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

```
⟨*package⟩
```

Required external packages:

```
\RequirePackage{etoolbox}

\RequirePackage{xargs}
\RequirePackage{xspace}
\RequirePackage{stringstrings}

```

Package options:

```
%% Auxiliary packages
\newif\ifaux@ \aux@false
\DeclareOption{aux}{\aux@true}
\DeclareOption{noaux}{\aux@false}

%% AMS defaults
\newif\ifamsdef@ \amsdef@true
\DeclareOption{noamsdef}{\amsdef@false}

%% AMS theorem tools
\newif\ifamsthm@ \amsthm@true
\DeclareOption{noamsthm}{\amsthm@false}

%% Extended Theorem tools
\newif\ifthmtls@ \thmtls@true
\DeclareOption{nothmtls}{\thmtls@false}

%% Enumeration tools
\newif\ifenmtls@ \enmtls@true
\DeclareOption{noenmtls}{\enmtls@false}

%% Hyper reference
\newif\ifhypref@ \hypref@true
\DeclareOption{nohypref}{\hypref@false}

%% Font tools
\newif\iffnttls@ \fnttls@true
```

*This document describes version v0.8 of the fmocdmac package, last revised 2022/08/21.

```
\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\text@false\com@false\gam@false\log@false\aut@false}

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


%% Elementary macros for text
\newif\iftext@ \text@false
\DeclareOption{text}{\text@true\txtgen@true}
\DeclareOption{notext}{\text@false}

%% Elementary macros for math
\newif\ifmath@ \math@false
\DeclareOption{math}{\math@true\mthgen@true}
\DeclareOption{nomath}{\math@false}


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


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

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

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


%% Format-related tricks
\newif\iffrm@ \frm@false
```

```
\DeclareOption{frm}{\frm@true}
\DeclareOption{nofrm}{\frm@false}


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

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


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


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

```

Option-processing code:

```

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

\ExecuteOptions{aux,txtgen,mthgen,text,math,com,gam,log,aut}%

\ProcessOptions\relax%

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

%%*****************************************************************************%%
%%** Auxiliary Tricks ********************************************************%%
%%*****************************************************************************%%
\ifaux@

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

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

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

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

```

```
\ifhypref@
  % Hyper References
  \RequirePackage{hyperref}

  \hypersetup
    {
    pdfsubject    = {},
    pdfkeywords   = {},
    pdfproducer   = {},
    pdfcreator    = {},
    pdfpagemode   = {UseNone},
    pdfstartview  = {FitH},
    urlcolor      = {blue},
    colorlinks
    }
\fi

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

\ifcrv@
  % Camera-Ready Version

  %%...

\else
  % Draft Version

  %%...

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

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

  %%...

\fi

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- `\arglef{A}{}` = “”
- `\arglef{A}{B}` = “AB”

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

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

- `\argrig{}{B}` = “”
- `\argrig{A}{B}` = “AB”

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

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

- `\argmid{A}{}{C}` = “”
- `\argmid{A}{B}{C}` = “ABC”

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

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

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

`\newtxt` ... to do!

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

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

`\newtxtsty` ... to do!

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

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

`\newtxtarg` ... to do!

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

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

`\newtxtargsty` ... to do!

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

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

`\newtxtoarg` ... to do!

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

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

`\newtxtoargsty` ... to do!

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

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

`\newtxtpar` ... to do!

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

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

`\newtxtparsty` ... to do!

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

```
\newcommandx{\newtxtparsty}[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]` = "$\mathtt{Name}^{\mathtt{sup}}_{\mathtt{sub}}[\mathtt{Par}]$"

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

`\newtxtoparsty` ... to do!

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

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

`\txtsubsup` ... to do!

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

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

`\txtarg` ... to do!

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

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

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

`\txtoarg` ... to do!

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

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

`\txtpar` ... to do!

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

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

`\txtopar` ... to do!

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

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

`\txtsty` ... to do!

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

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

`\cmdtxt` ... to do!

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

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

`\cmdtxtarg` ... to do!

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

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

`\cmdtxtoarg` ... to do!

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

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

`\cmdtxtpar` ... to do!

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

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

`\cmdtxtopar` ... to do!

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

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

\cmdtxtall ... to do!

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

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

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

\usrtxt ... to do!

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

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

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

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

\newmth ... to do!

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

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

\newmthsty ... to do!

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

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

\newmtharg ... to do!

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

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

\newmthargsty ... to do!

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

```
\newcommandx{\newmthargsty}[2][2=]
  {\newmtharg[\defval{#2}{#1}]}
```

`\newmthoarg` ... to do!

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

```
\newcommandx{\newmthoarg}[5][1=, 3=, 4=, 5=]
  {\newmtharg[#1]{#2}[#3][#4][]{#5}[]}
```

`\newmthoargsty` ... to do!

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

```
\newcommandx{\newmthoargsty}[2][2=]
  {\newmthoarg[\defval{#2}{#1}]}
```

`\newmthpar` ... to do!

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

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

`\newmthparsty` ... to do!

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

```
\newcommandx{\newmthparsty}[2][2=]
  {\newmthpar[\defval{#2}{#1}]}
```

`\newmthopar` ... to do!

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

```
\newcommandx{\newmthopar}[5][1=, 3=, 4=, 5=]
  {\newmthpar[#1]{#2}[#3][#4][]{#5}[]}
```

`\newmthoparsty` ... to do!

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

```
\newcommandx{\newmthoparsty}[2][2=]
  {\newmthopar[\defval{#2}{#1}]}
```

`\mthsubsup` ... to do!

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

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

`\mth` ... to do!

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

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

`\mtharg` ... to do!

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

```
\newcommand{\mtharg}
  {\newmthargsty{\mthsty}}
```

`\mthoarg` ... to do!

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

```
\newcommand{\mthoarg}
  {\newmthoargsty{\mthsty}}
```

`\mthpar` ... to do!

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

```
\newcommand{\mthpar}
  {\newmthparsty{\mthsty}}
```

`\mthopar` ... to do!

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

```
\newcommand{\mthopar}
  {\newmthoparsty{\mthsty}}
```

`\mthsty` ... to do!

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

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

`\cmdmth` ... to do!

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

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

`\cmdmtharg` ... to do!

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

```
\newcommand{\cmdmtharg}[1]
  {\csdef{mtharg#1}{\newmthargsty{mthsty#1}}}
```

`\cmdmthoarg` ... to do!

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

```
\newcommand{\cmdmthoarg}[1]
  {\csdef{mthoarg#1}{\newmthoargsty{mthsty#1}}}
```

`\cmdmthpar` ... to do!

- \cmdmthpar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
  \mthparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1[Par]Ext2$

```
\newcommand{\cmdmthpar}[1]
  {\csdef{mthpar#1}{\newmthparsty{mthsty#1}}}
```

\cmdmthopar ... to do!

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

```
\newcommand{\cmdmthopar}[1]
  {\csdef{mthopar#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}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1(Arg)Ext2$
  \mthoargNewCmd{Name}[sub][sup][Arg] = $\texttt{Name}_{sub}^{sup}(Arg)$
  \mthparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = $\texttt{Name}_{sub}^{sup}Ext1[Par]Ext2$
  \mthoparNewCmd{Name}[sub][sup][Par] = $\texttt{Name}_{sub}^{sup}[Par]$

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

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

\usrmth ... to do!

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

```
\newcommandx{\usrmth}[4][4=]
  {\csdef{#1#2}{\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]` = $\boldsymbol{Name_{sub}^{sup}Ext}$
- `\txtargdef{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $\boldsymbol{Name_{sub}^{sup}Ext1(Arg)Ext2}$
- `\txtpardef{Name}[sub][sup][Ext1]{Par}[Ext2]` = $\boldsymbol{Name_{sub}^{sup}Ext1[Par]Ext2}$

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

`\cmdtxtdef` ... to do!

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

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

`\cmdtxtargdef` ... to do!

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

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

`\cmdtxtoargdef` ... to do!

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

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

`\cmdtxtpardef` ... to do!

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

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

`\cmdtxtopardef` ... to do!

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

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

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

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

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

`\cmdtxtabr` ... to do!

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

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

`\cmdtxtargabr` ... to do!

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

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

`\cmdtxtoargabr` ... to do!

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

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

`\cmdtxtparabr` ... to do!

- `\cmdtxtparabr{cmdName}`;
  `\cmdName[sub][sub][ext1]{par}[ext2]` = $cmdName^{\text{sub}}_{\text{sub}}ext1[par]ext2$
- `\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]` = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext}$
- `\txtargname{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext1}(\textsc{Arg})\textsc{Ext2}$
- `\txtparname{Name}[sub][sup][Ext1]{Par}[Ext2]` = $\textsc{Name}^{\textsc{sup}}_{\textsc{sub}}\textsc{Ext1}[\textsc{Par}]\textsc{Ext2}$

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

`\cmdtxtname` ... to do!

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

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

`\cmdtxtargname` ... to do!

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

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

`\cmdtxtoargname` ... to do!

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

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

`\cmdtxtparname` ... to do!

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

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

`\cmdtxtoparname` ... to do!

- `\cmdtxtoparname{cmdName}`;
  `\cmdName[sub][sub][par]` = $\textsc{cmdName}^{\textsc{sub}}_{\textsc{sub}}[\textsc{par}]$
- `\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}[Ext2]` = $\mathcal{NAME}^{sup}_{sub}Ext1(Arg)Ext2$
- `\mthparname{NAME}[sub][sup][Ext1]{Par}[Ext2]` = $\mathcal{NAME}^{sup}_{sub}Ext1[Par]Ext2$

```
%% 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}[Ext2]` $= \mathscr{NAME}^{sup}_{sub}Ext1(Arg)Ext2$
- `\mthparfam{NAME}[sub][sup][Ext1]{Par}[Ext2]` $= \mathscr{NAME}^{sup}_{sub}Ext1[Par]Ext2$

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

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

`\cmdmthoargfam` ... to do!

- `\cmdmthoargfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][arg]` $= \mathscr{C}\mathscr{M}\mathscr{D}\mathscr{N}\mathscr{A}\mathscr{M}\mathscr{E}_{sub}^{sub}(arg)$
- `\cmdmthoargfam{cmdFam}[NEWNAME]`;
  `\cmdFamFam[sub][sub][arg]` $= \mathscr{N}\mathscr{E}\mathscr{W}\mathscr{N}\mathscr{A}\mathscr{M}\mathscr{E}_{sub}^{sub}(arg)$

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

`\cmdmthparfam` ... to do!

- `\cmdmthparfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][ext1]{par}[ext2]` $= \mathscr{C}\mathscr{M}\mathscr{D}\mathscr{N}\mathscr{A}\mathscr{M}\mathscr{E}_{sub}^{sub}ext1[par]ext2$
- `\cmdmthparfam{cmdName}[NEWNAME]`;
  `\cmdNameFam[sub][sub][ext1]{par}[ext2]` $= \mathscr{N}\mathscr{E}\mathscr{W}\mathscr{N}\mathscr{A}\mathscr{M}\mathscr{E}_{sub}^{sub}ext1[par]ext2$

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

`\cmdmthoparfam` ... to do!

- `\cmdmthoparfam{CMDNAME}`;
  `\CMDNAMEFam[sub][sub][par]` $= \mathscr{C}\mathscr{M}\mathscr{D}\mathscr{N}\mathscr{A}\mathscr{M}\mathscr{E}_{sub}^{sub}[par]$
- `\cmdmthoparfam{cmdFam}[NEWNAME]`;
  `\cmdFamFam[sub][sub][par]` $= \mathscr{N}\mathscr{E}\mathscr{W}\mathscr{N}\mathscr{A}\mathscr{M}\mathscr{E}_{sub}^{sub}[par]$

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

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

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

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

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

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

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

`\cmdmthsig` ... to do!

- `\cmdmthsig{cmdName}`;
  `\cmdNameSig[sub][sub][ext]` = $\mathcal{cmdN}ame_{sub}^{sub}ext$
- `\cmdmthsig{cmdName}[NewName]`;
  `\cmdNameSig[sub][sub][ext]` = $\mathcal{NewN}ame_{sub}^{sub}ext$

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

`\cmdmthargsig` ... to do!

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

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

`\cmdmthoargsig` ... to do!

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

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

```
%% 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]` = $\mathrm{Name}^{sup}_{sub}Ext$
- `\mthargset{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $\mathrm{Name}^{sup}_{sub}Ext1(Arg)Ext2$
- `\mthparset{Name}[sub][sup][Ext1]{Par}[Ext2]` = $\mathrm{Name}^{sup}_{sub}Ext1[Par]Ext2$

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

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

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

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

`\cmdmthfun` ... to do!

