

fmocdmac — FM's OCD L^AT_EX Macro*

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Abstract

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

1 Implementation & Usage

```
1 <*package>
  Required external packages:
2
3 \RequirePackage{etoolbox}
4
5 \RequirePackage{xargs}
6 \RequirePackage{xspace}
7 \RequirePackage{stringstrings}
8
  Package options:
9
10 %% Auxiliary packages
11 \newif\ifaux@ \aux@false
12 \DeclareOption{aux}{\aux@true}
13 \DeclareOption{noaux}{\aux@false}
14
15 %% AMS defaults
16 \newif\ifamsdef@ \amsdef@true
17 \DeclareOption{noamsdef}{\amsdef@false}
18
19 %% AMS theorem tools
20 \newif\ifamsthm@ \amsthm@true
21 \DeclareOption{noamsthm}{\amsthm@false}
22
23 %% Extended Theorem tools
24 \newif\ifthmtls@ \thmtls@true
25 \DeclareOption{nothmtls}{\thmtls@false}
26
27 %% Enumeration tools
28 \newif\ifenmtls@ \enmtls@true
29 \DeclareOption{noenmtls}{\enmtls@false}
30
31 %% Hyper reference
32 \newif\ifhympref@ \hympref@true
33 \DeclareOption{nohympref}{\hympref@false}
34
35 %% Font tools
36 \newif\iffnttls@ \fnttls@true
```

*This document describes version v0.6 of the fmocdmac package, last revised 2021/07/14.

```

37 \DeclareOption{nofnttts}{\fnttts@false}
38
39 %% Camera-ready version
40 \newif\ifcrv@ \crv@false
41 \DeclareOption{crv}{\crv@true}
42
43 %% Change bars
44 \newif\ifchgbar@ \chgbar@false
45 \DeclareOption{chgbar}{\chgbar@true}
46
47 %% Line numbers
48 \newif\iflinnum@ \linnum@false
49 \DeclareOption{linnum}{\linnum@true}
50
51
52 %% Text macro generation
53 \newif\iftxtgen@ \txtgen@false
54 \DeclareOption{txtgen}{\txtgen@true}
55 \DeclareOption{notxtgen}
56   {\txtgen@false\text@false\com@false\gam@false\log@false\aut@false}
57
58 %% Math macro generation
59 \newif\ifmthgen@ \mthgen@false
60 \DeclareOption{mthgen}{\mthgen@true}
61 \DeclareOption{nomthgen}
62   {\mthgen@false\math@false\gam@false\log@false\aut@false}
63
64
65 %% Elementary macros for text
66 \newif\iftext@ \text@false
67 \DeclareOption{text}{\text@true\txtgen@true}
68 \DeclareOption{notext}{\text@false}
69
70 %% Elementary macros for math
71 \newif\ifmath@ \math@false
72 \DeclareOption{math}{\math@true\mthgen@true}
73 \DeclareOption{nomath}{\math@false}
74
75
76 %% Macros for computational-complexity classes
77 \newif\ifcom@ \com@false
78 \DeclareOption{com}{\com@true\txtgen@true}
79 \DeclareOption{nocom}{\com@false}
80
81
82 %% Macros for games
83 \newif\ifgam@ \gam@false
84 \DeclareOption{gam}{\gam@true\txtgen@true\mthgen@true}
85 \DeclareOption{nogam}{\gam@false}
86
87 %% Macros for logics
88 \newif\iflog@ \log@false
89 \DeclareOption{log}{\log@true\txtgen@true\mthgen@true}
90 \DeclareOption{nolog}{\log@false}
91
92 %% Macros for automata
93 \newif\ifaut@ \aut@false
94 \DeclareOption{aut}{\aut@true\txtgen@true\mthgen@true}
95 \DeclareOption{noaut}{\aut@false}
96
97
98 %% Format-related tricks
99 \newif\iffirm@ \firm@false

```

```

100 \DeclareOption{frm}{\frm@true}
101 \DeclareOption{nofrm}{\frm@false}
102
103
104 %% Figure-related tricks
105 \newif\iffig@ \fig@false
106 \DeclareOption{fig}{\fig@true}
107 \DeclareOption{nofig}{\fig@false}
108
109 %% Wrapfig package
110 \newif\ifwrpfig@ \wrpfig@true
111 \DeclareOption{nowrpfig}{\wrpfig@false}
112
113
114 %% Table-related tricks
115 \newif\iftab@ \tab@false
116 \DeclareOption{tab}{\tab@true}
117 \DeclareOption{notab}{\tab@false}
118
119
120 %% Algorithm-related tricks
121 \newif\ifalg@ \alg@false
122 \DeclareOption{alg}{\alg@true}
123 \DeclareOption{noalg}{\alg@false}
124

```

Option-processing code:

```

125
126 \DeclareOption*{\PackageWarning{fmodcmac}{Unknown~'\CurrentOption'}}%
127
128 \ExecuteOptions{aux,txtgen,mthgen,text,math,com,gam,log,aut}%
129
130 \ProcessOptions\relax%
131
132 \ifcsdef{if@twocolumn}{\newif\if@twocolumn}
133
134 %*****
135 %** Auxiliary Tricks *****
136 %*****
137 \ifaux@
138
139 \ifamsdef@
140   % AMS Packages
141   \RequirePackage{amsmath}
142   \RequirePackage{amssymb}
143   \interdisplaylinepenalty=2500
144 \fi
145
146 \ifamsthm@
147   % AMS Theorem Tools
148   \RequirePackage{amsthm}
149 \fi
150
151 \ifthmtls@
152   % Extended Theorem Tools
153   \RequirePackage{thmtools, thm-restate}
154 \fi
155
156 \ifenmtls@
157   % Enumeration Tools
158   \RequirePackage{paralist}
159 \fi
160
161 \ifhyppref@

```

```

162 % Hyper References
163 \RequirePackage{hyperref}
164
165 \hypersetup
166 {
167     pdfsubject      = {},
168     pdfkeywords     = {},
169     pdfproducer     = {},
170     pdfcreator      = {},
171     pdfpagemode     = {UseNone},
172     pdfstartview    = {FitH},
173     colorlinks
174 }
175 \fi
176
177 \iffnttts@
178 % Font Tools
179 \RequirePackage[final]{microtype}
180 \fi
181
182 \ifcrv@
183 % Camera-Ready Version
184
185 %%...
186
187 \else
188 % Draft Version
189
190 %%...
191
192 \ifchgbar@
193 % Change Bars
194 \RequirePackage{changebar}
195 \fi
196
197 \iflinnum@
198 % Line Numbers
199 \if@twocolumn
200     \RequirePackage[switch, columnwise, mathlines]{lineno}\linenumbers
201 \else
202     \RequirePackage[columnwise, mathlines]{lineno}\linenumbers
203 \fi
204 \fi
205
206 %%...
207
208 \fi
209
210 \fi
211 %*****%
212 %*****%
213 %** Auxiliary Font Declarations *****%
214 %*****%

```

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

```

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

```

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

```

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

```

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

```

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

```

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

```

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

219 %*****%
220 %*****%
221 %** Auxiliary Alphabet Letters *****%
222 %*****%

```

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

```

223 \csdef{omicron}{o}

```

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

```

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

228 %*****%
229 %*****%
230 %** Tools *****%
231 %*****%

```

`\empchk` **Emptiness check:** `\empchk{⟨A⟩}{⟨B⟩}` 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”

```

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

```

`\defval` **Default value:** `\defval{⟨A⟩}{⟨B⟩}` 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”

```

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

236 %*****%

```

`\arglef` **Left extension:** `\arglef{⟨A⟩}{⟨B⟩}` 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”

```

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

```

`\argrig` **Right extension:** `\argrig{⟨A⟩}{⟨B⟩}` 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”

```

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

```

`\argmid` **Middle extension:** `\argmid{⟨A⟩}{⟨B⟩}{⟨C⟩}` 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”

```

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

```

\argsep **Separators:** `\argsep{<A>}{}{<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”

```

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

245 %*****%
```

\varcmd **Variadic commands:** `\varcmd{<A>}{}{<C>}{<D>}{<E>}{<F>} ...` to do!

```

246 \newcommand{\varcmd}[6]
247   {\expandafter\newcommand\csname gobble#1arg\endcsname[2]
248     {\csname check#1arg\endcsname{\argsep{##1}{#4}{##2}}}%
249     \expandafter\newcommand\csname check#1arg\endcsname[1]
250     {\csname @ifnextchar\endcsname%
251       \bgroup{\csname gobble#1arg\endcsname{##1}{#2{##1#5}#6}}}%
252     \expandafter\newcommand\csname#1\endcsname[1]
253     {\csname check#1arg\endcsname{#3##1}}}%

254 %*****%
```

\seqoftag **Sequence of tags:** `\seqoftag{<A>}{}{<C>} ...` to do!

```

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

\seqofcmd **Sequence of commands:** `\seqofcmd{<A>}{}{<C>} ...` to do!

```

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

263 %*****%
```

\seqoflatlow **Sequence of Latin lowercase letters:** `\seqoflatlow{<A>}{} ...` to do!

```

264 \newcommand{\seqoflatlow}
265   {\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>}{} ...` to do!

```

266 \newcommand{\seqoflatupp}
267   {\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>}{} ...` to do!

```

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

270 %*****%
```

\seqofgrklow **Sequence of Greek lowercase letters:** `\seqofgrklow{<A>}{} ...` to do!

```

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

\seqofgrkupp **Sequence of Greek uppercase letters:** `\seqofgrkupp{<A>}{} ...` to do!

```

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

```

\seqofgrklet Sequence of Greek letters: \seqofgrklet{⟨A⟩}{⟨B⟩} ... to do!
279 \newcommand{\seqofgrklet}[2]
280   {\seqofgrklow{#1}{#2}\seqofgrkupp{#1}{#2}}

281 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\seqoflow Sequence of lowercase letters: \seqoflow{⟨A⟩}{⟨B⟩} ... to do!
282 \newcommand{\seqoflow}[2]
283   {\seqoflatlow{#1}{#2}\seqofgrklow{#1}{#2}}

\seqofupp Sequence of uppercase letters: \seqofupp{⟨A⟩}{⟨B⟩} ... to do!
284 \newcommand{\seqofupp}[2]
285   {\seqoflatupp{#1}{#2}\seqofgrkupp{#1}{#2}}

\seqoflet Sequence of all letters: \seqoflet{⟨A⟩}{⟨B⟩} ... to do!
286 \newcommand{\seqoflet}[2]
287   {\seqoflow{#1}{#2}\seqofupp{#1}{#2}}

288 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
289 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
290 %** Text Meta Commands %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
291 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newtxt ... to do!
    • \newtxt[\rmfamily]{Name}[sub][sup][Ext] = “NamesubExt”
    • \newtxt[\sffamily]{Name}[sub][sup][Ext] = “NamesubExt”
    • \newtxt[\ttfamily]{Name}[sub][sup][Ext] = “NamesubExt”
292 \newcommandx{\newtxt}[5][1=, 3=, 4=, 5=]
293   {\text{#1#2\txsubsup{#1}{#3}{#4}{#5}\xspace}}

\newtxtsty ... to do!
    • \newtxtsty[\rmfamily]{Name}[sub][sup][Ext] = “NamesubExt”
    • \newtxtsty[\rmfamily][\sffamily]{Name}[sub][sup][Ext] = “NamesubExt”
    • \newtxtsty[\rmfamily][\ttfamily]{Name}[sub][sup][Ext] = “NamesubExt”
294 \newcommandx{\newtxtsty}[2][2=]
295   {\newtxt[\defval{#2}{#1}]}

\newxtarg ... to do!
    • \newxtarg[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NamesubExt1(Arg)Ext2”
    • \newxtarg[\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NamesubExt1(Arg)Ext2”
    • \newxtarg[\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NamesubExt1(Arg)Ext2”
296 \newcommandx{\newxtarg}[7][1=, 3=, 4=, 5=, 7=]
297   {\newtxt{#1}{#2}{#3}{#4}{#5\argmid{#6}{#7}}}

\newxtargsty ... to do!
    • \newxtargsty[\rmfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NamesubExt1(Arg)Ext2”
    • \newxtargsty[\rmfamily][\sffamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NamesubExt1(Arg)Ext2”
    • \newxtargsty[\rmfamily][\ttfamily]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NamesubExt1(Arg)Ext2”
298 \newcommandx{\newxtargsty}[2][2=]
299   {\newxtarg[\defval{#2}{#1}]}

\newtxtoarg ... to do!
    • \newtxtoarg[\rmfamily]{Name}[sub][sup][Arg] = “Namesub(Arg)”
    • \newtxtoarg[\sffamily]{Name}[sub][sup][Arg] = “Namesub(Arg)”
    • \newtxtoarg[\ttfamily]{Name}[sub][sup][Arg] = “Namesub(Arg)”
300 \newcommandx{\newtxtoarg}[5][1=, 3=, 4=, 5=]
301   {\newxtarg{#1}{#2}{#3}{#4}[]{}{#5}[]}}

```

```

\newtxtoargsty ... to do!
    • \newtxtoargsty{\rmfamily}{Name}[sub][sup][Arg] = “Namesub(Arg)”
    • \newtxtoargsty{\rmfamily}{\sffamily}{Name}[sub][sup][Arg] = “Namesub(Arg)”
    • \newtxtoargsty{\rmfamily}{\ttfamily}{Name}[sub][sup][Arg] = “Namesub(Arg)”
302 \newcommandx{\newtxtoargsty}[2][2=]
303   {\newtxtoarg[\defval{#2}{#1}]}

\newtxtpar ... to do!
    • \newtxtpar[\rmfamily]{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesubExt1[Par]Ext2”
    • \newtxtpar[\sffamily]{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesubExt1[Par]Ext2”
    • \newtxtpar[\ttfamily]{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesubExt1[Par]Ext2”
304 \newcommandx{\newtxtpar}[7][1=, 3=, 4=, 5=, 7=]
305   {\newtxt{#1}{#2}{#3}{#4}{#5}\argmid{[]}{#6}{[]}{#7}}

\newtxtparsty ... to do!
    • \newtxtparsty{\rmfamily}{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesubExt1[Par]Ext2”
    • \newtxtparsty{\rmfamily}{\sffamily}{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesubExt1[Par]Ext2”
    • \newtxtparsty{\rmfamily}{\ttfamily}{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesubExt1[Par]Ext2”
306 \newcommandx{\newtxtparsty}[2][2=]
307   {\newtxtpar[\defval{#2}{#1}]}

\newtxtopar ... to do!
    • \newtxtopar[\rmfamily]{Name}[sub][sup][Par] = “Namesub[Par]”
    • \newtxtopar[\sffamily]{Name}[sub][sup][Par] = “Namesub[Par]”
    • \newtxtopar[\ttfamily]{Name}[sub][sup][Par] = “Namesub[Par]”
308 \newcommandx{\newtxtopar}[5][1=, 3=, 4=, 5=]
309   {\newtxtpar{#1}{#2}{#3}{#4}[]{}{#5}[]}

\newtxtoparsty ... to do!
    • \newtxtoparsty{\rmfamily}{Name}[sub][sup][Par] = “Namesub[Par]”
    • \newtxtoparsty{\rmfamily}{\sffamily}{Name}[sub][sup][Par] = “Namesub[Par]”
    • \newtxtoparsty{\rmfamily}{\ttfamily}{Name}[sub][sup][Par] = “Namesub[Par]”
310 \newcommandx{\newtxtoparsty}[2][2=]
311   {\newtxtopar[\defval{#2}{#1}]}

\txtsupsub ... to do!
    • \txtsupsub{sub}{} = “sub”; \txtsupsub{}{sup} = “sup”; \txtsupsub{sub}{sup} = “sub”
    • \txtsupsub[\sffamily]{Aa}{Bb} = “AaBb”
    • \txtsupsub[\ttfamily]{Aa}{Bb} = “AaBb”
312 \newcommand{\txtsupsub}[3]{}
313   {\ensuremath{\empchk{#2}{_}{\text{#1#2}}}\empchk{#3}{^{\text{#1#3}}}}

314 %%*****%

\txt ... to do!
    • \txt{Name}[sub][sup][Ext] = “NamesubExt”
    • \txt[\scshape]{Name}[sub][sup][Ext] = “NAMESUBEXT”
    • \txt[\bfseries]{Name}[sub][sup][Ext] = “NamesubExt”
315 \newcommand{\txt}
316   {\newtxtsty{\txtsty}}

\txtarget ... to do!
    • \txtarget{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NamesubExt1(Arg)Ext2”
    • \txtarget[\scshape]{Name}[sub][sup][Ext1]{Arg}[Ext2] = “NAMESUBEXT1(ARG)EXT2”

```



```

    • \txtarg[\bfseries]{Name}[sub][sup][Ext1]{Arg}[Ext2] = "NamesubExt1(Arg)Ext2"
317 \newcommand{\txtarg}
318 {\newtxtargsty{\txtsty}}

\txtoarg ... to do!
    • \txtoarg{Name}[sub][sup][Arg] = "Namesub(Arg)"
    • \txtoarg[\scshape]{Name}[sub][sup][Arg] = "NAMESUB(ARG)"
    • \txtoarg[\bfseries]{Name}[sub][sup][Arg] = "Namesub(Arg)"
319 \newcommand{\txtoarg}
320 {\newtxtoargsty{\txtsty}}

\txtpar ... to do!
    • \txtpar{Name}[sub][sup][Ext1]{Par}[Ext2] = "NamesubExt1[Par]Ext2"
    • \txtpar[\scshape]{Name}[sub][sup][Ext1]{Par}[Ext2] = "NAMESUBEXT1[PAR]EXT2"
    • \txtpar[\bfseries]{Name}[sub][sup][Ext1]{Par}[Ext2] = "NamesubExt1[Par]Ext2"
321 \newcommand{\txtpar}
322 {\newtxtparsty{\txtsty}}

\txtopar ... to do!
    • \txtopar{Name}[sub][sup][Par] = "Namesub[Par]"
    • \txtopar[\scshape]{Name}[sub][sup][Par] = "NAMESUB[PAR]"
    • \txtopar[\bfseries]{Name}[sub][sup][Par] = "Namesub[Par]"
323 \newcommand{\txtopar}
324 {\newtxtoparsty{\txtsty}}

\txtsty ... to do!
325 \newcommand{\txtsty}
326 {\mdseries\upshape\rmfamily}

327 %*****%

\cmdtxt ... to do!
    • \cmdtxt{NewCmd}; \newcommand{\txtstyNewCmd}{\scshape\ttfamily};
    \txtNewCmd{Name}[sub][sup][Ext] = NAMESUBEXT
328 \newcommand{\cmdtxt}[1]
329 {\csdef{txt#1}{\newtxtsty{\csname txtsty#1\endcsname}}}

\cmdtxtarg ... to do!
    • \cmdtxtarg{NewCmd}; \newcommand{\txtstyNewCmd}{\scshape\ttfamily};
    \txtargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAMESUBEXT1(ARG)EXT2
330 \newcommand{\cmdtxtarg}[1]
331 {\csdef{txtarg#1}{\newtxtargsty{\csname txtsty#1\endcsname}}}

\cmdtxtoarg ... to do!
    • \cmdtxtoarg{NewCmd}; \newcommand{\txtstyNewCmd}{\scshape\ttfamily};
    \txtoargNewCmd{Name}[sub][sup][Arg] = NAMESUB(ARG)
332 \newcommand{\cmdtxtoarg}[1]
333 {\csdef{txtoarg#1}{\newtxtoargsty{\csname txtsty#1\endcsname}}}

\cmdtxtpar ... to do!
    • \cmdtxtpar{NewCmd}; \newcommand{\txtstyNewCmd}{\scshape\ttfamily};
    \txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = NAMESUBEXT1[PAR]EXT2
334 \newcommand{\cmdtxtpar}[1]
335 {\csdef{txtpar#1}{\newtxtparsty{\csname txtsty#1\endcsname}}}

\cmdtxtopar ... to do!

```

```

    • \cmdttxtopar{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtoparNewCmd{Name}[sub][sup][Par] = NAMESUB[PAR]
336 \newcommand{\cmdttxtopar}[1]
337   {\csdef{txtopar#1}{\newtxtoparsty{\csname txtsty#1\endcsname}}}

\cmdttxall ... to do!
    • \cmdttxall{NewCmd}; \newcommand{txtstyNewCmd}{\scshape\ttfamily};
      \txtNewCmd{Name}[sub][sup][Ext] = NAMESUBEXT
      \txtargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2] = NAMESUBEXT1(AR)EXT2
      \txtoargNewCmd{Name}[sub][sup][Arg] = NAMESUB(AR)
      \txtparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = NAMESUBEXT1[PAR]EXT2
      \txtoparNewCmd{Name}[sub][sup][Par] = NAMESUB[PAR]
338 \newcommand{\cmdttxall}[1]
339   {\cmdttx{#1}\cmdttxarg{#1}\cmdtxtoarg{#1}\cmdtxtpar{#1}\cmdtxtopar{#1}}

340 %%*****%

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

343 %%*****%
344 %%*****%
345 %** Math Meta Commands *****%
346 %%*****%

\newmth ... to do!
    • \newmth[mathrm]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmth[mathsf]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmth[mathtt]{Name}[sub][sup][Ext] = "NamesupsubExt"
347 \newcommandx{\newmth}[5][1=, 3=, 4=, 5=]
348   {\ensuremath{\csname#1\endcsname{#2}\mthsubsup{#3}{#4}{#5}}}

\newmthsty ... to do!
    • \newmthsty[mathrm]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmthsty[mathsf]{Name}[sub][sup][Ext] = "NamesupsubExt"
    • \newmthsty[mathtt]{Name}[sub][sup][Ext] = "NamesupsubExt"
349 \newcommandx{\newmthsty}[2][2=]
350   {\newmth[\defval{#2}{#1}]}

\newmtharg ... to do!
    • \newmtharg[mathrm]{Name}[sub][sup][Ext1]{Arg}[Ext2] = "NamesupsubExt1(Arg)Ext2"
    • \newmtharg[mathsf]{Name}[sub][sup][Ext1]{Arg}[Ext2] = "NamesupsubExt1(Arg)Ext2"
    • \newmtharg[mathtt]{Name}[sub][sup][Ext1]{Arg}[Ext2] = "NamesupsubExt1(Arg)Ext2"
351 \newcommandx{\newmtharg}[7][1=, 3=, 4=, 5=, 7=]
352   {\newmth{#1}{#2}{#3}{#4}{#5}\argmid{\!\left(\!{#6}{\right)}\arglef{\!}{#7}}}}

\newmthargsty ... to do!
    • \newmthargsty[mathrm]{Name}[sub][sup][Ext1]{Arg}[Ext2] = "NamesupsubExt1(Arg)Ext2"
    • \newmthargsty[mathsf]{Name}[sub][sup][Ext1]{Arg}[Ext2] = "NamesupsubExt1(Arg)Ext2"
    • \newmthargsty[mathtt]{Name}[sub][sup][Ext1]{Arg}[Ext2] = "NamesupsubExt1(Arg)Ext2"

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

\newmthoarg ... to do!


