fmocdmac — FM's OCD LaTeX Macro*

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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 v0.23 of the fmocdmac package, last revised 2023/09/16.

```
%% 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 graphs
\newif\ifgrp@ \grp@false
\DeclareOption{grp}{\grp@true\txtgen@true\mthgen@true}
\DeclareOption{nogrp}{\grp@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,grp,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{⟨A⟩}{⟨B⟩}` evaluates to the empty string, if Argument ⟨A⟩ is empty, and to Argument ⟨B⟩, 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}
  \RequirePackage{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]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext}$"
- `\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]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext}$"

```
\newcommand{\newtxt}
  {\@ifstar{\@snewtxt}{\@newtxt}}
\newcommandx{\@newtxt}[5][1=, 3=, 4=, 5=]
  {\text{#1#2\txtsubsup[#1]{#3}{#4}#5}\xspace}
\newcommandx{\@snewtxt}[5][1=, 3=, 4=, 5=]
  {#1#2\txtsubsup[#1]{#3}{#4}#5\normalfont\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]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext}$"
- `\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]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext}$"

```
\newcommand{\newtxtsty}
  {\@ifstar{\@snewtxtsty}{\@newtxtsty}}
\newcommandx{\@newtxtsty}[2][2=]
  {\newtxt[\defval{#2}{#1}]}
\newcommandx{\@snewtxtsty}[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]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext1(Arg)Ext2}$"
- `\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]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext1(Arg)Ext2}$"

```
\newcommand{\newtxtarg}
  {\@ifstar{\@snewtxtarg}{\@newtxtarg}}
\newcommandx{\@newtxtarg}[7][1=, 3=, 4=, 5=, 7=]
  {\newtxt[#1]{#2}[#3][#4][\argmid{#5(){#6}{)#7}]}
\newcommandx{\@snewtxtarg}[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]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}\mathsf{Ext1(Arg)Ext2}$"
- `\newtxtargsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext1(Arg)Ext2}$"
- `\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]` = "$\mathsf{Name}_{\mathsf{sub}}^{\mathsf{sup}}\mathsf{Ext1(Arg)Ext2}$"
- `\newtxtargsty*{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathtt{Name}_{\mathtt{sub}}^{\mathtt{sup}}\mathtt{Ext1(Arg)Ext2}$"

```
\newcommand{\newtxtargsty}
  {\@ifstar{\@snewtxtargsty}{\@newtxtargsty}}
\newcommandx{\@newtxtargsty}[2][2=]
  {\newtxtarg[\defval{#2}{#1}]}
\newcommandx{\@snewtxtargsty}[2][2=]
  {\newtxtarg*[\defval{#2}{#1}]}
```

`\newtxtoarg` ... to do!

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

```
\newcommand{\newtxtoarg}
  {\@ifstar{\@snewtxtoarg}{\@newtxtoarg}}
\newcommandx{\@newtxtoarg}[5][1=, 3=, 4=, 5=]
  {\newtxtarg[#1]{#2}[#3][#4][]{#5}[]}
\newcommandx{\@snewtxtoarg}[5][1=, 3=, 4=, 5=]
  {\newtxtarg*[#1]{#2}[#3][#4][]{#5}[]}
```

`\newtxtoargsty` ... to do!

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

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

```
\newcommand{\newtxtoargsty}
  {\@ifstar{\@snewtxtoargsty}{\@newtxtoargsty}}
\newcommandx{\@newtxtoargsty}[2][2=]
  {\newtxtoarg[\defval{#2}{#1}]}
\newcommandx{\@snewtxtoargsty}[2][2=]
  {\newtxtoarg*[\defval{#2}{#1}]}
```

`\newtxtpar` ... to do!

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

```
\newcommand{\newtxtpar}
  {\@ifstar{\@snewtxtpar}{\@newtxtpar}}
\newcommandx{\@newtxtpar}[7][1=, 3=, 4=, 5=, 7=]
  {\newtxt[#1]{#2}[#3][#4][\argmid{#5[}{#6}{]#7}]}
\newcommandx{\@snewtxtpar}[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]` = "$\mathrm{Name}^{\mathrm{sup}}_{\mathrm{sub}}\mathrm{Ext1[Par]Ext2}$"
- `\newtxtparsty{\rmfamily}[\sffamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathsf{Name}^{\mathsf{sup}}_{\mathsf{sub}}\mathsf{Ext1[Par]Ext2}$"
- `\newtxtparsty{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathtt{Name}^{\mathtt{sup}}_{\mathtt{sub}}\mathtt{Ext1[Par]Ext2}$"
- `\newtxtparsty*{\rmfamily}{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathrm{Name}^{\mathrm{sup}}_{\mathrm{sub}}\mathrm{Ext1[Par]Ext2}$"
- `\newtxtparsty*{\rmfamily}[\sffamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathsf{Name}^{\mathsf{sup}}_{\mathsf{sub}}\mathsf{Ext1[Par]Ext2}$"
- `\newtxtparsty*{\rmfamily}[\ttfamily]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathtt{Name}^{\mathtt{sup}}_{\mathtt{sub}}\mathtt{Ext1[Par]Ext2}$"

```
\newcommand{\newtxtparsty}
  {\@ifstar{\@snewtxtparsty}{\@newtxtparsty}}
\newcommandx{\@newtxtparsty}[2][2=]
  {\newtxtpar[\defval{#2}{#1}]}
\newcommandx{\@snewtxtparsty}[2][2=]
  {\newtxtpar*[\defval{#2}{#1}]}
```

`\newtxtopar` ... to do!

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

```
\newcommand{\newtxtopar}
  {\@ifstar{\@snewtxtopar}{\@newtxtopar}}
\newcommandx{\@newtxtopar}[5][1=, 3=, 4=, 5=]
  {\newtxtpar[#1]{#2}[#3][#4][]{#5}[]}
\newcommandx{\@snewtxtopar}[5][1=, 3=, 4=, 5=]
  {\newtxtpar*[#1]{#2}[#3][#4][]{#5}[]}
```

`\newtxtoparsty` ... to do!

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

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

```
\newcommand{\newtxtoparsty}
  {\@ifstar{\@snewtxtoparsty}{\@newtxtoparsty}}
\newcommandx{\@newtxtoparsty}[2][2=]
  {\newtxtopar[\defval{#2}{#1}]}
\newcommandx{\@snewtxtoparsty}[2][2=]
  {\newtxtopar*[\defval{#2}{#1}]}
```

`\txtsubsup` ... to do!

- `\txtsubsup{sub}{}` = "$_{\text{sub}}$"; `\txtsubsup{}{sup}` = "$^{\text{sup}}$"; `\txtsubsup{sub}{sup}` = "$^{\text{sup}}_{\text{sub}}$"
- `\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]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{Ext}$"
- `\txt[\scshape]{Name}[sub][sup][Ext]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{EXT}$"
- `\txt[\bfseries]{Name}[sub][sup][Ext]` = "$\mathbf{Name^{sup}_{sub}Ext}$"
- `\txt*{Name}[sub][sup][Ext]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{Ext}$"
- `\txt*[\scshape]{Name}[sub][sup][Ext]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{EXT}$"
- `\txt*[\bfseries]{Name}[sub][sup][Ext]` = "$\mathbf{Name^{sup}_{sub}Ext}$"

```
\newcommand{\txt}
  {\@ifstar{\newtxtsty*{\txtsty}}{\newtxtsty{\txtsty}}}
```

`\txtarg` ... to do!

- `\txtarg{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{Ext1(Arg)Ext2}$"
- `\txtarg[\scshape]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{EXT1(ARG)EXT2}$"
- `\txtarg[\bfseries]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathbf{Name^{sup}_{sub}Ext1(Arg)Ext2}$"
- `\txtarg*{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{Ext1(Arg)Ext2}$"
- `\txtarg*[\scshape]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{EXT1(ARG)EXT2}$"
- `\txtarg*[\bfseries]{Name}[sub][sup][Ext1]{Arg}[Ext2]` = "$\mathbf{Name^{sup}_{sub}Ext1(Arg)Ext2}$"

```
\newcommand{\txtarg}
  {\@ifstar{\newtxtargsty*{\txtsty}}{\newtxtargsty{\txtsty}}}
```

`\txtoarg` ... to do!

- `\txtoarg{Name}[sub][sup][Arg]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{(Arg)}$"
- `\txtoarg[\scshape]{Name}[sub][sup][Arg]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{(ARG)}$"
- `\txtoarg[\bfseries]{Name}[sub][sup][Arg]` = "$\mathbf{Name^{sup}_{sub}(Arg)}$"
- `\txtoarg*{Name}[sub][sup][Arg]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{(Arg)}$"
- `\txtoarg*[\scshape]{Name}[sub][sup][Arg]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{(ARG)}$"
- `\txtoarg*[\bfseries]{Name}[sub][sup][Arg]` = "$\mathbf{Name^{sup}_{sub}(Arg)}$"

