fmocdmac — FM's OCD LaTeX Macro*

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Released 2023/01/23

Abstract

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

1 Implementation & Usage

1 ⟨*package⟩

Required external packages:

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

Package options:

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

*This document describes version v0.12 of the fmocdmac package, last revised 2023/01/23.

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

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

\newtxtsty ... to do!

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

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

\newtxtarg ... to do!

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

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

\newtxtargsty ... to do!

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

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

\newtxtoarg ... to do!

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

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

`\newtxtoargsty` ... to do!

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

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

`\newtxtpar` ... to do!

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

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

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

`\newtxtopar` ... to do!

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

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

`\newtxtoparsty` ... to do!

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

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

`\txtsubsup` ... to do!

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

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

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

`\txt` ... to do!

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

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

`\txtarg` ... to do!

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

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

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

`\txtoarg` ... to do!

- `\txtoarg{Name}[sub][sup][Arg]` = "$\mathrm{Name_{sub}^{sup}(Arg)}$"
- `\txtoarg[\scshape]{Name}[sub][sup][Arg]` = "$\mathrm{NAME_{SUB}^{SUP}(ARG)}$"
- `\txtoarg[\bfseries]{Name}[sub][sup][Arg]` = "$\mathbf{Name_{sub}^{sup}(Arg)}$"

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

`\txtpar` ... to do!

- `\txtpar{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathrm{Name_{sub}^{sup}Ext1[Par]Ext2}$"
- `\txtpar[\scshape]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathrm{NAME_{SUB}^{SUP}EXT1[PAR]EXT2}$"
- `\txtpar[\bfseries]{Name}[sub][sup][Ext1]{Par}[Ext2]` = "$\mathbf{Name_{sub}^{sup}Ext1[Par]Ext2}$"

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

`\txtopar` ... to do!

- `\txtopar{Name}[sub][sup][Par]` = "$\mathrm{Name_{sub}^{sup}[Par]}$"
- `\txtopar[\scshape]{Name}[sub][sup][Par]` = "$\mathrm{NAME_{SUB}^{SUP}[PAR]}$"
- `\txtopar[\bfseries]{Name}[sub][sup][Par]` = "$\mathbf{Name_{sub}^{sup}[Par]}$"

```
\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]` = $\mathrm{NAME_{SUB}^{SUP}EXT}$

```
\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]` = $\mathrm{NAME_{SUB}^{SUP}EXT1(ARG)EXT2}$

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

`\cmdtxtoarg` ... to do!

- `\cmdtxtoarg{NewCmd}`; `\newcommand{txtstyNewCmd}{\scshape\ttfamily}`; `\txtoargNewCmd{Name}[sub][sup][Arg]` = $\mathrm{NAME_{SUB}^{SUP}(ARG)}$

```
\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]` = $\mathrm{NAME_{SUB}^{SUP}EXT1[PAR]EXT2}$

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

`\cmdtxtopar` ... to do!

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

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

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

\newmtharg ... to do!

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

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

```
\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] = 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] = 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] = Name$_{sub}^{sup}Ext$
  \mthargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2] = Name$_{sub}^{sup}Ext1(Arg)Ext2$
  \mthoargNewCmd{Name}[sub][sup][Arg] = Name$_{sub}^{sup}(Arg)$
  \mthparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = Name$_{sub}^{sup}Ext1[Par]Ext2$
  \mthoparNewCmd{Name}[sub][sup][Par] = 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]` = $Name_{sub}^{sup}Ext$
- `\txtargdef{Name}[sub][sup][Ext1]{Arg}[Ext2]` = $Name_{sub}^{sup}Ext1(Arg)Ext2$
- `\txtpardef{Name}[sub][sup][Ext1]{Par}[Ext2]` = $Name_{sub}^{sup}Ext1[Par]Ext2$

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

`\cmdtxtdef` ... to do!

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

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

`\cmdtxtargdef` ... to do!

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

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

`\cmdtxtoargdef` ... to do!

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

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

`\cmdtxtpardef` ... to do!

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

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

`\cmdtxtopardef` ... to do!

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

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

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

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

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

`\cmdtxtabr` ... to do!

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

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

`\cmdtxtargabr` ... to do!

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

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

`\cmdtxtoargabr` ... to do!

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

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

`\cmdtxtparabr` ... to do!

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

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

`\cmdtxtoparabr` ... to do!

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

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

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

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

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

```
%% 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]` = $\mathscr{CMDNAMEE}^{sub}_{sub}(arg)$
- `\cmdmthoargfam{cmdFam}[NEWNAME]`;
  `\cmdFamFam[sub][sub][arg]` = $\mathscr{NEWNAMEE}^{sub}_{sub}(arg)$

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

`\cmdmthparfam` ... to do!

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

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

`\cmdmthoparfam` ... to do!

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

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

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

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

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

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

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

`\cmdmthsig` ... to do!

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

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

`\cmdmthargsig` ... to do!

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

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

`\cmdmthoargsig` ... to do!

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

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

`\cmdmthparsig` ... to do!

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

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

`\cmdmthoparsig` ... to do!

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

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

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

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

`\cmdmthset` ... to do!

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

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

`\cmdmthargset` ... to do!

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

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

`\cmdmthoargset` ... to do!

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

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

`\cmdmthparset` ... to do!

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

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

\cmdmthoparset ... to do!

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

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

\cmdmthsetext ... to do!

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

\mthrel, ... to do!

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

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

```
%% 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, Γ, Δ, E, E, Z, H, Θ, $\varTheta$, I, K, K, Λ, M, N, Ξ, O, Π, $\varPi$, P, P, Σ, $\varSigma$, T, Υ, Φ, $\varPhi$, X, Ψ, Ω

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

`\cmdmthfun` ... to do!

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

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

`\cmdmthargfun` ... to do!

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

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

`\cmdmthoargfun` ... to do!

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

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

`\cmdmthparfun` ... to do!

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

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

`\cmdmthoparfun` ... to do!

