Go Cheatsheet

Minimal Go Program

`.../helloworld/helloworld.go`:

```
// Helloworld prints the expected message...
package main

import "fmt"

func main() {
        fmt.Println("Hello, World!")
}
```

To run:

```
go mod init helloworld
go run helloworld.go
```

To build excutable (to `helloworld`):

```
go build helloworld
```

Document classes

`book`	Default is two-sided.
`report`	No `\part` divisions.
`article`	No `\part` or `\chapter` divisions.
`letter`	Letter (?).
`slides`	Large sans-serif font.

Used at the very beginning of a document: `\documentclass{class}`. Use `\begin{document}` to start contents and `\end{document}` to end the document.

Common `documentclass` options

`10pt/11pt/12pt`	Font size.
`letterpaper/a4paper`	Paper size.
`twocolumn`	Use two columns.
`twoside`	Set margins for two-sided.
`landscape`	Landscape orientation. Must use `dvips -t landscape`.
`draft`	Double-space lines.

Usage: `\documentclass[opt,opt]{class}`.

Packages

`fullpage`	Use 1 inch margins.
`anysize`	Set margins: `\marginsize{l}{r}{t}{b}`.
`multicol`	Use n columns: `\begin{multicols}{n}`.
`latexsym`	Use LaTeX symbol font.
`graphicx`	Show image: `\includegraphics[width=x]{file}`.
`url`	Insert URL: `\url{http://...}`.

Use before `\begin{document}`. Usage: `\usepackage{package}`.

Title

`\author{text}`	Author of document.
`\title{text}`	Title of document.
`\date{text}`	Date.

These commands go before `\begin{document}`. The declaration `\maketitle` goes at the top of the document.

Miscellaneous

`\pagestyle{empty}`	Empty header, footer and no page numbers.
`\tableofcontents`	Add a table of contents here.

Document structure

`\part{title}`	`\subsubsection{title}`
`\chapter{title}`	`\paragraph{title}`
`\section{title}`	`\subparagraph{title}`
`\subsection{title}`	

Use `\setcounter{secnumdepth}{x}` suppresses heading numbers of depth $> x$, where `chapter` has depth 0. Use a `*`, as in `\section*{title}`, to not number a particular item—these items will also not appear in the table of contents.

Text environments

`\begin{comment}`	Comment (not printed). Requires `verbatim` package.
`\begin{quote}`	Indented quotation block.
`\begin{quotation}`	Like `quote` with indented paragraphs.
`\begin{verse}`	Quotation block for verse.

Lists

`\begin{enumerate}`	Numbered list.
`\begin{itemize}`	Bulleted list.
`\begin{description}`	Description list.
`\item text`	Add an item.
`\item[x] text`	Use x instead of normal bullet or number. Required for descriptions.

References

`\label{marker}`	Set a marker for cross-reference, often of the form `\label{sec:item}`.
`\ref{marker}`	Give section/body number of marker.
`\pageref{marker}`	Give page number of marker.
`\footnote{text}`	Print footnote at bottom of page.

Floating bodies

`\begin{table}[place]`	Add numbered table.
`\begin{figure}[place]`	Add numbered figure.
`\begin{equation}[place]`	Add numbered equation.
`\caption{text}`	Caption for the body.

The *place* is a list valid placements for the body. t=top, h=here, b=bottom, p=separate page, !=place even if ugly. Captions and label markers should be within the environment.

Text properties

Font face

Command	Declaration	Effect
`\textrm{text}`	`{\rmfamily text}`	Roman family
`\textsf{text}`	`{\sffamily text}`	Sans serif family
`\texttt{text}`	`{\ttfamily text}`	Typewriter family
`\textmd{text}`	`{\mdseries text}`	Medium series
`\textbf{text}`	`{\bfseries text}`	**Bold series**
`\textup{text}`	`{\upshape text}`	Upright shape
`\textit{text}`	`{\itshape text}`	*Italic shape*
`\textsl{text}`	`{\slshape text}`	*Slanted shape*
`\textsc{text}`	`{\scshape text}`	SMALL CAPS SHAPE
`\emph{text}`	`{\em text}`	*Emphasized*
`\textnormal{text}`	`{\normalfont text}`	Document font
`\underline{text}`		Underline

The command (t*ttt*) form handles spacing better than the declaration (t*ttt*) form.

Font size

`\tiny`	tiny
`\scriptsize`	scriptsize
`\footnotesize`	footnotesize
`\small`	small
`\normalsize`	normalsize
`\large`	large
`\Large`	Large
`\LARGE`	LARGE
`\huge`	huge
`\Huge`	Huge

These are declarations and should be used in the form `{\small ...}`, or without braces to affect the entire document.

