

Tamaziyt – Tamazeq keyboard AZERTY/QWERTY, version 0.91

User Guide



A Yablīt Laboratories Project



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Choosing a keyboard variant

The Berber keyboard is absolutely free to download and use. You can distribute it, and even modify it, as long as you attribute it to its creator, Paul Anderson.

The keyboard is available in two main variants, AZERTY and QWERTY, which match the physical keyboards in various countries in which there is a significant Berber-speaking population. The intention is that you can type your converged Berber language or regional variant, mixing it with languages like French and Spanish, using punctuation of your choice, in the same way, in whichever of these countries you happen to be in.

Instructions here are for the AZERTY variant as this is the type of physical keyboard found in North Africa (often with key tops labelled also for Arabic). Everything is the same on the QWERTY variant except that letters and punctuation have been moved to match the printed key tops of US QWERTY keyboards (with influences from the Canadian and UK keyboards), especially those used for typing web addresses.

Download the variant which matches the symbols printed on your physical keyboard. If your QWERTY keyboard is different to the US one (e.g. Spanish) you might need key top stickers.

Each main variant comes in two forms – Latin script, switching to Tifinagh on Caps Lock, and Tifinagh, switching to Latin on Caps Lock. You use them both in the same way, but there are some small differences because of technical limitations. Download the one that reflects your local and personal practice.

For use with shared computers, for example in Internet cafés, or by people who type mainly French, an alternative keyboard for Windows is available for download called Français+. It duplicates the French layout but extends it with almost all of the Berber keyboard's functions, and is described in its own chapter.

AZERTY variant

The AZERTY variant (Tamazight-LT/TL-A) is primarily intended for Berber speakers in Algeria, Morocco, France, Belgium, and West Africa. It closely matches the physical keyboard labels, so key top stickers should not be necessary.

The keyboard can be installed for Berber locales if the operating system provides them.

French features such as œ are designed to be available even with non-French locales if these have no auto-correction for French. “” are similarly available in any locale, so you can use your choice of either French or “” –style quotes, no matter which locale your keyboard is installed on.

QWERTY variant

The QWERTY keyboard (Tamazight-LT/TL-Q) is primarily intended for Berber speakers in the Netherlands, Spain, Canada and the US. (US users with old-style keyboards might lack AltGr and need to use Ctrl+Alt instead).

The keyboard can be installed for any locale, even Berber ones if the operating system provides them. French features such as œ are designed to be available even with non-French locales if these have no auto-correction for French. “” are similarly available in any locale, even German, so you can use your choice of either French or “” –style quotes, no matter which locale your keyboard is installed on.

Installation and activation on Windows XP

- Download and unzip your chosen package, then click on the installation script to install the keyboard.
- Then go to the Windows configuration panel 'Regional and Language Settings', Languages tab, Details button, and (for the AZERTY package) add the "Tamazight-LT-A" (Tamazight, Latin-Tifinagh, AZERTY) keyboard for the French language if it is not already present.
- Using the same part of the Windows configuration panel, Preferences, Language Bar, activate the language bar on the desktop. Under 'Key Settings' you can also control which key shortcuts change the language or keyboard layout.
- Some applications you have installed on your computer may have defined keyboard shortcuts triggered with the AltGr key. So that they do not interfere with typing Berber, disable or redefine the shortcuts.
- Choose French language using the left of the bar that appears on the desktop, and then choose Tamazight-LT-A layout using the right. You might need to do this each time you have opened an application, depending on which defaults are set.
- When typing Tifinagh, make sure you have installed and selected a suitable Unicode font (e.g. Hapax Berbère) containing Tifinagh letters, otherwise you will see only empty squares or ??. The same applies for typing Latin letters with accents (Doulos SIL or Gentium SIL recommended).

Installation on Windows Vista should be similar.

To uninstall, use the Windows configuration panel to remove the keyboard layout. Then click on the package's installation script again. You will be prompted whether you want to repair or remove the installed layout.

For experts only: *To install a new keyboard version after removing an old one, you might additionally have to remove the old one completely from \WINDOWS\system32 and the Windows registry.*

First, delete berqwt.dll or berazlt.dll from \WINDOWS\system32.

Then run regedit, then search for 'berqwt.dll' for QWERTY or 'berazlt.dll' for AZERTY. It will be found in several places, but the relevant key will be something like My

Computer\HKEY_LOCAL_MACHINE\System\ControlSet001\Control\Keyboard Layouts\[a numeric key like 00000424 for the specific keyboard layout]

Delete this numeric key.