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

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

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

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

```
%% 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, $\mathit{\Theta}$, I, K, K, Λ, M, N, Ξ, O, Π, $\mathit{\Pi}$, P, P, Σ, $\mathit{\Sigma}$, T, Υ, Φ, $\mathit{\Phi}$, X, Ψ, Ω

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

`\cmdmthsym` ... to do!

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

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

`\cmdmthargsym` ... to do!

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

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

`\cmdmthoargsym` ... to do!

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

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

`\cmdmthparsym` ... to do!

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

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

`\cmdmthoparsym` ... to do!

- `\cmdmthoparsym{cmdName}`;
  `\cmdNameSym[sub][sub][par]` = $\mathsf{cmdName}_{sub}^{sub}[par]$

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

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

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

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

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

`\cmdmthmat` ... to do!

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

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

`\cmdmthargmat` ... to do!

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

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

\cmdmthoargmat ... to do!

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

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

\cmdmthparmat ... to do!

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

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

\cmdmthoparmat ... to do!

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

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

\mthvec, ... to do!

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

```
%% 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.*

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

\Errata • \Errata = *Errata*

```
733 \cmdtxtabr{Errata}
```

\Erratum • \Erratum = *Erratum*

```
734 \cmdtxtabr{Erratum}
```

\Mutatismutandis • \Mutatismutandis = *Mutatis mutandis*

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

\Percontra • \Percontra = *Per contra*

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

\Primafacie • \Primafacie = *Prima facie*

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

\Viceversa • \Viceversa = *Vice versa*

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

```
739 %%** Italian Abbreviations ************************************************%%
```

...

```
740 %%*************************************************************************%%
```

...

```
741 %%** French Abbreviations **************************************************%%
```

\naif • \naif = *naïf*

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

\naive • \naive = *naïve*

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

\role • \role = *rôle*

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

```
745 %%*************************************************************************%%
```

\Role • \Role = *Rôle*

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

```
747 %%** English Abbreviations **************************************************%%
```

\aka • \aka = *a.k.a.*

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

\contd • \contd = *contd.*

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

\iff • \iff = *iff*

```
750 \cmdtxtabr{iff}
```

\stx • \stx = *s.t.*

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

\resp • \resp = *resp.*

```
752 \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}
  {\@ifstar%
    {\mthlbop{\stackrel{\text{\textup{def}}}{=}}%
    {\mthlbop{\triangleq}}}
\DeclareRobustCommand{\seteq}
  {\@ifstar{\mthlbop{:=}}{\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}
  {\@ifstar{\@svec}{\@vec}}
\DeclareRobustCommand{\@vec}[1]
  {\mth{\mathaccent"017E{#1}}}
\DeclareRobustCommand{\@svec}[1]
  {\mth{\overline{#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}
  {\@ifstar{\@set}{\@set[\left][\middle][\right]}}
\DeclareRobustCommandx{\@set}[5][1=, 2=, 3=]
  {\mth{\argmid{#1\lbrace}{\argsep{#4}{\,#2\vert\,}{#5}}{#3\rbrace}}}
\DeclareRobustCommand{\setl}
  {\@ifstar{\@setl}{\@setl[\left][\right]}}
\DeclareRobustCommandx{\@setl}[3][1=, 2=]
  {\mth{\argmid{#1\lbrace}{#3}{\,#2\vert\!}}}
\DeclareRobustCommand{\setr}
  {\@ifstar{\@setr}{\@setr[\left.][\right]}}
\DeclareRobustCommandx{\@setr}[3][1=, 2=]
  {\mth{\argmid{#1}{#3}{#2\rbrace}}}
```

\card ...

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

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

        \denot  ...
                842 \DeclareRobustCommand{\denot}
                843   {\@ifstar{\@denot}{\@denot[\left][\right]}}
                844 \DeclareRobustCommandx{\@denot}[3][1=, 2=]
                845   {\mth{\argmid{#1\llbracket}{#3}{#2\rrbracket}}}

                846 %%** Relations ********************************************************************%%

     \emptyrel  ...
                847 \DeclareRobustCommand{\emptyrel}
                848   {\mth{\varnothing}}

                849 %%***********************************************************************************%%

\dom, \cod, ...  ...
                850 \DeclareRobustCommand{\dom}
                851   {\mthargfun{dom}}
                852 \DeclareRobustCommand{\cod}
                853   {\mthargfun{cod}}
                854 \DeclareRobustCommand{\rng}
                855   {\mthargfun{rng}}
                856 \DeclareRobustCommand{\img}
                857   {\mthargfun{img}}

                858 %%***********************************************************************************%%

          \prj  ...
                859 \DeclareRobustCommand{\prj}
                860   {\mthargfun{prj}}

          \rst  ...
                861 \DeclareRobustCommand{\rst}
                862   {\mthlbop{\upharpoonright}}

          \cmp  ...
                863 \DeclareRobustCommand{\cmp}
                864   {\mthlbop{\circ}}

                865 %%** Functions ********************************************************************%%

     \emptyfun  ...
                866 \DeclareRobustCommand{\emptyfun}
                867   {\mth{\varnothing}}

                868 %%***********************************************************************************%%

 \pto, \pmapsto  ...
                869 \DeclareMathOperator{\pto}
                870   {\ensuremath{\rightharpoonup}}
                871 \DeclareMathOperator{\pmapsto}
                872   {\ensuremath{\mathrel{\raisebox{0.5ex}{\footnotesize${\llcorner}$}%
                873     \kern-1.5ex\rightharpoonup}}}

