `\newtxtopar[\ttfamily]{Name}[sub][sup][Par]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}$[Par]"

```
\newcommandx{\newtxtopar}[5][1=, 3=, 4=, 5=]
  {\newtxtpar[#1]{#2}[#3][#4][]{#5}[]}
```

`\newtxtoparsty` ... to do!

- `\newtxtoparsty{\rmfamily}{Name}[sub][sup][Par]` = "$\mathrm{Name}_{\mathrm{sub}}^{\mathrm{sup}}$[Par]"
- `\newtxtoparsty{\rmfamily}[\sffamily]{Name}[sub][sup][Par]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}$[Par]"
- `\newtxtoparsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Par]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}$[Par]"

```
\newcommandx{\newtxtoparsty}[2][2=]
  {\newtxtopar[\defval{#2}{#1}]}
```

`\txtsubsup` ... to do!

- `\txtsubsup{sub}{}` = "$_{\mathrm{sub}}$"; `\txtsubsup{}{sup}` = "$^{\mathrm{sup}}$"; `\txtsubsup{sub}{sup}` = "$_{\mathrm{sub}}^{\mathrm{sup}}$"
- `\txtsubsup[\sffamily]{Aa}{Bb}` = "$^{\mathsf{Bb}}_{\mathsf{Aa}}$"
- `\txtsubsup[\ttfamily]{Aa}{Bb}` = "$^{\mathtt{Bb}}_{\mathtt{Aa}}$"

```
\newcommand{\txtsubsup}[3][]
  {\ensuremath{\empchk{#2}{_{\text{#1#2}}}\empchk{#3}{^{\text{#1#3}}}}}
```

```
%%*************************************************************************%%
```

`\txt` ... to do!

- `\txt{Name}[sub][sup][Ext]` = "$\text{Name}_{\text{sub}}^{\text{sup}}\text{Ext}$"
- `\txt[\scshape]{Name}[sub][sup][Ext]` = "$\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext}$"
- `\txt[\bfseries]{Name}[sub][sup][Ext]` = "$\mathbf{Name}_{\mathbf{sub}}^{\mathbf{sup}}\mathbf{Ext}$"

```
\newcommand{\txt}
  {\newtxtsty{\txtsty}}
```

`\txtarg` ... to do!

- `\txtarg{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1(Arg)Ext2}$"
- `\txtarg[\scshape]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext1(Arg)Ext2}$"
- `\txtarg[\bfseries]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathbf{Name}_{\mathbf{sub}}^{\mathbf{sup}}\mathbf{Ext1(Arg)Ext2}$"

```
\newcommand{\txtarg}
  {\newtxtargsty{\txtsty}}
```

`\txtoarg` ... to do!

- `\txtoarg{Name}[sub][sup][Arg]` = "$\text{Name}_{\text{sub}}^{\text{sup}}\text{(Arg)}$"
- `\txtoarg[\scshape]{Name}[sub][sup][Arg]` = "$\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{(Arg)}$"
- `\txtoarg[\bfseries]{Name}[sub][sup][Arg]` = "$\mathbf{Name}_{\mathbf{sub}}^{\mathbf{sup}}\mathbf{(Arg)}$"

```
\newcommand{\txtoarg}
  {\newtxtoargsty{\txtsty}}
```

`\txtpar` ... to do!

- `\txtpar{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1[Par]Ext2}$"
- `\txtpar[\scshape]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext1[Par]Ext2}$"
- `\txtpar[\bfseries]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathbf{Name}_{\mathbf{sub}}^{\mathbf{sup}}\mathbf{Ext1[Par]Ext2}$"

```
\newcommand{\txtpar}
  {\newtxtparsty{\txtsty}}
```

`\txtopar` ... to do!

- `\txtopar{Name}[sub][sup][Par]` = "$\text{Name}_{\text{sub}}^{\text{sup}}\text{[Par]}$"
- `\txtopar[\scshape]{Name}[sub][sup][Par]` = "$\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{[Par]}$"
- `\txtopar[\bfseries]{Name}[sub][sup][Par]` = "$\mathbf{Name}_{\mathbf{sub}}^{\mathbf{sup}}\mathbf{[Par]}$"

```
\newcommand{\txtopar}
  {\newtxtoparsty{\txtsty}}
```

`\txtsty` ... to do!

```
\newcommand{\txtsty}
  {\mdseries\upshape\rmfamily}
```

```
%%*************************************************************************%%
```

`\cmdtxt` ... to do!

- `\cmdtxt{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`; `\txtNewCmd{Name}[sub][sup][Ext]` = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext}$

```
\newcommand{\cmdtxt}[1]
  {\csdef{txt#1}{\newtxtsty{\csname txtsty#1\endcsname}}}
```

`\cmdtxtarg` ... to do!

- `\cmdtxtarg{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`; `\txtargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext1(Arg)Ext2}$

```
\newcommand{\cmdtxtarg}[1]
  {\csdef{txtarg#1}{\newtxtargsty{\csname txtsty#1\endcsname}}}
```

`\cmdtxtoarg` ... to do!

- `\cmdtxtoarg{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`; `\txtoargNewCmd{Name}[sub][sup][Arg]` = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{(Arg)}$

```
\newcommand{\cmdtxtoarg}[1]
  {\csdef{txtoarg#1}{\newtxtoargsty{\csname txtsty#1\endcsname}}}
```

`\cmdtxtpar` ... to do!

- `\cmdtxtpar{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`;
  `\txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2]` = NAME$^{\text{SUP}}_{\text{SUB}}$EXT1[PAR]EXT2

```
\newcommand{\cmdtxtpar}[1]
  {\csdef{txtpar#1}{\newtxtparsty{\csname txtsty#1\endcsname}}}
```

`\cmdtxtopar` ... to do!

- `\cmdtxtopar{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`;
  `\txtoparNewCmd{Name}[sub][sup][Par]` = NAME$^{\text{SUP}}_{\text{SUB}}$[PAR]

```
\newcommand{\cmdtxtopar}[1]
  {\csdef{txtopar#1}{\newtxtoparsty{\csname txtsty#1\endcsname}}}
```

`\cmdtxtall` ... to do!

- `\cmdtxtall{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`;
  `\txtNewCmd{Name}[sub][sup][Ext]` = NAME$^{\text{SUP}}_{\text{SUB}}$EXT
  `\txtargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2]` = NAME$^{\text{SUP}}_{\text{SUB}}$EXT1(ARG)EXT2
  `\txtoargNewCmd{Name}[sub][sup][Arg]` = NAME$^{\text{SUP}}_{\text{SUB}}$(ARG)
  `\txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2]` = NAME$^{\text{SUP}}_{\text{SUB}}$EXT1[PAR]EXT2
  `\txtoparNewCmd{Name}[sub][sup][Par]` = NAME$^{\text{SUP}}_{\text{SUB}}$[PAR]

```
\newcommand{\cmdtxtall}[1]
  {\cmdtxt{#1}\cmdtxtarg{#1}\cmdtxtoarg{#1}\cmdtxtpar{#1}\cmdtxtopar{#1}}

%%*****************************************************************************%%
```

`\usrtxt` ... to do!

- `\usrtxt{cmdName}{Suf}{}`; `\cmdNameSuf` = cmdName
  `\usrtxt{cmdName}{Suf}{arg}`; `\cmdNameSuf{Arg}` = cmdName(Arg)
  `\usrtxt{cmdName}{Suf}{par}`; `\cmdNameSuf{Par}` = cmdName[Par]
- `\usrtxt{cmdName}{Suf}{}[newName]`; `\cmdNameSuf` = newName
  `\usrtxt{cmdName}{Suf}{arg}[newName]`; `\cmdNameSuf{Arg}` = newName(Arg)
  `\usrtxt{cmdName}{Suf}{par}[newName]`; `\cmdNameSuf{Par}` = newName[Par]

```
\newcommandx{\usrtxt}[4][4=]
  {\csdef{#1#2}{\csname txt#3\endcsname{\defval{#4}{#1}}}}

%%*****************************************************************************%%

%%*****************************************************************************%%
%%** Math Meta Commands *******************************************************%%
%%*****************************************************************************%%
```

`\newmth` ... to do!

- `\newmth[mathrm]{Name}[sub][sup][Ext]` = "$\text{Name}^{sup}_{sub}Ext$"
- `\newmth[mathsf]{Name}[sub][sup][Ext]` = "$\mathsf{Name}^{sup}_{sub}Ext$"
- `\newmth[mathtt]{Name}[sub][sup][Ext]` = "$\mathtt{Name}^{sup}_{sub}Ext$"

```
\newcommandx{\newmth}[5][1=, 3=, 4=, 5=]
  {\ensuremath{\csname#1\endcsname{#2}\mthsubsup{#3}{#4}#5}}
```

`\newmthsty` ... to do!

- `\newmthsty{mathrm}{Name}[sub][sup][Ext]` = "$\text{Name}^{sup}_{sub}Ext$"
- `\newmthsty{mathrm}[mathsf]{Name}[sub][sup][Ext]` = "$\mathsf{Name}^{sup}_{sub}Ext$"
- `\newmthsty{mathrm}[mathtt]{Name}[sub][sup][Ext]` = "$\mathtt{Name}^{sup}_{sub}Ext$"

```
\newcommandx{\newmthsty}[2][2=]
  {\newmth[\defval{#2}{#1}]}
```

`\newmtharg` ... to do!

- `\newmtharg[mathrm]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\text{Name}^{sup}_{sub}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$"

- `\newmtharg[mathsf]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\newmtharg[mathtt]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\newmtharg*[mathrm]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathrm{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"
- `\newmtharg*[mathsf]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"
- `\newmtharg*[mathtt]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"

```
\newcommand{\newmtharg}
  {\@ifstar{\@snewmtharg}{\@newmtharg}}
\newcommandx{\@newmtharg}[7][1=, 3=, 4=, 5=, 7=]
  {\newmth[#1]{#2}[#3][#4][\argmid{#5\!\left(}{#6}{\right)\arglef{\!}{#7}}]}
\newcommandx{\@snewmtharg}[7][1=, 3=, 4=, 5=, 7=]
  {\newmth[#1]{#2}[#3][#4][\argmid{#5(}{#6}{)#7}]}
```

`\newmthargsty` ... to do!

- `\newmthargsty{mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathrm{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\newmthargsty{mathrm}[mathsf]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\newmthargsty{mathrm}[mathtt]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\newmthargsty*{mathrm}{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathrm{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"
- `\newmthargsty*{mathrm}[mathsf]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"
- `\newmthargsty*{mathrm}[mathtt]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"

```
\newcommand{\newmthargsty}
  {\@ifstar{\@snewmthargsty}{\@newmthargsty}}
\newcommandx{\@newmthargsty}[2][2=]
  {\newmtharg[\defval{#2}{#1}]}
\newcommandx{\@snewmthargsty}[2][2=]
  {\newmtharg*[\defval{#2}{#1}]}
```

`\newmthoarg` ... to do!

- `\newmthoarg[mathrm]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\newmthoarg[mathsf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\newmthoarg[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\newmthoarg*[mathrm]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"
- `\newmthoarg*[mathsf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"
- `\newmthoarg*[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"

```
\newcommand{\newmthoarg}
  {\@ifstar{\@snewmthoarg}{\@newmthoarg}}
\newcommandx{\@newmthoarg}[5][1=, 3=, 4=, 5=]
  {\newmtharg[#1]{#2}[#3][#4][]{#5}[]}
\newcommandx{\@snewmthoarg}[5][1=, 3=, 4=, 5=]
  {\newmtharg*[#1]{#2}[#3][#4][]{#5}[]}
```

`\newmthoargsty` ... to do!

- `\newmthoargsty{mathrm}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\newmthoargsty{mathrm}[mathsf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\newmthoargsty{mathrm}[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\newmthoargsty*{mathrm}{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"
- `\newmthoargsty*{mathrm}[mathsf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"
- `\newmthoargsty*{mathrm}[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"

```
\newcommand{\newmthoargsty}
  {\@ifstar{\@snewmthoargsty}{\@newmthoargsty}}
\newcommandx{\@newmthoargsty}[2][2=]
  {\newmthoarg[\defval{#2}{#1}]}
\newcommandx{\@snewmthoargsty}[2][2=]
  {\newmthoarg*[\defval{#2}{#1}]}
```

`\newmthpar` ... to do!

- `\newmthpar[mathrm]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathrm{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\newmthpar[mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\newmthpar[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\newmthpar*[mathrm]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathrm{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"
- `\newmthpar*[mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"
- `\newmthpar*[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"

```
\newcommand{\newmthpar}
  {\@ifstar{\@snewmthpar}{\@newmthpar}}
\newcommandx{\@newmthpar}[7][1=, 3=, 4=, 5=, 7=]
  {\newmth[#1]{#2}[#3][#4][\argmid{#5\!\left[}{#6}{\right]\arglef{\!}{#7}}]}
\newcommandx{\@snewmthpar}[7][1=, 3=, 4=, 5=, 7=]
  {\newmth[#1]{#2}[#3][#4][\argmid{#5[}{#6}{]#7}]}
```

`\newmthparsty` ... to do!

- `\newmthparsty{mathrm}{Name}[sub][sup] [Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathrm{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\newmthparsty{mathrm}[mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\newmthparsty{mathrm}[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\newmthparsty*{mathrm}{Name}[sub][sup] [Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathrm{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"
- `\newmthparsty*{mathrm}[mathsf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathsf{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"
- `\newmthparsty*{mathrm}[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"

```
\newcommand{\newmthparsty}
  {\@ifstar{\@snewmthparsty}{\@newmthparsty}}
\newcommandx{\@newmthparsty}[2][2=]
  {\newmthpar[\defval{#2}{#1}]}
\newcommandx{\@snewmthparsty}[2][2=]
  {\newmthpar*[\defval{#2}{#1}]}
```

`\newmthopar` ... to do!

- `\newmthopar[mathrm]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\newmthopar[mathsf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\newmthopar[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\newmthopar*[mathrm]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"
- `\newmthopar*[mathsf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"
- `\newmthopar*[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"

```
\newcommand{\newmthopar}
  {\@ifstar{\@snewmthopar}{\@newmthopar}}
\newcommandx{\@newmthopar}[5][1=, 3=, 4=, 5=]
  {\newmthpar[#1]{#2}[#3][#4][]{#5}[]}
\newcommandx{\@snewmthopar}[5][1=, 3=, 4=, 5=]
  {\newmthpar*[#1]{#2}[#3][#4][]{#5}[]}
```

`\newmthoparsty` ... to do!

- `\newmthoparsty{mathrm}{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$"
- `\newmthoparsty{mathrm}[mathsf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$"
- `\newmthoparsty{mathrm}[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$"
- `\newmthoparsty*{mathrm}{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathrm{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"
- `\newmthoparsty*{mathrm}[mathsf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"
- `\newmthoparsty*{mathrm}[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"

```
\newcommand{\newmthoparsty}
  {\@ifstar{\@snewmthoparsty}{\@newmthoparsty}}
\newcommandx{\@newmthoparsty}[2][2=]
  {\newmthopar[\defval{#2}{#1}]}
\newcommandx{\@snewmthoparsty}[2][2=]
  {\newmthopar*[\defval{#2}{#1}]}
```

`\mthsubsup` ... to do!

```
\newcommand{\mthsubsup}[2]
  {\empchk{#1}{_{#1}}\empchk{#2}{^{#2}}}
```

```
%%*************************************************************************%%
```

`\mth` ... to do!

- `\mth{Name}[sub][sup][Ext]` = "$Name_{sub}^{sup}Ext$"
- `\mth[mathbf]{Name}[sub][sup][Ext]` = "$\mathbf{Name}_{sub}^{sup}Ext$"
- `\mth[mathtt]{Name}[sub][sup][Ext]` = "$\mathtt{Name}_{sub}^{sup}Ext$"

```
\newcommand{\mth}
  {\newmthsty{\mthsty}}
```

`\mtharg` ... to do!

- `\mtharg{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$Name_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\mtharg[mathbf]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathbf{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\mtharg[mathtt]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$"
- `\mtharg*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$Name_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"
- `\mtharg*[mathbf]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathbf{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"
- `\mtharg*[mathtt]{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$"

```
\newcommand{\mtharg}
  {\@ifstar{\newmthargsty*{\mthsty}}{\newmthargsty{\mthsty}}}
```

`\mthoarg` ... to do!

- `\mthoarg{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$Name_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\mthoarg[mathbf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathbf{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\mthoarg[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$"
- `\mthoarg*{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$Name_{sub}^{sup}(Arg^{Ex^{Ex}})$"
- `\mthoarg*[mathbf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathbf{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"
- `\mthoarg*[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$"

```
\newcommand{\mthoarg}
  {\@ifstar{\newmthoargsty*{\mthsty}}{\newmthoargsty{\mthsty}}}
```

`\mthpar` ... to do!

- `\mthpar{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$Name_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$"

- `\mthpar[mathbf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathbf{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\mthpar[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$"
- `\mthpar*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$Name_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"
- `\mthpar*[mathbf]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathbf{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"
- `\mthpar*[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$"

```
\newcommand{\mthpar}
  {\@ifstar{\newmthparsty*{\mthsty}}{\newmthparsty{\mthsty}}}
```

`\mthopar` ... to do!

- `\mthopar{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$Name_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\mthopar[mathbf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathbf{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\mthopar[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\mthopar*{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$Name_{sub}^{sup}[Par^{Ex^{Ex}}]$"
- `\mthopar*[mathbf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathbf{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"
- `\mthopar*[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$"

```
\newcommand{\mthopar}
  {\@ifstar{\newmthoparsty*{\mthsty}}{\newmthoparsty{\mthsty}}}
```

`\mthsty` ... to do!

```
\newcommand{\mthsty}
  {}
```

```
%%*************************************************************************%%
```

`\cmdmth` ... to do!

- `\cmdmth{NewCmd}`; `\newcommand{mthstyNewCmd}{\mathtt}`;
  `\mthNewCmd{Name}[sub][sup][Ext]` = $\mathtt{Name}_{sub}^{sup}Ext$

```
\newcommand{\cmdmth}[1]
  {\csdef{mth#1}{\newmthsty{mthsty#1}}}
```

`\cmdmtharg` ... to do!

- `\cmdmtharg{NewCmd}`; `\newcommand{mthstyNewCmd}{\mathtt}`;
  `\mthargNewCmd{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathtt{Name}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
  `\mthargNewCmd*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathtt{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$

```
\newcommand{\cmdmtharg}[1]
  {\csdef{mtharg#1}%
    {\@ifstar{\newmthargsty*{mthsty#1}}{\newmthargsty{mthsty#1}}}}
```

`\cmdmthoarg` ... to do!

- `\cmdmthoarg{NewCmd}`; `\newcommand{mthstyNewCmd}{\mathtt}`;
  `\mthoargNewCmd{Name}[sub][sup][Arg^{Ex^{Ex}}]` = $\mathtt{Name}_{sub}^{sup}\left(Arg^{Ex^{Ex}}\right)$
  `\mthoargNewCmd*{Name}[sub][sup][Arg^{Ex^{Ex}}]` = $\mathtt{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$

```
\newcommand{\cmdmthoarg}[1]
  {\csdef{mthoarg#1}%
    {\@ifstar{\newmthoargsty*{mthsty#1}}{\newmthoargsty{mthsty#1}}}}
```

`\cmdmthpar` ... to do!

- `\cmdmthpar{NewCmd}`; `\newcommand{mthstyNewCmd}{\mathtt}`;
  `\mthparNewCmd{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathtt{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
  `\mthparNewCmd*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathtt{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
\newcommand{\cmdmthpar}[1]
  {\csdef{mthpar#1}%
    {\@ifstar{\newmthparsty*{mthsty#1}}{\newmthparsty{mthsty#1}}}}
```

\cmdmthopar ... to do!

- \cmdmthopar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
  \mthoparNewCmd{Name}[sub][sup][Par^{Ex^{Ex}}] = $\texttt{Name}_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$
  \mthoparNewCmd*{Name}[sub][sup][Par^{Ex^{Ex}}] = $\texttt{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$

```
\newcommand{\cmdmthopar}[1]
  {\csdef{mthopar#1}%
    {\@ifstar{\newmthoparsty*{mthsty#1}}{\newmthoparsty{mthsty#1}}}}
```

\cmdmthall ... to do!

- \cmdmthall{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
  \mthNewCmd{Name}[sub][sup][Ext] = $\texttt{Name}_{sub}^{sup}Ext$
  \mthargNewCmd{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$
  \mthargNewCmd*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
  \mthoargNewCmd{Name}[sub][sup][Arg^{Ex^{Ex}}] = $\texttt{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$
  \mthoargNewCmd*{Name}[sub][sup][Arg^{Ex^{Ex}}] = $\texttt{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$
  \mthparNewCmd{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
  \mthparNewCmd*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$
  \mthoparNewCmd{Name}[sub][sup][Par^{Ex^{Ex}}] = $\texttt{Name}_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$
  \mthoparNewCmd*{Name}[sub][sup][Par^{Ex^{Ex}}] = $\texttt{Name}_{sub}^{sup}[Par^{Ex^{Ex}}]$

```
\newcommand{\cmdmthall}[1]
  {\cmdmth{#1}\cmdmtharg{#1}\cmdmthoarg{#1}\cmdmthpar{#1}\cmdmthopar{#1}}

%%*************************************************************************%%
```

\usrmth ... to do!

- \usrmth{cmdName}{Suf}{}; \cmdNameSuf = $cmdName$
  \usrmth{cmdName}{Suf}{arg};
  \cmdNameSuf{Arg^{Ex^{Ex}}} = $cmdName\Big(Arg^{Ex^{Ex}}\Big)$
  \cmdNameSuf*{Arg^{Ex^{Ex}}} = $cmdName(Arg^{Ex^{Ex}})$
  \usrmth{cmdName}{Suf}{par};
  \cmdNameSuf{Par^{Ex^{Ex}}} = $cmdName\Big[Par^{Ex^{Ex}}\Big]$
  \cmdNameSuf*{Par^{Ex^{Ex}}} = $cmdName[Par^{Ex^{Ex}}]$
- \usrmth{cmdName}{Suf}{}[newName]; \cmdNameSuf = $newName$
  \usrmth{cmdName}{Suf}{arg}[newName];
  \cmdNameSuf{Arg^{Ex^{Ex}}} = $newName\Big(Arg^{Ex^{Ex}}\Big)$
  \cmdNameSuf*{Arg^{Ex^{Ex}}} = $newName(Arg^{Ex^{Ex}})$
  \usrmth{cmdName}{Suf}{par}[newName];
  \cmdNameSuf{Par^{Ex^{Ex}}} = $newName\Big[Par^{Ex^{Ex}}\Big]$
  \cmdNameSuf*{Par^{Ex^{Ex}}} = $newName[Par^{Ex^{Ex}}]$

```
\newcommandx{\usrmth}[4][4=]
  {\csdef{#1#2}{%
    \@ifstar%
      {\csname mth#3\endcsname*{\defval{#4}{#1}}}%
      {\csname mth#3\endcsname{\defval{#4}{#1}}}%
  }}

%%*************************************************************************%%
```

\usrmthlatlow ... to do!

```
\newcommandx{\usrmthlatlow}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqoflatlow{#1#2}{mth#3}}
```

\usrmthlatupp ... to do!

```
\newcommandx{\usrmthlatupp}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqoflatupp{#1#2}{mth#3}}
```

\usrmthlatlet ... to do!

```
\newcommandx{\usrmthlatlet}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqoflatlet{#1#2}{mth#3}}
```

\usrmthgrklow ... to do!

```
\newcommandx{\usrmthgrklow}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqofgrklow{#1#2}{mth#3}}
```

\usrmthgrkupp ... to do!