Layout diagram – Latin (AZERTY)

Simplified:

...	1	2	3	4	5	6	7	8	9	0	h	{	g	Backspace
Tab	A	Z	E	R	T	Y	U	I	O	P	€	£	€	Enter
Caps Lock	Q	S	D	F	G	H	J	K	L	M	Y	Γ	N	
Shift	W	X	C	V	B	N	?	;	/	!	§	Shift		
Ctrl	Win Key	Alt						nnbsp		Alt Gr	Win Key	Menu	Ctrl	

Full:

...	1	2	3	4	5	6	7	8	9	0	h	{	g	Backspace
Tab	A	Z	E	R	T	Y	U	I	O	P	€	£	€	Enter
Caps Lock	Q	S	D	F	G	H	J	K	L	M	Y	Γ	N	
Shift	W	X	C	V	B	N	?	;	/	!	§	Shift		
Ctrl	Win Key	Alt						nnbsp		Alt Gr	Win Key	Menu	Ctrl	

- Caps Lock switches between Latin and Tifinagh.
- Black shows the preferred way to type common letters and punctuation.
- Blue shows symbols for technical use, or shows an alternative way to type a letter.
- Red symbols give special control characters, or are “dead keys”.
- Symbols on the bottom right of a key are accessed by pressing the key in conjunction with AltGr (right Alt or ctrl-left-Alt). Symbols on the top right are accessed with shift+AltGr.
- The blue ring is the degree symbol. The centred ring is a combining ring above. The red ring is a standalone ring above, which is better than the degree symbol to achieve the modifier ring recommended by Chaker.
- The red - to the left of Shift is for writing hyphenated words in Berber so that the words are never split at the end of a line. It is not a minus sign (shift+6) or a dash (shift+AltGr+1,2,3 gives hyphen, en dash, em dash).
- The dash with " over it is a quotation dash, for use with quoted speech. Tap this key twice because it doubles as a dead key.
- Tap ... twice because it doubles as a dead key.
- The centred dot on the bottom left key is used in Catalan.
- " and ' should suffice with a good text editor, but explicit curly quotes and guillemets may be needed with some applications or non-French locales.

- nnbsp is the narrow non-breaking space needed when typing out French punctuation marks explicitly.
- All major letters from the French AZERTY layout are present.
- Magenta and green squares show deadkeys that are used to access e.g. West African letters.
- Diacritics can be always be added to a letter after typing it (except in Word) by typing the diacritic's deadkey twice. For example e then AltGr+f twice gives é.

Layout diagram – Latin (QWERTY)

Simplified:

... ...	! 1	@ 2	~ 3	^ 4	" 5	% 6	+ 7	* 8	£ 9	(0) 1	- 2	= 3	← Backspace
Tab	Q	W	E	R	T	Y	U	I	O	P	ε	θ	Enter	
Caps Lock	A	S	D	F	G	H	J	K	L	:	Y	N		
Shift	Z	X	C	V	B	N	M	'	;	?	Shift			
Ctrl	Win Key	Alt						nnbsp	Alt Gr	Win Key	Menu	Ctrl		

Full:

! i	@	~	^	"	»	%	+	*	£	(a) o	-	=	← Backspace
1	2	3	4	5	6	7	8	9	€	0	#	h	g	Enter
Caps Lock	A	S	D	F	G	H	J	K	L	:	Y	N		
Shift	Z	X	C	V	B	N	M	'	;	?	Shift			
Ctrl	Win Key	Alt						nnbsp	Alt Gr	Win Key	Menu	Ctrl		

Northern Berber - Latin

To see all the letters and diacritics, you are likely to need a quality Unicode font such as Doulos or Gentium (freely downloadable from SIL).

đ ɽ ş ț z ← AltGr + d, r, s, t, z

A capital letter with a dot below can be obtained by typing either shift + AltGr + d,r,s,t,z (simple but awkward) or by typing AltGr + q (dot below) then shift + d,r,s,t,z

ȳ Ÿ ← ^, shift + ^

If the non-standard capital form Γ is needed for calligraphy, type shift + AltGr + ^

ε Ε ← ù, shift + ù

For labialization, type AltGr+w after a letter to get ^w

For the simplest, most intuitive typing style:

ḥ ← AltGr + h

The capital letter is shift+AltGr+h (simple but awkward), or AltGr+v (dot below) then shift+h

For ergonomic typing (no crossing of the hands), use:

ḥ ←)

I suggest writing v where it is lexical and not a regional spirant variant. Also, for French words, it would be possible to write Tuareg-style extra vowels, with tilde to show nasals. So instead of ‘labyu’, avion could be written lavyu (or with ã if the nasal vowel is commonly pronounced).

The Moroccan convention is to write tc, dj for č, ğ. For Algerian convention:

č ← AltGr+c

The capital letter is shift+AltGr+c (simple but awkward), or AltGr+v (v above) then shift+c

For the simplest, most intuitive typing style for Latin script:

ğ ← AltGr+g

The capital letter is shift+AltGr+g (simple but awkward), or AltGr+v (v above) then shift+g

For ergonomic typing, and to be able to type Tifinagh with the same keys that you use for Latin script (symmetrical typing style), use:

ğ ← =

Writing more phonetically

So that readers do not need to learn more symbols for dialogues written more phonetically, digraphs such as th, dh, kh (amekh), gh (gh^wma) and ḍh can be used for general, non-linguistic texts.

Bh or v can be used for spirant b. I prefer bh because it shows that the v is not lexical, just a local spirant pronunciation.

