

OneHotkey -- Math Formula Input Simplification Tool

This is a script that simplifies math formula inputs in `OneNote` and `Word` with `AutoHotKey` script, e.g., `\a` for α (`\alpha`).

Demonstration video (Early version):

- [AutoHotKey增强OneNote公式输入测试1哔哩哔哩 bilibili](#)

This project is still updating. Your suggestions and contributions are welcome.

If the formulas aren't displayed correctly, go to [README_EN.pdf](#).

How to Use

1. Download and run [OneHotkey.exe](#).
2. Input the code of the symbol, then press `Space` to get the symbol. For example, input `\a` and press `Space` to get α .
3. For editing the symbol mapping, please refer to [Code Editing Guide](#). If you need help, go to the [AutoHotKey official website](#).
4. To stop the script, right click the `H` icon in the system tray and select `Exit`.

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Symbol Mapping

Overview

The script contains multiple symbol mappings, including Greek letters, math fonts, frequently used letters, and structures. The following is a list of some typical mappings. Make sure that you have entered the formula input mode with `Alt+=`.

Code	Output	Category	Source
<code>\a</code>	α	lowercase Greek letters	<code>\alpha</code>
<code>\D</code>	Δ	uppercase Greek letters	<code>\Delta</code>
<code>\R, \C, \Z,</code> <code>\N, \J</code>	$\mathbb{R}, \mathbb{C}, \mathbb{Z}, \mathbb{N}, \mathbb{J}$	frequently used letters	<code>\doubleR, ...</code>
<code>\do x, \sc x,</code> <code>\fr x</code>	$\mathbb{X}, \mathcal{X}, \mathfrak{X}$	fancy letter forms	<code>\doubleX, \scriptX,</code> <code>\frakturX</code>
<code>\m3, \m4, ...</code>	specific shape matrices	matrices	<code>[\matrix{@@&&}], ...</code>
<code>x\h, x\~,</code> <code>x\d2</code>	$\hat{x}, \tilde{x}, \ddot{x}$	modifiers	<code>\hat, \tilde, \ddot</code>
<code>\x, \X, \sq,</code> <code>\pa, \eq</code>	$\cdot, \times, \sqrt{\square}, \parallel, \equiv$	operators	<code>\cdot, \times, \sqrt,</code> <code>\parallel, \equiv</code>
<code>\pd, \d, \dt,</code> <code>\inf</code>	$\partial, d, \frac{d}{dt}, \infty$	frequently used symbols	<code>\partial, "d", "d"/"d" t,</code> <code>\infty</code>
<code>\limx, \limx0</code>	$\lim_{x \rightarrow \infty},$ $\lim_{x \rightarrow 0}$	limits	<code>\lim_(x->\infty), \lim_(x->0)</code>
<code>\ls</code>	$\square P$	left super-and-lowerscript	<code>^_ P</code>
<code>\i, \j, \k</code>	i, j, k	imaginary/quaternion symbols	<code>"i", "j", "k"</code>
<code>\ejw</code>	$e^{j\omega}$	complex exponential factor	<code>e^j\omega</code>

You shall notice that (space) is commonly used, which is the key feature of OneNote formula input.

Full Table

Frequently Used Letters

Code	Output	Source	Code	Output	Source
<code>\pd</code>	∂	<code>\partial{Space}</code>	<code>\d</code>	d	<code>"d"{Space}</code>
<code>\inf</code>	∞	<code>\infty{Space}</code>	<code>\dt</code>	$\frac{\mathrm{d}}{\mathrm{d}t}$	<code>"d"{Space}/"d"{Space}t{Space}</code>
<code>\R</code>	\mathbb{R}	<code>\doubleR{Space}</code>	<code>\E</code>	$\mathbb{E}[\square]$	<code>\doubleE{Space}[] {Space}{Left}</code>
<code>\Q</code>	\mathbb{Q}	<code>\doubleQ{Space}</code>	<code>\Z</code>	\mathbb{Z}	<code>\doubleZ{Space}</code>
<code>\N</code>	\mathbb{N}	<code>\doubleN{Space}</code>	<code>\C</code>	\mathbb{C}	<code>\doubleC{Space}</code>
<code>\J</code>	\mathbb{J}	<code>\doubleJ{Space}</code>	<code>\n</code>	∇	<code>\nabla{Space}</code>