```
\newcommandx{\usrmthgrkupp}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqofgrkupp{#1#2}{mth#3}}
```

\usrmthgrklet ... to do!

```
\newcommandx{\usrmthgrklet}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqofgrklet{#1#2}{mth#3}}
```

\usrmthlow ... to do!

```
\newcommandx{\usrmthlow}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqoflow{#1#2}{mth#3}}
```

\usrmthupp ... to do!

```
\newcommandx{\usrmthupp}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqofupp{#1#2}{mth#3}}
```

\usrmthlet ... to do!

```
\newcommandx{\usrmthlet}[4][4=]
  {\usrmth{#1}{#2}{#3}[#4]\seqoflet{#1#2}{mth#3}}
```

```
%%*************************************************************************%%
%%*************************************************************************%%
%%** Text Macro Generators ************************************************%%
%%*************************************************************************%%
\iftxtgen@
```

\txtdef, ... to do!

- \txtdef{Name}[sub][sup][Ext] = $Name_{sub}^{sup}Ext$
- \txtargdef{Name}[sub][sup][Ext1]{Arg}[Ext2] = $Name_{sub}^{sup}Ext1(Arg)Ext2$
- \txtpardef{Name}[sub][sup][Ext1]{Par}[Ext2] = $Name_{sub}^{sup}Ext1[Par]Ext2$

```
%% Style for Definitions
\cmdtxtall{def}\newcommand{\txtstydef}{\normalfont\bfseries\em}
```

\cmdtxtdef ... to do!

- \cmdtxtdef{cmdName};
  \cmdName[sub][sub][ext] = $cmdName_{sub}^{sub}ext$
- \cmdtxtdef{cmdName}[newName];
  \cmdName[sub][sub][ext] = $newName_{sub}^{sub}ext$

```
\newcommandx{\cmdtxtdef}[2][2=]
  {\usrtxt{#1}{}{def}[#2]}
```

\cmdtxtargdef ... to do!

- \cmdtxtargdef{cmdName};
  \cmdName[sub][sub][ext1]{arg}[ext2] = $cmdName_{sub}^{sub}ext1(arg)ext2$
- \cmdtxtargdef{cmdName}[newName];
  \cmdName[sub][sub][ext1]{arg}[ext2] = $newName_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdtxtargdef}[2][2=]
  {\usrtxt{#1}{}{argdef}[#2]}
```

`\cmdtxtoargdef` ... to do!

- `\cmdtxtoargdef{cmdName}`;
  `\cmdName[sub][sub][arg]` = $\boldsymbol{cmdName^{sub}_{sub}(arg)}$
- `\cmdtxtoargdef{cmdName}[newName]`;
  `\cmdName[sub][sub][arg]` = $\boldsymbol{newName^{sub}_{sub}(arg)}$

```
\newcommandx{\cmdtxtoargdef}[2][2=]
  {\usrtxt{#1}{}{oargdef}[#2]}
```

`\cmdtxtpardef` ... to do!

- `\cmdtxtpardef{cmdName}`;
  `\cmdName[sub][sub][ext1]{par}[ext2]` = $\boldsymbol{cmdName^{sub}_{sub}ext1[par]ext2}$
- `\cmdtxtpardef{cmdName}[newName]`;
  `\cmdName[sub][sub][ext1]{par}[ext2]` = $\boldsymbol{newName^{sub}_{sub}ext1[par]ext2}$

```
\newcommandx{\cmdtxtpardef}[2][2=]
  {\usrtxt{#1}{}{pardef}[#2]}
```

`\cmdtxtopardef` ... to do!

- `\cmdtxtopardef{cmdName}`;
  `\cmdName[sub][sub][par]` = $\boldsymbol{cmdName^{sub}_{sub}[par]}$
- `\cmdtxtopardef{cmdName}[newName]`;
  `\cmdName[sub][sub][par]` = $\boldsymbol{newName^{sub}_{sub}[par]}$

```
\newcommandx{\cmdtxtopardef}[2][2=]
  {\usrtxt{#1}{}{opardef}[#2]}
```

`\txtabr, ...` ... to do!

- `\txtabr{Name}[sub][sup][Ext]` = $Name^{\text{sup}}_{\text{sub}}Ext$
- `\txtargabr{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $Name^{\text{sup}}_{\text{sub}}Ext1(Arg)Ext2$
- `\txtparabr{Name}[sub][sup][Ext1]{Par}[Ext2]` = $Name^{\text{sup}}_{\text{sub}}Ext1[Par]Ext2$

```
%% Style for Abbreviations
\cmdtxtall{abr}\newcommand{\txtstyabr}{\em}
```

`\cmdtxtabr` ... to do!

- `\cmdtxtabr{cmdName}`;
  `\cmdName[sub][sub][ext]` = $cmdName^{\text{sub}}_{\text{sub}}ext$
- `\cmdtxtabr{cmdName}[newName]`;
  `\cmdName[sub][sub][ext]` = $newName^{\text{sub}}_{\text{sub}}ext$

```
\newcommandx{\cmdtxtabr}[2][2=]
  {\usrtxt{#1}{}{abr}[#2]}
```

`\cmdtxtargabr` ... to do!

- `\cmdtxtargabr{cmdName}`;
  `\cmdName[sub][sub][ext1]{arg}[ext2]` = $cmdName^{\text{sub}}_{\text{sub}}ext1(arg)ext2$
- `\cmdtxtargabr{cmdName}[newName]`;
  `\cmdName[sub][sub][ext1]{arg}[ext2]` = $newName^{\text{sub}}_{\text{sub}}ext1(arg)ext2$

```
\newcommandx{\cmdtxtargabr}[2][2=]
  {\usrtxt{#1}{}{argabr}[#2]}
```

`\cmdtxtoargabr` ... to do!

- `\cmdtxtoargabr{cmdName}`;
  `\cmdName[sub][sub][arg]` = $cmdName^{\text{sub}}_{\text{sub}}(arg)$
- `\cmdtxtoargabr{cmdName}[newName]`;
  `\cmdName[sub][sub][arg]` = $newName^{\text{sub}}_{\text{sub}}(arg)$

```
\newcommandx{\cmdtxtoargabr}[2][2=]
  {\usrtxt{#1}{}{oargabr}[#2]}
```

\cmdtxtparabr ... to do!

- \cmdtxtparabr{cmdName};
  \cmdName[sub][sub][ext1]{par}[ext2] = $cmdName^{sub}_{sub}ext1[par]ext2$
- \cmdtxtparabr{cmdName}[newName];
  \cmdName[sub][sub][ext1]{par}[ext2] = $newName^{sub}_{sub}ext1[par]ext2$

```
\newcommandx{\cmdtxtparabr}[2][2=]
  {\usrtxt{#1}{}{parabr}[#2]}
```

\cmdtxtoparabr ... to do!

- \cmdtxtoparabr{cmdName};
  \cmdName[sub][sub][par] = $cmdName^{sub}_{sub}[par]$
- \cmdtxtoparabr{cmdName}[newName];
  \cmdName[sub][sub][par] = $newName^{sub}_{sub}[par]$

```
\newcommandx{\cmdtxtoparabr}[2][2=]
  {\usrtxt{#1}{}{oparabr}[#2]}
```

```
%%*************************************************************************%%
```

\txtname, ... to do!

- \txtname{Name}[sub][sup][Ext] = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext}$
- \txtargname{Name}[sub][sup][Ext1]{Arg}[Ext2] = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext1}(\textsc{Arg})\textsc{Ext2}$
- \txtparname{Name}[sub][sup][Ext1]{Par}[Ext2] = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext1}[\textsc{Par}]\textsc{Ext2}$

```
%% Style for Names
\cmdtxtall{name}\newcommand{\txtstyname}{\normalfont\mdseries\scshape\sffamily}
```

\cmdtxtname ... to do!

- \cmdtxtname{cmdName};
  \cmdName[sub][sub][ext] = $\textsc{cmdName}^{\textsc{sub}}_{\textsc{sub}}\textsc{ext}$
- \cmdtxtname{cmdName}[newName];
  \cmdName[sub][sub][ext] = $\textsc{newName}^{\textsc{sub}}_{\textsc{sub}}\textsc{ext}$

```
\newcommandx{\cmdtxtname}[2][2=]
  {\usrtxt{#1}{}{name}[#2]}
```

\cmdtxtargname ... to do!

- \cmdtxtargname{cmdName};
  \cmdName[sub][sub][ext1]{arg}[ext2] = $\textsc{cmdName}^{\textsc{sub}}_{\textsc{sub}}\textsc{ext1}(\textsc{arg})\textsc{ext2}$
- \cmdtxtargname{cmdName}[newName];
  \cmdName[sub][sub][ext1]{arg}[ext2] = $\textsc{newName}^{\textsc{sub}}_{\textsc{sub}}\textsc{ext1}(\textsc{arg})\textsc{ext2}$

```
\newcommandx{\cmdtxtargname}[2][2=]
  {\usrtxt{#1}{}{argname}[#2]}
```

\cmdtxtoargname ... to do!

- \cmdtxtoargname{cmdName};
  \cmdName[sub][sub][arg] = $\textsc{cmdName}^{\textsc{sub}}_{\textsc{sub}}(\textsc{arg})$
- \cmdtxtoargname{cmdName}[newName];
  \cmdName[sub][sub][arg] = $\textsc{newName}^{\textsc{sub}}_{\textsc{sub}}(\textsc{arg})$

```
\newcommandx{\cmdtxtoargname}[2][2=]
  {\usrtxt{#1}{}{oargname}[#2]}
```

\cmdtxtparname ... to do!

- \cmdtxtparname{cmdName};
  \cmdName[sub][sub][ext1]{par}[ext2] = $\textsc{cmdName}^{\textsc{sub}}_{\textsc{sub}}\textsc{ext1}[\textsc{par}]\textsc{ext2}$
- \cmdtxtparname{cmdName}[newName];
  \cmdName[sub][sub][ext1]{par}[ext2] = $\textsc{newName}^{\textsc{sub}}_{\textsc{sub}}\textsc{ext1}[\textsc{par}]\textsc{ext2}$

```
\newcommandx{\cmdtxtparname}[2][2=]
  {\usrtxt{#1}{}{parname}[#2]}
```

\cmdtxtoparname ... to do!

- \cmdtxtoparname{cmdName};
  \cmdName[sub][sub][par] = CMDNAME$_{SUB}^{SUB}$[PAR]
- \cmdtxtoparname{cmdName}[newName];
  \cmdName[sub][sub][par] = NEWNAME$_{SUB}^{SUB}$[PAR]

```
\newcommandx{\cmdtxtoparname}[2][2=]
  {\usrtxt{#1}{}{oparname}[#2]}
```

\txtcom, ... to do!

- \txtcom{Name}[sub][sup][Ext] = NAME$_{SUB}^{SUP}$EXT
- \txtargcom{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAME$_{SUB}^{SUP}$EXT1(ARG)EXT2
- \txtparcom{Name}[sub][sup][Ext1]{Par}[Ext2] = NAME$_{SUB}^{SUP}$EXT1[PAR]EXT2

```
%% Style for Complexities
\cmdtxtall{com}\newcommand{\txtstycom}{\normalfont\mdseries\scshape\rmfamily}
```

\cmdtxtcom ... to do!

- \cmdtxtcom{cmdName};
  \cmdName[sub][sub][ext] = CMDNAME$_{SUB}^{SUB}$EXT
- \cmdtxtcom{cmdName}[newName];
  \cmdName[sub][sub][ext] = NEWNAME$_{SUB}^{SUB}$EXT

```
\newcommandx{\cmdtxtcom}[2][2=]
  {\usrtxt{#1}{}{com}[#2]}
```

\cmdtxtargcom ... to do!

- \cmdtxtargcom{cmdName};
  \cmdName[sub][sub][ext1]{arg}[ext2] = CMDNAME$_{SUB}^{SUB}$EXT1(ARG)EXT2
- \cmdtxtargcom{cmdName}[newName];
  \cmdName[sub][sub][ext1]{arg}[ext2] = NEWNAME$_{SUB}^{SUB}$EXT1(ARG)EXT2

```
\newcommandx{\cmdtxtargcom}[2][2=]
  {\usrtxt{#1}{}{argcom}[#2]}
```

\cmdtxtoargcom ... to do!

- \cmdtxtoargcom{cmdName};
  \cmdName[sub][sub][arg] = CMDNAME$_{SUB}^{SUB}$(ARG)
- \cmdtxtoargcom{cmdName}[newName];
  \cmdName[sub][sub][arg] = NEWNAME$_{SUB}^{SUB}$(ARG)

```
\newcommandx{\cmdtxtoargcom}[2][2=]
  {\usrtxt{#1}{}{oargcom}[#2]}
```

\cmdtxtparcom ... to do!

- \cmdtxtparcom{cmdName};
  \cmdName[sub][sub][ext1]{par}[ext2] = CMDNAME$_{SUB}^{SUB}$EXT1[PAR]EXT2
- \cmdtxtparcom{cmdName}[newName];
  \cmdName[sub][sub][ext1]{par}[ext2] = NEWNAME$_{SUB}^{SUB}$EXT1[PAR]EXT2

```
\newcommandx{\cmdtxtparcom}[2][2=]
  {\usrtxt{#1}{}{parcom}[#2]}
```

\cmdtxtoparcom ... to do!

- \cmdtxtoparcom{cmdName};
  \cmdName[sub][sub][par] = CMDNAME$_{SUB}^{SUB}$[PAR]
- \cmdtxtoparcom{cmdName}[newName];
  \cmdName[sub][sub][par] = NEWNAME$_{SUB}^{SUB}$[PAR]

```
\newcommandx{\cmdtxtoparcom}[2][2=]
  {\usrtxt{#1}{}{oparcom}[#2]}

\fi
%%*************************************************************************%%
```

```
%%*****************************************************************************%%
%%** Math Macro Generators *****************************************************%%
%%*****************************************************************************%%
\ifmthgen@
```

`\mthname, ...` ... to do!

- `\mthname{NAME}[sub][sup][Ext]` = $\mathcal{NAME}_{sub}^{sup}Ext$
- `\mthargname{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargname*{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparname{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparname*{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Names
\cmdmthall{name}\newcommand{\mthstyname}{\mathcal}
```

`\AName, ...` ... to do!
$\mathcal{A}$, $\mathcal{B}$, $\mathcal{C}$, $\mathcal{D}$, $\mathcal{E}$, $\mathcal{F}$, $\mathcal{G}$, $\mathcal{H}$, $\mathcal{I}$, $\mathcal{J}$, $\mathcal{K}$, $\mathcal{L}$, $\mathcal{M}$, $\mathcal{N}$, $\mathcal{O}$, $\mathcal{P}$, $\mathcal{Q}$, $\mathcal{R}$, $\mathcal{S}$, $\mathcal{T}$, $\mathcal{U}$, $\mathcal{V}$, $\mathcal{W}$, $\mathcal{X}$, $\mathcal{Y}$, $\mathcal{Z}$

```
\seqoflatupp{Name}{mthname}
```

`\cmdmthname` ... to do!

- `\cmdmthname{CMDNAME}`;
  `\CMDNAMEName[sub][sub][ext]` = $\mathcal{CMDNAME}_{sub}^{sub}ext$
- `\cmdmthname{cmdName}[NEWNAME]`;
  `\cmdNameName[sub][sub][ext]` = $\mathcal{NEWNAME}_{sub}^{sub}ext$

```
\newcommandx{\cmdmthname}[2][2=]
  {\usrmth{#1}{Name}{name}[#2]}
```

`\cmdmthargname` ... to do!

- `\cmdmthargname{CMDNAME}`;
  `\CMDNAMEName[sub][sub][ext1]{arg}[ext2]` = $\mathcal{CMDNAME}_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargname{cmdName}[NEWNAME]`;
  `\cmdNameName[sub][sub][ext1]{arg}[ext2]` = $\mathcal{NEWNAME}_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargname}[2][2=]
  {\usrmth{#1}{Name}{argname}[#2]}
```

`\cmdmthoargname` ... to do!

- `\cmdmthoargname{CMDNAME}`;
  `\CMDNAMEName[sub][sub][arg]` = $\mathcal{CMDNAME}_{sub}^{sub}(arg)$
- `\cmdmthoargname{cmdName}[NEWNAME]`;
  `\cmdNameName[sub][sub][arg]` = $\mathcal{NEWNAME}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargname}[2][2=]
  {\usrmth{#1}{Name}{oargname}[#2]}
```

`\cmdmthparname` ... to do!

- `\cmdmthparname{CMDNAME}`;
  `\CMDNAMEName[sub][sub][ext1]{par}[ext2]` = $\mathcal{CMDNAME}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparname{cmdName}[NEWNAME]`;
  `\cmdNameName[sub][sub][ext1]{par}[ext2]` = $\mathcal{NEWNAME}_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparname}[2][2=]
  {\usrmth{#1}{Name}{parname}[#2]}
```

`\cmdmthoparname` ... to do!

- `\cmdmthoparname{CMDNAME}`;
  `\CMDNAMEName[sub][sub][par]` = $\mathcal{CMDNAME}_{sub}^{sub}[par]$
- `\cmdmthoparname{cmdName}[NEWNAME]`;
  `\cmdNameName[sub][sub][par]` = $\mathcal{NEWNAME}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparname}[2][2=]
  {\usrmth{#1}{Name}{oparname}[#2]}
```

`\mthfam, ...` ... to do!

- `\mthfam{NAME}[sub][sup][Ext]` $= \mathscr{NAMME}^{sup}_{sub}Ext$
- `\mthargfam{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` $= \mathscr{NAMME}^{sup}_{sub}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$
- `\mthargfam*{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` $= \mathscr{NAMME}^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparfam{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` $= \mathscr{NAMME}^{sup}_{sub}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
- `\mthparfam*{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` $= \mathscr{NAMME}^{sup}_{sub}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Families
\cmdmthall{fam}\newcommand{\mthstyfam}{\mathscr}
```

`\AFam, ...` ... to do!
$\mathscr{A}, \mathscr{B}, \mathscr{C}, \mathscr{D}, \mathscr{E}, \mathscr{F}, \mathscr{G}, \mathscr{H}, \mathscr{I}, \mathscr{J}, \mathscr{K}, \mathscr{L}, \mathscr{M}, \mathscr{N}, \mathscr{O}, \mathscr{P}, \mathscr{Q}, \mathscr{R}, \mathscr{S}, \mathscr{T}, \mathscr{U}, \mathscr{V}, \mathscr{W}, \mathscr{X}, \mathscr{Y}, \mathscr{Z}$

```
\seqoflatupp{Fam}{mthfam}
```

`\cmdmthfam` ... to do!

- `\cmdmthfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][ext]` $= \mathscr{CMDNAMME}^{sub}_{sub}ext$
- `\cmdmthfam{cmdName}[NEWNAME]`;
  `\cmdNameFam[sub][sub][ext]` $= \mathscr{NEWNAMME}^{sub}_{sub}ext$

```
\newcommandx{\cmdmthfam}[2][2=]
  {\usrmth{#1}{Fam}{fam}[#2]}
```

`\cmdmthargfam` ... to do!

- `\cmdmthargfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][ext1]{arg}[ext2]` $= \mathscr{CMDNAMME}^{sub}_{sub}ext1(arg)ext2$
- `\cmdmthargfam{cmdName}[NEWNAME]`;
  `\cmdNameFam[sub][sub][ext1]{arg}[ext2]` $= \mathscr{NEWNAMME}^{sub}_{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargfam}[2][2=]
  {\usrmth{#1}{Fam}{argfam}[#2]}
```

`\cmdmthoargfam` ... to do!

- `\cmdmthoargfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][arg]` $= \mathscr{CMDNAMME}^{sub}_{sub}(arg)$
- `\cmdmthoargfam{cmdFam}[NEWNAME]`;
  `\cmdFamFam[sub][sub][arg]` $= \mathscr{NEWNAMME}^{sub}_{sub}(arg)$

```
\newcommandx{\cmdmthoargfam}[2][2=]
  {\usrmth{#1}{Fam}{oargfam}[#2]}
```

`\cmdmthparfam` ... to do!

- `\cmdmthparfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][ext1]{par}[ext2]` $= \mathscr{CMDNAMME}^{sub}_{sub}ext1[par]ext2$
- `\cmdmthparfam{cmdName}[NEWNAME]`;
  `\cmdNameFam[sub][sub][ext1]{par}[ext2]` $= \mathscr{NEWNAMME}^{sub}_{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparfam}[2][2=]
  {\usrmth{#1}{Fam}{parfam}[#2]}
```

`\cmdmthoparfam` ... to do!

- `\cmdmthoparfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][par]` $= \mathscr{CMDNAMME}^{sub}_{sub}[par]$
- `\cmdmthoparfam{cmdFam}[NEWNAME]`;
  `\cmdFamFam[sub][sub][par]` $= \mathscr{NEWNAMME}^{sub}_{sub}[par]$

```
\newcommandx{\cmdmthoparfam}[2][2=]
  {\usrmth{#1}{Fam}{oparfam}[#2]}
```

`\mthcls, ...` ... to do!

- `\mthcls{NAME}[sub][sup][Ext]` = $\mathcal{NAME}_{sub}^{sup}Ext$
- `\mthargcls{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$
- `\mthargcls*{NAME}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparcls{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
- `\mthparcls*{NAME}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{NAME}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Classes
\cmdmthall{cls}\newcommand{\mthstycls}{\matheus}
```

`\ACls, ...` ... to do!
$\mathcal{A}$, $\mathcal{B}$, $\mathcal{C}$, $\mathcal{D}$, $\mathcal{E}$, $\mathcal{F}$, $\mathcal{G}$, $\mathcal{H}$, $\mathcal{I}$, $\mathcal{J}$, $\mathcal{K}$, $\mathcal{L}$, $\mathcal{M}$, $\mathcal{N}$, $\mathcal{O}$, $\mathcal{P}$, $\mathcal{Q}$, $\mathcal{R}$, $\mathcal{S}$, $\mathcal{T}$, $\mathcal{U}$, $\mathcal{V}$, $\mathcal{W}$, $\mathcal{X}$, $\mathcal{Y}$, $\mathcal{Z}$

```
\seqoflatupp{Cls}{mthcls}
```

`\cmdmthcls` ... to do!

- `\cmdmthcls{CMDNAME}`;
  `\CMDNAMECls[sub][sub][ext]` = $\mathcal{CMDNAME}_{sub}^{sub}ext$
- `\cmdmthcls{cmdName}[NEWNAME]`;
  `\cmdNameCls[sub][sub][ext]` = $\mathcal{NEWNAME}_{sub}^{sub}ext$

```
\newcommandx{\cmdmthcls}[2][2=]
  {\usrmth{#1}{Cls}{cls}[#2]}
```

`\cmdmthargcls` ... to do!

- `\cmdmthargcls{CMDNAME}`;
  `\CMDNAMECls[sub][sub][ext1]{arg}[ext2]` = $\mathcal{CMDNAME}_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargcls{cmdName}[NEWNAME]`;
  `\cmdNameCls[sub][sub][ext1]{arg}[ext2]` = $\mathcal{NEWNAME}_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargcls}[2][2=]
  {\usrmth{#1}{Cls}{argcls}[#2]}
```

`\cmdmthoargcls` ... to do!

