Unicode declarations for LaTeX documents.

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Contents

1 About this file

In order to write LaTeX documents using unicode in the source code, we must often tell LaTeX what we want the unicode characters to be rendered as.

There are at least two ways to inform LaTeX of unicode character translations;

- `\DeclareUnicodeCharacter`; this command does not work with XeLaTeX or LuaLaTeX, which I use.

- `\newunicodechar`; this command is provided by the newunicodechar package, which may not be pre-installed for all LaTeX users.

This collection uses the second.

1.1 Usage

This file generates (via Org Babel tangling) the file `unicode.sty`.

To use it, either place it in the same directory as your `.tex` file, and require it via `\usepackage{unicode}`.

Alternatively, place it in your `texmf` directory to allow global usage on your system. That directory is commonly located at the following locations on various OS's.

- Linux
  - `~/texmf/tex/latex/local/`
- Mac OS X
  - `/Users/<user name>/Library/texmf/tex/latex/local/`
- Windows 10 (and miktex)
  - `C:\Users\<user name>\Appdata\Local\MikTex\<number>\tex\latex\local\`
- Windows Vista/7
  - `C:\Users\<user name>\texmf\tex\latex\local\`
- Windows XP
  - `C:\Documents and Settings\<user name>\texmf\tex\latex\local\`

By default, we assume the standard `pdflatex` typesetting engine is used, if you are using XeLaTeX or LuaLaTeX, then simply declare:

```
\pdflatexfalse
```

1.2 Required LaTeX packages

Of course we require the `newunicodechar` package to use that command.

```
\usepackage{newunicodechar}

\usepackage{ifxetex, ifluatex} % Also used in agda.sty:
 ↪  xifthen

% https://tex.stackexchange.com/questions/47576/combining-
 ↪  ifxetex-and-ifluatex-with-the-logical-or-operation
\newif\ifpdflatex
\ifxetex
  \pdflatexfalse
\else
  \ifluatex
    \pdflatexfalse
  \else
    \pdflatextrue
  \fi
\fi

%\newif\ifpdflatex
%\pdflatextrue
%% To use other typesetting engines, declare the following:
%% \pdflatexfalse
```

The unicode-math package "provides a complete implementation of unicode maths for XeLaTeX and LuaLaTeX".

```
\ifpdflatex
  \usepackage{pifont}
  \usepackage{stmaryrd}
  \usepackage{amsmath, amssymb, amsthm, latexsym, amscd,
   ↪  enumerate, bbm, etex, nicefrac, mathrsfs}
\else
  \usepackage{unicode-math}
\fi
```

1.3 Contributing to this document

This document is written in Emacs using Org mode. While the exported PDF version, etc., show a collection of LaTeX source blocks, these are in fact generated by an Emacs Lisp script below.

That means that contributions to this document should modify the Emacs Lisp script, not `unicode.sty` or the LaTeX source blocks themselves.

1.4 The Emacs Lisp script

In this document, several lists of unicode character, LaTeX translation pairs are declared, and then "wrapped" into `latex` source blocks, using this function to map the pairs into `newunicodechar` declarations.

`generate-newunicodechars`

2 Blackboard, calligraphic, etc.

```
%-----------------------------------------------------------------------
% Blackboard, calligraphic, etc.
%-----------------------------------------------------------------------
```

These lists are most likely complete, unless I have missed some characters aside from Latin letters, Greek letters and Arabic numerals which should be included.

2.1 Blackboard

```
%-------------------------------------------------------------
% Blackboard
%-------------------------------------------------------------
```

