

My Unicode Symbol Translations

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Abstract

I tend to use `(set-input-method "Agda")` in many of my Emacs buffers to provide Unicode support so that `\forall` immediately produces \forall , and likewise a variety of symbols: $\forall x \bullet x \leq y \approx z \exists \equiv \Rightarrow \wedge \vee \smile \sqcap \sqcup < \sqsubseteq$. Draw a symbol at `de-TeX-ify` to find out what \TeX incantations would produce it.

This Org-mode file produces a \LaTeX style file which can be utilised in nearly all of my documents which generate PDFs.

The file's 'footer' declares the 'compile command' to perform an `(org-babel-tangle)` so as to produce the latest style file, then `(org-latex-export-to-pdf)` to produce this PDF.

Maintained at <https://github.com/alhassy/CheatSheet>

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1 Top Matter

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{MyUnicodeSymbols}[2019/01/30 Unicode Symbol Translations]

\RequirePackage[utf8]{inputenc}
\RequirePackage{newunicodechar}

% To avoid "too many math alphabets" error.
\newcommand\hmmax{0} % default 3
\newcommand\bmmax{0} % default 4

\RequirePackage{bbold} % \mathbb{n} to make double stroke digit
\RequirePackage{pifont}
\RequirePackage{stmaryrd}

\RequirePackage{amsmath, amssymb, amsthm, latexsym, amscd, enumerate, bbm, etex, nicefrac, mathrsfs}
% Incompatible with MnSymbol.
```

The stmaryrd package provides two types of multiset, or bag, delimiters: thick: `\lbag` and `\rbag`; and skinny: `\Lbag` and `\Rbag`.

2 Lattices –Sets, Booleans, Quantifiers

2.1 Orders

```
% arbitrary lattice
\newunicodechar{\sqsubset}{}{\ensuremath{\sqsubset}}
\newunicodechar{\sqsubseteq}{}{\ensuremath{\sqsubseteq}}
\newunicodechar{\sqsupseteq}{}{\ensuremath{\sqsupseteq}}

% numeric
\newunicodechar{\leq}{}{\ensuremath{\leq}}
\newunicodechar{\geq}{}{\ensuremath{\geq}}
\newunicodechar{\mid}{}{\ensuremath{\mid}} % divisibly ordering

% sets
\newunicodechar{\subset}{}{\ensuremath{\subset}}
\newunicodechar{\subseteq}{}{\ensuremath{\subseteq}}

% logical
\newunicodechar{\vdash}{}{\ensuremath{\vdash}}
\newunicodechar{\vDash}{}{\ensuremath{\vDash}} % semantic consequence  $\models$ 
\newunicodechar{\dashv}{}{\ensuremath{\dashv}}
```

2.2 Meets & Joins

```
% arbitrary lattice
\newunicodechar{\sqcup}{}{\ensuremath{\sqcup}}
\newunicodechar{\sqcap}{}{\ensuremath{\sqcap}}

% numeric
\newunicodechar{\uparrow}{}{\ensuremath{\uparrow}}
```

```

\newunicodechar{\Downarrow}{\ensuremath{\downarrow}}

% boolean
\newunicodechar{\V}{\ensuremath{\lor}}
\newunicodechar{\^}{\ensuremath{\land}}
\newunicodechar{\bigvee}{\ensuremath{\bigvee}}
\newunicodechar{\bigwedge}{\ensuremath{\bigwedge}}
\newunicodechar{\exists}{\ensuremath{\exists}}
\newunicodechar{\forall}{\ensuremath{\forall}}

% sets
\newunicodechar{\cap}{\ensuremath{\cap}}
\newunicodechar{\cup}{\ensuremath{\cup}}

% types
\newunicodechar{\uplus}{\ensuremath{\uplus}} % Agda u+
\newunicodechar{\uplus}{\ensuremath{\uplus}} % Agda u.

```

2.3 External Elements

```

% arbitrary lattice
\newunicodechar{\bot}{\ensuremath{\bot}}
\newunicodechar{\top}{\ensuremath{\top}}

% numeric
\newunicodechar{\infty}{\ensuremath{\infty}}

% sets
\newunicodechar{\emptyset}{\ensuremath{\emptyset}}
\newunicodechar{\emptyset}{\ensuremath{\emptyset}}

```

2.4 Pseudo-Complements

```

% arbitrary lattice
\newunicodechar{\rightarrow}{\ensuremath{\rightarrow}}
\newunicodechar{\leftarrow}{\ensuremath{\leftarrow}}
\newunicodechar{\longrightarrow}{\ensuremath{\longrightarrow}} % pseudo-complement
\newunicodechar{\hspace{-1em}. \; \; \; }{\hspace{-1em}. \; \; \; } %% to be used in compound symbol:  $\rightarrow$ 
                                                                %% to form a natural transformation