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

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

`\cmdmthargfun` ... to do!

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

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

`\cmdmthoargfun` ... to do!

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

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

`\cmdmthparfun` ... to do!

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

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

`\cmdmthoparfun` ... to do!

- `\cmdmthoparfun{cmdName}`;
  `\cmdNameFun[sub][sub][par]` = 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$_{sub}^{sup}Ext$
- `\mthargsym{Name}[sub][sup][Ext1]{Arg}[Ext2]` = Name$_{sub}^{sup}Ext1(Arg)Ext2$
- `\mthparsym{Name}[sub][sup][Ext1]{Par}[Ext2]` = Name$_{sub}^{sup}Ext1[Par]Ext2$

```
%% 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, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, Υ, Φ, Φ, 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]` = $\texttt{NewName}_{sub}^{sub}[par]$

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

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

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

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

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

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

`\cmdmthelm` ... to do!

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

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

`\cmdmthargelm` ... to do!

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

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

`\cmdmthoargelm` ... to do!

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

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

`\cmdmthparelm` ... to do!

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

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

`\cmdmthoparelm` ... to do!

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

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

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

`\cmdmthsymelm` ... to do!

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

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

`\cmdmthargsymelm` ... to do!

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

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

`\cmdmthoargsymelm` ... to do!

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

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

`\cmdmthparsymelm` ... to do!

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

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

`\cmdmthoparsymelm` ... to do!

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

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

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

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

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

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

`\cmdmthluop, ...` ... to do!

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

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

`\mthlrel` ... to do!

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

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

`\cmdmthlrel` ... to do!

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

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

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

`\mthsnt, ...` ... to do!

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

```
%% 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, Θ, I, K, K, Λ, M, N, Ξ, O, Π, Π, P, P, Σ, Σ, T, ϒ, Φ, Φ, 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}[Ext2]` = $Name^{sup}_{sub}Ext1(Arg)Ext2$
- `\mthparfrm{Name}[sub][sup][Ext1]{Par}[Ext2]` = $Name^{sup}_{sub}Ext1[Par]Ext2$

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

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

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

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

`\cmdmthfrm` ... to do!

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

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

`\cmdmthargfrm` ... to do!

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

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

`\cmdmthoargfrm` ... to do!

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

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

`\cmdmthparfrm` ... to do!

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

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

`\cmdmthoparfrm` ... to do!

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

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

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

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

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

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

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

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

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

`\cmdmthmat` ... to do!

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

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

`\cmdmthargmat` ... to do!

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

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

`\cmdmthoargmat` ... to do!

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

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

`\cmdmthparmat` ... to do!

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

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

`\cmdmthoparmat` ... to do!

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

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

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

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

```
%% 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 ************************************************%%
%%*****************************************************************************%%
\iftext@
%%** 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 *****************************************************%%
```

\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}
```

\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 ***********************************************%%
%%*****************************************************************************%%
\ifmath@
%%** General Notation ********************************************************%%
```

\defeq, \seteq ...

```
\DeclareRobustCommand{\defeq}
  {\mthlbop{\triangleq}}
\DeclareRobustCommand{\seteq}
  {\mthlbop{:=}}
```

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

\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}}
```

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

\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}[1]
  {\mth{\mathaccent"017E{#1}}}
```

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

\enumeration, ...

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

\sequence, ...

```
\varcmd{sequence}{\mth}{\left[}{,}{\right]}{}
\varcmd{sequencel}{\mth}{\left[}{,}{\right.}{}
\varcmd{sequencer}{\mth}{\left.}{,}{\right]}{}
\varcmd{sequencex}{\mth}{\left[}{;}{\right]}{}
\varcmd{sequencexl}{\mth}{\left[}{;}{\right.}{}
\varcmd{sequencexr}{\mth}{\left.}{;}{\right]}{}
```

\tuple, ...

```
\varcmd{tuple}{\mth}{\left\langle}{,}{\right\rangle}{}
\varcmd{tuplel}{\mth}{\left\langle}{,}{\right.}{}
\varcmd{tupler}{\mth}{\left.}{,}{\right\rangle}{}
\varcmd{tuplex}{\mth}{\left\langle}{;}{\right\rangle}{}
\varcmd{tuplexl}{\mth}{\left\langle}{;}{\right.}{}
\varcmd{tuplexr}{\mth}{\left.}{;}{\right\rangle}{}
```

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

\set, ...

```
\DeclareRobustCommand{\set}[2]
  {\argmid{\left\lbrace}{\argsep{#1}{\,\middle\vert\,}{#2}}{\right\rbrace}}
\DeclareRobustCommand{\setl}[1]
  {\argmid{\left\lbrace}{#1}{\,\right\vert\!}}
\DeclareRobustCommand{\setr}[1]
  {\argmid{\left.}{#1}{\right\rbrace}}
```

\card ...

```
\DeclareRobustCommand{\card}[1]
  {\mth{\argmid{\lvert}{#1}{\rvert}}}
```

\pow ...

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

\denot ...

```
\DeclareRobustCommand{\denot}[1]
  {\mth{\argmid{\llbracket}{#1}{\rrbracket}}}
```

```
%%** Relations *************************************************************%%
```

\emptyrel ...

```
\DeclareRobustCommand{\emptyrel}
  {\mth{\varnothing}}

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

\dom, \cod, ...

```
\DeclareRobustCommand{\dom}
  {\mthargfun{dom}}
\DeclareRobustCommand{\cod}
  {\mthargfun{cod}}
\DeclareRobustCommand{\rng}
  {\mthargfun{rng}}
\DeclareRobustCommand{\img}
  {\mthargfun{img}}

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

\prj ...

```
\DeclareRobustCommand{\prj}
  {\mthargfun{prj}}
```

\rst ...

```
\DeclareRobustCommand{\rst}
  {\mthlbop{\upharpoonright}}
```

\cmp ...

```
\DeclareRobustCommand{\cmp}
  {\mthlbop{\circ}}

%%** Functions ****************************************************************%%
```

\emptyfun ...

```
\DeclareRobustCommand{\emptyfun}
  {\mth{\varnothing}}

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

\pto, \pmapsto ...

```
\DeclareMathOperator{\pto}
  {\ensuremath{\rightharpoonup}}
\DeclareMathOperator{\pmapsto}
  {\ensuremath{\mathrel{\raisebox{0.5ex}{\footnotesize${\llcorner}$}%
    \kern-1.5ex\rightharpoonup}}}

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

\fix, \ifp, ...

```
\DeclareRobustCommand{\fix}
  {\mthfun{fix}}
\DeclareRobustCommand{\ifp}
  {\mthfun{ifp}}
\DeclareRobustCommand{\lfp}
  {\mthfun{lfp}}
\DeclareRobustCommand{\gfp}
  {\mthfun{gfp}}

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

\Aomega, \AOmega ...

```
\DeclareRobustCommand{\Aomega}
  {\mthargset{\omega}}
\DeclareRobustCommand{\AOmega}
  {\mthargset{\Omega}}
```

\Atheta, \ATheta ...

```
\DeclareRobustCommand{\Atheta}
  {\mthargset{\theta}}
\DeclareRobustCommand{\ATheta}
  {\mthargset{\Theta}}
```

\Aomicron, ...

```
\DeclareRobustCommand{\Aomicron}
  {\mthargset{\omicron}}
\DeclareRobustCommand{\AOmicron}
  {\mthargset{\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})}}
```

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

\floor, \ceil ...

```
\DeclareRobustCommand{\floor}[1]
  {\mth{\argmid{\left\lfloor}{#1}{\right\rfloor}}}
\DeclareRobustCommand{\ceil}[1]
  {\mth{\argmid{\left\lceil}{#1}{\right\rceil}}}
```

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

\arg ...

```
\DeclareRobustCommand{\arg}
  {\mthfun{arg}}
```

\evn, \odd ...

```
\DeclareRobustCommand{\evn}
  {\mthfun{evn}}
\DeclareRobustCommand{\odd}
  {\mthfun{odd}}
```

\bst, ...

```
\DeclareRobustCommand{\bst}
  {\mthfun{bst}}
\DeclareRobustCommand{\argbst}
  {\mthfun{arg bst}}
```

\min, \max, ...

```
\DeclareRobustCommand{\min}
  {\mthfun{min}}
\DeclareRobustCommand{\max}
  {\mthfun{max}}
\DeclareRobustCommand{\argmin}
  {\mthfun{arg min}}
\DeclareRobustCommand{\argmax}
  {\mthfun{arg max}}
```

\inf, \sup ...

```
\DeclareRobustCommand{\inf}
  {\mthfun{inf}}
\DeclareRobustCommand{\sup}
  {\mthfun{sup}}
```

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

\emptyseq ...

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

`\fst, \lst` ...