For linguistic transcription, see the appropriate chapter.

Obsolete methods supported

For writing dialogue more phonetically, or for explaining pronunciation to those familiar with older writing conventions, many methods are supported that are obsolete for normal text.

Ṭ ṭ can be obtained by pressing AltGr + 3 then T, t

For zz there are three possibilities. You can type AltGr + 3 then z to get a similar-looking substitute letter. Or type AltGr + 3 then press 2 (looks like z) to get a different substitute letter. If your font supports it, the best method is to type the z then add the cedilla to it by typing shift + AltGr + *.

For the labialization marker °, there are several possibilities:

Typing shift + AltGr + w after a letter gives ° (standalone ring above next to the letter) for labialization – this is the best option. You can add the same ring on top of a letter by typing shift + AltGr + = after the letter.

To use the old method, typing the degree symbol, type shift + AltGr +)

Tuareg - Latin

The keyboard supports writing Tuareg regional variants in their individual styles, as well as writing in a new unified style.

Individual styles are supported as a useful but non-core feature. The intention is that Tuaregs visiting other areas, where their customary keyboard is not available, can use the keyboard to type their local variant of Latin script, or to type Tifinagh.

Future versions of the keyboard that are intended to be standard for Northern Berber and for unified Tuareg style may drop support for these regional styles.

Unified style for Tuareg is supported on equal level with Northern Berber. Support is provided so that convergent literary Tuareg (called Tamazeq here) can be typed easily the same way whatever the country, in a way that complements Northern practice - extending Northern Berber convention without contradicting it. A change towards unified style would also be useful for Tamahaq in Algeria because it complements Northern practice, matches convergent literary Tuareg, corresponds to unified Tifinagh convention, and there is as yet little established practical or official tradition for Latin orthography.

Unified style

Unified style is as Northern Berber with the addition of

ɛ ← AltGr + e; Ē ← shift + AltGr + e, or AltGr + q then shift + e

It is easier to tell the difference between e and ɛ than e and ə, and it is consistent with Northern use of e for schwa. ɛ is better than the é often used for Tamahaq because it leaves the space above the e (and the acute diacritic) free for vowel length / stress marking, does not imply a particular vowel quality based on French, and uses the dot below that is already a productive diacritic for this language group.

For technical reasons on Windows, ɛ́ is hard to type like the other vowels óúái.

There are various ways to type ɛ́/É́:

1. Press the \$ key, or shift + \$ for the capital (the dot is a combining diacritic for the capital, and the acute is a combining diacritic for the small letter, because the height makes the capital acute difficult unless it is precomposed, and the dot is hard to line up on the small letter unless it is precomposed)
2. AltGr + e/E for ɛ/É, then AltGr + f twice to add the acute – the dot is lined up and the acute is a combining unicode. May not work in Word.
3. AltGr + f then e for é/É, then shift + AltGr + q (or AltGr + q twice if not in Word) to add the dot below – the acute is lined up and the dot is a combining unicode.

Fonts will generally fail to show combining diacritics or will position the diacritics incorrectly. Wikipaedia on the Internet uses Deja Vu Sans for Berber to show letters such as emphatics, and this font also works for ɛ́. Doulos SIL positions the diacritics almost perfectly for documents but has to be installed by the user.

ɨ ɨ ← *, shift+*

o, O ← o, O

ã ← AltGr + a

A capital letter a breve can be obtained by typing either shift + AltGr + a (simple but awkward) or by typing AltGr + l (breve) then shift + a.

If extra long vowel lengthening is a stress phenomenon, an acute accent can be typed with AltGr+f instead of a circumflex (AltGr + x).

Examples (words from Agadez, typed in this style):

eyes yaggóragã, ɛçɛn, ɛjwal, aɲ^wa; ñãmäku (from Mali)

Algeria

Like unified style but uses é instead of ɛ, and possibly ž for j, and š for c, and circumflex for length/stress marking. Marks ñ - this might sometimes reflect regional pronunciation of an ng phoneme that would be better written ɨ.

Examples (words from Agadez, typed in this style):

éyes yaggôragã, éçén/éšén, éjwal/éžwal

Niger

The official Tuareg Latin writing style of Niger prefers diacritics to the new IPA-based letters used in Mali. It is available as follows:

ŋ Ŋ ← *, shift+*

ə Ě ← deadkey ² then e, E

If the non-standard capital form Æ is needed for calligraphy, type shift + AltGr + \$

l ← AltGr+l

Ľ ← AltGr+q then L (or shift+AltGr+l - simple but awkward)

The ˇ diacritic is available by pressing AltGr + v before a letter, e.g. s,S,z,Z. For capital J with ˇ, tap AltGr + v twice after capital J; if using Word, shift + AltGr + j also gives capital J with ˇ.

Type AltGr + x before a letter to obtain ˆ.

ǎ ← AltGr + a

A capital letter ‘a’ breve can be obtained by typing either shift + AltGr + a (simple but awkward) or by typing AltGr + l (breve) then shift + a.