2.1.1 Lowercase latin complete

```
%-----------------------------------------------
% Lowercase latin
%-----------------------------------------------

\usepackage{bbm} % for double stroke lower case letters

\ifpdflatex
  \newunicodechar{𝕒}{\ensuremath{\mathbbm{a}}}
\else
  \newunicodechar{𝕒}{\ensuremath{\mathbb{a}}}
\fi
\ifpdflatex
```

```
  \newunicodechar{𝕓}{\ensuremath{\mathbbm{b}}}
\else
  \newunicodechar{𝕓}{\ensuremath{\mathbb{b}}}
\fi
\ifpdflatex
  \newunicodechar{𝕔}{\ensuremath{\mathbbm{c}}}
\else
  \newunicodechar{𝕔}{\ensuremath{\mathbb{c}}}
\fi
\ifpdflatex
  \newunicodechar{𝕕}{\ensuremath{\mathbbm{d}}}
\else
  \newunicodechar{𝕕}{\ensuremath{\mathbb{d}}}
\fi
\ifpdflatex
  \newunicodechar{𝕖}{\ensuremath{\mathbbm{e}}}
\else
  \newunicodechar{𝕖}{\ensuremath{\mathbb{e}}}
\fi
\ifpdflatex
  \newunicodechar{𝕗}{\ensuremath{\mathbbm{f}}}
\else
  \newunicodechar{𝕗}{\ensuremath{\mathbb{f}}}
\fi
\ifpdflatex
  \newunicodechar{𝕘}{\ensuremath{\mathbbm{g}}}
\else
  \newunicodechar{𝕘}{\ensuremath{\mathbb{g}}}
\fi
\ifpdflatex
  \newunicodechar{𝕙}{\ensuremath{\mathbbm{h}}}
\else
  \newunicodechar{𝕙}{\ensuremath{\mathbb{h}}}
\fi
\ifpdflatex
  \newunicodechar{𝕚}{\ensuremath{\mathbbm{i}}}
\else
  \newunicodechar{𝕚}{\ensuremath{\mathbb{i}}}
\fi
\ifpdflatex
```

```
  \newunicodechar{𝕛}{\ensuremath{\mathbbm{j}}}
\else
  \newunicodechar{𝕛}{\ensuremath{\mathbb{j}}}
\fi
\ifpdflatex
  \newunicodechar{𝕜}{\ensuremath{\mathbbm{k}}}
\else
  \newunicodechar{𝕜}{\ensuremath{\mathbb{k}}}
\fi
\ifpdflatex
  \newunicodechar{𝕝}{\ensuremath{\mathbbm{l}}}
\else
  \newunicodechar{𝕝}{\ensuremath{\mathbb{l}}}
\fi
\ifpdflatex
  \newunicodechar{𝕞}{\ensuremath{\mathbbm{m}}}
\else
  \newunicodechar{𝕞}{\ensuremath{\mathbb{m}}}
\fi
\ifpdflatex
  \newunicodechar{𝕟}{\ensuremath{\mathbbm{n}}}
\else
  \newunicodechar{𝕟}{\ensuremath{\mathbb{n}}}
\fi
\ifpdflatex
  \newunicodechar{𝕠}{\ensuremath{\mathbbm{o}}}
\else
  \newunicodechar{𝕠}{\ensuremath{\mathbb{o}}}
\fi
\ifpdflatex
  \newunicodechar{𝕡}{\ensuremath{\mathbbm{p}}}
\else
  \newunicodechar{𝕡}{\ensuremath{\mathbb{p}}}
\fi
\ifpdflatex
  \newunicodechar{𝕢}{\ensuremath{\mathbbm{q}}}
\else
  \newunicodechar{𝕢}{\ensuremath{\mathbb{q}}}
\fi
\ifpdflatex
```

```
  \newunicodechar{𝕣}{\ensuremath{\mathbbm{r}}}
\else
  \newunicodechar{𝕣}{\ensuremath{\mathbb{r}}}
\fi
\ifpdflatex
  \newunicodechar{𝕤}{\ensuremath{\mathbbm{s}}}
\else
  \newunicodechar{𝕤}{\ensuremath{\mathbb{s}}}
\fi
\ifpdflatex
  \newunicodechar{𝕥}{\ensuremath{\mathbbm{t}}}
\else
  \newunicodechar{𝕥}{\ensuremath{\mathbb{t}}}
\fi
\ifpdflatex
  \newunicodechar{𝕦}{\ensuremath{\mathbbm{u}}}
\else
  \newunicodechar{𝕦}{\ensuremath{\mathbb{u}}}
\fi
\ifpdflatex
  \newunicodechar{𝕧}{\ensuremath{\mathbbm{v}}}
\else
  \newunicodechar{𝕧}{\ensuremath{\mathbb{v}}}
\fi
\ifpdflatex
  \newunicodechar{𝕨}{\ensuremath{\mathbbm{w}}}
\else
  \newunicodechar{𝕨}{\ensuremath{\mathbb{w}}}
\fi
\ifpdflatex
  \newunicodechar{𝕩}{\ensuremath{\mathbbm{x}}}
\else
  \newunicodechar{𝕩}{\ensuremath{\mathbb{x}}}
\fi
\ifpdflatex
  \newunicodechar{𝕪}{\ensuremath{\mathbbm{y}}}
\else
  \newunicodechar{𝕪}{\ensuremath{\mathbb{y}}}
\fi
\ifpdflatex
```

```
  \newunicodechar{z}{\ensuremath{\mathbbm{z}}}
\else
  \newunicodechar{z}{\ensuremath{\mathbb{z}}}
\fi
```