```
\DeclareRobustCommand{\fst}
  {\mthargfun{fst}}
\DeclareRobustCommand{\lst}
  {\mthargfun{lst}}
```

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

`\defcomcls` ... to do!

- `\defcomcls{CompClass}`;

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

  `\NCompClass[sub][sup][ext]` = $\textsc{NCompClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoNCompClass[sub][sup][ext]` = $\textsc{CoNCompClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\NCompClassE[sub][sup][ext]` = $\textsc{NCompClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoNCompClassE[sub][sup][ext]` = $\textsc{CoNCompClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\NCompClassH[sub][sup][ext]` = $\textsc{NCompClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoNCompClassH[sub][sup][ext]` = $\textsc{CoNCompClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\NCompClassC[sub][sup][ext]` = $\textsc{NCompClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoNCompClassC[sub][sup][ext]` = $\textsc{CoNCompClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$

  `\UCompClass[sub][sup][ext]` = $\textsc{UCompClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoUCompClass[sub][sup][ext]` = $\textsc{CoUCompClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\UCompClassE[sub][sup][ext]` = $\textsc{UCompClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoUCompClassE[sub][sup][ext]` = $\textsc{CoUCompClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\UCompClassH[sub][sup][ext]` = $\textsc{UCompClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoUCompClassH[sub][sup][ext]` = $\textsc{CoUCompClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\UCompClassC[sub][sup][ext]` = $\textsc{UCompClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoUCompClassC[sub][sup][ext]` = $\textsc{CoUCompClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$

  `\ACompClass[sub][sup][ext]` = $\textsc{ACompClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoACompClass[sub][sup][ext]` = $\textsc{CoACompClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\ACompClassE[sub][sup][ext]` = $\textsc{ACompClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoACompClassE[sub][sup][ext]` = $\textsc{CoACompClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\ACompClassH[sub][sup][ext]` = $\textsc{ACompClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoACompClassH[sub][sup][ext]` = $\textsc{CoACompClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\ACompClassC[sub][sup][ext]` = $\textsc{ACompClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoACompClassC[sub][sup][ext]` = $\textsc{CoACompClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$

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

  `\CompClass[sub][sup][ext]` = $\textsc{NewClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoCompClass[sub][sup][ext]` = $\textsc{CoNewClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CompClassE[sub][sup][ext]` = $\textsc{NewClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoCompClassE[sub][sup][ext]` = $\textsc{CoNewClass-easy}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CompClassH[sub][sup][ext]` = $\textsc{NewClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoCompClassH[sub][sup][ext]` = $\textsc{CoNewClass-hard}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CompClassC[sub][sup][ext]` = $\textsc{NewClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoCompClassC[sub][sup][ext]` = $\textsc{CoNewClass-complete}_{\text{SUB}}^{\text{SUP}}\text{EXT}$

  `\NCompClass[sub][sup][ext]` = $\textsc{NNewClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$
  `\CoNCompClass[sub][sup][ext]` = $\textsc{CoNNewClass}_{\text{SUB}}^{\text{SUP}}\text{EXT}$

\NCompClassE[sub][sup][ext] = NNewClass-easy$^{\text{sup}}_{\text{sub}}$ext
\CoNCompClassE[sub][sup][ext] = CoNNewClass-easy$^{\text{sup}}_{\text{sub}}$ext
\NCompClassH[sub][sup][ext] = NNewClass-hard$^{\text{sup}}_{\text{sub}}$ext
\CoNCompClassH[sub][sup][ext] = CoNNewClass-hard$^{\text{sup}}_{\text{sub}}$ext
\NCompClassC[sub][sup][ext] = NNewClass-complete$^{\text{sup}}_{\text{sub}}$ext
\CoNCompClassC[sub][sup][ext] = CoNNewClass-complete$^{\text{sup}}_{\text{sub}}$ext

\UCompClass[sub][sup][ext] = UNewClass$^{\text{sup}}_{\text{sub}}$ext
\CoUCompClass[sub][sup][ext] = CoUNewClass$^{\text{sup}}_{\text{sub}}$ext
\UCompClassE[sub][sup][ext] = UNewClass-easy$^{\text{sup}}_{\text{sub}}$ext
\CoUCompClassE[sub][sup][ext] = CoUNewClass-easy$^{\text{sup}}_{\text{sub}}$ext
\UCompClassH[sub][sup][ext] = UNewClass-hard$^{\text{sup}}_{\text{sub}}$ext
\CoUCompClassH[sub][sup][ext] = CoUNewClass-hard$^{\text{sup}}_{\text{sub}}$ext
\UCompClassC[sub][sup][ext] = UNewClass-complete$^{\text{sup}}_{\text{sub}}$ext
\CoUCompClassC[sub][sup][ext] = CoUNewClass-complete$^{\text{sup}}_{\text{sub}}$ext

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

```
\newcommandx{\defcomcls}[2][2=]
  {\defcomclssem{#1}{\defval{#2}{#1}}%
  \defcomclssem{#1}{\defval{#2}{#1}}[Co]}
\newcommandx{\defcomclssem}[3][3=]
  {\defcomclsred{#3#1}{#2}[#3]%
  \defcomclsred{#3N#1}{#2}[#3N]%
  \defcomclsred{#3U#1}{#2}[#3U]%
  \defcomclsred{#3A#1}{#2}[#3A]}
\newcommandx{\defcomclsred}[3][3=]
  {\defcomclscmd{#1}{#2}[#3]%
  \defcomclscmd{#1E}{#2}[#3][-easy]%
  \defcomclscmd{#1H}{#2}[#3][-hard]%
  \defcomclscmd{#1C}{#2}[#3][-complete]}%
\newcommandx{\defcomclscmd}[4][3=, 4=]
  {\csdef{#1}{\txtcom{#3#2#4}}}
```

`\defcomhrc` ... to do!

- `\defcomhrc{CompHierarchy}`;

  `CompHierarchy[sub][sup][ext]` = CompHierarchy$^{\text{sup}}_{\text{sub}}$ext

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

  `CompHierarchy[sub][sup][ext]` = NewHierarchy$^{\text{sup}}_{\text{sub}}$ext

```
\newcommandx{\defcomhrc}[2][2=]
  {\csdef{#1}{\txtcom{\defval{#2}{#1}}}}
%%*****************************************************************************%%
```

`\Easy, \Hard, ...`

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

`\Time, ...`

- `\Time[sub][sup][ext]` = Time$^{\text{sup}}_{\text{sub}}$ext
  `\TimeE[sub][sup][ext]` = Time-easy$^{\text{sup}}_{\text{sub}}$ext
  `\TimeH[sub][sup][ext]` = Time-hard$^{\text{sup}}_{\text{sub}}$ext
  `\TimeC[sub][sup][ext]` = Time-complete$^{\text{sup}}_{\text{sub}}$ext

- `\NTime[sub][sup][ext]` = $\mathrm{NTime}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NTimeE[sub][sup][ext]` = $\mathrm{NTime\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NTimeH[sub][sup][ext]` = $\mathrm{NTime\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NTimeC[sub][sup][ext]` = $\mathrm{NTime\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\UTime[sub][sup][ext]` = $\mathrm{UTime}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\UTimeE[sub][sup][ext]` = $\mathrm{UTime\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\UTimeH[sub][sup][ext]` = $\mathrm{UTime\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\UTimeC[sub][sup][ext]` = $\mathrm{UTime\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\ATime[sub][sup][ext]` = $\mathrm{ATime}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ATimeE[sub][sup][ext]` = $\mathrm{ATime\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ATimeH[sub][sup][ext]` = $\mathrm{ATime\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ATimeC[sub][sup][ext]` = $\mathrm{ATime\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$

993 `\defcomcls{Time}`

`\Space, ...`

- `\Space[sub][sup][ext]` = $\mathrm{Space}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\SpaceE[sub][sup][ext]` = $\mathrm{Space\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\SpaceH[sub][sup][ext]` = $\mathrm{Space\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\SpaceC[sub][sup][ext]` = $\mathrm{Space\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\NSpace[sub][sup][ext]` = $\mathrm{NSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NSpaceE[sub][sup][ext]` = $\mathrm{NSpace\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NSpaceH[sub][sup][ext]` = $\mathrm{NSpace\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NSpaceC[sub][sup][ext]` = $\mathrm{NSpace\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\USpace[sub][sup][ext]` = $\mathrm{USpace}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\USpaceE[sub][sup][ext]` = $\mathrm{USpace\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\USpaceH[sub][sup][ext]` = $\mathrm{USpace\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\USpaceC[sub][sup][ext]` = $\mathrm{USpace\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\ASpace[sub][sup][ext]` = $\mathrm{ASpace}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ASpaceE[sub][sup][ext]` = $\mathrm{ASpace\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ASpaceH[sub][sup][ext]` = $\mathrm{ASpace\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ASpaceC[sub][sup][ext]` = $\mathrm{ASpace\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$

994 `\defcomcls{Space}`

`\LogTime, ...`

- `\LogTime[sub][sup][ext]` = $\mathrm{LogTime}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\LogTimeE[sub][sup][ext]` = $\mathrm{LogTime\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\LogTimeH[sub][sup][ext]` = $\mathrm{LogTime\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\LogTimeC[sub][sup][ext]` = $\mathrm{LogTime\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\NLogTime[sub][sup][ext]` = $\mathrm{NLogTime}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NLogTimeE[sub][sup][ext]` = $\mathrm{NLogTime\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NLogTimeH[sub][sup][ext]` = $\mathrm{NLogTime\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NLogTimeC[sub][sup][ext]` = $\mathrm{NLogTime\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\ULogTime[sub][sup][ext]` = $\mathrm{ULogTime}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ULogTimeE[sub][sup][ext]` = $\mathrm{ULogTime\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ULogTimeH[sub][sup][ext]` = $\mathrm{ULogTime\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ULogTimeC[sub][sup][ext]` = $\mathrm{ULogTime\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\ALogTime[sub][sup][ext]` = $\mathrm{ALogTime}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ALogTimeE[sub][sup][ext]` = $\mathrm{ALogTime\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ALogTimeH[sub][sup][ext]` = $\mathrm{ALogTime\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\ALogTimeC[sub][sup][ext]` = $\mathrm{ALogTime\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$

995 `\defcomcls{LogTime}`

`\LogSpace, ...`

- `\LogSpace[sub][sup][ext]` = $\mathrm{LogSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\LogSpaceE[sub][sup][ext]` = $\mathrm{LogSpace\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\LogSpaceH[sub][sup][ext]` = $\mathrm{LogSpace\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\LogSpaceC[sub][sup][ext]` = $\mathrm{LogSpace\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
- `\NLogSpace[sub][sup][ext]` = $\mathrm{NLogSpace}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NLogSpaceE[sub][sup][ext]` = $\mathrm{NLogSpace\text{-}EASY}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NLogSpaceH[sub][sup][ext]` = $\mathrm{NLogSpace\text{-}HARD}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$
  `\NLogSpaceC[sub][sup][ext]` = $\mathrm{NLogSpace\text{-}COMPLETE}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$

- \ULogSpace[sub][sup][ext] = $\textsc{ULogSpace}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \ULogSpaceE[sub][sup][ext] = $\textsc{ULogSpace-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \ULogSpaceH[sub][sup][ext] = $\textsc{ULogSpace-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \ULogSpaceC[sub][sup][ext] = $\textsc{ULogSpace-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
- \ALogSpace[sub][sup][ext] = $\textsc{ALogSpace}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \ALogSpaceE[sub][sup][ext] = $\textsc{ALogSpace-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \ALogSpaceH[sub][sup][ext] = $\textsc{ALogSpace-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \ALogSpaceC[sub][sup][ext] = $\textsc{ALogSpace-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$

```
\defcomcls{LogSpace}
```

\PTime, ...

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

```
\defcomcls{PTime}
```

\PSpace, ...

- \PSpace[sub][sup][ext] = $\textsc{PSpace}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \PSpaceE[sub][sup][ext] = $\textsc{PSpace-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \PSpaceH[sub][sup][ext] = $\textsc{PSpace-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \PSpaceC[sub][sup][ext] = $\textsc{PSpace-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
- \NPSpace[sub][sup][ext] = $\textsc{NPSpace}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \NPSpaceE[sub][sup][ext] = $\textsc{NPSpace-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \NPSpaceH[sub][sup][ext] = $\textsc{NPSpace-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \NPSpaceC[sub][sup][ext] = $\textsc{NPSpace-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
- \UPSpace[sub][sup][ext] = $\textsc{UPSpace}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \UPSpaceE[sub][sup][ext] = $\textsc{UPSpace-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \UPSpaceH[sub][sup][ext] = $\textsc{UPSpace-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \UPSpaceC[sub][sup][ext] = $\textsc{UPSpace-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
- \APSpace[sub][sup][ext] = $\textsc{APSpace}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \APSpaceE[sub][sup][ext] = $\textsc{APSpace-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \APSpaceH[sub][sup][ext] = $\textsc{APSpace-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \APSpaceC[sub][sup][ext] = $\textsc{APSpace-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$

```
\defcomcls{PSpace}
```

\QPTime, ...

- \QPTime[sub][sup][ext] = $\textsc{QPTime}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \QPTimeE[sub][sup][ext] = $\textsc{QPTime-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \QPTimeH[sub][sup][ext] = $\textsc{QPTime-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \QPTimeC[sub][sup][ext] = $\textsc{QPTime-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
- \NQPTime[sub][sup][ext] = $\textsc{NQPTime}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \NQPTimeE[sub][sup][ext] = $\textsc{NQPTime-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \NQPTimeH[sub][sup][ext] = $\textsc{NQPTime-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \NQPTimeC[sub][sup][ext] = $\textsc{NQPTime-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
- \UQPTime[sub][sup][ext] = $\textsc{UQPTime}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \UQPTimeE[sub][sup][ext] = $\textsc{UQPTime-easy}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \UQPTimeH[sub][sup][ext] = $\textsc{UQPTime-hard}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$
  \UQPTimeC[sub][sup][ext] = $\textsc{UQPTime-complete}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$

- \AQPTime[sub][sup][ext] = AQPTime$^{\text{SUP}}_{\text{SUB}}$EXT
  \AQPTimeE[sub][sup][ext] = AQPTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \AQPTimeH[sub][sup][ext] = AQPTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \AQPTimeC[sub][sup][ext] = AQPTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT

```
\defcomcls{QPTime}
```

\QPSpace, ...

- \QPSpace[sub][sup][ext] = QPSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \QPSpaceE[sub][sup][ext] = QPSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \QPSpaceH[sub][sup][ext] = QPSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \QPSpaceC[sub][sup][ext] = QPSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \NQPSpace[sub][sup][ext] = NQPSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \NQPSpaceE[sub][sup][ext] = NQPSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \NQPSpaceH[sub][sup][ext] = NQPSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \NQPSpaceC[sub][sup][ext] = NQPSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \UQPSpace[sub][sup][ext] = UQPSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \UQPSpaceE[sub][sup][ext] = UQPSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \UQPSpaceH[sub][sup][ext] = UQPSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \UQPSpaceC[sub][sup][ext] = UQPSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \AQPSpace[sub][sup][ext] = AQPSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \AQPSpaceE[sub][sup][ext] = AQPSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \AQPSpaceH[sub][sup][ext] = AQPSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \AQPSpaceC[sub][sup][ext] = AQPSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT

```
\defcomcls{QPSpace}
```

\ExpTime, ...

- \ExpTime[sub][sup][ext] = ExpTime$^{\text{SUP}}_{\text{SUB}}$EXT
  \ExpTimeE[sub][sup][ext] = ExpTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \ExpTimeH[sub][sup][ext] = ExpTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \ExpTimeC[sub][sup][ext] = ExpTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \NExpTime[sub][sup][ext] = NExpTime$^{\text{SUP}}_{\text{SUB}}$EXT
  \NExpTimeE[sub][sup][ext] = NExpTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \NExpTimeH[sub][sup][ext] = NExpTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \NExpTimeC[sub][sup][ext] = NExpTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \UExpTime[sub][sup][ext] = UExpTime$^{\text{SUP}}_{\text{SUB}}$EXT
  \UExpTimeE[sub][sup][ext] = UExpTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \UExpTimeH[sub][sup][ext] = UExpTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \UExpTimeC[sub][sup][ext] = UExpTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \AExpTime[sub][sup][ext] = AExpTime$^{\text{SUP}}_{\text{SUB}}$EXT
  \AExpTimeE[sub][sup][ext] = AExpTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \AExpTimeH[sub][sup][ext] = AExpTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \AExpTimeC[sub][sup][ext] = AExpTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT

```
\defcomcls{ExpTime}
```

\ExpSpace, ...

- \ExpSpace[sub][sup][ext] = ExpSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \ExpSpaceE[sub][sup][ext] = ExpSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \ExpSpaceH[sub][sup][ext] = ExpSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \ExpSpaceC[sub][sup][ext] = ExpSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \NExpSpace[sub][sup][ext] = NExpSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \NExpSpaceE[sub][sup][ext] = NExpSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \NExpSpaceH[sub][sup][ext] = NExpSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \NExpSpaceC[sub][sup][ext] = NExpSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \UExpSpace[sub][sup][ext] = UExpSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \UExpSpaceE[sub][sup][ext] = UExpSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \UExpSpaceH[sub][sup][ext] = UExpSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \UExpSpaceC[sub][sup][ext] = UExpSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- \AExpSpace[sub][sup][ext] = AExpSpace$^{\text{SUP}}_{\text{SUB}}$EXT
  \AExpSpaceE[sub][sup][ext] = AExpSpace-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  \AExpSpaceH[sub][sup][ext] = AExpSpace-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  \AExpSpaceC[sub][sup][ext] = AExpSpace-complete$^{\text{SUP}}_{\text{SUB}}$EXT

```
\defcomcls{ExpSpace}
```

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

\PH • \PH[sub][sup][ext] = $\mathrm{PH}^{\mathrm{SUP}}_{\mathrm{SUB}}\mathrm{EXT}$

```
\defcomhrc{PH}
```

...

```
\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
\cmdtxtoparname{MCG}[MC]

%% Ehrenfeucht-Fraisse Games
\cmdtxtoparname{EFG}[EF]
%%** Syntax ****************************************************************%%
```

\PlrSym, \OppSym ...

```
\newcommand{\plrsym}{E}
\cmdmthsym{Plr}[\plrsym]
\newcommand{\oppsym}{A}
\cmdmthsym{Opp}[\oppsym]
```

\ArenaName, ...

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

\PosSet, ...

```
\newcommand{\possym}{v}
\newcommand{\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}]
```

\PlrFun ...

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

\MovRel ...

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

\GameName, ...

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

\WinSet ...

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

\ObsSet, \obsFun ...

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

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

\PthSet, \pthFun ...

```
\newcommand{\pthsym}{\pi}
\newcommand{\pthset}{Pth}
\cmdmthsetext{Pth}[\pthset][\pthsym]
\cmdmthfun{pth}
```

\HstSet, ...

```
\newcommand{\hstsym}{\rho}
\newcommand{\hstset}{Hst}
\cmdmthsetext{Hst}[\hstset][\hstsym]
\cmdmthset{PHst}[\hstset_{\PlrSym}]
\cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
\cmdmthset{OHst}[\hstset_{\OppSym}]
\cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
\cmdmthfun{hst}
```

\PlaySet,\playFun ...

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

\StrSet, ...

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

\PrfSet, \prfFun ...

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

\preFun, \sucFun ...

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

\entFun, \escFun ...

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

\intFun, \outFun ...

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

\atrFun, \rchFun ...

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

\liftFun ...

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

\solFun ...

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

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

\BG, ...

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

%% Co-Buchi Games
\cmdtxtoparname{CG}

%% Parity Games
\cmdtxtoparname{PG}

%% Rabin Games
\cmdtxtoparname{RG}

%% Streett Games
\cmdtxtoparname{SG}

%% Muller Games
\cmdtxtoparname{MG}
```

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

\EvnSym, \OddSym ...

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

\PrtSet, \prtFun ...

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

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

...

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

\EG, ...

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

```
%% Mean-Payoff Games
\cmdtxtoparname{MPG}

%% Discounted-Payoff Games
\cmdtxtoparname{DPG}

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

\MaxSym, \MinSym ...

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

\WghSet, \wghFun ...

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

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

...

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

\BF, \QBF, ...

```
% Boolean Formulae
\cmdtxtoparname{BF}

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

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

\LogSig, ...

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

\Tt, \Ff ...

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

\LNeg, \LNot ...

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

\LCon, \LDis ...

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

\LImp, \LCoi ...

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

\LExs, \LAll ...

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

\APSet, ...

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

\sub ...

```
\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]

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

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

\VarSig, ...

```
\newcommand{\varsig}{V}
\usrmthlatupp{Var}{Sig}{sig}[\varsig]
\newcommand{\varsym}{x}
\newcommand{\varset}{Vr}
\cmdmthsetext{Var}[\varset][\varsym]
\usrmth{var}{}{argfun}[vr]
\cmdmthfun{dim}[dm]\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}
\cmdmthsetext{Fun}[\funset][\funsym]
\usrmth{fun}{}{argfun}[fn]
\cmdmthfun{art}[ar]\usrmth{art}{}{argfun}[ar]
```

\TerSig, ...

```
\newcommand{\tersig}{T}
\usrmthlatupp{Ter}{Sig}{sig}[\tersig]
\newcommand{\tersym}{t}
\newcommand{\terset}{Tr}
\cmdmthsetext{Ter}[\terset][\tersym]
\usrmth{ter}{}{argfun}
```

\RelSig, ...

```
\newcommand{\relsig}{R}
\usrmthlatupp{Rel}{Sig}{sig}[\relsig]
\newcommand{\relsym}{r}
\newcommand{\relset}{Rl}
\cmdmthsetext{Rel}[\relset][\relsym]
\usrmth{rel}{}{argfun}[rl]
```

\skm ...

```
\usrmth{skm}{}{argfun}
```

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

\ConStr, ...

```
\newcommand{\constr}{C}
\usrmthlatupp{Con}{Str}{str}[\constr]
```

\FunStr, ...

```
\newcommand{\funstr}{F}
\usrmthlatupp{Fun}{Str}{str}[\funstr]
```

\TerStr, ...

```
\newcommand{\terstr}{T}
\usrmthlatupp{Ter}{Str}{str}[\terstr]
```

\RelStr, ...

```
\newcommand{\relstr}{R}
\usrmthlatupp{Rel}{Str}{str}[\relstr]
```

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

\DF, \IF, ...

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

% Independence-Friendly Logic
\cmdtxtoparname{IF}

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

% Dependence Logic
\cmdtxtoparname{DL}

% Team Logic
\cmdtxtoparname{TL}

% Alternating Dependence-Friendly Logic
\cmdtxtoparname{ADF}

% Alternating Independence-Friendly Logic
\cmdtxtoparname{AIF}

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

...

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

\LEExs, \LAAll ...

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

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

...

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

\SOL, ...

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

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

```
%%** 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}

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

% Path Logic
\cmdtxtoparname{PL}

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

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

...

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

...

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

\ML, \QML, ...

```
% Modal Logic
\cmdtxtoparname{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}[1]
  {\mth{\defval{\argmid{\langle}{#1}{\rangle}}{\DMod}}}
\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, \pthFun ...

```
\providecommand{\pthsym}{\pi}
\providecommand{\pthset}{Pth}
\cmdmthsetext{Pth}[\pthset][\pthsym]
\cmdmthfun{pth}
```

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

\MC, \QMC, ...

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

% Quantified Modal Logic
\DeclareRobustCommand{\QMC}
  {{\txtname{Q}}\MC}
\DeclareRobustCommand{\EMC}
  {\ensuremath{\exists}\MC}
\DeclareRobustCommand{\UMC}
  {\ensuremath{\forall}\MC}
```

```
%%** 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}

% 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$^{+}$]

```

```
% 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*]

% Quantified Full Computation Tree Logic
\DeclareRobustCommand{\QCTLS}
  {{\txtname{Q}}\CTLS}
\DeclareRobustCommand{\ECTLS}
  {\ensuremath{\exists}\CTLS}
\DeclareRobustCommand{\UCTLS}
  {\ensuremath{\forall}\CTLS}
```

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

\E, \A ...

```
\usrmth{E}{}{sym}
\usrmth{A}{}{sym}
```

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

...

```
%%** Strategic Logics I ***********************************************%%
```

\ATL, ...

```
% Alternating Temporal Logic
\cmdtxtoparname{ATL}

% 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$^{+}$]

% 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*]

% Quantified Full Alternating Temporal Logic
\DeclareRobustCommand{\QATLS}
  {{\txtname{Q}}\ATLS}
\DeclareRobustCommand{\EATLS}
  {\ensuremath{\exists}\ATLS}
\DeclareRobustCommand{\UATLS}
  {\ensuremath{\forall}\ATLS}
```

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

\EExs, \AAll ...

```
\DeclareRobustCommand{\EExs}[1]
  {\mth{\argmid{\langle\!\langle}{\defval{#1}{\emptyset}}{\rangle\!\rangle}}}
\DeclareRobustCommand{\AAll}[1]
  {\mth{\argmid{\left[\left[}{\defval{#1}{\emptyset}}{\right]\right]}}}
```

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

\CGS ...

```
\cmdtxtname{CGS}
```

\CGSStr, ...

```
\newcommand{\cgsstr}{G}
\usrmthlatupp{CGS}{Str}{str}[\cgsstr]
```

\AgnSet, ...

```
\newcommand{\agnsym}{a}
\newcommand{\agnset}{Ag}
\cmdmthsetext{Agn}[\agnset][\agnsym]
```

\PosSet, ...

```
\providecommand{\possym}{v}
\providecommand{\posset}{Ps}
\cmdmthsetext{Pos}[\posset][\possym]
\cmdmthsymelm{ipos}[\possym_{I}]
\cmdmthsymelm{fpos}[\possym_{F}]
\cmdmthset{PPos}[\posset_{\PlrSym}]
\cmdmthsymelm{ppos}[\possym_{\PlrSym}]
\cmdmthset{OPos}[\posset_{\OppSym}]
\cmdmthsymelm{opos}[\possym_{\OppSym}]
```

\SttSet, ...

```
\newcommand{\sttsym}{s}
\newcommand{\sttset}{St}
\cmdmthsetext{Stt}[\sttset][\sttsym]
\cmdmthset{IStt}[\sttset_{I}]
\cmdmthsymelm{istt}[\sttsym_{I}]
\cmdmthset{FStt}[\sttset_{F}]
\cmdmthsymelm{fstt}[\sttsym_{F}]
```

\ActSet, ...