```
\newcommand{\txtoarg}
  {\@ifstar{\newtxtoargsty*{\txtsty}}{\newtxtoargsty{\txtsty}}}
```

`\txtpar` ... to do!

- `\txtpar{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{Ext1[Par]Ext2}$"
- `\txtpar[\scshape]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{EXT1[PAR]EXT2}$"
- `\txtpar[\bfseries]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathbf{Name^{sup}_{sub}Ext1[Par]Ext2}$"
- `\txtpar*{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\text{Name}^{\text{sup}}_{\text{sub}}\text{Ext1[Par]Ext2}$"
- `\txtpar*[\scshape]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\text{NAME}^{\text{SUP}}_{\text{SUB}}\text{EXT1[PAR]EXT2}$"

- `\txtpar*[\bfseries]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathbf{Name_{sub}^{sup}Ext1[Par]Ext2}$"

```
\newcommand{\txtpar}
  {\@ifstar{\newtxtparsty*{\txtsty}}{\newtxtparsty{\txtsty}}}
```

`\txtopar` ... to do!

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

```
\newcommand{\txtopar}
  {\@ifstar{\newtxtoparsty*{\txtsty}}{\newtxtoparsty{\txtsty}}}
```

`\txtsty` ... to do!

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

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

`\cmdtxt` ... to do!

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

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

`\cmdtxtarg` ... to do!

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

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

`\cmdtxtoarg` ... to do!

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

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

`\cmdtxtpar` ... to do!

- `\cmdtxtpar{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`;
  `\txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2]` = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext1[Par]Ext2}$
  `\txtparNewCmd*{Name}[sub][sup][Ext1]{Par}[Ext2]` = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext1[Par]Ext2}$

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

\cmdtxtopar ... to do!

- \cmdtxtopar{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
  \txtoparNewCmd{Name}[sub][sup][Par] = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}$[Par]
  \txtoparNewCmd*{Name}[sub][sup][Par] = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}$[Par]

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

\cmdtxtall ... to do!

- \cmdtxtall{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
  \txtNewCmd{Name}[sub][sup][Ext] = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext}$
  \txtargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2] = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext1(Arg)Ext2}$
  \txtoargNewCmd{Name}[sub][sup][Arg] = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{(Arg)}$
  \txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}\textsc{Ext1[Par]Ext2}$
  \txtoparNewCmd{Name}[sub][sup][Par] = $\textsc{Name}_{\textsc{sub}}^{\textsc{sup}}$[Par]

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

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

\usrtxt ... to do!

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

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

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

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

\newmth ... to do!

- \newmth[mathrm]{Name}[sub][sup][Ext] = "$\mathrm{Name}_{sub}^{sup}Ext$"
- \newmth[mathsf]{Name}[sub][sup][Ext] = "$\mathsf{Name}_{sub}^{sup}Ext$"
- \newmth[mathtt]{Name}[sub][sup][Ext] = "$\mathtt{Name}_{sub}^{sup}Ext$"
- \newmth*[mathrm]{Name}[sub][sup][Ext] = "$\mathrm{N}ame_{sub}^{sup}Ext$"
- \newmth*[mathsf]{Name}[sub][sup][Ext] = "$\mathsf{N}ame_{sub}^{sup}Ext$"
- \newmth*[mathtt]{Name}[sub][sup][Ext] = "$\mathtt{N}ame_{sub}^{sup}Ext$"

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

`\newmthsty` ... to do!

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

```
\newcommand{\newmthsty}
  {\@ifstar{\@snewmthsty}{\@newmthsty}}
\newcommandx{\@newmthsty}[2][2=]
  {\newmth[\defval{#2}{#1}]}
\newcommandx{\@snewmthsty}[2][2=]
  {\newmth*[\defval{#2}{#1}]}
```

`\newmtharg` ... to do!

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

- `\newmthoarg[mathsf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}\left(Arg^{Ex^{Ex}}\right)$"
- `\newmthoarg[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\left(Arg^{Ex^{Ex}}\right)$"
- `\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}}]` = "$\mathrm{Name}_{sub}^{sup}\left(Arg^{Ex^{Ex}}\right)$"
- `\newmthoargsty{mathrm}[mathsf]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}\left(Arg^{Ex^{Ex}}\right)$"
- `\newmthoargsty{mathrm}[mathtt]{Name}[sub][sup][Arg^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\left(Arg^{Ex^{Ex}}\right)$"
- `\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}}]` = "$\mathrm{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\newmthoparsty{mathrm}[mathsf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathsf{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\newmthoparsty{mathrm}[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\left[Par^{Ex^{Ex}}\right]$"
- `\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]` = "$\mathtt{Name}_{sub}^{sup}Ext$"
- `\mth*{Name}[sub][sup][Ext]` = "$Name_{sub}^{sup}Ext$"
- `\mth*[mathbf]{Name}[sub][sup][Ext]` = "$\mathbf{N}ame_{sub}^{sup}Ext$"
- `\mth*[mathtt]{Name}[sub][sup][Ext]` = "$\mathtt{N}ame_{sub}^{sup}Ext$"

```
\newcommand{\mth}
  {\@ifstar{\newmthsty*{\mthsty}}{\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]` = "$\mathbf{Name}_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$"
- `\mthpar[mathtt]{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = "$\mathtt{Name}_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$"
- `\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}}]` = "$Name_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$"
- `\mthopar[mathbf]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathbf{Name}_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$"
- `\mthopar[mathtt]{Name}[sub][sup][Par^{Ex^{Ex}}]` = "$\mathtt{Name}_{sub}^{sup}\Big[Par^{Ex^{Ex}}\Big]$"
- `\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] = $\texttt{Name}_{sub}^{sup}Ext$
  \mthNewCmd*{Name}[sub][sup][Ext] = $\texttt{N}ame_{sub}^{sup}Ext$

```
\newcommand{\cmdmth}[1]
  {\csdef{mth#1}%
    {\@ifstar{\newmthsty*{mthsty#1}}{\newmthsty{mthsty#1}}}}
```

\cmdmtharg ... to do!

- \cmdmtharg{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
  \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] = $\texttt{Name}_{sub}^{sup}Ext1(Arg^{Ex^{Ex}})Ext2$

```
\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}}] = $\texttt{Name}_{sub}^{sup}\Big(Arg^{Ex^{Ex}}\Big)$
  \mthoargNewCmd*{Name}[sub][sup][Arg^{Ex^{Ex}}] = $\texttt{Name}_{sub}^{sup}(Arg^{Ex^{Ex}})$

```
\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] = $\texttt{Name}_{sub}^{sup}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
  \mthparNewCmd*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1[Par^{Ex^{Ex}}]Ext2$

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

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

`\cmdtxtpardef` ... to do!

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

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

`\cmdtxtopardef` ... to do!

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

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

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

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

```
%% 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]` = $cmdName_{\text{sub}}^{\text{sub}}ext1[par]ext2$
- `\cmdtxtparabr{cmdName}[newName]`;
  `\cmdName[sub][sub][ext1]{par}[ext2]` = $newName_{\text{sub}}^{\text{sub}}ext1[par]ext2$

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

`\cmdtxtoparabr` ... to do!

- `\cmdtxtoparabr{cmdName}`;
  `\cmdName[sub][sub][par]` = $cmdName_{\text{sub}}^{\text{sub}}[par]$
- `\cmdtxtoparabr{cmdName}[newName]`;
  `\cmdName[sub][sub][par]` = $newName_{\text{sub}}^{\text{sub}}[par]$

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

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

`\txtname, ...` ... to do!

- `\txtname{Name}[sub][sup][Ext]` = $\text{NAME}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
- `\txtargname{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $\text{NAME}_{\text{SUB}}^{\text{SUP}}\text{EXT1}(\text{ARG})\text{EXT2}$
- `\txtparname{Name}[sub][sup][Ext1]{Par}[Ext2]` = $\text{NAME}_{\text{SUB}}^{\text{SUP}}\text{EXT1}[\text{PAR}]\text{EXT2}$

```
%% 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]` = $\textsc{cmdName}^{\textsc{sub}}_{\textsc{sub}}[\textsc{par}]$
- `\cmdtxtoparname{cmdName}[newName]`;
  `\cmdName[sub][sub][par]` = $\textsc{newName}^{\textsc{sub}}_{\textsc{sub}}[\textsc{par}]$

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

`\txtcom, ...` ... to do!

- `\txtcom{Name}[sub][sup][Ext]` = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext}$
- `\txtargcom{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext1}(\textsc{Arg})\textsc{Ext2}$
- `\txtparcom{Name}[sub][sup][Ext1]{Par}[Ext2]` = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext1}[\textsc{Par}]\textsc{Ext2}$

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

`\cmdtxtcom` ... to do!

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

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

`\cmdtxtargcom` ... to do!

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

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

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

`\cmdtxtoargcom` ... to do!

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

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

`\cmdtxtparcom` ... to do!

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

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

`\cmdtxtoparcom` ... to do!

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

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

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

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

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

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

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

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

\cmdmthargfam ... to do!

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

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

`\cmdmthoargfam` ... to do!

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

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

`\cmdmthparfam` ... to do!

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

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

`\cmdmthoparfam` ... to do!