Examples (words from Agadez, typed in this style):

eyəs yaggôragăñ, ešen, ežwal, aŋwa

Mali

The official Tuareg Latin writing style of Mali is similar to that of Niger, but prefers new letters to diacritics.

To obtain these new letters, press ² then another key either alone or with shift for the capital letter - see the green letters on the layout diagram for Latin.

ſ is available with s for people used to the Mali local style, and with c for those more used to Northern Berber or the unified Tuareg style.

z is available with z or with j for the same reason.

Ŧ is available in four forms, obtained using ²/shift + ² then ^/shift + ^.

Examples (words from Agadez, typed in this style):

eyəs yaggôragăñ, eſen, ežwal, aŋwa

Burkina Faso

Likely to be some mix of the approaches used in Mali and Niger.

Phonetic

For writing dialogue phonetically, either a y can be written after a letter, or a ^y by means of AltGr + y.

A ñ can be written like that (by typing AltGt + n/N – simple but awkward – or by typing AltGr + 2 then n/N) if it marks a phoneme of a borrowed word. If the ñ is a variant pronunciation of η it would be better written η, or phonetically for dialogue as ny or ñ.

Layout diagram – Tifinagh (QWERTY)

Simplified:

—	!	-	@	-	~	—	~(TIF)	"	%	+	*	£	()	-	=	°	←	
...	1	2	3	4	5	6	^	7	&	8	\$	9	€	0	#	^	—		Backspace
Tab	↔	↔	.	°	(<)	Q	Q	E	!	X	(:)	⋮	(⋮)	(-)	Ɔ	V	°	⊙	Enter
	Z	U	°	Q	O	t	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	Enter
Caps Lock	↑	°	°	E	^	'	'	(X)	⋮	⋮	⋮	⋮	⋮	⋮	:	X	⊕		
	°	°	Λ	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	-	{	}	!	\
Shift	↑	⋮	⋮	^	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	?	§	Shift		
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	
Ctrl	Win Key	Alt																	

Full:

—	-	!	-	@	-	~	—	~(TIF)«	"	»	%	,	+	,	*	£	(a)	o	-	-	=	°	←
...	..	1	2	~	3	~	4	“	5	”	6	^	7	&	8	\$	9	€	0	#	^	—		Backspace	
Tab	↔	↔	.	°	(<)	Q	Q	E	!	X	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	Enter
	Z	.	U	w	°	e	O	r	t	t	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	Enter
Caps Lock	↑	°	°	°	E	^	'	'	(X)	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	Enter
	°	°	°	°	Λ	d	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	Enter
Shift	↑	a	°	⋮	^	zwnj	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	Enter
	o	.	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	Enter
Ctrl	Win Key	Alt																							

I suggest typing Tifinagh with the same punctuation, spelling and gemination conventions as with Latin script, to benefit from experience accumulated using it. (The rendering of foreign words in Tifinagh is likely often to differ from Latin convention, however, because of the Latin script's rich diacritics – unless digraphs are used for both scripts).

Northern Berber – Tifinagh

Simply press Caps Lock to enter Tifinagh mode. Then use shift in the same way AltGr is used for Latin script to type letters such as ḍ.

Switching between Latin and Tifinagh mode is easy and allows typing of titles in Tifinagh and body text in Latin script, for example.

You will need to select a suitable Tifinagh font such as Hapax Berbère or one of several downloadable from IRCAM in Morocco, otherwise you will see only squares or ? symbols instead of the Tifinagh.

Note that if you want to type anything other than Moroccan Berber you may want a suitable font that shows Tifinagh appropriate for your region. Without such a font you may still be able to obtain your specific letters by various methods explained below.

Users can type in two styles:

- Using the same keys for Latin and for Tifinagh (symmetric). Note however that not all letters are typed exactly symmetrically. P, v, and o are letters not usually found in Northern Berber, and shift + p, v, o gives the equivalent Tifinagh.
- IRCAM style for Tifinagh

IRCAM keyboard style

Users familiar with the IRCAM keyboard will find that the same keys work here, with two exceptions. The first is that the labialization mark typed by itself is found on shift + w, which is intuitive. The second is that because of technical limitations, g^w and k^w are found on shift + g and shift + k respectively only on the keyboard version that defaults to Tifinagh mode (i.e. the Tifinagh/Latin version, not Latin/Tifinagh).

I have extended the IRCAM style for Algerian convention.

As well as on =, Kabyle users can find ḡ also on shift+j, a position intuitive for Tifinagh. Č is on shift+c.

Writing more phonetically

Bh or v can be used for spirant b. I suggest bh because it shows that the v is not lexical, just a local spirant pronunciation.

Forcing a font to show a different letter for the same sound

Note that = and shift+j both produce the Unicode TIFINAGH LETTER DJ, and it is up to the font to show this in the Berber Academy visual form. There is a freely available variant of the Hapax Berbère font for Algeria.