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

\DecSet, ...

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

\movFun ...

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

\HstSet, ...

```
\providecommand{\hstsym}{\rho}
\providecommand{\hstset}{Hst}
\cmdmthsetext{Hst}[\hstset][\hstsym]
\cmdmthset{PHst}[\hstset_{\PlrSym}]
\cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
\cmdmthset{OHst}[\hstset_{\OppSym}]
\cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
\cmdmthfun{hst}
```

\PlaySet,\playFun ...

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

\StrSet, ...

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

\PrfSet, \prfFun ...

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

```
%%** Strategic Logics II ******************************************************%%
```

\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}}\xGSL}

\DeclareRobustCommand{\EFCGSL}
  {\ensuremath{\exists}\FCGSL}
\DeclareRobustCommand{\UFCGSL}
  {\ensuremath{\forall}\FCGSL}

% Disjunctive-Goal Strategy Logic
\DeclareRobustCommandx{\DGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][dg\arglef{,}{#3}]}

\DeclareRobustCommand{\EDGSL}
  {\ensuremath{\exists}\DGSL}
\DeclareRobustCommand{\UDGSL}
  {\ensuremath{\forall}\DGSL}

\DeclareRobustCommand{\FDGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFDGSL}
  {\ensuremath{\exists}\FDGSL}
\DeclareRobustCommand{\UFDGSL}
  {\ensuremath{\forall}\FDGSL}

% Alternating-Goal Strategy Logic
\DeclareRobustCommandx{\AGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][ag\arglef{,}{#3}]}

\DeclareRobustCommand{\EAGSL}
  {\ensuremath{\exists}\AGSL}
\DeclareRobustCommand{\UAGSL}
  {\ensuremath{\forall}\AGSL}

\DeclareRobustCommand{\FAGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFAGSL}
  {\ensuremath{\exists}\FAGSL}
\DeclareRobustCommand{\UFAGSL}
  {\ensuremath{\forall}\FAGSL}

% Extended-Goal Strategy Logic
\DeclareRobustCommandx{\EGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][eg\arglef{,}{#3}]}

\DeclareRobustCommand{\EEGSL}
  {\ensuremath{\exists}\EGSL}
\DeclareRobustCommand{\UEGSL}
  {\ensuremath{\forall}\EGSL}

\DeclareRobustCommand{\FEGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFEGSL}
  {\ensuremath{\exists}\FEGSL}
\DeclareRobustCommand{\UFEGSL}
  {\ensuremath{\forall}\FEGSL}

% Boolean-Goal Strategy Logic
\DeclareRobustCommandx{\BGSL}[3][1=, 2=, 3=]
```

```
  {\SL[#1][#2][bg\arglef{,}{#3}]}

\DeclareRobustCommand{\EBGSL}
  {\ensuremath{\exists}\BGSL}
\DeclareRobustCommand{\UBGSL}
  {\ensuremath{\forall}\BGSL}

\DeclareRobustCommand{\FBGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFBGSL}
  {\ensuremath{\exists}\FBGSL}
\DeclareRobustCommand{\UFBGSL}
  {\ensuremath{\forall}\FBGSL}

% Nested-Goal Strategy Logic
\DeclareRobustCommandx{\NGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][ng\arglef{,}{#3}]}

\DeclareRobustCommand{\ENGSL}
  {\ensuremath{\exists}\NGSL}
\DeclareRobustCommand{\UNGSL}
  {\ensuremath{\forall}\NGSL}

\DeclareRobustCommand{\FNGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFNGSL}
  {\ensuremath{\exists}\FNGSL}
\DeclareRobustCommand{\UFNGSL}
  {\ensuremath{\forall}\FNGSL}

% Undefined-Goal Strategy Logic
\DeclareRobustCommandx{\XGSL}[3][1=, 2=, 3=]
  {\SL[#1][#2][xg\arglef{,}{#3}]}

\DeclareRobustCommand{\EXGSL}
  {\ensuremath{\exists}\XGSL}
\DeclareRobustCommand{\UXGSL}
  {\ensuremath{\forall}\XGSL}

\DeclareRobustCommand{\FXGSL}
  {{\txtname{F}}\xGSL}

\DeclareRobustCommand{\EFXGSL}
  {\ensuremath{\exists}\FXGSL}
\DeclareRobustCommand{\UFXGSL}
  {\ensuremath{\forall}\FXGSL}

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

\BndSet, ...

```
\newcommand{\bndsym}{\flat}
\newcommand{\bndset}{Bn}
\cmdmthsetext{Bnd}[\bndset][\bndsym]
\usrmth{bnd}{}{argfun}
```

\psn ...

```
\usrmth{psn}{}{argfun}

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

\nxtFun ...

```
\newcommand{\nxtfun}{nxt}
\cmdmthfun{nxt}[\nxtfun]
```

```
\fi
%%*****************************************************************************%%
%%*****************************************************************************%%
%%** Macros for Automata ******************************************************%%
%%*****************************************************************************%%
\ifaut@
%%** Finite Word Automata ****************************************************%%
```

\DWA, ...

```
\cmdtxtoparname{DWA}\cmdtxtoparname{NWA}\cmdtxtoparname{UWA}\cmdtxtoparname{AWA}

\cmdtxtoparname{DFW}\cmdtxtoparname{NFW}\cmdtxtoparname{UFW}\cmdtxtoparname{AFW}
\cmdtxtoparname{DBW}\cmdtxtoparname{NBW}\cmdtxtoparname{UBW}\cmdtxtoparname{ABW}
\cmdtxtoparname{DCW}\cmdtxtoparname{NCW}\cmdtxtoparname{UCW}\cmdtxtoparname{ACW}
\cmdtxtoparname{DPW}\cmdtxtoparname{NPW}\cmdtxtoparname{UPW}\cmdtxtoparname{APW}
\cmdtxtoparname{DRW}\cmdtxtoparname{NRW}\cmdtxtoparname{URW}\cmdtxtoparname{ARW}
\cmdtxtoparname{DSW}\cmdtxtoparname{NSW}\cmdtxtoparname{USW}\cmdtxtoparname{ASW}
\cmdtxtoparname{DMW}\cmdtxtoparname{NMW}\cmdtxtoparname{UMW}\cmdtxtoparname{AMW}
```

\GFG, \PD, ...

```
\cmdtxtoparname{GFG}

\cmdtxtoparname{PD}

%% ...
```

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

\AutName, ...

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

\WAutSet ...

```
\newcommand{\wautset}{WAut}
\cmdmthset{WAut}[\wautset]
```

\SttSet, ...

```
\def\sttsym{q}
\def\sttset{Q}
\cmdmthsetext{Stt}[\sttset][\sttsym]
\cmdmthset{IStt}[\sttset_{I}]
\cmdmthsymelm{istt}[\sttsym_{I}]
\cmdmthset{FStt}[\sttset_{F}]
\cmdmthsymelm{fstt}[\sttsym_{F}]
```

\SymSet, ...

```
\newcommand{\symsym}{\sigma}
\newcommand{\symset}{\Sigma}
\cmdmthsetext{Sym}[\symset][\symsym]
```

\trnFun ...

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

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

\LangFun ...

```
\newcommand{\langfun}{L}
\cmdmthfun{Lang}[\langfun]
```

\WrdSet, ...

```
\newcommand{\wrdsym}{w}
\newcommand{\wrdset}{Wr}
\cmdmthsetext{Wrd}[\wrdset][\wrdsym]
```

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

\DTA, ...

```
\cmdtxtoparname{DTA}\cmdtxtoparname{NTA}\cmdtxtoparname{UTA}\cmdtxtoparname{ATA}

\cmdtxtoparname{DFT}\cmdtxtoparname{NFT}\cmdtxtoparname{UFT}\cmdtxtoparname{AFT}
\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]
```

\wotFun ...

```
\newcommand{\wotfun}{wot}
\cmdmthfun{wot}[\wotfun]
```

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

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

... ...

```
%%...
```

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

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

```
\RequirePackage{tikz}
\usetikzlibrary{arrows,shapes,patterns}
```

```
\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}
\setlength{\algomargin}{1.25em}
\DontPrintSemicolon
\SetInd{0.25em}{0.5em}
```

\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}
```

\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

v0.0
General: First public release 1
v0.1
General: Algorithm tricks 1
v0.2
General: Changes in auxiliary tricks 1
v0.3
General: Few problems solved 1
v0.4
General: Refactoring, corrections, and extensions 1
v0.5
General: Figure tricks 1
v0.6
General: Small refinements 1
v0.7
General: Refinements, corrections, and extensions 1
v0.8
General: Few refinements and corrections . . . 1

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.

Symbols

\! 354, 362, 370, 783, 823, 1489
\" 744, 745
\# 1830
\, . . . 821, 823, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411
\... . . . . 1780, 1809
\@for 258, 262
\^ 746, 748

A

\AccRel,␣\TrnRel 1357
\accsym 1357, 1358, 1359
\ACls,␣... 507
\actset 1516, 1517
\ActSet,␣... 1515
\actsym 1515, 1517
\addtocounter 1832, 1833
\adhoc 704
\aElm,␣... 604
\AFam,␣... 494
\Afortiori 727
\afortiori 705
\aFrm,␣... 659
\aFun,␣... 578
\agnset 1497, 1498
\AgnSet,␣... 1496
\agnsym 1496, 1498
\AGSL 1614, 1618, 1620
\aka 750
\alg@false 121, 123
\alg@true 122
\algomargin 1817
\allowbreak . 240, 242, 244, 246
\Alpha,␣... 226
\aMat,␣... 673
\amsdef@false 17
\amsdef@true 16
\amsthm@false 21
\amsthm@true 20
\AName,␣... 481
\Aomega,␣\AOmega 870
\AOmicron 880
\Aomicron,␣... 878
\Aposteriori 729
\aposteriori 707
\Apriori 728
\apriori 706
\apset 1191, 1192
\APSet,␣... 1190
\apsym 1190, 1192
\arabic 1833
\aRel,␣... 565
\arenaname 1034, 1035
\ArenaName,␣... 1034
\arg 936
\argbst 944
\arglef . 239, 246, 354, 362, 1564, 1581, 1598, 1615, 1632, 1649, 1666, 1683
\argmax 952
\argmid 243, 299, 307, 354, 362, 821, 823, 825, 827, 831, 932, 934, 1347, 1349, 1489, 1491
\argmin 950
\argrig 241
\argsep 245, 250, 821, 923, 925, 927, 929
\aSet,␣... 546
\asgset 1218, 1219
\AsgSet,␣... 1217
\asgsym 1217, 1219
\aSig,␣... 520
\aSnt,␣... 646
\aStr,␣... 533
\aSym,␣... 591
\Atheta,␣\ATheta 874
\ATL,␣... 1455
\ATLP 1471, 1473, 1475
\ATLS 1482, 1484, 1486
\atrfun 1095, 1096
\atrFun,␣\rchFun 1095
\aut@false 56, 62, 93, 95
\aut@true 94
\autname 1728, 1729
\AutName,␣... 1728
\autset 1730, 1731
\aux@false 11, 13
\aux@true 12
\aVec,␣... 686