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

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

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

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

```
%% 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]` = $\mathcal{Name}^{sup}_{sub}Ext$
- `\mthargsig{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{Name}^{sup}_{sub}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\mthargsig*{Name}[sub][sup][Ext1]{Arg^{Ex^{Ex}}}[Ext2]` = $\mathcal{Name}^{sup}_{sub}Ext1(Arg^{Ex^{Ex}})Ext2$
- `\mthparsig{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{Name}^{sup}_{sub}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\mthparsig*{Name}[sub][sup][Ext1]{Par^{Ex^{Ex}}}[Ext2]` = $\mathcal{Name}^{sup}_{sub}Ext1[Par^{Ex^{Ex}}]Ext2$

```
%% 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]` = $\mathcal{cmdName}^{sub}_{sub}ext$
- `\cmdmthsig{cmdName}[NewName]`;
  `\cmdNameSig[sub][sub][ext]` = $\mathcal{NewName}^{sub}_{sub}ext$

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

`\cmdmthargsig` ... to do!

- `\cmdmthargsig{cmdName}`;
  `\cmdNameSig[sub][sub][ext1]{arg}[ext2]` = $\mathcal{cmdName}^{sub}_{sub}ext1(arg)ext2$

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

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

`\cmdmthoargsig` ... to do!

- `\cmdmthoargsig{cmdName}`;
  `\cmdNameSig[sub][sub][arg]` = $\mathit{cmdName}^{sub}_{sub}(arg)$
- `\cmdmthoargsig{cmdSig}[NewName]`;
  `\cmdSigSig[sub][sub][arg]` = $\mathit{NewName}^{sub}_{sub}(arg)$

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

`\cmdmthparsig` ... to do!

- `\cmdmthparsig{cmdName}`;
  `\cmdNameSig[sub][sub][ext1]{par}[ext2]` = $\mathit{cmdName}^{sub}_{sub}ext1[par]ext2$
- `\cmdmthparsig{cmdName}[NewName]`;
  `\cmdNameSig[sub][sub][ext1]{par}[ext2]` = $\mathit{NewName}^{sub}_{sub}ext1[par]ext2$

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

`\cmdmthoparsig` ... to do!

- `\cmdmthoparsig{cmdName}`;
  `\cmdNameSig[sub][sub][par]` = $\mathit{cmdName}^{sub}_{sub}[par]$
- `\cmdmthoparsig{cmdSig}[NewName]`;
  `\cmdSigSig[sub][sub][par]` = $\mathit{NewName}^{sub}_{sub}[par]$

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

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

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

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

```
%% 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]` = $\mathsf{Name}_{sub}^{sup}Ext1\left(Arg^{Ex^{Ex}}\right)Ext2$
- `\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]` = $\mathsf{Name}_{sub}^{sup}Ext1\left[Par^{Ex^{Ex}}\right]Ext2$
- `\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] = NewName$^{sub}_{sub}ext$

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

\cmdmthargfun ... to do!

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

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

\cmdmthoargfun ... to do!

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

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

\cmdmthparfun ... to do!

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

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

\cmdmthoparfun ... to do!

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

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

\mthsym, ... to do!

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

```
%% 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, $\varTheta$, I, K, K, Λ, M, N, Ξ, O, Π, $\varPi$, P, P, Σ, $\varSigma$, T, T, Φ, $\varPhi$, X, Ψ, Ω

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

\cmdmthsym ... to do!

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

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

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

\cmdmthargsym ... to do!

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

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

\cmdmthoargsym ... to do!

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

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

\cmdmthparsym ... to do!

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

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

\cmdmthoparsym ... to do!

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

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

\mthelm, ... to do!

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

```
%% 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] = $\oplus^{sup}_{sub}\,Ext$
- \mthlbop{\oplus}[sub][sup][Ext] = $\oplus^{sup}_{sub}Ext$

```
%% 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]` = $\mathsf{Name}_{sub}^{sup} Ext1\Big(Arg^{Ex^{Ex}}\Big) Ext2$
- `\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]` = $\mathsf{Name}_{sub}^{sup} Ext1\Big[Par^{Ex^{Ex}}\Big] Ext2$
- `\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, $\mathit{\Theta}$, 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{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]` = $Name^{sup}_{sub}Ext1\Big(Arg^{Ex^{Ex}}\Big)Ext2$
- `\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]` = $Name^{sup}_{sub}Ext1\Big[Par^{Ex^{Ex}}\Big]Ext2$
- `\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!

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

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

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

`\aMat, ...` ... 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, $\mathsf{\Gamma}$, $\mathsf{\Delta}$, E, E, Z, H, $\mathsf{\Theta}$, $\mathsf{\Theta}$, I, K, K, $\mathsf{\Lambda}$, M, N, $\mathsf{\Xi}$, O, $\mathsf{\Pi}$, $\mathsf{\Pi}$, P, P, $\mathsf{\Sigma}$, $\mathsf{\Sigma}$, T, $\mathsf{\Upsilon}$, $\mathsf{\Phi}$, $\mathsf{\Phi}$, X, $\mathsf{\Psi}$, $\mathsf{\Omega}$

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

`\cmdmthmat` ... to do!

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

```
%% 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*

```
\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.\@]
```

\ergo

- \ergo = *ergo*

```
\cmdtxtabr{ergo}
```

\errata

- \errata = *errata*

```
\cmdtxtabr{errata}
```

\erratum • \erratum = *erratum*

```
\cmdtxtabr{erratum}
```

\etal • \etal = *et al.*

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

\etc • \etc = *etc.*

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

\ie • \ie = *i.e.*

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

\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]
```

\vs • \vs = *vs.*

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

\viz • \viz = *viz.*

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

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

\Afortiori • \Afortiori = *A fortiori*

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

\Apriori • \Apriori = *A priori*

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

\ala • \ala = *à la*

```
\cmdtxtabr{ala}[\`a la]
```

\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}}}

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

\limp, ...

```
\DeclareRobustCommand{\limp}
  {\mthlbop{\rightarrow}}
```

\lcoimp, ...

```
\DeclareRobustCommand{\lcoimp}
  {\mthlbop{\leftrightarrow}}

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

\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{\@sdenot}{\@denot}}
\DeclareRobustCommand{\@denot}[1]
  {\mth{\argmid{\left\llbracket}{#1}{\right\rrbracket}}}
\DeclareRobustCommand{\@sdenot}[1]
  {\mth*{\argmid{\llbracket}{#1}{\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{\@sset{\vert}}{\@set{\vert}}}
\DeclareRobustCommand{\setx}
  {\@ifstar{\@sset{:}}{\@set{.\!:}}}
\DeclareRobustCommand{\@set}[3]
  {\mth{\argmid{\left\lbrace}{\argsep{#2}{\,\middle#1\,}{#3}}{\right\rbrace}}}
\DeclareRobustCommand{\@sset}[3]
  {\mth*{\argmid{\lbrace}{\argsep{#2}{\,#1\,}{#3}}{\rbrace}}}
\DeclareRobustCommand{\setl}
  {\@ifstar{\@ssetl{\vert}}{\@setl{\vert}}}
\DeclareRobustCommand{\setlx}
  {\@ifstar{\@ssetl{:}}{\@setl{.\!\!\!:}}}
\DeclareRobustCommand{\@setl}[2]
  {\mth{\argmid{\left\lbrace}{#2}{\,\right#1\!}}}
\DeclareRobustCommand{\@ssetl}[2]
  {\mth*{\argmid{\lbrace}{#2}{\,#1\!}}}
\DeclareRobustCommand{\setr}
  {\@ifstar{\@ssetr}{\@setr}}
\DeclareRobustCommand{\setrx}
  {\@ifstar{\@ssetr}{\@setr}}
\DeclareRobustCommand{\@setr}[1]
  {\mth{\argmid{\left.}{#1}{\right\rbrace}}}
\DeclareRobustCommand{\@ssetr}[1]
  {\mth*{\argmid{}{#1}{\rbrace}}}
```

```
          \card  ...
1011 \DeclareRobustCommand{\card}
1012   {\@ifstar{\@scard}{\@card}}
1013 \DeclareRobustCommand{\@card}[1]
1014   {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}
1015 \DeclareRobustCommand{\@scard}[1]
1016   {\mth*{\argmid{\lvert}{#1}{\rvert}}}

           \pow  ...
1017 \DeclareRobustCommand{\pow}[1]
1018   {\mth{2^{\defval{#1}{\cdot}}}}

1019 %%** Relations ********************************************************%%

      \emptyrel  ...
1020 \DeclareRobustCommand{\emptyrel}
1021   {\mth{\varnothing}}

1022 %%*************************************************************************%%

\dom, \cod, ...  ...
1023 \usrmth{dom}{}{argfun}
1024 \usrmth{cod}{}{argfun}
1025 \usrmth{rng}{}{argfun}
1026 \usrmth{img}{}{argfun}

1027 %%*************************************************************************%%

           \prj  ...
1028 \DeclareRobustCommand{\prj}
1029   {\mthlbop{\downarrow}}

           \rst  ...
1030 \DeclareRobustCommand{\rst}
1031   {\mthlbop{\upharpoonright}}

           \cmp  ...
1032 \DeclareRobustCommand{\cmp}
1033   {\mthlbop{\circ}}

1034 %%** Functions ********************************************************%%

      \emptyfun  ...
1035 \DeclareRobustCommand{\emptyfun}
1036   {\mth{\varnothing}}

1037 %%*************************************************************************%%

 \pto, \pmapsto  ...
1038 \DeclareMathOperator{\pto}
1039   {\ensuremath{\rightharpoonup}}
1040 \DeclareMathOperator{\pmapsto}
1041   {\ensuremath{\mathrel{\raisebox{0.5ex}{\footnotesize${\llcorner}$}%
1042     \kern-1.5ex\rightharpoonup}}}

1043 %%*************************************************************************%%

\fix, \ifp, ...  ...
1044 \usrmth{fix}{}{fun}
1045 \usrmth{ifp}{}{fun}
1046 \usrmth{lfp}{}{fun}
1047 \usrmth{gfp}{}{fun}

1048 %%*************************************************************************%%
```