- \newmthoarg[\mathrm]{Name}[sub][sup][Arg] = “Namesupsub(Arg)”
- \newmthoarg[\mathsf]{Name}[sub][sup][Arg] = “Namesupsub(Arg)”
- \newmthoarg[\mathtt]{Name}[sub][sup][Arg] = “Namesupsub(Arg)”


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

\newmthoargsty ... to do!


- \newmthoargsty[\mathrm]{Name}[sub][sup][Arg] = “Namesupsub(Arg)”
- \newmthoargsty[\mathrm]{\mathsf}{Name}[sub][sup][Arg] = “Namesupsub(Arg)”
- \newmthoargsty[\mathrm]{\mathtt}{Name}[sub][sup][Arg] = “Namesupsub(Arg)”


357 \newcommandx{\newmthoargsty}[2][2=]
358   {\newmtharg[\defval{#2}{#1}]}

\newmthpar ... to do!


- \newmthpar[\mathrm]{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesupsubExt1[Par]Ext2”
- \newmthpar[\mathsf]{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesupsubExt1[Par]Ext2”
- \newmthpar[\mathtt]{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesupsubExt1[Par]Ext2”


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

\newmthparsty ... to do!


- \newmthparsty[\mathrm]{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesupsubExt1[Par]Ext2”
- \newmthparsty[\mathrm]{\mathsf}{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesupsubExt1[Par]Ext2”
- \newmthparsty[\mathrm]{\mathtt}{Name}[sub][sup][Ext1]{Par}[Ext2] = “NamesupsubExt1[Par]Ext2”


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

\newmthopar ... to do!


- \newmthopar[\mathrm]{Name}[sub][sup][Par] = “Namesupsub[Par]”
- \newmthopar[\mathsf]{Name}[sub][sup][Par] = “Namesupsub[Par]”
- \newmthopar[\mathtt]{Name}[sub][sup][Par] = “Namesupsub[Par]”


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

\newmthoparsty ... to do!


- \newmthoparsty[\mathrm]{Name}[sub][sup][Par] = “Namesupsub[Par]”
- \newmthoparsty[\mathrm]{\mathsf}{Name}[sub][sup][Par] = “Namesupsub[Par]”
- \newmthoparsty[\mathrm]{\mathtt}{Name}[sub][sup][Par] = “Namesupsub[Par]”


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

\mthsubsup ... to do!
367 \newcommand{\mthsubsup}[2]
368   {\empchk{#1}{_ {#1}}\empchk{#2}{^{#2}}}

369 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\mth ... to do!


- \mth{Name}[sub][sup][Ext] = “NamesupsubExt”
- \mth[\mathbf]{Name}[sub][sup][Ext] = “NamesupsubExt”
- \mth[\mathtt]{Name}[sub][sup][Ext] = “NamesupsubExt”

```

```

370 \newcommand{\mth}
371 {\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] =  $\mathtt{Name}_{sub}^{sup}Ext1(Arg)Ext2$


372 \newcommand{\mtharg}
373 {\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] =  $\mathtt{Name}_{sub}^{sup}(Arg)$


374 \newcommand{\mthoarg}
375 {\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] =  $\mathtt{Name}_{sub}^{sup}Ext1[Par]Ext2$


376 \newcommand{\mthpar}
377 {\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] =  $\mathtt{Name}_{sub}^{sup}[Par]$


378 \newcommand{\mthopar}
379 {\newmthoparsty{\mthsty}}

\mthsty ... to do!
380 \newcommand{\mthsty}
381 {}

382 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\cmdmth ... to do!


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


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

\cmdmtharg ... to do!


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


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

\cmdmthoarg ... to do!


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


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

\cmdmthpar ... to do!

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    • \cmdmthpar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
      \mthparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = NamesubExt1[Par]Ext2
389 \newcommand{\cmdmthpar}[1]
390   {\csdef{mthpar#1}{\newmthparsty{mthsty#1}}}

\cmdmthopar ... to do!
    • \cmdmthopar{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
      \mthoparNewCmd{Name}[sub][sup][Par] = Namesub[Par]
391 \newcommand{\cmdmthopar}[1]
392   {\csdef{mthopar#1}{\newmthoparsty{mthsty#1}}}

\cmdmthall ... to do!
    • \cmdmthall{NewCmd}; \newcommand{mthstyNewCmd}{\mathtt};
      \mthNewCmd{Name}[sub][sup][Ext] = NamesubExt
      \mthargNewCmd{Name}[sub][sup][Ext1]{Arg}[Ext2] = NamesubExt1(Arg)Ext2
      \mthoargNewCmd{Name}[sub][sup][Arg] = Namesub(Arg)
      \mthparNewCmd{Name}[sub][sup][Ext1]{Par}[Ext2] = NamesubExt1[Par]Ext2
      \mthoparNewCmd{Name}[sub][sup][Par] = Namesub[Par]
393 \newcommand{\cmdmthall}[1]
394   {\cmdmth{#1}\cmdmtharg{#1}\cmdmthoarg{#1}\cmdmthpar{#1}\cmdmthopar{#1}}

395 %*****%

\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]
396 \newcommandx{\usrmth}[4][4=]
397   {\csdef{#1#2}{\csname mth#3\endcsname{\defval{#4}{#1}}}}

398 %*****%

\usrmthlatlow ... to do!
399 \newcommandx{\usrmthlatlow}[4][4=]
400   {\usrmth{#1}{#2}{#3}[#4]\seqoflatlow{#1#2}{mth#3}}

\usrmthlatupp ... to do!
401 \newcommandx{\usrmthlatupp}[4][4=]
402   {\usrmth{#1}{#2}{#3}[#4]\seqoflatupp{#1#2}{mth#3}}

\usrmthlatlet ... to do!
403 \newcommandx{\usrmthlatlet}[4][4=]
404   {\usrmth{#1}{#2}{#3}[#4]\seqoflatlet{#1#2}{mth#3}}

\usrmthgrklow ... to do!
405 \newcommandx{\usrmthgrklow}[4][4=]
406   {\usrmth{#1}{#2}{#3}[#4]\seqofgrklow{#1#2}{mth#3}}

\usrmthgrkupp ... to do!
407 \newcommandx{\usrmthgrkupp}[4][4=]
408   {\usrmth{#1}{#2}{#3}[#4]\seqofgrkupp{#1#2}{mth#3}}

\usrmthgrklet ... to do!
409 \newcommandx{\usrmthgrklet}[4][4=]
410   {\usrmth{#1}{#2}{#3}[#4]\seqofgrklet{#1#2}{mth#3}}

\usrmthlow ... to do!
411 \newcommandx{\usrmthlow}[4][4=]
412   {\usrmth{#1}{#2}{#3}[#4]\seqoflow{#1#2}{mth#3}}

```

```

\usrmthupp ... to do!
413 \newcommandx{\usrmthupp}[4][4=]
414   {\usrmth{#1}{#2}{#3}[#4]\seqofupp{#1#2}{mth#3}}

\usrmthlet ... to do!
415 \newcommandx{\usrmthlet}[4][4=]
416   {\usrmth{#1}{#2}{#3}[#4]\seqoflet{#1#2}{mth#3}}

417 %%*****%
418 %%*****%
419 %%** Text Macro Generators *****%
420 %%*****%
421 \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] =  $Name_{sub}^{sup}Ext1[Par]Ext2$ 
422 %% Style for Definitions
423 \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] =  $newName_{sub}^{sub}ext$ 
424 \newcommandx{\cmdtxtdef}[2][2=]
425   {\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] =  $newName_{sub}^{sub}ext1(arg)ext2$ 
426 \newcommandx{\cmdtxtargdef}[2][2=]
427   {\usrtxt{#1}{}\{argdef\}[#2]}

\cmdtxtoargdef ... to do!
    • \cmdtxtoargdef{cmdName};
      \cmdName[sub][sub][arg] =  $cmdName_{sub}^{sub}(arg)$ 
    • \cmdtxtoargdef{cmdName}[newName];
      \cmdName[sub][sub][arg] =  $newName_{sub}^{sub}(arg)$ 
428 \newcommandx{\cmdtxtoargdef}[2][2=]
429   {\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] =  $newName_{sub}^{sub}ext1[par]ext2$ 
430 \newcommandx{\cmdtxtpardef}[2][2=]
431   {\usrtxt{#1}{}\{pardef\}[#2]}

\cmdtxtopardef ... to do!
    • \cmdtxtopardef{cmdName};
      \cmdName[sub][sub][par] =  $cmdName_{sub}^{sub}[par]$ 
    • \cmdtxtopardef{cmdName}[newName];
      \cmdName[sub][sub][par] =  $newName_{sub}^{sub}[par]$ 

```

```

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

\txtabr, ... ... to do!
  • \txtabr{Name}[sub][sup][Ext] =  $Name_{\text{sub}}^{\text{sup}} \text{Ext}$ 
  • \txtargabr{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $Name_{\text{sub}}^{\text{sup}} \text{Ext1}(\text{Arg}) \text{Ext2}$ 
  • \txtparabr{Name}[sub][sup][Ext1]{Par}[Ext2] =  $Name_{\text{sub}}^{\text{sup}} \text{Ext1}[\text{Par}] \text{Ext2}$ 

434 %% Style for Abbreviations
435 \cmdtxtall{abr}\newcommand{\txtstyabr}{\em}

\cmdtxtabr ... to do!
  • \cmdtxtabr{cmdName};
    \cmdName[sub][sub][ext] =  $cmdName_{\text{sub}}^{\text{sub}} \text{ext}$ 
  • \cmdtxtabr{cmdName}[newName];
    \cmdName[sub][sub][ext] =  $newName_{\text{sub}}^{\text{sub}} \text{ext}$ 

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

\cmdtxtargabr ... to do!
  • \cmdtxtargabr{cmdName};
    \cmdName[sub][sub][ext1]{arg}[ext2] =  $cmdName_{\text{sub}}^{\text{sub}} \text{ext1}(\text{arg}) \text{ext2}$ 
  • \cmdtxtargabr{cmdName}[newName];
    \cmdName[sub][sub][ext1]{arg}[ext2] =  $newName_{\text{sub}}^{\text{sub}} \text{ext1}(\text{arg}) \text{ext2}$ 

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

\cmdtxtoargabr ... to do!
  • \cmdtxtoargabr{cmdName};
    \cmdName[sub][sub][arg] =  $cmdName_{\text{sub}}^{\text{sub}}(\text{arg})$ 
  • \cmdtxtoargabr{cmdName}[newName];
    \cmdName[sub][sub][arg] =  $newName_{\text{sub}}^{\text{sub}}(\text{arg})$ 

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

\cmdtxtparabr ... to do!
  • \cmdtxtparabr{cmdName};
    \cmdName[sub][sub][ext1]{par}[ext2] =  $cmdName_{\text{sub}}^{\text{sub}} \text{ext1}[\text{par}] \text{ext2}$ 
  • \cmdtxtparabr{cmdName}[newName];
    \cmdName[sub][sub][ext1]{par}[ext2] =  $newName_{\text{sub}}^{\text{sub}} \text{ext1}[\text{par}] \text{ext2}$ 

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

\cmdtxtoparabr ... to do!
  • \cmdtxtoparabr{cmdName};
    \cmdName[sub][sub][par] =  $cmdName_{\text{sub}}^{\text{sub}}[\text{par}]$ 
  • \cmdtxtoparabr{cmdName}[newName];
    \cmdName[sub][sub][par] =  $newName_{\text{sub}}^{\text{sub}}[\text{par}]$ 

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

446 %%*****

\txtname, ... ... to do!
  • \txtname{Name}[sub][sup][Ext] =  $NAME_{\text{SUB}}^{\text{SUP}} \text{EXT}$ 
  • \txtargname{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $NAME_{\text{SUB}}^{\text{SUP}} \text{EXT1}(\text{ARG}) \text{EXT2}$ 
  • \txtparname{Name}[sub][sup][Ext1]{Par}[Ext2] =  $NAME_{\text{SUB}}^{\text{SUP}} \text{EXT1}[\text{PAR}] \text{EXT2}$ 

```

```

447 %% Style for Names
448 \cmdtxtall{name}\newcommand{\txtstytname}{\normalfont\mdseries\scshape\sffamily}

```

```
\cmdtxtname ... to do!
```

- \cmdtxtname{cmdName};
 \cmdName[sub][sub][ext] = CMDNAME_{SUB}EXT
- \cmdtxtname{cmdName}[newName];
 \cmdName[sub][sub][ext] = NEWNAME_{SUB}EXT

```

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

```

```
\cmdtxtargname ... to do!
```

- \cmdtxtargname{cmdName};
 \cmdName[sub][sub][ext1]{arg}[ext2] = CMDNAME_{SUB}EXT1(ARG)EXT2
- \cmdtxtargname{cmdName}[newName];
 \cmdName[sub][sub][ext1]{arg}[ext2] = NEWNAME_{SUB}EXT1(ARG)EXT2

```

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

```

```
\cmdtxtoargname ... to do!
```

- \cmdtxtoargname{cmdName};
 \cmdName[sub][sub][arg] = CMDNAME_{SUB}(ARG)
- \cmdtxtoargname{cmdName}[newName];
 \cmdName[sub][sub][arg] = NEWNAME_{SUB}(ARG)

```

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

```

```
\cmdtxtparname ... to do!
```

- \cmdtxtparname{cmdName};
 \cmdName[sub][sub][ext1]{par}[ext2] = CMDNAME_{SUB}EXT1[PAR]EXT2
- \cmdtxtparname{cmdName}[newName];
 \cmdName[sub][sub][ext1]{par}[ext2] = NEWNAME_{SUB}EXT1[PAR]EXT2

```

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

```

```
\cmdtxtoparname ... to do!
```

- \cmdtxtoparname{cmdName};
 \cmdName[sub][sub][par] = CMDNAME_{SUB}[PAR]
- \cmdtxtoparname{cmdName}[newName];
 \cmdName[sub][sub][par] = NEWNAME_{SUB}[PAR]

```

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

```

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

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

```

459 %% Style for Complexities
460 \cmdtxtall{com}\newcommand{\txtstytcom}{\normalfont\mdseries\scshape\rmfamily}

```

```
\cmdtxtcom ... to do!
```

- \cmdtxtcom{cmdName};
 \cmdName[sub][sub][ext] = CMDNAME_{SUB}EXT
- \cmdtxtcom{cmdName}[newName];
 \cmdName[sub][sub][ext] = NEWNAME_{SUB}EXT

```

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

```



```

\cmdtxtargcom ... to do!
    • \cmdtxtargcom{cmdName};
      \cmdName[sub][sub][ext1]{arg}[ext2] = CMDNAMESUBSUBEXT1(ARG)EXT2
    • \cmdtxtargcom{cmdName}[newName];
      \cmdName[sub][sub][ext1]{arg}[ext2] = NEWNAMESUBSUBEXT1(ARG)EXT2
463 \newcommandx{\cmdtxtargcom}[2][2=]
464   {\usrtxt{#1}{-}{argcom}[#2]}

\cmdtxtoargcom ... to do!
    • \cmdtxtoargcom{cmdName};
      \cmdName[sub][sub][arg] = CMDNAMESUBSUB(ARG)
    • \cmdtxtoargcom{cmdName}[newName];
      \cmdName[sub][sub][arg] = NEWNAMESUBSUB(ARG)
465 \newcommandx{\cmdtxtoargcom}[2][2=]
466   {\usrtxt{#1}{-}{oargcom}[#2]}

\cmdtxtparcom ... to do!
    • \cmdtxtparcom{cmdName};
      \cmdName[sub][sub][ext1]{par}[ext2] = CMDNAMESUBSUBEXT1[PAR]EXT2
    • \cmdtxtparcom{cmdName}[newName];
      \cmdName[sub][sub][ext1]{par}[ext2] = NEWNAMESUBSUBEXT1[PAR]EXT2
467 \newcommandx{\cmdtxtparcom}[2][2=]
468   {\usrtxt{#1}{-}{parcom}[#2]}

\cmdtxtoparcom ... to do!
    • \cmdtxtoparcom{cmdName};
      \cmdName[sub][sub][par] = CMDNAMESUBSUB[PAR]
    • \cmdtxtoparcom{cmdName}[newName];
      \cmdName[sub][sub][par] = NEWNAMESUBSUB[PAR]
469 \newcommandx{\cmdtxtoparcom}[2][2=]
470   {\usrtxt{#1}{-}{oparcom}[#2]}

471 \fi
472 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
473 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
474 %** Math Macro Generators %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
475 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
476 \ifmthgen@

\mthname, ... ... to do!
    • \mthname{NAME}[sub][sup][Ext] =  $\mathcal{NAME}_{sub}^{sup}Ext$ 
    • \mthargname{NAME}[sub][sup][Ext1]{Arg}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1(Arg)Ext2$ 
    • \mthparname{NAME}[sub][sup][Ext1]{Par}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1(Par)Ext2$ 
477 % Style for Names
478 \cmdmthall{name}\newcommand{\mthstname}{\mathcal}

\AName, ... ... 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
479 \seqoflatupp{Name}{mthname}