B

\BF,␣\QBF,␣... 1157
\bfseries 425
\BG,␣... 1104
\bgroup 253
\BGSL 1648, 1652, 1654
\BMod 1349
\bndset 1699, 1700
\BndSet,␣... 1698
\bndsym 1698, 1700
\boldsymbol 672, 685
\bot 1172
\Box 1345
\boxminus 1143
\bst,␣... 942

C

\card 826
\caselower 558
\cdot 829
\cequiv,␣... 789
\cf 708
\CGS 1493
\CGSL 1580, 1584, 1586
\cgsstr 1494, 1495
\CGSStr,␣... 1494
\chgbar@false 44
\chgbar@true 45
\chi 1217
\circ 850
\cmdmth 385, 396, 633, 634, 640
\cmdmthall 395, 480, 493, 506, 519, 532, 545, 564, 577, 590, 603, 645, 658, 672, 685

\cmdmtharg 387, 396
\cmdmthargcls 510
\cmdmthargelm 607, 621
\cmdmthargfam 497
\cmdmthargfrm 662
\cmdmthargfun 581
\cmdmthargmat 676
\cmdmthargname 484
\cmdmthargrel 568
\cmdmthargset 549
\cmdmthargsig 523
\cmdmthargsnt 649
\cmdmthargstr 536
\cmdmthargsym 594, 620
\cmdmthargsymelm 619
\cmdmthargvec 689
\cmdmthcls 508
\cmdmthelm 605, 618
\cmdmthfam 495
\cmdmthfrm 660
\cmdmthfun 579, 1046, 1055, 1060, 1068, 1072, 1129, 1148, 1193, 1234, 1247, 1361, 1365, 1522, 1530, 1534, 1705, 1745, 1748, 1773
\cmdmthlbop 637
\cmdmthlrel 641
\cmdmthluop,␣... 635
\cmdmthmat 674
\cmdmthname 482
\cmdmthoarg 389, 396
\cmdmthoargcls 512
\cmdmthoargelm 609, 624
\cmdmthoargfam 499
\cmdmthoargfrm 664
\cmdmthoargfun 583, 1084, 1086, 1088, 1090, 1092, 1094, 1096, 1098, 1100, 1102
\cmdmthoargmat 678
\cmdmthoargname 486
\cmdmthoargrel 570
\cmdmthoargset 551
\cmdmthoargsig 525
\cmdmthoargsnt 651
\cmdmthoargstr 538
\cmdmthoargsym 596, 623
\cmdmthoargsymelm 622
\cmdmthoargvec 691
\cmdmthopar 393, 396
\cmdmthoparcls 516
\cmdmthoparelm 613, 630
\cmdmthoparfam 503
\cmdmthoparfrm 668
\cmdmthoparfun 587
\cmdmthoparmat 682
\cmdmthoparname 490
\cmdmthoparrel 574
\cmdmthoparset 555
\cmdmthoparsig 529
\cmdmthoparsnt 655
\cmdmthoparstr 542
\cmdmthoparsym 600, 629
\cmdmthoparsymelm 628
\cmdmthoparvec 695
\cmdmthpar 391, 396
\cmdmthparcls 514
\cmdmthparelm 611, 627
\cmdmthparfam 501
\cmdmthparfrm 666
\cmdmthparfun 585
\cmdmthparmat 680
\cmdmthparname 488
\cmdmthparrel 572
\cmdmthparset 553
\cmdmthparsig 527
\cmdmthparsnt 653
\cmdmthparstr 540
\cmdmthparsym 598, 626
\cmdmthparsymelm 625
\cmdmthparvec 693
\cmdmthrel 566, 1048, 1358, 1359
\cmdmthset .. 547, 558, 1041, 1043, 1052, 1054, 1064, 1066, 1076, 1078, 1504, 1506, 1511, 1513, 1526, 1528, 1538, 1540, 1731, 1733, 1737, 1739, 1764
\cmdmthsetext 557, 1038, 1059, 1063, 1071, 1075, 1082, 1128, 1147, 1192, 1202, 1216, 1219, 1232, 1239, 1245, 1252, 1258, 1310, 1313, 1355, 1364, 1498, 1501, 1510, 1517, 1520, 1525, 1533, 1537, 1544, 1700, 1736, 1743, 1751, 1767, 1771
\cmdmthsig 521
\cmdmthsnt 647
\cmdmthstr 534
\cmdmthsym 592, 617, 1031, 1033, 1123, 1125, 1142, 1144
\cmdmthsymelm .. 616, 1039, 1040, 1042, 1044, 1065, 1067, 1077, 1079, 1356, 1502, 1503, 1505, 1507, 1512, 1514, 1527, 1529, 1539, 1541, 1738, 1740
\cmdmthvec 687
\cmdtxt 330, 341
\cmdtxtabr 438, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 744, 745, 746, 748, 750, 751, 752, 753, 754, 755, 756, 758, 759, 1207, 1208, 1209, 1210
\cmdtxtall 340, 425, 437, 450, 462
\cmdtxtarg 332, 341
\cmdtxtargabr 440
\cmdtxtargcom 465
\cmdtxtargdef 428
\cmdtxtargname 453
\cmdtxtcom .. 463, 989, 990, 991
\cmdtxtdef 426
\cmdtxtname 451, 1493
\cmdtxtoarg 334, 341
\cmdtxtoargabr 442
\cmdtxtoargcom 467
\cmdtxtoargdef 430
\cmdtxtoargname 455
\cmdtxtopar 338, 341
\cmdtxtoparabr 446
\cmdtxtoparcom 471
\cmdtxtopardef 434
\cmdtxtoparname 459, 1013, 1016, 1019, 1022, 1025, 1028, 1105, 1108, 1111, 1114, 1117, 1120, 1133, 1136, 1139, 1158, 1222, 1272, 1275, 1278, 1281, 1284, 1287, 1290, 1293, 1302, 1317, 1324, 1333, 1368, 1381, 1392, 1416, 1419, 1430, 1441, 1456, 1467, 1478, 1547, 1713, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1724, 1753, 1755, 1756, 1757, 1758, 1759, 1760, 1761
\cmdtxtpar 336, 341
\cmdtxtparabr 444
\cmdtxtparcom 469
\cmdtxtpardef 432
\cmdtxtparname 457
\cmodels,␣... 785
\cmp 849
\cnf,␣\dnf,␣... 1207
\Cnt,␣\Qnt,␣\Sym 1195
\coimplies,␣... 780
\com@false 56, 77, 79
\com@true 78
\conset 1238, 1239
\consig 1235, 1236
\ConSig,␣... 1235
\constr 1262, 1263
\ConStr,␣... 1262
\consym 1237, 1239
\Contd 758
\contd 751
\crv@false 40
\crv@true 41
\csdef 225, 226, 227, 228, 229, 331, 333, 335, 337, 339, 344, 386, 388, 390, 392, 394, 399, 985, 987
\csedef 259, 263
\csname 249, 250, 251, 252, 253, 254, 255, 260, 264, 331, 333, 335, 337, 339, 344, 350, 399

\CTLP 1434, 1436, 1438
\CTLS 1445, 1447, 1449
\CurrentOption 126

D

\DeclareMathAlphabet 217, 218, 219, 220
\DeclareMathOperator 855, 857
\DeclareOption 12, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 54, 55, 60, 61, 67, 68, 72, 73, 78, 79, 84, 85, 89, 90, 94, 95, 100, 101, 106, 107, 111, 116, 117, 122, 123, 126
\DeclareRobustCommand ... 767, 769, 772, 774, 776, 778, 780, 782, 785, 787, 789, 791, 794, 796, 798, 800, 802, 820, 822, 824, 826, 828, 830, 833, 836, 838, 840, 842, 845, 847, 849, 852, 861, 863, 865, 867, 870, 872, 874, 876, 878, 880, 883, 885, 887, 889, 891, 893, 895, 897, 899, 901, 903, 905, 907, 909, 911, 913, 915, 917, 920, 922, 924, 926, 928, 931, 933, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 959, 961, 963, 1161, 1163, 1165, 1225, 1305, 1320, 1327, 1336, 1338, 1340, 1346, 1348, 1371, 1373, 1375, 1384, 1386, 1388, 1395, 1397, 1399, 1422, 1424, 1426, 1433, 1435, 1437, 1444, 1446, 1448, 1459, 1461, 1463, 1470, 1472, 1474, 1481, 1483, 1485, 1488, 1490, 1549, 1551, 1554, 1557, 1559, 1566, 1568, 1571, 1574, 1576, 1583, 1585, 1588, 1591, 1593, 1600, 1602, 1605, 1608, 1610, 1617, 1619, 1622, 1625, 1627, 1634, 1636, 1639, 1642, 1644, 1651, 1653, 1656, 1659, 1661, 1668, 1670, 1673, 1676, 1678, 1685, 1687, 1690, 1693, 1695, 1831
\DeclareRobustCommandx .. 1563, 1580, 1597, 1614, 1631, 1648, 1665, 1682
\decset 1519, 1520
\DecSet,␣... 1518
\decsym 1518, 1520
\Dedicto 730
\dedicto 709
\def 1734, 1735
\Defacto 731
\defacto 710
\defcomcls 971, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002
\defcomclscmd 980, 981, 982, 983, 984
\defcomclsred 975, 976, 977, 978, 979
\defcomclssem .. 972, 973, 974
\defcomhrc 986, 1004
\defeq,␣\seteq 767
\defval 236, 297, 301, 305, 309, 313, 344, 352, 356, 360, 364, 368, 399, 560, 562, 829, 972, 973, 987, 1347, 1349, 1489, 1491
\delta 1744
\denot 830
\dep,␣\alt 1205
\der 798
\Dere 732
\dere 711
\DF,␣\IF,␣... 1271
\DGSL 1597, 1601, 1603
\Diamond 1344
\dirset 1766, 1767
\DirSet,␣... 1765
\dirsym 1765, 1767
\Divideetimpera 733
\divideetimpera 712
\DMod 1347
\DMod,␣\BMod 1344
\do 258, 262
\dom,␣\cod,␣... 836
\DontPrintSemicolon 1818
\DTA,␣... 1753
\dual,␣\adj,␣... 794
\DWA,␣... 1713