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

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

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

                  %%** Numbers ***********************************************************************%%

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

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

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

      \SetZ, ...  ...
                  \DeclareRobustCommand{\SetZ}
                    {\mthset[mathbb]{Z}}
                  \DeclareRobustCommand{\SetZI}[1][]
                    {\SetZ[\pm\infty #1]}
                  \DeclareRobustCommand{\SetZPI}[1][]
                    {\SetZ[+\infty #1]}
                  \DeclareRobustCommand{\SetZNI}[1][]
                    {\SetZ[-\infty #1]}

      \SetQ, ...  ...
                  \DeclareRobustCommand{\SetQ}
                    {\mthset[mathbb]{Q}}
                  \DeclareRobustCommand{\SetQI}[1][]
                    {\SetQ[\pm\infty #1]}
                  \DeclareRobustCommand{\SetQPI}[1][]
                    {\SetQ[+\infty #1]}
                  \DeclareRobustCommand{\SetQNI}[1][]
                    {\SetQ[-\infty #1]}

      \SetR, ...  ...
                  \DeclareRobustCommand{\SetR}
                    {\mthset[mathbb]{R}}
                  \DeclareRobustCommand{\SetRI}[1][]
                    {\SetR[\pm\infty #1]}
                  \DeclareRobustCommand{\SetRPI}[1][]
                    {\SetR[+\infty #1]}
                  \DeclareRobustCommand{\SetRNI}[1][]
                    {\SetR[-\infty #1]}

      \SetC, ...  ...
                  \DeclareRobustCommand{\SetC}
                    {\mthset[mathbb]{C}}
                  \DeclareRobustCommand{\SetCI}[1][]
                    {\SetC[\infty #1]}
```

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

`\num, ...` ...

```
\DeclareRobustCommand{\num}[1]
  {\mth{[#1]}}
\DeclareRobustCommand{\numcc}[2]
  {\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{\@sabs}{\@abs}}
\DeclareRobustCommand{\@abs}[1]
  {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}
\DeclareRobustCommand{\@sabs}[1]
  {\mth*{\argmid{\lvert}{#1}{\rvert}}}
\DeclareRobustCommand{\norm}
  {\@ifstar{\@snorm}{\@norm}}
\DeclareRobustCommand{\@norm}[1]
  {\mth{\argmid{\left\lVert}{#1}{\right\rVert}}}
\DeclareRobustCommand{\@snorm}[1]
  {\mth*{\argmid{\lVert}{#1}{\rVert}}}
```

`\floor, \ceil` ...

```
\DeclareRobustCommand{\floor}
  {\@ifstar{\@sfloor}{\@floor}}
\DeclareRobustCommand{\@floor}[1]
  {\mth{\argmid{\left\lfloor}{#1}{\right\rfloor}}}
\DeclareRobustCommand{\@sfloor}[1]
  {\mth*{\argmid{\lfloor}{#1}{\rfloor}}}
\DeclareRobustCommand{\ceil}
  {\@ifstar{\@sceil}{\@ceil}}
\DeclareRobustCommand{\@ceil}[1]
  {\mth{\argmid{\left\lceil}{#1}{\right\rceil}}}
\DeclareRobustCommand{\@sceil}[1]
  {\mth*{\argmid{\lceil}{#1}{\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{\@slen}{\@len}}
\DeclareRobustCommandx{\@len}[3][1=, 2=]
  {\mth{\argmid{#1\lvert}{#3}{#2\rvert}}}
\DeclareRobustCommand{\@len}[1]
  {\mth{\argmid{\left\lvert}{#1}{\right\rvert}}}
\DeclareRobustCommand{\@slen}[1]
  {\mth*{\argmid{\lvert}{#1}{\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]` = $\textsc{CompClass}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

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

  `\CompClass[sub][sup][arg]` = $\textsc{NewClass}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

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

`\defcomclsgrp` ... to do!

- `\defcomclsgrp{CompClass}`;

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

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

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

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

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

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

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

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

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

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

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

```
\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]` = $\mathrm{FPT}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\FPLin[sub][sup][arg]` = $\mathrm{FPL}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\FPQdr[sub][sup][arg]` = $\mathrm{FPQ}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- `\FPCub[sub][sup][arg]` = $\mathrm{FPC}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$

```
\defcomcls{FPT}
\defcomcls{FPLin}[FPL]
\defcomcls{FPQdr}[FPQ]
\defcomcls{FPCub}[FPC]

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

`\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]` = $\mathrm{DTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DTimeE[sub][sup][arg]` = $\mathrm{DTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DTimeH[sub][sup][arg]` = $\mathrm{DTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DTimeC[sub][sup][arg]` = $\mathrm{DTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\NTime[sub][sup][arg]` = $\mathrm{NTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NTimeE[sub][sup][arg]` = $\mathrm{NTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NTimeH[sub][sup][arg]` = $\mathrm{NTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\NTimeC[sub][sup][arg]` = $\mathrm{NTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\UTime[sub][sup][arg]` = $\mathrm{UTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\UTimeE[sub][sup][arg]` = $\mathrm{UTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\UTimeH[sub][sup][arg]` = $\mathrm{UTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\UTimeC[sub][sup][arg]` = $\mathrm{UTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\ATime[sub][sup][arg]` = $\mathrm{ATIME}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ATimeE[sub][sup][arg]` = $\mathrm{ATIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ATimeH[sub][sup][arg]` = $\mathrm{ATIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\ATimeC[sub][sup][arg]` = $\mathrm{ATIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1189 `\defcomclsgrp{Time}`

`\Space, ...`

- `\Space[sub][sup][arg]` = $\mathrm{SPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\SpaceE[sub][sup][arg]` = $\mathrm{SPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\SpaceH[sub][sup][arg]` = $\mathrm{SPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\SpaceC[sub][sup][arg]` = $\mathrm{SPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\DSpace[sub][sup][arg]` = $\mathrm{DSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DSpaceE[sub][sup][arg]` = $\mathrm{DSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DSpaceH[sub][sup][arg]` = $\mathrm{DSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
  `\DSpaceC[sub][sup][arg]` = $\mathrm{DSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$
- `\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]` = $\mathrm{ASPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1190 `\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]` = $\mathrm{ALOGTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}(\mathrm{ARG})$

1191 `\defcomclsgrp{LogTime}`

\LogSpace, ...

- \LogSpace[sub][sup][arg] = $\textsc{LogSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \LogSpaceE[sub][sup][arg] = $\textsc{LogSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \LogSpaceH[sub][sup][arg] = $\textsc{LogSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \LogSpaceC[sub][sup][arg] = $\textsc{LogSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \DLogSpace[sub][sup][arg] = $\textsc{DLogSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DLogSpaceE[sub][sup][arg] = $\textsc{DLogSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DLogSpaceH[sub][sup][arg] = $\textsc{DLogSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DLogSpaceC[sub][sup][arg] = $\textsc{DLogSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \NLogSpace[sub][sup][arg] = $\textsc{NLogSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NLogSpaceE[sub][sup][arg] = $\textsc{NLogSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NLogSpaceH[sub][sup][arg] = $\textsc{NLogSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NLogSpaceC[sub][sup][arg] = $\textsc{NLogSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \ULogSpace[sub][sup][arg] = $\textsc{ULogSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \ULogSpaceE[sub][sup][arg] = $\textsc{ULogSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \ULogSpaceH[sub][sup][arg] = $\textsc{ULogSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \ULogSpaceC[sub][sup][arg] = $\textsc{ULogSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \ALogSpace[sub][sup][arg] = $\textsc{ALogSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \ALogSpaceE[sub][sup][arg] = $\textsc{ALogSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \ALogSpaceH[sub][sup][arg] = $\textsc{ALogSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \ALogSpaceC[sub][sup][arg] = $\textsc{ALogSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$

1192 \defcomclsgrp{LogSpace}

\PTime, ...

