Language in QB64

QB64 works with an 8-bit character set, which allows 256 different characters, while Windows has processed texts in unicode (UTF-16) since 2018, thus allowing all the necessary characters for all the languages of the world, nevertheless it maintains a 8-bit local page system for different groups of nations, which is what comes to QB64, unless Windows is set to unicode.

For the USA and Western Europe the page it configures is CP1252 (USA, Canada, Latin America, the United Kingdom, Spain, France, Italy, Portugal, the Netherlands, Germany, Austria and the Nordic countries), while for Central and Eastern Europe it is used the CP1250 (Polish, Czech, Slovak, Hungarian, Slovenian, Bosnian, Croatian, Serbian (Latin script), Romanian and Albanian), which could also be used for Germany and Austria.

QB64 maps the characters it will display, as if they had been encoded with the original MSDOS page, which is the extended ASCII type CP437, looking for a character on the windows page (presumably CP1252) that looks the same or similar, for example the Ñ, has the unicode code 209, which is the same as that used on page CP1252, while on CP437 it was 165, therefore it is necessary to map 209 to 165 for the Ñ to appear, however this mapping has only been done at the presentation level, but not at the keyboard level, therefore when the Ñ is typed, it is not captured according to the presentation mapping, but receives 209 and therefore shows the image of 209 on the CP437, which is ±.

That means, it is possible to use the mapping table in reverse to map the keyboard captures, which is what should have been done, so it is a QB64 bug.

On the other hand, to access certain symbols, can be necessary to use the [AltGr] key to obtain the alternative character, which should capture the same code, but this is not the case in INKEY $, which returns a non-unique compound code, which therefore does not allows you to map it, which is another flaw of INKEY$. In general the INKEY$ function does not behave like in QuickBasic:

1) Suffer the problems of not key mapping
    1. you cannot type local characters: Ñ ñ ç Ç º ª ¡ ¿
    2. characters accessible with AltGr are not captured: € \ | @ # {} []
2) Accents do not work, therefore it is not possible to type accented letters: á é í ó ú à ä â
3) Alt <number> does not work, so Greek letters and other symbols are not available

However, the _KEYHIT function delivers the characters according to the configured page code, whether they are a direct key, or with [AltGr], so in this case the corresponding code is obtained from page CP1252 and therefore does not depend on the key pressed, so it works for all keyboards using the same Windows CP1252 page. For example, typing @ provides the code 64, which is also 64 in the CP437, and it does not matter if the keyboard has it or it was necessary to access it using [AltGr], while if you type € (euro), which is 128 in unicode and on page CP1252, but does not exist on CP437; however it can be mapped to the lowercase epsilon ϵ of the Greek alphabet, which is similar to it and is code 238 (its position in CP437), therefore when mapping 128 generated by the € key in Windows with page CP1252, you can redirect to 238, which is where the ϵ is on CP437. This ϵ is the unicode 949 (U03B5), which was initially mapped to ASCII code 238, with an instruction: _MAPUNICODE 949 TO 238, but which is intended to be captured from the keyboard by pressing [AlrGr] [€], which generates the code 128.

Unfortunately the _KEYHIT function returns the changes of a key, so it does not solve the problem of modifiers [Alt], [Control], [Shift], nor does it allow pressing the [Alt] key to type from 0 to 255 to generate a ASCII code, therefore additional code is required to emulate the INKEY$ and to be able to generate all the two-character codes that start with 0, corresponding to the pressing of the modifiers [Alt], [Control], [Shift]. As you can see the manual text input in QB64 is only seen by keyboard.

Solution

If the CP1252 language is configured in the IDE, it works quite well except that when in text mode, the border and corner stripes of the box are other characters, since this page does not have the box drawing characters, but it still maps to the page CP437, so it is necessary to change the mapping using _MAPUNICODE instructions in the program itself, which is inconsistent.

For this solution to be complete it might be necessary:

- To be able to choose the mapping to the page between the CP437, for compatibility with the migration of QuickBasic applications, or another page for access to more regions and languages.
  - For the IDE
  - Within the application itself, at run time, making it start by default on the page that has the IDE configured
- Adapt the IDE to a graphic display mode
  - Create a graphic cursor or use Windows
  - Draw the box
- ….