If the font you want to use is attractive but is a non-Algerian one e.g. from IRCAM that shows the Tuareg form for dj, you can still type shift+² (specifies alternative form) then shift+j or =

to force display of the non-standard Unicode TIFINAGH LETTER BERBER ACADEMY YADJ.

The same applies for the letter h. You can force the Berber academy form for your non-Algerian font by pressing shift+² then h to produce the non-standard Unicode TIFINAGH LETTER BERBER ACADEMY YAH.

If you prefer the Algerian forms for other letters forms which do not exist as standard in Unicode, you will have to use an Algerian-specific font such as the Hapax Berbère font variant for Algeria – or use ‘insert special characters’ to enter letters from the private use space of your font if such forms exist.

Tuareg - Tifinagh

Note that you will probably want a suitable font that shows Tifinagh appropriate for your region. Without such a font you may still be able to obtain your specific letters by various methods explained below.

I have extended the IRCAM style for Tuareg convention.

The extra Tifinagh vowels I use to extend the IRCAM ones are based on those from the APT project in Niger, with a SIL-like solution used as an alternative (like ae for ä in German) while letters are unavailable in Unicode. The two approaches are compatible because both use u and i as a base for o and e: APT’s modifies the graphical forms, and mine adds a diacritic. These extra vowels could also be used for French borrowings into Northern Berber, for example where the consonants do not have corresponding emphatic consonants to indicate the vowel sound.

ɛ and o are on shift + e and shift + o respectively for both IRCAM style and symmetric typing (note that o is on shift + o not o, which strains the symmetry between Latin and Tifinagh mode, but fortunately it is not a common letter in Tuareg and it is still typed with the same key).

ǎ is on shift + 2 not shift + a on the Latin/Tifinagh version because of technical limitations. On the Tifinagh/Latin version it is on shift + a as you would expect. The Tifinagh Joiner, which may be used in future to control letter joining in classical Tuareg Tifinagh, is shown as TIF on the layout diagram.

ng can be obtained by pressing *.

ñ can be obtained by pressing shift + n. There seems to be some confusion about this letter and ng. I think this is because the letter YAGN was used to mark ng phonemes pronounced

locally as ñ, and perhaps ñ phonemes too. If the word has an ng phoneme in Tuareg generally, it is probably better to write the letter ng (a regional font will show the appropriate shape for YANG so it may appear as YAGN for Niger), and to write Tifinagh YANG or two letters NY (or even GN) in phonetic dialogue.

Shift + o will give the Tifinagh o when/if this is accepted in Unicode. Shift + e will give the Tuareg long vowel e when/if this is accepted in Unicode.

Because these are not yet in Unicode and so font support is not standardised, another approach is needed in the meantime to write o and e.

One approach is to use similar-looking characters < and |. These can be obtained by pressing ², then shift + 3 or shift + 9 respectively.

For a better solution, i with dot below can be used for e, and u with dot below for o.

The dot below is already used with Tifinagh emphatic letters in Niger; it looks good, leaves the area above the letter for stress/length marking, and the sound it implies is correct (pronunciation next to emphatic letters). Historically it seems e may have come from i, and o from u, having previously been pronunciation variants next to emphatic letters.

The dot below and acute above, or circumflex, can be added to i or u by typing shift + q, shift + f or shift + x afterwards respectively. They can be combined for stressed/long e or o. As a shortcut to make these combinations easier to type, i dot below and u dot below are on AltGr + i and AltGr + u. Pressing shift as well adds the acute accent. If the font you are using does not combine acute or circumflex with Tifinagh very well, my suggestion is: Type AltGr + ^ after the letter so that the ^ does not appear over the vowel but follows it. Alternatively, press AltGr + x after the letter to get the standalone ^ (type a space afterwards if you want the ^ to appear immediately, before you type the next letter of the word). For a standalone acute after a vowel, type AltGr + f after the letter (followed optionally by space).

For Niger APT-style Tifinagh, which does not have separate emphatic letters, it is best to type Tifinagh letters that have a dot below as shift + letter, not to type them explicitly as letter then dot below, unless you are sure that your text's dotted letters will always be displayed in that form. Encoding the letters like this allows you to show these letters e.g. as YATT simply by changing the font.

Writing more phonetically

For writing dialogue phonetically, either a y can be written after a letter to show palatalisation, or a y-like zigzag by means of shift + AltGr + y. This may have to be

displayed in a non-Tifinagh font, because it is in fact a mediaeval manuscript mark above a narrow non-breaking space. Different fonts give a different width. For the Hapax Berbère font only, Shift+² then y gives an alternative small palatalization mark like a small Tifinagh y (from the font's non-standard, private use area).

For rendering occasional words from other languages, using vowelised Tifinagh has the advantage of allowing combinations of letters to be used together as an approximation for non-Tuareg sounds.

Forcing a font to show a different letter for the same sound

If you like a font but it is not a Tuareg-specific one such as the Hapax Berbère font variants for Tuareg, you can force your font to show the typical Tuareg forms, or even non-standard Tuareg forms. Typing ² then a letter gives the standard Tuareg alternative form; shift+² then the letter gives any second, regional alternative form. For example, for j there are two alternative forms – the first is the standard Tuareg form, and the second is for Ahaggar.