- \PTime[sub][sup][arg] = $\textsc{PTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \PTimeE[sub][sup][arg] = $\textsc{PTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \PTimeH[sub][sup][arg] = $\textsc{PTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \PTimeC[sub][sup][arg] = $\textsc{PTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \DPTime[sub][sup][arg] = $\textsc{DPTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DPTimeE[sub][sup][arg] = $\textsc{DPTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DPTimeH[sub][sup][arg] = $\textsc{DPTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DPTimeC[sub][sup][arg] = $\textsc{DPTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \NPTime[sub][sup][arg] = $\textsc{NPTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NPTimeE[sub][sup][arg] = $\textsc{NPTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NPTimeH[sub][sup][arg] = $\textsc{NPTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NPTimeC[sub][sup][arg] = $\textsc{NPTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \UPTime[sub][sup][arg] = $\textsc{UPTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \UPTimeE[sub][sup][arg] = $\textsc{UPTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \UPTimeH[sub][sup][arg] = $\textsc{UPTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \UPTimeC[sub][sup][arg] = $\textsc{UPTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \APTime[sub][sup][arg] = $\textsc{APTime}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \APTimeE[sub][sup][arg] = $\textsc{APTime-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \APTimeH[sub][sup][arg] = $\textsc{APTime-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \APTimeC[sub][sup][arg] = $\textsc{APTime-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$

1193 \defcomclsgrp{PTime}

\PSpace, ...

- \PSpace[sub][sup][arg] = $\textsc{PSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \PSpaceE[sub][sup][arg] = $\textsc{PSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \PSpaceH[sub][sup][arg] = $\textsc{PSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \PSpaceC[sub][sup][arg] = $\textsc{PSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \DPSpace[sub][sup][arg] = $\textsc{DPSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DPSpaceE[sub][sup][arg] = $\textsc{DPSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DPSpaceH[sub][sup][arg] = $\textsc{DPSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \DPSpaceC[sub][sup][arg] = $\textsc{DPSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \NPSpace[sub][sup][arg] = $\textsc{NPSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NPSpaceE[sub][sup][arg] = $\textsc{NPSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NPSpaceH[sub][sup][arg] = $\textsc{NPSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \NPSpaceC[sub][sup][arg] = $\textsc{NPSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
- \UPSpace[sub][sup][arg] = $\textsc{UPSpace}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \UPSpaceE[sub][sup][arg] = $\textsc{UPSpace-easy}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \UPSpaceH[sub][sup][arg] = $\textsc{UPSpace-hard}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$
  \UPSpaceC[sub][sup][arg] = $\textsc{UPSpace-complete}^{\textsc{sup}}_{\textsc{sub}}(\textsc{arg})$

- `\APSpace[sub][sup][arg]` = $\text{APSPACE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\APSpaceE[sub][sup][arg]` = $\text{APSPACE-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\APSpaceH[sub][sup][arg]` = $\text{APSPACE-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\APSpaceC[sub][sup][arg]` = $\text{APSPACE-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

1194 `\defcomclsgrp{PSpace}`

`\QPTime, ...`

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

1195 `\defcomclsgrp{QPTime}`

`\QPSpace, ...`

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

1196 `\defcomclsgrp{QPSpace}`

`\ExpTime, ...`

- `\ExpTime[sub][sup][arg]` = $\text{EXPTIME}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\ExpTimeE[sub][sup][arg]` = $\text{EXPTIME-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\ExpTimeH[sub][sup][arg]` = $\text{EXPTIME-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\ExpTimeC[sub][sup][arg]` = $\text{EXPTIME-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
- `\DExpTime[sub][sup][arg]` = $\text{DEXPTIME}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\DExpTimeE[sub][sup][arg]` = $\text{DEXPTIME-EASY}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\DExpTimeH[sub][sup][arg]` = $\text{DEXPTIME-HARD}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$
  `\DExpTimeC[sub][sup][arg]` = $\text{DEXPTIME-COMPLETE}_{\text{SUB}}^{\text{SUP}}(\text{ARG})$

- `\NExpTime[sub][sup][arg]` = $\mathrm{NExpTime}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NExpTimeE[sub][sup][arg]` = $\mathrm{NExpTime\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NExpTimeH[sub][sup][arg]` = $\mathrm{NExpTime\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\NExpTimeC[sub][sup][arg]` = $\mathrm{NExpTime\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\UExpTime[sub][sup][arg]` = $\mathrm{UExpTime}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UExpTimeE[sub][sup][arg]` = $\mathrm{UExpTime\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UExpTimeH[sub][sup][arg]` = $\mathrm{UExpTime\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\UExpTimeC[sub][sup][arg]` = $\mathrm{UExpTime\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\AExpTime[sub][sup][arg]` = $\mathrm{AExpTime}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\AExpTimeE[sub][sup][arg]` = $\mathrm{AExpTime\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\AExpTimeH[sub][sup][arg]` = $\mathrm{AExpTime\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\AExpTimeC[sub][sup][arg]` = $\mathrm{AExpTime\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$

```
1197 \defcomclsgrp{ExpTime}
```

`\ExpSpace, ...`

- `\ExpSpace[sub][sup][arg]` = $\mathrm{ExpSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\ExpSpaceE[sub][sup][arg]` = $\mathrm{ExpSpace\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\ExpSpaceH[sub][sup][arg]` = $\mathrm{ExpSpace\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\ExpSpaceC[sub][sup][arg]` = $\mathrm{ExpSpace\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\DExpSpace[sub][sup][arg]` = $\mathrm{DExpSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DExpSpaceE[sub][sup][arg]` = $\mathrm{DExpSpace\text{-}easy}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DExpSpaceH[sub][sup][arg]` = $\mathrm{DExpSpace\text{-}hard}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
  `\DExpSpaceC[sub][sup][arg]` = $\mathrm{DExpSpace\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$
- `\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]` = $\mathrm{AExpSpace\text{-}complete}^{\mathrm{SUP}}_{\mathrm{SUB}}(\mathrm{ARG})$

```
1198 \defcomclsgrp{ExpSpace}

1199 %%*************************************************************************%%
```

`\PH`

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

```
1200 \defcomhrc{PH}
```

`\WH`

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

```
1201 \defcomhrc{WH}[W]
```

`\AH`

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

```
1202 \defcomhrc{AH}[A]
```

`\DLH, \DBH`

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

```
1203 \defcomhrc{DLH}[{\mth{\Delta}}]
1204 \defcomhrc{DBH}[{\mth[mathbf]{\Delta}}]
```

`\ELH, \EBH`

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

```
1205 \defcomhrc{ELH}[{\mth{\Sigma}}]
1206 \defcomhrc{EBH}[{\mth[mathbf]{\Sigma}}]
```

`\ULH, \UBH`

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

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

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

\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Macros for Graphs *********************************************************%%
%%*****************************************************************************%%
\ifgrp@
%%** Syntax *******************************************************************%%
```

\GrpName, ...

```
\newcommand{\grpname}{G}
\usrmthlatupp{Grp}{Name}{name}[\grpname]
```

\VerSet, ...

```
\newcommand{\versym}{v}
\newcommand{\verset}{V}
\cmdmthsetext{Ver}[\verset][\versym]
\cmdmthsymelm{iver}[\versym_{I}]
\cmdmthsymelm{fver}[\versym_{F}]
```

\EdgRel ...

```
\newcommand{\edgrel}{E}
\cmdmthrel{Edg}[\edgrel]
```

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

\PthSet, \pthFun ...

```
\newcommand{\pthsym}{\pi}
\newcommand{\pthset}{Pth}
\cmdmthsetext{Pth}[\pthset][\pthsym]
\usrmth{path}{}{argfun}
```

\pre, \suc ...

```
\usrmth{pre}{}{oargfun}
\usrmth{suc}{}{oargfun}

\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]

%% Model-Checking Games
```

```
1252 \cmdtxtoparname{MCG}[MC]
1253
1254 %% Ehrenfeucht-Fraisse Games
1255 \cmdtxtoparname{EFG}[EF]

1256 %%** Syntax ********************************************************************%%
```

\PlrSym, \OppSym ...

```
1257 \newcommand{\plrsym}{E}
1258 \cmdmthsym{Plr}[\plrsym]
1259 \newcommand{\oppsym}{A}
1260 \cmdmthsym{Opp}[\oppsym]
```

\ArenaName, ...

```
1261 \newcommand{\arenaname}{A}
1262 \usrmthlatupp{Arena}{Name}{name}[\arenaname]
```

\PosSet, ...

```
1263 \newcommand{\possym}{v}
1264 \newcommand{\posset}{Ps}
1265 \cmdmthsetext{Pos}[\posset][\possym]
1266 \cmdmthsymelm{ipos}[\possym_{I}]
1267 \cmdmthsymelm{fpos}[\possym_{F}]
1268 \cmdmthset{PPos}[\posset_{\PlrSym}]
1269 \cmdmthsymelm{ppos}[\possym_{\PlrSym}]
1270 \cmdmthset{OPos}[\posset_{\OppSym}]
1271 \cmdmthsymelm{opos}[\possym_{\OppSym}]
```

\PlrFun ...

```
1272 \newcommand{\plrfun}{pl}
1273 \cmdmthfun{plr}[\plrfun]
```

\MovRel ...

```
1274 \newcommand{\movrel}{Mv}
1275 \cmdmthrel{Mov}[\movrel]
```

\GameName, ...

```
1276 \newcommand{\gamename}{\Game}
1277 \usrmthlatupp{Game}{Name}{name}[\gamename]
```

\WinSet ...

```
1278 \newcommand{\winset}{Wn}
1279 \cmdmthset{Win}[\winset]
```

\ObsSet, \obsFun ...