\cmdmthname ... to do!
    • \cmdmthname{CMDNAME};
      \CMDNAMEName[sub][sub][ext] =  $CMDNAME_{sub}^{sub}ext$ 
    • \cmdmthname{cmdName}[NEWNAME];
      \cmdNameName[sub][sub][ext] =  $NEWNAME_{sub}^{sub}ext$ 
480 \newcommandx{\cmdmthname}[2][2=]
481   {\usrmth{#1}{Name}{name}[#2]}

```

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\cmdmthargname ... to do!
    • \cmdmthargname{CMDNAME};
      \CMDNAMEName[sub][sub][ext1]{arg}[ext2] =  $CMDNAME_{sub}^{sub}ext1(arg)ext2$ 
    • \cmdmthargname{cmdName}{NEWNAME};
      \cmdNameName[sub][sub][ext1]{arg}[ext2] =  $NEWNAME_{sub}^{sub}ext1(arg)ext2$ 
482 \newcommandx{\cmdmthargname}[2][2=]
483   {\usrmth{#1}{Name}{argname}[#2]}

\cmdmthoargname ... to do!
    • \cmdmthoargname{CMDNAME};
      \CMDNAMEName[sub][sub][arg] =  $CMDNAME_{sub}^{sub}(arg)$ 
    • \cmdmthoargname{cmdName}{NEWNAME};
      \cmdNameName[sub][sub][arg] =  $NEWNAME_{sub}^{sub}(arg)$ 
484 \newcommandx{\cmdmthoargname}[2][2=]
485   {\usrmth{#1}{Name}{oargname}[#2]}

\cmdmthparname ... to do!
    • \cmdmthparname{CMDNAME};
      \CMDNAMEName[sub][sub][ext1]{par}[ext2] =  $CMDNAME_{sub}^{sub}ext1[par]ext2$ 
    • \cmdmthparname{cmdName}{NEWNAME};
      \cmdNameName[sub][sub][ext1]{par}[ext2] =  $NEWNAME_{sub}^{sub}ext1[par]ext2$ 
486 \newcommandx{\cmdmthparname}[2][2=]
487   {\usrmth{#1}{Name}{parname}[#2]}

\cmdmthoparname ... to do!
    • \cmdmthoparname{CMDNAME};
      \CMDNAMEName[sub][sub][par] =  $CMDNAME_{sub}^{sub}[par]$ 
    • \cmdmthoparname{cmdName}{NEWNAME};
      \cmdNameName[sub][sub][par] =  $NEWNAME_{sub}^{sub}[par]$ 
488 \newcommandx{\cmdmthoparname}[2][2=]
489   {\usrmth{#1}{Name}{oparname}[#2]}

\mthfam, ... ... to do!
    • \mthfam{NAME}[sub][sup][Ext] =  $\mathcal{NAME}_{sub}^{sup}Ext$ 
    • \mthargfam{NAME}[sub][sup][Ext1]{Arg}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1(Arg)Ext2$ 
    • \mthparfam{NAME}[sub][sup][Ext1]{Par}[Ext2] =  $\mathcal{NAME}_{sub}^{sup}Ext1[Par]Ext2$ 
490 %% Style for Families
491 \cmdmthall{fam}\newcommand{\mthstyfam}{\mathscr}

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

\cmdmthfam ... to do!
    • \cmdmthfam{CMDNAME};
      \CMDNAMEFam[sub][sub][ext] =  $CMDNAME_{sub}^{sub}ext$ 
    • \cmdmthfam{cmdName}{NEWNAME};
      \cmdNameFam[sub][sub][ext] =  $NEWNAME_{sub}^{sub}ext$ 
493 \newcommandx{\cmdmthfam}[2][2=]
494   {\usrmth{#1}{Fam}{fam}[#2]}

\cmdmthargfam ... to do!
    • \cmdmthargfam{CMDNAME};
      \CMDNAMEFam[sub][sub][ext1]{arg}[ext2] =  $CMDNAME_{sub}^{sub}ext1(arg)ext2$ 
    • \cmdmthargfam{cmdName}{NEWNAME};
      \cmdNameFam[sub][sub][ext1]{arg}[ext2] =  $NEWNAME_{sub}^{sub}ext1(arg)ext2$ 

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

\cmdmthoargfam ... to do!
  • \cmdmthoargfam{CMDNAME};
    \CMDNAMEFam[sub][sub][arg] =  $\mathcal{CMDNAME}^{\text{sub}}(arg)$ 
  • \cmdmthoargfam{cmdFam}{NEWNAME};
    \cmdFamFam[sub][sub][arg] =  $\mathcal{NEWNAME}^{\text{sub}}(arg)$ 
497 \newcommandx{\cmdmthoargfam}[2][2=]
498   {\usrmth{#1}{Fam}{oargfam}{#2}}

\cmdmthparfam ... to do!
  • \cmdmthparfam{CMDNAME};
    \CMDNAMEFam[sub][sub][ext1]{par}[ext2] =  $\mathcal{CMDNAME}^{\text{sub}}_{\text{ext1}}[par]_{\text{ext2}}$ 
  • \cmdmthparfam{cmdName}{NEWNAME};
    \cmdNameFam[sub][sub][ext1]{par}[ext2] =  $\mathcal{NEWNAME}^{\text{sub}}_{\text{ext1}}[par]_{\text{ext2}}$ 
499 \newcommandx{\cmdmthparfam}[2][2=]
500   {\usrmth{#1}{Fam}{parfam}{#2}}

\cmdmthoparfam ... to do!
  • \cmdmthoparfam{CMDNAME};
    \CMDNAMEFam[sub][sub][par] =  $\mathcal{CMDNAME}^{\text{sub}}[par]$ 
  • \cmdmthoparfam{cmdFam}{NEWNAME};
    \cmdFamFam[sub][sub][par] =  $\mathcal{NEWNAME}^{\text{sub}}[par]$ 
501 \newcommandx{\cmdmthoparfam}[2][2=]
502   {\usrmth{#1}{Fam}{oparfam}{#2}}

\mthcls, ... ... to do!
  • \mthcls{NAME}[sub][sup][Ext] =  $\mathcal{NAME}^{\text{sup}}_{\text{sub}}Ext$ 
  • \mthargcls{NAME}[sub][sup][Ext1]{Arg}[Ext2] =  $\mathcal{NAME}^{\text{sup}}_{\text{sub}}Ext1(Arg)Ext2$ 
  • \mthparcls{NAME}[sub][sup][Ext1]{Par}[Ext2] =  $\mathcal{NAME}^{\text{sup}}_{\text{sub}}Ext1[Par]Ext2$ 
503 %% Style for Classes
504 \cmdmthall{cls}\newcommand{\mthstcls}{\matheus}

\ACls, ... ... 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
505 \seqoflatupp{Cls}{mthcls}

\cmdmthcls ... to do!
  • \cmdmthcls{CMDNAME};
    \CMDNAMECls[sub][sub][ext] =  $\mathcal{CMDNAME}^{\text{sub}}_{\text{ext}}$ 
  • \cmdmthcls{cmdName}{NEWNAME};
    \cmdNameCls[sub][sub][ext] =  $\mathcal{NEWNAME}^{\text{sub}}_{\text{ext}}$ 
506 \newcommandx{\cmdmthcls}[2][2=]
507   {\usrmth{#1}{Cls}{cls}{#2}}

\cmdmthargcls ... to do!
  • \cmdmthargcls{CMDNAME};
    \CMDNAMECls[sub][sub][ext1]{arg}[ext2] =  $\mathcal{CMDNAME}^{\text{sub}}_{\text{ext1}}(arg)_{\text{ext2}}$ 
  • \cmdmthargcls{cmdName}{NEWNAME};
    \cmdNameCls[sub][sub][ext1]{arg}[ext2] =  $\mathcal{NEWNAME}^{\text{sub}}_{\text{ext1}}(arg)_{\text{ext2}}$ 
508 \newcommandx{\cmdmthargcls}[2][2=]
509   {\usrmth{#1}{Cls}{argcls}{#2}}

\cmdmthoargcls ... to do!
  • \cmdmthoargcls{CMDNAME};
    \CMDNAMECls[sub][sub][arg] =  $\mathcal{CMDNAME}^{\text{sub}}(arg)$ 

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    • \cmdmthoargcls{cmdCls}[NEWNAME];
      \cmdClsCls[sub][sub][arg] =  $\mathcal{NEWNAME}_{sub}^{sub}(arg)$ 
510 \newcommandx{\cmdmthoargcls}[2][2=]
511   {\usrmth{#1}{Cls}{oargcls}{#2}}

\cmdmthparcls ... to do!
    • \cmdmthparcls{CMDNAME};
      \CMDNAMECls[sub][sub][ext1]{par}[ext2] =  $\mathcal{MDNAME}_{sub}^{sub}ext1[par]ext2$ 
    • \cmdmthparcls{cmdName}[NEWNAME];
      \cmdNameCls[sub][sub][ext1]{par}[ext2] =  $\mathcal{NEWNAME}_{sub}^{sub}ext1[par]ext2$ 
512 \newcommandx{\cmdmthparcls}[2][2=]
513   {\usrmth{#1}{Cls}{parcls}{#2}}

\cmdmthoparcls ... to do!
    • \cmdmthoparcls{CMDNAME};
      \CMDNAMECls[sub][sub][par] =  $\mathcal{MDNAME}_{sub}^{sub}[par]$ 
    • \cmdmthoparcls{cmdCls}[NEWNAME];
      \cmdClsCls[sub][sub][par] =  $\mathcal{NEWNAME}_{sub}^{sub}[par]$ 
514 \newcommandx{\cmdmthoparcls}[2][2=]
515   {\usrmth{#1}{Cls}{oparcls}{#2}}

\mthsig, ... ... to do!
    • \mthsig{Name}[sub][sup][Ext] =  $\mathcal{ame}_{sub}^{sup}Ext$ 
    • \mthargsig{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $\mathcal{ame}_{sub}^{sup}Ext1(Arg)Ext2$ 
    • \mthparsig{Name}[sub][sup][Ext1]{Par}[Ext2] =  $\mathcal{ame}_{sub}^{sup}Ext1[Par]Ext2$ 
516 %% Style for Signatures
517 \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
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, ζ, η, θ, ϑ, ι, κ, λ, μ, ν, ξ, ο, π, ϖ, ρ, ϑ, σ, ς, τ, υ, φ, ϕ, χ, ψ, ω
518 \seqoflatlet{Sig}{mthsig}\seqofgrklow{Sig}{mthsig}

\cmdmthsig ... to do!
    • \cmdmthsig{cmdName};
      \cmdNameSig[sub][sub][ext] =  $cmd\mathcal{ame}_{sub}^{sub}ext$ 
    • \cmdmthsig{cmdName}[NewName];
      \cmdNameSig[sub][sub][ext] =  $\mathcal{ew}\mathcal{ame}_{sub}^{sub}ext$ 
519 \newcommandx{\cmdmthsig}[2][2=]
520   {\usrmth{#1}{Sig}{sig}{#2}}

\cmdmthargsig ... to do!
    • \cmdmthargsig{cmdName};
      \cmdNameSig[sub][sub][ext1]{arg}[ext2] =  $cmd\mathcal{ame}_{sub}^{sub}ext1(arg)ext2$ 
    • \cmdmthargsig{cmdName}[NewName];
      \cmdNameSig[sub][sub][ext1]{arg}[ext2] =  $\mathcal{ew}\mathcal{ame}_{sub}^{sub}ext1(arg)ext2$ 
521 \newcommandx{\cmdmthargsig}[2][2=]
522   {\usrmth{#1}{Sig}{argsig}{#2}}

\cmdmthoargsig ... to do!
    • \cmdmthoargsig{cmdName};
      \cmdNameSig[sub][sub][arg] =  $cmd\mathcal{ame}_{sub}^{sub}(arg)$ 
    • \cmdmthoargsig{cmdSig}[NewName];
      \cmdSigSig[sub][sub][arg] =  $\mathcal{ew}\mathcal{ame}_{sub}^{sub}(arg)$ 
523 \newcommandx{\cmdmthoargsig}[2][2=]
524   {\usrmth{#1}{Sig}{oargsig}{#2}}

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\cmdmthparsig ... to do!
    • \cmdmthparsig{cmdName};
      \cmdNameSig[sub][sub][ext1]{par}[ext2] = cmd\namesubext1[par]ext2
    • \cmdmthparsig{cmdName}[NewName];
      \cmdNameSig[sub][sub][ext1]{par}[ext2] = \new\namesubext1[par]ext2
525 \newcommandx{\cmdmthparsig}[2][2=]
526   {\usrmth{#1}{Sig}{parsig}{#2}}

\cmdmthoparsig ... to do!
    • \cmdmthoparsig{cmdName};
      \cmdNameSig[sub][sub][par] = cmd\namesub[par]
    • \cmdmthoparsig{cmdSig}[NewName];
      \cmdSigSig[sub][sub][par] = \new\namesub[par]
527 \newcommandx{\cmdmthoparsig}[2][2=]
528   {\usrmth{#1}{Sig}{oparsig}{#2}}

\mthstr, ... ... to do!
    • \mthstr{Name}[sub][sup][Ext] = \namesupsubExt
    • \mthargstr{Name}[sub][sup][Ext1]{Arg}[Ext2] = \namesupsubExt1(Arg)Ext2
    • \mthparstr{Name}[sub][sup][Ext1]{Par}[Ext2] = \namesupsubExt1[Par]Ext2
529 %% Style for Structures
530 \cmdmthall{str}\newcommand{\mthstystyr}{\mathfrak}

\astr, ... ... 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, ζ, η, θ, ι, κ, λ, μ, ν, ξ, ο, π, ρ, ς, σ, ϓ, τ, υ, φ, ϕ, χ, ψ, ω
531 \seqoflatlet{Str}{mthstr}\seqofgrklow{Str}{mthstr}

\cmdmthstr ... to do!
    • \cmdmthstr{cmdName};
      \cmdNameStr[sub][sub][ext] = cmd\namesubext
    • \cmdmthstr{cmdName}[NewName];
      \cmdNameStr[sub][sub][ext] = \new\namesubext
532 \newcommandx{\cmdmthstr}[2][2=]
533   {\usrmth{#1}{Str}{str}{#2}}

\cmdmthargstr ... to do!
    • \cmdmthargstr{cmdName};
      \cmdNameStr[sub][sub][ext1]{arg}[ext2] = cmd\namesubext1(arg)ext2
    • \cmdmthargstr{cmdName}[NewName];
      \cmdNameStr[sub][sub][ext1]{arg}[ext2] = \new\namesubext1(arg)ext2
534 \newcommandx{\cmdmthargstr}[2][2=]
535   {\usrmth{#1}{Str}{argstr}{#2}}

\cmdmthoargstr ... to do!
    • \cmdmthoargstr{cmdName};
      \cmdNameStr[sub][sub][arg] = cmd\namesub(arg)
    • \cmdmthoargstr{cmdStr}[NewName];
      \cmdStrStr[sub][sub][arg] = \new\namesub(arg)
536 \newcommandx{\cmdmthoargstr}[2][2=]
537   {\usrmth{#1}{Str}{oargstr}{#2}}

\cmdmthparstr ... to do!
    • \cmdmthparstr{cmdName};
      \cmdNameStr[sub][sub][ext1]{par}[ext2] = cmd\namesubext1[par]ext2

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    • \cmdmthparstr{cmdName}[NewName];
      \cmdNameStr[sub][sub][ext1]{par}[ext2] = \newNamesubsubext1[par]ext2
538 \newcommandx{\cmdmthparstr}[2][2=]
539   {\usrmth{#1}{Str}{parstr}[#2]}

\cmdmthoparstr ... to do!
    • \cmdmthoparstr{cmdName};
      \cmdNameStr[sub][sub][par] = cmdNamesubsub[par]
    • \cmdmthoparstr{cmdStr}[NewName];
      \cmdStrStr[sub][sub][par] = \newNamesubsub[par]
540 \newcommandx{\cmdmthoparstr}[2][2=]
541   {\usrmth{#1}{Str}{oparstr}[#2]}

\mthset, ... ... to do!
    • \mthset{Name}[sub][sup][Ext] = NamesupsubExt
    • \mthargset{Name}[sub][sup][Ext1]{Arg}[Ext2] = NamesupsubExt1(Arg)Ext2
    • \mthparset{Name}[sub][sup][Ext1]{Par}[Ext2] = NamesupsubExt1[Par]Ext2
542 %% Style for Sets
543 \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
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$ 
A, B,  $\Gamma, \Delta, E, Z, H, \Theta, \varnothing, I, K, \Lambda, M, N, \Xi, O, \Pi, \varPi, P, \Sigma, \varSigma, T, \Upsilon, \Phi, \varPhi, X, \Psi, \Omega$ 
544 \seqoflet{Set}{mthset}

\cmdmthset ... to do!
    • \cmdmthset{cmdName};
      \cmdNameSet[sub][sub][ext] = cmdNamesubsubext
    • \cmdmthset{cmdName}[NewName];
      \cmdNameSet[sub][sub][ext] = NewNamesubsubext
545 \newcommandx{\cmdmthset}[2][2=]
546   {\usrmth{#1}{Set}{set}[#2]}

\cmdmthargset ... to do!
    • \cmdmthargset{cmdName};
      \cmdNameSet[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2
    • \cmdmthargset{cmdName}[NewName];
      \cmdNameSet[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2
547 \newcommandx{\cmdmthargset}[2][2=]
548   {\usrmth{#1}{Set}{argset}[#2]}

\cmdmthoargset ... to do!
    • \cmdmthoargset{cmdName};
      \cmdNameSet[sub][sub][arg] = cmdNamesubsub(arg)
    • \cmdmthoargset{cmdSet}[NewName];
      \cmdSetSet[sub][sub][arg] = NewNamesubsub(arg)
549 \newcommandx{\cmdmthoargset}[2][2=]
550   {\usrmth{#1}{Set}{oargset}[#2]}

\cmdmthparset ... to do!
    • \cmdmthparset{cmdName};
      \cmdNameSet[sub][sub][ext1]{par}[ext2] = cmdNamesubsubext1[par]ext2
    • \cmdmthparset{cmdName}[NewName];
      \cmdNameSet[sub][sub][ext1]{par}[ext2] = NewNamesubsubext1[par]ext2
551 \newcommandx{\cmdmthparset}[2][2=]
552   {\usrmth{#1}{Set}{parset}[#2]}

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\cmdmthoparset ... to do!
    • \cmdmthoparset{cmdName};
      \cmdNameSet[sub][sub][par] = cmdNamesubsub[par]
    • \cmdmthoparset{cmdSet}[NewName];
      \cmdSetSet[sub][sub][par] = NewNamesubsub[par]
553 \newcommandx{\cmdmthoparset}[2][2=]
554   {\usrmth{#1}{Set}{oparset}[#2]}

\cmdmthsetext ... to do!
555 \newcommandx{\cmdmthsetext}[3][2=, 3=]
556   {\cmdmthset{#1}[#2]\caselower[q]{#1}%
557    \usrmthlet{\thestring}{Sym}{sym}
558    [\defval{#3}{\defval{\empchk{#2}{\lowercase{#2}}}{\thestring}}}%
559    \usrmthlet{\thestring}{Elm}{elm}
560    [\defval{#3}{\defval{\empchk{#2}{\lowercase{#2}}}{\thestring}}]}

\mthrel, ... ... to do!
    • \mthrel{Name}[sub][sup][Ext] = NamesupsubExt
    • \mthargrel{Name}[sub][sup][Ext1]{Arg}[Ext2] = NamesupsubExt1(Arg)Ext2
    • \mthparrel{Name}[sub][sup][Ext1]{Par}[Ext2] = NamesupsubExt1[Par]Ext2
561 %% Style for Relations
562 \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, ζ, η, θ, ϑ, ι, κ, λ, μ, ν, ξ, ο, π, ϖ, ρ, ϑ, 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, Τ, Φ, Φ, X, Ψ, Ω
563 \seqoflet{Rel}{mthrel}

\cmdmthrel ... to do!
    • \cmdmthrel{cmdName};
      \cmdNameRel[sub][sub][ext] = cmdNamesubsubext
    • \cmdmthrel{cmdName}[NewName];
      \cmdNameRel[sub][sub][ext] = NewNamesubsubext
564 \newcommandx{\cmdmthrel}[2][2=]
565   {\usrmth{#1}{Rel}{rel}[#2]}

\cmdmthargrel ... to do!
    • \cmdmthargrel{cmdName};
      \cmdNameRel[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2
    • \cmdmthargrel{cmdName}[NewName];
      \cmdNameRel[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2
566 \newcommandx{\cmdmthargrel}[2][2=]
567   {\usrmth{#1}{Rel}{argrel}[#2]}

\cmdmthoargrel ... to do!
    • \cmdmthoargrel{cmdName};
      \cmdNameRel[sub][sub][arg] = cmdNamesubsub(arg)
    • \cmdmthoargrel{cmdRel}[NewName];
      \cmdRelRel[sub][sub][arg] = NewNamesubsub(arg)
568 \newcommandx{\cmdmthoargrel}[2][2=]
569   {\usrmth{#1}{Rel}{oargrel}[#2]}

\cmdmthparrel ... to do!
    • \cmdmthparrel{cmdName};
      \cmdNameRel[sub][sub][ext1]{par}[ext2] = cmdNamesubsubext1[par]ext2

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    • \cmdmthparrel{cmdName}[NewName];
      \cmdNameRel[sub][sub][ext1]{par}[ext2] =  $NewName_{sub}^{sub}ext1[par]ext2$ 
570 \newcommandx{\cmdmthparrel}[2][2=]
571   {\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] =  $NewName_{sub}^{sub}[par]$ 
572 \newcommandx{\cmdmthoparrel}[2][2=]
573   {\usrmth{#1}{Rel}{oparrel}{#2}}

\mthfun, ... ... to do!
    • \mthfun{Name}[sub][sup][Ext] =  $Name_{sub}^{sup}Ext$ 
    • \mthargfun{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $Name_{sub}^{sup}Ext1(Arg)Ext2$ 
    • \mthparfun{Name}[sub][sup][Ext1]{Par}[Ext2] =  $Name_{sub}^{sup}Ext1[Par]Ext2$ 
574 %% Style for Functions
575 \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
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$ 
A, B,  $\Gamma, \Delta, E, Z, H, \Theta, \vartheta, I, K, \Lambda, M, N, \Xi, O, \Pi, \varPi, P, \Sigma, \varSigma, T, \Upsilon, \Phi, \varPhi, X, \Psi, \Omega$ 
576 \seqoflet{Fun}{mthfun}

\cmdmthfun ... to do!
    • \cmdmthfun{cmdName};
      \cmdNameFun[sub][sub][ext] =  $cmdName_{sub}^{sub}ext$ 
    • \cmdmthfun{cmdName}[NewName];
      \cmdNameFun[sub][sub][ext] =  $NewName_{sub}^{sub}ext$ 
577 \newcommandx{\cmdmthfun}[2][2=]
578   {\usrmth{#1}{Fun}{fun}{#2}}

\cmdmthargfun ... to do!
    • \cmdmthargfun{cmdName};
      \cmdNameFun[sub][sub][ext1]{arg}[ext2] =  $cmdName_{sub}^{sub}ext1(arg)ext2$ 
    • \cmdmthargfun{cmdName}[NewName];
      \cmdNameFun[sub][sub][ext1]{arg}[ext2] =  $NewName_{sub}^{sub}ext1(arg)ext2$ 
579 \newcommandx{\cmdmthargfun}[2][2=]
580   {\usrmth{#1}{Fun}{argfun}{#2}}

\cmdmthoargfun ... to do!
    • \cmdmthoargfun{cmdName};
      \cmdNameFun[sub][sub][arg] =  $cmdName_{sub}^{sub}(arg)$ 
    • \cmdmthoargfun{cmdFun}[NewName];
      \cmdFunFun[sub][sub][arg] =  $NewName_{sub}^{sub}(arg)$ 
581 \newcommandx{\cmdmthoargfun}[2][2=]
582   {\usrmth{#1}{Fun}{oargfun}{#2}}

\cmdmthparfun ... to do!
    • \cmdmthparfun{cmdName};
      \cmdNameFun[sub][sub][ext1]{par}[ext2] =  $cmdName_{sub}^{sub}ext1[par]ext2$ 
    • \cmdmthparfun{cmdName}[NewName];
      \cmdNameFun[sub][sub][ext1]{par}[ext2] =  $NewName_{sub}^{sub}ext1[par]ext2$ 
583 \newcommandx{\cmdmthparfun}[2][2=]
584   {\usrmth{#1}{Fun}{parfun}{#2}}