2.1.2 Uppercase latin complete

```
%-------------------------------------------------
% Uppercase latin
%-------------------------------------------------

\newunicodechar{𝔸}{\ensuremath{\mathbb{A}}}
\newunicodechar{𝔹}{\ensuremath{\mathbb{B}}}
\newunicodechar{ℂ}{\ensuremath{\mathbb{C}}}
\newunicodechar{𝔻}{\ensuremath{\mathbb{D}}}
\newunicodechar{𝔼}{\ensuremath{\mathbb{E}}}
\newunicodechar{𝔽}{\ensuremath{\mathbb{F}}}
\newunicodechar{𝔾}{\ensuremath{\mathbb{G}}}
\newunicodechar{ℍ}{\ensuremath{\mathbb{H}}}
\newunicodechar{𝕀}{\ensuremath{\mathbb{I}}}
\newunicodechar{𝕁}{\ensuremath{\mathbb{J}}}
\newunicodechar{𝕂}{\ensuremath{\mathbb{K}}}
\newunicodechar{𝕃}{\ensuremath{\mathbb{L}}}
\newunicodechar{𝕄}{\ensuremath{\mathbb{M}}}
\newunicodechar{ℕ}{\ensuremath{\mathbb{N}}}
\newunicodechar{𝕆}{\ensuremath{\mathbb{O}}}
\newunicodechar{ℙ}{\ensuremath{\mathbb{P}}}
\newunicodechar{ℚ}{\ensuremath{\mathbb{Q}}}
\newunicodechar{ℝ}{\ensuremath{\mathbb{R}}}
\newunicodechar{𝕊}{\ensuremath{\mathbb{S}}}
\newunicodechar{𝕋}{\ensuremath{\mathbb{T}}}
\newunicodechar{𝕌}{\ensuremath{\mathbb{U}}}
\newunicodechar{𝕍}{\ensuremath{\mathbb{V}}}
\newunicodechar{𝕎}{\ensuremath{\mathbb{W}}}
\newunicodechar{𝕏}{\ensuremath{\mathbb{X}}}
\newunicodechar{𝕐}{\ensuremath{\mathbb{Y}}}
\newunicodechar{ℤ}{\ensuremath{\mathbb{Z}}}
```

2.1.3 Greek **complete**

```
%-------------------------------------------------
% Greek
%-------------------------------------------------
```

There are unfortunately not many included in Unicode.

```
\ifpdflatex
  \newunicodechar{ℾ}{\ensuremath{TODO}}
\else
  \newunicodechar{ℾ}{\ensuremath{\mathbb{\Gamma}}}
\fi
\ifpdflatex
  \newunicodechar{ℽ}{\ensuremath{TODO}}
\else
  \newunicodechar{ℽ}{\ensuremath{\mathbb{\gamma}}}
\fi
\ifpdflatex
  \newunicodechar{ℿ}{\ensuremath{TODO}}
\else
  \newunicodechar{ℿ}{\ensuremath{\mathbb{\Pi}}}
\fi
\ifpdflatex
  \newunicodechar{⅀}{\ensuremath{TODO}}
\else
  \newunicodechar{⅀}{\ensuremath{\mathbb{\pi}}}
\fi
\ifpdflatex
  \newunicodechar{⅀}{\ensuremath{TODO}}
\else
  \newunicodechar{⅀}{\ensuremath{\mathbb{\Sum}}}
\fi
```

2.2 Math calligraphic

```
%-------------------------------------------------------------
% Math calligraphic
%-------------------------------------------------------------
```