% boolean
\newunicodechar{\Rightarrow}{\ensuremath{\Rightarrow}}
\newunicodechar{\Leftarrow}{\ensuremath{\Leftarrow}}
\newunicodechar{\lnot}{\ensuremath{\lnot}}

% sets
\newunicodechar{\in}{\ensuremath{\in}}
\newunicodechar{\sim}{\ensuremath{\sim}}

```

3 Equality-Like Symbols

```

\newunicodechar{\neq}{\ensuremath{\neq}}
\newunicodechar{\equiv}{\ensuremath{\equiv}}

```

```

\newunicodechar{≠}{\ensuremath{\not\equiv}}
\newunicodechar{⇔}{\ensuremath{\iff}}
\newunicodechar{≈}{\ensuremath{\approx}}
\newunicodechar{≅}{\ensuremath{\cong}}
\newunicodechar{:=}{\ensuremath{:\!=}}
% \newunicodechar{8788}{\ensuremath{\mathrel{:=}}} % =

```

4 Brackets

```

\newunicodechar{⌊}{\ensuremath{\lfloor}}
\newunicodechar{⌋}{\ensuremath{\rfloor}}

\newunicodechar{⌈}{\ensuremath{\lceil}}
\newunicodechar{⌉}{\ensuremath{\rceil}}

\newunicodechar{⟨}{\ensuremath{\langle!\rangle}}
\newunicodechar{⟩}{\ensuremath{\rangle!\rangle}}

\newunicodechar{⟨}{\ensuremath{\langle}}
\newunicodechar{⟩}{\ensuremath{\rangle}}

\newunicodechar{(}{\ensuremath{(?!)} }
\newunicodechar{)}{\ensuremath{|\!)}}
%
% \newunicodechar{10631}{\ensuremath{(\hspace{-0.4ex})}} % (
% \newunicodechar{10632}{\ensuremath{|\hspace{-0.4ex})}} % )

\newunicodechar{⌘}{\ensuremath{\Lbag}}
\newunicodechar{⌞}{\ensuremath{\Rbag}}

\newunicodechar{⏚}{\ensuremath{\{\!|\}} }
\newunicodechar{⏛}{\ensuremath{|\!\}}

```

5 Greek Letters

```

\newunicodechar{τ}{\ensuremath{\tau}}
\newunicodechar{λ}{\ensuremath{\lambda}}
\newunicodechar{γ}{\ensuremath{\gamma}}
\newunicodechar{δ}{\ensuremath{\delta}}
\newunicodechar{σ}{\ensuremath{\sigma}}
\newunicodechar{θ}{\ensuremath{\theta}}
\newunicodechar{η}{\ensuremath{\eta}}
\newunicodechar{ε}{\ensuremath{\epsilon}}
\newunicodechar{μ}{\ensuremath{\mu}}
\newunicodechar{φ}{\ensuremath{\phi}}
\newunicodechar{π}{\ensuremath{\pi}}

% capital letters
\newunicodechar{Φ}{\ensuremath{\Phi}}
\newunicodechar{Σ}{\ensuremath{\mathop{\Sigma}}}
\newunicodechar{Γ}{\ensuremath{\Gamma}}
\newunicodechar{Π}{\ensuremath{\Pi}}

```

6 Compositional Operators

```
\newunicodechar{\oplus}{\ensuremath{\oplus}}
\newunicodechar{\otimes}{\ensuremath{\otimes}}
\newunicodechar{\odot}{\ensuremath{\odot}}
\newunicodechar{\mathop}{\ensuremath{\mathop{\fatsemi}}}
\newunicodechar{\circ}{\ensuremath{\circ}} % mathop ?

\newunicodechar{\backslash}{\ensuremath{\backslash}} % under
\newunicodechar{/}{\ensuremath{/}} % over

\newunicodechar{\circ}{\ensuremath{\circ}} % Looks like, but is not bullet!

\newunicodechar{\star}{\ensuremath{\star}}
\newunicodechar{\times}{\ensuremath{\times}}
\newunicodechar{\bullet}{\ensuremath{\bullet}}
\newunicodechar{:}{\ensuremath{:}} % ghost colon, Agda input “\.”.