```



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\cmdmthoparfun ... to do!
    • \cmdmthoparfun{cmdName};
      \cmdNameFun[sub][sub][par] = cmdNamesubsub[par]
    • \cmdmthoparfun{cmdFun}[NewName];
      \cmdFunFun[sub][sub][par] = NewNamesubsub[par]
585 \newcommandx{\cmdmthoparfun}[2][2=]
586   {\usrmth{#1}{Fun}{oparfun}{#2}}

\mthsym, ... ... to do!
    • \mthsym{Name}[sub][sup][Ext] = NamesupsubExt
    • \mthargsym{Name}[sub][sup][Ext1]{Arg}[Ext2] = NamesupsubExt1(Arg)Ext2
    • \mthparsym{Name}[sub][sup][Ext1]{Par}[Ext2] = NamesupsubExt1[Par]Ext2
587 %% Style for Symbols
588 \cmdmthall{sym}\newcommand{\mthstysym}{\mathhtt}

\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
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$ 
A, B,  $\Gamma, \Delta, E, Z, H, \Theta, \Theta, I, K, K, \Lambda, M, N, \Xi, O, \Pi, \Pi, P, P, \Sigma, \Sigma, T, T, \Phi, \Phi, X, \Psi, \Omega$ 
589 \seqoflet{Sym}{mthsym}

\cmdmthsym ... to do!
    • \cmdmthsym{cmdName};
      \cmdNameSym[sub][sub][ext] = cmdNamesubsubext
    • \cmdmthsym{cmdName}[NewName];
      \cmdNameSym[sub][sub][ext] = NewNamesubsubext
590 \newcommandx{\cmdmthsym}[2][2=]
591   {\usrmth{#1}{Sym}{sym}{#2}}

\cmdmthargsym ... to do!
    • \cmdmthargsym{cmdName};
      \cmdNameSym[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2
    • \cmdmthargsym{cmdName}[NewName];
      \cmdNameSym[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2
592 \newcommandx{\cmdmthargsym}[2][2=]
593   {\usrmth{#1}{Sym}{argsym}{#2}}

\cmdmthoargsym ... to do!
    • \cmdmthoargsym{cmdName};
      \cmdNameSym[sub][sub][arg] = cmdNamesubsub(arg)
    • \cmdmthoargsym{cmdSym}[NewName];
      \cmdSymSym[sub][sub][arg] = NewNamesubsub(arg)
594 \newcommandx{\cmdmthoargsym}[2][2=]
595   {\usrmth{#1}{Sym}{oargsym}{#2}}

\cmdmthparsym ... to do!
    • \cmdmthparsym{cmdName};
      \cmdNameSym[sub][sub][ext1]{par}[ext2] = cmdNamesubsubext1[par]ext2
    • \cmdmthparsym{cmdName}[NewName];
      \cmdNameSym[sub][sub][ext1]{par}[ext2] = NewNamesubsubext1[par]ext2
596 \newcommandx{\cmdmthparsym}[2][2=]
597   {\usrmth{#1}{Sym}{parsym}{#2}}

\cmdmthoparsym ... to do!
    • \cmdmthoparsym{cmdName};
      \cmdNameSym[sub][sub][par] = cmdNamesubsub[par]

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    • \cmdmthoparsym{cmdSym}[NewName];
      \cmdSymSym[sub][sub][par] =  $NewName_{sub}^{sub}[par]$ 
598 \newcommandx{\cmdmthoparsym}[2][2=]
599   {\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] =  $Name_{sub}^{sup}Ext1[Par]Ext2$ 
600 %% Style for Elements
601 \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
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \varkappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$ 
A, B,  $\Gamma, \Delta, E, \mathbb{E}, Z, H, \Theta, \mathbb{O}, I, K, \mathbb{K}, \mathbb{A}, M, N, \Xi, O, \mathbb{H}, \mathbb{H}, P, \mathbb{P}, \Sigma, \mathbb{S}, T, \Upsilon, \Phi, \mathbb{P}, X, \Psi, \Omega$ 
602 \seqoflet{Elm}{mthelm}

\cmdmthelm ... to do!
    • \cmdmthelm{cmdName};
      \cmdNameElm[sub][sub][ext] =  $cmdName_{sub}^{sub}ext$ 
    • \cmdmthelm{cmdName}[NewName];
      \cmdNameElm[sub][sub][ext] =  $NewName_{sub}^{sub}ext$ 
603 \newcommandx{\cmdmthelm}[2][2=]
604   {\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] =  $NewName_{sub}^{sub}ext1(arg)ext2$ 
605 \newcommandx{\cmdmthargelm}[2][2=]
606   {\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] =  $NewName_{sub}^{sub}(arg)$ 
607 \newcommandx{\cmdmthoargelm}[2][2=]
608   {\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] =  $NewName_{sub}^{sub}ext1[par]ext2$ 
609 \newcommandx{\cmdmthparelm}[2][2=]
610   {\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] =  $NewName_{sub}^{sub}[par]$ 
611 \newcommandx{\cmdmthoparelm}[2][2=]
612   {\usrmth{#1}{Elm}{oparelm}[#2]}

```

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613 %%*****%

\cmdmthsymelm ... to do!

    • \cmdmthsymelm{cmdName};
      \cmdNameSym[sub][sub][ext] = cmdNamesubsubext
      \cmdNameElm[sub][sub][ext] = cmdNamesubsubext

    • \cmdmthsymelm{cmdName}[NewName];
      \cmdNameSym[sub][sub][ext] = NewNamesubsubext
      \cmdNameElm[sub][sub][ext] = NewNamesubsubext

614 \newcommandx{\cmdmthsymelm}[2][2=]
615   {\cmdmthsym{#1}[#2]}%
616   \cmdmthelm{#1}[#2]}

\cmdmthargsymelm ... to do!

    • \cmdmthargsymelm{cmdName};
      \cmdNameSym[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2
      \cmdNameElm[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2

    • \cmdmthargsymelm{cmdName}[NewName];
      \cmdNameSym[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2
      \cmdNameElm[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2

617 \newcommandx{\cmdmthargsymelm}[2][2=]
618   {\cmdmthargsym{#1}[#2]}%
619   \cmdmthargelm{#1}[#2]}

\cmdmthoargsymelm ... to do!

    • \cmdmthoargsymelm{cmdName};
      \cmdNameSym[sub][sub][arg] = cmdNamesubsub(arg)
      \cmdNameElm[sub][sub][arg] = cmdNamesubsub(arg)

    • \cmdmthoargsymelm{cmdName}[NewName];
      \cmdNameSym[sub][sub][arg] = NewNamesubsub(arg)
      \cmdNameElm[sub][sub][arg] = NewNamesubsub(arg)

620 \newcommandx{\cmdmthoargsymelm}[2][2=]
621   {\cmdmthoargsym{#1}[#2]}%
622   \cmdmthoargelm{#1}[#2]}

\cmdmthparsymelm ... to do!

    • \cmdmthparsymelm{cmdName};
      \cmdNameSym[sub][sub][ext1]{par}[ext2] = cmdNamesubsubext1[par]ext2
      \cmdNameElm[sub][sub][ext1]{par}[ext2] = cmdNamesubsubext1[par]ext2

    • \cmdmthparsymelm{cmdName}[NewName];
      \cmdNameSym[sub][sub][ext1]{par}[ext2] = NewNamesubsubext1[par]ext2
      \cmdNameElm[sub][sub][ext1]{par}[ext2] = NewNamesubsubext1[par]ext2

623 \newcommandx{\cmdmthparsymelm}[2][2=]
624   {\cmdmthparsym{#1}[#2]}%
625   \cmdmthparelm{#1}[#2]}

\cmdmthoparsymelm ... to do!

    • \cmdmthoparsymelm{cmdName};
      \cmdNameSym[sub][sub][par] = cmdNamesubsub[par]
      \cmdNameElm[sub][sub][par] = cmdNamesubsub[par]

    • \cmdmthoparsymelm{cmdName}[NewName];
      \cmdNameSym[sub][sub][par] = NewNamesubsub[par]
      \cmdNameElm[sub][sub][par] = NewNamesubsub[par]

626 \newcommandx{\cmdmthoparsymelm}[2][2=]
627   {\cmdmthoparsym{#1}[#2]}%
628   \cmdmthoparelm{#1}[#2]}

629 %%*****%

\mthlopr, ... ... to do!

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    • \mthlopr{\oplus}[sub][sup][Ext] =  $\oplus_{sub}^{sup} Ext$ 
630 %% Style for Sentences
631 \cmdmthlopr\newcommand{\mthstylopr}[1]{\textstyle\mathop{#1}}

\cmdmthlopr ... to do!
    • \cmdmthlopr{cmdName};
      \cmdNameOpr[sub][sub][ext] =  $cmdName_{sub}^{sub} ext$ 
    • \cmdmthlopr{cmdName}[\oplus];
      \cmdNameOpr[sub][sub][ext] =  $\oplus_{sub}^{sub} ext$ 
632 \newcommandx{\cmdmthlopr}[2][2=]
633 {\usrmth{#1}\{Opr\}\{lopr\}[#2]}

\mthlrel, ... ... to do!
    • \mthlrel{\preceq}[sub][sup][Ext] =  $\preceq_{sub}^{sup} Ext$ 
634 %% Style for Sentences
635 \cmdmthlrel\newcommand{\mthstylrel}{\mathrel}

\cmdmthlrel ... to do!
    • \cmdmthlrel{cmdName};
      \cmdNameRel[sub][sub][ext] =  $cmdName_{sub}^{sub} ext$ 
    • \cmdmthlrel{cmdName}[\preceq];
      \cmdNameRel[sub][sub][ext] =  $\preceq_{sub}^{sub} ext$ 
636 \newcommandx{\cmdmthlrel}[2][2=]
637 {\usrmth{#1}\{Rel\}\{lrel\}[#2]}

638 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\mthsnt, ... ... to do!
    • \mthsnt{Name}[sub][sup][Ext] =  $Name_{sub}^{sup} Ext$ 
    • \mthargsnt{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $Name_{sub}^{sup} Ext1(Arg)Ext2$ 
    • \mthparsnt{Name}[sub][sup][Ext1]{Par}[Ext2] =  $Name_{sub}^{sup} Ext1[Par]Ext2$ 
639 %% Style for Sentences
640 \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
 $\alpha, \beta, \gamma, \delta, \epsilon, \zeta, \eta, \theta, \vartheta, \iota, \kappa, \varkappa, \lambda, \mu, \nu, \xi, \omicron, \pi, \varpi, \rho, \varrho, \sigma, \varsigma, \tau, \upsilon, \phi, \varphi, \chi, \psi, \omega$ 
A, B,  $\Gamma, \Delta, E, Z, H, \Theta, \varnothing, I, K, \Lambda, M, N, \Xi, O, \Pi, \varPi, P, \Sigma, \varSigma, T, \Upsilon, \Phi, \varPhi, X, \Psi, \Omega$ 
641 \seqoflet{Snt}{mthsnt}

\cmdmthsnt ... to do!
    • \cmdmthsnt{cmdName};
      \cmdNameSnt[sub][sub][ext] =  $cmdName_{sub}^{sub} ext$ 
    • \cmdmthsnt{cmdName}[NewName];
      \cmdNameSnt[sub][sub][ext] =  $NewName_{sub}^{sub} ext$ 
642 \newcommandx{\cmdmthsnt}[2][2=]
643 {\usrmth{#1}\{Snt\}\{snt\}[#2]}

\cmdmthargsnt ... to do!
    • \cmdmthargsnt{cmdName};
      \cmdNameSnt[sub][sub][ext1]{arg}[ext2] =  $cmdName_{sub}^{sub} ext1(arg)ext2$ 
    • \cmdmthargsnt{cmdName}[NewName];
      \cmdNameSnt[sub][sub][ext1]{arg}[ext2] =  $NewName_{sub}^{sub} ext1(arg)ext2$ 
644 \newcommandx{\cmdmthargsnt}[2][2=]
645 {\usrmth{#1}\{Snt\}\{argsnt\}[#2]}

\cmdmthoargsnt ... to do!

```

- `\cmdmthoargsnt{cmdName};`
`\cmdNameSnt[sub][sub][arg] = cmdNamesubsub(arg)`
- `\cmdmthoargsnt{cmdName}[NewName];`
`\cmdNameSnt[sub][sub][arg] = NewNamesubsub(arg)`

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

`\cmdmthparsnt` ... to do!

- `\cmdmthparsnt{cmdName};`
`\cmdNameSnt[sub][sub][ext1]{par}[ext2] = cmdNamesubsubext1[par]ext2`
- `\cmdmthparsnt{cmdName}[NewName];`
`\cmdNameSnt[sub][sub][ext1]{par}[ext2] = NewNamesubsubext1[par]ext2`

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

`\cmdmthoparsnt` ... to do!

- `\cmdmthoparsnt{cmdName};`
`\cmdNameSnt[sub][sub][par] = cmdNamesubsub[par]`
- `\cmdmthoparsnt{cmdName}[NewName];`
`\cmdNameSnt[sub][sub][par] = NewNamesubsub[par]`

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

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

- `\mthfrm{Name}[sub][sup][Ext] = NamesupsubExt`
- `\mthargfrm{Name}[sub][sup][Ext1]{Arg}[Ext2] = NamesupsubExt1(Arg)Ext2`
- `\mthparfrm{Name}[sub][sup][Ext1]{Par}[Ext2] = NamesupsubExt1[Par]Ext2`

652 %% Style for Formulae
653 `\cmdmthall{frm}\newcommand{\mthstyfrm}{\mathit}`

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

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

654 `\seqoflet{Frm}{mthfrm}`

`\cmdmthfrm` ... to do!

- `\cmdmthfrm{cmdName};`
`\cmdNameFrm[sub][sub][ext] = cmdNamesubsubext`
- `\cmdmthfrm{cmdName}[NewName];`
`\cmdNameFrm[sub][sub][ext] = NewNamesubsubext`

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

`\cmdmthargfrm` ... to do!

- `\cmdmthargfrm{cmdName};`
`\cmdNameFrm[sub][sub][ext1]{arg}[ext2] = cmdNamesubsubext1(arg)ext2`
- `\cmdmthargfrm{cmdName}[NewName];`
`\cmdNameFrm[sub][sub][ext1]{arg}[ext2] = NewNamesubsubext1(arg)ext2`

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

`\cmdmthoargfrm` ... to do!