2.2.1 Lowercase latin complete

```
%-----------------------------------------------
% Uppercase latin
%-----------------------------------------------
\ifpdflatex
  \newunicodechar{𝑎}{\ensuremath{a}}
\else
  \newunicodechar{𝑎}{\ensuremath{\mathcal{a}}}
\fi
\ifpdflatex
  \newunicodechar{𝑏}{\ensuremath{b}}
\else
  \newunicodechar{𝑏}{\ensuremath{\mathcal{b}}}
\fi
\ifpdflatex
  \newunicodechar{𝑐}{\ensuremath{c}}
\else
  \newunicodechar{𝑐}{\ensuremath{\mathcal{c}}}
\fi
\ifpdflatex
  \newunicodechar{𝑑}{\ensuremath{d}}
\else
  \newunicodechar{𝑑}{\ensuremath{\mathcal{d}}}
\fi
\ifpdflatex
  \newunicodechar{𝑒}{\ensuremath{e}}
\else
  \newunicodechar{𝑒}{\ensuremath{\mathcal{e}}}
\fi
\ifpdflatex
  \newunicodechar{𝑓}{\ensuremath{f}}
\else
  \newunicodechar{𝑓}{\ensuremath{\mathcal{f}}}
\fi
\ifpdflatex
  \newunicodechar{𝑔}{\ensuremath{g}}
\else
  \newunicodechar{𝑔}{\ensuremath{\mathcal{g}}}
\fi
```

```
\ifpdflatex
  \newunicodechar{ℎ}{\ensuremath{h}}
\else
  \newunicodechar{ℎ}{\ensuremath{\mathcal{h}}}
\fi
\ifpdflatex
  \newunicodechar{𝑖}{\ensuremath{i}}
\else
  \newunicodechar{𝑖}{\ensuremath{\mathcal{i}}}
\fi
\ifpdflatex
  \newunicodechar{𝑗}{\ensuremath{j}}
\else
  \newunicodechar{𝑗}{\ensuremath{\mathcal{j}}}
\fi
\ifpdflatex
  \newunicodechar{𝑘}{\ensuremath{j}}
\else
  \newunicodechar{𝑘}{\ensuremath{\mathcal{k}}}
\fi
\ifpdflatex
  \newunicodechar{𝑙}{\ensuremath{l}}
\else
  \newunicodechar{𝑙}{\ensuremath{\mathcal{l}}}
\fi
\ifpdflatex
  \newunicodechar{𝑚}{\ensuremath{m}}
\else
  \newunicodechar{𝑚}{\ensuremath{\mathcal{m}}}
\fi
\ifpdflatex
  \newunicodechar{𝑛}{\ensuremath{n}}
\else
  \newunicodechar{𝑛}{\ensuremath{\mathcal{n}}}
\fi
\ifpdflatex
  \newunicodechar{𝑜}{\ensuremath{o}}
\else
  \newunicodechar{𝑜}{\ensuremath{\mathcal{o}}}
\fi
```

```
\ifpdflatex
  \newunicodechar{𝑝}{\ensuremath{p}}
\else
  \newunicodechar{𝑝}{\ensuremath{\mathcal{p}}}
\fi
\ifpdflatex
  \newunicodechar{𝑞}{\ensuremath{q}}
\else
  \newunicodechar{𝑞}{\ensuremath{\mathcal{q}}}
\fi
\ifpdflatex
  \newunicodechar{𝑟}{\ensuremath{r}}
\else
  \newunicodechar{𝑟}{\ensuremath{\mathcal{r}}}
\fi
\ifpdflatex
  \newunicodechar{𝑠}{\ensuremath{s}}
\else
  \newunicodechar{𝑠}{\ensuremath{\mathcal{s}}}
\fi
\ifpdflatex
  \newunicodechar{𝑡}{\ensuremath{t}}
\else
  \newunicodechar{𝑡}{\ensuremath{\mathcal{t}}}
\fi
\ifpdflatex
  \newunicodechar{𝑢}{\ensuremath{u}}
\else
  \newunicodechar{𝑢}{\ensuremath{\mathcal{u}}}
\fi
\ifpdflatex
  \newunicodechar{𝑣}{\ensuremath{v}}
\else
  \newunicodechar{𝑣}{\ensuremath{\mathcal{v}}}
\fi
\ifpdflatex
  \newunicodechar{𝑤}{\ensuremath{w}}
\else
  \newunicodechar{𝑤}{\ensuremath{\mathcal{w}}}
\fi
```

```
\ifpdflatex
  \newunicodechar{𝑥}{\ensuremath{x}}
\else
  \newunicodechar{𝑥}{\ensuremath{\mathcal{x}}}
\fi
\ifpdflatex
  \newunicodechar{𝑦}{\ensuremath{y}}
\else
  \newunicodechar{𝑦}{\ensuremath{\mathcal{y}}}
\fi
\ifpdflatex
  \newunicodechar{𝑧}{\ensuremath{z}}
\else
  \newunicodechar{𝑧}{\ensuremath{\mathcal{z}}}
\fi
```

2.2.2 Uppercase latin — complete

```
%-------------------------------------------------
% Uppercase latin
%-------------------------------------------------

\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{ℱ}{\ensuremath{\mathcal{F}}}
\newunicodechar{𝒢}{\ensuremath{\mathcal{G}}}
\newunicodechar{ℋ}{\ensuremath{\mathcal{H}}}
\newunicodechar{ℐ}{\ensuremath{\mathcal{I}}}
\newunicodechar{𝒥}{\ensuremath{\mathcal{J}}}
\newunicodechar{𝒦}{\ensuremath{\mathcal{K}}}
\newunicodechar{ℒ}{\ensuremath{\mathcal{L}}}
\newunicodechar{ℳ}{\ensuremath{\mathcal{M}}}
\newunicodechar{𝒩}{\ensuremath{\mathcal{N}}}
\newunicodechar{𝒪}{\ensuremath{\mathcal{O}}}
\newunicodechar{𝒫}{\ensuremath{\mathcal{P}}}
\newunicodechar{𝒬}{\ensuremath{\mathcal{Q}}}
\newunicodechar{ℛ}{\ensuremath{\mathcal{R}}}
```

```
\newunicodechar{𝒮}{\ensuremath{\mathcal{S}}}
\newunicodechar{𝒯}{\ensuremath{\mathcal{T}}}
\newunicodechar{𝒰}{\ensuremath{\mathcal{U}}}
\newunicodechar{𝒱}{\ensuremath{\mathcal{V}}}
\newunicodechar{𝒲}{\ensuremath{\mathcal{W}}}
\newunicodechar{𝒳}{\ensuremath{\mathcal{X}}}
\newunicodechar{𝒴}{\ensuremath{\mathcal{Y}}}
\newunicodechar{𝒵}{\ensuremath{\mathcal{Z}}}
```