                874 %%***********************************************************************************%%
```

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

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

\arg …

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

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

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

`\ACompClass[sub][sup][ext]` = $\textsc{ACompClass}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
`\CoACompClass[sub][sup][ext]` = $\textsc{CoACompClass}^{\text{SUP}}_{\text{SUB}}\text{EXT}$

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

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

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

`\NCompClass[sub][sup][ext]` = NNewClass$^{\text{SUP}}_{\text{SUB}}$EXT
`\CoNCompClass[sub][sup][ext]` = CoNNewClass$^{\text{SUP}}_{\text{SUB}}$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]` = NTime$^{\text{SUP}}_{\text{SUB}}$EXT
  `\NTimeE[sub][sup][ext]` = NTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  `\NTimeH[sub][sup][ext]` = NTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  `\NTimeC[sub][sup][ext]` = NTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- `\UTime[sub][sup][ext]` = UTime$^{\text{SUP}}_{\text{SUB}}$EXT
  `\UTimeE[sub][sup][ext]` = UTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  `\UTimeH[sub][sup][ext]` = UTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  `\UTimeC[sub][sup][ext]` = UTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- `\ATime[sub][sup][ext]` = ATime$^{\text{SUP}}_{\text{SUB}}$EXT
  `\ATimeE[sub][sup][ext]` = ATime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  `\ATimeH[sub][sup][ext]` = ATime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  `\ATimeC[sub][sup][ext]` = ATime-complete$^{\text{SUP}}_{\text{SUB}}$EXT

```
\defcomcls{Time}
```

`\Space, ...`

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

```
\defcomcls{Space}
```

`\LogTime, ...`

- `\LogTime[sub][sup][ext]` = LogTime$^{\text{SUP}}_{\text{SUB}}$EXT
  `\LogTimeE[sub][sup][ext]` = LogTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  `\LogTimeH[sub][sup][ext]` = LogTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  `\LogTimeC[sub][sup][ext]` = LogTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT
- `\NLogTime[sub][sup][ext]` = NLogTime$^{\text{SUP}}_{\text{SUB}}$EXT
  `\NLogTimeE[sub][sup][ext]` = NLogTime-easy$^{\text{SUP}}_{\text{SUB}}$EXT
  `\NLogTimeH[sub][sup][ext]` = NLogTime-hard$^{\text{SUP}}_{\text{SUB}}$EXT
  `\NLogTimeC[sub][sup][ext]` = NLogTime-complete$^{\text{SUP}}_{\text{SUB}}$EXT

- `\ULogTime[sub][sup][ext]` = $\text{ULogTime}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ULogTimeE[sub][sup][ext]` = $\text{ULogTime-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ULogTimeH[sub][sup][ext]` = $\text{ULogTime-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ULogTimeC[sub][sup][ext]` = $\text{ULogTime-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
- `\ALogTime[sub][sup][ext]` = $\text{ALogTime}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ALogTimeE[sub][sup][ext]` = $\text{ALogTime-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ALogTimeH[sub][sup][ext]` = $\text{ALogTime-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ALogTimeC[sub][sup][ext]` = $\text{ALogTime-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$

1013 `\defcomcls{LogTime}`

`\LogSpace, ...`

- `\LogSpace[sub][sup][ext]` = $\text{LogSpace}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\LogSpaceE[sub][sup][ext]` = $\text{LogSpace-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\LogSpaceH[sub][sup][ext]` = $\text{LogSpace-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\LogSpaceC[sub][sup][ext]` = $\text{LogSpace-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
- `\NLogSpace[sub][sup][ext]` = $\text{NLogSpace}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\NLogSpaceE[sub][sup][ext]` = $\text{NLogSpace-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\NLogSpaceH[sub][sup][ext]` = $\text{NLogSpace-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\NLogSpaceC[sub][sup][ext]` = $\text{NLogSpace-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
- `\ULogSpace[sub][sup][ext]` = $\text{ULogSpace}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ULogSpaceE[sub][sup][ext]` = $\text{ULogSpace-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ULogSpaceH[sub][sup][ext]` = $\text{ULogSpace-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ULogSpaceC[sub][sup][ext]` = $\text{ULogSpace-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
- `\ALogSpace[sub][sup][ext]` = $\text{ALogSpace}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ALogSpaceE[sub][sup][ext]` = $\text{ALogSpace-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ALogSpaceH[sub][sup][ext]` = $\text{ALogSpace-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\ALogSpaceC[sub][sup][ext]` = $\text{ALogSpace-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$

1014 `\defcomcls{LogSpace}`

`\PTime, ...`

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

1015 `\defcomcls{PTime}`

`\PSpace, ...`

- `\PSpace[sub][sup][ext]` = $\text{PSpace}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\PSpaceE[sub][sup][ext]` = $\text{PSpace-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\PSpaceH[sub][sup][ext]` = $\text{PSpace-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\PSpaceC[sub][sup][ext]` = $\text{PSpace-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