Operators

Code	Output	Source	Code	Output	Source
<code>\x</code>	\cdot	<code>\cdot{Space}</code>	<code>\X</code>	\times	<code>\times{Space}</code>
<code>\sq</code>	$\sqrt{\square}$	<code>\sqrt{Space 2}{Left}</code>	<code>\pa</code>	\parallel	<code>\parallel{Space}</code>
<code>\ss</code>	\subset	<code>\subset{Space}</code>	<code>\sse</code>	\subseteq	<code>\subteq{Space}</code>
<code>\op</code>	\oplus	<code>\oplus{Space}</code>	<code>\ox</code>	\otimes	<code>\otimes{Space}</code>
<code>\od</code>	\odot	<code>\odot{Space}</code>	<code>\dd</code>	\cdots	<code>\ddots{Space}</code>
<code>\cd</code>	\cdots	<code>\cdots{Space}</code>	<code>\vd</code>	\vdots	<code>\vdots{Space}</code>
<code>\map</code>	\mapsto	<code>\mapsto{Space}</code>	<code>\pro</code>	\propto	<code>\propto{Space}</code>
<code>\as</code>	\because	<code>\because{Space}</code>	<code>\so</code>	\therefore	<code>\therefore{Space}</code>
<code>\eq</code>	\equiv	<code>\equiv{Space}</code>	<code>\deq</code>	\triangleq	<code>\Deltaeq{Space}</code>
<code>\xe</code>	$\times 10^{\square}$	<code>\times{Space}10^{^}{Space}{Left}</code>	<code>\ex</code>	\exists	<code>\exists{Space}</code>
<code>\fa</code>	\forall	<code>\forall{Space}</code>	<code>\ppd</code>	$\frac{\partial}{\partial}$	<code>\partial{Space}/\partial{Space 2}{Left 3}</code>
<code>\ppd</code>	$\frac{\partial}{\partial}$	<code>\partial{Space}/\partial{Space 2}{Left 3}</code>			

Greek Letters

Code	Output	Source	Code	Output	Source
<code>\a</code>	α	<code>\alpha{Space}</code>	<code>\b</code>	β	<code>\beta{Space}</code>
<code>\e</code>	ε	<code>\varepsilon{Space}</code>	<code>\ve</code>	ϵ	<code>\epsilon{Space}</code>
<code>\de</code>	δ	<code>\delta{Space}</code>	<code>\D</code>	Δ	<code>\Delta{Space}</code>
<code>\s</code>	σ	<code>\sigma{Space}</code>	<code>\S</code>	Σ	<code>\Sigma{Space}</code>
<code>\l</code>	λ	<code>\lambda{Space}</code>	<code>\L</code>	Λ	<code>\Lambda{Space}</code>

Code	Output	Source	Code	Output	Source
<code>\t</code>	θ	<code>\theta{Space}</code>	<code>\T</code>	Θ	<code>\Theta{Space}</code>
<code>\p</code>	ϕ	<code>\phi{Space}</code>	<code>\P</code>	Φ	<code>\Phi{Space}</code>
<code>\o</code>	ω	<code>\omega{Space}</code>	<code>\O</code>	Ω	<code>\Omega{Space}</code>
<code>\g</code>	γ	<code>\gamma{Space}</code>	<code>\G</code>	Γ	<code>\Gamma{Space}</code>

- `\ve` means variant epsilon. For convenience, `\e` is set to ε and `\ve` is set to ϵ , which is different from their original code.