3 Other letters or letterlike symbols

```
\newunicodechar{ℓ}{\ensuremath{\ell}}
```

4 Greek alphabet

4.1 Normal complete

```
\newunicodechar{α}{\ensuremath{\alpha}}
\ifpdflatex
  \newunicodechar{A}{\ensuremath{A}}
\else
  \newunicodechar{A}{\ensuremath{\Alpha}}
\fi
\newunicodechar{β}{\ensuremath{\beta}}
\ifpdflatex
  \newunicodechar{B}{\ensuremath{B}}
\else
  \newunicodechar{B}{\ensuremath{\Beta}}
\fi
\newunicodechar{γ}{\ensuremath{\gamma}}
\newunicodechar{Γ}{\ensuremath{\Gamma}}
\newunicodechar{δ}{\ensuremath{\delta}}
\newunicodechar{Δ}{\ensuremath{\Delta}}
\newunicodechar{ϵ}{\ensuremath{\epsilon}}
\ifpdflatex
  \newunicodechar{E}{\ensuremath{E}}
\else
  \newunicodechar{E}{\ensuremath{\Epsilon}}
\fi
```

```
\newunicodechar{ζ}{\ensuremath{\zeta}}
\ifpdflatex
  \newunicodechar{Z}{\ensuremath{Z}}
\else
  \newunicodechar{Z}{\ensuremath{\Zeta}}
\fi
\newunicodechar{η}{\ensuremath{\eta}}
\ifpdflatex
  \newunicodechar{H}{\ensuremath{H}}
\else
  \newunicodechar{H}{\ensuremath{\Eta}}
\fi
\newunicodechar{θ}{\ensuremath{\theta}}
\newunicodechar{Θ}{\ensuremath{\Theta}}
\newunicodechar{ι}{\ensuremath{\iota}}
\ifpdflatex
  \newunicodechar{I}{\ensuremath{I}}
\else
  \newunicodechar{I}{\ensuremath{\Iota}}
\fi
\newunicodechar{κ}{\ensuremath{\kappa}}
\ifpdflatex
  \newunicodechar{K}{\ensuremath{K}}
\else
  \newunicodechar{K}{\ensuremath{\Kappa}}
\fi
\newunicodechar{λ}{\ensuremath{\lambda}}
\newunicodechar{Λ}{\ensuremath{\Lambda}}
\newunicodechar{μ}{\ensuremath{\mu}}
\ifpdflatex
  \newunicodechar{M}{\ensuremath{M}}
\else
  \newunicodechar{M}{\ensuremath{\Mu}}
\fi
\newunicodechar{ν}{\ensuremath{\nu}}
\ifpdflatex
  \newunicodechar{N}{\ensuremath{N}}
\else
  \newunicodechar{N}{\ensuremath{\Nu}}
\fi
```

```
\newunicodechar{ξ}{\ensuremath{\xi}}
\newunicodechar{Ξ}{\ensuremath{\Xi}}
\ifpdflatex
  \newunicodechar{ο}{\ensuremath{o}}
\else
  \newunicodechar{ο}{\ensuremath{\omicron}}
\fi
\ifpdflatex
  \newunicodechar{Ο}{\ensuremath{O}}
\else
  \newunicodechar{Ο}{\ensuremath{\Omicron}}
\fi
\newunicodechar{π}{\ensuremath{\pi}}
\newunicodechar{Π}{\ensuremath{\Pi}}
\newunicodechar{ρ}{\ensuremath{\rho}}
\ifpdflatex
  \newunicodechar{Ρ}{\ensuremath{P}}
\else
  \newunicodechar{Ρ}{\ensuremath{\Rho}}
\fi
\newunicodechar{σ}{\ensuremath{\sigma}}
\newunicodechar{Σ}{\ensuremath{\Sigma}}
\newunicodechar{τ}{\ensuremath{\tau}}
\ifpdflatex
  \newunicodechar{Τ}{\ensuremath{T}}
\else
  \newunicodechar{Τ}{\ensuremath{\Tau}}
\fi
\newunicodechar{υ}{\ensuremath{\upsilon}}
\newunicodechar{Υ}{\ensuremath{\Upsilon}}
\newunicodechar{φ}{\ensuremath{\phi}}
\newunicodechar{Φ}{\ensuremath{\Phi}}
\newunicodechar{χ}{\ensuremath{\chi}}
\ifpdflatex
  \newunicodechar{Χ}{\ensuremath{X}}
\else
  \newunicodechar{Χ}{\ensuremath{\Chi}}
\fi
\newunicodechar{ψ}{\ensuremath{\psi}}
\newunicodechar{Ψ}{\ensuremath{\Psi}}
```

```
\newunicodechar{ω}{\ensuremath{\omega}}
\newunicodechar{Ω}{\ensuremath{\Omega}}
```