- `\NPSpace[sub][sup][ext]` = $\text{NPSpace}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\NPSpaceE[sub][sup][ext]` = $\text{NPSpace-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\NPSpaceH[sub][sup][ext]` = $\text{NPSpace-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\NPSpaceC[sub][sup][ext]` = $\text{NPSpace-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
- `\UPSpace[sub][sup][ext]` = $\text{UPSpace}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\UPSpaceE[sub][sup][ext]` = $\text{UPSpace-easy}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\UPSpaceH[sub][sup][ext]` = $\text{UPSpace-hard}^{\text{SUP}}_{\text{SUB}}\text{EXT}$
  `\UPSpaceC[sub][sup][ext]` = $\text{UPSpace-complete}^{\text{SUP}}_{\text{SUB}}\text{EXT}$

- `\APSpace[sub][sup][ext]` = $\mathrm{APSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\APSpaceE[sub][sup][ext]` = $\mathrm{APSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\APSpaceH[sub][sup][ext]` = $\mathrm{APSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\APSpaceC[sub][sup][ext]` = $\mathrm{APSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$

1016 `\defcomcls{PSpace}`

`\QPTime, ...`

- `\QPTime[sub][sup][ext]` = $\mathrm{QPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\QPTimeE[sub][sup][ext]` = $\mathrm{QPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\QPTimeH[sub][sup][ext]` = $\mathrm{QPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\QPTimeC[sub][sup][ext]` = $\mathrm{QPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\NQPTime[sub][sup][ext]` = $\mathrm{NQPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NQPTimeE[sub][sup][ext]` = $\mathrm{NQPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NQPTimeH[sub][sup][ext]` = $\mathrm{NQPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NQPTimeC[sub][sup][ext]` = $\mathrm{NQPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\UQPTime[sub][sup][ext]` = $\mathrm{UQPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UQPTimeE[sub][sup][ext]` = $\mathrm{UQPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UQPTimeH[sub][sup][ext]` = $\mathrm{UQPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UQPTimeC[sub][sup][ext]` = $\mathrm{UQPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\AQPTime[sub][sup][ext]` = $\mathrm{AQPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AQPTimeE[sub][sup][ext]` = $\mathrm{AQPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AQPTimeH[sub][sup][ext]` = $\mathrm{AQPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AQPTimeC[sub][sup][ext]` = $\mathrm{AQPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$

1017 `\defcomcls{QPTime}`

`\QPSpace, ...`

- `\QPSpace[sub][sup][ext]` = $\mathrm{QPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\QPSpaceE[sub][sup][ext]` = $\mathrm{QPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\QPSpaceH[sub][sup][ext]` = $\mathrm{QPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\QPSpaceC[sub][sup][ext]` = $\mathrm{QPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\NQPSpace[sub][sup][ext]` = $\mathrm{NQPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NQPSpaceE[sub][sup][ext]` = $\mathrm{NQPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NQPSpaceH[sub][sup][ext]` = $\mathrm{NQPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NQPSpaceC[sub][sup][ext]` = $\mathrm{NQPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\UQPSpace[sub][sup][ext]` = $\mathrm{UQPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UQPSpaceE[sub][sup][ext]` = $\mathrm{UQPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UQPSpaceH[sub][sup][ext]` = $\mathrm{UQPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UQPSpaceC[sub][sup][ext]` = $\mathrm{UQPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\AQPSpace[sub][sup][ext]` = $\mathrm{AQPSPACE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AQPSpaceE[sub][sup][ext]` = $\mathrm{AQPSPACE\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AQPSpaceH[sub][sup][ext]` = $\mathrm{AQPSPACE\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AQPSpaceC[sub][sup][ext]` = $\mathrm{AQPSPACE\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$

1018 `\defcomcls{QPSpace}`

`\ExpTime, ...`

- `\ExpTime[sub][sup][ext]` = $\mathrm{EXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\ExpTimeE[sub][sup][ext]` = $\mathrm{EXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\ExpTimeH[sub][sup][ext]` = $\mathrm{EXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\ExpTimeC[sub][sup][ext]` = $\mathrm{EXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\NExpTime[sub][sup][ext]` = $\mathrm{NEXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NExpTimeE[sub][sup][ext]` = $\mathrm{NEXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NExpTimeH[sub][sup][ext]` = $\mathrm{NEXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\NExpTimeC[sub][sup][ext]` = $\mathrm{NEXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\UExpTime[sub][sup][ext]` = $\mathrm{UEXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UExpTimeE[sub][sup][ext]` = $\mathrm{UEXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UExpTimeH[sub][sup][ext]` = $\mathrm{UEXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\UExpTimeC[sub][sup][ext]` = $\mathrm{UEXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
- `\AExpTime[sub][sup][ext]` = $\mathrm{AEXPTIME}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AExpTimeE[sub][sup][ext]` = $\mathrm{AEXPTIME\text{-}EASY}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AExpTimeH[sub][sup][ext]` = $\mathrm{AEXPTIME\text{-}HARD}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$
  `\AExpTimeC[sub][sup][ext]` = $\mathrm{AEXPTIME\text{-}COMPLETE}_{\mathrm{SUB}}^{\mathrm{SUP}}\mathrm{EXT}$

1019 `\defcomcls{ExpTime}`

\ExpSpace, ...

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