```
1280 \newcommand{\obsset}{Ob}
1281 \cmdmthset{Obs}[\obsset]
1282 \cmdmthfun{obs}

1283 %%** Semantics *****************************************************************%%
```

\HstSet, ...

```
1284 \newcommand{\hstsym}{\varpi}
1285 \newcommand{\hstset}{Hst}
1286 \cmdmthsetext{Hst}[\hstset][\hstsym]
1287 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1288 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1289 \cmdmthset{OHst}[\hstset_{\OppSym}]
1290 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1291 \usrmth{play}{}{argfun}
```

\PlaySet,\playFun ...

```
\newcommand{\playsym}{\pi}
\newcommand{\playset}{Play}
\cmdmthsetext{Play}[\playset][\playsym]
\usrmth{hst}{}{argfun}
```

\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]
```

\ent, \esc ...

```
\usrmth{ent}{}{oargfun}
\usrmth{esc}{}{oargfun}
```

\int, \out ...

```
\usrmth{int}{}{oargfun}
\usrmth{out}{}{oargfun}
```

\atr, \rch ...

```
\usrmth{atr}{}{oargfun}
\usrmth{rch}{}{oargfun}
```

\lift ...

```
\usrmth{lift}{}{oargfun}
```

\sol ...

```
\usrmth{sol}{}{oargfun}
```

```
%%** 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]
\usrmth{ap}{}{argfun}

       \sub  ...
\usrmth{sub}{}{argfun}

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

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

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

\free, \bound  ...
\usrmth{free}{}{argfun}
\usrmth{bound}{}{argfun}
```

```
    \dep, \alt  ...
                \usrmth{dep}{}{argfun}
                \usrmth{alt}{}{argfun}

\cnf, \dnf, ...  ...
                \cmdtxtabr{cnf}
                \cmdtxtabr{dnf}
                \cmdtxtabr{pnf}
                \cmdtxtabr{nnf}

                %%** Semantics ********************************************************%%

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

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

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

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

     \FOL, ...  ...
                % First-Order Logic
                \cmdtxtoparname{FOL}[Fol]
                \cmdtxtoparname{FO}[FO]

                % Monadic First-Order Logic
                \DeclareRobustCommand{\MFOL}
                  {{\txtname{M}}\FOL}
                \DeclareRobustCommand{\MFO}
                  {{\txtname{M}}\FO}

                %%** Syntax ************************************************************%%

  \VarSig, ...  ...
                \newcommand{\varsig}{V}
                \usrmthlatupp{Var}{Sig}{sig}[\varsig]
                \newcommand{\varsym}{x}
                \newcommand{\varset}{Vr}
                \cmdmthsetext{Var}[\varset][\varsym]
                \usrmth{var}{}{argfun}[vr]
                \usrmth{dim}{}{argfun}[dm]

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

  \FunSig, ...  ...
                \newcommand{\funsig}{F}
                \usrmthlatupp{Fun}{Sig}{sig}[\funsig]
                \newcommand{\funsym}{f}
                \newcommand{\funset}{Fn}
```

```
1459 \cmdmthsetext{Fun}[\funset][\funsym]
1460 \usrmth{fun}{}{argfun}[fn]
1461 \usrmth{art}{}{argfun}[ar]

\TerSig, ...  ...
1462 \newcommand{\tersig}{T}
1463 \usrmthlatupp{Ter}{Sig}{sig}[\tersig]
1464 \newcommand{\tersym}{t}
1465 \newcommand{\terset}{Tr}
1466 \cmdmthsetext{Ter}[\terset][\tersym]
1467 \usrmth{ter}{}{argfun}

\RelSig, ...  ...
1468 \newcommand{\relsig}{R}
1469 \usrmthlatupp{Rel}{Sig}{sig}[\relsig]
1470 \newcommand{\relsym}{r}
1471 \newcommand{\relset}{Rl}
1472 \cmdmthsetext{Rel}[\relset][\relsym]
1473 \usrmth{rel}{}{argfun}[rl]

        \skm  ...
1474 \usrmth{skm}{}{argfun}

1475 %%** Semantics ********************************************************************%%

\ConStr, ...  ...
1476 \newcommand{\constr}{C}
1477 \usrmthlatupp{Con}{Str}{str}[\constr]

\FunStr, ...  ...
1478 \newcommand{\funstr}{F}
1479 \usrmthlatupp{Fun}{Str}{str}[\funstr]

\TerStr, ...  ...
1480 \newcommand{\terstr}{T}
1481 \usrmthlatupp{Ter}{Str}{str}[\terstr]

\RelStr, ...  ...
1482 \newcommand{\relstr}{R}
1483 \usrmthlatupp{Rel}{Str}{str}[\relstr]

1484 %%** First-Order Logics II ********************************************************%%

\DF, \IF, ...  ...
1485 % Dependence-Friendly Logic
1486 \cmdtxtoparname{DF}
1487
1488 % Independence-Friendly Logic
1489 \cmdtxtoparname{IF}
1490
1491 % Dependence/Independence-Friendly Logic
1492 \cmdtxtoparname{DIF}
1493
1494 % Dependence Logic
1495 \cmdtxtoparname{DL}
1496
1497 % Team Logic
1498 \cmdtxtoparname{TL}
1499
1500 % Alternating Dependence-Friendly Logic
1501 \cmdtxtoparname{ADF}
1502
1503 % 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}

% Weak Monadic Second-Order Logic
\DeclareRobustCommand{\WMSOL}
  {{\txtname{W}}\MSOL}
\DeclareRobustCommand{\WMSO}
  {{\txtname{W}}\MSO}

% coWeak Monadic Second-Order Logic
\DeclareRobustCommand{\coWMSOL}
  {{\txtname{coW}}\MSOL}
\DeclareRobustCommand{\coWMSO}
  {{\txtname{coW}}\MSO}
```

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

\FVarSet, ...

```
\newcommand{\fvarsym}{x}
\newcommand{\fvarset}{FVr}
\cmdmthsetext{FVar}[\fvarset][\fvarsym]
```

\SVarSet, ...

```
\newcommand{\svarsym}{X}
\newcommand{\svarset}{SVr}
\cmdmthsetext{SVar}[\svarset][\svarsym]
```

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

...

```
%%** Second-Order Logics II ***************************************************%%
```

\TL, \PL, ...

```
% Tree Logic
\cmdtxtoparname{TL}

% Weak Tree Logic
\DeclareRobustCommand{\WTL}
  {{\txtname{W}}\TL}

% coWeak Tree Logic
\DeclareRobustCommand{\coWTL}
  {{\txtname{coW}}\TL}

% Monadic Tree Logic
\DeclareRobustCommand{\MTL}
  {{\txtname{M}}\TL}

% Weak Monadic Tree Logic
\DeclareRobustCommand{\WMTL}
  {{\txtname{W}}\MTL}

% coWeak Monadic Tree Logic
\DeclareRobustCommand{\coWMTL}
  {{\txtname{coW}}\MTL}

% Path Logic
\cmdtxtoparname{PL}

% Weak Path Logic
\DeclareRobustCommand{\WPL}
  {{\txtname{W}}\PL}

% coWeak Path Logic
\DeclareRobustCommand{\coWPL}
  {{\txtname{coW}}\PL}

% Monadic Path Logic
\DeclareRobustCommand{\MPL}
  {{\txtname{M}}\PL}

% Weak Monadic Path Logic
\DeclareRobustCommand{\WMPL}
  {{\txtname{W}}\MPL}

% coWeak Monadic Path Logic
\DeclareRobustCommand{\coWMPL}
  {{\txtname{coW}}\MPL}
```

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

...

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

...

```
%%** Modal Logics I ************************************************************%%
```

\ML, \GML, ...

```
% Modal Logic
\cmdtxtoparname{ML}

```

```
% Graded Modal Logic
\DeclareRobustCommand{\GML}
  {{\txtname{G}}\ML}

% Quantified Modal Logic
\DeclareRobustCommand{\QML}
  {{\txtname{Q}}\ML}
\DeclareRobustCommand{\EML}
  {\ensuremath{\exists}\ML}
\DeclareRobustCommand{\UML}
  {\ensuremath{\forall}\ML}

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

`\Opr` ...

```
\usrmth{Opr}{}{sym}[Op]
```

`\DMod, \BMod` ...

```
\usrmth{DMod}{}{sym}[\Diamond]
\usrmth{BMod}{}{sym}[\Box]
```

`\Exs, \All` ...