4.2 var-variants

Note that some of the default Agda input entries are in this list, rather than the default above.

Also, `varbeta` is missing here; it requires a choice of some other package to add support for it.

```
\newunicodechar{ε}{\ensuremath{\varepsilon}}
\newunicodechar{ϑ}{\ensuremath{\vartheta}}
\newunicodechar{ϰ}{\ensuremath{\varkappa}}
\newunicodechar{ϖ}{\ensuremath{\varpi}}
\newunicodechar{ς}{\ensuremath{\varsigma}}
\newunicodechar{φ}{\ensuremath{\varphi}}
```

5 Subscripts, superscripts, underscripts, and overscripts

Note that while the alphabetic lists are complete, **there are missing letters**, because unfortunately Unicode does not have characters for every letter subscript and superscript.

5.1 Subscripts

Note there are no uppercase letter subscripts.

5.1.1 Lowercase alphabet **complete**

```
\newunicodechar{ₐ}{\ensuremath{{}_{a}}}
\newunicodechar{ₑ}{\ensuremath{{}_{e}}}
\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}}}
\newunicodechar{ᵣ}{\ensuremath{{}_{r}}}
\newunicodechar{ₛ}{\ensuremath{{}_{s}}}
\newunicodechar{ₜ}{\ensuremath{{}_{t}}}
\newunicodechar{ᵤ}{\ensuremath{{}_{u}}}
\newunicodechar{ᵥ}{\ensuremath{{}_{v}}}
\newunicodechar{ₓ}{\ensuremath{{}_{x}}}
```

5.1.2 Numeric — complete

```
\newunicodechar{₀}{\ensuremath{{}_{0}}}
\newunicodechar{₁}{\ensuremath{{}_{1}}}
\newunicodechar{₂}{\ensuremath{{}_{2}}}
\newunicodechar{₃}{\ensuremath{{}_{3}}}
\newunicodechar{₄}{\ensuremath{{}_{4}}}
\newunicodechar{₅}{\ensuremath{{}_{5}}}
\newunicodechar{₆}{\ensuremath{{}_{6}}}
\newunicodechar{₇}{\ensuremath{{}_{7}}}
\newunicodechar{₈}{\ensuremath{{}_{8}}}
\newunicodechar{₉}{\ensuremath{{}_{9}}}
```

5.1.3 Other

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

5.2 Superscripts

5.2.1 Uppercase alphabet

```
\newunicodechar{ᴬ}{\ensuremath{{}^{A}}}
\newunicodechar{ᴮ}{\ensuremath{{}^{B}}}
\newunicodechar{ᴰ}{\ensuremath{{}^{D}}}
\newunicodechar{ᴱ}{\ensuremath{{}^{E}}}
\newunicodechar{ᴳ}{\ensuremath{{}^{G}}}
\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}}}
\newunicodechar{ᴿ}{\ensuremath{{}^{R}}}
\newunicodechar{ᵀ}{\ensuremath{{}^{T}}}
\newunicodechar{ᵁ}{\ensuremath{{}^{U}}}
\newunicodechar{ⱽ}{\ensuremath{{}^{V}}}
\newunicodechar{ᵂ}{\ensuremath{{}^{W}}}
```

5.2.2 Lowercase alphabet

```
\newunicodechar{ᵃ}{\ensuremath{{}^{a}}}
\newunicodechar{ᵇ}{\ensuremath{{}^{b}}}
\newunicodechar{ᶜ}{\ensuremath{{}^{c}}}
\newunicodechar{ᵈ}{\ensuremath{{}^{d}}}
\newunicodechar{ᵉ}{\ensuremath{{}^{e}}}
\newunicodechar{ᶠ}{\ensuremath{{}^{f}}}
\newunicodechar{ᵍ}{\ensuremath{{}^{g}}}
\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}}}
\newunicodechar{ʳ}{\ensuremath{{}^{r}}}
\newunicodechar{ˢ}{\ensuremath{{}^{s}}}
\newunicodechar{ᵗ}{\ensuremath{{}^{t}}}
\newunicodechar{ᵘ}{\ensuremath{{}^{u}}}
\newunicodechar{ᵛ}{\ensuremath{{}^{v}}}
\newunicodechar{ʷ}{\ensuremath{{}^{w}}}
\newunicodechar{ˣ}{\ensuremath{{}^{x}}}
\newunicodechar{ʸ}{\ensuremath{{}^{y}}}
\newunicodechar{ᶻ}{\ensuremath{{}^{z}}}
```