- `\cmdmthoargcls{CMDNAME}`;
  `\CMDNAMECls[sub][sub][arg]` = $\mathcal{CMDNAME}_{sub}^{sub}(arg)$
- `\cmdmthoargcls{cmdCls}[NEWNAME]`;
  `\cmdClsCls[sub][sub][arg]` = $\mathcal{NEWNAME}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargcls}[2][2=]
  {\usrmth{#1}{Cls}{oargcls}[#2]}
```

`\cmdmthparcls` ... to do!

- `\cmdmthparcls{CMDNAME}`;
  `\CMDNAMECls[sub][sub][ext1]{par}[ext2]` = $\mathcal{CMDNAME}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparcls{cmdName}[NEWNAME]`;
  `\cmdNameCls[sub][sub][ext1]{par}[ext2]` = $\mathcal{NEWNAME}_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparcls}[2][2=]
  {\usrmth{#1}{Cls}{parcls}[#2]}
```

`\cmdmthoparcls` ... to do!

- `\cmdmthoparcls{CMDNAME}`;
  `\CMDNAMECls[sub][sub][par]` = $\mathcal{CMDNAME}_{sub}^{sub}[par]$
- `\cmdmthoparcls{cmdCls}[NEWNAME]`;
  `\cmdClsCls[sub][sub][par]` = $\mathcal{NEWNAME}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparcls}[2][2=]
  {\usrmth{#1}{Cls}{oparcls}[#2]}
```

`\mthsig, ...` ... to do!

- `\mthsig{Name}[sub][sup][Ext]` = $\mathcal{Name}_{sub}^{sup}Ext$

- `\mthargsig{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{N}ame_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$
- `\mthargsig*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{N}ame_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparsig{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{N}ame_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
- `\mthparsig*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{N}ame_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Signatures
\cmdmthall{sig}\newcommand{\mthstysig}{\mathpzc}
```

`\aSig, ...` ... to do!

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
$\mathcal{A}$, $\mathcal{B}$, $\mathcal{C}$, $\mathcal{D}$, $\mathcal{E}$, $\mathcal{F}$, $\mathcal{G}$, $\mathcal{H}$, $\mathcal{I}$, $\mathcal{J}$, $\mathcal{K}$, $\mathcal{L}$, $\mathcal{M}$, $\mathcal{N}$, $\mathcal{O}$, $\mathcal{P}$, $\mathcal{Q}$, $\mathcal{R}$, $\mathcal{S}$, $\mathcal{T}$, $\mathcal{U}$, $\mathcal{V}$, $\mathcal{W}$, $\mathcal{X}$, $\mathcal{Y}$, $\mathcal{Z}$
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω

```
\seqoflatlet{Sig}{mthsig}\seqofgrklow{Sig}{mthsig}
```

`\cmdmthsig` ... to do!

- `\cmdmthsig{cmdName}`;
  `\cmdNameSig[sub][sub][ext]` = $cmd\mathcal{N}ame_{sub}^{sub}ext$
- `\cmdmthsig{cmdName}[NewName]`;
  `\cmdNameSig[sub][sub][ext]` = $\mathcal{N}ew\mathcal{N}ame_{sub}^{sub}ext$

```
\newcommandx{\cmdmthsig}[2][2=]
  {\usrmth{#1}{Sig}{sig}[#2]}
```

`\cmdmthargsig` ... to do!

- `\cmdmthargsig{cmdName}`;
  `\cmdNameSig[sub][sub][ext1]{arg}[ext2]` = $cmd\mathcal{N}ame_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargsig{cmdName}[NewName]`;
  `\cmdNameSig[sub][sub][ext1]{arg}[ext2]` = $\mathcal{N}ew\mathcal{N}ame_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargsig}[2][2=]
  {\usrmth{#1}{Sig}{argsig}[#2]}
```

`\cmdmthoargsig` ... to do!

- `\cmdmthoargsig{cmdName}`;
  `\cmdNameSig[sub][sub][arg]` = $cmd\mathcal{N}ame_{sub}^{sub}(arg)$
- `\cmdmthoargsig{cmdSig}[NewName]`;
  `\cmdSigSig[sub][sub][arg]` = $\mathcal{N}ew\mathcal{N}ame_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargsig}[2][2=]
  {\usrmth{#1}{Sig}{oargsig}[#2]}
```

`\cmdmthparsig` ... to do!

- `\cmdmthparsig{cmdName}`;
  `\cmdNameSig[sub][sub][ext1]{par}[ext2]` = $cmd\mathcal{N}ame_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparsig{cmdName}[NewName]`;
  `\cmdNameSig[sub][sub][ext1]{par}[ext2]` = $\mathcal{N}ew\mathcal{N}ame_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparsig}[2][2=]
  {\usrmth{#1}{Sig}{parsig}[#2]}
```

`\cmdmthoparsig` ... to do!

- `\cmdmthoparsig{cmdName}`;
  `\cmdNameSig[sub][sub][par]` = $cmd\mathcal{N}ame_{sub}^{sub}[par]$
- `\cmdmthoparsig{cmdSig}[NewName]`;
  `\cmdSigSig[sub][sub][par]` = $\mathcal{N}ew\mathcal{N}ame_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparsig}[2][2=]
  {\usrmth{#1}{Sig}{oparsig}[#2]}
```

`\mthstr, ...` ... to do!

- `\mthstr{Name}[sub][sup][Ext]` = $\mathfrak{Name}_{sub}^{sup}Ext$
- `\mthargstr{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathfrak{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$

- `\mthargstr*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathfrak{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparstr{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathfrak{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparstr*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathfrak{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Structures
\cmdmthall{str}\newcommand{\mthstystr}{\mathfrak}
```

`\aStr, ...` ... to do!

$\mathfrak{a}$, $\mathfrak{b}$, $\mathfrak{c}$, $\mathfrak{d}$, $\mathfrak{e}$, $\mathfrak{f}$, $\mathfrak{g}$, $\mathfrak{h}$, $\mathfrak{i}$, $\mathfrak{j}$, $\mathfrak{k}$, $\mathfrak{l}$, $\mathfrak{m}$, $\mathfrak{n}$, $\mathfrak{o}$, $\mathfrak{p}$, $\mathfrak{q}$, $\mathfrak{r}$, $\mathfrak{s}$, $\mathfrak{t}$, $\mathfrak{u}$, $\mathfrak{v}$, $\mathfrak{w}$, $\mathfrak{x}$, $\mathfrak{y}$, $\mathfrak{z}$
$\mathfrak{A}$, $\mathfrak{B}$, $\mathfrak{C}$, $\mathfrak{D}$, $\mathfrak{E}$, $\mathfrak{F}$, $\mathfrak{G}$, $\mathfrak{H}$, $\mathfrak{I}$, $\mathfrak{J}$, $\mathfrak{K}$, $\mathfrak{L}$, $\mathfrak{M}$, $\mathfrak{N}$, $\mathfrak{O}$, $\mathfrak{P}$, $\mathfrak{Q}$, $\mathfrak{R}$, $\mathfrak{S}$, $\mathfrak{T}$, $\mathfrak{U}$, $\mathfrak{V}$, $\mathfrak{W}$, $\mathfrak{X}$, $\mathfrak{Y}$, $\mathfrak{Z}$
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, $\mathfrak{o}$, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω

```
\seqoflatlet{Str}{mthstr}\seqofgrklow{Str}{mthstr}
```

`\cmdmthstr` ... to do!

- `\cmdmthstr{cmdName}`;
  `\cmdNameStr[sub][sub][ext]` = $\mathfrak{cmdName}_{sub}^{sub}ext$
- `\cmdmthstr{cmdName}[NewName]`;
  `\cmdNameStr[sub][sub][ext]` = $\mathfrak{NewName}_{sub}^{sub}ext$

```
\newcommandx{\cmdmthstr}[2][2=]
  {\usrmth{#1}{Str}{str}[#2]}
```

`\cmdmthargstr` ... to do!

- `\cmdmthargstr{cmdName}`;
  `\cmdNameStr[sub][sub][ext1]{arg}[ext2]` = $\mathfrak{cmdName}_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargstr{cmdName}[NewName]`;
  `\cmdNameStr[sub][sub][ext1]{arg}[ext2]` = $\mathfrak{NewName}_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargstr}[2][2=]
  {\usrmth{#1}{Str}{argstr}[#2]}
```

`\cmdmthoargstr` ... to do!

- `\cmdmthoargstr{cmdName}`;
  `\cmdNameStr[sub][sub][arg]` = $\mathfrak{cmdName}_{sub}^{sub}(arg)$
- `\cmdmthoargstr{cmdStr}[NewName]`;
  `\cmdStrStr[sub][sub][arg]` = $\mathfrak{NewName}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargstr}[2][2=]
  {\usrmth{#1}{Str}{oargstr}[#2]}
```

`\cmdmthparstr` ... to do!

- `\cmdmthparstr{cmdName}`;
  `\cmdNameStr[sub][sub][ext1]{par}[ext2]` = $\mathfrak{cmdName}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparstr{cmdName}[NewName]`;
  `\cmdNameStr[sub][sub][ext1]{par}[ext2]` = $\mathfrak{NewName}_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparstr}[2][2=]
  {\usrmth{#1}{Str}{parstr}[#2]}
```

`\cmdmthoparstr` ... to do!

- `\cmdmthoparstr{cmdName}`;
  `\cmdNameStr[sub][sub][par]` = $\mathfrak{cmdName}_{sub}^{sub}[par]$
- `\cmdmthoparstr{cmdStr}[NewName]`;
  `\cmdStrStr[sub][sub][par]` = $\mathfrak{NewName}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparstr}[2][2=]
  {\usrmth{#1}{Str}{oparstr}[#2]}
```

`\mthset, ...` ... to do!

- `\mthset{Name}[sub][sup][Ext]` = $\mathrm{Name}_{sub}^{sup}Ext$
- `\mthargset{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathrm{Name}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargset*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathrm{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$

- `\mthparset{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathrm{Name}_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
- `\mthparset*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathrm{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Sets
\cmdmthall{set}\newcommand{\mthstyset}{\mathrm}
```

`\aSet, ...` ... to do!

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
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
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, $\varTheta$, I, K, K, Λ, M, N, Ξ, O, Π, $\varPi$, P, P, Σ, $\varSigma$, T, Υ, Φ, $\varPhi$, X, Ψ, Ω

```
\seqoflet{Set}{mthset}
```

`\cmdmthset` ... to do!

- `\cmdmthset{cmdName}`;
  `\cmdNameSet[sub][sub][ext]` = $\mathrm{cmdName}_{sub}^{sub}ext$
- `\cmdmthset{cmdName}[NewName]`;
  `\cmdNameSet[sub][sub][ext]` = $\mathrm{NewName}_{sub}^{sub}ext$

```
\newcommandx{\cmdmthset}[2][2=]
  {\usrmth{#1}{Set}{set}[#2]}
```

`\cmdmthargset` ... to do!

- `\cmdmthargset{cmdName}`;
  `\cmdNameSet[sub][sub][ext1]{arg}[ext2]` = $\mathrm{cmdName}_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargset{cmdName}[NewName]`;
  `\cmdNameSet[sub][sub][ext1]{arg}[ext2]` = $\mathrm{NewName}_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargset}[2][2=]
  {\usrmth{#1}{Set}{argset}[#2]}
```

`\cmdmthoargset` ... to do!

- `\cmdmthoargset{cmdName}`;
  `\cmdNameSet[sub][sub][arg]` = $\mathrm{cmdName}_{sub}^{sub}(arg)$
- `\cmdmthoargset{cmdSet}[NewName]`;
  `\cmdSetSet[sub][sub][arg]` = $\mathrm{NewName}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargset}[2][2=]
  {\usrmth{#1}{Set}{oargset}[#2]}
```

`\cmdmthparset` ... to do!

- `\cmdmthparset{cmdName}`;
  `\cmdNameSet[sub][sub][ext1]{par}[ext2]` = $\mathrm{cmdName}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparset{cmdName}[NewName]`;
  `\cmdNameSet[sub][sub][ext1]{par}[ext2]` = $\mathrm{NewName}_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparset}[2][2=]
  {\usrmth{#1}{Set}{parset}[#2]}
```

`\cmdmthoparset` ... to do!

- `\cmdmthoparset{cmdName}`;
  `\cmdNameSet[sub][sub][par]` = $\mathrm{cmdName}_{sub}^{sub}[par]$
- `\cmdmthoparset{cmdSet}[NewName]`;
  `\cmdSetSet[sub][sub][par]` = $\mathrm{NewName}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparset}[2][2=]
  {\usrmth{#1}{Set}{oparset}[#2]}
```

`\cmdmthsetext` ... to do!

```
\newcommandx{\cmdmthsetext}[3][2=, 3=]
  {\cmdmthset{#1}[#2]\caselower[q]{#1}%
  \usrmthlet{\thestring}{Sym}{sym}
    [\defval{#3}{\defval{\empchk{#2}{\lowercase{#2}}}{\thestring}}]%
  \usrmthlet{\thestring}{Elm}{elm}
    [\defval{#3}{\defval{\empchk{#2}{\lowercase{#2}}}{\thestring}}]}
```

`\mthrel, ...` ... to do!

- `\mthrel{Name}[sub][sup][Ext]` = $Name_{sub}^{sup}Ext$
- `\mthargrel{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$
- `\mthargrel*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparrel{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
- `\mthparrel*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Relations
\cmdmthall{rel}\newcommand{\mthstyrel}{\mathit}
```

`\aRel, ...` ... to do!

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
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, L, T, U, V, W, X, Y, Z
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, Υ, Φ, Φ, X, Ψ, Ω

```
\seqoflet{Rel}{mthrel}
```

`\cmdmthrel` ... to do!

- `\cmdmthrel{cmdName}`;
  `\cmdNameRel[sub][sub][ext]` = $cmdName_{sub}^{sub}ext$
- `\cmdmthrel{cmdName}[NewName]`;
  `\cmdNameRel[sub][sub][ext]` = $NewName_{sub}^{sub}ext$

```
\newcommandx{\cmdmthrel}[2][2=]
  {\usrmth{#1}{Rel}{rel}[#2]}
```

`\cmdmthargrel` ... to do!

- `\cmdmthargrel{cmdName}`;
  `\cmdNameRel[sub][sub][ext1]{arg}[ext2]` = $cmdName_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargrel{cmdName}[NewName]`;
  `\cmdNameRel[sub][sub][ext1]{arg}[ext2]` = $NewName_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargrel}[2][2=]
  {\usrmth{#1}{Rel}{argrel}[#2]}
```

`\cmdmthoargrel` ... to do!

- `\cmdmthoargrel{cmdName}`;
  `\cmdNameRel[sub][sub][arg]` = $cmdName_{sub}^{sub}(arg)$
- `\cmdmthoargrel{cmdRel}[NewName]`;
  `\cmdRelRel[sub][sub][arg]` = $NewName_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargrel}[2][2=]
  {\usrmth{#1}{Rel}{oargrel}[#2]}
```

`\cmdmthparrel` ... to do!

- `\cmdmthparrel{cmdName}`;
  `\cmdNameRel[sub][sub][ext1]{par}[ext2]` = $cmdName_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparrel{cmdName}[NewName]`;
  `\cmdNameRel[sub][sub][ext1]{par}[ext2]` = $NewName_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparrel}[2][2=]
  {\usrmth{#1}{Rel}{parrel}[#2]}
```

`\cmdmthoparrel` ... to do!

- `\cmdmthoparrel{cmdName}`;
  `\cmdNameRel[sub][sub][par]` = $cmdName_{sub}^{sub}[par]$
- `\cmdmthoparrel{cmdRel}[NewName]`;
  `\cmdRelRel[sub][sub][par]` = $NewName_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparrel}[2][2=]
  {\usrmth{#1}{Rel}{oparrel}[#2]}
```

`\mthfun, ...` ... to do!

- `\mthfun{Name}[sub][sup][Ext]` = $\mathsf{Name}_{sub}^{sup}Ext$
- `\mthargfun{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathsf{Name}_{sub}^{sup}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$
- `\mthargfun*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathsf{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparfun{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathsf{Name}_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
- `\mthparfun*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathsf{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Functions
\cmdmthall{fun}\newcommand{\mthstyfun}{\mathsf}
```

`\aFun, ...` ... to do!

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
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
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, $\varTheta$, I, K, K, Λ, M, N, Ξ, O, Π, $\varPi$, P, P, Σ, $\varSigma$, T, Υ, Φ, $\varPhi$, X, Ψ, Ω

```
\seqoflet{Fun}{mthfun}
```

`\cmdmthfun` ... to do!

- `\cmdmthfun{cmdName}`;
  `\cmdNameFun[sub][sub][ext]` = $\mathsf{cmdName}_{sub}^{sub}ext$
- `\cmdmthfun{cmdName}[NewName]`;
  `\cmdNameFun[sub][sub][ext]` = $\mathsf{NewName}_{sub}^{sub}ext$

```
\newcommandx{\cmdmthfun}[2][2=]
  {\usrmth{#1}{Fun}{fun}[#2]}
```

`\cmdmthargfun` ... to do!

- `\cmdmthargfun{cmdName}`;
  `\cmdNameFun[sub][sub][ext1]{arg}[ext2]` = $\mathsf{cmdName}_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargfun{cmdName}[NewName]`;
  `\cmdNameFun[sub][sub][ext1]{arg}[ext2]` = $\mathsf{NewName}_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargfun}[2][2=]
  {\usrmth{#1}{Fun}{argfun}[#2]}
```

`\cmdmthoargfun` ... to do!

- `\cmdmthoargfun{cmdName}`;
  `\cmdNameFun[sub][sub][arg]` = $\mathsf{cmdName}_{sub}^{sub}(arg)$
- `\cmdmthoargfun{cmdFun}[NewName]`;
  `\cmdFunFun[sub][sub][arg]` = $\mathsf{NewName}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargfun}[2][2=]
  {\usrmth{#1}{Fun}{oargfun}[#2]}
```

`\cmdmthparfun` ... to do!

- `\cmdmthparfun{cmdName}`;
  `\cmdNameFun[sub][sub][ext1]{par}[ext2]` = $\mathsf{cmdName}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparfun{cmdName}[NewName]`;
  `\cmdNameFun[sub][sub][ext1]{par}[ext2]` = $\mathsf{NewName}_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparfun}[2][2=]
  {\usrmth{#1}{Fun}{parfun}[#2]}
```

`\cmdmthoparfun` ... to do!

- `\cmdmthoparfun{cmdName}`;
  `\cmdNameFun[sub][sub][par]` = $\mathsf{cmdName}_{sub}^{sub}[par]$
- `\cmdmthoparfun{cmdFun}[NewName]`;
  `\cmdFunFun[sub][sub][par]` = $\mathsf{NewName}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparfun}[2][2=]
  {\usrmth{#1}{Fun}{oparfun}[#2]}
```

`\mthsym, ...` ... to do!

- `\mthsym{Name}[sub][sup][Ext]` = $\texttt{Name}_{sub}^{sup}Ext$
- `\mthargsym{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\texttt{Name}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargsym*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\texttt{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparsym{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\texttt{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparsym*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\texttt{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Symbols
\cmdmthall{sym}\newcommand{\mthstysym}{\mathtt}
```

`\aSym, ...` ... to do!

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
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
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, $\mathit{\Theta}$, I, K, K, Λ, M, N, Ξ, O, Π, $\mathit{\Pi}$, P, P, Σ, $\mathit{\Sigma}$, T, Υ, Φ, $\mathit{\Phi}$, X, Ψ, Ω

```
\seqoflet{Sym}{mthsym}
```

`\cmdmthsym` ... to do!

- `\cmdmthsym{cmdName}`;
  `\cmdNameSym[sub][sub][ext]` = $\texttt{cmdName}_{sub}^{sub}ext$
- `\cmdmthsym{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][ext]` = $\texttt{NewName}_{sub}^{sub}ext$

```
\newcommandx{\cmdmthsym}[2][2=]
  {\usrmth{#1}{Sym}{sym}[#2]}
```

`\cmdmthargsym` ... to do!

- `\cmdmthargsym{cmdName}`;
  `\cmdNameSym[sub][sub][ext1]{arg}[ext2]` = $\texttt{cmdName}_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargsym{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][ext1]{arg}[ext2]` = $\texttt{NewName}_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargsym}[2][2=]
  {\usrmth{#1}{Sym}{argsym}[#2]}
```

`\cmdmthoargsym` ... to do!

- `\cmdmthoargsym{cmdName}`;
  `\cmdNameSym[sub][sub][arg]` = $\texttt{cmdName}_{sub}^{sub}(arg)$
- `\cmdmthoargsym{cmdSym}[NewName]`;
  `\cmdSymSym[sub][sub][arg]` = $\texttt{NewName}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargsym}[2][2=]
  {\usrmth{#1}{Sym}{oargsym}[#2]}
```

`\cmdmthparsym` ... to do!

- `\cmdmthparsym{cmdName}`;
  `\cmdNameSym[sub][sub][ext1]{par}[ext2]` = $\texttt{cmdName}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparsym{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][ext1]{par}[ext2]` = $\texttt{NewName}_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparsym}[2][2=]
  {\usrmth{#1}{Sym}{parsym}[#2]}
```

`\cmdmthoparsym` ... to do!

- `\cmdmthoparsym{cmdName}`;
  `\cmdNameSym[sub][sub][par]` = $\texttt{cmdName}_{sub}^{sub}[par]$
- `\cmdmthoparsym{cmdSym}[NewName]`;
  `\cmdSymSym[sub][sub][par]` = $\texttt{NewName}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparsym}[2][2=]
  {\usrmth{#1}{Sym}{oparsym}[#2]}
```

`\mthelm, ...` ... to do!

- `\mthelm{Name}[sub][sup][Ext]` = $Name_{sub}^{sup}Ext$
- `\mthargelm{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargelm*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparelm{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparelm*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $Name_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Elements
\cmdmthall{elm}\newcommand{\mthstyelm}{\mathnormal}
```

`\aElm, ...` ... to do!

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
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
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, Υ, Φ, Φ, X, Ψ, Ω

```
\seqoflet{Elm}{mthelm}
```

`\cmdmthelm` ... to do!

- `\cmdmthelm{cmdName}`;
  `\cmdNameElm[sub][sub][ext]` = $cmdName_{sub}^{sub}ext$
- `\cmdmthelm{cmdName}[NewName]`;
  `\cmdNameElm[sub][sub][ext]` = $NewName_{sub}^{sub}ext$

```
\newcommandx{\cmdmthelm}[2][2=]
  {\usrmth{#1}{Elm}{elm}[#2]}
```

`\cmdmthargelm` ... to do!

- `\cmdmthargelm{cmdName}`;
  `\cmdNameElm[sub][sub][ext1]{arg}[ext2]` = $cmdName_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargelm{cmdName}[NewName]`;
  `\cmdNameElm[sub][sub][ext1]{arg}[ext2]` = $NewName_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargelm}[2][2=]
  {\usrmth{#1}{Elm}{argelm}[#2]}
```

`\cmdmthoargelm` ... to do!

- `\cmdmthoargelm{cmdName}`;
  `\cmdNameElm[sub][sub][arg]` = $cmdName_{sub}^{sub}(arg)$
- `\cmdmthoargelm{cmdElm}[NewName]`;
  `\cmdElmElm[sub][sub][arg]` = $NewName_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargelm}[2][2=]
  {\usrmth{#1}{Elm}{oargelm}[#2]}
```

`\cmdmthparelm` ... to do!

- `\cmdmthparelm{cmdName}`;
  `\cmdNameElm[sub][sub][ext1]{par}[ext2]` = $cmdName_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparelm{cmdName}[NewName]`;
  `\cmdNameElm[sub][sub][ext1]{par}[ext2]` = $NewName_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparelm}[2][2=]
  {\usrmth{#1}{Elm}{parelm}[#2]}
```

`\cmdmthoparelm` ... to do!

- `\cmdmthoparelm{cmdName}`;
  `\cmdNameElm[sub][sub][par]` = $cmdName_{sub}^{sub}[par]$
- `\cmdmthoparelm{cmdElm}[NewName]`;
  `\cmdElmElm[sub][sub][par]` = $NewName_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparelm}[2][2=]
  {\usrmth{#1}{Elm}{oparelm}[#2]}
```

```
%%*************************************************************************%%
```

`\cmdmthsymelm` ... to do!