- `\cmdmthoargfrm{cmdName};`
`\cmdNameFrm[sub][sub][arg] = cmdNamesubsub(arg)`
- `\cmdmthoargfrm{cmdName}[NewName];`
`\cmdNameFrm[sub][sub][arg] = NewNamesubsub(arg)`

```

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

\cmdmthparfrm ... to do!
  • \cmdmthparfrm{cmdName};
    \cmdNameFrm[sub][sub][ext1]{par}[ext2] =  $\text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}[par]\text{ext2}$ 
  • \cmdmthparfrm{cmdName}[NewName];
    \cmdNameFrm[sub][sub][ext1]{par}[ext2] =  $\text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}[par]\text{ext2}$ 
661 \newcommandx{\cmdmthparfrm}[2][2=]
662   {\usrmth{#1}{Frm}{parfrm}[#2]}

\cmdmthoparfrm ... to do!
  • \cmdmthoparfrm{cmdName};
    \cmdNameFrm[sub][sub][par] =  $\text{cmdName}_{\text{sub}}^{\text{sub}}[par]$ 
  • \cmdmthoparfrm{cmdName}[NewName];
    \cmdNameFrm[sub][sub][par] =  $\text{NewName}_{\text{sub}}^{\text{sub}}[par]$ 
663 \newcommandx{\cmdmthoparfrm}[2][2=]
664   {\usrmth{#1}{Frm}{oparfrm}[#2]}

665 %%*****%

\mthmat, ... ... to do!
  • \mthmat{Name}[sub][sup][Ext] =  $\text{Name}_{\text{sub}}^{\text{sup}}\text{Ext}$ 
  • \mthargmat{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $\text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}(\text{Arg})\text{Ext2}$ 
  • \mthparmat{Name}[sub][sup][Ext1]{Par}[Ext2] =  $\text{Name}_{\text{sub}}^{\text{sup}}\text{Ext1}[\text{Par}]\text{Ext2}$ 
666 %% Style for Matrices
667 \cmdmthall{\mat}\newcommand{\mthstymat}[1]{\boldsymbol{\mathsf{#1}}}

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

\cmdmthmat ... to do!
  • \cmdmthmat{cmdName};
    \cmdNameMat[sub][sub][ext] =  $\text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext}$ 
  • \cmdmthmat{cmdName}[NewName];
    \cmdNameMat[sub][sub][ext] =  $\text{NewName}_{\text{sub}}^{\text{sub}}\text{ext}$ 
669 \newcommandx{\cmdmthmat}[2][2=]
670   {\usrmth{#1}{Mat}{mat}[#2]}

\cmdmthargmat ... to do!
  • \cmdmthargmat{cmdName};
    \cmdNameMat[sub][sub][ext1]{arg}[ext2] =  $\text{cmdName}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$ 
  • \cmdmthargmat{cmdName}[NewName];
    \cmdNameMat[sub][sub][ext1]{arg}[ext2] =  $\text{NewName}_{\text{sub}}^{\text{sub}}\text{ext1}(\text{arg})\text{ext2}$ 
671 \newcommandx{\cmdmthargmat}[2][2=]
672   {\usrmth{#1}{Mat}{argmat}[#2]}

\cmdmthoargmat ... to do!
  • \cmdmthoargmat{cmdName};
    \cmdNameMat[sub][sub][arg] =  $\text{cmdName}_{\text{sub}}^{\text{sub}}(\text{arg})$ 
  • \cmdmthoargmat{cmdName}[NewName];
    \cmdNameMat[sub][sub][arg] =  $\text{NewName}_{\text{sub}}^{\text{sub}}(\text{arg})$ 
673 \newcommandx{\cmdmthoargmat}[2][2=]
674   {\usrmth{#1}{Mat}{oargmat}[#2]}

```

```

\cmdmthparmat ... to do!
    • \cmdmthparmat{cmdName};
      \cmdNameMat[sub][sub][ext1]{par}[ext2] =  $\text{cmdName}_{sub}^{sub}ext1[par]ext2$ 

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

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

\cmdmthoparmat ... to do!
    • \cmdmthoparmat{cmdName};
      \cmdNameMat[sub][sub][par] =  $\text{cmdName}_{sub}^{sub}[par]$ 

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

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

\mthvec, ... ... to do!
    • \mthvec{Name}[sub][sup][Ext] =  $\text{Name}_{sub}^{sup}Ext$ 

    • \mthargvec{Name}[sub][sup][Ext1]{Arg}[Ext2] =  $\text{Name}_{sub}^{sup}Ext1(Arg)Ext2$ 

    • \mthparvec{Name}[sub][sup][Ext1]{Par}[Ext2] =  $\text{Name}_{sub}^{sup}Ext1[Par]Ext2$ 

679 %% Style for Vectors
680 \cmdmthall{vec}\newcommand{\mthstyvec}[1]{\boldsymbol{\mathit{#1}}}

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

681 \seqoflet{Vec}{mthvec}

\cmdmthvec ... to do!
    • \cmdmthvec{cmdName};
      \cmdNameVec[sub][sub][ext] =  $\text{cmdName}_{sub}^{sub}ext$ 

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

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

\cmdmthargvec ... to do!
    • \cmdmthargvec{cmdName};
      \cmdNameVec[sub][sub][ext1]{arg}[ext2] =  $\text{cmdName}_{sub}^{sub}ext1(arg)ext2$ 

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

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

\cmdmthoargvec ... to do!
    • \cmdmthoargvec{cmdName};
      \cmdNameVec[sub][sub][arg] =  $\text{cmdName}_{sub}^{sub}(arg)$ 

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

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

\cmdmthparvec ... to do!
    • \cmdmthparvec{cmdName};
      \cmdNameVec[sub][sub][ext1]{par}[ext2] =  $\text{cmdName}_{sub}^{sub}ext1[par]ext2$ 

```

```

        • \cmdmthparvec{cmdName}[NewName];
        \cmdNameVec[sub][sub][ext1]{par}[ext2] = NewNamesubsubext1[par]ext2
688 \newcommandx{\cmdmthparvec}[2][2=]
689   {\usrmth{#1}{Vec}{parvec}[#2]}

\cmdmthoparvec ... to do!
        • \cmdmthoparvec{cmdName};
        \cmdNameVec[sub][sub][par] = cmdNamesubsub[par]
        • \cmdmthoparvec{cmdName}[NewName];
        \cmdNameVec[sub][sub][par] = NewNamesubsub[par]
690 \newcommandx{\cmdmthoparvec}[2][2=]
691   {\usrmth{#1}{Vec}{oparvec}[#2]}

692 \fi
693 %*****%
694 %*****%
695 %** Elementary Macros for Text *****%
696 %*****%
697 \iftext@
698 %** Latin Abbreviations *****%

\adhoc      • \adhoc = ad hoc
699 \cmdtxtabr{\adhoc}[ad hoc]

\afortiori  • \afortiori = a fortiori
700 \cmdtxtabr{\afortiori}[a fortiori]

\apriori    • \apriori = a priori
701 \cmdtxtabr{\apriori}[a priori]

\aposteriori • \aposteriori = a posteriori
702 \cmdtxtabr{\aposteriori}[a posteriori]

\cf         • \cf = cf.
703 \cmdtxtabr{\cf}[cf.]

\dedicto    • \dedicto = de dicto
704 \cmdtxtabr{\dedicto}[de dicto]

\defacto    • \defacto = de facto
705 \cmdtxtabr{\defacto}[de facto]

\dere       • \dere = de re
706 \cmdtxtabr{\dere}[de re]

\divideetimpera • \divideetimpera = divide et impera
707 \cmdtxtabr{\divideetimpera}[divide et impera]

\eg         • \eg = e.g.
708 \cmdtxtabr{\eg}[e.g.]

\ergo       • \ergo = ergo
709 \cmdtxtabr{\ergo}

\errata     • \errata = errata
710 \cmdtxtabr{\errata}

\erratum    • \erratum = erratum
711 \cmdtxtabr{\erratum}

```


`\etal` • `\etal` = *et al.*
712 `\cmdtxtabr{etal}[et al.]`

`\etc` • `\etc` = *etc.*
713 `\cmdtxtabr{etc}[etc.]`

`\ie` • `\ie` = *i.e.*
714 `\cmdtxtabr{ie}[i.e.]`

`\mutatismutandis` • `\mutatismutandis` = *mutatis mutandis*
715 `\cmdtxtabr{mutatismutandis}[mutatis mutandis]`

`\percontra` • `\percontra` = *per contra*
716 `\cmdtxtabr{percontra}[per contra]`

`\primafacie` • `\primafacie` = *prima facie*
717 `\cmdtxtabr{primafacie}[prima facie]`

`\viceversa` • `\viceversa` = *vice versa*
718 `\cmdtxtabr{viceversa}[vice versa]`

`\vs` • `\vs` = *vs.*
719 `\cmdtxtabr{vs}[vs.]`

`\viz` • `\viz` = *viz.*
720 `\cmdtxtabr{viz}[viz.]`

721 `%%*****%`

`\Afortiori` • `\Afortiori` = *A fortiori*
722 `\cmdtxtabr{Afortiori}[A fortiori]`

`\Apriori` • `\Apriori` = *A priori*
723 `\cmdtxtabr{Apriori}[A priori]`

`\Aposteriori` • `\Aposteriori` = *A posteriori*
724 `\cmdtxtabr{Aposteriori}[A posteriori]`

`\Dedicto` • `\Dedicto` = *De dicto*
725 `\cmdtxtabr{Dedicto}[De dicto]`

`\Defacto` • `\Defacto` = *De facto*
726 `\cmdtxtabr{Defacto}[De facto]`

`\Dere` • `\Dere` = *De re*
727 `\cmdtxtabr{Dere}[De re]`

`\Divideetimpera` • `\Divideetimpera` = *Divide et impera*
728 `\cmdtxtabr{Divideetimpera}[Divide et impera]`

`\Eg` • `\Eg` = *E.g.*
729 `\cmdtxtabr{Eg}[E.g.]`

`\Errata` • `\Errata` = *Errata*
730 `\cmdtxtabr{Errata}`

`\Erratum` • `\Erratum` = *Erratum*
731 `\cmdtxtabr{Erratum}`

\backslash Mutatismutandis • \backslash Mutatismutandis = *Mutatis mutandis*
732 \backslash cmdtxtabr{Mutatismutandis}[Mutatis mutandis]

\backslash Percontra • \backslash Percontra = *Per contra*
733 \backslash cmdtxtabr{Percontra}[Per contra]

\backslash Prima facie • \backslash Prima facie = *Prima facie*
734 \backslash cmdtxtabr{Prima facie}[Prima facie]

\backslash Viceversa • \backslash Viceversa = *Vice versa*
735 \backslash cmdtxtabr{Viceversa}[Vice versa]

736 %** Italian Abbreviations *****%
...
737 %*****%
...
738 %** French Abbreviations *****%

\backslash naif • \backslash naif = *naïf*
739 \backslash cmdtxtabr{naif}[na\{i}f]

\backslash naive • \backslash naive = *naïve*
740 \backslash cmdtxtabr{naive}[na\{i}ve]

\backslash role • \backslash role = *rôle*
741 \backslash cmdtxtabr{role}[r\^{o}le]

742 %*****%

\backslash Role • \backslash Role = *Rôle*
743 \backslash cmdtxtabr{Role}[R\^{o}le]

744 %** English Abbreviations *****%

\backslash aka • \backslash aka = *a.k.a.*
745 \backslash cmdtxtabr{aka}[a.k.a.]

\backslash contd • \backslash contd = *contd.*
746 \backslash cmdtxtabr{contd}[contd.]

\backslash iff • \backslash iff = *iff*
747 \backslash cmdtxtabr{iff}

\backslash stx • \backslash stx = *s.t.*
748 \backslash cmdtxtabr{stx}[s.t.]

\backslash resp • \backslash resp = *resp.*
749 \backslash cmdtxtabr{resp}[resp.]

\backslash wrt • \backslash wrt = *w.r.t.*
750 \backslash cmdtxtabr{wrt}[w.r.t.]

\backslash wlogx • \backslash wlogx = *w.l.o.g.*
751 \backslash cmdtxtabr{wlogx}[w.l.o.g.]

752 %*****%

\backslash Contd • \backslash Contd = *Contd.*
753 \backslash cmdtxtabr{Contd}[Contd.]

```

\Wlogx      • \Wlogx = W.l.o.g.
754 \cmdtxtabr{Wlogx}[W.l.o.g.]

755 \fi
756 %*****%
757 %*****%
758 %** Elementary Macros for Math *****%
759 %*****%
760 \ifmath@
761 %** General Notation *****%

\defeq, \seteq ...
762 \DeclareRobustCommand{\defeq}
763   {\mthlopr{\triangleq}}
764 \DeclareRobustCommand{\seteq}
765   {\mthlopr{:=}}
766 %*****%

\implies, ... ...
767 \DeclareRobustCommand{\implies}
768   {\mthlrel{\rightarrow}}
769 \DeclareRobustCommand{\notimplies}
770   {\mthlrel{\not\rightarrow}}

\coimplies, ... ...
771 \DeclareRobustCommand{\coimplies}
772   {\mthlrel{\Leftrightarrow}}
773 \DeclareRobustCommand{\notcoimplies}
774   {\mthlrel{\not\!\Leftrightarrow}}
775 %*****%

\cmodels, ... ...
776 \DeclareRobustCommand{\cmodels}
777   {\mthlrel{\models}}
778 \DeclareRobustCommand{\notcmodels}
779   {\mthlrel{\not\models}}

\cequiv, ... ...
780 \DeclareRobustCommand{\cequiv}
781   {\mthlrel{\equiv}}
782 \DeclareRobustCommand{\notcequiv}
783   {\mthlrel{\not\equiv}}
784 %*****%

\dual, \adj, ... ...
785 \DeclareRobustCommand{\dual}[1]
786   {\mth{\overline{#1}}}
787 \DeclareRobustCommand{\adj}[1]
788   {\mth{\mathring{#1}}}
789 \DeclareRobustCommand{\der}[1]
790   {\mth{\widehat{#1}}}
791 \DeclareRobustCommand{\trn}[1]
792   {\mth{\widetilde{#1}}}

\vec ...
793 \DeclareRobustCommand{\vec}[1]
794   {\mth{\mathaccent"017E{#1}}}
795 %*****%

```

```

\enumeration, ... ...
796 \varcmd{enumeration}{\mth}{\left[\,}{\right]}{}
797 \varcmd{enumerationx}{\mth}{\left[\,}{\right]}{}

\sequence, ... ...
798 \varcmd{sequence}{\mth}{\left[\,}{\right]}{}
799 \varcmd{sequence1}{\mth}{\left[\,}{\right]}{}
800 \varcmd{sequencer}{\mth}{\left[\,}{\right]}{}
801 \varcmd{sequencecx}{\mth}{\left[\,}{\right]}{}
802 \varcmd{sequencecx1}{\mth}{\left[\,}{\right]}{}
803 \varcmd{sequencecxr}{\mth}{\left[\,}{\right]}{}

\tuple, ... ...
804 \varcmd{tuple}{\mth}{\left\langle\,}{\right\rangle}{}
805 \varcmd{tuple1}{\mth}{\left\langle\,}{\right\rangle}{}
806 \varcmd{tupler}{\mth}{\left\langle\,}{\right\rangle}{}
807 \varcmd{tuplex}{\mth}{\left\langle\,}{\right\rangle}{}
808 \varcmd{tuplex1}{\mth}{\left\langle\,}{\right\rangle}{}
809 \varcmd{tuplexr}{\mth}{\left\langle\,}{\right\rangle}{}

810 %** Sets *****%

\set ...
811 \DeclareRobustCommand{\set}[2]
812   {\argmid{\left\lbrace}{\argsep{#1}{\,}{\middle\vert}{\,}{#2}}{\right\rbrace}}

\card ...
813 \DeclareRobustCommand{\card}[1]
814   {\mth{\argmid{\lvert}{#1}{\rvert}}}

\pow ...
815 \DeclareRobustCommand{\pow}[1]
816   {\mth{2^{\defval{#1}{\cdot}}}}

\denot ...
817 \DeclareRobustCommand{\denot}[1]
818   {\mth{\argmid{\lVert}{#1}{\rVert}}}

819 %** Relations *****%

\emptyrel ...
820 \DeclareRobustCommand{\emptyrel}
821   {\mth{\varnothing}}

822 %*****%

\dom, \cod, ... ...
823 \DeclareRobustCommand{\dom}
824   {\mthargfun{dom}}
825 \DeclareRobustCommand{\cod}
826   {\mthargfun{cod}}
827 \DeclareRobustCommand{\rng}
828   {\mthargfun{rng}}
829 \DeclareRobustCommand{\img}
830   {\mthargfun{img}}

831 %*****%

\prj ...
832 \DeclareRobustCommand{\prj}
833   {\mthargfun{prj}}

```

```

\rst ...
834 \DeclareRobustCommand{\rst}
835   {\mthlopr{\upharpoonright}}

\cmp ...
836 \DeclareRobustCommand{\cmp}
837   {\mthlopr{\circ}}

838 %** Functions *****%%

\emptyfun ...
839 \DeclareRobustCommand{\emptyfun}
840   {\mth{\varnothing}}

841 %*****%%

\pto, \pmapsto ...
842 \DeclareMathOperator{\pto}
843   {\ensuremath{\rightharpoonup}}
844 \DeclareMathOperator{\pmapsto}
845   {\ensuremath{\mathrel{\raisebox{0.5ex}{\footnotesize$\llcorner$}}}%
846     \kern-1.5ex\rightharpoonup}}

847 %*****%%

\fix, \ifp, ... ...
848 \DeclareRobustCommand{\fix}
849   {\mthfun{\fix}}
850 \DeclareRobustCommand{\ifp}
851   {\mthfun{\ifp}}
852 \DeclareRobustCommand{\lfp}
853   {\mthfun{\lfp}}
854 \DeclareRobustCommand{\gfp}
855   {\mthfun{\gfp}}

\Aomega, \AOmega ...
856 \DeclareRobustCommand{\Aomega}
857   {\mthargset{\omega}}
858 \DeclareRobustCommand{\AOmega}
859   {\mthargset{\Omega}}

\Atheta, \ATheta ...
860 \DeclareRobustCommand{\Atheta}
861   {\mthargset{\theta}}
862 \DeclareRobustCommand{\ATheta}
863   {\mthargset{\Theta}}

\Aomicron, ... ...
864 \DeclareRobustCommand{\Aomicron}
865   {\mthargset{\omicron}}
866 \DeclareRobustCommand{\AOmicon}
867   {\mthargset{\Omicron}}

868 %** Numbers *****%%

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

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

```

```

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

\SetZ, ... ...
877 \DeclareRobustCommand{\SetZ}
878   {\mthset[mathbb]{Z}}
879 \DeclareRobustCommand{\SetZI}[1] []
880   {\SetZ[\pm\infty #1]}
881 \DeclareRobustCommand{\SetZPI}[1] []
882   {\SetZ[+\infty #1]}
883 \DeclareRobustCommand{\SetZNI}[1] []
884   {\SetZ[-\infty #1]}

\SetQ, ... ...
885 \DeclareRobustCommand{\SetQ}
886   {\mthset[mathbb]{Q}}
887 \DeclareRobustCommand{\SetQI}[1] []
888   {\SetQ[\pm\infty #1]}
889 \DeclareRobustCommand{\SetQPI}[1] []
890   {\SetQ[+\infty #1]}
891 \DeclareRobustCommand{\SetQNI}[1] []
892   {\SetQ[-\infty #1]}

\SetR, ... ...
893 \DeclareRobustCommand{\SetR}
894   {\mthset[mathbb]{R}}
895 \DeclareRobustCommand{\SetRI}[1] []
896   {\SetR[\pm\infty #1]}
897 \DeclareRobustCommand{\SetRPI}[1] []
898   {\SetR[+\infty #1]}
899 \DeclareRobustCommand{\SetRNI}[1] []
900   {\SetR[-\infty #1]}

\SetC, ... ...
901 \DeclareRobustCommand{\SetC}
902   {\mthset[mathbb]{C}}
903 \DeclareRobustCommand{\SetCI}[1] []
904   {\SetC[\infty #1]}

905 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\num, ... ...
906 \DeclareRobustCommand{\num}[1]
907   {\mth{[#1]}}
908 \DeclareRobustCommand{\numcc}[2]
909   {\mth{[\argsep{#1}{,}{#2}]}}
910 \DeclareRobustCommand{\numco}[2]
911   {\mth{[\argsep{#1}{,}{#2})}}
912 \DeclareRobustCommand{\numoc}[2]
913   {\mth{(\argsep{#1}{,}{#2})}}
914 \DeclareRobustCommand{\numoo}[2]
915   {\mth{(\argsep{#1}{,}{#2}))}}

916 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\floor, \ceil ...
917 \DeclareRobustCommand{\floor}[1]
918   {\mth{\argmid{\left\lfloor}{#1}{\right\rfloor}}}
919 \DeclareRobustCommand{\ceil}[1]
920   {\mth{\argmid{\left\lceil}{#1}{\right\rceil}}}