E

\E,␣\A 1451
\EAGSL 1617
\Easy,␣\Hard,␣... 989
\EATL 1461
\EATLP 1472
\EATLS 1483
\EBF 1163
\EBGSL 1651
\ECGSL 1583
\ECTL 1424
\ECTLP 1435
\ECTLS 1446
\EDGSL 1600
\EEGSL 1634
\EExs,␣\AAll 1488
\EFAGSL 1625
\EFBGSL 1659
\EFCGSL 1591
\EFDGSL 1608
\EFEGSL 1642
\EFNGSL 1676
\EFOGSL 1574
\EFSL 1557
\EFXGSL 1693
\Eg 734
\eg 713
\EG,␣... 1132
\EGSL 1631, 1635, 1637
\else .. 189, 203, 235, 237, 246
\ELTL 1397
\em 425, 437
\EMC 1373
\EML 1338
\empchk 234, 240, 242, 244, 315, 370, 560, 562
\emptyfun 852
\emptyrel 833
\emptyseq 959
\emptyset 1489, 1491
\endcsname 249, 250, 251, 252, 253, 254, 255, 260, 264, 331, 333, 335, 337, 339, 344, 350, 399
\endinput 1836
\ENGSL 1668
\enmtls@false 29
\enmtls@true 28
\ensuremath . 315, 350, 856, 858, 1164, 1166, 1339, 1341, 1368, 1374, 1376, 1387, 1389, 1398, 1400, 1425, 1427, 1436, 1438, 1447, 1449, 1462, 1464, 1473, 1475, 1484, 1486, 1550, 1552, 1558, 1560, 1567, 1569, 1575, 1577, 1584, 1586, 1592, 1594, 1601, 1603, 1609, 1611, 1618, 1620, 1626, 1628, 1635, 1637, 1643, 1645, 1652, 1654, 1660, 1662, 1669, 1671, 1677, 1679, 1686, 1688, 1694, 1696
\entfun 1087, 1088
\entFun,␣\escFun 1087
\enumeration,␣... 805
\EOGSL 1566
\EPTL 1386
\equiv 790, 792
\ergo 714
\Errata 735
\errata 715
\Erratum 736
\erratum 716
\escfun 1089, 1090
\ESL 1549
\etal 717
\etc 718
\evn,␣\odd 938
\evnsym 1122, 1123
\EvnSym,␣\OddSym 1122
\ExecuteOptions 128
\EXGSL 1685
\exists 1164, 1186, 1198, 1199, 1339, 1374, 1387, 1398, 1425, 1436, 1447, 1462,

1473, 1484, 1550, 1558, 1567, 1575, 1584, 1592, 1601, 1609, 1618, 1626, 1635, 1643, 1652, 1660, 1669, 1677, 1686, 1694
\expandafter 249, 251, 254, 259, 263
\ExpSpace,␣... 1002
\ExpTime,␣... 1001
\Exs,␣\All 1346

F

\FAGSL 1622, 1626, 1628
\FBGSL 1656, 1660, 1662
\FCGSL 1588, 1592, 1594
\FDGSL 1605, 1609, 1611
\FEGSL 1639, 1643, 1645
\ffsym 1172, 1173
\fi 145, 150, 155, 160, 177, 182, 197, 205, 206, 210, 212, 235, 237, 246, 473, 697, 760, 965, 1005, 1150, 1706, 1774, 1781, 1802, 1803, 1810, 1834
\fig@false 105, 107
\fig@true 106
\fix,␣\ifp,␣... 861
\flat 1698
\floor,␣\ceil 931
\FNGSL 1673, 1677, 1679
\fnttls@false 37
\fnttls@true 36
\FOGSL 1571, 1575, 1577
\FOL,␣... 1221
\footnotesize 858
\forall 1166, 1188, 1198, 1199, 1341, 1376, 1389, 1400, 1427, 1438, 1449, 1464, 1475, 1486, 1552, 1560, 1569, 1577, 1586, 1594, 1603, 1611, 1620, 1628, 1637, 1645, 1654, 1662, 1671, 1679, 1688, 1696
\free,␣\bound 1203
\frm@false 99, 101
\frm@true 100
\FSL 1554, 1558, 1560
\fst,␣\lst 961
\funset 1244, 1245
\funsig 1241, 1242
\FunSig,␣... 1241
\funstr 1264, 1265
\FunStr,␣... 1264
\funsym 1243, 1245
\fvarset 1309, 1310
\FVarSet,␣... 1308
\fvarsym 1308, 1310
\FXGSL 1690, 1694, 1696

G

\gam@false 56, 62, 83, 85
\gam@true 84
\Game 1049
\gamename 1049, 1050
\GameName,␣... 1049
\GFG,␣\PD,␣... 1722
\gfp 867
\GoTo,␣... 1827

H

\H 1409
\hstset 1062, 1063, 1064, 1066, 1524, 1525, 1526, 1528
\HstSet,␣... . . . . 1061, 1523
\hstsym 1061, 1063, 1065, 1067, 1523, 1525, 1527, 1529
\hypersetup 166
\hypref@false 33
\hypref@true 32

I

\ie 719
\if 235, 237, 246
\if@twocolumn 132, 201
\ifalg@ 121, 1815
\ifamsdef@ 16, 139
\ifamsthm@ 20, 147
\ifaut@ 93, 1711
\ifaux@ 11, 137
\ifchgbar@ 44, 194
\ifcom@ 77, 970
\ifcrv@ 40, 184
\ifcsdef 132
\ifdef 217, 218, 219, 220
\ifenmtls@ 28, 157
\iff 752
\iffig@ 105, 1786
\iffnttls@ 36, 179
\iffrm@ 99, 1779
\ifgam@ 83, 1010
\ifhypref@ 32, 162
\iflinnum@ 48, 199
\iflog@ 88, 1155
\ifmath@ 71, 765
\ifmthgen@ 59, 478
\iftab@ 115, 1808
\iftext@ 66, 702
\ifthmtls@ 24, 152
\iftxtgen@ 53, 423
\ifwrpfig@ 110, 1799
\img 842
\implied,␣... 776
\implies,␣... 772
\inf,␣\sup 954
\infty 890, 894, 896, 898, 902, 904, 906, 910, 912, 914, 918
\interdisplaylinepenalty 144
\intfun 1091, 1092
\intFun,␣\outFun 1091
\itr 258, 259, 260, 262, 263, 264

K

\kern 859
\krpstr 1351, 1352
\KrpStr,␣... 1351

L

\laallsym 1297, 1298
\labFun 1360
\labsym 1360, 1361
\lallsym 1188, 1189
\Lambda 1766
\lambda 1360
\land 1178
\LangFun 1747
\langfun 1747, 1748
\langle 813, 814, 816, 817, 1347, 1489
\LaTex 632, 639
\lbrace 821, 823
\lceil 934
\lcoisym 1184, 1185
\LCon,␣\LDis 1178
\lconsym 1178, 1179
\ldissym 1180, 1181
\LEExs,␣\LAAll 1295
\leexssym 1295, 1296
\left 354, 362, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 821, 823, 825, 932, 934, 1349, 1491
\Leftarrow 777, 779
\Leftrightarrow 781, 783
\leftrightarrow 1182
\Let 1824
\let 1408, 1409, 1410
\LExs,␣\LAll 1186
\lexssym 1186, 1187
\lfloor 932
\lfp 865
\liftFun 1099
\liftfun 1099, 1100
\LImp,␣\LCoi 1182
\limpsym 1182, 1183
\linenumbers 202, 204
\linnum@false 48
\linnum@true 49
\llbracket 831
\llcorner 858
\LNeg,␣\LNot 1174
\lnegsym 1174, 1175
\lnotsym 1176, 1177
\log@false 56, 62, 88, 90
\log@true 89
\logsig 1168, 1169
\LogSig,␣... 1168
\LogSpace,␣... 996
\logstr 1212, 1213
\LogStr,␣... 1212
\LogTime,␣... 995
\lor 1180
\lowercase 560, 562
\lvert 827

M

\Macro,␣... 1821
\math@false 62, 71, 73
\math@true 72
\mathaccent 803

\mathbbo 217
\mathbin 634
\mathcal 480
\matheus 218, 506
\mathfrak 532
\mathit 564, 658, 685
\mathnormal 603
\mathop 633
\mathpzc 219, 519
\mathrel 640, 858
\mathring 797
\mathrm 545
\mathscr 220, 493
\mathsf 577, 645, 672
\mathtt 590
\maxsym 1141, 1142
\MaxSym,␣\MinSym 1141
\MC,␣\QMC,␣... 1367
\mdseries 328, 450, 462
\MFOL 1225
\middle 821
\MIf,␣... 1830
\min,␣\max,␣... 946
\minsym 1143, 1144
\ML,␣\QML,␣... 1332
\models 786, 788
\movFun 1521
\MovRel 1047
\movrel 1047, 1048
\movsym 1521, 1522
\MPL 1327
\MSOL 1305
\mth 372, 795, 797, 799, 801, 803, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 827, 829, 831, 834, 853, 921, 923, 925, 927, 929, 932, 934, 960, 1347, 1349, 1489, 1491
\mtharg 374
\mthargfun 837, 839, 841, 843, 846, 962, 964
\mthargset 871, 873, 875, 877, 879, 881
\mthcls,␣... 505
\mthelm,␣... 602
\mthfam,␣... 492
\mthfrm,␣... 657
\mthfun . 862, 864, 866, 868, 937, 939, 941, 943, 945, 947, 949, 951, 953, 955, 957
\mthfun,␣... 576
\mthgen@false 59, 62
\mthgen@true . 60, 72, 84, 89, 94
\mthlbop . . . 768, 770, 848, 850
\mthlrel 639, 773, 775, 777, 779, 781, 783, 786, 788, 790, 792
\mthluop,␣... 632
\mthmat,␣... 671
\mthname,␣... 479
\mthoarg 376
\mthopar 380
\mthpar 378
\mthrel,␣... 563
\mthset 884, 886, 888, 892, 900, 908, 916
\mthset,␣... 544
\mthsig,␣... 518
\mthsnt,␣... 644
\mthstr,␣... 531
\mthsty 373, 375, 377, 379, 381, 382
\mthstycls 506
\mthstyelm 603
\mthstyfam 493
\mthstyfrm 658
\mthstyfun 577
\mthstylbop 634
\mthstylrel 640
\mthstyluop 633
\mthstymat 672
\mthstyname 480
\mthstyrel 564
\mthstyset 545
\mthstysig 519
\mthstysnt 645
\mthstystr 532
\mthstysym 590
\mthstyvec 685
\mthsubsup 350, 369
\mthsym,␣... 589
\mthvec,␣... 684
\MTL 1320
\mu 1368
\Mutatismutandis 737
\mutatismutandis 720

N

\naif 744
\naive 745
\neg 1174
\newcommandx 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 343, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 398, 401, 403, 405, 407, 409, 411, 413, 415, 417, 426, 428, 430, 432, 434, 438, 440, 442, 444, 446, 451, 453, 455, 457, 459, 463, 465, 467, 469, 471, 482, 484, 486, 488, 490, 495, 497, 499, 501, 503, 508, 510, 512, 514, 516, 521, 523, 525, 527, 529, 534, 536, 538, 540, 542, 547, 549, 551, 553, 555, 557, 566, 568, 570, 572, 574, 579, 581, 583, 585, 587, 592, 594, 596, 598, 600, 605, 607, 609, 611, 613, 616, 619, 622, 625, 628, 635, 637, 641, 647, 649, 651, 653, 655, 660, 662, 664, 666, 668, 674, 676, 678, 680, 682, 687, 689, 691, 693, 695, 971, 974, 979, 984, 986
\newif 11, 16, 20, 24, 28, 32, 36, 40, 44, 48, 53, 59, 66, 71, 77, 83, 88, 93, 99, 105, 110, 115, 121, 132
\newmth 349, 352, 354, 362
\newmtharg 353, 356, 358
\newmthargsty . . 355, 375, 388
\newmthoarg 357, 360
\newmthoargsty . 359, 377, 390
\newmthopar 365, 368
\newmthoparsty . 367, 381, 394
\newmthpar 361, 364, 366
\newmthparsty . . 363, 379, 392
\newmthsty 351, 373, 386
\newtxt 294, 297, 299, 307
\newtxtarg 298, 301, 303
\newtxtargsty . . 300, 320, 333
\newtxtoarg 302, 305
\newtxtoargsty . 304, 322, 335
\newtxtopar 310, 313
\newtxtoparsty . 312, 326, 339
\newtxtpar 306, 309, 311
\newtxtparsty . . 308, 324, 337
\newtxtsty 296, 318, 331
\NGSL 1665, 1669, 1671
\nlr 1831
\nlset 1833
\noexpand 260, 264
\normalfont 425, 450, 462
\not . . . 775, 779, 783, 788, 792
\notcequiv 791
\notcmodels 787
\notcoimplies 782
\notimplied 778
\notimplies 774
\num,␣... 920
\numcc 922
\numco 924
\numoc 926
\numoo 928
\nxtFun 1704
\nxtfun 1704, 1705

