My Unicode Symbol Translations

Musa Al-hassy

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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 ∀, and likewise a variety of symbols: ∀ x • $x \leq y \approx z$ ∃ ≡ ⇒ ∧ ∨ ⊓ ⊔ < ⊑.

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/MyUnicodeSymbols`.

Contents

1 Top Matter

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

\RequirePackage[utf8]{inputenc}
 \RequirePackage{newunicodechar}
 \RequirePackage{bbold}   % \mathbb{n} to make double stroke digit
 \RequirePackage{pifont}
 \RequirePackage{stmaryrd}
```

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{⊏}{\ensuremath{\sqsubset}}
 \newunicodechar{⊑}{\ensuremath{\sqsubseteq}}
 \newunicodechar{⊒}{\ensuremath{\sqsupseteq}}

% numeric
\newunicodechar{≤}{\ensuremath{\leq}}
\newunicodechar{≥}{\ensuremath{\geq}}
\newunicodechar{|}{\ensuremath{\mid}}  % divisibily ordering

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

% logical
 \newunicodechar{⊢}{\ensuremath{\vdash}}
 \DeclareUnicodeCharacter{8872}{\ensuremath{\vDash}} % semantic consequence
 \newunicodechar{⊣}{\ensuremath{\dashv}}
```

2.2 Meets & Joins

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

% numeric
 \newunicodechar{↑}{\ensuremath{\uparrow}}
 \newunicodechar{↓}{\ensuremath{\downarrow}}

% boolean
 \newunicodechar{∨}{\ensuremath{\lor}}
 \newunicodechar{∧}{\ensuremath{\land}}
 \newunicodechar{⋁}{\ensuremath{\bigvee}}
 \newunicodechar{⋀}{\ensuremath{\bigwedge}}
 \newunicodechar{∃}{\ensuremath{\exists}}
```

```
 \newunicodechar{∀}{\ensuremath{\forall}}

% sets
 \newunicodechar{∩}{\ensuremath{\cap}}
 \newunicodechar{∪}{\ensuremath{\cup}}
```

2.3 Extermal Elements

```
% arbitrary lattice
\newunicodechar{⊥}{\ensuremath{\bot}}
\newunicodechar{⊤}{\ensuremath{\top}}

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

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

2.4 Pseudo-Complements

```
% arbitrary lattice
 \newunicodechar{→}{\ensuremath{\to}}
 \newunicodechar{←}{\ensuremath{\leftarrow}}
 \newunicodechar{⟶}{\ensuremath{\longrightarrow}} % pseudo-complement
 \newunicodechar{}{\ensuremath{\hspace{-1em}.}\;\;\;\,} %% to be used in compound symbol: ↣
                                                        %% to form a natural transformation

% boolean
 \newunicodechar{ ⇒ }{\ensuremath{\;\Rightarrow\;}}
 \newunicodechar{ ⇐ }{\ensuremath{\;\Leftarrow\;}}
 \newunicodechar{¬}{\ensuremath{\lnot}}

% sets
\newunicodechar{∈}{\ensuremath{\in}}
\newunicodechar{∼}{\ensuremath{\sim}}
```

3 Equality-Like Symbols

```
\newunicodechar{≠}{\ensuremath{\neq}}
\newunicodechar{≡}{\ensuremath{\equiv}}
\newunicodechar{ ⟺ }{\ensuremath{\iff}}
\newunicodechar{≈}{\ensuremath{\approx}}
\newunicodechar{≅}{\ensuremath{\cong}}
\newunicodechar{≔}{\ensuremath{:\!=}}
% \DeclareUnicodeCharacter{8788}{\ensuremath{\mathrel{{:}{=}}}} % ≔
```

4 Brackets

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

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

\newunicodechar{}{\ensuremath{\llangle}}
\newunicodechar{}{\ensuremath{\rrangle}}

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

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

\newunicodechar{⟅}{\ensuremath{\Lbag}}
\newunicodechar{⟆}{\ensuremath{\Rbag}}

\DeclareUnicodeCharacter{10627}{\ensuremath{\{\!|}} %
\DeclareUnicodeCharacter{10628}{\ensuremath{|\!\}}} %
```

5 Greek Letters

```
\newunicodechar{λ}{\ensuremath{\lambda}}
\newunicodechar{γ}{\ensuremath{\gamma}}
\newunicodechar{δ}{\ensuremath{\delta}}
\newunicodechar{σ}{\ensuremath{\sigma}}
\newunicodechar{η}{\ensuremath{\eta}}
\newunicodechar{ϵ}{\ensuremath{\epsilon}}
\newunicodechar{μ}{\ensuremath{\mu}}
\newunicodechar{Φ}{\ensuremath{\Phi}}  % capital case
\newunicodechar{ϕ}{\ensuremath{\phi}}  % lower   case
\newunicodechar{π}{\ensuremath{\pi}}
```

6 Compositional Operators

```
\newunicodechar{}{\ensuremath{\cupdot}
\newunicodechar{}{\ensuremath{\oplus}}
\newunicodechar{}{\ensuremath{\otimes}}
\newunicodechar{}{\ensuremath{\odot}}
\newunicodechar{}{\ensuremath{\mathop{\fatsemi}}}
\newunicodechar{}{\ensuremath{\lhd}}
\newunicodechar{}{\ensuremath{\circ}}

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

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

\newunicodechar{⋆}{\ensuremath{\star}}
\newunicodechar{×}{\ensuremath{\times}}
\newunicodechar{•}{\ensuremath{\bullet}}
```

```
\newunicodechar{:}{\ensuremath{:}} % ghost colon, Agda input "\:".