\newunicodechar{\lhd}{\ensuremath{\lhd}}
\newunicodechar{\triangle}{\ensuremath{\triangle}}
\newunicodechar{\triangledown}{\ensuremath{\triangledown}}

% Z-notation: ( $\oplus$  dummies | range  $\bullet$  body)
\def\with{\kern0.7em \withrule \kern0.7em }
\def\withrule{\vrule height1.57ex depth0.43ex width0.12em}
\newunicodechar{ | }{\ensuremath{\mathop{\with}}}}

\newunicodechar{\heartsuit}{\ensuremath{\heartsuit}}
\newunicodechar{★}{\color{red}\bigstar} % red ★
```

7 Types – \mathbb{N} , \mathbb{B} , etc

```
\newunicodechar{\mathcal{N}}{\ensuremath{\mathcal{N}}}
\newunicodechar{\mathbb{N}}{\ensuremath{\mathbb{N}}}
\newunicodechar{\mathbb{Z}}{\ensuremath{\mathbb{Z}}}
\newunicodechar{\mathbb{B}}{\ensuremath{\mathbb{B}}}
\newunicodechar{\mathbb{1}}{\ensuremath{\mathbb{1}}}
```

8 Subscript and Superscript

```
\newunicodechar{\mathcal{V}_v}{\ensuremath{\mathcal{V}_v}} % subscript v
\newunicodechar{\ell_l}{\ensuremath{\ell_l}} % subscript l

\newunicodechar{o^}{\ensuremath{o^}}
\newunicodechar{p^}{\ensuremath{p^}}

\newunicodechar{+_}{\ensuremath{+_}}

\newunicodechar{_0}{\ensuremath{_0}}
\newunicodechar{_1}{\ensuremath{_1}}
\newunicodechar{_2}{\ensuremath{_2}}
\newunicodechar{_3}{\ensuremath{_3}}
```


10 Math Italics

```
\newunicodechar{a}{\ensuremath{\mathit{a}}}  
\newunicodechar{b}{\ensuremath{\mathit{b}}}  
\newunicodechar{c}{\ensuremath{\mathit{c}}}  
\newunicodechar{d}{\ensuremath{\mathit{d}}}  
\newunicodechar{e}{\ensuremath{\mathit{e}}}  
\newunicodechar{f}{\ensuremath{\mathit{f}}}  
\newunicodechar{g}{\ensuremath{\mathit{g}}}  
\newunicodechar{h}{\ensuremath{\mathit{h}}}  
\newunicodechar{i}{\ensuremath{\mathit{i}}}  
\newunicodechar{j}{\ensuremath{\mathit{j}}}  
\newunicodechar{k}{\ensuremath{\mathit{k}}}  
\newunicodechar{l}{\ensuremath{\mathit{l}}}  
\newunicodechar{m}{\ensuremath{\mathit{m}}}  
\newunicodechar{n}{\ensuremath{\mathit{n}}}  
\newunicodechar{o}{\ensuremath{\mathit{o}}}  
\newunicodechar{p}{\ensuremath{\mathit{p}}}  
\newunicodechar{q}{\ensuremath{\mathit{q}}}  
\newunicodechar{r}{\ensuremath{\mathit{r}}}
```

11 Math Bold

```
\newunicodechar{I}{\ensuremath{\mathbf{I}}}  
\newunicodechar{M}{\ensuremath{\mathbf{M}}}  
\newunicodechar{T}{\ensuremath{\mathbf{T}}}
```

12 Misc

```
\newunicodechar{-}{\text{\textemdash}}  
\DeclareUnicodeCharacter{9472}{---} % \---  
  
% \DeclareUnicodeCharacter{8759}{\ensuremath{::!}} % ::  
\newunicodechar{::}{\ensuremath{::,::}}  
\newunicodechar{...}{\ensuremath{\cdots}}  
\newunicodechar{:}{\ensuremath{\vdots}}  
  
\newunicodechar{~}{\ensuremath{\smile}}  
\newunicodechar{^}{\ensuremath{\smile}}  
\newunicodechar{'}{'}  
\newunicodechar{''}{''}  
\newunicodechar{□}{\ensuremath{\qedsymbol}}  
  
\newunicodechar{↦}{\ensuremath{\mapsto}}  
  
% In LaTeX documents, the "¿" is written as ?' (question mark, backtick) or \textquestiondown,  
% and "¡" as !' (exclamation point, backtick) or \textexclamdown.  
\newunicodechar{¡}{\text{!'}}  
\newunicodechar{¿}{\text{?'}}  
\newunicodechar{! ? }{ {\color{red}\large ! ? } }  
  
\newunicodechar{↗}{\ensuremath{\nrightarrow}} % partial functions
```

```

\newunicodechar{z}{\ensuremath{\mathfrak{z}}} % fancy small z
\newunicodechar{,}{\ensuremath{\,,}} % \, %% an invisible space
\newunicodechar{X}{\ding{55}}

```