```

```

921 %%*****
\arg ...
922 \DeclareRobustCommand{\arg}
923   {\mthfun{arg}}

\evn, \odd ...
924 \DeclareRobustCommand{\evn}
925   {\mthfun{evn}}
926 \DeclareRobustCommand{\odd}
927   {\mthfun{odd}}

\bst, ... ...
928 \DeclareRobustCommand{\bst}
929   {\mthfun{bst}}
930 \DeclareRobustCommand{\argbst}
931   {\mthfun{arg bst}}

\min, \max, ... ...
932 \DeclareRobustCommand{\min}
933   {\mthfun{min}}
934 \DeclareRobustCommand{\max}
935   {\mthfun{max}}
936 \DeclareRobustCommand{\argmin}
937   {\mthfun{arg min}}
938 \DeclareRobustCommand{\argmax}
939   {\mthfun{arg max}}

\inf, \sup ...
940 \DeclareRobustCommand{\inf}
941   {\mthfun{inf}}
942 \DeclareRobustCommand{\sup}
943   {\mthfun{sup}}

944 %%** Sequences *****

\emptyseq ...
945 \DeclareRobustCommand{\emptyseq}
946   {\mth{\varepsilon}}

\fst, \lst ...
947 \DeclareRobustCommand{\fst}
948   {\mthargfun{fst}}
949 \DeclareRobustCommand{\lst}
950   {\mthargfun{lst}}

951 \fi
952 %%*****

953 %%*****
954 %%** Macros for Computational-Complexity Classes *****
955 %%*****
956 \ifcom@

\defcomcls ... to do!
    • \defcomcls{CompClass};

    \CompClass[sub][sup][ext] = COMPCLASSSUPSUBEXT;
    \CoCompClass[sub][sup][ext] = COCOMPCLASSSUPSUBEXT
    \CompClassE[sub][sup][ext] = COMPCLASS-EASYSUPSUBEXT;
    \CoCompClassE[sub][sup][ext] = COCOMPCLASS-EASYSUPSUBEXT
    \CompClassH[sub][sup][ext] = COMPCLASS-HARDSUPSUBEXT;
    \CoCompClassH[sub][sup][ext] = COCOMPCLASS-HARDSUPSUBEXT
    \CompClassC[sub][sup][ext] = COMPCLASS-COMPLETESUPSUBEXT;

```

```

\CoCompClassC[sub][sup][ext] = CoCOMPCLASS-COMPLETESUBEXT

\NCompClass[sub][sup][ext] = NCOMPCLASSSUBEXT;
\CoNCompClass[sub][sup][ext] = CoNCOMPCLASSSUBEXT
\NCompClassE[sub][sup][ext] = NCOMPCLASS-EASYSUBEXT;
\CoNCompClassE[sub][sup][ext] = CoNCOMPCLASS-EASYSUBEXT
\NCompClassH[sub][sup][ext] = NCOMPCLASS-HARDSUBEXT;
\CoNCompClassH[sub][sup][ext] = CoNCOMPCLASS-HARDSUBEXT
\NCompClassC[sub][sup][ext] = NCOMPCLASS-COMPLETESUBEXT;
\CoNCompClassC[sub][sup][ext] = CoNCOMPCLASS-COMPLETESUBEXT

\UCompClass[sub][sup][ext] = UCOMPCLASSSUBEXT;
\CoUCompClass[sub][sup][ext] = CoUCOMPCLASSSUBEXT
\UCompClassE[sub][sup][ext] = UCOMPCLASS-EASYSUBEXT;
\CoUCompClassE[sub][sup][ext] = CoUCOMPCLASS-EASYSUBEXT
\UCompClassH[sub][sup][ext] = UCOMPCLASS-HARDSUBEXT;
\CoUCompClassH[sub][sup][ext] = CoUCOMPCLASS-HARDSUBEXT
\UCompClassC[sub][sup][ext] = UCOMPCLASS-COMPLETESUBEXT;
\CoUCompClassC[sub][sup][ext] = CoUCOMPCLASS-COMPLETESUBEXT

\ACompClass[sub][sup][ext] = ACOMPCLASSSUBEXT;
\CoACompClass[sub][sup][ext] = CoACOMPCLASSSUBEXT
\ACompClassE[sub][sup][ext] = ACOMPCLASS-EASYSUBEXT;
\CoACompClassE[sub][sup][ext] = CoACOMPCLASS-EASYSUBEXT
\ACompClassH[sub][sup][ext] = ACOMPCLASS-HARDSUBEXT;
\CoACompClassH[sub][sup][ext] = CoACOMPCLASS-HARDSUBEXT
\ACompClassC[sub][sup][ext] = ACOMPCLASS-COMPLETESUBEXT;
\CoACompClassC[sub][sup][ext] = CoACOMPCLASS-COMPLETESUBEXT

• \defcomcls{CompClass}{NewClass};

\CompClass[sub][sup][ext] = NEWCLASSSUBEXT;
\CoCompClass[sub][sup][ext] = CoNEWCLASSSUBEXT
\CompClassE[sub][sup][ext] = NEWCLASS-EASYSUBEXT;
\CoCompClassE[sub][sup][ext] = CoNEWCLASS-EASYSUBEXT
\CompClassH[sub][sup][ext] = NEWCLASS-HARDSUBEXT;
\CoCompClassH[sub][sup][ext] = CoNEWCLASS-HARDSUBEXT
\CompClassC[sub][sup][ext] = NEWCLASS-COMPLETESUBEXT;
\CoCompClassC[sub][sup][ext] = CoNEWCLASS-COMPLETESUBEXT

\NCompClass[sub][sup][ext] = NNEWCLASSSUBEXT;
\CoNCompClass[sub][sup][ext] = CoNNEWCLASSSUBEXT
\NCompClassE[sub][sup][ext] = NNEWCLASS-EASYSUBEXT;
\CoNCompClassE[sub][sup][ext] = CoNNEWCLASS-EASYSUBEXT
\NCompClassH[sub][sup][ext] = NNEWCLASS-HARDSUBEXT;
\CoNCompClassH[sub][sup][ext] = CoNNEWCLASS-HARDSUBEXT
\NCompClassC[sub][sup][ext] = NNEWCLASS-COMPLETESUBEXT;
\CoNCompClassC[sub][sup][ext] = CoNNEWCLASS-COMPLETESUBEXT

\UCompClass[sub][sup][ext] = UNEWCLASSSUBEXT;
\CoUCompClass[sub][sup][ext] = CoUNEWCLASSSUBEXT
\UCompClassE[sub][sup][ext] = UNEWCLASS-EASYSUBEXT;
\CoUCompClassE[sub][sup][ext] = CoUNEWCLASS-EASYSUBEXT
\UCompClassH[sub][sup][ext] = UNEWCLASS-HARDSUBEXT;
\CoUCompClassH[sub][sup][ext] = CoUNEWCLASS-HARDSUBEXT
\UCompClassC[sub][sup][ext] = UNEWCLASS-COMPLETESUBEXT;
\CoUCompClassC[sub][sup][ext] = CoUNEWCLASS-COMPLETESUBEXT

\ACompClass[sub][sup][ext] = ANEWCLASSSUBEXT;
\CoACompClass[sub][sup][ext] = CoANEWCLASSSUBEXT
\ACompClassE[sub][sup][ext] = ANEWCLASS-EASYSUBEXT;
\CoACompClassE[sub][sup][ext] = CoANEWCLASS-EASYSUBEXT
\ACompClassH[sub][sup][ext] = ANEWCLASS-HARDSUBEXT;
\CoACompClassH[sub][sup][ext] = CoANEWCLASS-HARDSUBEXT
\ACompClassC[sub][sup][ext] = ANEWCLASS-COMPLETESUBEXT;

```



```

\CoACompClassC[sub][sup][ext] = CoANewClass-COMpleteSUBEXT
957 \newcommandx{\defcomcls}[2][2=]
958   {\defcomclssem{#1}{\defval{#2}{#1}}}%
959   \defcomclssem{#1}{\defval{#2}{#1}}[Co]}
960 \newcommandx{\defcomclsred}[3][3=]
961   {\defcomclsred{#3#1}{#2}{#3}%
962   \defcomclsred{#3N#1}{#2}{#3N}%
963   \defcomclsred{#3U#1}{#2}{#3U}%
964   \defcomclsred{#3A#1}{#2}{#3A}}
965 \newcommandx{\defcomclsred}[3][3=]
966   {\defcomclscmd{#1}{#2}{#3}%
967   \defcomclscmd{#1E}{#2}{#3}[-easy]%
968   \defcomclscmd{#1H}{#2}{#3}[-hard]%
969   \defcomclscmd{#1C}{#2}{#3}[-complete]]}%
970 \newcommandx{\defcomclscmd}[4][3=, 4=]
971   {\csdef{#1}{\txtcom{#3#2#4}}}

972 %%*****%

\Easy, \Hard, ...

973 \cmdtxtcom{Easy}
974 \cmdtxtcom{Hard}
975 \cmdtxtcom{Complete}

976 %%*****%

\Time, ...
• \Time[sub][sup][ext] = TIMESUBEXT
  \TimeE[sub][sup][ext] = TIME-EASYSUBEXT
  \TimeH[sub][sup][ext] = TIME-HARDSUBEXT
  \TimeC[sub][sup][ext] = TIME-COMpleteSUBEXT
• \NTime[sub][sup][ext] = NTIMESUBEXT
  \NTimeE[sub][sup][ext] = NTIME-EASYSUBEXT
  \NTimeH[sub][sup][ext] = NTIME-HARDSUBEXT
  \NTimeC[sub][sup][ext] = NTIME-COMpleteSUBEXT
• \UTime[sub][sup][ext] = UTIMESUBEXT
  \UTimeE[sub][sup][ext] = UTIME-EASYSUBEXT
  \UTimeH[sub][sup][ext] = UTIME-HARDSUBEXT
  \UTimeC[sub][sup][ext] = UTIME-COMpleteSUBEXT
• \ATime[sub][sup][ext] = ATIMESUBEXT
  \ATimeE[sub][sup][ext] = ATIME-EASYSUBEXT
  \ATimeH[sub][sup][ext] = ATIME-HARDSUBEXT
  \ATimeC[sub][sup][ext] = ATIME-COMpleteSUBEXT
977 \defcomcls{Time}

\Space, ...
• \Space[sub][sup][ext] = SPACESUBEXT
  \SpaceE[sub][sup][ext] = SPACE-EASYSUBEXT
  \SpaceH[sub][sup][ext] = SPACE-HARDSUBEXT
  \SpaceC[sub][sup][ext] = SPACE-COMpleteSUBEXT
• \NSpace[sub][sup][ext] = NSPACESUBEXT
  \NSpaceE[sub][sup][ext] = NSPACE-EASYSUBEXT
  \NSpaceH[sub][sup][ext] = NSPACE-HARDSUBEXT
  \NSpaceC[sub][sup][ext] = NSPACE-COMpleteSUBEXT
• \USpace[sub][sup][ext] = USPACESUBEXT
  \USpaceE[sub][sup][ext] = USPACE-EASYSUBEXT
  \USpaceH[sub][sup][ext] = USPACE-HARDSUBEXT
  \USpaceC[sub][sup][ext] = USPACE-COMpleteSUBEXT
• \ASpace[sub][sup][ext] = ASPACESUBEXT
  \ASpaceE[sub][sup][ext] = ASPACE-EASYSUBEXT
  \ASpaceH[sub][sup][ext] = ASPACE-HARDSUBEXT
  \ASpaceC[sub][sup][ext] = ASPACE-COMpleteSUBEXT
978 \defcomcls{Space}

```

\LogTime, ...

- \LogTime[sub][sup][ext] = LOGTIME^{SUB}EXT
- \LogTimeE[sub][sup][ext] = LOGTIME-EASY^{SUB}EXT
- \LogTimeH[sub][sup][ext] = LOGTIME-HARD^{SUB}EXT
- \LogTimeC[sub][sup][ext] = LOGTIME-COMPLETE^{SUB}EXT
- \NLogTime[sub][sup][ext] = NLOGTIME^{SUB}EXT
- \NLogTimeE[sub][sup][ext] = NLOGTIME-EASY^{SUB}EXT
- \NLogTimeH[sub][sup][ext] = NLOGTIME-HARD^{SUB}EXT
- \NLogTimeC[sub][sup][ext] = NLOGTIME-COMPLETE^{SUB}EXT
- \ULogTime[sub][sup][ext] = ULOGTIME^{SUB}EXT
- \ULogTimeE[sub][sup][ext] = ULOGTIME-EASY^{SUB}EXT
- \ULogTimeH[sub][sup][ext] = ULOGTIME-HARD^{SUB}EXT
- \ULogTimeC[sub][sup][ext] = ULOGTIME-COMPLETE^{SUB}EXT
- \ALogTime[sub][sup][ext] = ALOGTIME^{SUB}EXT
- \ALogTimeE[sub][sup][ext] = ALOGTIME-EASY^{SUB}EXT
- \ALogTimeH[sub][sup][ext] = ALOGTIME-HARD^{SUB}EXT
- \ALogTimeC[sub][sup][ext] = ALOGTIME-COMPLETE^{SUB}EXT

979 \defcomcls{LogTime}

\LogSpace, ...

- \LogSpace[sub][sup][ext] = LOGSPACE^{SUB}EXT
- \LogSpaceE[sub][sup][ext] = LOGSPACE-EASY^{SUB}EXT
- \LogSpaceH[sub][sup][ext] = LOGSPACE-HARD^{SUB}EXT
- \LogSpaceC[sub][sup][ext] = LOGSPACE-COMPLETE^{SUB}EXT
- \NLogSpace[sub][sup][ext] = NLOGSPACE^{SUB}EXT
- \NLogSpaceE[sub][sup][ext] = NLOGSPACE-EASY^{SUB}EXT
- \NLogSpaceH[sub][sup][ext] = NLOGSPACE-HARD^{SUB}EXT
- \NLogSpaceC[sub][sup][ext] = NLOGSPACE-COMPLETE^{SUB}EXT
- \ULogSpace[sub][sup][ext] = ULOGSPACE^{SUB}EXT
- \ULogSpaceE[sub][sup][ext] = ULOGSPACE-EASY^{SUB}EXT
- \ULogSpaceH[sub][sup][ext] = ULOGSPACE-HARD^{SUB}EXT
- \ULogSpaceC[sub][sup][ext] = ULOGSPACE-COMPLETE^{SUB}EXT
- \ALogSpace[sub][sup][ext] = ALOGSPACE^{SUB}EXT
- \ALogSpaceE[sub][sup][ext] = ALOGSPACE-EASY^{SUB}EXT
- \ALogSpaceH[sub][sup][ext] = ALOGSPACE-HARD^{SUB}EXT
- \ALogSpaceC[sub][sup][ext] = ALOGSPACE-COMPLETE^{SUB}EXT

980 \defcomcls{LogSpace}

\PTime, ...

- \PTime[sub][sup][ext] = PTIME^{SUB}EXT
- \PTimeE[sub][sup][ext] = PTIME-EASY^{SUB}EXT
- \PTimeH[sub][sup][ext] = PTIME-HARD^{SUB}EXT
- \PTimeC[sub][sup][ext] = PTIME-COMPLETE^{SUB}EXT
- \NPTime[sub][sup][ext] = NPTime^{SUB}EXT
- \NPTimeE[sub][sup][ext] = NPTime-EASY^{SUB}EXT
- \NPTimeH[sub][sup][ext] = NPTime-HARD^{SUB}EXT
- \NPTimeC[sub][sup][ext] = NPTime-COMPLETE^{SUB}EXT
- \UPTime[sub][sup][ext] = UPTIME^{SUB}EXT
- \UPTimeE[sub][sup][ext] = UPTIME-EASY^{SUB}EXT
- \UPTimeH[sub][sup][ext] = UPTIME-HARD^{SUB}EXT
- \UPTimeC[sub][sup][ext] = UPTIME-COMPLETE^{SUB}EXT
- \APTime[sub][sup][ext] = APTIME^{SUB}EXT
- \APTimeE[sub][sup][ext] = APTIME-EASY^{SUB}EXT
- \APTimeH[sub][sup][ext] = APTIME-HARD^{SUB}EXT
- \APTimeC[sub][sup][ext] = APTIME-COMPLETE^{SUB}EXT

981 \defcomcls{PTime}

\PSpace, ...

- \PSpace[sub][sup][ext] = PSPACE^{SUB}EXT
- \PSpaceE[sub][sup][ext] = PSPACE-EASY^{SUB}EXT
- \PSpaceH[sub][sup][ext] = PSPACE-HARD^{SUB}EXT
- \PSpaceC[sub][sup][ext] = PSPACE-COMPLETE^{SUB}EXT

- $\backslash \text{ExpTime}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpTime}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{ExpTimeE}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpTime-EASY}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{ExpTimeH}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpTime-HARD}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{ExpTimeC}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpTime-COMLETE}_{\text{SUBEXT}}^{\text{SUP}}$
- $\backslash \text{AExpTime}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpTime}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{AExpTimeE}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpTime-EASY}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{AExpTimeH}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpTime-HARD}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{AExpTimeC}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpTime-COMLETE}_{\text{SUBEXT}}^{\text{SUP}}$

985 $\backslash \text{defcomcls}\{\text{ExpTime}\}$

$\backslash \text{ExpSpace}, \dots$

- $\backslash \text{ExpSpace}[\text{sub}][\text{sup}][\text{ext}] = \text{ExpSpace}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{ExpSpaceE}[\text{sub}][\text{sup}][\text{ext}] = \text{ExpSpace-EASY}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{ExpSpaceH}[\text{sub}][\text{sup}][\text{ext}] = \text{ExpSpace-HARD}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{ExpSpaceC}[\text{sub}][\text{sup}][\text{ext}] = \text{ExpSpace-COMLETE}_{\text{SUBEXT}}^{\text{SUP}}$
- $\backslash \text{NExpSpace}[\text{sub}][\text{sup}][\text{ext}] = \text{NExpSpace}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{NExpSpaceE}[\text{sub}][\text{sup}][\text{ext}] = \text{NExpSpace-EASY}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{NExpSpaceH}[\text{sub}][\text{sup}][\text{ext}] = \text{NExpSpace-HARD}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{NExpSpaceC}[\text{sub}][\text{sup}][\text{ext}] = \text{NExpSpace-COMLETE}_{\text{SUBEXT}}^{\text{SUP}}$
- $\backslash \text{UExpSpace}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpSpace}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{UExpSpaceE}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpSpace-EASY}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{UExpSpaceH}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpSpace-HARD}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{UExpSpaceC}[\text{sub}][\text{sup}][\text{ext}] = \text{UExpSpace-COMLETE}_{\text{SUBEXT}}^{\text{SUP}}$
- $\backslash \text{AExpSpace}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpSpace}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{AExpSpaceE}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpSpace-EASY}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{AExpSpaceH}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpSpace-HARD}_{\text{SUBEXT}}^{\text{SUP}}$
 $\backslash \text{AExpSpaceC}[\text{sub}][\text{sup}][\text{ext}] = \text{AExpSpace-COMLETE}_{\text{SUBEXT}}^{\text{SUP}}$

986 $\backslash \text{defcomcls}\{\text{ExpSpace}\}$

987 $\%*****\%$

...