```
\DeclareRobustCommand{\Exs}
  {\@ifstar{\@sexs}{\@exs}}
\DeclareRobustCommand{\@sexs}[1]
  {\mth{\DMod}[#1]}
\DeclareRobustCommand{\@exs}[1]
  {\mth{\defval{\argmid{\langle}{#1}{\rangle}}{\DMod}}}
\DeclareRobustCommand{\All}
  {\@ifstar{\@sall}{\@all}}
\DeclareRobustCommand{\@sall}[1]
  {\mth{\BMod}[#1]}
\DeclareRobustCommand{\@all}[1]
  {\mth{\defval{\argmid{\left[}{#1}{\right]}}{\BMod}}}

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

`\KrpStr, ...` ...

```
\newcommand{\krpstr}{K}
\usrmthlatupp{Krp}{Str}{str}[\krpstr]
```

`\WrlSet, ...` ...

```
\newcommand{\wrlsym}{w}
\newcommand{\wrlset}{W}
\cmdmthsetext{Wrl}[\wrlset][\wrlsym]
\cmdmthsymelm{iwrl}[\wrlsym_{I}]
```

`\AccRel, \TrnRel` ...

```
\newcommand{\accsym}{R}
\cmdmthrel{Acc}[\accsym]
\cmdmthrel{Trn}[\accsym]
```

`\labFun` ...

```
\newcommand{\labsym}{\lambda}
\cmdmthfun{lab}[\labsym]
```

`\PthSet, ...` ...

```
\providecommand{\pthsym}{\pi}
\providecommand{\pthset}{Pth}
\cmdmthsetext{Pth}[\pthset][\pthsym]
\usrmth{path}{}{argfun}

%%** Modal Logics II **************************************************%%
```

\MC, \GMC, ...

```
% Mu Calculus
\cmdtxtoparname{MC}[\ensuremath{\mu}-Calculus]

% Graded Mu Calculus
\DeclareRobustCommand{\GMC}
  {{\txtname{G}}\MC}

% Quantified Mu Calculus
\DeclareRobustCommand{\QMC}
  {{\txtname{Q}}\MC}
\DeclareRobustCommand{\EMC}
  {\ensuremath{\exists}\MC}
\DeclareRobustCommand{\UMC}
  {\ensuremath{\forall}\MC}

% Alternation-Free Mu Calculus
\DeclareRobustCommand{\AFMC}
  {{\txtname{AF}}\MC}

% Alternation-Free Graded Mu Calculus
\DeclareRobustCommand{\AFGMC}
  {{\txtname{AF}}\GMC}

% Quantified Alternation-Free Mu Calculus
\DeclareRobustCommand{\QAFMC}
  {{\txtname{Q}}\AFMC}
\DeclareRobustCommand{\EAFMC}
  {\ensuremath{\exists}\AFMC}
\DeclareRobustCommand{\UAFMC}
  {\ensuremath{\forall}\AFMC}

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

...

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

...

```
%%** Temporal Logics I ************************************************%%
```

\PTL, \LTL, ...

```
% Propositional Temporal Logic
\cmdtxtoparname{PTL}

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

...

```
%%** Game 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]
```

\ActSet, ...

```
\newcommand{\actsym}{c}
\newcommand{\actset}{Ac}
\cmdmthsetext{Act}[\actset][\actsym]
```

\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}]
```

\DecSet, ...

```
\newcommand{\decsym}{d}
\newcommand{\decset}{Dc}
\cmdmthsetext{Dec}[\decset][\decsym]
```

\movFun, \movRel ...

```
\newcommand{\movsym}{\tau}
\cmdmthfun{mov}[\movsym]
\cmdmthrel{mov}[\movsym]
```

\trnFun, \trnRel ...

```
\newcommand{\trnsym}{\delta}
\cmdmthfun{trn}[\trnsym]
\cmdmthrel{trn}[\trnsym]
```

```
\PrfSet  ...
1857 \providecommand{\prfsym}{\xi}
1858 \providecommand{\prfset}{Prf}
1859 \cmdmthsetext{Prf}[\prfset][\prfsym]

\HstSet, ...  ...
1860 \providecommand{\hstsym}{\varpi}
1861 \providecommand{\hstset}{Hst}
1862 \cmdmthsetext{Hst}[\hstset][\hstsym]
1863 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1864 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1865 \cmdmthset{OHst}[\hstset_{\OppSym}]
1866 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1867 \usrmth{hst}{}{argfun}

\PlaySet, ...  ...
1868 \providecommand{\playsym}{\pi}
1869 \providecommand{\playset}{Play}
1870 \cmdmthsetext{Play}[\playset][\playsym]
1871 \usrmth{play}{}{argfun}

\PlnSet, ...  ...
1872 \providecommand{\plnsym}{\rho}
1873 \providecommand{\plnset}{Pln}
1874 \cmdmthsetext{Pln}[\plnset][\plnsym]
1875 \cmdmthset{PPln}[\plnset_{\PlrSym}]
1876 \cmdmthsymelm{pPln}[\plnsym_{\PlrSym}]
1877 \cmdmthset{OPln}[\plnset_{\OppSym}]
1878 \cmdmthsymelm{oPln}[\plnsym_{\OppSym}]

\StrSet, ...  ...
1879 \providecommand{\strsym}{\sigma}
1880 \providecommand{\strset}{Str}
1881 \cmdmthsetext{Str}[\strset][\strsym]
1882 \cmdmthset{PStr}[\strset_{\PlrSym}]
1883 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1884 \cmdmthset{OStr}[\strset_{\OppSym}]
1885 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]

1886 %%** Game Logics II ************************************************************%%

\PL, ...  ...
1887 % Plan Logic
1888 \cmdtxtoparname{PL}
1889
1890 \DeclareRobustCommand{\EPL}
1891   {\ensuremath{\exists}\PL}
1892 \DeclareRobustCommand{\UPL}
1893   {\ensuremath{\forall}\PL}
1894
1895 \DeclareRobustCommand{\FPL}
1896   {{\txtname{F}}\PL}
1897
1898 \DeclareRobustCommand{\EFPL}
1899   {\ensuremath{\exists}\FPL}
1900 \DeclareRobustCommand{\UFPL}
1901   {\ensuremath{\forall}\FPL}
1902
1903 % One-Goal Plan Logic
1904 \DeclareRobustCommandx{\OGPL}[3][1=, 2=, 3=]
1905   {\PL[#1][#2][1g\arglef{,}{#3}]}
1906
1907 \DeclareRobustCommand{\EOGPL}
```

```
  {\ensuremath{\exists}\OGPL}
\DeclareRobustCommand{\UOGPL}
  {\ensuremath{\forall}\OGPL}

\DeclareRobustCommand{\FOGPL}
  {{\txtname{F}}\OGPL}

\DeclareRobustCommand{\EFOGPL}
  {\ensuremath{\exists}\FOGPL}
\DeclareRobustCommand{\UFOGPL}
  {\ensuremath{\forall}\FOGPL}

% Conjunctive-Goal Plan Logic
\DeclareRobustCommandx{\CGPL}[3][1=, 2=, 3=]
  {\PL[#1][#2][cg\arglef{,}{#3}]}

\DeclareRobustCommand{\ECGPL}
  {\ensuremath{\exists}\CGPL}
\DeclareRobustCommand{\UCGPL}
  {\ensuremath{\forall}\CGPL}

\DeclareRobustCommand{\FCGPL}
  {{\txtname{F}}\CGPL}

\DeclareRobustCommand{\EFCGPL}
  {\ensuremath{\exists}\FCGPL}
\DeclareRobustCommand{\UFCGPL}
  {\ensuremath{\forall}\FCGPL}

% Disjunctive-Goal Plan Logic
\DeclareRobustCommandx{\DGPL}[3][1=, 2=, 3=]
  {\PL[#1][#2][dg\arglef{,}{#3}]}

\DeclareRobustCommand{\EDGPL}
  {\ensuremath{\exists}\DGPL}
\DeclareRobustCommand{\UDGPL}
  {\ensuremath{\forall}\DGPL}

\DeclareRobustCommand{\FDGPL}
  {{\txtname{F}}\DGPL}

\DeclareRobustCommand{\EFDGPL}
  {\ensuremath{\exists}\FDGPL}
\DeclareRobustCommand{\UFDGPL}
  {\ensuremath{\forall}\FDGPL}

% Alternating-Goal Plan Logic
\DeclareRobustCommandx{\AGPL}[3][1=, 2=, 3=]
  {\PL[#1][#2][ag\arglef{,}{#3}]}

\DeclareRobustCommand{\EAGPL}
  {\ensuremath{\exists}\AGPL}
\DeclareRobustCommand{\UAGPL}
  {\ensuremath{\forall}\AGPL}

\DeclareRobustCommand{\FAGPL}
  {{\txtname{F}}\AGPL}

\DeclareRobustCommand{\EFAGPL}
  {\ensuremath{\exists}\FAGPL}
\DeclareRobustCommand{\UFAGPL}
  {\ensuremath{\forall}\FAGPL}
```

```
% Extended-Goal Plan Logic
\DeclareRobustCommandx{\EGPL}[3][1=, 2=, 3=]
  {\PL[#1][#2][eg\arglef{,}{#3}]}

\DeclareRobustCommand{\EEGPL}
  {\ensuremath{\exists}\EGPL}
\DeclareRobustCommand{\UEGPL}
  {\ensuremath{\forall}\EGPL}

\DeclareRobustCommand{\FEGPL}
  {{\txtname{F}}\EGPL}

\DeclareRobustCommand{\EFEGPL}
  {\ensuremath{\exists}\FEGPL}
\DeclareRobustCommand{\UFEGPL}
  {\ensuremath{\forall}\FEGPL}

% Boolean-Goal Plan Logic
\DeclareRobustCommandx{\BGPL}[3][1=, 2=, 3=]
  {\PL[#1][#2][bg\arglef{,}{#3}]}

\DeclareRobustCommand{\EBGPL}
  {\ensuremath{\exists}\BGPL}
\DeclareRobustCommand{\UBGPL}
  {\ensuremath{\forall}\BGPL}

\DeclareRobustCommand{\FBGPL}
  {{\txtname{F}}\BGPL}

\DeclareRobustCommand{\EFBGPL}
  {\ensuremath{\exists}\FBGPL}
\DeclareRobustCommand{\UFBGPL}
  {\ensuremath{\forall}\FBGPL}

% Undefined-Goal Plan Logic
\DeclareRobustCommandx{\XGPL}[3][1=, 2=, 3=]
  {\PL[#1][#2][xg\arglef{,}{#3}]}

\DeclareRobustCommand{\EXGPL}
  {\ensuremath{\exists}\XGPL}
\DeclareRobustCommand{\UXGPL}
  {\ensuremath{\forall}\XGPL}

\DeclareRobustCommand{\FXGPL}
  {{\txtname{F}}\XGPL}

\DeclareRobustCommand{\EFXGPL}
  {\ensuremath{\exists}\FXGPL}
\DeclareRobustCommand{\UFXGPL}
  {\ensuremath{\forall}\FXGPL}
```

`\SL, ...` ...