Verbatim text

`\begin{verbatim}`	Verbatim environment.
`\begin{verbatim*}`	Spaces are shown as ␣.
`\verb!text!`	Text between the delimiting characters (in this case '!') is verbatim.

Justification

Environment	Declaration
`\begin{center}`	`\centering`
`\begin{flushleft}`	`\raggedright`
`\begin{flushright}`	`\raggedleft`

Miscellaneous

`\linespread{x}` changes the line spacing by the multiplier x.

Text-mode symbols

Symbols

&	`\&`	_	`\_`	...	`\ldots`	• `\textbullet`
$	`\$`	^	`\^{}`	|	`\textbar`	\ `\textbackslash`
%	`\%`	~	`\~{}`	#	`\#`	§ `\S`

Accents

ò `\`o	ó `\'o`	ô `\^o`	õ `\~o`	ō `\=o`
ȯ `\.o`	ö `\"o`	o̦ `\c o`	ŏ `\v o`	ő `\H o`
ç `\c c`	o̧ `\d o`	o̱ `\b o`	o͡o `\t oo`	œ `\oe`
Œ `\OE`	æ `\ae`	Æ `\AE`	å `\aa`	Å `\AA`
ø `\o`	Ø `\O`	ł `\l`	Ł `\L`	ı `\i`
ȷ `\j`	¡ `~``	¿ `?``		

Delimiters

```
` `    " ``    { \{    [ [    ( (    < \textless
' '    " ,,    } \}    ] ]    ) )    > \textgreater
```

Dashes

Name	Source	Example	Usage
hyphen	-	X-ray	In words.
en-dash	--	1–5	Between numbers.
em-dash	---	Yes—or no?	Punctuation.

Line and page breaks

`\\`	Begin new line without new paragraph.
`\\*`	Prohibit pagebreak after linebreak.
`\kill`	Don't print current line.
`\pagebreak`	Start new page.
`\noindent`	Do not indent current line.

Miscellaneous

`\today`	January 25, 2025.
`$\sim$`	Prints ∼ instead of `\~{}`, which makes ˜.
`~`	Space, disallow linebreak (`W.J.~Clinton`).
`\@.`	Indicate that the . ends a sentence when following an uppercase letter.
`\hspace{l}`	Horizontal space of length l (Ex: $l = $ `20pt`).
`\vspace{l}`	Vertical space of length l.
`\rule{w}{h}`	Line of width w and height h.

Tabular environments

tabbing environment

`\=` Set tab stop.   `\>` Go to tab stop.
Tab stops can be set on "invisible" lines with `\kill` at the end of the line. Normally `\\` is used to separate lines.

tabular environment

```
\begin{array}[pos]{cols}
\begin{tabular}[pos]{cols}
\begin{tabular*}{width}[pos]{cols}
```

tabular column specification

`l`	Left-justified column.
`c`	Centered column.
`r`	Right-justified column.
`p{width}`	Same as `\parbox[t]{width}`.
`@{decl}`	Insert *decl* instead of inter-column space.
`|`	Inserts a vertical line between columns.

tabular elements

`\hline`	Horizontal line between rows.
`\cline{x-y}`	Horizontal line across columns x through y.
`\multicolumn{n}{cols}{text}`	A cell that spans n columns, with *cols* column specification.

Math mode

For inline math, use `\(...\)` or `$...$`. For displayed math, use `\[...\]` or `\begin{equation}`.

Superscript^x	`^{x}`	Subscript$_x$	`_{x}`
$\frac{x}{y}$	`\frac{x}{y}`	$\sum_{k=1}^{n}$	`\sum_{k=1}^n`
$\sqrt[n]{x}$	`\sqrt[n]{x}`	$\prod_{k=1}^{n}$	`\prod_{k=1}^n`