- `\cmdmthsymelm{cmdName}`;
  `\cmdNameSym[sub][sub][ext]` = $\texttt{cmdName}_{sub}^{sub}ext$
  `\cmdNameElm[sub][sub][ext]` = $cmdName_{sub}^{sub}ext$
- `\cmdmthsymelm{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][ext]` = $\texttt{NewName}_{sub}^{sub}ext$
  `\cmdNameElm[sub][sub][ext]` = $NewName_{sub}^{sub}ext$

```
\newcommandx{\cmdmthsymelm}[2][2=]
  {\cmdmthsym{#1}[#2]%
  \cmdmthelm{#1}[#2]}
```

`\cmdmthargsymelm` ... to do!

- `\cmdmthargsymelm{cmdName}`;
  `\cmdNameSym[sub][sub][ext1]{arg}[ext2]` = $\texttt{cmdName}_{sub}^{sub}ext1(arg)ext2$
  `\cmdNameElm[sub][sub][ext1]{arg}[ext2]` = $cmdName_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargsymelm{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][ext1]{arg}[ext2]` = $\texttt{NewName}_{sub}^{sub}ext1(arg)ext2$
  `\cmdNameElm[sub][sub][ext1]{arg}[ext2]` = $NewName_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargsymelm}[2][2=]
  {\cmdmthargsym{#1}[#2]%
  \cmdmthargelm{#1}[#2]}
```

`\cmdmthoargsymelm` ... to do!

- `\cmdmthoargsymelm{cmdName}`;
  `\cmdNameSym[sub][sub][arg]` = $\texttt{cmdName}_{sub}^{sub}(arg)$
  `\cmdNameElm[sub][sub][arg]` = $cmdName_{sub}^{sub}(arg)$
- `\cmdmthoargsymelm{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][arg]` = $\texttt{NewName}_{sub}^{sub}(arg)$
  `\cmdNameElm[sub][sub][arg]` = $NewName_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargsymelm}[2][2=]
  {\cmdmthoargsym{#1}[#2]%
  \cmdmthoargelm{#1}[#2]}
```

`\cmdmthparsymelm` ... to do!

- `\cmdmthparsymelm{cmdName}`;
  `\cmdNameSym[sub][sub][ext1]{par}[ext2]` = $\texttt{cmdName}_{sub}^{sub}ext1[par]ext2$
  `\cmdNameElm[sub][sub][ext1]{par}[ext2]` = $cmdName_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparsymelm{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][ext1]{par}[ext2]` = $\texttt{NewName}_{sub}^{sub}ext1[par]ext2$
  `\cmdNameElm[sub][sub][ext1]{par}[ext2]` = $NewName_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparsymelm}[2][2=]
  {\cmdmthparsym{#1}[#2]%
  \cmdmthparelm{#1}[#2]}
```

`\cmdmthoparsymelm` ... to do!

- `\cmdmthoparsymelm{cmdName}`;
  `\cmdNameSym[sub][sub][par]` = $\texttt{cmdName}_{sub}^{sub}[par]$
  `\cmdNameElm[sub][sub][par]` = $cmdName_{sub}^{sub}[par]$
- `\cmdmthoparsymelm{cmdName}[NewName]`;
  `\cmdNameSym[sub][sub][par]` = $\texttt{NewName}_{sub}^{sub}[par]$
  `\cmdNameElm[sub][sub][par]` = $NewName_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparsymelm}[2][2=]
  {\cmdmthoparsym{#1}[#2]%
  \cmdmthoparelm{#1}[#2]}

%%*************************************************************************%%
```

`\mthluop, ...` ... to do!

- \mthluop{\oplus}[sub][sup][Ext] = $\oplus_{sub}^{sup} Ext$
- \mthlbop{\oplus}[sub][sup][Ext] = $\oplus_{sub}^{sup} Ext$

```
%% Style for \LaTex Operators
\cmdmth{luop}\newcommand{\mthstyluop}[1]{\textstyle\mathop{#1}}
\cmdmth{lbop}\newcommand{\mthstylbop}[1]{\textstyle\mathbin{#1}}
```

\cmdmthluop, ... to do!

- \cmdmthluop{cmdName};
  \cmdNameUOp[sub][sub][ext] = $cmdName_{sub}^{sub} ext$
- \cmdmthluop{cmdName}[\oplus];
  \cmdNameUOp[sub][sub][ext] = $\oplus_{sub}^{sub} ext$
- \cmdmthlbop{cmdName};
  \cmdNameBOp[sub][sub][ext] = $cmdName_{sub}^{sub} ext$
- \cmdmthlbop{cmdName}[\oplus];
  \cmdNameBOp[sub][sub][ext] = $\oplus_{sub}^{sub} ext$

```
\newcommandx{\cmdmthluop}[2][2=]
  {\usrmth{#1}{UOp}{luop}[#2]}
\newcommandx{\cmdmthlbop}[2][2=]
  {\usrmth{#1}{BOp}{lbop}[#2]}
```

\mthlrel ... to do!

- \mthlrel{\preceq}[sub][sup][Ext] = $\preceq_{sub}^{sup} Ext$

```
%% Style for \LaTex Relations
\cmdmth{lrel}\newcommand{\mthstylrel}{\mathrel}
```

\cmdmthlrel ... to do!

- \cmdmthlrel{cmdName};
  \cmdNameRel[sub][sub][ext] = $cmdName_{sub}^{sub} ext$
- \cmdmthlrel{cmdName}[\preceq];
  \cmdNameRel[sub][sub][ext] = $\preceq_{sub}^{sub} ext$

```
\newcommandx{\cmdmthlrel}[2][2=]
  {\usrmth{#1}{Rel}{lrel}[#2]}
```

```
%%*************************************************************************%%
```

\mthsnt, ... to do!

- \mthsnt{Name}[sub][sup][Ext] = $\mathsf{Name}_{sub}^{sup} Ext$
- \mthargsnt{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\mathsf{Name}_{sub}^{sup} Ext1\left(Arg^{Ex^{Ex}}\right) Ext2$
- \mthargsnt*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2] = $\mathsf{Name}_{sub}^{sup} Ext1(Arg^{Ex^{Ex}}) Ext2$
- \mthparsnt{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\mathsf{Name}_{sub}^{sup} Ext1\left[Par^{Ex^{Ex}}\right] Ext2$
- \mthparsnt*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\mathsf{Name}_{sub}^{sup} Ext1[Par^{Ex^{Ex}}] Ext2$

```
%% Style for Sentences
\cmdmthall{snt}\newcommand{\mthstysnt}{\mathsf}
```

\aSnt, ... to do!

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
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
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, $\varTheta$, I, K, K, Λ, M, N, Ξ, O, Π, $\varPi$, P, P, Σ, $\varSigma$, T, Υ, Φ, $\varPhi$, X, Ψ, Ω

```
\seqoflet{Snt}{mthsnt}
```

\cmdmthsnt ... to do!

- \cmdmthsnt{cmdName};
  \cmdNameSnt[sub][sub][ext] = $\mathsf{cmdName}_{sub}^{sub} ext$
- \cmdmthsnt{cmdName}[NewName];
  \cmdNameSnt[sub][sub][ext] = $\mathsf{NewName}_{sub}^{sub} ext$

```
\newcommandx{\cmdmthsnt}[2][2=]
  {\usrmth{#1}{Snt}{snt}[#2]}
```

`\cmdmthargsnt` ... to do!

- `\cmdmthargsnt{cmdName}`;
  `\cmdNameSnt[sub][sub][ext1]{arg}[ext2]` = $\mathsf{cmdName}^{sub}_{sub}ext1(arg)ext2$
- `\cmdmthargsnt{cmdName}[NewName]`;
  `\cmdNameSnt[sub][sub][ext1]{arg}[ext2]` = $\mathsf{NewName}^{sub}_{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargsnt}[2][2=]
  {\usrmth{#1}{Snt}{argsnt}[#2]}
```

`\cmdmthoargsnt` ... to do!

- `\cmdmthoargsnt{cmdName}`;
  `\cmdNameSnt[sub][sub][arg]` = $\mathsf{cmdName}^{sub}_{sub}(arg)$
- `\cmdmthoargsnt{cmdName}[NewName]`;
  `\cmdNameSnt[sub][sub][arg]` = $\mathsf{NewName}^{sub}_{sub}(arg)$

```
\newcommandx{\cmdmthoargsnt}[2][2=]
  {\usrmth{#1}{Snt}{oargsnt}[#2]}
```

`\cmdmthparsnt` ... to do!

- `\cmdmthparsnt{cmdName}`;
  `\cmdNameSnt[sub][sub][ext1]{par}[ext2]` = $\mathsf{cmdName}^{sub}_{sub}ext1[par]ext2$
- `\cmdmthparsnt{cmdName}[NewName]`;
  `\cmdNameSnt[sub][sub][ext1]{par}[ext2]` = $\mathsf{NewName}^{sub}_{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparsnt}[2][2=]
  {\usrmth{#1}{Snt}{parsnt}[#2]}
```

`\cmdmthoparsnt` ... to do!

- `\cmdmthoparsnt{cmdName}`;
  `\cmdNameSnt[sub][sub][par]` = $\mathsf{cmdName}^{sub}_{sub}[par]$
- `\cmdmthoparsnt{cmdName}[NewName]`;
  `\cmdNameSnt[sub][sub][par]` = $\mathsf{NewName}^{sub}_{sub}[par]$

```
\newcommandx{\cmdmthoparsnt}[2][2=]
  {\usrmth{#1}{Snt}{oparsnt}[#2]}
```

`\mthfrm, ...` ... to do!

- `\mthfrm{Name}[sub][sup][Ext]` = $Name^{sup}_{sub}Ext$
- `\mthargfrm{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $Name^{sup}_{sub}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargfrm*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $Name^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparfrm{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $Name^{sup}_{sub}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparfrm*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $Name^{sup}_{sub}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Formulae
\cmdmthall{frm}\newcommand{\mthstyfrm}{\mathit}
```

`\aFrm, ...` ... to do!

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
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
α, β, γ, δ, ϵ, ε, ζ, η, θ, ϑ, ι, κ, $\varkappa$, λ, μ, ν, ξ, o, π, ϖ, ρ, ϱ, σ, ς, τ, υ, ϕ, φ, χ, ψ, ω
A, B, Γ, Δ, E, E, Z, H, Θ, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, Υ, Φ, Φ, X, Ψ, Ω

```
\seqoflet{Frm}{mthfrm}
```

`\cmdmthfrm` ... to do!

- `\cmdmthfrm{cmdName}`;
  `\cmdNameFrm[sub][sub][ext]` = $cmdName^{sub}_{sub}ext$
- `\cmdmthfrm{cmdName}[NewName]`;
  `\cmdNameFrm[sub][sub][ext]` = $NewName^{sub}_{sub}ext$

```
\newcommandx{\cmdmthfrm}[2][2=]
  {\usrmth{#1}{Frm}{frm}[#2]}
```

`\cmdmthargfrm` ... to do!

- `\cmdmthargfrm{cmdName};`
  `\cmdNameFrm[sub][sub][ext1]{arg}[ext2]` = $cmdName^{sub}_{sub}ext1(arg)ext2$
- `\cmdmthargfrm{cmdName}[NewName];`
  `\cmdNameFrm[sub][sub][ext1]{arg}[ext2]` = $NewName^{sub}_{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargfrm}[2][2=]
  {\usrmth{#1}{Frm}{argfrm}[#2]}
```

`\cmdmthoargfrm` ... to do!

- `\cmdmthoargfrm{cmdName};`
  `\cmdNameFrm[sub][sub][arg]` = $cmdName^{sub}_{sub}(arg)$
- `\cmdmthoargfrm{cmdName}[NewName];`
  `\cmdNameFrm[sub][sub][arg]` = $NewName^{sub}_{sub}(arg)$

```
\newcommandx{\cmdmthoargfrm}[2][2=]
  {\usrmth{#1}{Frm}{oargfrm}[#2]}
```

`\cmdmthparfrm` ... to do!

- `\cmdmthparfrm{cmdName};`
  `\cmdNameFrm[sub][sub][ext1]{par}[ext2]` = $cmdName^{sub}_{sub}ext1[par]ext2$
- `\cmdmthparfrm{cmdName}[NewName];`
  `\cmdNameFrm[sub][sub][ext1]{par}[ext2]` = $NewName^{sub}_{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparfrm}[2][2=]
  {\usrmth{#1}{Frm}{parfrm}[#2]}
```

`\cmdmthoparfrm` ... to do!

- `\cmdmthoparfrm{cmdName};`
  `\cmdNameFrm[sub][sub][par]` = $cmdName^{sub}_{sub}[par]$
- `\cmdmthoparfrm{cmdName}[NewName];`
  `\cmdNameFrm[sub][sub][par]` = $NewName^{sub}_{sub}[par]$

```
\newcommandx{\cmdmthoparfrm}[2][2=]
  {\usrmth{#1}{Frm}{oparfrm}[#2]}
```

```
%%*************************************************************************%%
```

`\mthmat, ...` ... to do!

- `\mthmat{Name}[sub][sup][Ext]` = $\mathbf{Name}^{sup}_{sub}Ext$
- `\mthargmat{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathbf{Name}^{sup}_{sub}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargmat*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathbf{Name}^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparmat{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathbf{Name}^{sup}_{sub}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparmat*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathbf{Name}^{sup}_{sub}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Matrices
\cmdmthall{mat}\newcommand{\mthstymat}[1]{\boldsymbol{\mathsf{#1}}}
```

`\aMat, ...` ... to do!

$\mathbf{a}$, $\mathbf{b}$, $\mathbf{c}$, $\mathbf{d}$, $\mathbf{e}$, $\mathbf{f}$, $\mathbf{g}$, $\mathbf{h}$, $\mathbf{i}$, $\mathbf{j}$, $\mathbf{k}$, $\mathbf{l}$, $\mathbf{m}$, $\mathbf{n}$, $\mathbf{o}$, $\mathbf{p}$, $\mathbf{q}$, $\mathbf{r}$, $\mathbf{s}$, $\mathbf{t}$, $\mathbf{u}$, $\mathbf{v}$, $\mathbf{w}$, $\mathbf{x}$, $\mathbf{y}$, $\mathbf{z}$
$\mathbf{A}$, $\mathbf{B}$, $\mathbf{C}$, $\mathbf{D}$, $\mathbf{E}$, $\mathbf{F}$, $\mathbf{G}$, $\mathbf{H}$, $\mathbf{I}$, $\mathbf{J}$, $\mathbf{K}$, $\mathbf{L}$, $\mathbf{M}$, $\mathbf{N}$, $\mathbf{O}$, $\mathbf{P}$, $\mathbf{Q}$, $\mathbf{R}$, $\mathbf{S}$, $\mathbf{T}$, $\mathbf{U}$, $\mathbf{V}$, $\mathbf{W}$, $\mathbf{X}$, $\mathbf{Y}$, $\mathbf{Z}$
$\boldsymbol{\alpha}$, $\boldsymbol{\beta}$, $\boldsymbol{\gamma}$, $\boldsymbol{\delta}$, $\boldsymbol{\epsilon}$, $\boldsymbol{\varepsilon}$, $\boldsymbol{\zeta}$, $\boldsymbol{\eta}$, $\boldsymbol{\theta}$, $\boldsymbol{\vartheta}$, $\boldsymbol{\iota}$, $\boldsymbol{\kappa}$, $\boldsymbol{\varkappa}$, $\boldsymbol{\lambda}$, $\boldsymbol{\mu}$, $\boldsymbol{\nu}$, $\boldsymbol{\xi}$, $\mathbf{o}$, $\boldsymbol{\pi}$, $\boldsymbol{\varpi}$, $\boldsymbol{\rho}$, $\boldsymbol{\varrho}$, $\boldsymbol{\sigma}$, $\boldsymbol{\varsigma}$, $\boldsymbol{\tau}$, $\boldsymbol{\upsilon}$, $\boldsymbol{\phi}$, $\boldsymbol{\varphi}$, $\boldsymbol{\chi}$, $\boldsymbol{\psi}$, $\boldsymbol{\omega}$
$\mathbf{A}$, $\mathbf{B}$, $\boldsymbol{\Gamma}$, $\boldsymbol{\Delta}$, $\mathbf{E}$, $\mathbf{E}$, $\mathbf{Z}$, $\mathbf{H}$, $\boldsymbol{\Theta}$, $\boldsymbol{\varTheta}$, $\mathbf{I}$, $\mathbf{K}$, $\mathbf{K}$, $\boldsymbol{\Lambda}$, $\mathbf{M}$, $\mathbf{N}$, $\boldsymbol{\Xi}$, $\mathbf{O}$, $\boldsymbol{\Pi}$, $\boldsymbol{\varPi}$, $\mathbf{P}$, $\mathbf{P}$, $\boldsymbol{\Sigma}$, $\boldsymbol{\varSigma}$, $\mathbf{T}$, $\boldsymbol{\Upsilon}$, $\boldsymbol{\Phi}$, $\boldsymbol{\varPhi}$, $\mathbf{X}$, $\boldsymbol{\Psi}$, $\boldsymbol{\Omega}$

```
\seqoflet{Mat}{mthmat}
```

`\cmdmthmat` ... to do!

- `\cmdmthmat{cmdName};`
  `\cmdNameMat[sub][sub][ext]` = $\mathbf{cmdName}^{sub}_{sub}ext$

- `\cmdmthmat{cmdName}[NewName]`;
  `\cmdNameMat[sub][sub][ext]` = $\mathsf{NewName}_{sub}^{sub}ext$

```
\newcommandx{\cmdmthmat}[2][2=]
  {\usrmth{#1}{Mat}{mat}[#2]}
```

`\cmdmthargmat` ... to do!

- `\cmdmthargmat{cmdName}`;
  `\cmdNameMat[sub][sub][ext1]{arg}[ext2]` = $\mathsf{cmdName}_{sub}^{sub}ext1(arg)ext2$
- `\cmdmthargmat{cmdName}[NewName]`;
  `\cmdNameMat[sub][sub][ext1]{arg}[ext2]` = $\mathsf{NewName}_{sub}^{sub}ext1(arg)ext2$

```
\newcommandx{\cmdmthargmat}[2][2=]
  {\usrmth{#1}{Mat}{argmat}[#2]}
```

`\cmdmthoargmat` ... to do!

- `\cmdmthoargmat{cmdName}`;
  `\cmdNameMat[sub][sub][arg]` = $\mathsf{cmdName}_{sub}^{sub}(arg)$
- `\cmdmthoargmat{cmdName}[NewName]`;
  `\cmdNameMat[sub][sub][arg]` = $\mathsf{NewName}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargmat}[2][2=]
  {\usrmth{#1}{Mat}{oargmat}[#2]}
```

`\cmdmthparmat` ... to do!

- `\cmdmthparmat{cmdName}`;
  `\cmdNameMat[sub][sub][ext1]{par}[ext2]` = $\mathsf{cmdName}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparmat{cmdName}[NewName]`;
  `\cmdNameMat[sub][sub][ext1]{par}[ext2]` = $\mathsf{NewName}_{sub}^{sub}ext1[par]ext2$

```
\newcommandx{\cmdmthparmat}[2][2=]
  {\usrmth{#1}{Mat}{parmat}[#2]}
```

`\cmdmthoparmat` ... to do!

- `\cmdmthoparmat{cmdName}`;
  `\cmdNameMat[sub][sub][par]` = $\mathsf{cmdName}_{sub}^{sub}[par]$
- `\cmdmthoparmat{cmdName}[NewName]`;
  `\cmdNameMat[sub][sub][par]` = $\mathsf{NewName}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparmat}[2][2=]
  {\usrmth{#1}{Mat}{oparmat}[#2]}
```

`\mthvec, ...` ... to do!

- `\mthvec{Name}[sub][sup][Ext]` = $\boldsymbol{Name}_{sub}^{sup}Ext$
- `\mthargvec{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\boldsymbol{Name}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargvec*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\boldsymbol{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparvec{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\boldsymbol{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparvec*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\boldsymbol{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% Style for Vectors
\cmdmthall{vec}\newcommand{\mthstyvec}[1]{\boldsymbol{\mathit{#1}}}
```

`\aVec, ...` ... to do!

$\boldsymbol{a}$, $\boldsymbol{b}$, $\boldsymbol{c}$, $\boldsymbol{d}$, $\boldsymbol{e}$, $\boldsymbol{f}$, $\boldsymbol{g}$, $\boldsymbol{h}$, $\boldsymbol{i}$, $\boldsymbol{j}$, $\boldsymbol{k}$, $\boldsymbol{l}$, $\boldsymbol{m}$, $\boldsymbol{n}$, $\boldsymbol{o}$, $\boldsymbol{p}$, $\boldsymbol{q}$, $\boldsymbol{r}$, $\boldsymbol{s}$, $\boldsymbol{t}$, $\boldsymbol{u}$, $\boldsymbol{v}$, $\boldsymbol{w}$, $\boldsymbol{x}$, $\boldsymbol{y}$, $\boldsymbol{z}$
$\boldsymbol{A}$, $\boldsymbol{B}$, $\boldsymbol{C}$, $\boldsymbol{D}$, $\boldsymbol{E}$, $\boldsymbol{F}$, $\boldsymbol{G}$, $\boldsymbol{H}$, $\boldsymbol{I}$, $\boldsymbol{J}$, $\boldsymbol{K}$, $\boldsymbol{L}$, $\boldsymbol{M}$, $\boldsymbol{N}$, $\boldsymbol{O}$, $\boldsymbol{P}$, $\boldsymbol{Q}$, $\boldsymbol{R}$, $\boldsymbol{S}$, $\boldsymbol{T}$, $\boldsymbol{U}$, $\boldsymbol{V}$, $\boldsymbol{W}$, $\boldsymbol{X}$, $\boldsymbol{Y}$, $\boldsymbol{Z}$
$\boldsymbol{\alpha}$, $\boldsymbol{\beta}$, $\boldsymbol{\gamma}$, $\boldsymbol{\delta}$, $\boldsymbol{\epsilon}$, $\boldsymbol{\varepsilon}$, $\boldsymbol{\zeta}$, $\boldsymbol{\eta}$, $\boldsymbol{\theta}$, $\boldsymbol{\vartheta}$, $\boldsymbol{\iota}$, $\boldsymbol{\kappa}$, $\boldsymbol{\varkappa}$, $\boldsymbol{\lambda}$, $\boldsymbol{\mu}$, $\boldsymbol{\nu}$, $\boldsymbol{\xi}$, $\boldsymbol{o}$, $\boldsymbol{\pi}$, $\boldsymbol{\varpi}$, $\boldsymbol{\rho}$, $\boldsymbol{\varrho}$, $\boldsymbol{\sigma}$, $\boldsymbol{\varsigma}$, $\boldsymbol{\tau}$, $\boldsymbol{\upsilon}$, $\boldsymbol{\phi}$, $\boldsymbol{\varphi}$, $\boldsymbol{\chi}$, $\boldsymbol{\psi}$, $\boldsymbol{\omega}$
$\boldsymbol{A}$, $\boldsymbol{B}$, $\boldsymbol{\Gamma}$, $\boldsymbol{\Delta}$, $\boldsymbol{E}$, $\boldsymbol{E}$, $\boldsymbol{Z}$, $\boldsymbol{H}$, $\boldsymbol{\Theta}$, $\boldsymbol{\Theta}$, $\boldsymbol{I}$, $\boldsymbol{K}$, $\boldsymbol{K}$, $\boldsymbol{\Lambda}$, $\boldsymbol{M}$, $\boldsymbol{N}$, $\boldsymbol{\Xi}$, $\boldsymbol{O}$, $\boldsymbol{\Pi}$, $\boldsymbol{\Pi}$, $\boldsymbol{P}$, $\boldsymbol{P}$, $\boldsymbol{\Sigma}$, $\boldsymbol{\Sigma}$, $\boldsymbol{T}$, $\boldsymbol{\Upsilon}$, $\boldsymbol{\Phi}$, $\boldsymbol{\Phi}$, $\boldsymbol{X}$, $\boldsymbol{\Psi}$, $\boldsymbol{\Omega}$