Where Tuareg uses a letter to mark a different sound, for example the standard 'h' to mark 'b', you type h instead of b. Remember that it is normally up to the font to do these substitutions.

If you prefer particular Tuareg letter forms which do not exist as standard in Unicode, and you are not using a Tuareg-specific font, you will have to use 'insert special characters' to enter letters from the non-standard, private use space of your font, if it has them.

Some Hapax Berbère private use letters can be accessed directly from the keyboard as a convenience:

Shift+² then l gives a 'leaned' l. Shift+² then n gives a 'leaned' n. Shift+² then / gives a ligature of n plus leaned n.

Shift+² then shift+3 gives Tuareg e (<). Shift+² then shift+9 gives Tuareg o (–)

You can display precomposed letters with diacritics by using AltGr+x then vowel, or AlgGr+1 then vowel. (Note that you need to type shift+3 instead of shift+e, and shift+9 instead of shift+o, for the e and o long vowels). This also works for consonants with dot below for Niger – AltGr+x then **shift**+t etc for the consonant. If you type AltGr+x then t, the keyboard behaves as for Latin script and YATT will appear.

Classical Tifinagh

If your font supports ligatures for classical Tifinagh, when a Tifinagh Joiner is specified in Unicode you will be able to type shift+é (2) to specify that two letters are joined, i.e. that there is no vowel pronounced between them.

In the meantime, some Tifinagh fonts such as Hapax Berbère support a few of the necessary ligatures, but you will need to use AltGr+v (Unicode ZERO WIDTH JOIN) between the letters to link them. It doesn't seem to work in Word, but does in WordPad.

Punctuation

There is a new character - , used to connect parts of words together such as “iman-is” so that they are never separated at the end of a line. To obtain it, press the ‘!’ key.

The numbers are typed without shift, because the keyboard is designed to be optimal for Berber, not to follow the quirks of the French keyboard. Most commonly used punctuation is available by pressing shift with the usual number key.

?,,:./ work as usual, but ! is typed with shift. @ is now on shift+0 (this is more ergonomic)

Press shift+² twice to get a quotation dash, and ² twice to get ... as a single character if three full stops are not auto-converted by your text editor.

If you prefer to use “” rather than guillemets, type AltGr+4 and AltGr+5.

For Tifinagh punctuation, the font is responsible for giving an appropriate appearance to standard punctuation (as seen in the books published in Niger by APT). Numbers might then have to be in a different font to show the decimal separator appropriately.

There is one Tifinagh-specific punctuation character proposed for Unicode - the TIFINAGH SEPARATOR. It is supported here for occasional use in formal inscriptions (like the Latin interpunct historically). When available in Unicode it will be obtained by pressing AltGr+,

Zenaga

As this Berber variant is phonologically different from other Berber variants, is spoken by relatively few people, and I have not yet investigated it in depth, it is supported as a useful option not a core language.

As in Darja, đ t and đ are not simply pronunciation variants of d, t, d. They can be written in Latin script in two ways:

- As dh, th, and đh
- đ, t by pressing ² then d or t; and đ by typing đ then pressing shift + AltGr + q to add the dot below if using Word (otherwise AltGr + q twice works too, or ² then q). This way the sounds are each represented by a single letter.

In Tifinagh you can use the rotated letters originally intended for spirants – for example shift + ^.

See also Arabic under ‘mixing languages’.

For marking ^y in Latin and Tifinagh see also Tuareg.

Technical symbols

In general these have had to be moved from their printed locations on the physical keyboard.

The basic mathematical symbols are accessible simply with shift,

For purposes such as programming, all the necessary basic symbols are present using AltGr, but are lower priority and so not as ergonomic to access as language features and common

punctuation. To improve matters you can use ctrl+Alt on the left hand instead of the AltGr key on the right.

Mixing languages

Berber variants which mix freely with other languages

To allow easy typing of Berber variants which mix in significant elements of French and Spanish (Catalan is also possible), typing for these languages is ergonomic.

For Berber locales such as Kabyle, it would probably still be practical to retain auto-correction for French, and Rifian might include it for Spanish as well, but a literary Berber locale might drop support except for any necessary punctuation.

Darja is also typed ergonomically if you use the forms dh, th, ðh and not the đ, ƚ, đ forms discussed for Zenaga. Using two letters is more understandable for readers as well as being easier to type. It does not involve deadkeys, and is therefore guaranteed to be possible even on future Berber keyboard versions that may have more limited support for mixing other languages. However, it might lead to ambiguity.

French

To mix Berber with French words, see the Latin layout diagrams for how to type French diacritics. For example, é is AltGr+f then e. If you are using your text editor with the French locale, auto-correction makes oe, guillemets and 2^e easier. If not, oe is on AltGr+o, shift+AltGr+4 then shift+AltGr+space will give you ‘« ’, and you can write ^e using superscript.