However, the correct thing would be to read the code page configured in Windows and use it without any configuration.

The definitive solution will be to redo INKEY$ capturing the queue of messages that reach the execution window, obtaining the independent translation of its origin (including virtual keyboard or voice), according to the configured code page, so that there is no need to map anything, leaving _KEYHIT as is. In any case, it would be a matter of analyzing the WM_CHAR messages and performing a mapping if necessary for compatibility, but not for consistency, since what is received is what is typed, in any keyboard configuration.

It would be necessary to check how the messages of the special keys arrive, such as the function keys, and if necessary, map them to the DOS configuration if you need compatibility.

Hopefully, over time everything will end up in unicode, so at some point it will need to be addressed in QB64.

The workaround is to create a function that emulates INKEY$ that does the reverse mapping of the key codes to the codes on the CP437 so that the corresponding key is displayed on any keyboard on the same page CP1252, and looks at the modifier keystrokes.

InkeyHit$, an emulation of INKEY$ for page CP1252

```
$NOPREFIX
DEFLNG H-P
CONST Phor = 1366, Pver = 768 ' WXGA
'CONST Phor = 1600, Pver = 900 ' HD+

TITLE "Inkeyhit" 'Version 1.1
hscr = NEWIMAGE(Phor, Pver, 256)
SCREEN hscr
CONTROLCHR OFF
'Allows test keyboard maping
SCREENMOVE 0, 0
'<Alt><Intro> for fullscreen

fontpath$ = "Lucon.ttf": fontsize% = 20 'Windows lucida console 20x12, 24x14
style$ = "MONOSPACE"
hfont = LOADFONT(fontpath$, fontsize%, style$)
IF hfont THEN FONT hfont

PRINT "Inkeyhit & display (128-175): €①‚ƒ„…†‡ˆ‰Š‹Œ❷Ž❹❺‘’“”•–—˜™š›œ␣žŸ ¡¢£¤¥¦§¨©ª«¬¯"
PRINT "                   (176-223): °±²³´µ¶·¸¹º»¼½¾¿ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞß"
PRINT "CP437 extended     (224-255): àáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþÿ"
```

```
PRINT "Please, test Keyboard maping"
PRINT CHR$(254);
LOCATE , 1
DO
  in$ = Inkeyhit$ 'emulates quickbasic INKEY$
  IF LEN(in$) THEN
    PRINT in$;
    IF in$ = CHR$(13) THEN PRINT
    pcol = POS(0)
    PRINT CHR$(254);
    LOCATE , pcol
  END IF
LOOP UNTIL in$ = CHR$(27)
FONT 16
IF hfont THEN FREEFONT hfont
SYSTEM

FUNCTION Inkeyhit$ STATIC 'Emulates INKEY$
  CONST KeyLook = "€ ¡¢£¥ª«¬°±²µ·º»¼½¿ÄÅÆÇÉÑÖÜßàáâäåæçèéêëìíîïñ•¢ôö÷ùúûü" 'Accesible
mapings in CP437
  CONST KeyMapi = "îÿ›œ˜¦®ªøñýæú§¯¬«¨Ž❹’€❺¥™Šá… ƒ„†‘‡Š‚ˆ‰❷¡Œ‹¤•¢“”ö–£–①" 'Maping code

  CONST AcuteLook = "aeiouE", GraveLook = " aeiou", UmlauLook = "aeiouAOUy", CircuLook =
" aeiou"
  CONST AcuteMapi = " ,¡¢£❺", GraveMapi = "`…Š❷•–", UmlauMapi = "„‰‹”①Ž™š˜", CircuMapi
= "^ƒˆŒ“–"

  DIM hit AS LONG, prekey AS LONG, car AS UNSIGNED BYTE, dblcar AS STRING * 2

  hit = KEYHIT
  IF hit THEN
    car = 0
    keyshift = KEYDOWN(100303) OR KEYDOWN(100304)
    keyctrl = KEYDOWN(100305) OR KEYDOWN(100306)
    keyAltGr = KEYDOWN(100307) AND KEYDOWN(100306)
    keyalt = (KEYDOWN(100307) OR KEYDOWN(100308)) AND NOT keyAltGr

    IF prekey THEN
      IF hit >= 32 AND hit <= 127 THEN
        SELECT CASE prekey
          CASE 1 '
            p = INSTR(AcuteLook, CHR$(hit))
            IF p THEN car = ASC(AcuteMapi, p)
          CASE 2 '`
            p = INSTR(GraveLook, CHR$(hit))
            IF p THEN car = ASC(GraveMapi, p)
          CASE 3
            p = INSTR(UmlauLook, CHR$(hit))
            IF p THEN car = ASC(UmlauMapi, p)
          CASE 4
            p = INSTR(CircuLook, CHR$(hit))