```
% Strategy Logic
\cmdtxtoparname{SL}

\DeclareRobustCommand{\ESL}
  {\ensuremath{\exists}\SL}
\DeclareRobustCommand{\USL}
  {\ensuremath{\forall}\SL}

\DeclareRobustCommand{\FSL}
  {{\txtname{F}}\SL}

\DeclareRobustCommand{\EFSL}
```

```
  {\ensuremath{\exists}\FSL}
\DeclareRobustCommand{\UFSL}
  {\ensuremath{\forall}\FSL}

% One-Goal Strategy Logic
\DeclareRobustCommandx{\OGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][1g\arglef{,}{#3}]}

\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}}\CGSL}

\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}}\DGSL}

\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}}\AGSL}

\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}}\EGSL}

\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}}\BGSL}

\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}}\NGSL}

\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}]}
```

```
2159
2160 \DeclareRobustCommand{\EXGSL}
2161   {\ensuremath{\exists}\XGSL}
2162 \DeclareRobustCommand{\UXGSL}
2163   {\ensuremath{\forall}\XGSL}
2164
2165 \DeclareRobustCommand{\FXGSL}
2166   {{\txtname{F}}\XGSL}
2167
2168 \DeclareRobustCommand{\EFXGSL}
2169   {\ensuremath{\exists}\FXGSL}
2170 \DeclareRobustCommand{\UFXGSL}
2171   {\ensuremath{\forall}\FXGSL}

2172 %%** Syntax ************************************************************%%

\BndSet, ...  ...
2173 \newcommand{\bndsym}{\flat}
2174 \newcommand{\bndset}{Bn}
2175 \cmdmthsetext{Bnd}[\bndset][\bndsym]
2176 \usrmth{bnd}{}{argfun}

      \psn  ...
2177 \usrmth{psn}{}{argfun}

2178 %%** Semantics *********************************************************%%

      \nxt  ...
2179 \usrmth{nxt}{}{argfun}

2180 \fi
2181 %%*************************************************************************%%
2182 %%*************************************************************************%%
2183 %%** Macros for Automata ************************************************%%
2184 %%*************************************************************************%%
2185 \ifaut@
2186 %%** Finite Word Automata **********************************************%%

  \DFA, ...  ...
2187 \cmdtxtoparname{DFA}\cmdtxtoparname{NFA}\cmdtxtoparname{UFA}\cmdtxtoparname{AFA}
2188
2189 \cmdtxtoparname{DWA}\cmdtxtoparname{NWA}\cmdtxtoparname{UWA}\cmdtxtoparname{AWA}
2190
2191 \cmdtxtoparname{DFW}\cmdtxtoparname{NFW}\cmdtxtoparname{UFW}\cmdtxtoparname{AFW}
2192 \cmdtxtoparname{DWW}\cmdtxtoparname{NWW}\cmdtxtoparname{UWW}\cmdtxtoparname{AWW}
2193 \cmdtxtoparname{DBW}\cmdtxtoparname{NBW}\cmdtxtoparname{UBW}\cmdtxtoparname{ABW}
2194 \cmdtxtoparname{DCW}\cmdtxtoparname{NCW}\cmdtxtoparname{UCW}\cmdtxtoparname{ACW}
2195 \cmdtxtoparname{DPW}\cmdtxtoparname{NPW}\cmdtxtoparname{UPW}\cmdtxtoparname{APW}
2196 \cmdtxtoparname{DRW}\cmdtxtoparname{NRW}\cmdtxtoparname{URW}\cmdtxtoparname{ARW}
2197 \cmdtxtoparname{DSW}\cmdtxtoparname{NSW}\cmdtxtoparname{USW}\cmdtxtoparname{ASW}
2198 \cmdtxtoparname{DMW}\cmdtxtoparname{NMW}\cmdtxtoparname{UMW}\cmdtxtoparname{AMW}

  \GFG, ...  ...
2199 \cmdtxtoparname{GFG}
2200
2201 \cmdtxtoparname{PD}
2202 \cmdtxtoparname{PN}
2203
2204 \cmdtxtoparname{LD}
2205 \cmdtxtoparname{LN}

2206 %%** Syntax ************************************************************%%
```

```
\AutName, ...  ...
               \newcommand{\autname}{A}
               \usrmthlatupp{Aut}{Name}{name}[\autname]
               \newcommand{\autset}{Aut}
               \cmdmthset{Aut}[\autset]

    \WAutSet   ...
               \newcommand{\wautset}{WAut}
               \cmdmthset{WAut}[\wautset]

\SymSet, ...   ...
               \newcommand{\symsym}{\sigma}
               \newcommand{\symset}{\Sigma}
               \cmdmthsetext{Sym}[\symset][\symsym]

\SttSet, ...   ...
               \def\sttsym{q}
               \def\sttset{Q}
               \cmdmthsetext{Stt}[\sttset][\sttsym]
               \cmdmthset{ISt}[\sttset_{I}]
               \cmdmthsymelm{istt}[\sttsym_{I}]
               \cmdmthset{FStt}[\sttset_{F}]
               \cmdmthsymelm{fstt}[\sttsym_{F}]

\trnFun, \trnRel  ...
               \def\trnsym{\delta}
               \cmdmthfun{trn}[\trnsym]
               \cmdmthrel{trn}[\trnsym]

               %%** Semantics ********************************************************%%

\WrdSet, ...   ...
               \newcommand{\wrdsym}{w}
               \newcommand{\wrdset}{Wr}
               \cmdmthsetext{Wrd}[\wrdset][\wrdsym]

      \Lang    ...
               \usrmth{Lang}{}{argfun}[L]

               %%** Finite Tree Automata ********************************************%%

   \DTA, ...   ...
               \cmdtxtoparname{DTA}\cmdtxtoparname{NTA}\cmdtxtoparname{UTA}\cmdtxtoparname{ATA}

               \cmdtxtoparname{DFT}\cmdtxtoparname{NFT}\cmdtxtoparname{UFT}\cmdtxtoparname{AFT}
               \cmdtxtoparname{DWT}\cmdtxtoparname{NWT}\cmdtxtoparname{UWT}\cmdtxtoparname{AWT}
               \cmdtxtoparname{DBT}\cmdtxtoparname{NBT}\cmdtxtoparname{UBT}\cmdtxtoparname{ABT}
               \cmdtxtoparname{DCT}\cmdtxtoparname{NCT}\cmdtxtoparname{UCT}\cmdtxtoparname{ACT}
               \cmdtxtoparname{DPT}\cmdtxtoparname{NPT}\cmdtxtoparname{UPT}\cmdtxtoparname{APT}
               \cmdtxtoparname{DRT}\cmdtxtoparname{NRT}\cmdtxtoparname{URT}\cmdtxtoparname{ART}
               \cmdtxtoparname{DST}\cmdtxtoparname{NST}\cmdtxtoparname{UST}\cmdtxtoparname{AST}
               \cmdtxtoparname{DMT}\cmdtxtoparname{NMT}\cmdtxtoparname{UMT}\cmdtxtoparname{AMT}

               %%** Syntax ************************************************************%%

    \TAutSet   ...
               \newcommand{\tautset}{TAut}
               \cmdmthset{TAut}[\tautset]

\DirSet, ...   ...
               \newcommand{\dirsym}{d}
               \newcommand{\dirset}{\Lambda}
               \cmdmthsetext{Dir}[\dirset][\dirsym]
```

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

\TreeSet, ...  ...
\newcommand{\treesym}{T}
\newcommand{\treeset}{Tr}
\cmdmthsetext{Tree}[\treeset][\treesym]

      \wot  ...
\usrmth{wot}{}{argfun}

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

%%*************************************************************************%%
%%** Format Tricks ******************************************************%%
%%*************************************************************************%%
\iffrm@

       ...  ...
%%...

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

%%*************************************************************************%%
%%** Figure Tricks ******************************************************%%
%%*************************************************************************%%
\iffig@

\RequirePackage{tikz}
\usetikzlibrary{arrows,shapes,patterns,graphs,matrix}

\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

3 Index

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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