```
\defcomcls{ExpSpace}

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

\PH

- \PH[sub][sup][ext] = $\textsc{PH}^{\textsc{sup}}_{\textsc{sub}}\textsc{ext}$

```
\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, ...  ...
1054 \newcommand{\possym}{v}
1055 \newcommand{\posset}{Ps}
1056 \cmdmthsetext{Pos}[\posset][\possym]
1057 \cmdmthsymelm{ipos}[\possym_{I}]
1058 \cmdmthsymelm{fpos}[\possym_{F}]
1059 \cmdmthset{PPos}[\posset_{\PlrSym}]
1060 \cmdmthsymelm{ppos}[\possym_{\PlrSym}]
1061 \cmdmthset{OPos}[\posset_{\OppSym}]
1062 \cmdmthsymelm{opos}[\possym_{\OppSym}]

        \PlrFun  ...
1063 \newcommand{\plrfun}{pl}
1064 \cmdmthfun{plr}[\plrfun]

        \MovRel  ...
1065 \newcommand{\movrel}{Mv}
1066 \cmdmthrel{Mov}[\movrel]

  \GameName, ...  ...
1067 \newcommand{\gamename}{\Game}
1068 \usrmthlatupp{Game}{Name}{name}[\gamename]

        \WinSet  ...
1069 \newcommand{\winset}{Wn}
1070 \cmdmthset{Win}[\winset]

 \ObsSet, \obsFun  ...
1071 \newcommand{\obsset}{Ob}
1072 \cmdmthset{Obs}[\obsset]
1073 \cmdmthfun{obs}

1074 %%** Semantics *********************************************************%%

 \PthSet, \pthFun  ...
1075 \newcommand{\pthsym}{\pi}
1076 \newcommand{\pthset}{Pth}
1077 \cmdmthsetext{Pth}[\pthset][\pthsym]
1078 \cmdmthfun{pth}

    \HstSet, ...  ...
1079 \newcommand{\hstsym}{\rho}
1080 \newcommand{\hstset}{Hst}
1081 \cmdmthsetext{Hst}[\hstset][\hstsym]
1082 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1083 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1084 \cmdmthset{OHst}[\hstset_{\OppSym}]
1085 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1086 \cmdmthfun{hst}

\PlaySet,\playFun  ...
1087 \newcommand{\playsym}{\pi}
1088 \newcommand{\playset}{Play}
1089 \cmdmthsetext{Play}[\playset][\playsym]
1090 \cmdmthfun{play}

    \StrSet, ...  ...
1091 \newcommand{\strsym}{\sigma}
1092 \newcommand{\strset}{Str}
1093 \cmdmthsetext{Str}[\strset][\strsym]
1094 \cmdmthset{PStr}[\strset_{\PlrSym}]
1095 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1096 \cmdmthset{OStr}[\strset_{\OppSym}]
1097 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]
```

```
\PrfSet, \prfFun  ...
1098 \newcommand{\prfsym}{\xi}
1099 \newcommand{\prfset}{Prf}
1100 \cmdmthsetext{Prf}[\prfset][\prfsym]

\preFun, \sucFun  ...
1101 \newcommand{\prefun}{pre}
1102 \cmdmthoargfun{pre}[\prefun]
1103 \newcommand{\sucfun}{suc}
1104 \cmdmthoargfun{suc}[\sucfun]

\entFun, \escFun  ...
1105 \newcommand{\entfun}{ent}
1106 \cmdmthoargfun{ent}[\entfun]
1107 \newcommand{\escfun}{esc}
1108 \cmdmthoargfun{esc}[\escfun]

\intFun, \outFun  ...
1109 \newcommand{\intfun}{int}
1110 \cmdmthoargfun{int}[\intfun]
1111 \newcommand{\outfun}{out}
1112 \cmdmthoargfun{out}[\outfun]

\atrFun, \rchFun  ...
1113 \newcommand{\atrfun}{atr}
1114 \cmdmthoargfun{atr}[\atrfun]
1115 \newcommand{\rchfun}{rch}
1116 \cmdmthoargfun{rch}[\rchfun]

        \liftFun  ...
1117 \newcommand{\liftfun}{lift}
1118 \cmdmthoargfun{lift}[\liftfun]

         \solFun  ...
1119 \newcommand{\solfun}{sol}
1120 \cmdmthoargfun{sol}[\solfun]

1121 %%** Qualitative Games on Graph *********************************************%%

        \BG, ...  ...
1122 %% Buchi Games
1123 \cmdtxtoparname{BG}
1124
1125 %% Co-Buchi Games
1126 \cmdtxtoparname{CG}
1127
1128 %% Parity Games
1129 \cmdtxtoparname{PG}
1130
1131 %% Rabin Games
1132 \cmdtxtoparname{RG}
1133
1134 %% Streett Games
1135 \cmdtxtoparname{SG}
1136
1137 %% Muller Games
1138 \cmdtxtoparname{MG}

1139 %%** Syntax ************************************************************%%

\EvnSym, \OddSym  ...
1140 \newcommand{\evnsym}{0}
1141 \cmdmthsym{Evn}[\evnsym]
1142 \newcommand{\oddsym}{1}
1143 \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  ...
1188 \newcommand{\ttsym}{\top}
1189 \usrmth{Tt}{}{sym}[\ttsym]
1190 \newcommand{\ffsym}{\bot}
1191 \usrmth{Ff}{}{sym}[\ffsym]

  \LNeg, \LNot  ...
1192 \newcommand{\lnegsym}{\neg}
1193 \usrmth{LNeg}{}{luop}[\lnegsym]
1194 \newcommand{\lnotsym}{\sim}
1195 \usrmth{LNot}{}{luop}[\lnotsym]

  \LCon, \LDis  ...
1196 \newcommand{\lconsym}{\land}
1197 \usrmth{LCon}{}{lbop}[\lconsym]
1198 \newcommand{\ldissym}{\lor}
1199 \usrmth{LDis}{}{lbop}[\ldissym]

  \LImp, \LCoi  ...
1200 \newcommand{\limpsym}{\rightarrow}
1201 \usrmth{LImp}{}{lbop}[\limpsym]
1202 \newcommand{\lcoisym}{\leftrightarrow}
1203 \usrmth{LCoi}{}{lbop}[\lcoisym]

  \LExs, \LAll  ...
1204 \newcommand{\lexssym}{\exists}
1205 \usrmth{LExs}{}{luop}[\lexssym]
1206 \newcommand{\lallsym}{\forall}
1207 \usrmth{LAll}{}{luop}[\lallsym]

   \APSet, ...  ...
1208 \newcommand{\apsym}{p}
1209 \newcommand{\apset}{AP}
1210 \cmdmthsetext{AP}[\apset][\apsym]
1211 \cmdmthfun{ap}\usrmth{ap}{}{argfun}

        \sub  ...
1212 \usrmth{sub}{}{argfun}

\Cnt, \Qnt, \Sym  ...
1213 \usrmth{Cnt}{}{sym}[C]
1214 \usrmth{Qnt}{}{sym}[Q]
1215 \usrmth{Sym}{}{sym}[\odot]

    \QAE, \QEA  ...
1216 \usrmth{QAE}{}{sym}[\forall\exists]
1217 \usrmth{QEA}{}{sym}[\exists\forall]

  \QntSet, ...  ...
1218 \newcommand{\qntsym}{\wp}
1219 \newcommand{\qntset}{Qn}
1220 \cmdmthsetext{Qnt}[\qntset][\qntsym]

 \free, \bound  ...
1221 \usrmth{free}{}{argfun}
1222 \usrmth{bound}{}{argfun}

    \dep, \alt  ...
1223 \usrmth{dep}{}{argfun}
1224 \usrmth{alt}{}{argfun}
```

\cnf, \dnf, ...

```
\cmdtxtabr{cnf}
\cmdtxtabr{dnf}
\cmdtxtabr{pnf}
\cmdtxtabr{nnf}

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

\LogStr, ...

```
\newcommand{\logstr}{L}
\usrmthlatupp{Log}{Str}{str}[\logstr]
```

\ValSet, ...

```
\newcommand{\valsym}{\xi}
\newcommand{\valset}{Val}
\cmdmthsetext{Val}[\valset][\valsym]
```

\AsgSet, ...

```
\newcommand{\asgsym}{\chi}
\newcommand{\asgset}{Asg}
\cmdmthsetext{Asg}[\asgset][\asgsym]

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

\FOL, ...