5.2.3 Numeric

```
\newunicodechar{⁰}{\ensuremath{{}^{0}}}
\newunicodechar{¹}{\ensuremath{{}^{1}}}
```

```
\newunicodechar{²}{\ensuremath{{}^{2}}}
\newunicodechar{³}{\ensuremath{{}^{3}}}
\newunicodechar{⁴}{\ensuremath{{}^{4}}}
\newunicodechar{⁵}{\ensuremath{{}^{5}}}
\newunicodechar{⁶}{\ensuremath{{}^{6}}}
\newunicodechar{⁷}{\ensuremath{{}^{7}}}
\newunicodechar{⁸}{\ensuremath{{}^{8}}}
\newunicodechar{⁹}{\ensuremath{{}^{9}}}
```

5.2.4 Other

```
\newunicodechar{⁺}{\ensuremath{{}^{+}}}
```

6 Punctuation and delimiters

6.1 Dots

```
\newunicodechar{…}{\ensuremath{\ldots}}
\newunicodechar{⋯}{\ensuremath{\cdots}}
\newunicodechar{⋮}{\ensuremath{\vdots}}
```

6.2 Dashes

```
\newunicodechar{–}{\ensuremath{\text{--}}}
\newunicodechar{—}{\ensuremath{\text{---}}}
```

6.3 Parentheses, braces and brackets

Note there are a few different braces I translate the same way. Braces and parentheses themselves are special characters in Agda, so they cannot be used in names.

```
\newunicodechar{⦇}{\ensuremath{(\!|}}
\newunicodechar{⦈}{\ensuremath{|\!)}}
\newunicodechar{⟨}{\ensuremath{\langle}}
\newunicodechar{⟩}{\ensuremath{\rangle}}
\newunicodechar{⟪}{\ensuremath{\langle\!\langle}}
\newunicodechar{⟫}{\ensuremath{\rangle\!\rangle}}
\newunicodechar{{}{\ensuremath{\{}}
\newunicodechar{}}{\ensuremath{\}}}
```

```
\newunicodechar{{}{\ensuremath{\{}}
\newunicodechar{}}{\ensuremath{\}}}
```

6.4 Other paired delimiters

```
\newunicodechar{⌜}{\ensuremath{\ulcorner}}
\newunicodechar{⌝}{\ensuremath{\urcorner}}
\newunicodechar{⌞}{\ensuremath{\llcorner}}
\newunicodechar{⌟}{\ensuremath{\lrcorner}}
\newunicodechar{⌈}{\ensuremath{\lceil}}
\newunicodechar{⌉}{\ensuremath{\rceil}}
\newunicodechar{⌊}{\ensuremath{\lfloor}}
\newunicodechar{⌋}{\ensuremath{\rfloor}}
```

6.5 Whitespace

Non-breaking space. Though it may appear as a normal space, it is in fact a ~ in the LaTeX —in classic LaTeX one writes `\,`.

```
\newunicodechar{ }{\ensuremath{~}}
```

I am a very long line whose words are separated by non-breaking spaces so I should run off the page at

7 Logic

7.1 Quantifiers

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

7.2 Boolean algebra

```
\newunicodechar{≡}{\ensuremath{\equiv}}
\newunicodechar{¬}{\ensuremath{\lnot}}
\newunicodechar{≢}{\ensuremath{\not\equiv}}
\newunicodechar{∨}{\ensuremath{\lor}}
\newunicodechar{∧}{\ensuremath{\land}}
\newunicodechar{ ⇒ }{\ensuremath{\;\Rightarrow\;}}
\newunicodechar{ ⇐ }{\ensuremath{\;\Leftarrow\;}}
\newunicodechar{ ⟺ }{\ensuremath{\iff}}
```

7.3 Entailment

```
\newunicodechar{⊢}{\ensuremath{\vdash}}
\newunicodechar{⊣}{\ensuremath{\dashv}}
\newunicodechar{⊨}{\ensuremath{\vDash}}
```