```
\seqoflet{Vec}{mthvec}
```

`\cmdmthvec` ... to do!

- `\cmdmthvec{cmdName}`;
  `\cmdNameVec[sub][sub][ext]` = $\boldsymbol{cmdName}_{sub}^{sub}ext$

- \cmdmthvec{cmdName}[NewName];
  \cmdNameVec[sub][sub][ext] = $\boldsymbol{NewName}_{sub}^{sub} ext$

```
\newcommandx{\cmdmthvec}[2][2=]
  {\usrmth{#1}{Vec}{vec}[#2]}
```

\cmdmthargvec ... to do!

- \cmdmthargvec{cmdName};
  \cmdNameVec[sub][sub][ext1]{arg}[ext2] = $\boldsymbol{cmdName}_{sub}^{sub} ext1(arg)ext2$
- \cmdmthargvec{cmdName}[NewName];
  \cmdNameVec[sub][sub][ext1]{arg}[ext2] = $\boldsymbol{NewName}_{sub}^{sub} ext1(arg)ext2$

```
\newcommandx{\cmdmthargvec}[2][2=]
  {\usrmth{#1}{Vec}{argvec}[#2]}
```

\cmdmthoargvec ... to do!

- \cmdmthoargvec{cmdName};
  \cmdNameVec[sub][sub][arg] = $\boldsymbol{cmdName}_{sub}^{sub}(arg)$
- \cmdmthoargvec{cmdName}[NewName];
  \cmdNameVec[sub][sub][arg] = $\boldsymbol{NewName}_{sub}^{sub}(arg)$

```
\newcommandx{\cmdmthoargvec}[2][2=]
  {\usrmth{#1}{Vec}{oargvec}[#2]}
```

\cmdmthparvec ... to do!

- \cmdmthparvec{cmdName};
  \cmdNameVec[sub][sub][ext1]{par}[ext2] = $\boldsymbol{cmdName}_{sub}^{sub} ext1[par]ext2$
- \cmdmthparvec{cmdName}[NewName];
  \cmdNameVec[sub][sub][ext1]{par}[ext2] = $\boldsymbol{NewName}_{sub}^{sub} ext1[par]ext2$

```
\newcommandx{\cmdmthparvec}[2][2=]
  {\usrmth{#1}{Vec}{parvec}[#2]}
```

\cmdmthoparvec ... to do!

- \cmdmthoparvec{cmdName};
  \cmdNameVec[sub][sub][par] = $\boldsymbol{cmdName}_{sub}^{sub}[par]$
- \cmdmthoparvec{cmdName}[NewName];
  \cmdNameVec[sub][sub][par] = $\boldsymbol{NewName}_{sub}^{sub}[par]$

```
\newcommandx{\cmdmthoparvec}[2][2=]
  {\usrmth{#1}{Vec}{oparvec}[#2]}
```

```
\fi
%%****************************************************************************%%
```

```
%%****************************************************************************%%
%%** Elementary Macros for Text ***********************************************%%
%%****************************************************************************%%
\iftxt@
```

```
%%** Latin Abbreviations ******************************************************%%
```

\adhoc

- \adhoc = *ad hoc*

```
\cmdtxtabr{adhoc}[ad hoc]
```

\afortiori

- \afortiori = *a fortiori*

```
\cmdtxtabr{afortiori}[a fortiori]
```

\apriori

- \apriori = *a priori*

```
\cmdtxtabr{apriori}[a priori]
```

\aposteriori

- \aposteriori = *a posteriori*

```
\cmdtxtabr{aposteriori}[a posteriori]
```

\cf

- \cf = *cf.*

```
\cmdtxtabr{cf}[cf.]
```

\dedicto • \dedicto = *de dicto*

```
748 \cmdtxtabr{dedicto}[de dicto]
```

\defacto • \defacto = *de facto*

```
749 \cmdtxtabr{defacto}[de facto]
```

\dere • \dere = *de re*

```
750 \cmdtxtabr{dere}[de re]
```

\divideetimpera • \divideetimpera = *divide et impera*

```
751 \cmdtxtabr{divideetimpera}[divide et impera]
```

\eg • \eg = *e.g.*

```
752 \cmdtxtabr{eg}[e.g.]
```

\ergo • \ergo = *ergo*

```
753 \cmdtxtabr{ergo}
```

\errata • \errata = *errata*

```
754 \cmdtxtabr{errata}
```

\erratum • \erratum = *erratum*

```
755 \cmdtxtabr{erratum}
```

\etal • \etal = *et al.*

```
756 \cmdtxtabr{etal}[et al.]
```

\etc • \etc = *etc.*

```
757 \cmdtxtabr{etc}[etc.]
```

\ie • \ie = *i.e.*

```
758 \cmdtxtabr{ie}[i.e.]
```

\mutatismutandis • \mutatismutandis = *mutatis mutandis*

```
759 \cmdtxtabr{mutatismutandis}[mutatis mutandis]
```

\percontra • \percontra = *per contra*

```
760 \cmdtxtabr{percontra}[per contra]
```

\primafacie • \primafacie = *prima facie*

```
761 \cmdtxtabr{primafacie}[prima facie]
```

\viceversa • \viceversa = *vice versa*

```
762 \cmdtxtabr{viceversa}[vice versa]
```

\vs • \vs = *vs.*

```
763 \cmdtxtabr{vs}[vs.]
```

\viz • \viz = *viz.*

```
764 \cmdtxtabr{viz}[viz.]
```

```
765 %%*****************************************************************************%%
```

\Afortiori • \Afortiori = *A fortiori*

```
766 \cmdtxtabr{Afortiori}[A fortiori]
```

\Apriori • \Apriori = *A priori*

```
767 \cmdtxtabr{Apriori}[A priori]
```

\Aposteriori • \Aposteriori = *A posteriori*

```
\cmdtxtabr{Aposteriori}[A posteriori]
```

\Dedicto • \Dedicto = *De dicto*

```
\cmdtxtabr{Dedicto}[De dicto]
```

\Defacto • \Defacto = *De facto*

```
\cmdtxtabr{Defacto}[De facto]
```

\Dere • \Dere = *De re*

```
\cmdtxtabr{Dere}[De re]
```

\Divideetimpera • \Divideetimpera = *Divide et impera*

```
\cmdtxtabr{Divideetimpera}[Divide et impera]
```

\Eg • \Eg = *E.g.*

```
\cmdtxtabr{Eg}[E.g.]
```

\Errata • \Errata = *Errata*

```
\cmdtxtabr{Errata}
```

\Erratum • \Erratum = *Erratum*

```
\cmdtxtabr{Erratum}
```

\Mutatismutandis • \Mutatismutandis = *Mutatis mutandis*

```
\cmdtxtabr{Mutatismutandis}[Mutatis mutandis]
```

\Percontra • \Percontra = *Per contra*

```
\cmdtxtabr{Percontra}[Per contra]
```

\Primafacie • \Primafacie = *Prima facie*

```
\cmdtxtabr{Primafacie}[Prima facie]
```

\Viceversa • \Viceversa = *Vice versa*

```
\cmdtxtabr{Viceversa}[Vice versa]
```

```
%%** Italian Abbreviations ************************************************%%
```

...

```
%%*************************************************************************%%
```

...

```
%%** French Abbreviations **************************************************%%
```

\naif • \naif = *naïf*

```
\cmdtxtabr{naif}[na\"{i}f]
```

\naive • \naive = *naïve*

```
\cmdtxtabr{naive}[na\"{i}ve]
```

\role • \role = *rôle*

```
\cmdtxtabr{role}[r\^{o}le]
```

```
%%*************************************************************************%%
```

\Role • \Role = *Rôle*

```
\cmdtxtabr{Role}[R\^{o}le]
```

```
%%** English Abbreviations *************************************************%%
```

\aka • \aka = *a.k.a.*

```
\cmdtxtabr{aka}[a.k.a.]
```

\contd • \contd = *contd.*

```
\cmdtxtabr{contd}[contd.]
```

\iff • \iff = *iff*

```
\cmdtxtabr{iff}
```

\iht • \iht = *i.h.t.*

```
\cmdtxtabr{iht}[i.h.t.]
```

\stx • \stx = *s.t.*

```
\cmdtxtabr{stx}[s.t.]
```

\resp • \resp = *resp.*

```
\cmdtxtabr{resp}[resp.]
```

\wrt • \wrt = *w.r.t.*

```
\cmdtxtabr{wrt}[w.r.t.]
```

\wlogx • \wlogx = *w.l.o.g.*

```
\cmdtxtabr{wlogx}[w.l.o.g.]

%%*************************************************************************%%
```

\Contd • \Contd = *Contd.*

```
\cmdtxtabr{Contd}[Contd.]
```

\Wlogx • \Wlogx = *W.l.o.g.*

```
\cmdtxtabr{Wlogx}[W.l.o.g.]

\fi
%%*************************************************************************%%
%%*************************************************************************%%
%%** Elementary Macros for Math *******************************************%%
%%*************************************************************************%%
\ifmth@
%%** General Notation *****************************************************%%
```

\defeq, \seteq ...

```
\DeclareRobustCommand{\defeq}
  {\@ifstar%
    {\mthlbop{\stackrel{\text{\textup{def}}}{=}}%
    {\mthlbop{\triangleq}}}
\DeclareRobustCommand{\seteq}
  {\@ifstar{\mthlbop{\Coloneqq}}{\mthlbop{\coloneqq}}}

%%*************************************************************************%%
```

\implies, ...

```
\DeclareRobustCommand{\implies}
  {\mthlrel{\Rightarrow}}
\DeclareRobustCommand{\notimplies}
  {\mthlrel{\not\Rightarrow}}
```

\implied, ...

```
\DeclareRobustCommand{\implied}
  {\mthlrel{\Leftarrow}}
\DeclareRobustCommand{\notimplied}
  {\mthlrel{\not\Leftarrow}}
```

\coimplies, ...

```
\DeclareRobustCommand{\coimplies}
  {\mthlrel{\Leftrightarrow}}
\DeclareRobustCommand{\notcoimplies}
  {\mthlrel{\not\!\Leftrightarrow}}
```

```
%%**************************************************************************%%
```

\cmodels, ...

```
\DeclareRobustCommand{\cmodels}
  {\mthlrel{\models}}
\DeclareRobustCommand{\notcmodels}
  {\mthlrel{\not\models}}
```

\cequiv, ...

```
\DeclareRobustCommand{\cequiv}
  {\mthlrel{\equiv}}
\DeclareRobustCommand{\notcequiv}
  {\mthlrel{\not\equiv}}
```

```
%%**************************************************************************%%
```

\denot ...

```
\DeclareRobustCommand{\denot}
  {\@ifstar{\@denot}{\@denot[\left][\right]}}
\DeclareRobustCommandx{\@denot}[3][1=, 2=]
  {\mth{\argmid{#1\llbracket}{#3}{#2\rrbracket}}}
```

```
%%**************************************************************************%%
```

\dual, \adj, ...

```
\DeclareRobustCommand{\dual}[1]
  {\mth{\overline{#1}}}
\DeclareRobustCommand{\adj}[1]
  {\mth{\mathring{#1}}}
\DeclareRobustCommand{\der}[1]
  {\mth{\widehat{#1}}}
\DeclareRobustCommand{\trn}[1]
  {\mth{\widetilde{#1}}}
```

\vec ...

```
\DeclareRobustCommand{\vec}
  {\@ifstar{\@svec}{\@vec}}
\DeclareRobustCommand{\@vec}[1]
  {\mth{\mathaccent"017E{#1}}}
\DeclareRobustCommand{\@svec}[1]
  {\mth{\overline{#1}}}
```

```
%%**************************************************************************%%
```

\enumeration, ...

```
\varcmd{enumeration}{\mth}{}{,}{}{}
\varcmd{enumerationx}{\mth}{}{;}{}{}
```

\sequence, ...

```
\DeclareRobustCommand{\sequence}
  {\@ifstar{\@ssequence}{\@sequence}}
\varcmd{@sequence}{\mth}{\left[}{,}{\right]}{}
\varcmd{@ssequence}{\mth}{[}{,}{]}{}
\DeclareRobustCommand{\sequencel}
  {\@ifstar{\@ssequencel}{\@sequencel}}
\varcmd{@sequencel}{\mth}{\left[}{,}{\right.}{}
\varcmd{@ssequencel}{\mth}{[}{,}{}{}
```

```
\DeclareRobustCommand{\sequencer}
  {\@ifstar{\@ssequencer}{\@sequencer}}
\varcmd{@sequencer}{\mth}{\left.}{,}{\right]}{}
\varcmd{@ssequencer}{\mth}{}{,}{]}{}
\DeclareRobustCommand{\sequencex}
  {\@ifstar{\@ssequencex}{\@sequencex}}
\varcmd{@sequencex}{\mth}{\left[}{;}{\right]}{}
\varcmd{@ssequencex}{\mth}{[}{;}{]}{}
\DeclareRobustCommand{\sequencexl}
  {\@ifstar{\@ssequencexl}{\@sequencexl}}
\varcmd{@sequencexl}{\mth}{\left[}{;}{\right.}{}
\varcmd{@ssequencexl}{\mth}{[}{;}{}{}
\DeclareRobustCommand{\sequencexr}
  {\@ifstar{\@ssequencexr}{\@sequencexr}}
\varcmd{@sequencexr}{\mth}{\left.}{;}{\right]}{}
\varcmd{@ssequencexr}{\mth}{}{;}{]}{}
```

\tuple, ...

```
\DeclareRobustCommand{\tuple}
  {\@ifstar{\@stuple}{\@tuple}}
\varcmd{@tuple}{\mth}{\left\langle}{,}{\right\rangle}{}
\varcmd{@stuple}{\mth}{\langle}{,}{\rangle}{}
\DeclareRobustCommand{\tuplel}
  {\@ifstar{\@stuplel}{\@tuplel}}
\varcmd{@tuplel}{\mth}{\left\langle}{,}{\right.}{}
\varcmd{@stuplel}{\mth}{\langle}{,}{}{}
\DeclareRobustCommand{\tupler}
  {\@ifstar{\@stupler}{\@tupler}}
\varcmd{@tupler}{\mth}{\left.}{,}{\right\rangle}{}
\varcmd{@stupler}{\mth}{}{,}{\rangle}{}
\DeclareRobustCommand{\tuplex}
  {\@ifstar{\@stuplex}{\@tuplex}}
\varcmd{@tuplex}{\mth}{\left\langle}{;}{\right\rangle}{}
\varcmd{@stuplex}{\mth}{\langle}{;}{\rangle}{}
\DeclareRobustCommand{\tuplexl}
  {\@ifstar{\@stuplexl}{\@tuplexl}}
\varcmd{@tuplexl}{\mth}{\left\langle}{;}{\right.}{}
\varcmd{@stuplexl}{\mth}{\langle}{;}{}{}
\DeclareRobustCommand{\tuplexr}
  {\@ifstar{\@stuplexr}{\@tuplexr}}
\varcmd{@tuplexr}{\mth}{\left.}{;}{\right\rangle}{}
\varcmd{@stuplexr}{\mth}{}{;}{\rangle}{}

%%** Sets ************************************************************%%
```

\set, ...

```
\DeclareRobustCommand{\set}
  {\@ifstar{\@set}{\@set[\left][\middle][\right]}}
\DeclareRobustCommandx{\@set}[5][1=, 2=, 3=]
  {\mth{\argmid{#1\lbrace}{\argsep{#4}{\,#2\vert\,}{#5}}{#3\rbrace}}}
\DeclareRobustCommand{\setl}
  {\@ifstar{\@setl}{\@setl[\left][\right]}}
\DeclareRobustCommandx{\@setl}[3][1=, 2=]
  {\mth{\argmid{#1\lbrace}{#3}{\,#2\vert\!}}}
\DeclareRobustCommand{\setr}
  {\@ifstar{\@setr}{\@setr[\left.][\right]}}
\DeclareRobustCommandx{\@setr}[3][1=, 2=]
  {\mth{\argmid{#1}{#3}{#2\rbrace}}}
```

\card ...

```
\DeclareRobustCommand{\card}
  {\@ifstar{\@card}{\@card[\left][\right]}}
\DeclareRobustCommandx{\@card}[3][1=, 2=]
  {\mth{\argmid{#1\lvert}{#3}{#2\rvert}}}
```

```
          \pow  ...
                923 \DeclareRobustCommand{\pow}[1]
                924   {\mth{2^{\defval{#1}{\cdot}}}}

                925 %%** Relations ********************************************************************%%

      \emptyrel  ...
                926 \DeclareRobustCommand{\emptyrel}
                927   {\mth{\varnothing}}

                928 %%*************************************************************************************%%

\dom, \cod, ...  ...
                929 \usrmth{dom}{}{argfun}
                930 \usrmth{cod}{}{argfun}
                931 \usrmth{rng}{}{argfun}
                932 \usrmth{img}{}{argfun}

                933 %%*************************************************************************************%%

          \prj  ...
                934 \DeclareRobustCommand{\prj}
                935   {\mthargfun{prj}}

          \rst  ...
                936 \DeclareRobustCommand{\rst}
                937   {\mthlbop{\upharpoonright}}

          \cmp  ...
                938 \DeclareRobustCommand{\cmp}
                939   {\mthlbop{\circ}}

                940 %%** Functions ********************************************************************%%

      \emptyfun  ...
                941 \DeclareRobustCommand{\emptyfun}
                942   {\mth{\varnothing}}

                943 %%*************************************************************************************%%

 \pto, \pmapsto  ...
                944 \DeclareMathOperator{\pto}
                945   {\ensuremath{\rightharpoonup}}
                946 \DeclareMathOperator{\pmapsto}
                947   {\ensuremath{\mathrel{\raisebox{0.5ex}{\footnotesize${\llcorner}$}%
                948     \kern-1.5ex\rightharpoonup}}}

                949 %%*************************************************************************************%%

\fix, \ifp, ...  ...
                950 \usrmth{fix}{}{fun}
                951 \usrmth{ifp}{}{fun}
                952 \usrmth{lfp}{}{fun}
                953 \usrmth{gfp}{}{fun}

                954 %%*************************************************************************************%%

\Aomega, \AOmega  ...
                955 \usrmth{Aomega}{}{argset}[\omega]
                956 \usrmth{AOmega}{}{argset}[\Omega]

\Atheta, \ATheta  ...
                957 \usrmth{Atheta}{}{argset}[\theta]
                958 \usrmth{ATheta}{}{argset}[\Theta]
```

```
\Aomicron, ...  ...
                959 \usrmth{Aomicron}{}{argset}[\omicron]
                960 \usrmth{AOmicron}{}{argset}[\Omicron]

                961 %%** Numbers ********************************************************************%%

        \SetB   ...
                962 \DeclareRobustCommand{\SetB}
                963   {\mthset[mathbb]{B}}

        \SetF   ...
                964 \DeclareRobustCommand{\SetF}
                965   {\mthset[mathbb]{F}}

    \SetN, ...  ...
                966 \DeclareRobustCommand{\SetN}
                967   {\mthset[mathbb]{N}}
                968 \DeclareRobustCommand{\SetNI}[1][]
                969   {\SetN[\infty #1]}

    \SetZ, ...  ...
                970 \DeclareRobustCommand{\SetZ}
                971   {\mthset[mathbb]{Z}}
                972 \DeclareRobustCommand{\SetZI}[1][]
                973   {\SetZ[\pm\infty #1]}
                974 \DeclareRobustCommand{\SetZPI}[1][]
                975   {\SetZ[+\infty #1]}
                976 \DeclareRobustCommand{\SetZNI}[1][]
                977   {\SetZ[-\infty #1]}

    \SetQ, ...  ...
                978 \DeclareRobustCommand{\SetQ}
                979   {\mthset[mathbb]{Q}}
                980 \DeclareRobustCommand{\SetQI}[1][]
                981   {\SetQ[\pm\infty #1]}
                982 \DeclareRobustCommand{\SetQPI}[1][]
                983   {\SetQ[+\infty #1]}
                984 \DeclareRobustCommand{\SetQNI}[1][]
                985   {\SetQ[-\infty #1]}

    \SetR, ...  ...
                986 \DeclareRobustCommand{\SetR}
                987   {\mthset[mathbb]{R}}
                988 \DeclareRobustCommand{\SetRI}[1][]
                989   {\SetR[\pm\infty #1]}
                990 \DeclareRobustCommand{\SetRPI}[1][]
                991   {\SetR[+\infty #1]}
                992 \DeclareRobustCommand{\SetRNI}[1][]
                993   {\SetR[-\infty #1]}

    \SetC, ...  ...
                994 \DeclareRobustCommand{\SetC}
                995   {\mthset[mathbb]{C}}
                996 \DeclareRobustCommand{\SetCI}[1][]
                997   {\SetC[\infty #1]}

                998 %%********************************************************************************%%

     \num, ...  ...
                999 \DeclareRobustCommand{\num}[1]
               1000   {\mth{[#1]}}
               1001 \DeclareRobustCommand{\numcc}[2]
               1002   {\mth{[\argsep{#1}{,}{#2}]}}
```

```
\DeclareRobustCommand{\numco}[2]
  {\mth{[\argsep{#1}{,}{#2})}}
\DeclareRobustCommand{\numoc}[2]
  {\mth{(\argsep{#1}{,}{#2}]}}
\DeclareRobustCommand{\numoo}[2]
  {\mth{(\argsep{#1}{,}{#2})}}

%%*****************************************************************************%%
```

`\abs, \norm` ...

```
\DeclareRobustCommand{\abs}
  {\@ifstar{\@abs}{\@abs[\left][\right]}}
\DeclareRobustCommandx{\@abs}[3][1=, 2=]
  {\mth{\argmid{#1\lvert}{#3}{#2\rvert}}}
\DeclareRobustCommand{\norm}
  {\@ifstar{\@norm}{\@norm[\left][\right]}}
\DeclareRobustCommandx{\@norm}[3][1=, 2=]
  {\mth{\argmid{#1\lVert}{#3}{#2\rVert}}}
```

`\floor, \ceil` ...

```
\DeclareRobustCommand{\floor}
  {\@ifstar{\@floor}{\@floor[\left][\right]}}
\DeclareRobustCommandx{\@floor}[3][1=, 2=]
  {\mth{\argmid{#1\lfloor}{#3}{#2\rfloor}}}
\DeclareRobustCommand{\ceil}
  {\@ifstar{\@ceil}{\@ceil[\left][\right]}}
\DeclareRobustCommandx{\@ceil}[3][1=, 2=]
  {\mth{\argmid{#1\lceil}{#3}{#2\rceil}}}

%%*****************************************************************************%%
```

`\arg` ...

```
\usrmth{arg}{}{fun}
```

`\evn, \odd` ...

```
\usrmth{evn}{}{fun}
\usrmth{odd}{}{fun}
```

`\bst, ...` ...

```
\usrmth{bst}{}{fun}
\usrmth{argbst}{}{fun}[arg\,bst]
```

`\min, \max, ...` ...