            IF p THEN car = ASC(CircuMapi, p)
        END SELECT
      END IF
    END IF

    IF car = 0 THEN '--- control sequences and special behavior ---
      SELECT CASE hit
        CASE 9 'tab
          IF keyshift THEN dblcar = CHR$(0) + CHR$(15) ELSE car = hit
        CASE 48 TO 57 'numeric heys 0-9
          IF keyalt = 0 THEN car = hit
        CASE 65 TO 90 'CTRL A-Z: 1-26
          IF keyctrl THEN car = hit - 64 ELSE car = hit
        CASE 97 TO 122 'CTRL a-z: 1-26
          IF keyctrl THEN car = hit - 96 ELSE car = hit
        CASE 0 TO 127 'ASCII
          car = hit
        CASE 128 TO 255
          '--- bring the system codepage mapped inputs back to Cp437, if available ---
          p = INSTR(KeyLook, CHR$(hit))
          IF p THEN car = ASC(KeyMapi, p) ELSE car = hit
        CASE 256 TO 65535 'double byte chr$(0)+
          dblcar = MKI$(hit)
          IF ASC(dblcar) = 0 THEN
            car = ASC(dblcar, 2)
            SELECT CASE car 'priority ordering (Alt -> Ctrl -> Shift)
              CASE 59 TO 68 'F1-F10
                IF keyalt THEN
                  MID$(dblcar, 2) = CHR$(car + 45)
                ELSEIF keyctrl THEN
```

```
                MID$(dblcar, 2) = CHR$(car + 35)
              ELSEIF keyshift THEN
                MID$(dblcar, 2) = CHR$(car + 25)
              END IF
            CASE 133, 134 'F11-F12
              IF keyalt THEN
                MID$(dblcar, 2) = CHR$(car + 6)
              ELSEIF keyctrl THEN
                MID$(dblcar, 2) = CHR$(car + 4)
              ELSEIF keyshift THEN
                MID$(dblcar, 2) = CHR$(car + 2)
              END IF
            CASE 71 'Home
              IF keyctrl THEN MID$(dblcar, 2) = CHR$(119) 'w
            CASE 73 'RePag
              IF keyctrl THEN MID$(dblcar, 2) = CHR$(132) '„
            CASE 75 'Left
              IF keyctrl THEN MID$(dblcar, 2) = CHR$(115) 's
            CASE 77 'Right
              IF keyctrl THEN MID$(dblcar, 2) = CHR$(116) 't
            CASE 79 'End
              IF keyctrl THEN MID$(dblcar, 2) = CHR$(117) 'u
            CASE 81 'AvPag
              IF keyctrl THEN MID$(dblcar, 2) = CHR$(118) 'v
          END SELECT
        END IF
        IF CVI(dblcar) THEN
          Inkeyhit$ = dblcar
          prekey = 0
        END IF
        car = 0
      CASE IS >= &H40000000 'unicode (someday)
        hitu = hit AND &H3FFFFFFF '4 bytes
      CASE -100308 'Alt up
        IF LEN(buf$) THEN
          car = VAL(buf$)
          buf$ = ""
        END IF
      CASE -186 'grave accent and circumflex: Spanish
        IF keyshift THEN
          prekey = 4
        ELSE
          prekey = 2
        END IF
      CASE -220 'circumflex: German
        prekey = 4
      CASE -221 'German & French
        IF isFrench THEN 'circumflex and umlaut
          IF keyshift THEN
            prekey = 3
          ELSE
            prekey = 4
          END IF
        ELSE 'German
          IF keyshift THEN 'acute accent and grave
            prekey = 2
          ELSE
            prekey = 1
          END IF
        END IF
      CASE -222 'acute accent and umlaut: Spanish (diéresis)
        IF keyshift THEN
          prekey = 3
        ELSE
          prekey = 1
        END IF
      CASE -57 TO -48 'numeric keys, also numeric keypad with numlock
        IF keyalt THEN
          IF LEN(buf$) > 2 THEN buf$ = RIGHT$(buf$, 2)
          buf$ = buf$ + CHR$(ABS(hit))
        END IF
    END SELECT
  END IF
  IF car THEN
    Inkeyhit$ = CHR$(car)
    prekey = 0
  END IF
 END IF
END FUNCTION
```