Math-mode symbols

≤	`\leq`	≥	`\geq`	≠	`\neq`	≈	`\approx`
×	`\times`	÷	`\div`	±	`\pm`	·	`\cdot`
°	`^{\circ}`	∘	`\circ`	′	`\prime`	⋯	`\cdots`
∞	`\infty`	¬	`\neg`	∧	`\wedge`	∨	`\vee`
⊃	`\supset`	∀	`\forall`	∈	`\in`	→	`\rightarrow`
⊂	`\subset`	∃	`\exists`	∉	`\notin`	⇒	`\Rightarrow`
∪	`\cup`	∩	`\cap`	│	`\mid`	⇔	`\Leftrightarrow`
$\dot a$	`\dot a`	$\hat a$	`\hat a`	$\bar a$	`\bar a`	$\tilde a$	`\tilde a`
α	`\alpha`	β	`\beta`	γ	`\gamma`	δ	`\delta`
ε	`\epsilon`	ζ	`\zeta`	η	`\eta`	ε	`\varepsilon`
θ	`\theta`	ι	`\iota`	κ	`\kappa`	ϑ	`\vartheta`
λ	`\lambda`	μ	`\mu`	ν	`\nu`	ξ	`\xi`
π	`\pi`	ρ	`\rho`	σ	`\sigma`	τ	`\tau`
υ	`\upsilon`	φ	`\phi`	χ	`\chi`	ψ	`\psi`
ω	`\omega`	Γ	`\Gamma`	Δ	`\Delta`	Θ	`\Theta`
Λ	`\Lambda`	Ξ	`\Xi`	Π	`\Pi`	Σ	`\Sigma`
Υ	`\Upsilon`	Φ	`\Phi`	Ψ	`\Psi`	Ω	`\Omega`

Bibliography and citations

When using BIBTEX, you need to run `latex`, `bibtex`, and `latex` twice more to resolve dependencies.

Citation types

`\cite{key}`	Full author list and year. (Watson and Crick 1953)
`\citeA{key}`	Full author list. (Watson and Crick)
`\citeN{key}`	Full author list and year. Watson and Crick (1953)
`\shortcite{key}`	Abbreviated author list and year. ?
`\shortciteA{key}`	Abbreviated author list. ?
`\shortciteN{key}`	Abbreviated author list and year. ?
`\citeyear{key}`	Cite year only. (1953)

All the above have an `NP` variant without parentheses; Ex. `\citeNP`.

BIBTEX entry types

`@article`	Journal or magazine article.
`@book`	Book with publisher.
`@booklet`	Book without publisher.
`@conference`	Article in conference proceedings.
`@inbook`	A part of a book and/or range of pages.
`@incollection`	A part of book with its own title.
`@misc`	If nothing else fits.
`@phdthesis`	PhD. thesis.
`@proceedings`	Proceedings of a conference.
`@techreport`	Tech report, usually numbered in series.
`@unpublished`	Unpublished.

BIBTEX fields

address	Address of publisher. Not necessary for major publishers.
author	Names of authors, of format ....
booktitle	Title of book when part of it is cited.
chapter	Chapter or section number.
edition	Edition of a book.
editor	Names of editors.
institution	Sponsoring institution of tech. report.
journal	Journal name.
key	Used for cross ref. when no author.
month	Month published. Use 3-letter abbreviation.
note	Any additional information.
number	Number of journal or magazine.
organization	Organization that sponsors a conference.
pages	Page range (2,6,9--12).
publisher	Publisher's name.
school	Name of school (for thesis).
series	Name of series of books.
title	Title of work.
type	Type of tech. report, ex. "Research Note".
volume	Volume of a journal or book.
year	Year of publication.

Not all fields need to be filled. See example below.

Common BIBTEX style files

abbrv	Standard	abstract	alpha with abstract
alpha	Standard	apa	APA
plain	Standard	unsrt	Unsorted

The LATEX document should have the following two lines just before `\end{document}`, where `bibfile.bib` is the name of the BIBTEX file.

```
\bibliographystyle{plain}
\bibliography{bibfile}
```

BIBTEX example

The BIBTEX database goes in a file called *file*.bib, which is processed with `bibtex file`.

```
@String{N = {Na\-ture}}
@Article{WC:1953,
  author  = {James Watson and Francis Crick},
  title   = {A structure for Deoxyribose Nucleic Acid},
  journal = N,
  volume  = {171},
  pages   = {737},
  year    = 1953
}
```

Sample LATEX document

```
\documentclass[11pt]{article}
\usepackage{fullpage}
\title{Template}
\author{Name}
\begin{document}
\maketitle
```

```
\section{section}
\subsection*{subsection without number}
text \textbf{bold text} text. Some math: $2+2=5$
\subsection{subsection}
text \emph{emphasized text} text. \cite{WC:1953}
discovered the structure of DNA.

A table:

\begin{table}[!th]
\begin{tabular}{|l|c|r|}
\hline
first  &  row  &  data \\
second &  row  &  data \\
\hline
\end{tabular}
\caption{This is the caption}
\label{ex:table}

\end{table}

The table is numbered \ref{ex:table}.
\end{document}
```