O

\obsset 1053, 1054
\ObsSet,␣\obsFun 1053
\oddsym 1124, 1125
\odot 1197
\OGSL . . . 1563, 1567, 1569, 1572
\Omega 873
\omega 871
\Omicron 881
\omicron 225, 879
\oplus 1141
\OppSym 1043, 1044, 1066, 1067, 1078, 1079, 1506, 1507, 1528, 1529, 1540, 1541
\oppsym 1032, 1033
\Opr 1343

\outfun 1093, 1094
\overline 795

P

\P 1408
\PackageWarning 126
\PDL,␣\CTL,␣... 1414
\Percontra 738
\percontra 721
\PH 1004
\Pi 1297
\pi 1057, 1069, 1362, 1531
\playset 1070, 1071, 1532, 1533
\PlaySet,\playFun . 1069, 1531
\playsym 1069, 1071, 1531, 1533
\PlrFun 1045
\plrfun 1045, 1046
\PlrSym 1041, 1042, 1064, 1065, 1076, 1077, 1504, 1505, 1526, 1527, 1538, 1539
\plrsym 1030, 1031
\PlrSym,␣\OppSym 1030
\pm 894, 902, 910
\posset 1037, 1038, 1041, 1043, 1500, 1501, 1504, 1506
\PosSet,␣... . . . . 1036, 1499
\possym 1036, 1038, 1039, 1040, 1042, 1044, 1499, 1501, 1502, 1503, 1505, 1507
\pow 828
\prefun 1083, 1084
\preFun,␣\sucFun 1083
\prfset . 1081, 1082, 1543, 1544
\PrfSet,␣\prfFun . . 1080, 1542
\prfsym . 1080, 1082, 1542, 1544
\Primafacie 739
\primafacie 722
\prj 845
\ProcessOptions 130
\providecommand 1362, 1363, 1499, 1500, 1523, 1524, 1531, 1532, 1535, 1536, 1542, 1543
\prtset 1127, 1128
\PrtSet,␣\prtFun 1126
\prtsym 1126, 1128
\psn 1702
\PSpace,␣... 998
\pthset . 1058, 1059, 1363, 1364
\PthSet,␣\pthFun . . 1057, 1362
\pthsym . 1057, 1059, 1362, 1364
\PTime,␣... 997
\PTL,␣\LTL,␣... 1380
\pto,␣\pmapsto 855

Q

\QAE,␣\QEA 1198
\QATL 1459
\QATLP 1470
\QATLS 1481
\QCTL 1422
\QCTLP 1433
\QCTLS 1444
\QLTL 1395
\qntset 1201, 1202
\QntSet,␣... 1200
\qntsym 1200, 1202
\QPSpace,␣... 1000
\QPTime,␣... 999
\QPTL 1384

R

\raisebox 858
\rangle 813, 815, 816, 818, 1347, 1489
\rbrace 821, 825
\rceil 934
\rchfun 1097, 1098
\relax 130
\relset 1257, 1258
\relsig 1254, 1255
\RelSig,␣... 1254
\relstr 1268, 1269
\RelStr,␣... 1268
\relsym 1256, 1258
\RequirePackage 3, 5, 6, 7, 141, 142, 143, 149, 154, 159, 164, 181, 196, 202, 204, 1787, 1801, 1816
\resp 754
\rfloor 932
\rho 1061, 1523
\right 354, 362, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 821, 823, 825, 932, 934, 1349, 1491
\Rightarrow 773, 775
\rightarrow 1184
\rightharpoonup 856, 859
\rmfamily 328, 462
\rng 840
\Role 748
\role 746
\rrbracket 831
\rst 847
\rvert 827

S

\S 1410
\SATG,␣... 1012
\SaveDoubleAcute 1409
\SavePilcrow 1408
\SaveSectionSymbol 1410
\scshape 450, 462
\seqofcmd 261, 274, 278
\seqofgrklet 281, 412
\seqofgrklow 273, 282, 285, 408, 520, 533
\seqofgrkupp 277, 282, 287, 410
\seqoflatlet 270, 406, 520, 533
\seqoflatlow 266, 271, 285, 402
\seqoflatupp 268, 271, 287, 404, 481, 494, 507
\seqoflet 288, 418, 546, 565, 578, 591, 604, 646, 659, 673, 686
\seqoflow 284, 289, 414
\seqoftag 257, 267, 269
\seqofupp 286, 289, 416
\sequence,␣... 807
\set,␣... 820
\SetB 883
\SetC,␣... 915
\SetCI 917
\SetF 885
\SetInd 1819
\SetKw 1820, 1825, 1826, 1827, 1828, 1829
\SetKwFor 1821, 1822, 1823, 1824
\SetKwIF 1830
\setl 822
\setlength 1817
\SetN,␣... 887
\SetNI 889
\SetQ,␣... 899
\SetQI 901
\SetQNI 905
\SetQPI 903
\setr 824
\SetR,␣... 907
\SetRI 909
\SetRNI 913
\SetRPI 911
\SetZ,␣... 891
\SetZI 893
\SetZNI 897
\SetZPI 895
\sffamily 450
\Sigma 1295, 1742
\sigma 1073, 1535, 1741
\Signature 1820
\sim 1176
\skm 1260
\SL,␣... 1546
\SOL,␣... 1301
\solFun 1101
\solfun 1101, 1102
\Space,␣... 994
\strset 1074, 1075, 1076, 1078, 1536, 1537, 1538, 1540
\StrSet,␣... . . . . 1073, 1535
\strsym 1073, 1075, 1077, 1079, 1535, 1537, 1539, 1541
\sttset 1509, 1510, 1511, 1513, 1735, 1736, 1737, 1739
\SttSet,␣... . . . . 1508, 1734
\sttsym 1508, 1510, 1512, 1514, 1734, 1736, 1738, 1740
\stx 753
\sub 1194
\sucfun 1085, 1086
\svarset 1312, 1313

\SVarSet,␣... 1311
\svarsym 1311, 1313
\symset 1742, 1743
\SymSet,␣... 1741
\symsym 1741, 1743

T

\tab@false 115, 117
\tab@true 116
\tau 1521
\TAutSet 1763
\tautset 1763, 1764
\terset 1251, 1252
\tersig 1248, 1249
\TerSig,␣... 1248
\terstr 1266, 1267
\TerStr,␣... 1266
\tersym 1250, 1252
\text 295, 315
\text@false 56, 66, 68
\text@true 67
\textstyle 633, 634
\thestring 559, 560, 561, 562
\Theta 877
\theta 875
\thmtls@false 25
\thmtls@true 24
\tikzstyle 1789, 1791, 1793, 1795, 1797
\Time,␣... 993
\TL,␣\PL,␣... 1316
\top 1170
\treeset 1770, 1771
\TreeSet,␣... 1769
\treesym 1769, 1771
\triangleq 768
\trn 800
\trnFun 1744
\trnsym 1744, 1745
\True,␣\False 1825
\Tt,␣\Ff 1170
\ttsym 1170, 1171
\tuple,␣... 813
\txt 317
\txtabr,␣... 436
\txtarg 319
\txtcom 985, 987
\txtcom,␣... 461
\txtdef,␣... 424
\txtgen@false 53, 56
\txtgen@true ... 54, 67, 78, 84, 89, 94
\txtname 1162, 1226, 1306, 1321, 1328, 1337, 1372, 1385, 1396, 1423, 1434, 1445, 1460, 1471, 1482, 1555, 1572, 1589, 1606, 1623, 1640, 1657, 1674, 1691
\txtname,␣... 449
\txtoarg 321
\txtopar 325
\txtpar 323
\txtsty 318, 320, 322, 324, 326, 327
\txtstyabr 437
\txtstycom 462
\txtstydef 425
\txtstyname 450
\txtsubsup 295, 314

U

\UAGSL 1619
\UATL 1463
\UATLP 1474
\UATLS 1485
\UBF 1165
\UBGSL 1653
\UCGSL 1585
\UCTL 1426
\UCTLP 1437
\UCTLS 1448
\UDGSL 1602
\UEGSL 1636
\UFAGSL 1627
\UFBGSL 1661
\UFCGSL 1593
\UFDGSL 1610
\UFEGSL 1644
\UFNGSL 1678
\UFOGSL 1576
\UFSL 1559
\UFXGSL 1695
\ULTL 1399
\UMC 1375
\UML 1340
\UNGSL 1670
\UOGSL 1568
\upharpoonright 848
\upshape 328
\UPTL 1388
\usetikzlibrary 1788
\USL 1551
\usrmth 398, 402, 404, 406, 408, 410, 412, 414, 416, 418, 483, 485, 487, 489, 491, 496, 498, 500, 502, 504, 509, 511, 513, 515, 517, 522, 524, 526, 528, 530, 535, 537, 539, 541, 543, 548, 550, 552, 554, 556, 567, 569, 571, 573, 575, 580, 582, 584, 586, 588, 593, 595, 597, 599, 601, 606, 608, 610, 612, 614, 636, 638, 642, 648, 650, 652, 654, 656, 661, 663, 665, 667, 669, 675, 677, 679, 681, 683, 688, 690, 692, 694, 696, 1171, 1173, 1175, 1177, 1179, 1181, 1183, 1185, 1187, 1189, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1203, 1204, 1205, 1206, 1233, 1234, 1240, 1246, 1247, 1253, 1259, 1260, 1296, 1298, 1343, 1344, 1345, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1451, 1452, 1701, 1702
\usrmthgrklet 411
\usrmthgrklow 407
\usrmthgrkupp 409
\usrmthlatlet 405
\usrmthlatlow 401
\usrmthlatupp 403, 1035, 1050, 1169, 1213, 1229, 1236, 1242, 1249, 1255, 1263, 1265, 1267, 1269, 1352, 1495, 1729
\usrmthlet 417, 559, 561
\usrmthlow 413
\usrmthupp 415
\usrtxt 343, 427, 429, 431, 433, 435, 439, 441, 443, 445, 447, 452, 454, 456, 458, 460, 464, 466, 468, 470, 472
\UXGSL 1687

V

\valset 1215, 1216
\ValSet,␣... 1214
\valsym 1214, 1216
\varcmd 248, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818
\varepsilon 960
\varnothing 834, 853
\varset 1231, 1232
\varsig 1228, 1229
\VarSig,␣... 1228
\varsym 1230, 1232
\vec 802
\vert 821, 823
\Viceversa 740
\viceversa 723
\viz 725
\vs 724

W

\WAutSet 1732
\wautset 1732, 1733
\wghset 1146, 1147
\WghSet,␣\wghFun 1145
\wghsym 1145, 1147
\widehat 799
\widetilde 801
\WinSet 1051
\winset 1051, 1052
\Wlogx 759
\wlogx 756
\wotFun 1772
\wotfun 1772, 1773
\wp 1200
\wrdset 1750, 1751
\WrdSet,␣... 1749
\wrdsym 1749, 1751
\wrlset 1354, 1355

\WrlSet,␣... 1353
\wrlsym 1353, 1355, 1356
\wrpfig@false 111
\wrpfig@true 110
\wrt 755

X

\X,␣... 1402
\XGSL 1682, 1686, 1688
\xGSL 1589, 1606, 1623, 1640, 1657, 1674, 1691
\xi 1080, 1214, 1542
\xspace 295

Y

\Y,␣... 1407