Matrix

Code	Output	Source
<code>\m4</code>	4 by 4 empty matrix	<code>[\matrix{@@@&&}{Space}]{Space}</code>
<code>\m3</code>	3 by 3 empty matrix	<code>[\matrix{@@&}{Space}]{Space}</code>
<code>\m2</code>	2 by 2 empty matrix	<code>[\matrix{@&}{Space}]{Space}</code>
<code>\m</code>	empty matrix awaiting & @ to set size	<code>[]{Space}{Left}\matrix(){Left}</code>

Modifiers

Code	Output	Source
<code>\d1</code>	\dot{x}	<code>\dot{Space 2}</code>
<code>\d2</code>	\ddot{x}	<code>\ddot{Space 2}</code>
<code>\d3</code>	3 dots above	<code>\dddot{Space 2}</code>
<code>\d4</code>	4 dots above	<code>\ddddot{Space 2}</code>
<code>\~</code>	\tilde{x}	<code>\tilde{Space 2}</code>
<code>\v</code>	\vec{x}	<code>\vec{Space 2}</code>
<code>\h</code>	\hat{x}	<code>\hat{Space 2}</code>
<code>\ub</code>	\underline{x}	<code>\underbar{Space 2}{Left}</code>

- For the above codes, you should input like `x\h`.

Arrows

Code	Output	Source	Code	Output	Source
<code>\lr</code>	\leftrightarrow	<code>\leftrightarrow{Space}</code>	<code>\Lr</code>	\Leftrightarrow	<code>\Leftrightarrow{Space}</code>
<code>\lrs</code>	\Leftrightarrow	<code>\leftrightarrows{Enter}{Left}</code>	<code>\la</code>	\leftarrow	<code>\leftarrow{Space}</code>


Code	Output	Source	Code	Output	Source
<code>\La</code>	\leftarrow	<code>\Leftarrow{Space}</code>	<code>\ra</code>	\rightarrow	<code>\rightarrow{Space}</code>
<code>\Ra</code>	\Rightarrow	<code>\Rightarrow{Space}</code>	<code>\down</code>	\downarrow	<code>\downarrow{Space}</code>
<code>\up</code>	\uparrow	<code>\uparrow{Space}</code>			

Symbols

Code	Output	Source	Code	Output	Source
<code>\deg</code>	$^{\circ}$	<code>\degree{Space}</code>	<code>\st</code>	\star	<code>\star{Space}</code>

Structures

Code	Output	Source
<code>\r</code>	$\{ \}$	<code>\right.{Left}</code>
<code>\leb</code>	$\{ \}$	<code>\left\box{Space 2}{Left}</code>
<code>\ceil</code>	$\lceil \rceil$	<code>\lceil{Space}\rceil{Space 2}{Left}</code>
<code>\floor</code>	$\lfloor \rfloor$	<code>\lfloor{Space}\rfloor{Space 2}{Left}</code>
<code>\brak</code>	$\langle \rangle$	<code>\bra{Space}\ket{Space 2}{Left}</code>
<code>\ls</code>	$\overset{P}{\square}$	<code>\^_ P {Left 4}</code>
<code>\ab</code>	$\overset{x}{\square}$	<code>\above{Space 2}{Left}</code>
<code>\be</code>	$\underset{x}{\square}$	<code>\below{Space 2}{Left}</code>
<code>\abb</code>	\overbrace{x}	<code>\overbrace{Space 2}</code>
<code>\beb</code>	\underbrace{x}	<code>\underbrace{space 2}</code>
<code>\fu</code>	myfunction \square	<code>\funcapply</code>
<code>\Norm</code>	$\ \square \ $	<code>\norm{Space}\norm{Space 2}{Left}</code>
<code>\limx,</code> <code>\limx0</code>	$\lim_{x \rightarrow \infty}, \lim_{x \rightarrow 0}$	<code>\lim_(x->\infty{Space}){Space}, \lim_(x->0{Space}){Space}</code>
<code>\limt,</code> <code>\limt0</code>	$\lim_{t \rightarrow \infty}, \lim_{t \rightarrow 0}$	<code>\lim_(t->\infty{Space}){Space}, \lim_(t->0{Space}){Space}</code>
<code>\limn,</code> <code>\limk</code>	$\lim_{n \rightarrow \infty}, \lim_{k \rightarrow \infty}$	<code>\lim_(n->\infty{Space}){Space}, \lim_(k->\infty{Space}){Space}</code>
<code>\limh</code>	$\lim_{h \rightarrow 0}$	<code>\lim_(h->0{Space}){Space}</code>