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

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

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

\VarSig, ...

```
\newcommand{\varsig}{V}
\usrmthlatupp{Var}{Sig}{sig}[\varsig]
\newcommand{\varsym}{x}
\newcommand{\varset}{Vr}
\cmdmthsetext{Var}[\varset][\varsym]
\usrmth{var}{}{argfun}[vr]
\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, ...  ...
1269 \newcommand{\tersig}{T}
1270 \usrmthlatupp{Ter}{Sig}{sig}[\tersig]
1271 \newcommand{\tersym}{t}
1272 \newcommand{\terset}{Tr}
1273 \cmdmthsetext{Ter}[\terset][\tersym]
1274 \usrmth{ter}{}{argfun}

\RelSig, ...  ...
1275 \newcommand{\relsig}{R}
1276 \usrmthlatupp{Rel}{Sig}{sig}[\relsig]
1277 \newcommand{\relsym}{r}
1278 \newcommand{\relset}{Rl}
1279 \cmdmthsetext{Rel}[\relset][\relsym]
1280 \usrmth{rel}{}{argfun}[rl]

       \skm  ...
1281 \usrmth{skm}{}{argfun}

1282 %%** Semantics ********************************************************%%

\ConStr, ...  ...
1283 \newcommand{\constr}{C}
1284 \usrmthlatupp{Con}{Str}{str}[\constr]

\FunStr, ...  ...
1285 \newcommand{\funstr}{F}
1286 \usrmthlatupp{Fun}{Str}{str}[\funstr]

\TerStr, ...  ...
1287 \newcommand{\terstr}{T}
1288 \usrmthlatupp{Ter}{Str}{str}[\terstr]

\RelStr, ...  ...
1289 \newcommand{\relstr}{R}
1290 \usrmthlatupp{Rel}{Str}{str}[\relstr]

1291 %%** First-Order Logics II ********************************************%%

\DF, \IF, ...  ...
1292 % Dependence-Friendly Logic
1293 \cmdtxtoparname{DF}
1294
1295 % Independence-Friendly Logic
1296 \cmdtxtoparname{IF}
1297
1298 % Dependence/Independence-Friendly Logic
1299 \cmdtxtoparname{DIF}
1300
1301 % Dependence Logic
1302 \cmdtxtoparname{DL}
1303
1304 % Team Logic
1305 \cmdtxtoparname{TL}
1306
1307 % Alternating Dependence-Friendly Logic
1308 \cmdtxtoparname{ADF}
1309
1310 % Alternating Independence-Friendly Logic
1311 \cmdtxtoparname{AIF}
1312
1313 % Alternating Dependence/Independence-Friendly Logic
1314 \cmdtxtoparname{ADIF}
```

```
                    ...
                1315 %%** Syntax ******************************************************************%%

\LEExs, \LAAll  ...
                1316 \newcommand{\leexssym}{\Sigma}
                1317 \usrmth{LEExs}{}{luop}[\leexssym]
                1318 \newcommand{\laallsym}{\Pi}
                1319 \usrmth{LAAll}{}{luop}[\laallsym]

                1320 %%** Semantics ******************************************************************%%

                    ...
                1321 %%** Second-Order Logics I *********************************************************%%

     \SOL, ...  ...
                1322 % Second-Order Logic
                1323 \cmdtxtoparname{SOL}[Sol]
                1324 \cmdtxtoparname{SO}
                1325
                1326 % Weak Second-Order Logic
                1327 \DeclareRobustCommand{\WSOL}
                1328   {{\txtname{W}}\SOL}
                1329 \DeclareRobustCommand{\WSO}
                1330   {{\txtname{W}}\SO}
                1331
                1332 % coWeak Second-Order Logic
                1333 \DeclareRobustCommand{\coWSOL}
                1334   {{\txtname{coW}}\SOL}
                1335 \DeclareRobustCommand{\coWSO}
                1336   {{\txtname{coW}}\SO}
                1337
                1338 % Monadic Second-Order Logic
                1339 \DeclareRobustCommand{\MSOL}
                1340   {{\txtname{M}}\SOL}
                1341 \DeclareRobustCommand{\MSO}
                1342   {{\txtname{M}}\SO}
                1343
                1344 % Weak Monadic Second-Order Logic
                1345 \DeclareRobustCommand{\WMSOL}
                1346   {{\txtname{W}}\MSOL}
                1347 \DeclareRobustCommand{\WMSO}
                1348   {{\txtname{W}}\MSO}
                1349
                1350 % coWeak Monadic Second-Order Logic
                1351 \DeclareRobustCommand{\coWMSOL}
                1352   {{\txtname{coW}}\MSOL}
                1353 \DeclareRobustCommand{\coWMSO}
                1354   {{\txtname{coW}}\MSO}

                1355 %%** Syntax ******************************************************************%%

 \FVarSet, ...  ...
                1356 \newcommand{\fvarsym}{x}
                1357 \newcommand{\fvarset}{FVr}
                1358 \cmdmthsetext{FVar}[\fvarset][\fvarsym]

 \SVarSet, ...  ...
                1359 \newcommand{\svarsym}{X}
                1360 \newcommand{\svarset}{SVr}
                1361 \cmdmthsetext{SVar}[\svarset][\svarsym]

                1362 %%** Semantics ******************************************************************%%
```

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

\TL, \PL, ...  ...
% Tree Logic
\cmdtxtoparname{TL}

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

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

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

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

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

% Path Logic
\cmdtxtoparname{PL}

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

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

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

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

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

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

...
%%** Semantics ***************************************************************%%

...
%%** Modal Logics I ***********************************************************%%

\ML, \GML, ...  ...
% Modal Logic
\cmdtxtoparname{ML}

% Graded Modal Logic
```

```
\DeclareRobustCommand{\GML}
  {{\txtname{G}}\ML}

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

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

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

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

      \Exs, \All  ...
\DeclareRobustCommand{\Exs}[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, \GMC, ...  ...
% Mu Calculus
\cmdtxtoparname{MC}[\ensuremath{\mu}-Calculus]

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

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

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

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

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

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

...

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

...

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

\PTL, \LTL, ...