To get \$ μ and ° you need to press shift+AltGr with the usual key or one near to it. The Euro symbol is on AltGr+* (near the \$)

Spanish and Catalan

For diacritics needed when mixing Spanish or Catalan with Rifian, see the Latin layout diagrams.

As a convenience for writing occasional names of people and places, ^a and ^o are available on the key marked <>, and pressing AltGr+this key gives the Catalan interpunct. If the key is missing (common in Algeria on cheap keyboards adapted from Arabic keyboards, but not a problem in Spain) then these letters are available elsewhere on the keyboard – see layout diagrams.

For typing mixed (e.g. academic linguistic) texts, typing ² before ?, ! gives the inverted version of the punctuation mark.

Occasional words in other languages

Writing occasional words such as names of people and places in their original form (but not necessarily all punctuation) is possible in languages used in countries where there is a significant Berber expatriate or Tuareg population, and in other languages of the Western Mediterranean. This is simply as a convenience to save switching keyboards when writing about local places and people – access to letters is not necessarily ergonomic.

Such occasional words can be typed for a language even when the keyboard is installed on a different locale. For example, a German ß can be typed with the keyboard installed on a French locale. Only auto-correction features of your text editor would change, and even then,

you can mark different sections of your document to be in different languages. The aim is that typing Berber mixed with other languages is the same with any keyboard variant on any locale, so a user travelling abroad can still use local machines that have Berber keyboards.

French, Spanish, Dutch, Flemish, German and English languages are supported for Berber expatriates. (Czech is available too – type ² then u/U for ů/Ů; and Cree – type shift + AltGr + k then d/D for ḏ/Ḑ).

The ten major national languages of Mali, 5 major languages of Niger, and some widely-spoken languages of Burkina Faso are supported for Tuareg speakers.

Similarly, languages supported for the Mediterranean are French, Spanish, Portuguese, Catalan, Basque and Italian. (Maltese is available too).

Moroccan and Algerian Darja, as well Tunisian Arabic, are supported in transcribed form in two ways:

- By using the digraphs dh, th, ḏh
- By using ḏ, ṭ, ḏ (see Zenaga).

The apostrophe may be needed for the glottal stop in classical words. (‘ can be typed as ² then ‘ if auto-correction is causing problems, or if it is disabled and you prefer the curly form. The result is specifically a glottal stop apostrophe, not a punctuation apostrophe).

For Tunisian Arabic, AltGr + 1 then u or i can be typed to obtain additional short vowels.

Full punctuation features

Full French punctuation is included because it is used for example for Kabyle, and because full texts such as academic works mixing Kabyle with French are likely. Similarly, full punctuation is included for English, allowing alternative punctuation for Berber, and allowing mixed texts to be written easily, for example academic works. Full Spanish punctuation is not included in the core keyboard support, because only fragments or occasional words are likely (for Rifian). But to allow writing of mixed academic texts, Spanish punctuation is supported as a convenience using deadkey ².

Academic transcription

Ḑ and ṃ can be typed with the deadkey. To place a dot below any Latin letter, press shift+AltGr+q after the letter.

Shift+AltGr+² gives a macron.

Shift+AltGr+_ gives a line below (it also rotates Tifnagh letters as an alternative to using e.g. shift+^). The letter g is an exception - there are three possibilities. Typing Shift+AltGr+_ then g gives g with macron above, which is the most readable variant. Typing 9 afterwards instead of g gives another option – g with line through. And typing the Shift+AltGr+_ twice after the g adds the line underneath it; if this works with your font – it usually looks fine for capital G but not with small g.

Type shift+AltGr+b then g/G to get g/G with dot above (sometimes used for γ).

shift+AltGr+b then d then shift+AltGr+_ twice gives ḏ, a more readable form of ḏ.

There are two dead keys for typing characters for transcription, such as IPA letters – shift+AltGr+k and shift+AltGr+m.

With shift+AltGr+k

a	→	æ
b	→	β
c	→	ç
e	→	ə
g	→	g
h	→	h
i	→	i
r	→	ʀ
j	→	ʒ
q	→	ʎ
t	→	θ
d	→	ð
x	→	χ
A	→	ɑ
C	→	Ƀ
J	→	ɶ
^	→	ˆ
s	→	š
z	→	ž
H	→	ħ
n	→	ɲ
N	→	ŋ
Q	→	ɥ
o	→	ɔ
E	→	ɛ
S	→	š
Z	→	ž
D	→	ð

With shift+AltGr+m

z	→	dz
j	→	ɶ
s	→	ts
c	→	tʃ

a	→	æ
t	→	ṭ
d	→	ḍ
k	→	ḱ
b	→	ḃ
g	→	ḡ
9	→	ḡ
u	→	ṹ

There are some experimental extensions to these tables for deadkey m, such as : and . for IPA vowel length marking; ‘ , “ ” (typed after a letter to add the diacritic – might not work in Word) for marking primary and secondary stress, h, H for ḥ, Ḥ (sometimes used for x), or alternatively h then deadkey m then v to obtain h with caron below.