Code	Output	Source
<code>\BO</code>		<code>\boxed{Enter}{Left 2}</code>
<code>\qu</code>	Quad space	<code>\quad{Enter}{Left}</code>
<code>\diverge</code>	$\frac{\partial}{\partial x} + \frac{\partial}{\partial y} + \frac{\partial}{\partial z}$	Omitted
<code>\gradient</code>	$\frac{\partial}{\partial x} \vec{a}_x + \frac{\partial}{\partial y} \vec{a}_y + \frac{\partial}{\partial z} \vec{a}_z$	Omitted
<code>\curl</code>	Curl matrix	

- `\funcapply` is a little different from `\of`. Have a try by yourself!

Prefix for Fancy Letters

Code	Output	Source
<code>\sc</code>	\mathcal{X}	<code>\script</code>
<code>\do</code>	\mathbb{X}	<code>\double</code>
<code>\fr</code>	\mathfrak{X}	<code>\fraktur</code>

- For these mappings, your input should be like `\sc x`.

Multi-column Equations

Code	Output	Source
<code>\eq2</code>	Two-column equation	<code>\eqarray(&=@&=){Space}{Left 6}</code>
<code>\eqs</code>	Example equation array	<code>\eqarray(a\quad&b@c\quad&e){Enter}{Left 11}</code>

Note: Multi-column equations are used for aligning multiple equations, using `@` as placeholder and `&` as alignment point.

Theorem Structures

Code	Output	Source
<code>\pf</code>	Proof structure	<code>\bProof.\b{Enter 2}!={Space}{#}\qed{Enter}{Left 7}</code>
<code>\thm</code>	Theorem structure	<code>\bTheorem{Space}.\b^i{Space}{Left 2}</code>
<code>\que</code>	Question structure	<code>\bQuestion{Space}.\b{Space}{Left 2}</code>

Recommendations

- Learn more about the math input from this document: [UTN28-PlainTextMath-v3.pdf](#). Page 39~47 is useful.
- Input Unicode characters directly: https://github.com/gtj1/symbol_assist
- Intuitive Vim-like text cursor control: <https://github.com/RUSRUSHB/AutoTextCursor>

Experimental Features (In folder `experimental/`)

`key_combination.exe`

- Use key combinations to input special characters and structures
- Contains: Start formula inputting; Division line; Boxed text; Text block

`rus_hotkey.exe`

- Input Russian alphabets. They can be integrated into formula inputting.
- Format: `\+Romanized Alphabet+ R`
- e.g., `\dR` generates д , `\DR` generates Д

Code Editing Guide

For editing the mapping, please: Edit `oneHotkey.ahk`, compile it with `Ahk2Exe`, and run the compiled `.exe` file. You are recommended to learn more about `AutoHotKey` from its [website](#).

The code of `oneHotkey.ahk` is very easy to understand, even if you have not learnt about `AutoHotKey`. For newcomers, the explanation of the code is as follows:

Each line of the code is a mapping of the input code to the output symbol. The format is `:(parameters):input::output`. For example, `::\a::\a1pha` means that when you input `\a`, the script will output `\a1pha`.

The script uses global hotstring settings `#Hotstring c o ?`, which apply to all mappings:

Parameter	Meaning
<code>c</code>	Case-sensitive. <code>\a</code> and <code>\A</code> are different.
<code>o</code>	Delete the <code>space</code> you entered at the end.
<code>?</code>	Output formula even if you have typed something before the code. Otherwise, it will fail in cases like <code>x\h</code>