Tests

The tests of the InkeyHit$ function have been carried out with the simulation of some keyboards that use the code page CP1252, in a Windows 10 in Spanish language with a Spanish keyboard, configuring several keyboards and preferred languages, making the keyboard changes in the task bar, paying attention to the following groups of keys:

1. Alphabet keys, upper and lower case.
2. Numbers of the main keyboard and the numeric
3. Punctuation marks:! ', .-;: _
4. National letters in keyboard: ñÑçÇÜ
5. Symbols [AltGr]: € \ | @ # {}] [
6. Accented letters using accent: áéíóúÿàâä
7. Function keys, except [Alt] [F4]
8. Scroll keys
9. ASCII code: [Alt] number
10. Control characters: [Control] a-z

The summary is recorded in this table, where
OK means it works, - not aplicable because there are no such keys, and X means it doesn't work:

Language	1.Alfa	2.Num	3.Punt	4.Natio	5.Altgr	6.Acen	7.Fxx*	8.Des.	9.Alt-n	10.Ctrl
Español (España)	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
English (USA)	OK	OK	OK	-	-	-	OK	OK	OK	OK
English (UK)	OK	OK	OK	OK	OK[1]	-	OK	OK	OK	OK
Français (France)	OK	OK	OK	OK	OK[2]	no'	OK	OK	OK	OK
German (Deutsch)	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Italliano (Italia)	OK	OK	OK	OK[3]	OK	-	OK	OK	OK	OK

* [Alt] F4 closes the application, cannot be used.

[1] Except [AltGr] O → Ó

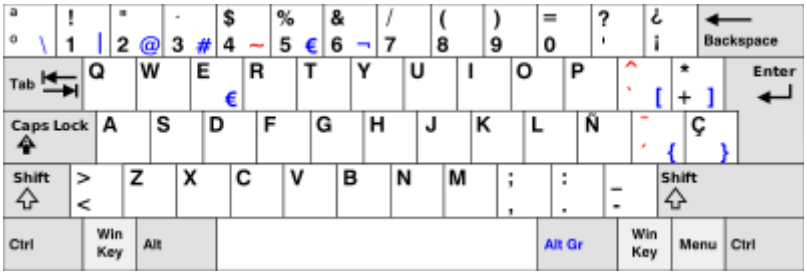
[2] Incomplete

[3] Except [ò]

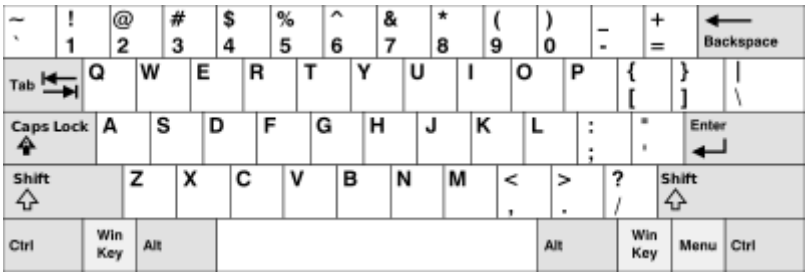
' In this test, the accent key for french keyboard and german keyboard is the same -221, so need identify keyboard or language. For the moment default is german.

Layout of some keyboards that use page CP1252.