\newunicodechar{△}{\ensuremath{\triangle}}
\newunicodechar{▽}{\ensuremath{\triangledown}}

\DeclareUnicodeCharacter{9829}{\ensuremath{\heartsuit}} %
\DeclareUnicodeCharacter{9785}{\ensuremath{\frownie{}}} %
\DeclareUnicodeCharacter{9733}{ {\color{red}$\bigstar$} } %  should be printed red ;-)
```

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

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

8 Subscript and Superscript

```
\DeclareUnicodeCharacter{7525}{\ensuremath{_}} % subscript v
\DeclareUnicodeCharacter{8343}{\ensuremath{_\ell}} % subscript

\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}}

\newunicodechar{ₐ}{\ensuremath{_a}}
% I have no access to subscript b,c,d with my "current" agda input mode -- to fix!
\newunicodechar{ₑ}{\ensuremath{_e}}
% I have no access to subscript f,g with my "current" agda input mode -- to fix!
\newunicodechar{ₕ}{\ensuremath{_h}}
\newunicodechar{ᵢ}{\ensuremath{_i}}
\newunicodechar{ⱼ}{\ensuremath{_j}}
\newunicodechar{ₖ}{\ensuremath{_k}}
\newunicodechar{ₗ}{\ensuremath{_l}}
\newunicodechar{ₘ}{\ensuremath{_m}}
\newunicodechar{ₙ}{\ensuremath{_n}}
\newunicodechar{ₒ}{\ensuremath{_o}}
\newunicodechar{ₚ}{\ensuremath{_p}}
% I have no access to subscript q with my "current" agda input mode -- to fix!
\newunicodechar{ᵣ}{\ensuremath{_r}}
\newunicodechar{ₛ}{\ensuremath{_s}}
\newunicodechar{ₜ}{\ensuremath{_t}}
\newunicodechar{ᵤ}{\ensuremath{_u}}
\newunicodechar{ᵥ}{\ensuremath{_v}}
% I have no access to subscript w with my "current" agda input mode -- to fix!
```

```
\newunicodechar{ₓ}{\ensuremath{_x}}
% I have no access to subscript y with my "current" agda input mode -- to fix!
% I have no access to subscript z with my "current" agda input mode -- to fix!
```

9 \mathcal Calligraphy

```
\newunicodechar{𝓁}{\ensuremath{\mathcal{l}}}
\newunicodechar{𝓇}{\ensuremath{\mathcal{r}}}
\newunicodechar{ℳ}{\ensuremath{\mathcal{M}}}
\newunicodechar{ℱ}{\ensuremath{\mathcal{F}}}
\newunicodechar{𝓊}{\ensuremath{u}}
\newunicodechar{𝓃}{\ensuremath{n}}
\newunicodechar{𝒸}{\ensuremath{c}}
\newunicodechar{𝒜}{\ensuremath{\mathcal{A}}}
\newunicodechar{ℬ}{\ensuremath{\mathcal{B}}}
\newunicodechar{𝒞}{\ensuremath{\mathcal{C}}}
\newunicodechar{𝒟}{\ensuremath{\mathcal{D}}}
\newunicodechar{ℰ}{\ensuremath{\mathcal{E}}}
\newunicodechar{ℯ}{\ensuremath{e}}
\newunicodechar{ℊ}{\ensuremath{g}}
\newunicodechar{𝓁}{\textit{l}}
\newunicodechar{ℒ}{\ensuremath{\mathcal{L}}}
\newunicodechar{ℛ}{\ensuremath{\mathcal{R}}}
\newunicodechar{𝒮}{\ensuremath{\mathcal{S}}}
\newunicodechar{𝒯}{\ensuremath{\mathcal{T}}}
\newunicodechar{𝓉}{\ensuremath{t}}
\newunicodechar{𝒬}{\ensuremath{\mathcal{Q}}}
```

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}}}
\DeclareUnicodeCharacter{119924}{\ensuremath{\mathbf{M}}} % math bold caps
\DeclareUnicodeCharacter{119931}{\ensuremath{\mathbf{T}}} % math bold caps
```

12 Misc

```
\newunicodechar{-}{\text{\textemdash}}
\DeclareUnicodeCharacter{9472}{---} % \---

% \DeclareUnicodeCharacter{8759}{\ensuremath{::\!}} % ::
\newunicodechar{::}{\ensuremath{:\,:}}
\newunicodechar{⋯}{\ensuremath{\cdots}}
\newunicodechar{⋮}{\ensuremath{\vdots}}

\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{?‘}}
\DeclareUnicodeCharacter{8265}{ {\color{red}\large !? } } %

\DeclareUnicodeCharacter{8603}{\ensuremath{\nrightarrow}} % , partial functions
% \DeclareUnicodeCharacter{10073}{\ensuremath{\with}} %

\DeclareUnicodeCharacter{120015}{\ensuremath{\mathfrak{z}}} % fancy small z

\DeclareUnicodeCharacter{8239}{\ensuremath{\,}} % \, %% an invisible space

\newunicodechar{✗}{\ding{55}}
```