988 $\backslash \text{fi}$

989 $\%*****\%$

990 $\%*****\%$

991 $\%** \text{ Macros for Games }*****\%$

992 $\%*****\%$

993 $\backslash \text{ifgam@}$

994 $\%** \text{ Logic Games }*****\%$

$\backslash \text{SATG}, \dots$

995 $\% \text{ Satisfiability Games}$

996 $\backslash \text{cmdtxtopname}\{\text{SATG}\}[\text{Sat}]$

997

998 $\% \text{ Validity Games}$

999 $\backslash \text{cmdtxtopname}\{\text{VALG}\}[\text{Val}]$

1000

1001 $\% \text{ Evaluation Games}$

1002 $\backslash \text{cmdtxtopname}\{\text{EVLG}\}[\text{Evl}]$

1003

1004 $\% \text{ Synthesis Games}$

1005 $\backslash \text{cmdtxtopname}\{\text{SYNG}\}[\text{Syn}]$

1006

1007 $\% \text{ Model-Checking Games}$

1008 $\backslash \text{cmdtxtopname}\{\text{MCG}\}[\text{MC}]$

1009

1010 $\% \text{ Ehrenfeucht-Fraisse Games}$

1011 $\backslash \text{cmdtxtopname}\{\text{EFG}\}[\text{EF}]$

1012 $\%** \text{ Syntax }*****\%$

```

\PlrSym, \OppSym ...
1013 \newcommand{\plrsym}{E}
1014 \cmdmthsym{Plr}[\plrsym]
1015 \newcommand{\oppsym}{A}
1016 \cmdmthsym{Opp}[\oppsym]

\ArenaName, ... ...
1017 \newcommand{\arenaname}{A}
1018 \usrmthlatupp{Arena}{Name}{name}[\arenaname]

\PosSet, ... ...
1019 \newcommand{\possym}{v}
1020 \newcommand{\posset}{Ps}
1021 \cmdmthsetext{Pos}[\posset][\possym]
1022 \cmdmthsymelm{ipos}[\possym_{I}]
1023 \cmdmthsymelm{fpos}[\possym_{F}]
1024 \cmdmthset{PPos}[\posset_{\PlrSym}]
1025 \cmdmthsymelm{ppos}[\possym_{\PlrSym}]
1026 \cmdmthset{OPos}[\posset_{\OppSym}]
1027 \cmdmthsymelm{opos}[\possym_{\OppSym}]

\MovRel ...
1028 \newcommand{\movrel}{Mv}
1029 \cmdmthrel{Mov}[\movrel]

\GameName, ... ...
1030 \newcommand{\gamename}{Game}
1031 \usrmthlatupp{Game}{Name}{name}[\gamename]

\WinSet ...
1032 \newcommand{\winset}{Wn}
1033 \cmdmthset{Win}[\winset]

\ObsSet, \obsFun ...
1034 \newcommand{\obsset}{Ob}
1035 \cmdmthset{Obs}[\obsset]
1036 \cmdmthfun{obs}

1037 %** Semantics *****%

\PthSet, \pthFun ...
1038 \newcommand{\pthsym}{\pi}
1039 \newcommand{\pthset}{Pth}
1040 \cmdmthsetext{Pth}[\pthset][\pthsym]
1041 \cmdmthfun{pth}

\HstSet, ... ...
1042 \newcommand{\hstsym}{\rho}
1043 \newcommand{\hstset}{Hst}
1044 \cmdmthsetext{Hst}[\hstset][\hstsym]
1045 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1046 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1047 \cmdmthset{OHst}[\hstset_{\OppSym}]
1048 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1049 \cmdmthfun{hst}

\PlaySet, \playFun ...
1050 \newcommand{\playsym}{\pi}
1051 \newcommand{\playset}{Play}
1052 \cmdmthsetext{Play}[\playset][\playsym]
1053 \cmdmthfun{play}

```

```

\StrSet, ... ...
1054 \newcommand{\strsym}{\sigma}
1055 \newcommand{\strset}{Str}
1056 \cmdmthsetext{Str}[\strset][\strsym]
1057 \cmdmthset{PStr}[\strset_{\PlrSym}]
1058 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1059 \cmdmthset{OStr}[\strset_{\OppSym}]
1060 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]

\PrfSet, \prfFun ...
1061 \newcommand{\prfsym}{\xi}
1062 \newcommand{\prfset}{Prf}
1063 \cmdmthsetext{Prf}[\prfset][\prfsym]

\preFun, \sucFun ...
1064 \newcommand{\prefun}{pre}
1065 \cmdmthoargfun{pre}[\prefun]
1066 \newcommand{\sucfun}{suc}
1067 \cmdmthoargfun{suc}[\sucfun]

\entFun, \escFun ...
1068 \newcommand{\entfun}{ent}
1069 \cmdmthoargfun{ent}[\entfun]
1070 \newcommand{\escfun}{esc}
1071 \cmdmthoargfun{esc}[\escfun]

\intFun, \outFun ...
1072 \newcommand{\intfun}{int}
1073 \cmdmthoargfun{int}[\intfun]
1074 \newcommand{\outfun}{out}
1075 \cmdmthoargfun{out}[\outfun]

\atrFun, \rchFun ...
1076 \newcommand{\atrfun}{atr}
1077 \cmdmthoargfun{atr}[\atrfun]
1078 \newcommand{\rchfun}{rch}
1079 \cmdmthoargfun{rch}[\rchfun]

\liftFun ...
1080 \newcommand{\liftfun}{lift}
1081 \cmdmthoargfun{lift}[\liftfun]

\solFun ...
1082 \newcommand{\solfun}{sol}
1083 \cmdmthoargfun{sol}[\solfun]

1084 %%** Qualitative Games on Graph *****%%

\BG, ... ...
1085 %% Buchi Games
1086 \cmdtxttoparname{BG}
1087
1088 %% Co-Buchi Games
1089 \cmdtxttoparname{CG}
1090
1091 %% Parity Games
1092 \cmdtxttoparname{PG}
1093
1094 %% Rabin Games
1095 \cmdtxttoparname{RG}
1096
1097 %% Streett Games

```

```

1098 \cmdtxttoparname{SG}
1099
1100 %% Muller Games
1101 \cmdtxttoparname{MG}

1102 %** Syntax *****%
```

\EvnSym, \OddSym ...

```

1103 \newcommand{\evnsym}{0}
1104 \cmdmthsym{Evn}[\evnsym]
1105 \newcommand{\oddsym}{1}
1106 \cmdmthsym{Odd}[\oddsym]

\PrtSet, \prtFun ...

1107 \newcommand{\prtsym}{p}
1108 \newcommand{\prtset}{Pr}
1109 \cmdmthsetext{Prt}[\prtset][\prtsym]
1110 \cmdmthfun{prt}[pr]

1111 %** Semantics *****%
...

1112 %** Quantitative Games on Graph *****%
```

\EG,

```

1113 %% Energy Games
1114 \cmdtxttoparname{EG}
1115
1116 %% Mean-Payoff Games
1117 \cmdtxttoparname{MPG}
1118
1119 %% Discounted-Payoff Games
1120 \cmdtxttoparname{DPG}

1121 %** Syntax *****%
```

\MaxSym, \MinSym ...

```

1122 \newcommand{\maxsym}{\oplus}
1123 \cmdmthsym{Max}[\maxsym]
1124 \newcommand{\minsym}{\boxminus}
1125 \cmdmthsym{Min}[\minsym]
```

\WghSet, \wghFun ...

```

1126 \newcommand{\wghsym}{w}
1127 \newcommand{\wghset}{Wg}
1128 \cmdmthsetext{Wgh}[\wghset][\wghsym]
1129 \cmdmthfun{wgh}[wg]

1130 %** Semantics *****%
...

1131 \fi
1132 %*****%
1133 %*****%
1134 %** Macros for Logics *****%
1135 %*****%
1136 \iflog@

1137 %** Propositional Logics *****%
```

\BF, \QBF,

```

1138 % Boolean Formulae
1139 \cmdtxttoparname{BF}
1140
```

```

1141 % Quantified Boolean Formulae
1142 \DeclareRobustCommand{\QBF}
1143   {\textname{Q}}\BF}
1144 \DeclareRobustCommand{\EBF}
1145   {\ensuremath{\exists}\BF}
1146 \DeclareRobustCommand{\UBF}
1147   {\ensuremath{\forall}\BF}

1148 %** Syntax ****

\LogSig, ... ...
1149 \newcommand{\logsig}{L}
1150 \usrmthlatupp{Log}{Sig}{sig}[\logsig]

\Tt, \Ff ...
1151 \newcommand{\ttsym}{\top}
1152 \usrmth{Tt}{}{sym}[\ttsym]
1153 \newcommand{\ffsym}{\bot}
1154 \usrmth{Ff}{}{sym}[\ffsym]

\APSet, ... ...
1155 \newcommand{\apsym}{p}
1156 \newcommand{\apset}{AP}
1157 \cmdmthsetext{AP}[\apset][\apsym]
1158 \cmdmthfun{ap}\usrmth{ap}{}{argfun}

\sub ...
1159 \usrmth{sub}{}{argfun}

\Cnt, \Qnt ...
1160 \usrmth{Cnt}{}{sym}[Cn]
1161 \usrmth{Qnt}{}{sym}[Qn]

\QAE, \QEA ...
1162 \usrmth{QAE}{}{sym}[\forall\exists]
1163 \usrmth{QEA}{}{sym}[\exists\forall]

\QntSet, ... ...
1164 \newcommand{\qntsym}{\wp}
1165 \newcommand{\qntset}{Qn}
1166 \cmdmthsetext{Qnt}[\qntset][\qntsym]

\free ...
1167 \usrmth{free}{}{argfun}

\dep, \alt ...
1168 \usrmth{dep}{}{argfun}
1169 \usrmth{alt}{}{argfun}

\pnf, \nnf ...
1170 \cmdtxtabr{pnf}
1171 \cmdtxtabr{nnf}

1172 %** Semantics ****

\LogStr, ... ...
1173 \newcommand{\logstr}{L}
1174 \usrmthlatupp{Log}{Str}{str}[\logstr]

\ValSet, ... ...
1175 \newcommand{\valsym}{\xi}
1176 \newcommand{\valset}{Val}
1177 \cmdmthsetext{Val}[\valset][\valsym]

```



```

\AsgSet, ... ...
1178 \newcommand{\asgsym}{\chi}
1179 \newcommand{\asgset}{Asg}
1180 \cmdmthsetext{Asg}[\asgset][\asgsym]

1181 %** First-Order Logics I *****%%

\FOL, ... ...
1182 % First-Order Logic
1183 \cmdtxttoparname{FOL}[Fol]
1184
1185 % Monadic First-Order Logic
1186 \DeclareRobustCommand{\MFOL}
1187   {\{\txtname{M}\}\FOL}

1188 %** Syntax *****%%

\VarSig, ... ...
1189 \newcommand{\varsig}{V}
1190 \usrmthlatupp{Var}{Sig}{sig}[\varsig]
1191 \newcommand{\varsym}{x}
1192 \newcommand{\varset}{Vr}
1193 \cmdmthsetext{Var}[\varset][\varsym]
1194 \usrmth{var}{\}{argfun}[vr]
1195 \cmdmthfun{dim}[dm]\usrmth{dim}{\}{argfun}[dm]

\ConSig, ... ...
1196 \newcommand{\consig}{C}
1197 \usrmthlatupp{Con}{Sig}{sig}[\consig]
1198 \newcommand{\consym}{c}
1199 \newcommand{\conset}{Cn}
1200 \cmdmthsetext{Con}[\conset][\consym]
1201 \usrmth{con}{\}{argfun}[cn]

\FunSig, ... ...
1202 \newcommand{\funsig}{F}
1203 \usrmthlatupp{Fun}{Sig}{sig}[\funsig]
1204 \newcommand{\funsym}{f}
1205 \newcommand{\funset}{Fn}
1206 \cmdmthsetext{Fun}[\funset][\funsym]
1207 \usrmth{fun}{\}{argfun}[fn]
1208 \cmdmthfun{art}[ar]\usrmth{art}{\}{argfun}[ar]

\TerSig, ... ...
1209 \newcommand{\tersig}{T}
1210 \usrmthlatupp{Ter}{Sig}{sig}[\tersig]
1211 \newcommand{\tersym}{t}
1212 \newcommand{\terset}{Tr}
1213 \cmdmthsetext{Ter}[\terset][\tersym]
1214 \usrmth{ter}{\}{argfun}

\RelSig, ... ...
1215 \newcommand{\relsig}{R}
1216 \usrmthlatupp{Rel}{Sig}{sig}[\relsig]
1217 \newcommand{\relsym}{r}
1218 \newcommand{\relset}{Rl}
1219 \cmdmthsetext{Rel}[\relset][\relsym]
1220 \usrmth{rel}{\}{argfun}[rl]

\skm ...
1221 \usrmth{skm}{\}{argfun}

1222 %** Semantics *****%%

```

```

\ConStr, ... ...
1223 \newcommand{\constr}{C}
1224 \usrmthlatupp{Con}{Str}{str}[\constr]

\FunStr, ... ...
1225 \newcommand{\funstr}{F}
1226 \usrmthlatupp{Fun}{Str}{str}[\funstr]

\TerStr, ... ...
1227 \newcommand{\terstr}{T}
1228 \usrmthlatupp{Ter}{Str}{str}[\terstr]

\RelStr, ... ...
1229 \newcommand{\relstr}{R}
1230 \usrmthlatupp{Rel}{Str}{str}[\relstr]

1231 %** First-Order Logics II *****%%

\IF, ... ...
1232 % Independence-Friendly Logic
1233 \cmdtxttoparname{IF}

...

1234 %** Syntax *****%%

...

1235 %** Semantics *****%%

...

1236 %** Second-Order Logics I *****%%

\SOL, ... ...
1237 % Second-Order Logic
1238 \cmdtxttoparname{SOL}[Sol]
1239
1240 % Monadic Second-Order Logic
1241 \DeclareRobustCommand{\MSOL}
1242 {\{\txtname{M}\}\SOL}

1243 %** Syntax *****%%

\FVarSet, ... ...
1244 \newcommand{\fvarsym}{x}
1245 \newcommand{\fvarset}{FVr}
1246 \cmdmthsetext{FVar}[\fvarset][\fvarsym]

\SVarSet, ... ...
1247 \newcommand{\svarsym}{X}
1248 \newcommand{\svarset}{SVr}
1249 \cmdmthsetext{SVar}[\svarset][\svarsym]

1250 %** Semantics *****%%

...

1251 %** Second-Order Logics II *****%%

\TL, \PL, ... ...
1252 % Tree Logic
1253 \cmdtxttoparname{TL}
1254
1255 % Monadic Tree Logic
1256 \DeclareRobustCommand{\MTL}
1257 {\{\txtname{M}\}\TL}

```

```

1258
1259 % Path Logic
1260 \cmdtxttoparname{PL}
1261
1262 % Monadic Path Logic
1263 \DeclareRobustCommand{\MPL}
1264   {\textname{M}}\PL}

1265 %** Syntax *****%%
...

1266 %** Semantics *****%%
...

1267 %** Modal Logics I *****%%

```

\ML, \QML, ...

```

1268 % Modal Logic
1269 \cmdtxttoparname{ML}
1270
1271 % Quantified Modal Logic
1272 \DeclareRobustCommand{\QML}
1273   {\textname{Q}}\ML}
1274 \DeclareRobustCommand{\EML}
1275   {\ensuremath{\exists}\ML}
1276 \DeclareRobustCommand{\UML}
1277   {\ensuremath{\forall}\ML}

1278 %** Syntax *****%%

```

\Opr ...

```

1279 \usrmth{Opr}{\sym}[Op]

```

\DMod, \BMod ...

```

1280 \usrmth{DMod}{\sym}[\Diamond]
1281 \usrmth{BMod}{\sym}[\Box]

```

\Exs, \All ...

```

1282 \DeclareRobustCommand{\Exs}[1]
1283   {\mth{\defval{\argmid{\langle}{#1}{\rangle}}{\DMod}}}
1284 \DeclareRobustCommand{\All}[1]
1285   {\mth{\defval{\argmid{\left[]}{#1}{\right}}}{\BMod}}}

```

```

1286 %** Semantics *****%%

```

\KrpStr, ...

```

1287 \newcommand{\krpstr}{K}
1288 \usrmthlatupp{Krp}{Str}{str}[\krpstr]

```

\WrlSet, ...

```

1289 \newcommand{\wrlsym}{w}
1290 \newcommand{\wrlset}{W}
1291 \cmdmthsetext{Wrl}[\wrlset][\wrlsym]
1292 \cmdmthsymelm{iwrl}[\wrlsym_{I}]

```

\AccRel, \TrnRel ...

```

1293 \newcommand{\accsym}{R}
1294 \cmdmthrel{Acc}[\accsym]
1295 \cmdmthrel{Trn}[\accsym]

```

\labFun ...

```

1296 \newcommand{\labsym}{\lambda}
1297 \cmdmthfun{lab}[\labsym]

```

```

\PthSet, \pthFun ...
1298 \providecommand{\pthsym}{\pi}
1299 \providecommand{\pthset}{Pth}
1300 \cmdmthsetext{Pth}[\pthset][\pthsym]
1301 \cmdmthfun{pth}

1302 %** Modal Logics II *****%

\MC, \QMC, ... ...
1303 % Mu Calculus
1304 \cmdtxtoparname{MC}[\ensuremath{\mu}-Calculus]
1305
1306 % Quantified Modal Logic
1307 \DeclareRobustCommand{\QMC}
1308   {\{\textrm{Q}\}\MC}
1309 \DeclareRobustCommand{\EMC}
1310   {\ensuremath{\exists}\MC}
1311 \DeclareRobustCommand{\UMC}
1312   {\ensuremath{\forall}\MC}

1313 %** Syntax *****%

...

1314 %** Semantics *****%

...

1315 %** Temporal Logics I *****%

\PTL, \LTL, ... ...
1316 % Propositional Temporal Logic
1317 \cmdtxtoparname{PTL}
1318
1319 % Quantified Propositional Temporal Logic
1320 \DeclareRobustCommand{\QPTL}
1321   {\{\textrm{Q}\}\PTL}
1322 \DeclareRobustCommand{\EPTL}
1323   {\ensuremath{\exists}\PTL}
1324 \DeclareRobustCommand{\UPTL}
1325   {\ensuremath{\forall}\PTL}
1326
1327 % Linear Temporal Logic
1328 \cmdtxtoparname{LTL}
1329
1330 % Quantified Linear Temporal Logic
1331 \DeclareRobustCommand{\QLTL}
1332   {\{\textrm{Q}\}\LTL}
1333 \DeclareRobustCommand{\ELTL}
1334   {\ensuremath{\exists}\LTL}
1335 \DeclareRobustCommand{\ULTL}
1336   {\ensuremath{\forall}\LTL}

1337 %** Syntax *****%

\X, ... ...
1338 \usrmth{X}{-}{sym}[X\,,]
1339 \usrmth{F}{-}{sym}[F\,,]
1340 \usrmth{G}{-}{sym}[G\,,]
1341 \usrmth{U}{-}{sym}[\,,U\,,]
1342 \usrmth{R}{-}{sym}[\,,R\,,]

\Y, ... ...
1343 \usrmth{Y}{-}{sym}[G\,,]
1344 \usrmth{P}{-}{sym}[P\,,]\let\SavePilcrow\P
1345 \usrmth{H}{-}{sym}[H\,,]\let\SaveDoubleAcute\H
1346 \usrmth{S}{-}{sym}[\,,S\,,]\let\SaveSectionSymbol\S
1347 \usrmth{B}{-}{sym}[\,,B\,,]

```

1348 %** Semantics *****%

...

1349 %** Temporal Logics II *****%

\PDL, \CTL, ...

1350

1351 % Propositional Dynamic Logic

1352 \cmdtxttoparname{PDL}

1353

1354 % Computation Tree Logic

1355 \cmdtxttoparname{CTL}

1356

1357 % Quantified Computation Tree Logic

1358 \DeclareRobustCommand{\QCTL}

1359 {\txtname{Q}}\CTL

1360 \DeclareRobustCommand{\ECTL}

1361 {\ensuremath{\exists}}\CTL

1362 \DeclareRobustCommand{\UCTL}

1363 {\ensuremath{\forall}}\CTL

1364

1365 % Improved Computation Tree Logic

1366 \cmdtxttoparname{CTLP}[CTL\$^{+}\$]

1367

1368 % Quantified Improved Computation Tree Logic

1369 \DeclareRobustCommand{\QCTLP}

1370 {\txtname{Q}}\CTLP

1371 \DeclareRobustCommand{\ECTLP}

1372 {\ensuremath{\exists}}\CTLP

1373 \DeclareRobustCommand{\UCTLP}

1374 {\ensuremath{\forall}}\CTLP

1375

1376 % Full Computation Tree Logic

1377 \cmdtxttoparname{CTLS}[CTL*]

1378

1379 % Quantified Full Computation Tree Logic

1380 \DeclareRobustCommand{\QCTLS}

1381 {\txtname{Q}}\CTLS

1382 \DeclareRobustCommand{\ECTLS}

1383 {\ensuremath{\exists}}\CTLS

1384 \DeclareRobustCommand{\UCTLS}

1385 {\ensuremath{\forall}}\CTLS

1386 %** Syntax *****%

\E, \A ...

1387 \usrmth{E}{\sym}

1388 \usrmth{A}{\sym}

1389 %** Semantics *****%

...

1390 %** Strategic Logics I *****%

\ATL, ...