You can use the foreign language deadkey ² then h, H to give ḥ, Ḥ (sometimes used for ḥ) instead of the transcription deadkey, because the letter ḥ is used for Maltese.

²/shift+² then ^/shift+^ gives four forms of ayn.

²/shift+² then ‘ or 4 gives four different ways of writing a glottal stop. The simplest form is a curly apostrophe (² then ‘). It is not the same as a punctuation apostrophe.

To type a diacritic by itself (not on a letter), type its deadkey followed by space.

Font design, character encoding and typesetting considerations - Tifinagh

The keyboard has some underlying design assumptions for fonts and encoding.

Whatever the appearance of a letter, Tuareg, Algerian, or whatever, it is encoded as the equivalent IRCAM letter or basic Tifinagh letter such as TIFINAGH LETTER DJ.

It is intended that different Tifinagh fonts give these standard letters any different regional or artistic appearance, even to the extent of changing the Unicode reference letter forms completely. For example, an Algerian font would show TIFINAGH LETTER DJ with the same appearance as the letter BERBER ACADEMY DJ. A Niger font might show YEY with the APT visual form for schwa, and show YATT with the visual form of Tifinagh YAT with dot below.

Note: If emphatic T is typed in Niger with shift + t (and encoded as YATT), changing the font to a non-Niger one can show the letter as YATT. But if it is typed (and encoded) as YAT plus dot below, it will always look like that when displayed in any font, unless that font defines the sequence to look like YATT by substitution.

Until the Tuareg e and o are in the Unicode standard, the letters can be encoded as i with dot below and o with dot below. These can either be displayed as such, or the font can display the 2-code sequences by substitution using the APT visual forms for e and o.

Tifinagh fonts need to be able to combine acute, circumflex, breve (and perhaps grave and tilde accents for foreign words such as from French, and macron) with Tifinagh letters correctly, even when combined with dot below. T,D,S,Z,R need to take a dot below correctly, I and U for Tuareg, L too for Tuareg (used in more words than in Northern Berber), as well as M and B for phonetic writing. 2 L's in sequence need to be handled either IRCAM-style by linking the lines that form each L, or Tuareg-style by leaning one of the L's (similarly for N). Tifinagh fonts can optionally change the common punctuation to look e.g. like in the publications of the APT project in Niger.

Many IRCAM-style fonts exist, so if you use one of these but need a non-IRCAM Tifinagh letter that exists in Unicode, you can obtain it using shift + AltGr or the ² deadkey.

To unify the Tifinagh repertoires across regions, languages and language variants, I suggest that when there are alternatives, the IRCAM letters, the common Tuareg letters (not regional ones such as harpoon YAZ or ones that are rotations of standard letters), and Berber Academy/Algerian forms for YAY, and YADJ should all be acceptable. Writers would be aware of all forms, probably preferring their local ones in fonts they use for general text even for publication elsewhere; or being biased towards Northern or Tuareg forms (and fonts) depending on the language of the text; and using other acceptable forms creatively e.g. for calligraphy. Letters causing ambiguity with the IRCAM letters – Tuareg YAB, Berber Academy YAH; letters that needed a diacritic before but no longer – Algerian YAA (a with circumflex); and old spirant forms, are avoided.

Of course, fonts that give 'classic', regional, or artistic appearances would still use other forms. For example, the Niger APT form for U lends a Tuareg-style appearance that is still understandable elsewhere, and looks good also with diacritics above and below.

Fonts that are not intended for classical Tuareg Tifinagh where ligatures are significant (controlled in future by typing the TIFINAGH JOINER) can join letters together for special calligraphic effects. Joining of the letters can be optional, specified by typing a ZERO WIDTH JOIN (ZWJ), AltGr + v. Or the font can attempt to join all letters like a cursive font, and a break can be specified by typing a ZERO WIDTH NON-JOIN (ZWNJ), AltGr + x.

Scientific symbols

“ μ ” \leftarrow shift + AltGr + m twice, or 2 then m

$^1 \leftarrow ^2$ then 1

$^2 \leftarrow ^2$ then 2 or shift + AltGr + k twice

$^3 \leftarrow ^2$ then 3

$8 \leftarrow \infty$

$* \leftarrow \times$

$/ \leftarrow \div$

$+ \leftarrow \pm$

$< \leftarrow \leq$

$> \leftarrow \geq$

$= \leftarrow \approx$

$p \leftarrow \pi$

$- \leftarrow \neg$

AZERTY French-compatible (Internet café) keyboard

There is an alternative keyboard, Français+, which is 100% compatible with the French AZERTY keyboard, but extends it with Berber. Berber is therefore a little more difficult to type, but most of the features are still available.

The variant is intended for shared computers such as in Internet cafés where people are not used to switching keyboard layouts, and for people who type Berber only occasionally and need a familiar keyboard optimised for French.

Instructions will be added here when the Français+ keyboard has been updated to version 0.91.