```
\usrmth{min}{}{fun}
\usrmth{max}{}{fun}
\usrmth{argmin}{}{fun}[arg\,min]
\usrmth{argmax}{}{fun}[arg\,max]
```

`\inf, \sup` ...

```
\usrmth{inf}{}{fun}
\usrmth{sup}{}{fun}

%%** Sequences ***************************************************************%%
```

`\emptyseq` ...

```
\DeclareRobustCommand{\emptyseq}
  {\mth{\varepsilon}}
```

`\len` ...

```
\DeclareRobustCommand{\len}
  {\@ifstar{\@len}{\@len[\left][\right]}}
\DeclareRobustCommandx{\@len}[3][1=, 2=]
  {\mth{\argmid{#1\lvert}{#3}{#2\rvert}}}
```

\fst, \lst ...

```
\usrmth{fst}{}{argfun}
\usrmth{lst}{}{argfun}

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Macros for Computational-Complexity Classes ***************************%%
%%*****************************************************************************%%
\ifcom@
```

\defcomcls ... to do!

- \defcomcls{CompClass};

  \CompClass[sub][sup][arg] = $\textsc{CompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$

- \defcomcls{CompClass}[NewClass];

  \CompClass[sub][sup][arg] = $\textsc{NewClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$

```
\newcommandx{\defcomcls}[2][2=]
  {\csdef{#1}{\txtoargcom{\defval{#2}{#1}}}}
```

\defcomclsgrp ... to do!

- \defcomclsgrp{CompClass};

  \CompClass[sub][sup][arg] = $\textsc{CompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoCompClass[sub][sup][arg] = $\textsc{CoCompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CompClassE[sub][sup][arg] = $\textsc{CompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoCompClassE[sub][sup][arg] = $\textsc{CoCompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CompClassH[sub][sup][arg] = $\textsc{CompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoCompClassH[sub][sup][arg] = $\textsc{CoCompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CompClassC[sub][sup][arg] = $\textsc{CompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoCompClassC[sub][sup][arg] = $\textsc{CoCompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$

  \DCompClass[sub][sup][arg] = $\textsc{DCompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoDCompClass[sub][sup][arg] = $\textsc{CoDCompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \DCompClassE[sub][sup][arg] = $\textsc{DCompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoDCompClassE[sub][sup][arg] = $\textsc{CoDCompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \DCompClassH[sub][sup][arg] = $\textsc{DCompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoDCompClassH[sub][sup][arg] = $\textsc{CoDCompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \DCompClassC[sub][sup][arg] = $\textsc{DCompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoDCompClassC[sub][sup][arg] = $\textsc{CoDCompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$

  \NCompClass[sub][sup][arg] = $\textsc{NCompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoNCompClass[sub][sup][arg] = $\textsc{CoNCompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \NCompClassE[sub][sup][arg] = $\textsc{NCompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoNCompClassE[sub][sup][arg] = $\textsc{CoNCompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \NCompClassH[sub][sup][arg] = $\textsc{NCompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoNCompClassH[sub][sup][arg] = $\textsc{CoNCompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \NCompClassC[sub][sup][arg] = $\textsc{NCompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoNCompClassC[sub][sup][arg] = $\textsc{CoNCompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$

  \UCompClass[sub][sup][arg] = $\textsc{UCompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoUCompClass[sub][sup][arg] = $\textsc{CoUCompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \UCompClassE[sub][sup][arg] = $\textsc{UCompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoUCompClassE[sub][sup][arg] = $\textsc{CoUCompClass-easy}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \UCompClassH[sub][sup][arg] = $\textsc{UCompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoUCompClassH[sub][sup][arg] = $\textsc{CoUCompClass-hard}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \UCompClassC[sub][sup][arg] = $\textsc{UCompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$
  \CoUCompClassC[sub][sup][arg] = $\textsc{CoUCompClass-complete}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$

  \ACompClass[sub][sup][arg] = $\textsc{ACompClass}_{\textsc{sub}}^{\textsc{sup}}(\textsc{arg})$

\CoACompClass[sub][sup][arg] = CoACompClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\ACompClassE[sub][sup][arg] = ACompClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoACompClassE[sub][sup][arg] = CoACompClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\ACompClassH[sub][sup][arg] = ACompClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoACompClassH[sub][sup][arg] = CoACompClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\ACompClassC[sub][sup][arg] = ACompClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoACompClassC[sub][sup][arg] = CoACompClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)

- `\defcomclsgrp{CompClass}[NewClass]`;

\CompClass[sub][sup][arg] = NewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoCompClass[sub][sup][arg] = CoNewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CompClassE[sub][sup][arg] = NewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoCompClassE[sub][sup][arg] = CoNewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CompClassH[sub][sup][arg] = NewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoCompClassH[sub][sup][arg] = CoNewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CompClassC[sub][sup][arg] = NewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoCompClassC[sub][sup][arg] = CoNewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)

\DCompClass[sub][sup][arg] = DNewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoDCompClass[sub][sup][arg] = CoDNewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\DCompClassE[sub][sup][arg] = DNewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoDCompClassE[sub][sup][arg] = CoDNewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\DCompClassH[sub][sup][arg] = DNewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoDCompClassH[sub][sup][arg] = CoDNewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\DCompClassC[sub][sup][arg] = DNewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoDCompClassC[sub][sup][arg] = CoDNewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)

\NCompClass[sub][sup][arg] = NNewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoNCompClass[sub][sup][arg] = CoNNewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\NCompClassE[sub][sup][arg] = NNewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoNCompClassE[sub][sup][arg] = CoNNewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\NCompClassH[sub][sup][arg] = NNewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoNCompClassH[sub][sup][arg] = CoNNewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\NCompClassC[sub][sup][arg] = NNewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoNCompClassC[sub][sup][arg] = CoNNewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)

\UCompClass[sub][sup][arg] = UNewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoUCompClass[sub][sup][arg] = CoUNewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\UCompClassE[sub][sup][arg] = UNewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoUCompClassE[sub][sup][arg] = CoUNewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\UCompClassH[sub][sup][arg] = UNewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoUCompClassH[sub][sup][arg] = CoUNewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\UCompClassC[sub][sup][arg] = UNewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoUCompClassC[sub][sup][arg] = CoUNewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)

\ACompClass[sub][sup][arg] = ANewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoACompClass[sub][sup][arg] = CoANewClass$^{\text{SUP}}_{\text{SUB}}$(ARG)
\ACompClassE[sub][sup][arg] = ANewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoACompClassE[sub][sup][arg] = CoANewClass-easy$^{\text{SUP}}_{\text{SUB}}$(ARG)
\ACompClassH[sub][sup][arg] = ANewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoACompClassH[sub][sup][arg] = CoANewClass-hard$^{\text{SUP}}_{\text{SUB}}$(ARG)
\ACompClassC[sub][sup][arg] = ANewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)
\CoACompClassC[sub][sup][arg] = CoANewClass-complete$^{\text{SUP}}_{\text{SUB}}$(ARG)

```
\newcommandx{\defcomclsgrp}[2][2=]
  {\defcomclsgrpsem{#1}{\defval{#2}{#1}}%
  \defcomclsgrpsem{#1}{\defval{#2}{#1}}[Co]}
\newcommandx{\defcomclsgrpsem}[3][3=]
  {\defcomclsgrpred{#3#1}{#2}[#3]%
  \defcomclsgrpred{#3D#1}{#2}[#3D]%
  \defcomclsgrpred{#3N#1}{#2}[#3N]%
  \defcomclsgrpred{#3U#1}{#2}[#3U]%
  \defcomclsgrpred{#3A#1}{#2}[#3A]}
\newcommandx{\defcomclsgrpred}[3][3=]
  {\defcomclsgrpcmd{#1}{#2}[#3]%
```

```
  \defcomclsgrpcmd{#1E}{#2}[#3][-easy]%
  \defcomclsgrpcmd{#1H}{#2}[#3][-hard]%
  \defcomclsgrpcmd{#1C}{#2}[#3][-complete]}%
\newcommandx{\defcomclsgrpcmd}[4][3=, 4=]
  {\csdef{#1}{\txtoargcom{#3#2#4}}}
```

`\defcomhrc` ... to do!

- `\defcomhrc{CompHierarchy}`;

  `CompHierarchy[sub][sup][par]` = $\textsc{CompHierarchy}^{\textsc{sup}}_{\textsc{sub}}[\textsc{par}]$

- `\defcomhrc{CompHierarchy}[NewHierarchy]`;

  `CompHierarchy[sub][sup][par]` = $\textsc{NewHierarchy}^{\textsc{sup}}_{\textsc{sub}}[\textsc{par}]$

```
\newcommandx{\defcomhrc}[2][2=]
  {\csdef{#1}{\txtoparcom{\defval{#2}{#1}}}}

%%*************************************************************************%%
```

`\Easy, \Hard, ...`

```
\cmdtxtcom{Easy}
\cmdtxtcom{Hard}
\cmdtxtcom{Complete}

%%*************************************************************************%%
```

`\FPT`

- `\FPT[sub][sup][arg]` = $\textsc{FPT}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$

```
\defcomcls{FPT}

%%*************************************************************************%%
```

`\Time, ...`

- `\Time[sub][sup][arg]` = $\textsc{Time}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\TimeE[sub][sup][arg]` = $\textsc{Time-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\TimeH[sub][sup][arg]` = $\textsc{Time-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\TimeC[sub][sup][arg]` = $\textsc{Time-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\DTime[sub][sup][arg]` = $\textsc{DTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\DTimeE[sub][sup][arg]` = $\textsc{DTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\DTimeH[sub][sup][arg]` = $\textsc{DTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\DTimeC[sub][sup][arg]` = $\textsc{DTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\NTime[sub][sup][arg]` = $\textsc{NTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\NTimeE[sub][sup][arg]` = $\textsc{NTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\NTimeH[sub][sup][arg]` = $\textsc{NTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\NTimeC[sub][sup][arg]` = $\textsc{NTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\UTime[sub][sup][arg]` = $\textsc{UTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\UTimeE[sub][sup][arg]` = $\textsc{UTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\UTimeH[sub][sup][arg]` = $\textsc{UTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\UTimeC[sub][sup][arg]` = $\textsc{UTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\ATime[sub][sup][arg]` = $\textsc{ATime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\ATimeE[sub][sup][arg]` = $\textsc{ATime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\ATimeH[sub][sup][arg]` = $\textsc{ATime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\ATimeC[sub][sup][arg]` = $\textsc{ATime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$

```
\defcomclsgrp{Time}
```

`\Space, ...`

- `\Space[sub][sup][arg]` = $\textsc{Space}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\SpaceE[sub][sup][arg]` = $\textsc{Space-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\SpaceH[sub][sup][arg]` = $\textsc{Space-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\SpaceC[sub][sup][arg]` = $\textsc{Space-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\DSpace[sub][sup][arg]` = $\textsc{DSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\DSpaceE[sub][sup][arg]` = $\textsc{DSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\DSpaceH[sub][sup][arg]` = $\textsc{DSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  `\DSpaceC[sub][sup][arg]` = $\textsc{DSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$

- `\NSpace[sub][sup][arg]` = $\mathrm{NSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NSpaceE[sub][sup][arg]` = $\mathrm{NSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NSpaceH[sub][sup][arg]` = $\mathrm{NSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NSpaceC[sub][sup][arg]` = $\mathrm{NSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\USpace[sub][sup][arg]` = $\mathrm{USPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\USpaceE[sub][sup][arg]` = $\mathrm{USPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\USpaceH[sub][sup][arg]` = $\mathrm{USPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\USpaceC[sub][sup][arg]` = $\mathrm{USPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\ASpace[sub][sup][arg]` = $\mathrm{ASPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ASpaceE[sub][sup][arg]` = $\mathrm{ASPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ASpaceH[sub][sup][arg]` = $\mathrm{ASPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ASpaceC[sub][sup][arg]` = $\mathrm{ASPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1081 `\defcomclsgrp{Space}`

`\LogTime, ...`

- `\LogTime[sub][sup][arg]` = $\mathrm{LOGTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\LogTimeE[sub][sup][arg]` = $\mathrm{LOGTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\LogTimeH[sub][sup][arg]` = $\mathrm{LOGTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\LogTimeC[sub][sup][arg]` = $\mathrm{LOGTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\DLogTime[sub][sup][arg]` = $\mathrm{DLOGTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DLogTimeE[sub][sup][arg]` = $\mathrm{DLOGTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DLogTimeH[sub][sup][arg]` = $\mathrm{DLOGTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DLogTimeC[sub][sup][arg]` = $\mathrm{DLOGTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\NLogTime[sub][sup][arg]` = $\mathrm{NLOGTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NLogTimeE[sub][sup][arg]` = $\mathrm{NLOGTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NLogTimeH[sub][sup][arg]` = $\mathrm{NLOGTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NLogTimeC[sub][sup][arg]` = $\mathrm{NLOGTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\ULogTime[sub][sup][arg]` = $\mathrm{ULOGTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ULogTimeE[sub][sup][arg]` = $\mathrm{ULOGTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ULogTimeH[sub][sup][arg]` = $\mathrm{ULOGTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ULogTimeC[sub][sup][arg]` = $\mathrm{ULOGTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\ALogTime[sub][sup][arg]` = $\mathrm{ALOGTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ALogTimeE[sub][sup][arg]` = $\mathrm{ALOGTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ALogTimeH[sub][sup][arg]` = $\mathrm{ALOGTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ALogTimeC[sub][sup][arg]` = $\mathrm{ALOGTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1082 `\defcomclsgrp{LogTime}`

`\LogSpace, ...`

- `\LogSpace[sub][sup][arg]` = $\mathrm{LOGSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\LogSpaceE[sub][sup][arg]` = $\mathrm{LOGSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\LogSpaceH[sub][sup][arg]` = $\mathrm{LOGSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\LogSpaceC[sub][sup][arg]` = $\mathrm{LOGSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\DLogSpace[sub][sup][arg]` = $\mathrm{DLOGSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DLogSpaceE[sub][sup][arg]` = $\mathrm{DLOGSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DLogSpaceH[sub][sup][arg]` = $\mathrm{DLOGSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DLogSpaceC[sub][sup][arg]` = $\mathrm{DLOGSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\NLogSpace[sub][sup][arg]` = $\mathrm{NLOGSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NLogSpaceE[sub][sup][arg]` = $\mathrm{NLOGSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NLogSpaceH[sub][sup][arg]` = $\mathrm{NLOGSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NLogSpaceC[sub][sup][arg]` = $\mathrm{NLOGSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\ULogSpace[sub][sup][arg]` = $\mathrm{ULOGSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ULogSpaceE[sub][sup][arg]` = $\mathrm{ULOGSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ULogSpaceH[sub][sup][arg]` = $\mathrm{ULOGSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ULogSpaceC[sub][sup][arg]` = $\mathrm{ULOGSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\ALogSpace[sub][sup][arg]` = $\mathrm{ALOGSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ALogSpaceE[sub][sup][arg]` = $\mathrm{ALOGSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ALogSpaceH[sub][sup][arg]` = $\mathrm{ALOGSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ALogSpaceC[sub][sup][arg]` = $\mathrm{ALOGSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1083 `\defcomclsgrp{LogSpace}`

`\PTime, ...`

- `\PTime[sub][sup][arg]` = $\mathrm{PTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\PTimeE[sub][sup][arg]` = $\mathrm{PTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\PTimeH[sub][sup][arg]` = $\mathrm{PTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\PTimeC[sub][sup][arg]` = $\mathrm{PTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\DPTime[sub][sup][arg]` = $\mathrm{DPTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DPTimeE[sub][sup][arg]` = $\mathrm{DPTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DPTimeH[sub][sup][arg]` = $\mathrm{DPTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DPTimeC[sub][sup][arg]` = $\mathrm{DPTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\NPTime[sub][sup][arg]` = $\mathrm{NPTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NPTimeE[sub][sup][arg]` = $\mathrm{NPTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NPTimeH[sub][sup][arg]` = $\mathrm{NPTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NPTimeC[sub][sup][arg]` = $\mathrm{NPTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\UPTime[sub][sup][arg]` = $\mathrm{UPTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UPTimeE[sub][sup][arg]` = $\mathrm{UPTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UPTimeH[sub][sup][arg]` = $\mathrm{UPTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UPTimeC[sub][sup][arg]` = $\mathrm{UPTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\APTime[sub][sup][arg]` = $\mathrm{APTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\APTimeE[sub][sup][arg]` = $\mathrm{APTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\APTimeH[sub][sup][arg]` = $\mathrm{APTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\APTimeC[sub][sup][arg]` = $\mathrm{APTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$

1084 `\defcomclsgrp{PTime}`

`\PSpace, ...`

- `\PSpace[sub][sup][arg]` = $\mathrm{PSPACE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\PSpaceE[sub][sup][arg]` = $\mathrm{PSPACE\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\PSpaceH[sub][sup][arg]` = $\mathrm{PSPACE\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\PSpaceC[sub][sup][arg]` = $\mathrm{PSPACE\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\DPSpace[sub][sup][arg]` = $\mathrm{DPSPACE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DPSpaceE[sub][sup][arg]` = $\mathrm{DPSPACE\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DPSpaceH[sub][sup][arg]` = $\mathrm{DPSPACE\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DPSpaceC[sub][sup][arg]` = $\mathrm{DPSPACE\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\NPSpace[sub][sup][arg]` = $\mathrm{NPSPACE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NPSpaceE[sub][sup][arg]` = $\mathrm{NPSPACE\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NPSpaceH[sub][sup][arg]` = $\mathrm{NPSPACE\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NPSpaceC[sub][sup][arg]` = $\mathrm{NPSPACE\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\UPSpace[sub][sup][arg]` = $\mathrm{UPSPACE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UPSpaceE[sub][sup][arg]` = $\mathrm{UPSPACE\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UPSpaceH[sub][sup][arg]` = $\mathrm{UPSPACE\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UPSpaceC[sub][sup][arg]` = $\mathrm{UPSPACE\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\APSpace[sub][sup][arg]` = $\mathrm{APSPACE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\APSpaceE[sub][sup][arg]` = $\mathrm{APSPACE\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\APSpaceH[sub][sup][arg]` = $\mathrm{APSPACE\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\APSpaceC[sub][sup][arg]` = $\mathrm{APSPACE\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$

1085 `\defcomclsgrp{PSpace}`

`\QPTime, ...`

- `\QPTime[sub][sup][arg]` = $\mathrm{QPTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\QPTimeE[sub][sup][arg]` = $\mathrm{QPTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\QPTimeH[sub][sup][arg]` = $\mathrm{QPTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\QPTimeC[sub][sup][arg]` = $\mathrm{QPTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\DQPTime[sub][sup][arg]` = $\mathrm{DQPTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DQPTimeE[sub][sup][arg]` = $\mathrm{DQPTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DQPTimeH[sub][sup][arg]` = $\mathrm{DQPTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DQPTimeC[sub][sup][arg]` = $\mathrm{DQPTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\NQPTime[sub][sup][arg]` = $\mathrm{NQPTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NQPTimeE[sub][sup][arg]` = $\mathrm{NQPTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NQPTimeH[sub][sup][arg]` = $\mathrm{NQPTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NQPTimeC[sub][sup][arg]` = $\mathrm{NQPTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\UQPTime[sub][sup][arg]` = $\mathrm{UQPTIME}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UQPTimeE[sub][sup][arg]` = $\mathrm{UQPTIME\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UQPTimeH[sub][sup][arg]` = $\mathrm{UQPTIME\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UQPTimeC[sub][sup][arg]` = $\mathrm{UQPTIME\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$

- \AQPTime[sub][sup][arg] = $\mathrm{AQPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AQPTimeE[sub][sup][arg] = $\mathrm{AQPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AQPTimeH[sub][sup][arg] = $\mathrm{AQPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AQPTimeC[sub][sup][arg] = $\mathrm{AQPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1086 \defcomclsgrp{QPTime}

\QPSpace, ...

- \QPSpace[sub][sup][arg] = $\mathrm{QPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \QPSpaceE[sub][sup][arg] = $\mathrm{QPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \QPSpaceH[sub][sup][arg] = $\mathrm{QPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \QPSpaceC[sub][sup][arg] = $\mathrm{QPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \DQPSpace[sub][sup][arg] = $\mathrm{DQPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DQPSpaceE[sub][sup][arg] = $\mathrm{DQPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DQPSpaceH[sub][sup][arg] = $\mathrm{DQPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DQPSpaceC[sub][sup][arg] = $\mathrm{DQPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \NQPSpace[sub][sup][arg] = $\mathrm{NQPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \NQPSpaceE[sub][sup][arg] = $\mathrm{NQPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \NQPSpaceH[sub][sup][arg] = $\mathrm{NQPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \NQPSpaceC[sub][sup][arg] = $\mathrm{NQPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \UQPSpace[sub][sup][arg] = $\mathrm{UQPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \UQPSpaceE[sub][sup][arg] = $\mathrm{UQPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \UQPSpaceH[sub][sup][arg] = $\mathrm{UQPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \UQPSpaceC[sub][sup][arg] = $\mathrm{UQPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \AQPSpace[sub][sup][arg] = $\mathrm{AQPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AQPSpaceE[sub][sup][arg] = $\mathrm{AQPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AQPSpaceH[sub][sup][arg] = $\mathrm{AQPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AQPSpaceC[sub][sup][arg] = $\mathrm{AQPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1087 \defcomclsgrp{QPSpace}

\ExpTime, ...

- \ExpTime[sub][sup][arg] = $\mathrm{EXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \ExpTimeE[sub][sup][arg] = $\mathrm{EXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \ExpTimeH[sub][sup][arg] = $\mathrm{EXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \ExpTimeC[sub][sup][arg] = $\mathrm{EXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \DExpTime[sub][sup][arg] = $\mathrm{DEXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DExpTimeE[sub][sup][arg] = $\mathrm{DEXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DExpTimeH[sub][sup][arg] = $\mathrm{DEXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DExpTimeC[sub][sup][arg] = $\mathrm{DEXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \NExpTime[sub][sup][arg] = $\mathrm{NEXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \NExpTimeE[sub][sup][arg] = $\mathrm{NEXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \NExpTimeH[sub][sup][arg] = $\mathrm{NEXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \NExpTimeC[sub][sup][arg] = $\mathrm{NEXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \UExpTime[sub][sup][arg] = $\mathrm{UEXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \UExpTimeE[sub][sup][arg] = $\mathrm{UEXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \UExpTimeH[sub][sup][arg] = $\mathrm{UEXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \UExpTimeC[sub][sup][arg] = $\mathrm{UEXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \AExpTime[sub][sup][arg] = $\mathrm{AEXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AExpTimeE[sub][sup][arg] = $\mathrm{AEXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AExpTimeH[sub][sup][arg] = $\mathrm{AEXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \AExpTimeC[sub][sup][arg] = $\mathrm{AEXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1088 \defcomclsgrp{ExpTime}

\ExpSpace, ...

- \ExpSpace[sub][sup][arg] = $\mathrm{EXPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \ExpSpaceE[sub][sup][arg] = $\mathrm{EXPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \ExpSpaceH[sub][sup][arg] = $\mathrm{EXPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \ExpSpaceC[sub][sup][arg] = $\mathrm{EXPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- \DExpSpace[sub][sup][arg] = $\mathrm{DEXPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DExpSpaceE[sub][sup][arg] = $\mathrm{DEXPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DExpSpaceH[sub][sup][arg] = $\mathrm{DEXPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  \DExpSpaceC[sub][sup][arg] = $\mathrm{DEXPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

- `\NExpSpace[sub][sup][arg]` = $\mathrm{NExpSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NExpSpaceE[sub][sup][arg]` = $\mathrm{NExpSpace\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NExpSpaceH[sub][sup][arg]` = $\mathrm{NExpSpace\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NExpSpaceC[sub][sup][arg]` = $\mathrm{NExpSpace\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\UExpSpace[sub][sup][arg]` = $\mathrm{UExpSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UExpSpaceE[sub][sup][arg]` = $\mathrm{UExpSpace\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UExpSpaceH[sub][sup][arg]` = $\mathrm{UExpSpace\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UExpSpaceC[sub][sup][arg]` = $\mathrm{UExpSpace\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\AExpSpace[sub][sup][arg]` = $\mathrm{AExpSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\AExpSpaceE[sub][sup][arg]` = $\mathrm{AExpSpace\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\AExpSpaceH[sub][sup][arg]` = $\mathrm{AExpSpace\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\AExpSpaceC[sub][sup][arg]` = $\mathrm{AExpSpace\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$

```
\defcomclsgrp{ExpSpace}
%%*****************************************************************************%%
```

`\PH`

- `\PH[sub][sup][par]` = $\mathrm{PH}^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$

```
\defcomhrc{PH}
```

`\WH`

- `\WH[sub][sup][par]` = $\mathrm{W}^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$

```
\defcomhrc{WH}[W]
```

`\AH`

- `\AH[sub][sup][par]` = $\mathrm{A}^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$

```
\defcomhrc{AH}[A]
```

`\DLH, \DBH`

- `\DLH[sub][sup][par]` = $\Delta^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$
- `\DBH[sub][sup][par]` = $\boldsymbol{\Delta}^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$

```
\defcomhrc{DLH}[{\mth{\Delta}}]
\defcomhrc{DBH}[{\mth[mathbf]{\Delta}}]
```

`\ELH, \EBH`

- `\ELH[sub][sup][par]` = $\Sigma^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$
- `\EBH[sub][sup][par]` = $\boldsymbol{\Sigma}^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$

```
\defcomhrc{ELH}[{\mth{\Sigma}}]
\defcomhrc{EBH}[{\mth[mathbf]{\Sigma}}]
```

`\ULH, \UBH`

- `\ULH[sub][sup][par]` = $\Pi^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$
- `\UBH[sub][sup][par]` = $\boldsymbol{\Pi}^{\mathrm{SUP}}_{\mathrm{SUB}}[\mathrm{PAR}]$

```
\defcomhrc{ULH}[{\mth{\Pi}}]
\defcomhrc{UBH}[{\mth[mathbf]{\Pi}}]

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Macros for Games *********************************************************%%
%%*****************************************************************************%%
\ifgam@
%%** Logic Games **************************************************************%%
```

`\SATG, ...` ...

