

Input

For years I've been using a Windows program called **Multikey** to input Latin script diacritics and non-Latin scripts. There is also a program called **Keyman** that does the same thing.

These days I spend more time on Linux so I've had to learn some Linux keyboard mappings. There, additional keyboards are provided by a system called 'X keyboard extension' (**XKB**).

Here is a keyboard mapping for Latin script special characters. This works by default on my UK keyboard. It's from a file called 'latin' found at `/usr/share/X11/xkb/symbols/latin`

AltGr 1	¹	AltGr Shift q	Ω	AltGr a	æ	AltGr x	»
AltGr Shift 1	¡	AltGr w	ƒ	AltGr Shift a	Æ	AltGr c	¢
AltGr 2	²	AltGr Shift w	§	AltGr s	ß	AltGr Shift c	©
AltGr Shift 2	¹ / ₈	AltGr r	¶	AltGr Shift s	ẞ	AltGr v	„
AltGr 3	³	AltGr Shift r	®	AltGr d	ð	AltGr Shift v	,
AltGr Shift 3	£	AltGr t	₣	AltGr Shift d	Ð	AltGr b	“
AltGr 4	€	AltGr Shift t	₤	AltGr f	đ	AltGr Shift b	‘
AltGr Shift 4	¹ / ₄	AltGr y	←	AltGr Shift f	ª	AltGr n	”
AltGr 5	¹ / ₂	AltGr Shift y	¥	AltGr g	η	AltGr Shift n	’
AltGr Shift 5	³ / ₈	AltGr u	↓	AltGr Shift g	Ŋ	AltGr m	μ
AltGr 6	³ / ₄	AltGr Shift u	↑	AltGr h	ħ	AltGr Shift m	°
AltGr Shift 6	⁵ / ₈	AltGr i	→	AltGr Shift h	Ħ	AltGr ,	•
AltGr Shift 7	⁷ / ₈	AltGr Shift i	ı	AltGr k	κ	AltGr Shift ,	×
AltGr Shift 8	™	AltGr o	ø	AltGr l	ł	AltGr .	·
AltGr Shift 9	±	AltGr Shift o	Ø	AltGr Shift l	Ł	AltGr Shift .	÷
AltGr Shift 0	°	AltGr p	þ	AltGr Shift \			
AltGr Shift -	˘	AltGr Shift p	Ɔ	AltGr z	«		
AltGr = c	ç	AltGr] a	ã	AltGr ' a	â	AltGr / a	ạ
AltGr Shift = a	ą	AltGr Shift] a	ā	AltGr Shift ' a	ǎ	AltGr Shift / a	à
AltGr [a	ä	AltGr ; a	á	AltGr # a	à	AltGr j a	ǎ
AltGr Shift [a	å	AltGr Shift ; o	ó	AltGr Shift # a	ǎ	AltGr Shift j a	õ

The symbols in the first part of the table are made by holding down AltGr or AltGr Shift and then pressing a key. They always produce the same output.

The second part of the table uses dead keys to make precomposed Unicode characters with diacritics. You hold down AltGr or AltGr Shift plus a symbol, then lift and press a letter. Some of them produce a great many combinations e.g. AltGr ; [a-z] makes á ć é ğ í j k l m n ó p r s ú ů w y z, AltGr Shift ; [a-z] makes only ő ů. AltGr j [a-z] makes â b c d e f g h i k m n o p q r s t u v w y z, AltGr Shift j [a-z] makes ô ü. You can combine keystrokes from the first and second part, e.g. AltGr Shift] AltGr a makes æ, AltGr ; AltGr o makes ó. You can also use two key combinations from the second group: AltGr ; AltGr Shift # a makes ǎ, AltGr / AltGr Shift] r makes ř.

Pressing AltGr ' (lift) and one of the keys on the top row from '1' to '=' makes superscript numbers and maths symbols: ^{1 2 3 4 5 6 7 8 9 0 () - = +}. AltGr ' Shift with the same keys makes subscripts: _{1 2 3 4 5 6 7 8 9 0 () - = +}.

A mapping for the 'Russian (phonetic)' keyboard. From `/usr/share/X11/xkb/symbols/ru`

Aa	Аа	Ii	Ии	Ss	Сс	^%	Ъъ
Bb	Бб	Jj	Йй	Tt	Тт	Yy	Ыы
Ww	Вв	Kk	Кк	Uu	Уу	Xx	Ьь
Gg	Гг	Ll	Лл	Ff	Фф	~#	Ээ
Dd	Дд	Mm	Мм	Hh	Хх	-`	Юю
Ee	Ее	Nn	Нн	Cc	Цц	Qq	Яя
\$£	Ёё	Oo	Оо	+=	Чч	'	'
Vv	Жж	Pp	Пп	{[Шш	Shift	'
Zz	Зз	Rr	Рр	}]	Щщ		" "

The default 'Russian' keyboard layout is completely different to qwerty.