1391 % Alternating Temporal Logic

1392 \cmdtxttoparname{ATL}

1393

1394 % Quantified Alternating Temporal Logic

1395 \DeclareRobustCommand{\QATL}

1396 {\txtname{Q}}\ATL

1397 \DeclareRobustCommand{\EATL}

1398 {\ensuremath{\exists}}\ATL

1399 \DeclareRobustCommand{\UATL}

```

1400   {\ensuremath{\forall}\text{forall}}\ATL}
1401
1402 % Improved Alternating Temporal Logic
1403 \cmdtxttoparname{ATLP}[ATL$^{+}$]
1404
1405 % Quantified Improved Alternating Temporal Logic
1406 \DeclareRobustCommand{\QATLP}
1407   {\{\textname{Q}\}\ATLP}
1408 \DeclareRobustCommand{\EATLP}
1409   {\ensuremath{\exists}\ATLP}
1410 \DeclareRobustCommand{\UATLP}
1411   {\ensuremath{\forall}\ATLP}
1412
1413 % Full Alternating Temporal Logic
1414 \cmdtxttoparname{ATLS}[ATL*]
1415
1416 % Quantified Full Alternating Temporal Logic
1417 \DeclareRobustCommand{\QATLS}
1418   {\{\textname{Q}\}\ATLS}
1419 \DeclareRobustCommand{\EATLS}
1420   {\ensuremath{\exists}\ATLS}
1421 \DeclareRobustCommand{\UATLS}
1422   {\ensuremath{\forall}\ATLS}
1423 %** Syntax *****%

\EExs, \AA11 ...
1424 \DeclareRobustCommand{\EExs}[1]
1425   {\math{\argmid{\langle!\rangle}{\defval{#1}{\emptyset}}{\rangle!\rangle}}}
1426 \DeclareRobustCommand{\AA11}[1]
1427   {\math{\argmid{\left[\left[{}]{\defval{#1}{\emptyset}}{\right]\right]}}}

1428 %** Semantics *****%

\CGS ...
1429 \cmdtxtname{CGS}

\CGSStr, ... ...
1430 \newcommand{\cgsstr}{G}
1431 \usrmthlatupp{CGS}{Str}{str}[\cgsstr]

\AgnSet, ... ...
1432 \newcommand{\agnsym}{a}
1433 \newcommand{\agnset}{Ag}
1434 \cmdmthsetext{Agn}{\agnset}[\agnsym]

\PosSet, ... ...
1435 \providecommand{\possym}{v}
1436 \providecommand{\posset}{Ps}
1437 \cmdmthsetext{Pos}{\posset}[\possym]
1438 \cmdmthsymelm{ipos}[\possym_{I}]
1439 \cmdmthsymelm{fpos}[\possym_{F}]
1440 \cmdmthset{PPos}[\posset_{PlrSym}]
1441 \cmdmthsymelm{ppos}[\possym_{PlrSym}]
1442 \cmdmthset{OPos}[\posset_{OppSym}]
1443 \cmdmthsymelm{opos}[\possym_{OppSym}]

\SttSet, ... ...
1444 \newcommand{\sttsym}{s}
1445 \newcommand{\sttset}{St}
1446 \cmdmthsetext{Stt}{\sttset}[\sttsym]
1447 \cmdmthset{IStt}[\sttset_{I}]
1448 \cmdmthsymelm{istt}[\sttsym_{I}]
1449 \cmdmthset{FStt}[\sttset_{F}]
1450 \cmdmthsymelm{fstt}[\sttsym_{F}]

```

```

\ActSet, ... ...
1451 \newcommand{\actsym}{c}
1452 \newcommand{\actset}{Ac}
1453 \cmdmthsettext{Act}[\actset][\actsym]

\DecSet, ... ...
1454 \newcommand{\decsym}{d}
1455 \newcommand{\decset}{Dc}
1456 \cmdmthsettext{Dec}[\decset][\decsym]

\movFun ...
1457 \newcommand{\movsym}{\tau}
1458 \cmdmthfun{mov}[\movsym]

\HstSet, ... ...
1459 \providecommand{\hstsym}{\rho}
1460 \providecommand{\hstset}{Hst}
1461 \cmdmthsettext{Hst}[\hstset][\hstsym]
1462 \cmdmthset{PHst}[\hstset_{\PlrSym}]
1463 \cmdmthsymelm{phst}[\hstsym_{\PlrSym}]
1464 \cmdmthset{OHst}[\hstset_{\OppSym}]
1465 \cmdmthsymelm{ohst}[\hstsym_{\OppSym}]
1466 \cmdmthfun{hst}

\PlaySet, \playFun ...
1467 \providecommand{\playsym}{\pi}
1468 \providecommand{\playset}{Play}
1469 \cmdmthsettext{Play}[\playset][\playsym]
1470 \cmdmthfun{play}

\StrSet, ... ...
1471 \providecommand{\strsym}{\sigma}
1472 \providecommand{\strset}{Str}
1473 \cmdmthsettext{Str}[\strset][\strsym]
1474 \cmdmthset{PStr}[\strset_{\PlrSym}]
1475 \cmdmthsymelm{pstr}[\strsym_{\PlrSym}]
1476 \cmdmthset{OStr}[\strset_{\OppSym}]
1477 \cmdmthsymelm{ostr}[\strsym_{\OppSym}]

\PrfSet, \prfFun ...
1478 \providecommand{\prfsym}{\xi}
1479 \providecommand{\prfset}{Prf}
1480 \cmdmthsettext{Prf}[\prfset][\prfsym]

1481 %** Strategic Logics II *****%

\SL, ... ...
1482 % Strategy Logic
1483 \cmdtxttoparname{SL}
1484
1485 \DeclareRobustCommand{\ESL}
1486   {\ensuremath{\exists}\SL}
1487 \DeclareRobustCommand{\USL}
1488   {\ensuremath{\forall}\SL}
1489
1490 \DeclareRobustCommand{\FSL}
1491   {\{\textname{F}\}\SL}
1492
1493 \DeclareRobustCommand{\EFSL}
1494   {\ensuremath{\exists}\FSL}
1495 \DeclareRobustCommand{\UFSL}
1496   {\ensuremath{\forall}\FSL}
1497

```

```

1498 % One-Goal Strategy Logic
1499 \DeclareRobustCommandx{\OGSL}[3][1=, 2=, 3=]
1500   {\SL[#1][#2][lg\arglef{,}{#3}]}
1501
1502 \DeclareRobustCommand{\EOGSL}
1503   {\ensuremath{\exists}\OGSL}
1504 \DeclareRobustCommand{\UOGSL}
1505   {\ensuremath{\forall}\OGSL}
1506
1507 \DeclareRobustCommand{\FOGSL}
1508   {\{\textname{F}\}\OGSL}
1509
1510 \DeclareRobustCommand{\EFOGSL}
1511   {\ensuremath{\exists}\FOGSL}
1512 \DeclareRobustCommand{\UFOGSL}
1513   {\ensuremath{\forall}\FOGSL}
1514
1515 % Conjunctive-Goal Strategy Logic
1516 \DeclareRobustCommandx{\CGSL}[3][1=, 2=, 3=]
1517   {\SL[#1][#2][cg\arglef{,}{#3}]}
1518
1519 \DeclareRobustCommand{\ECGSL}
1520   {\ensuremath{\exists}\CGSL}
1521 \DeclareRobustCommand{\UCGSL}
1522   {\ensuremath{\forall}\CGSL}
1523
1524 \DeclareRobustCommand{\FCGSL}
1525   {\{\textname{F}\}\CGSL}
1526
1527 \DeclareRobustCommand{\EFCGSL}
1528   {\ensuremath{\exists}\FCGSL}
1529 \DeclareRobustCommand{\UFCGSL}
1530   {\ensuremath{\forall}\FCGSL}
1531
1532 % Disjunctive-Goal Strategy Logic
1533 \DeclareRobustCommandx{\DGS}[3][1=, 2=, 3=]
1534   {\SL[#1][#2][dg\arglef{,}{#3}]}
1535
1536 \DeclareRobustCommand{\EDGS}
1537   {\ensuremath{\exists}\DGS}
1538 \DeclareRobustCommand{\UDGS}
1539   {\ensuremath{\forall}\DGS}
1540
1541 \DeclareRobustCommand{\FDGS}
1542   {\{\textname{F}\}\DGS}
1543
1544 \DeclareRobustCommand{\EFDGS}
1545   {\ensuremath{\exists}\FDGS}
1546 \DeclareRobustCommand{\UFDGS}
1547   {\ensuremath{\forall}\FDGS}
1548
1549 % Alternating-Goal Strategy Logic
1550 \DeclareRobustCommandx{\AGSL}[3][1=, 2=, 3=]
1551   {\SL[#1][#2][ag\arglef{,}{#3}]}
1552
1553 \DeclareRobustCommand{\EAGSL}
1554   {\ensuremath{\exists}\AGSL}
1555 \DeclareRobustCommand{\UAGSL}
1556   {\ensuremath{\forall}\AGSL}
1557
1558 \DeclareRobustCommand{\FAGSL}
1559   {\{\textname{F}\}\AGSL}
1560

```



```

1561 \DeclareRobustCommand{\EFAGSL}
1562   {\ensuremath{\exists}\FAGSL}
1563 \DeclareRobustCommand{\UFAGSL}
1564   {\ensuremath{\forall}\FAGSL}
1565
1566 % Extended-Goal Strategy Logic
1567 \DeclareRobustCommandx{\EGSL}[3][1=, 2=, 3=]
1568   {\SL[#1][#2][eg\arglef{,}{#3}]}
1569
1570 \DeclareRobustCommand{\EEGSL}
1571   {\ensuremath{\exists}\EGSL}
1572 \DeclareRobustCommand{\UEGSL}
1573   {\ensuremath{\forall}\EGSL}
1574
1575 \DeclareRobustCommand{\FEGSL}
1576   {\{\txtname{F}\}\xGSL}
1577
1578 \DeclareRobustCommand{\EFEGSL}
1579   {\ensuremath{\exists}\FEGSL}
1580 \DeclareRobustCommand{\UFEGSL}
1581   {\ensuremath{\forall}\FEGSL}
1582
1583 % Boolean-Goal Strategy Logic
1584 \DeclareRobustCommandx{\BGSL}[3][1=, 2=, 3=]
1585   {\SL[#1][#2][bg\arglef{,}{#3}]}
1586
1587 \DeclareRobustCommand{\EBGSL}
1588   {\ensuremath{\exists}\BGSL}
1589 \DeclareRobustCommand{\UBGSL}
1590   {\ensuremath{\forall}\BGSL}
1591
1592 \DeclareRobustCommand{\FBGSL}
1593   {\{\txtname{F}\}\xGSL}
1594
1595 \DeclareRobustCommand{\EFBGSL}
1596   {\ensuremath{\exists}\FBGSL}
1597 \DeclareRobustCommand{\UFBGSL}
1598   {\ensuremath{\forall}\FBGSL}
1599
1600 % Nested-Goal Strategy Logic
1601 \DeclareRobustCommandx{\NGSL}[3][1=, 2=, 3=]
1602   {\SL[#1][#2][ng\arglef{,}{#3}]}
1603
1604 \DeclareRobustCommand{\ENGSL}
1605   {\ensuremath{\exists}\NGSL}
1606 \DeclareRobustCommand{\UNGSL}
1607   {\ensuremath{\forall}\NGSL}
1608
1609 \DeclareRobustCommand{\FNGSL}
1610   {\{\txtname{F}\}\xGSL}
1611
1612 \DeclareRobustCommand{\EFNGSL}
1613   {\ensuremath{\exists}\FNGSL}
1614 \DeclareRobustCommand{\UFNGSL}
1615   {\ensuremath{\forall}\FNGSL}
1616
1617 % Undefined-Goal Strategy Logic
1618 \DeclareRobustCommandx{\XGSL}[3][1=, 2=, 3=]
1619   {\SL[#1][#2][xg\arglef{,}{#3}]}
1620
1621 \DeclareRobustCommand{\EXGSL}
1622   {\ensuremath{\exists}\XGSL}
1623 \DeclareRobustCommand{\UXGSL}

```

```

1624 {\ensuremath{\forall}\XGSL}
1625
1626 \DeclareRobustCommand{\FXGSL}
1627 {\{\txname{F}\}\XGSL}
1628
1629 \DeclareRobustCommand{\EFXGSL}
1630 {\ensuremath{\exists}\FXGSL}
1631 \DeclareRobustCommand{\UFXGSL}
1632 {\ensuremath{\forall}\FXGSL}

1633 %%** Syntax *****%%

\BndSet, ... ...
1634 \newcommand{\bndsym}{\flat}
1635 \newcommand{\bndset}{\Bn}
1636 \cmdmthsettext{\Bnd}[\bndset][\bndsym]
1637 \usrmth{\bnd}{\}{argfun}

\psn ...
1638 \usrmth{\psn}{\}{argfun}

1639 %%** Semantics *****%%

\nxtFun ...
1640 \newcommand{\nxtfun}{\nxt}
1641 \cmdmthfun{\nxt}[\nxtfun]

1642 \fi
1643 %%*****%%
1644 %%*****%%
1645 %%** Macros for Automata *****%%
1646 %%*****%%
1647 \ifaut@

1648 %%** Finite Word Automata *****%%

\DWA, ... ...
1649 \cmdtxtoparname{\DWA}\cmdtxtoparname{\NWA}\cmdtxtoparname{\UWA}\cmdtxtoparname{\AWA}
1650
1651 \cmdtxtoparname{\DFW}\cmdtxtoparname{\NFW}\cmdtxtoparname{\UFW}\cmdtxtoparname{\AFW}
1652 \cmdtxtoparname{\DBW}\cmdtxtoparname{\NBW}\cmdtxtoparname{\UBW}\cmdtxtoparname{\ABW}
1653 \cmdtxtoparname{\DCW}\cmdtxtoparname{\NCW}\cmdtxtoparname{\UCW}\cmdtxtoparname{\ACW}
1654 \cmdtxtoparname{\DPW}\cmdtxtoparname{\NPW}\cmdtxtoparname{\UPW}\cmdtxtoparname{\APW}
1655 \cmdtxtoparname{\DRW}\cmdtxtoparname{\NRW}\cmdtxtoparname{\URW}\cmdtxtoparname{\ARW}
1656 \cmdtxtoparname{\DSW}\cmdtxtoparname{\NSW}\cmdtxtoparname{\USW}\cmdtxtoparname{\ASW}
1657 \cmdtxtoparname{\DMW}\cmdtxtoparname{\NMW}\cmdtxtoparname{\UMW}\cmdtxtoparname{\AMW}

\GFG, \PD, ... ...
1658 \cmdtxtoparname{\GFG}
1659
1660 \cmdtxtoparname{\PD}
1661
1662 %% ...

1663 %%** Syntax *****%%

\AutName, ... ...
1664 \newcommand{\autname}{\A}
1665 \usrmthlatupp{\Aut}{\Name}{\name}[\autname]
1666 \newcommand{\autset}{\Aut}
1667 \cmdmthset{\Aut}[\autset]

\WAutSet ...
1668 \newcommand{\wautset}{\WAut}
1669 \cmdmthset{\WAut}[\wautset]

```

```

\SttSet, ... ...
1670 \def\sttsym{q}
1671 \def\sttset{Q}
1672 \cmdmthsetext{Stt}[\sttset][\sttsym]
1673 \cmdmthset{IStt}[\sttset_{I}]
1674 \cmdmthsymelm{istt}[\sttsym_{I}]
1675 \cmdmthset{FStt}[\sttset_{F}]
1676 \cmdmthsymelm{fstt}[\sttsym_{F}]

\SymSet, ... ...
1677 \newcommand{\symsym}{\sigma}
1678 \newcommand{\symset}{\Sigma}
1679 \cmdmthsetext{Sym}[\symset][\symsym]

\trnFun ...
1680 \newcommand{\trnsym}{\delta}
1681 \cmdmthfun{trn}[\trnsym]

1682 %** Semantics *****%

\LangFun ...
1683 \newcommand{\langfun}{L}
1684 \cmdmthfun{Lang}[\langfun]

\WrdSet, ... ...
1685 \newcommand{\wrdsym}{w}
1686 \newcommand{\wrddset}{W}
1687 \cmdmthsetext{Wrd}[\wrddset][\wrdsym]

1688 %** Finite Tree Automata *****%

\DTA, ... ...
1689 \cmdtxtopname{DTA}\cmdtxtopname{NTA}\cmdtxtopname{UTA}\cmdtxtopname{ATA}
1690
1691 \cmdtxtopname{DFT}\cmdtxtopname{NFT}\cmdtxtopname{UFT}\cmdtxtopname{AFT}
1692 \cmdtxtopname{DBT}\cmdtxtopname{NBT}\cmdtxtopname{UBT}\cmdtxtopname{ABT}
1693 \cmdtxtopname{DCT}\cmdtxtopname{NCT}\cmdtxtopname{UCT}\cmdtxtopname{ACT}
1694 \cmdtxtopname{DPT}\cmdtxtopname{NPT}\cmdtxtopname{UPT}\cmdtxtopname{APT}
1695 \cmdtxtopname{DRT}\cmdtxtopname{NRT}\cmdtxtopname{URT}\cmdtxtopname{ART}
1696 \cmdtxtopname{DST}\cmdtxtopname{NST}\cmdtxtopname{UST}\cmdtxtopname{AST}
1697 \cmdtxtopname{DMT}\cmdtxtopname{NMT}\cmdtxtopname{UMT}\cmdtxtopname{AMT}

1698 %** Syntax *****%

\TAutSet ...
1699 \newcommand{\tautset}{TAut}
1700 \cmdmthset{TAut}[\tautset]

\DirSet, ... ...
1701 \newcommand{\dirsym}{d}
1702 \newcommand{\dirset}{\Lambda}
1703 \cmdmthsetext{Dir}[\dirset][\dirsym]

1704 %** Semantics *****%

\TreeSet, ... ...
1705 \newcommand{\treesym}{T}
1706 \newcommand{\treeset}{Tr}
1707 \cmdmthsetext{Tree}[\treeset][\treesym]

\wotFun ...
1708 \newcommand{\wotfun}{wot}
1709 \cmdmthfun{wot}[\wotfun]

```

```

1710 \fi
1711 %*****%
1712 %*****%
1713 %** Format Tricks *****%
1714 %*****%
1715 \iffm@

... ..

1716 %...

1717 \fi
1718 %*****%
1719 %*****%
1720 %** Figure Tricks *****%
1721 %*****%
1722 \iffig@

1723 \RequirePackage{tikz}
1724 \usetikzlibrary{arrows,shapes}

1725 \tikzstyle{every node} =
1726   [draw = none, fill = none, black, thin]
1727 \tikzstyle{every edge} +=
1728   [black, thick]

1729 \tikzstyle{noall} =
1730   [draw = none, fill = none]
1731 \tikzstyle{nodraw} =
1732   [draw = none, fill = white]
1733 \tikzstyle{nofill} =
1734   [draw = black, fill = none]

1735 \ifwrpfig@
1736   % Wrapfig Package
1737   \RequirePackage{wrapfig}
1738 \fi

1739 \fi
1740 %*****%
1741 %*****%
1742 %** Table Tricks *****%
1743 %*****%
1744 \iftab@

... ..

1745 %...

1746 \fi
1747 %*****%
1748 %*****%
1749 %** Algorithm Tricks *****%
1750 %*****%
1751 \ifalg@

1752 \RequirePackage[ruled,vlined]{algorithm2e}
1753 \setlength{\algomargin}{1.25em}
1754 \DontPrintSemicolon
1755 \SetInd{0.25em}{0.5em}

\Signature ...
1756 \SetKw{Signature}{signature}

\Macro, ... ..
1757 \SetKwFor{Macro}{macro}{}{}
1758 \SetKwFor{Function}{function}{}{}
1759 \SetKwFor{Procedure}{procedure}{}{}

```

```

\Let ...
1760 \SetKwFor{Let}{let}{in}{}

\True, \False ...
1761 \SetKw{True}{true}
1762 \SetKw{False}{false}

\GoTo, ... ...
1763 \SetKw{GoTo}{goto}
1764 \SetKw{Break}{break}
1765 \SetKw{Continue}{continue}

\MIf, ... ...
1766 \SetKwIF{MIf}{MElseIf}{MElse}{\#if}{\#then}{\#else \#if}{\#else}{\#endif}

\nlr ...
1767 \DeclareRobustCommand{\nlr}[1]
1768   {\addtocounter{AlgoLine}{1}%
1769   \nlset{\arabic{AlgoLine}-\addtocounter{AlgoLine}{#1}\arabic{AlgoLine}}}

1770 \fi
1771 %%*****%
1772 \endinput
1773 \</package>

```

2 Change History

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

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