```
%% Satisfiability Games
\cmdtxtoparname{SATG}[Sat]

%% Validity Games
\cmdtxtoparname{VALG}[Val]

%% Evaluation Games
\cmdtxtoparname{EVLG}[Evl]

%% Synthesis Games
\cmdtxtoparname{SYNG}[Syn]
```

```
1118
1119 %% Model-Checking Games
1120 \cmdtxtoparname{MCG}[MC]
1121
1122 %% Ehrenfeucht-Fraisse Games
1123 \cmdtxtoparname{EFG}[EF]

1124 %%** Syntax ************************************************************%%

\PlrSym, \OppSym  ...
1125 \newcommand{\plrsym}{E}
1126 \cmdmthsym{Plr}[\plrsym]
1127 \newcommand{\oppsym}{A}
1128 \cmdmthsym{Opp}[\oppsym]

 \ArenaName, ...  ...
1129 \newcommand{\arenaname}{A}
1130 \usrmthlatupp{Arena}{Name}{name}[\arenaname]

    \PosSet, ...  ...
1131 \newcommand{\possym}{v}
1132 \newcommand{\posset}{Ps}
1133 \cmdmthsetext{Pos}[\posset][\possym]
1134 \cmdmthsymelm{ipos}[\possym_{I}]
1135 \cmdmthsymelm{fpos}[\possym_{F}]
1136 \cmdmthset{PPos}[\posset_{\PlrSym}]
1137 \cmdmthsymelm{ppos}[\possym_{\PlrSym}]
1138 \cmdmthset{OPos}[\posset_{\OppSym}]
1139 \cmdmthsymelm{opos}[\possym_{\OppSym}]

        \PlrFun  ...
1140 \newcommand{\plrfun}{pl}
1141 \cmdmthfun{plr}[\plrfun]

        \MovRel  ...
1142 \newcommand{\movrel}{Mv}
1143 \cmdmthrel{Mov}[\movrel]

  \GameName, ...  ...
1144 \newcommand{\gamename}{\Game}
1145 \usrmthlatupp{Game}{Name}{name}[\gamename]

        \WinSet  ...
1146 \newcommand{\winset}{Wn}
1147 \cmdmthset{Win}[\winset]

\ObsSet, \obsFun  ...
1148 \newcommand{\obsset}{Ob}
1149 \cmdmthset{Obs}[\obsset]
1150 \cmdmthfun{obs}

1151 %%** Semantics *********************************************************%%

\PthSet, \pthFun  ...
1152 \newcommand{\pthsym}{\pi}
1153 \newcommand{\pthset}{Pth}
1154 \cmdmthsetext{Pth}[\pthset][\pthsym]
1155 \cmdmthfun{pth}

    \HstSet, ...  ...
1156 \newcommand{\hstsym}{\rho}
1157 \newcommand{\hstset}{Hst}
1158 \cmdmthsetext{Hst}[\hstset][\hstsym]
```

```
\cmdmthset{PHst}[\hstset_{\PlrSym}]
\cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
\cmdmthset{OHst}[\hstset_{\OppSym}]
\cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
\cmdmthfun{hst}
```

\PlaySet,\playFun ...

```
\newcommand{\playsym}{\pi}
\newcommand{\playset}{Play}
\cmdmthsetext{Play}[\playset][\playsym]
\cmdmthfun{play}
```

\StrSet, ...

```
\newcommand{\strsym}{\sigma}
\newcommand{\strset}{Str}
\cmdmthsetext{Str}[\strset][\strsym]
\cmdmthset{PStr}[\strset_{\PlrSym}]
\cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
\cmdmthset{OStr}[\strset_{\OppSym}]
\cmdmthsymelm{ostr}[\strsym_{\OppSym}]
```

\PrfSet, \prfFun ...

```
\newcommand{\prfsym}{\xi}
\newcommand{\prfset}{Prf}
\cmdmthsetext{Prf}[\prfset][\prfsym]
```

\preFun, \sucFun ...

```
\newcommand{\prefun}{pre}
\cmdmthoargfun{pre}[\prefun]
\newcommand{\sucfun}{suc}
\cmdmthoargfun{suc}[\sucfun]
```

\entFun, \escFun ...

```
\newcommand{\entfun}{ent}
\cmdmthoargfun{ent}[\entfun]
\newcommand{\escfun}{esc}
\cmdmthoargfun{esc}[\escfun]
```

\intFun, \outFun ...

```
\newcommand{\intfun}{int}
\cmdmthoargfun{int}[\intfun]
\newcommand{\outfun}{out}
\cmdmthoargfun{out}[\outfun]
```

\atrFun, \rchFun ...

```
\newcommand{\atrfun}{atr}
\cmdmthoargfun{atr}[\atrfun]
\newcommand{\rchfun}{rch}
\cmdmthoargfun{rch}[\rchfun]
```

\liftFun ...

```
\newcommand{\liftfun}{lift}
\cmdmthoargfun{lift}[\liftfun]
```

\solFun ...

```
\newcommand{\solfun}{sol}
\cmdmthoargfun{sol}[\solfun]
```

```
%%** Qualitative Games on Graph ********************************************%%
```

\BG, ...

```
%% Buchi Games
\cmdtxtoparname{BG}

%% Co-Buchi Games
\cmdtxtoparname{CG}

%% Parity Games
\cmdtxtoparname{PG}

%% Rabin Games
\cmdtxtoparname{RG}

%% Streett Games
\cmdtxtoparname{SG}

%% Muller Games
\cmdtxtoparname{MG}

%%** Syntax *************************************************************%%
```

\EvnSym, \OddSym ...

```
\newcommand{\evnsym}{0}
\cmdmthsym{Evn}[\evnsym]
\newcommand{\oddsym}{1}
\cmdmthsym{Odd}[\oddsym]
```

\PrtSet, \prtFun ...

```
\newcommand{\prtsym}{p}
\newcommand{\prtset}{Pr}
\cmdmthsetext{Prt}[\prtset][\prtsym]
\cmdmthfun{prt}[pr]

%%** Semantics **********************************************************%%
```

...

```
%%** Quantitative Games on Graph ****************************************%%
```

\EG, ...

```
%% Energy Games
\cmdtxtoparname{EG}

%% Mean-Payoff Games
\cmdtxtoparname{MPG}

%% Discounted-Payoff Games
\cmdtxtoparname{DPG}

%%** Syntax *************************************************************%%
```

\MaxSym, \MinSym ...

```
\newcommand{\maxsym}{\oplus}
\cmdmthsym{Max}[\maxsym]
\newcommand{\minsym}{\boxminus}
\cmdmthsym{Min}[\minsym]
```

\WghSet, \wghFun ...

```
\newcommand{\wghsym}{w}
\newcommand{\wghset}{Wg}
\cmdmthsetext{Wgh}[\wghset][\wghsym]
\cmdmthfun{wgh}[wg]

%%** Semantics **********************************************************%%
```

...

```
\fi
%%****************************************************************************%%
```

```
%%****************************************************************************%%
%%** Macros for Logics *******************************************************%%
%%****************************************************************************%%
\iflog@
```

```
%%** Propositional Logics ****************************************************%%
```

\BF, \QBF, ...

```
% Boolean Formulae
\cmdtxtoparname{BF}

% Quantified Boolean Formulae
\DeclareRobustCommand{\QBF}
  {{\txtname{Q}}\BF}
\DeclareRobustCommand{\EBF}
  {\ensuremath{\exists}\BF}
\DeclareRobustCommand{\UBF}
  {\ensuremath{\forall}\BF}
```

```
%%** Syntax ******************************************************************%%
```

\LogSig, ...

```
\newcommand{\logsig}{L}
\usrmthlatupp{Log}{Sig}{sig}[\logsig]
```

\Tt, \Ff ...

```
\newcommand{\ttsym}{\top}
\usrmth{Tt}{}{sym}[\ttsym]
\newcommand{\ffsym}{\bot}
\usrmth{Ff}{}{sym}[\ffsym]
```

\LNeg, \LNot ...

```
\newcommand{\lnegsym}{\neg}
\usrmth{LNeg}{}{luop}[\lnegsym]
\newcommand{\lnotsym}{\sim}
\usrmth{LNot}{}{luop}[\lnotsym]
```

\LCon, \LDis ...

```
\newcommand{\lconsym}{\land}
\usrmth{LCon}{}{lbop}[\lconsym]
\newcommand{\ldissym}{\lor}
\usrmth{LDis}{}{lbop}[\ldissym]
```

\LImp, \LCoi ...

```
\newcommand{\limpsym}{\rightarrow}
\usrmth{LImp}{}{lbop}[\limpsym]
\newcommand{\lcoisym}{\leftrightarrow}
\usrmth{LCoi}{}{lbop}[\lcoisym]
```

\LExs, \LAll ...

```
\newcommand{\lexssym}{\exists}
\usrmth{LExs}{}{luop}[\lexssym]
\newcommand{\lallsym}{\forall}
\usrmth{LAll}{}{luop}[\lallsym]
```

\APSet, ...

```
\newcommand{\apsym}{p}
\newcommand{\apset}{AP}
\cmdmthsetext{AP}[\apset][\apsym]
\cmdmthfun{ap}\usrmth{ap}{}{argfun}
```

```
          \sub  ...
                1289 \usrmth{sub}{}{argfun}

\Cnt, \Qnt, \Sym  ...
                1290 \usrmth{Cnt}{}{sym}[C]
                1291 \usrmth{Qnt}{}{sym}[Q]
                1292 \usrmth{Sym}{}{sym}[\odot]

      \QAE, \QEA  ...
                1293 \usrmth{QAE}{}{sym}[\forall\exists]
                1294 \usrmth{QEA}{}{sym}[\exists\forall]

    \QntSet, ...  ...
                1295 \newcommand{\qntsym}{\wp}
                1296 \newcommand{\qntset}{Qn}
                1297 \cmdmthsetext{Qnt}[\qntset][\qntsym]

   \free, \bound  ...
                1298 \usrmth{free}{}{argfun}
                1299 \usrmth{bound}{}{argfun}

      \dep, \alt  ...
                1300 \usrmth{dep}{}{argfun}
                1301 \usrmth{alt}{}{argfun}

 \cnf, \dnf, ...  ...
                1302 \cmdtxtabr{cnf}
                1303 \cmdtxtabr{dnf}
                1304 \cmdtxtabr{pnf}
                1305 \cmdtxtabr{nnf}

                1306 %%** Semantics *****************************************************************%%

    \LogStr, ...  ...
                1307 \newcommand{\logstr}{L}
                1308 \usrmthlatupp{Log}{Str}{str}[\logstr]

    \ValSet, ...  ...
                1309 \newcommand{\valsym}{\xi}
                1310 \newcommand{\valset}{Val}
                1311 \cmdmthsetext{Val}[\valset][\valsym]

    \AsgSet, ...  ...
                1312 \newcommand{\asgsym}{\chi}
                1313 \newcommand{\asgset}{Asg}
                1314 \cmdmthsetext{Asg}[\asgset][\asgsym]

                1315 %%** First-Order Logics I ******************************************************%%

       \FOL, ...  ...
                1316 % First-Order Logic
                1317 \cmdtxtoparname{FOL}[Fol]
                1318 \cmdtxtoparname{FO}[FO]
                1319
                1320 % Monadic First-Order Logic
                1321 \DeclareRobustCommand{\MFOL}
                1322   {{\txtname{M}}\FOL}
                1323 \DeclareRobustCommand{\MFO}
                1324   {{\txtname{M}}\FO}

                1325 %%** Syntax ********************************************************************%%
```

```
\VarSig, ...  ...
1326 \newcommand{\varsig}{V}
1327 \usrmthlatupp{Var}{Sig}{sig}[\varsig]
1328 \newcommand{\varsym}{x}
1329 \newcommand{\varset}{Vr}
1330 \cmdmthsetext{Var}[\varset][\varsym]
1331 \usrmth{var}{}{argfun}[vr]
1332 \cmdmthfun{dim}[dm]\usrmth{dim}{}{argfun}[dm]

\ConSig, ...  ...
1333 \newcommand{\consig}{C}
1334 \usrmthlatupp{Con}{Sig}{sig}[\consig]
1335 \newcommand{\consym}{c}
1336 \newcommand{\conset}{Cn}
1337 \cmdmthsetext{Con}[\conset][\consym]
1338 \usrmth{con}{}{argfun}[cn]

\FunSig, ...  ...
1339 \newcommand{\funsig}{F}
1340 \usrmthlatupp{Fun}{Sig}{sig}[\funsig]
1341 \newcommand{\funsym}{f}
1342 \newcommand{\funset}{Fn}
1343 \cmdmthsetext{Fun}[\funset][\funsym]
1344 \usrmth{fun}{}{argfun}[fn]
1345 \cmdmthfun{art}[ar]\usrmth{art}{}{argfun}[ar]

\TerSig, ...  ...
1346 \newcommand{\tersig}{T}
1347 \usrmthlatupp{Ter}{Sig}{sig}[\tersig]
1348 \newcommand{\tersym}{t}
1349 \newcommand{\terset}{Tr}
1350 \cmdmthsetext{Ter}[\terset][\tersym]
1351 \usrmth{ter}{}{argfun}

\RelSig, ...  ...
1352 \newcommand{\relsig}{R}
1353 \usrmthlatupp{Rel}{Sig}{sig}[\relsig]
1354 \newcommand{\relsym}{r}
1355 \newcommand{\relset}{Rl}
1356 \cmdmthsetext{Rel}[\relset][\relsym]
1357 \usrmth{rel}{}{argfun}[rl]

      \skm  ...
1358 \usrmth{skm}{}{argfun}

1359 %%** Semantics ****************************************************************%%

\ConStr, ...  ...
1360 \newcommand{\constr}{C}
1361 \usrmthlatupp{Con}{Str}{str}[\constr]

\FunStr, ...  ...
1362 \newcommand{\funstr}{F}
1363 \usrmthlatupp{Fun}{Str}{str}[\funstr]

\TerStr, ...  ...
1364 \newcommand{\terstr}{T}
1365 \usrmthlatupp{Ter}{Str}{str}[\terstr]

\RelStr, ...  ...
1366 \newcommand{\relstr}{R}
1367 \usrmthlatupp{Rel}{Str}{str}[\relstr]
```

```
%%** First-Order Logics II ************************************************%%
```

\DF, \IF, ...

```
% Dependence-Friendly Logic
\cmdtxtoparname{DF}

% Independence-Friendly Logic
\cmdtxtoparname{IF}

% Dependence/Independence-Friendly Logic
\cmdtxtoparname{DIF}

% Dependence Logic
\cmdtxtoparname{DL}

% Team Logic
\cmdtxtoparname{TL}

% Alternating Dependence-Friendly Logic
\cmdtxtoparname{ADF}

% Alternating Independence-Friendly Logic
\cmdtxtoparname{AIF}

% Alternating Dependence/Independence-Friendly Logic
\cmdtxtoparname{ADIF}
```

...

```
%%** Syntax ******************************************************************%%
```

\LEExs, \LAAll ...

```
\newcommand{\leexssym}{\Sigma}
\usrmth{LEExs}{}{luop}[\leexssym]
\newcommand{\laallsym}{\Pi}
\usrmth{LAAll}{}{luop}[\laallsym]

%%** Semantics ***************************************************************%%
```

...

```
%%** Second-Order Logics I ************************************************%%
```

\SOL, ...

```
% Second-Order Logic
\cmdtxtoparname{SOL}[Sol]
\cmdtxtoparname{SO}

% Weak Second-Order Logic
\DeclareRobustCommand{\WSOL}
  {{\txtname{W}}\SOL}
\DeclareRobustCommand{\WSO}
  {{\txtname{W}}\SO}

% coWeak Second-Order Logic
\DeclareRobustCommand{\coWSOL}
  {{\txtname{coW}}\SOL}
\DeclareRobustCommand{\coWSO}
  {{\txtname{coW}}\SO}

% Monadic Second-Order Logic
\DeclareRobustCommand{\MSOL}
  {{\txtname{M}}\SOL}
\DeclareRobustCommand{\MSO}
  {{\txtname{M}}\SO}
```

```
1420
1421 % Weak Monadic Second-Order Logic
1422 \DeclareRobustCommand{\WMSOL}
1423   {{\txtname{W}}\MSOL}
1424 \DeclareRobustCommand{\WMSO}
1425   {{\txtname{W}}\MSO}
1426
1427 % coWeak Monadic Second-Order Logic
1428 \DeclareRobustCommand{\coWMSOL}
1429   {{\txtname{coW}}\MSOL}
1430 \DeclareRobustCommand{\coWMSO}
1431   {{\txtname{coW}}\MSO}

1432 %%** Syntax ************************************************************%%

\FVarSet, ...  ...
1433 \newcommand{\fvarsym}{x}
1434 \newcommand{\fvarset}{FVr}
1435 \cmdmthsetext{FVar}[\fvarset][\fvarsym]

\SVarSet, ...  ...
1436 \newcommand{\svarsym}{X}
1437 \newcommand{\svarset}{SVr}
1438 \cmdmthsetext{SVar}[\svarset][\svarsym]

1439 %%** Semantics ********************************************************%%

    ...
1440 %%** Second-Order Logics II *******************************************%%

\TL, \PL, ...  ...
1441 % Tree Logic
1442 \cmdtxtoparname{TL}
1443
1444 % Weak Tree Logic
1445 \DeclareRobustCommand{\WTL}
1446   {{\txtname{W}}\TL}
1447
1448 % coWeak Tree Logic
1449 \DeclareRobustCommand{\coWTL}
1450   {{\txtname{coW}}\TL}
1451
1452 % Monadic Tree Logic
1453 \DeclareRobustCommand{\MTL}
1454   {{\txtname{M}}\TL}
1455
1456 % Weak Monadic Tree Logic
1457 \DeclareRobustCommand{\WMTL}
1458   {{\txtname{W}}\MTL}
1459
1460 % coWeak Monadic Tree Logic
1461 \DeclareRobustCommand{\coWMTL}
1462   {{\txtname{coW}}\MTL}
1463
1464 % Path Logic
1465 \cmdtxtoparname{PL}
1466
1467 % Weak Path Logic
1468 \DeclareRobustCommand{\WPL}
1469   {{\txtname{W}}\PL}
1470
1471 % coWeak Path Logic
1472 \DeclareRobustCommand{\coWPL}
1473   {{\txtname{coW}}\PL}
```

```
1474
1475 % Monadic Path Logic
1476 \DeclareRobustCommand{\MPL}
1477   {{\txtname{M}}\PL}
1478
1479 % Weak Monadic Path Logic
1480 \DeclareRobustCommand{\WMPL}
1481   {{\txtname{W}}\MPL}
1482
1483 % coWeak Monadic Path Logic
1484 \DeclareRobustCommand{\coWMPL}
1485   {{\txtname{coW}}\MPL}

1486 %%** Syntax ********************************************************************%%

   ...

1487 %%** Semantics ******************************************************************%%

   ...

1488 %%** Modal Logics I **************************************************************%%

\ML, \GML, ...  ...
1489 % Modal Logic
1490 \cmdtxtoparname{ML}
1491
1492 % Graded Modal Logic
1493 \DeclareRobustCommand{\GML}
1494   {{\txtname{G}}\ML}
1495
1496 % Quantified Modal Logic
1497 \DeclareRobustCommand{\QML}
1498   {{\txtname{Q}}\ML}
1499 \DeclareRobustCommand{\EML}
1500   {\ensuremath{\exists}\ML}
1501 \DeclareRobustCommand{\UML}
1502   {\ensuremath{\forall}\ML}

1503 %%** Syntax ********************************************************************%%

        \Opr  ...
1504 \usrmth{Opr}{}{sym}[Op]

  \DMod, \BMod  ...
1505 \usrmth{DMod}{}{sym}[\Diamond]
1506 \usrmth{BMod}{}{sym}[\Box]

    \Exs, \All  ...
1507 \DeclareRobustCommand{\Exs}[1]
1508   {\mth{\defval{\argmid{\langle}{#1}{\rangle}}{\DMod}}}
1509 \DeclareRobustCommand{\All}[1]
1510   {\mth{\defval{\argmid{\left[}{#1}{\right]}}{\BMod}}}

1511 %%** Semantics ******************************************************************%%

  \KrpStr, ...  ...
1512 \newcommand{\krpstr}{K}
1513 \usrmthlatupp{Krp}{Str}{str}[\krpstr]

  \WrlSet, ...  ...
1514 \newcommand{\wrlsym}{w}
1515 \newcommand{\wrlset}{W}
1516 \cmdmthsetext{Wrl}[\wrlset][\wrlsym]
1517 \cmdmthsymelm{iwrl}[\wrlsym_{I}]
```

```
\AccRel, \TrnRel  ...
1518 \newcommand{\accsym}{R}
1519 \cmdmthrel{Acc}[\accsym]
1520 \cmdmthrel{Trn}[\accsym]

        \labFun  ...
1521 \newcommand{\labsym}{\lambda}
1522 \cmdmthfun{lab}[\labsym]

\PthSet, \pthFun  ...
1523 \providecommand{\pthsym}{\pi}
1524 \providecommand{\pthset}{Pth}
1525 \cmdmthsetext{Pth}[\pthset][\pthsym]
1526 \cmdmthfun{pth}

1527 %%** Modal Logics II ********************************************************%%

  \MC, \GMC, ...  ...
1528 % Mu Calculus
1529 \cmdtxtoparname{MC}[\ensuremath{\mu}-Calculus]
1530
1531 % Graded Mu Calculus
1532 \DeclareRobustCommand{\GMC}
1533   {{\txtname{G}}\MC}
1534
1535 % Quantified Mu Calculus
1536 \DeclareRobustCommand{\QMC}
1537   {{\txtname{Q}}\MC}
1538 \DeclareRobustCommand{\EMC}
1539   {\ensuremath{\exists}\MC}
1540 \DeclareRobustCommand{\UMC}
1541   {\ensuremath{\forall}\MC}
1542
1543 % Alternation-Free Mu Calculus
1544 \DeclareRobustCommand{\AFMC}
1545   {{\txtname{AF}}\MC}
1546
1547 % Alternation-Free Graded Mu Calculus
1548 \DeclareRobustCommand{\AFGMC}
1549   {{\txtname{AF}}\GMC}
1550
1551 % Quantified Alternation-Free Mu Calculus
1552 \DeclareRobustCommand{\QAFMC}
1553   {{\txtname{Q}}\AFMC}
1554 \DeclareRobustCommand{\EAFMC}
1555   {\ensuremath{\exists}\AFMC}
1556 \DeclareRobustCommand{\UAFMC}
1557   {\ensuremath{\forall}\AFMC}
1558

1559 %%** Syntax ******************************************************************%%

    ...