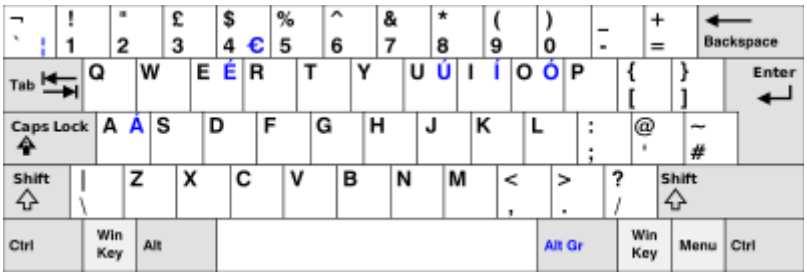
Qwerty España:



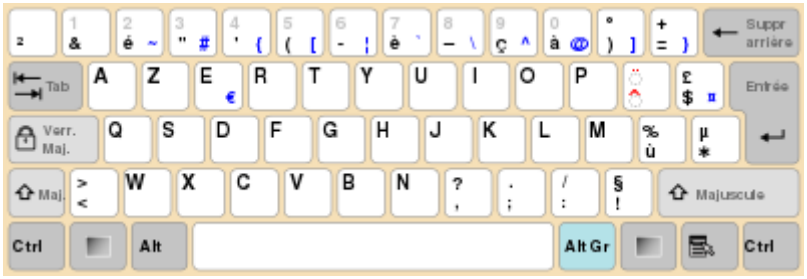
Qwerty US:



Qwerty UK:

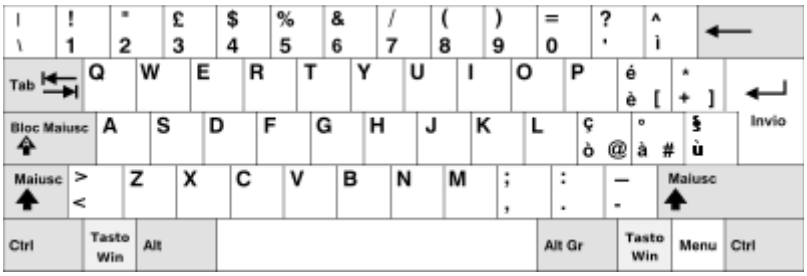


Azerty France:



Qwertz German:

Qwerty Italiano:



Code Pages with their symbol and unicode in the center

CP437

	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-A	-B	-C	-D	-E	-F
0-	FSP 2007 **0**	☺ 263A **1**	☻ 263B **2**	♥ 2665 **3**	♦ 2666 **4**	♣ 2663 **5**	♠ 2660 **6**	• 2022 **7**	◘ 25D8 **8**	○ 25CB **9**	◙ 25D9 **10**	♂ 2642 **11**	♀ 2640 **12**	♪ 266A **13**	♫ 266B **14**	☼ 263C **15**
1-	► 25BA **16**	◄ 25C4 **17**	↕ 2195 **18**	‼ 203C **19**	¶ 00B6 **20**	§ 00A7 **21**	▬ 25AC **22**	↨ 21A8 **23**	↑ 2191 **24**	↓ 2193 **25**	→ 2192 **26**	← 2190 **27**	∟ 221F **28**	↔ 2194 **29**	▲ 25B2 **30**	▼ 25BC **31**
2-	SP 0020 **32**	! 0021 **33**	" 0022 **34**	# 0023 **35**	$ 0024 **36**	% 0025 **37**	& 0026 **38**	' 0027 **39**	(0028 **40**	) 0029 **41**	* 002A **42**	+ 002B **43**	, 002C **44**	- 002D **45**	. 002E **46**	/ 002F **47**
3-	0 0030 **48**	1 0031 **49**	2 0032 **50**	3 0033 **51**	4 0034 **52**	5 0035 **53**	6 0036 **54**	7 0037 **55**	8 0038 **56**	9 0039 **57**	: 003A **58**	; 003B **59**	< 003C **60**	= 003D **61**	> 003E **62**	? 003F **63**
4-	@ 0040 **64**	A 0041 **65**	B 0042 **66**	C 0043 **67**	D 0044 **68**	E 0045 **69**	F 0046 **70**	G 0047 **71**	H 0048 **72**	I 0049 **73**	J 004A **74**	K 004B **75**	L 004C **76**	M 004D **77**	N 004E **78**	O 004F **79**
5-	P 0050 **80**	Q 0051 **81**	R 0052 **82**	S 0053 **83**	T 0054 **84**	U 0055 **85**	V 0056 **86**	W 0057 **87**	X 0058 **88**	Y 0059 **89**	Z 005A **90**	[005B **91**	\ 005C **92**	] 005D **93**	^ 005E **94**	_ 005F **95**
6-	` 0060 **96**	a 0061 **97**	b 0062 **98**	c 0063 **99**	d 0064 **100**	e 0065 **101**	f 0066 **102**	g 0067 **103**	h 0068 **104**	i 0069 **105**	j 006A **106**	k 006B **107**	l 006C **108**	m 006D **109**	n 006E **110**	o 006F **111**
7-	p 0070 **112**	q 0071 **113**	r 0072 **114**	s 0073 **115**	t 0074 **116**	u 0075 **117**	v 0076 **118**	w 0077 **119**	x 0078 **120**	y 0079 **121**	z 007A **122**	{ 007B **123**	| 007C **124**	} 007D **125**	~ 007E **126**	⌂ 2302 **127**
8-	Ç 00C7 **128**	ü 00FC **129**	é 00E9 **130**	â 00E2 **131**	ä 00E4 **132**	à 00E0 **133**	å 00E5 **134**	ç 00E7 **135**	ê 00EA **136**	ë 00EB **137**	è 00E8 **138**	ï 00EF **139**	î 00EE **140**	ì 00EC **141**	Ä 00C4 **142**	Å 00C5 **143**
9-	É 00C9 **144**	æ 00E6 **145**	Æ 00C6 **146**	ô 00F4 **147**	ö 00F6 **148**	ò 00F2 **149**	û 00FB **150**	ù 00F9 **151**	ÿ 00FF **152**	Ö 00D6 **153**	Ü 00DC **154**	¢ 00A2 **155**	£ 00A3 **156**	¥ 00A5 **157**	₧ 20A7 **158**	ƒ 0192 **159**
A-	á 00E1 **160**	í 00ED **161**	ó 00F3 **162**	ú 00FA **163**	ñ 00F1 **164**	Ñ 00D1 **165**	ª 00AA **166**	º 00BA **167**	¿ 00BF **168**	⌐ 2310 **169**	¬ 00AC **170**	½ 00BD **171**	¼ 00BC **172**	¡ 00A1 **173**	« 00AB **174**	» 00BB **175**
B-	░ 2591 **176**	▒ 2592 **177**	▓ 2593 **178**	| 2502 **179**	┤ 2524 **180**	╡ 2561 **181**	╢ 2562 **182**	╖ 2556 **183**	╕ 2555 **184**	╣ 2563 **185**	║ 2551 **186**	╗ 2557 **187**	╝ 255D **188**	╜ 255C **189**	╛ 255B **190**	┐ 2510 **191**
C-	└ 2514 **192**	┴ 2534 **193**	┬ 252C **194**	├ 251C **195**	─ 2500 **196**	┼ 253C **197**	╞ 255E **198**	╟ 255F **199**	╚ 255A **200**	╔ 2554 **201**	╩ 2569 **202**	╦ 2566 **203**	╠ 2560 **204**	═ 2550 **205**	╬ 256C **206**	╧ 2567 **207**
D-	╨ 2568 **208**	╤ 2564 **209**	╥ 2565 **210**	╙ 2559 **211**	╘ 2558 **212**	╒ 2552 **213**	╓ 2553 **214**	╫ 256B **215**	╪ 256A **216**	┘ 2518 **217**	┌ 250C **218**	█ 2588 **219**	▄ 2584 **220**	▌ 258C **221**	▐ 2590 **222**	▀ 2580 **223**
E-	α 03B1 **224**	ß 03B2 **225**	Γ 0393 **226**	π 03C0 **227**	Σ 03A3 **228**	σ 03C3 **229**	µ 00B5 **230**	τ 03C4 **231**	Φ 03A6 **232**	Θ 0398 **233**	Ω 03A9 **234**	δ 03B4 **235**	∞ 221E **236**	∅ 2205 **237**	∈ 2208 **238**	∩ 2229 **239**
F-	≡ 2261 **240**	± 00B1 **241**	≥ 2265 **242**	≤ 2264 **243**	⌠ 2320 **244**	⌡ 2321 **245**	÷ 00F7 **246**	≈ 2248 **247**	° 00B0 **248**	∙ 2219 **249**	· 00B7 **250**	√ 221A **251**	ⁿ 207F **252**	² 00B2 **253**	■ 25A0 **254**	NBSP 00A0 **255**