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

% Quantified Propositional Temporal Logic
\DeclareRobustCommand{\QPTL}
  {{\txtname{Q}}\PTL}
\DeclareRobustCommand{\EPTL}
  {\ensuremath{\exists}\PTL}
\DeclareRobustCommand{\UPTL}
  {\ensuremath{\forall}\PTL}

% Linear Temporal Logic
\cmdtxtoparname{LTL}

% Quantified Linear Temporal Logic
\DeclareRobustCommand{\QLTL}
  {{\txtname{Q}}\LTL}
\DeclareRobustCommand{\ELTL}
  {\ensuremath{\exists}\LTL}
\DeclareRobustCommand{\ULTL}
  {\ensuremath{\forall}\LTL}

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

\X, ...

```
\usrmth{X}{}{sym}[X\,]
\usrmth{F}{}{sym}[F\,]
\usrmth{G}{}{sym}[G\,]
\usrmth{U}{}{sym}[\,U\,]
\usrmth{R}{}{sym}[\,R\,]
```

\Y, ...

```
\usrmth{Y}{}{sym}[G\,]
\usrmth{P}{}{sym}[P\,]\let\SavePilcrow\P
\usrmth{H}{}{sym}[H\,]\let\SaveDoubleAcute\H
\usrmth{S}{}{sym}[\,S\,]\let\SaveSectionSymbol\S
\usrmth{B}{}{sym}[\,B\,]

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

...

```
%%** Temporal Logics II ***************************************************%%
```

\PDL, \CTL, ...

```

% Propositional Dynamic Logic
\cmdtxtoparname{PDL}

% Computation Tree Logic
\cmdtxtoparname{CTL}

% Weak Computation Tree Logic
\DeclareRobustCommand{\WCTL}
  {{\txtname{W}}\CTL}

% Quantified Computation Tree Logic
\DeclareRobustCommand{\QCTL}
  {{\txtname{Q}}\CTL}
\DeclareRobustCommand{\ECTL}
  {\ensuremath{\exists}\CTL}
\DeclareRobustCommand{\UCTL}
  {\ensuremath{\forall}\CTL}

% Improved Computation Tree Logic
\cmdtxtoparname{CTLP}[CTL$^{+}$]

% Weak Improved Computation Tree Logic
\DeclareRobustCommand{\WCTLP}
  {{\txtname{W}}\CTLP}

% Quantified Improved Computation Tree Logic
\DeclareRobustCommand{\QCTLP}
  {{\txtname{Q}}\CTLP}
\DeclareRobustCommand{\ECTLP}
  {\ensuremath{\exists}\CTLP}
\DeclareRobustCommand{\UCTLP}
  {\ensuremath{\forall}\CTLP}

% Full Computation Tree Logic
\cmdtxtoparname{CTLS}[CTL*]

% Weak Full Computation Tree Logic
\DeclareRobustCommand{\WCTLS}
  {{\txtname{W}}\CTLS}

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

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

\E, \A ...

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

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

...

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

\ATL, ...

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

% Weak Alternating Tree Logic
\DeclareRobustCommand{\WATL}
  {{\txtname{W}}\ATL}

% Quantified Alternating Temporal Logic
\DeclareRobustCommand{\QATL}
  {{\txtname{Q}}\ATL}
\DeclareRobustCommand{\EATL}
  {\ensuremath{\exists}\ATL}
\DeclareRobustCommand{\UATL}
  {\ensuremath{\forall}\ATL}

% Improved Alternating Temporal Logic
\cmdtxtoparname{ATLP}[ATL$^{+}$]

% Weak Improved Alternating Tree Logic
\DeclareRobustCommand{\WATLP}
  {{\txtname{W}}\ATLP}

% Quantified Improved Alternating Temporal Logic
\DeclareRobustCommand{\QATLP}
  {{\txtname{Q}}\ATLP}
\DeclareRobustCommand{\EATLP}
  {\ensuremath{\exists}\ATLP}
\DeclareRobustCommand{\UATLP}
  {\ensuremath{\forall}\ATLP}

% Full Alternating Temporal Logic
\cmdtxtoparname{ATLS}[ATL*]

% Weak Full Alternating Tree Logic
\DeclareRobustCommand{\WATLS}
  {{\txtname{W}}\ATLS}

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

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

\EExs, \AAll ...

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

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

```
        \CGS  ...
              \cmdtxtname{CGS}

  \CGSStr, ...  ...
              \newcommand{\cgsstr}{G}
              \usrmthlatupp{CGS}{Str}{str}[\cgsstr]

  \AgnSet, ...  ...
              \newcommand{\agnsym}{a}
              \newcommand{\agnset}{Ag}
              \cmdmthsetext{Agn}[\agnset][\agnsym]

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

  \SttSet, ...  ...
              \newcommand{\sttsym}{s}
              \newcommand{\sttset}{St}
              \cmdmthsetext{Stt}[\sttset][\sttsym]
              \cmdmthset{ISt}[\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}
```

```
1784
1785 \DeclareRobustCommand{\FBGSL}
1786   {{\txtname{F}}\xGSL}
1787
1788 \DeclareRobustCommand{\EFBGSL}
1789   {\ensuremath{\exists}\FBGSL}
1790 \DeclareRobustCommand{\UFBGSL}
1791   {\ensuremath{\forall}\FBGSL}
1792
1793 % Nested-Goal Strategy Logic
1794 \DeclareRobustCommandx{\NGSL}[3][1=, 2=, 3=]
1795   {\SL[#1][#2][ng\arglef{,}{#3}]}
1796
1797 \DeclareRobustCommand{\ENGSL}
1798   {\ensuremath{\exists}\NGSL}
1799 \DeclareRobustCommand{\UNGSL}
1800   {\ensuremath{\forall}\NGSL}
1801
1802 \DeclareRobustCommand{\FNGSL}
1803   {{\txtname{F}}\xGSL}
1804
1805 \DeclareRobustCommand{\EFNGSL}
1806   {\ensuremath{\exists}\FNGSL}
1807 \DeclareRobustCommand{\UFNGSL}
1808   {\ensuremath{\forall}\FNGSL}
1809
1810 % Undefined-Goal Strategy Logic
1811 \DeclareRobustCommandx{\XGSL}[3][1=, 2=, 3=]
1812   {\SL[#1][#2][xg\arglef{,}{#3}]}
1813
1814 \DeclareRobustCommand{\EXGSL}
1815   {\ensuremath{\exists}\XGSL}
1816 \DeclareRobustCommand{\UXGSL}
1817   {\ensuremath{\forall}\XGSL}
1818
1819 \DeclareRobustCommand{\FXGSL}
1820   {{\txtname{F}}\xGSL}
1821
1822 \DeclareRobustCommand{\EFXGSL}
1823   {\ensuremath{\exists}\FXGSL}
1824 \DeclareRobustCommand{\UFXGSL}
1825   {\ensuremath{\forall}\FXGSL}

1826 %%** Syntax ************************************************************%%

\BndSet, ...  ...
1827 \newcommand{\bndsym}{\flat}
1828 \newcommand{\bndset}{Bn}
1829 \cmdmthsetext{Bnd}[\bndset][\bndsym]
1830 \usrmth{bnd}{}{argfun}

    \psn  ...
1831 \usrmth{psn}{}{argfun}

1832 %%** Semantics *********************************************************%%

 \nxtFun  ...
1833 \newcommand{\nxtfun}{nxt}
1834 \cmdmthfun{nxt}[\nxtfun]

1835 \fi
1836 %%*********************************************************************%%
```