1560 %%** Semantics ***************************************************************%%

    ...

1561 %%** Temporal Logics I *******************************************************%%

 \PTL, \LTL, ...  ...
1562 % Propositional Temporal Logic
1563 \cmdtxtoparname{PTL}
1564
1565 % Quantified Propositional Temporal Logic
```

```
\DeclareRobustCommand{\QPTL}
  {{\txtname{Q}}\PTL}
\DeclareRobustCommand{\EPTL}
  {\ensuremath{\exists}\PTL}
\DeclareRobustCommand{\UPTL}
  {\ensuremath{\forall}\PTL}

% Linear Temporal Logic
\cmdtxtoparname{LTL}

% Quantified Linear Temporal Logic
\DeclareRobustCommand{\QLTL}
  {{\txtname{Q}}\LTL}
\DeclareRobustCommand{\ELTL}
  {\ensuremath{\exists}\LTL}
\DeclareRobustCommand{\ULTL}
  {\ensuremath{\forall}\LTL}

%%** Syntax ***************************************************************%%

\X, ...  ...

\usrmth{X}{}{sym}[X\,]
\usrmth{F}{}{sym}[F\,]
\usrmth{G}{}{sym}[G\,]
\usrmth{U}{}{sym}[\,U\,]
\usrmth{R}{}{sym}[\,R\,]

\Y, ...  ...

\usrmth{Y}{}{sym}[G\,]
\usrmth{P}{}{sym}[P\,]\let\SavePilcrow\P
\usrmth{H}{}{sym}[H\,]\let\SaveDoubleAcute\H
\usrmth{S}{}{sym}[\,S\,]\let\SaveSectionSymbol\S
\usrmth{B}{}{sym}[\,B\,]

%%** Semantics ************************************************************%%

   ...

%%** Temporal Logics II ***************************************************%%

\PDL, \CTL, ...  ...

% Propositional Dynamic Logic
\cmdtxtoparname{PDL}

% Computation Tree Logic
\cmdtxtoparname{CTL}

% Weak Computation Tree Logic
\DeclareRobustCommand{\WCTL}
  {{\txtname{W}}\CTL}

% Quantified Computation Tree Logic
\DeclareRobustCommand{\QCTL}
  {{\txtname{Q}}\CTL}
\DeclareRobustCommand{\ECTL}
  {\ensuremath{\exists}\CTL}
\DeclareRobustCommand{\UCTL}
  {\ensuremath{\forall}\CTL}

% Improved Computation Tree Logic
\cmdtxtoparname{CTLP}[CTL$^{+}$]

% Weak Improved Computation Tree Logic
\DeclareRobustCommand{\WCTLP}
```

```
  {{\txtname{W}}\CTLP}

% Quantified Improved Computation Tree Logic
\DeclareRobustCommand{\QCTLP}
  {{\txtname{Q}}\CTLP}
\DeclareRobustCommand{\ECTLP}
  {\ensuremath{\exists}\CTLP}
\DeclareRobustCommand{\UCTLP}
  {\ensuremath{\forall}\CTLP}

% Full Computation Tree Logic
\cmdtxtoparname{CTLS}[CTL*]

% Weak Full Computation Tree Logic
\DeclareRobustCommand{\WCTLS}
  {{\txtname{W}}\CTLS}

% Quantified Full Computation Tree Logic
\DeclareRobustCommand{\QCTLS}
  {{\txtname{Q}}\CTLS}
\DeclareRobustCommand{\ECTLS}
  {\ensuremath{\exists}\CTLS}
\DeclareRobustCommand{\UCTLS}
  {\ensuremath{\forall}\CTLS}

%%** Syntax ***************************************************************%%
```

\E, \A ...

```
\usrmth{E}{}{sym}
\usrmth{A}{}{sym}

%%** Semantics ************************************************************%%
```

...

```
%%** Strategic Logics I ***************************************************%%
```

\ATL, ...

```
% Alternating Temporal Logic
\cmdtxtoparname{ATL}

% Weak Alternating Tree Logic
\DeclareRobustCommand{\WATL}
  {{\txtname{W}}\ATL}

% Quantified Alternating Temporal Logic
\DeclareRobustCommand{\QATL}
  {{\txtname{Q}}\ATL}
\DeclareRobustCommand{\EATL}
  {\ensuremath{\exists}\ATL}
\DeclareRobustCommand{\UATL}
  {\ensuremath{\forall}\ATL}

% Improved Alternating Temporal Logic
\cmdtxtoparname{ATLP}[ATL$^{+}$]

% Weak Improved Alternating Tree Logic
\DeclareRobustCommand{\WATLP}
  {{\txtname{W}}\ATLP}

% Quantified Improved Alternating Temporal Logic
\DeclareRobustCommand{\QATLP}
  {{\txtname{Q}}\ATLP}
\DeclareRobustCommand{\EATLP}
  {\ensuremath{\exists}\ATLP}
```

```
\DeclareRobustCommand{\UATLP}
  {\ensuremath{\forall}\ATLP}

% Full Alternating Temporal Logic
\cmdtxtoparname{ATLS}[ATL*]

% Weak Full Alternating Tree Logic
\DeclareRobustCommand{\WATLS}
  {{\txtname{W}}\ATLS}

% Quantified Full Alternating Temporal Logic
\DeclareRobustCommand{\QATLS}
  {{\txtname{Q}}\ATLS}
\DeclareRobustCommand{\EATLS}
  {\ensuremath{\exists}\ATLS}
\DeclareRobustCommand{\UATLS}
  {\ensuremath{\forall}\ATLS}

%%** Syntax ************************************************************%%
```

`\EExs, \AAll` ...

```
\DeclareRobustCommand{\EExs}[1]
  {\mth{\argmid{\langle\!\langle}{\defval{#1}{\emptyset}}{\rangle\!\rangle}}}
\DeclareRobustCommand{\AAll}[1]
  {\mth{\argmid{\left[\left[}{\defval{#1}{\emptyset}}{\right]\right]}}}

%%** Semantics ********************************************************%%
```

`\CGS` ...

```
\cmdtxtname{CGS}
```

`\CGSStr, ...` ...

```
\newcommand{\cgsstr}{G}
\usrmthlatupp{CGS}{Str}{str}[\cgsstr]
```

`\AgnSet, ...` ...

```
\newcommand{\agnsym}{a}
\newcommand{\agnset}{Ag}
\cmdmthsetext{Agn}[\agnset][\agnsym]
```

`\PosSet, ...` ...

```
\providecommand{\possym}{v}
\providecommand{\posset}{Ps}
\cmdmthsetext{Pos}[\posset][\possym]
\cmdmthsymelm{ipos}[\possym_{I}]
\cmdmthsymelm{fpos}[\possym_{F}]
\cmdmthset{PPos}[\posset_{\PlrSym}]
\cmdmthsymelm{ppos}[\possym_{\PlrSym}]
\cmdmthset{OPos}[\posset_{\OppSym}]
\cmdmthsymelm{opos}[\possym_{\OppSym}]
```

`\SttSet, ...` ...

```
\newcommand{\sttsym}{s}
\newcommand{\sttset}{St}
\cmdmthsetext{Stt}[\sttset][\sttsym]
\cmdmthset{IStt}[\sttset_{I}]
\cmdmthsymelm{istt}[\sttsym_{I}]
\cmdmthset{FStt}[\sttset_{F}]
\cmdmthsymelm{fstt}[\sttsym_{F}]
```

`\ActSet, ...` ...

```
\newcommand{\actsym}{c}
\newcommand{\actset}{Ac}
\cmdmthsetext{Act}[\actset][\actsym]
```

```
\DecSet, ...  ...
1724 \newcommand{\decsym}{d}
1725 \newcommand{\decset}{Dc}
1726 \cmdmthsetext{Dec}[\decset][\decsym]

     \movFun  ...
1727 \newcommand{\movsym}{\tau}
1728 \cmdmthfun{mov}[\movsym]

\HstSet, ...  ...
1729 \providecommand{\hstsym}{\rho}
1730 \providecommand{\hstset}{Hst}
1731 \cmdmthsetext{Hst}[\hstset][\hstsym]
1732 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1733 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1734 \cmdmthset{OHst}[\hstset_{\OppSym}]
1735 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1736 \cmdmthfun{hst}

\PlaySet,\playFun  ...
1737 \providecommand{\playsym}{\pi}
1738 \providecommand{\playset}{Play}
1739 \cmdmthsetext{Play}[\playset][\playsym]
1740 \cmdmthfun{play}

\StrSet, ...  ...
1741 \providecommand{\strsym}{\sigma}
1742 \providecommand{\strset}{Str}
1743 \cmdmthsetext{Str}[\strset][\strsym]
1744 \cmdmthset{PStr}[\strset_{\PlrSym}]
1745 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1746 \cmdmthset{OStr}[\strset_{\OppSym}]
1747 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]

\PrfSet, \prfFun  ...
1748 \providecommand{\prfsym}{\xi}
1749 \providecommand{\prfset}{Prf}
1750 \cmdmthsetext{Prf}[\prfset][\prfsym]

1751 %%** Strategic Logics II ****************************************************%%

    \SL, ...  ...
1752 % Strategy Logic
1753 \cmdtxtoparname{SL}
1754
1755 \DeclareRobustCommand{\ESL}
1756   {\ensuremath{\exists}\SL}
1757 \DeclareRobustCommand{\USL}
1758   {\ensuremath{\forall}\SL}
1759
1760 \DeclareRobustCommand{\FSL}
1761   {{\txtname{F}}\SL}
1762
1763 \DeclareRobustCommand{\EFSL}
1764   {\ensuremath{\exists}\FSL}
1765 \DeclareRobustCommand{\UFSL}
1766   {\ensuremath{\forall}\FSL}
1767
1768 % One-Goal Strategy Logic
1769 \DeclareRobustCommandx{\OGSL}[3][1=, 2=, 3=]
1770   {\SL[#1][#2][1g\arglef{,}{#3}]}
1771
1772 \DeclareRobustCommand{\EOGSL}
```

```
  {\ensuremath{\exists}\OGSL}
\DeclareRobustCommand{\UOGSL}
  {\ensuremath{\forall}\OGSL}

\DeclareRobustCommand{\FOGSL}
  {{\txtname{F}}\OGSL}

\DeclareRobustCommand{\EFOGSL}
  {\ensuremath{\exists}\FOGSL}
\DeclareRobustCommand{\UFOGSL}
  {\ensuremath{\forall}\FOGSL}

% Conjunctive-Goal Strategy Logic
\DeclareRobustCommandx{\CGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][cg\arglef{,}{#3}]}

\DeclareRobustCommand{\ECGSL}
  {\ensuremath{\exists}\CGSL}
\DeclareRobustCommand{\UCGSL}
  {\ensuremath{\forall}\CGSL}

\DeclareRobustCommand{\FCGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFCGSL}
  {\ensuremath{\exists}\FCGSL}
\DeclareRobustCommand{\UFCGSL}
  {\ensuremath{\forall}\FCGSL}

% Disjunctive-Goal Strategy Logic
\DeclareRobustCommandx{\DGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][dg\arglef{,}{#3}]}

\DeclareRobustCommand{\EDGSL}
  {\ensuremath{\exists}\DGSL}
\DeclareRobustCommand{\UDGSL}
  {\ensuremath{\forall}\DGSL}

\DeclareRobustCommand{\FDGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFDGSL}
  {\ensuremath{\exists}\FDGSL}
\DeclareRobustCommand{\UFDGSL}
  {\ensuremath{\forall}\FDGSL}

% Alternating-Goal Strategy Logic
\DeclareRobustCommandx{\AGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][ag\arglef{,}{#3}]}

\DeclareRobustCommand{\EAGSL}
  {\ensuremath{\exists}\AGSL}
\DeclareRobustCommand{\UAGSL}
  {\ensuremath{\forall}\AGSL}

\DeclareRobustCommand{\FAGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFAGSL}
  {\ensuremath{\exists}\FAGSL}
\DeclareRobustCommand{\UFAGSL}
  {\ensuremath{\forall}\FAGSL}
```

```
% Extended-Goal Strategy Logic
\DeclareRobustCommandx{\EGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][eg\arglef{,}{#3}]}

\DeclareRobustCommand{\EEGSL}
  {\ensuremath{\exists}\EGSL}
\DeclareRobustCommand{\UEGSL}
  {\ensuremath{\forall}\EGSL}

\DeclareRobustCommand{\FEGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFEGSL}
  {\ensuremath{\exists}\FEGSL}
\DeclareRobustCommand{\UFEGSL}
  {\ensuremath{\forall}\FEGSL}

% Boolean-Goal Strategy Logic
\DeclareRobustCommandx{\BGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][bg\arglef{,}{#3}]}

\DeclareRobustCommand{\EBGSL}
  {\ensuremath{\exists}\BGSL}
\DeclareRobustCommand{\UBGSL}
  {\ensuremath{\forall}\BGSL}

\DeclareRobustCommand{\FBGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFBGSL}
  {\ensuremath{\exists}\FBGSL}
\DeclareRobustCommand{\UFBGSL}
  {\ensuremath{\forall}\FBGSL}

% Nested-Goal Strategy Logic
\DeclareRobustCommandx{\NGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][ng\arglef{,}{#3}]}

\DeclareRobustCommand{\ENGSL}
  {\ensuremath{\exists}\NGSL}
\DeclareRobustCommand{\UNGSL}
  {\ensuremath{\forall}\NGSL}

\DeclareRobustCommand{\FNGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFNGSL}
  {\ensuremath{\exists}\FNGSL}
\DeclareRobustCommand{\UFNGSL}
  {\ensuremath{\forall}\FNGSL}

% Undefined-Goal Strategy Logic
\DeclareRobustCommandx{\XGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][xg\arglef{,}{#3}]}

\DeclareRobustCommand{\EXGSL}
  {\ensuremath{\exists}\XGSL}
\DeclareRobustCommand{\UXGSL}
  {\ensuremath{\forall}\XGSL}

\DeclareRobustCommand{\FXGSL}
  {{\txtname{F}}\xGSL}
```

```
\DeclareRobustCommand{\EFXGSL}
  {\ensuremath{\exists}\FXGSL}
\DeclareRobustCommand{\UFXGSL}
  {\ensuremath{\forall}\FXGSL}

%%** Syntax ************************************************************%%
```

\BndSet, ...

```
\newcommand{\bndsym}{\flat}
\newcommand{\bndset}{Bn}
\cmdmthsetext{Bnd}[\bndset][\bndsym]
\usrmth{bnd}{}{argfun}
```

\psn ...

```
\usrmth{psn}{}{argfun}

%%** Semantics ********************************************************%%
```

\nxtFun ...

```
\newcommand{\nxtfun}{nxt}
\cmdmthfun{nxt}[\nxtfun]

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Macros for Automata ******************************************************%%
%%*****************************************************************************%%
\ifaut@
%%** Finite Word Automata *****************************************************%%
```

\DFA, ...

```
\cmdtxtoparname{DFA}\cmdtxtoparname{NFA}\cmdtxtoparname{UFA}\cmdtxtoparname{AFA}

\cmdtxtoparname{DWA}\cmdtxtoparname{NWA}\cmdtxtoparname{UWA}\cmdtxtoparname{AWA}

\cmdtxtoparname{DFW}\cmdtxtoparname{NFW}\cmdtxtoparname{UFW}\cmdtxtoparname{AFW}
\cmdtxtoparname{DBW}\cmdtxtoparname{NBW}\cmdtxtoparname{UBW}\cmdtxtoparname{ABW}
\cmdtxtoparname{DCW}\cmdtxtoparname{NCW}\cmdtxtoparname{UCW}\cmdtxtoparname{ACW}
\cmdtxtoparname{DPW}\cmdtxtoparname{NPW}\cmdtxtoparname{UPW}\cmdtxtoparname{APW}
\cmdtxtoparname{DRW}\cmdtxtoparname{NRW}\cmdtxtoparname{URW}\cmdtxtoparname{ARW}
\cmdtxtoparname{DSW}\cmdtxtoparname{NSW}\cmdtxtoparname{USW}\cmdtxtoparname{ASW}
\cmdtxtoparname{DMW}\cmdtxtoparname{NMW}\cmdtxtoparname{UMW}\cmdtxtoparname{AMW}
```

\GFG, \PD, ...

```
\cmdtxtoparname{GFG}

\cmdtxtoparname{PD}

%% ...

%%** Syntax ************************************************************%%
```

\AutName, ...

```
\newcommand{\autname}{A}
\usrmthlatupp{Aut}{Name}{name}[\autname]
\newcommand{\autset}{Aut}
\cmdmthset{Aut}[\autset]
```

\WAutSet ...

```
\newcommand{\wautset}{WAut}
\cmdmthset{WAut}[\wautset]
```

```
\SttSet, ...  ...
1942 \def\sttsym{q}
1943 \def\sttset{Q}
1944 \cmdmthsetext{Stt}[\sttset][\sttsym]
1945 \cmdmthset{IStt}[\sttset_{I}]
1946 \cmdmthsymelm{istt}[\sttsym_{I}]
1947 \cmdmthset{FStt}[\sttset_{F}]
1948 \cmdmthsymelm{fstt}[\sttsym_{F}]

\SymSet, ...  ...
1949 \newcommand{\symsym}{\sigma}
1950 \newcommand{\symset}{\Sigma}
1951 \cmdmthsetext{Sym}[\symset][\symsym]

     \trnFun  ...
1952 \newcommand{\trnsym}{\delta}
1953 \cmdmthfun{trn}[\trnsym]

1954 %%** Semantics ********************************************************%%

    \LangFun  ...
1955 \newcommand{\langfun}{L}
1956 \cmdmthfun{Lang}[\langfun]

\WrdSet, ...  ...
1957 \newcommand{\wrdsym}{w}
1958 \newcommand{\wrdset}{Wr}
1959 \cmdmthsetext{Wrd}[\wrdset][\wrdsym]

1960 %%** Finite Tree Automata *****************************************************%%

   \DTA, ...  ...
1961 \cmdtxtoparname{DTA}\cmdtxtoparname{NTA}\cmdtxtoparname{UTA}\cmdtxtoparname{ATA}
1962
1963 \cmdtxtoparname{DFT}\cmdtxtoparname{NFT}\cmdtxtoparname{UFT}\cmdtxtoparname{AFT}
1964 \cmdtxtoparname{DBT}\cmdtxtoparname{NBT}\cmdtxtoparname{UBT}\cmdtxtoparname{ABT}
1965 \cmdtxtoparname{DCT}\cmdtxtoparname{NCT}\cmdtxtoparname{UCT}\cmdtxtoparname{ACT}
1966 \cmdtxtoparname{DPT}\cmdtxtoparname{NPT}\cmdtxtoparname{UPT}\cmdtxtoparname{APT}
1967 \cmdtxtoparname{DRT}\cmdtxtoparname{NRT}\cmdtxtoparname{URT}\cmdtxtoparname{ART}
1968 \cmdtxtoparname{DST}\cmdtxtoparname{NST}\cmdtxtoparname{UST}\cmdtxtoparname{AST}
1969 \cmdtxtoparname{DMT}\cmdtxtoparname{NMT}\cmdtxtoparname{UMT}\cmdtxtoparname{AMT}

1970 %%** Syntax ************************************************************%%

    \TAutSet  ...
1971 \newcommand{\tautset}{TAut}
1972 \cmdmthset{TAut}[\tautset]

\DirSet, ...  ...
1973 \newcommand{\dirsym}{d}
1974 \newcommand{\dirset}{\Lambda}
1975 \cmdmthsetext{Dir}[\dirset][\dirsym]

1976 %%** Semantics ********************************************************%%

\TreeSet, ...  ...
1977 \newcommand{\treesym}{T}
1978 \newcommand{\treeset}{Tr}
1979 \cmdmthsetext{Tree}[\treeset][\treesym]

     \wotFun  ...
1980 \newcommand{\wotfun}{wot}
1981 \cmdmthfun{wot}[\wotfun]
```

```
\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Format Tricks ************************************************************%%
%%*****************************************************************************%%
\iffrm@

...  ...
%%...

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Figure Tricks ************************************************************%%
%%*****************************************************************************%%
\iffig@

\RequirePackage{tikz}
\usetikzlibrary{arrows,graphs,matrix,patterns,shapes}

\tikzstyle{every node} =
  [draw = none, fill = none, black, thin]
\tikzstyle{every edge} +=
  [black, thick]

\tikzstyle{noall} =
  [draw = none, fill = none]
\tikzstyle{nodraw} =
  [draw = none, fill = white]
\tikzstyle{nofill} =
  [draw = black, fill = none]

\ifwrpfig@
  % Wrapfig Package
  \RequirePackage{wrapfig}
\fi

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Table Tricks *************************************************************%%
%%*****************************************************************************%%
\iftab@

...  ...
%%...

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Algorithm Tricks *********************************************************%%
%%*****************************************************************************%%
\ifalg@

\RequirePackage[ruled,vlined]{algorithm2e}
\DontPrintSemicolon
\SetInd{0.25em}{0.5em}
\setlength{\algomargin}{1.25em}

\Signature  ...
\SetKw{Signature}{signature}

\Macro, ...  ...
\SetKwFor{Macro}{macro}{}{}
\SetKwFor{Function}{function}{}{}
\SetKwFor{Procedure}{procedure}{}{}
```

```
        \Let  ...
              \SetKwFor{Let}{let}{in}{}

\True, \False  ...
              \SetKw{True}{true}
              \SetKw{False}{false}

   \From, ...  ...
              \SetKw{From}{from}
              \SetKw{To}{to}
              \SetKw{DownTo}{downto}

   \GoTo, ...  ...
              \SetKw{GoTo}{goto}
              \SetKw{Break}{break}
              \SetKw{Continue}{continue}

    \MIf, ...  ...
              \SetKwIF{MIf}{MElseIf}{MElse}{\#if}{\#then}{\#else \#if}{\#else}{\#endif}

        \nlr  ...
              \DeclareRobustCommand{\nlr}[1]
                {\addtocounter{AlgoLine}{1}%
                 \nlset{\arabic{AlgoLine}-\addtocounter{AlgoLine}{#1}\arabic{AlgoLine}}}

              \fi
              %%*****************************************************************************%%
              \endinput
              ⟨/package⟩
```

2 Change History

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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

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