To get additional keyboards to work you can go to Menu > Preferences > Keyboard and choose the 'Layouts' tab. Once you are in that click '+' and the list of available keyboards will come up. Select the keyboard you want and click 'Add'. If you want a keyboard shortcut for switching between layouts, click on Options, expand the section 'Switching to another layout' and select which key combination you want to use for switching. This is for Linux **Mint** Cinnamon, but the procedure is similar in xfce desktops.

There is also a command line way of doing this. Enter

```
setxkbmap -layout gb,ru -variant ,phonetic -option "grp:alt_shift_toggle"
```

in a terminal and press enter. Now you can switch between the UK keyboard and the Russian (phonetic) by pressing Alt Shift. This only lasts until you reboot though.

A full list of layouts and variants can be found at `/usr/share/X11/xkb/rules/base.lst`

A mapping for the 'Greek (polytonic)' layout. From /usr/share/X11/xkb/symbols/gr

Aa	Αα	Jj	Ξξ	@a	ά][@h	ή̃
Bb	Ββ	Oo	Οο	;a	ά̃	AltGr [a	ᾱ̃
Gg	Γγ	Pp	Ππ	'a	ὰ	AltGr] a	ᾱ̃
Dd	Δδ	Rr	Ρρ	[a	ᾱ̃	q	;
Ee	Εε	Ss	Σσ	::a	ᾱ̃	Q	:
Zz	Ζζ	Ww	Σς	:@a	ᾱ̃	AltGr q	·
Hh	Ηη	Tt	Ττ	'a	ᾱ̃	\	«
Uu	Θθ	Yy	Υυ	'@a	ᾱ̃		»
Ii	Ιι	Ff	Φφ	[:a	ᾱ̃	AltGr	' ‘ ’
Kk	Κκ	Xx	Χχ	[@a	ᾱ̃	AltGr Shift	' “ ”
Ll	Λλ	Cc	Ψψ	{i	ï		
Mm	Μμ	Vv	Ωω	{i	ï̃		
Nn	Νν	:a	ά̃]a	α̃		

AltGr `	—	AltGr Shift u	Θ	AltGr g	ƒ	AltGr Shift z	Ϸ
AltGr 1	•	AltGr i	Ϸ	AltGr Shift g	F	AltGr v	ω
AltGr 5	‰	AltGr Shift i	Ϸ	AltGr h	j	AltGr b	β
AltGr Shift 5	‰	AltGr o	Ϸ	AltGr Shift h	J	AltGr Shift b	β̃
AltGr 6	κ	AltGr Shift o	Ϸ	AltGr j	j	AltGr n	ν
AltGr 8	Ͱ	AltGr p	ω	AltGr Shift j	J	AltGr Shift n	ν̃
AltGr w	Ϸ	AltGr Shift p	φ	AltGr k	κ	AltGr m	μ
AltGr Shift w	Ϸ	AltGr s	ς	AltGr Shift k	Κ	AltGr Shift m	Μ
AltGr Shift r	Ϸ	AltGr Shift s	ς	AltGr l	c	AltGr Shift ,	...
AltGr y	Υ	AltGr f	ƒ	AltGr Shift l	C		
AltGr u	Ϸ	AltGr Shift f	F	AltGr z	z		

The second part of this table contains some variant and archaic letters which have recently been added to the polytonic layout: e.g. stigma, digamma, koppa, sampi, also the Greek numeral signs ' and , . The dash mapped to AltGr ` is U+2015 'horizontal bar'.

One difference between Multikey and the XKB Greek layouts, is that Multikey uses characters from the Greek blocks for Greek punctuation: U+037E for 'Greek question mark' (;), U+0387 for 'ano teleia' (·), U+1FBF for 'Greek koronis' (').* The XKB layouts use respectively U+003b (;), U+00b7 (·) and U+2019 ('). Greek texts on the internet seem to vary in which characters they use for these marks. Comma and full stop are the same as in English.

Another difference concerns a duplication in Unicode. The following sixteen glyphs appear in both the monotonic block ('Greek and Coptic') and in the polytonic block ('Greek Extended'):

Monotonic glyphs with tonos ά έ ή ί ό ύ ώ Ά Έ Ή Ί Ό Ύ Ώ ΐ ύ
Polytonic glyphs with oxia ά έ ή ί ό ύ ώ Ά Έ Ή Ί Ό Ύ Ώ ΐ ύ

* Actually it uses U+1FBF 'Greek psili', but I altered my Multikey.ini to make it use U+1FBF.

The Multikey polytonic layout uses the glyphs from Greek Extended; XKB's uses the monotonic equivalents. It seems that XKB is more correct; see [here](#).

If you copy the two rows of glyphs above from this PDF into LibreOffice Writer, the Greek letters in the bottom row get converted to their monotonic equivalents.* If you copy them from the .tex file this doesn't happen.

* Writer does a similar thing to Greek punctuation: it changes ; · ' to higher code points, e.g. U+037E 'Greek question mark' to U+003B 'semicolon'. If you highlight a character in Writer or Word and press Alt x, you can toggle between the character and its Unicode value.