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

\DFA, ...

```
\cmdtxtoparname{DFA}\cmdtxtoparname{NFA}\cmdtxtoparname{UFA}\cmdtxtoparname{AFA}

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

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

\GFG, \PD, ...

```
\cmdtxtoparname{GFG}

\cmdtxtoparname{PD}

%% ...
```

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

\AutName, ...

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

\WAutSet ...

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

\SttSet, ...

```
\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, ...  ...
1880 \newcommand{\wrdsym}{w}
1881 \newcommand{\wrdset}{Wr}
1882 \cmdmthsetext{Wrd}[\wrdset][\wrdsym]

1883 %%** Finite Tree Automata ****************************************************%%

   \DTA, ...  ...
1884 \cmdtxtoparname{DTA}\cmdtxtoparname{NTA}\cmdtxtoparname{UTA}\cmdtxtoparname{ATA}
1885
1886 \cmdtxtoparname{DFT}\cmdtxtoparname{NFT}\cmdtxtoparname{UFT}\cmdtxtoparname{AFT}
1887 \cmdtxtoparname{DBT}\cmdtxtoparname{NBT}\cmdtxtoparname{UBT}\cmdtxtoparname{ABT}
1888 \cmdtxtoparname{DCT}\cmdtxtoparname{NCT}\cmdtxtoparname{UCT}\cmdtxtoparname{ACT}
1889 \cmdtxtoparname{DPT}\cmdtxtoparname{NPT}\cmdtxtoparname{UPT}\cmdtxtoparname{APT}
1890 \cmdtxtoparname{DRT}\cmdtxtoparname{NRT}\cmdtxtoparname{URT}\cmdtxtoparname{ART}
1891 \cmdtxtoparname{DST}\cmdtxtoparname{NST}\cmdtxtoparname{UST}\cmdtxtoparname{AST}
1892 \cmdtxtoparname{DMT}\cmdtxtoparname{NMT}\cmdtxtoparname{UMT}\cmdtxtoparname{AMT}

1893 %%** Syntax ********************************************************************%%

    \TAutSet  ...
1894 \newcommand{\tautset}{TAut}
1895 \cmdmthset{TAut}[\tautset]

 \DirSet, ...  ...
1896 \newcommand{\dirsym}{d}
1897 \newcommand{\dirset}{\Lambda}
1898 \cmdmthsetext{Dir}[\dirset][\dirsym]

1899 %%** Semantics ****************************************************************%%

\TreeSet, ...  ...
1900 \newcommand{\treesym}{T}
1901 \newcommand{\treeset}{Tr}
1902 \cmdmthsetext{Tree}[\treeset][\treesym]

     \wotFun  ...
1903 \newcommand{\wotfun}{wot}
1904 \cmdmthfun{wot}[\wotfun]

1905 \fi
1906 %%*************************************************************************%%
1907 %%*************************************************************************%%
1908 %%** Format Tricks *********************************************************%%
1909 %%*************************************************************************%%
1910 \iffrm@

         ...  ...
1911 %%...

1912 \fi
1913 %%*************************************************************************%%
1914 %%*************************************************************************%%
1915 %%** Figure Tricks *********************************************************%%
1916 %%*************************************************************************%%
1917 \iffig@

1918 \RequirePackage{tikz}
1919 \usetikzlibrary{arrows,graphs,matrix,patterns,shapes}

1920 \tikzstyle{every node} =
1921   [draw = none, fill = none, black, thin]
1922 \tikzstyle{every edge} +=
1923   [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}
```

\From, ... …

```
\SetKw{From}{from}
\SetKw{To}{to}
\SetKw{DownTo}{downto}
```

\GoTo, ... …

```
\SetKw{GoTo}{goto}
\SetKw{Break}{break}
\SetKw{Continue}{continue}
```

\MIf, ... …

```
\SetKwIF{MIf}{MElseIf}{MElse}{\#if}{\#then}{\#else \#if}{\#else}{\#endif}
```

\nlr ...

```
\DeclareRobustCommand{\nlr}[1]
  {\addtocounter{AlgoLine}{1}%
  \nlset{\arabic{AlgoLine}-\addtocounter{AlgoLine}{#1}\arabic{AlgoLine}}}
\fi
%%*****************************************************************************%%
\endinput
⟨/package⟩
```

2 Change History

v0.0
General: First public release 1
v0.1
General: Algorithm tricks 1
v0.10
General: Small refinements 1
v0.11
General: Few additions and corrections 1
v0.12
General: New starred variants 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
v0.9
General: Small addition to ‘Algorithm tricks’ 1

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