8 Sets, relations and functions

8.1 Sets

```
\newunicodechar{∅}{\ensuremath{\emptyset}}
\newunicodechar{∅}{\ensuremath{\emptyset}}
\newunicodechar{∈}{\ensuremath{\in}}
\newunicodechar{∉}{\ensuremath{\not\in}}
\newunicodechar{∋}{\ensuremath{\ni}}
\newunicodechar{∩}{\ensuremath{\cap}}
\newunicodechar{∪}{\ensuremath{\cup}}
\newunicodechar{⊎}{\ensuremath{\uplus}}
\newunicodechar{⊎}{\ensuremath{\uplus}}
```

8.2 Relation operators

```
\newunicodechar{⊤}{\ensuremath{\top}}
\newunicodechar{⊥}{\ensuremath{\bot}}
\newunicodechar{⊔}{\ensuremath{\sqcup}}
\newunicodechar{⊓}{\ensuremath{\sqcap}}
```

8.3 Function operators

```
\newunicodechar{∘}{\ensuremath{\circ}}
```

8.4 Relations

8.4.1 Equality like

Along with negations where they exist. Note that equivalences are within the 7 section.

```
\newunicodechar{≠}{\ensuremath{\neq}}
\newunicodechar{≒}{\ensuremath{\doteq}}
\newunicodechar{≟}{\ensuremath{\stackrel{?}{=}}}
\newunicodechar{≅}{\ensuremath{\cong}}
```

```
\newunicodechar{≇}{\ensuremath{\ncong}}
\newunicodechar{≃}{\ensuremath{\simeq}}
\newunicodechar{≄}{\ensuremath{\not\simeq}}
\newunicodechar{≈}{\ensuremath{\approx}}
\newunicodechar{≉}{\ensuremath{\not\approx}}
\newunicodechar{∼}{\ensuremath{\sim}}
\newunicodechar{≁}{\ensuremath{\not\sim}}
\newunicodechar{≔}{\ensuremath{:\!=}}
```

8.4.2 Order like

```
\newunicodechar{≤}{\ensuremath{\leq}}
\newunicodechar{≰}{\ensuremath{\nleq}}
\newunicodechar{≥}{\ensuremath{\geq}}
\newunicodechar{≱}{\ensuremath{\ngeq}}
\newunicodechar{≮}{\ensuremath{\nless}}
\newunicodechar{≯}{\ensuremath{\ngtr}}
\newunicodechar{≦}{\ensuremath{\leqq}}
\newunicodechar{≨}{\ensuremath{\lneqq}}
\newunicodechar{≧}{\ensuremath{\geqq}}
\newunicodechar{≩}{\ensuremath{\gneqq}}
\newunicodechar{≲}{\ensuremath{\lesssim}}
\newunicodechar{≳}{\ensuremath{\gtrsim}}
\newunicodechar{⊏}{\ensuremath{\sqsubset}}
\newunicodechar{⊑}{\ensuremath{\sqsubseteq}}
\newunicodechar{⊐}{\ensuremath{\sqsupset}}
\newunicodechar{⊒}{\ensuremath{\sqsupseteq}}
\newunicodechar{|}{\ensuremath{\mid}}
```

9 Generic or other operators

9.1 Arrows

```
\newunicodechar{→}{\ensuremath{\rightarrow}}
\newunicodechar{←}{\ensuremath{\leftarrow}}
\newunicodechar{↔}{\ensuremath{\leftrightarrow}}
\newunicodechar{↑}{\ensuremath{\uparrow}}
\newunicodechar{↓}{\ensuremath{\downarrow}}
\newunicodechar{⟶}{\ensuremath{\longrightarrow}}
\newunicodechar{⟵}{\ensuremath{\longleftarrow}}
```

9.2 “o”-operators

```
\newunicodechar{⊕}{\ensuremath{\oplus}}
\newunicodechar{⊖}{\ensuremath{\ominus}}
\newunicodechar{⊗}{\ensuremath{\otimes}}
\newunicodechar{⊘}{\ensuremath{\oslash}}
\newunicodechar{⊙}{\ensuremath{\odot}}
\newunicodechar{◎}{\ensuremath{\circledcirc}}
\newunicodechar{⊛}{\ensuremath{\circledast}}
\newunicodechar{⊜}{\ensuremath{\circleddash}}
```

9.3 Others

Probably some of these belong somewhere else.

```
\newunicodechar{·}{\ensuremath{\cdot}}
\newunicodechar{∞}{\ensuremath{\infty}}
\ifpdflatex
  \newunicodechar{∷}{\ensuremath{::}}
\else
  \newunicodechar{∷}{\ensuremath{\Colon}}
\fi
```

10 Check and X-marks

```
\newunicodechar{✓}{\ensuremath{\checkmark}}
\newunicodechar{×}{\ensuremath{\times}}
```