CP1252

Windows-1252 (CP1252)

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
0_ 0	NUL 0000 *0*	SOH 0001 *1*	STX 0002 *2*	ETX 0003 *3*	EOT 0004 *4*	ENQ 0005 *5*	ACK 0006 *6*	BEL 0007 *7*	BS 0008 *8*	HT 0009 *9*	LF 000A *10*	VT 000B *11*	FF 000C *12*	CR 000D *13*	SO 000E *14*	SI 000F *15*
1_ 16	DLE 0010 *16*	DC1 0011 *17*	DC2 0012 *18*	DC3 0013 *19*	DC4 0014 *20*	NAK 0015 *21*	SYN 0016 *22*	ETB 0017 *23*	CAN 0018 *24*	EM 0019 *25*	SUB 001A *26*	ESC 001B *27*	FS 001C *28*	GS 001D *29*	RS 001E *30*	US 001F *31*
2_ 32	SP 0020 *32*	! 0021 *33*	" 0022 *34*	# 0023 *35*	$ 0024 *36*	% 0025 *37*	& 0026 *38*	' 0027 *39*	(0028 *40*	) 0029 *41*	* 002A *42*	+ 002B *43*	, 002C *44*	- 002D *45*	. 002E *46*	/ 002F *47*
3_ 48	0 0030 *48*	1 0031 *49*	2 0032 *50*	3 0033 *51*	4 0034 *52*	5 0035 *53*	6 0036 *54*	7 0037 *55*	8 0038 *56*	9 0039 *57*	: 003A *58*	; 003B *59*	< 003C *60*	= 003D *61*	> 003E *62*	? 003F *63*
4_ 64	@ 0040 *64*	A 0041 *65*	B 0042 *66*	C 0043 *67*	D 0044 *68*	E 0045 *69*	F 0046 *70*	G 0047 *71*	H 0048 *72*	I 0049 *73*	J 004A *74*	K 004B *75*	L 004C *76*	M 004D *77*	N 004E *78*	O 004F *79*
5_ 80	P 0050 *80*	Q 0051 *81*	R 0052 *82*	S 0053 *83*	T 0054 *84*	U 0055 *85*	V 0056 *86*	W 0057 *87*	X 0058 *88*	Y 0059 *89*	Z 005A *90*	[005B *91*	\ 005C *92*	] 005D *93*	^ 005E *94*	_ 005F *95*
6_ 96	` 0060 *96*	a 0061 *97*	b 0062 *98*	c 0063 *99*	d 0064 *100*	e 0065 *101*	f 0066 *102*	g 0067 *103*	h 0068 *104*	i 0069 *105*	j 006A *106*	k 006B *107*	l 006C *108*	m 006D *109*	n 006E *110*	o 006F *111*
7_ 112	p 0070 *112*	q 0071 *113*	r 0072 *114*	s 0073 *115*	t 0074 *116*	u 0075 *117*	v 0076 *118*	w 0077 *119*	x 0078 *120*	y 0079 *121*	z 007A *122*	{ 007B *123*	| 007C *124*	} 007D *125*	~ 007E *126*	DEL 007F *127*
8_ 128	€ 20AC *128*		‚ 201A *130*	ƒ 0192 *131*	„ 201E *132*	… 2026 *133*	† 2020 *134*	‡ 2021 *135*	ˆ 02C6 *136*	‰ 2030 *137*	Š 0160 *138*	‹ 2039 *139*	Œ 0152 *140*		Ž 017D *142*	
9_ 144		‘ 2018 *145*	’ 2019 *146*	“ 201C *147*	” 201D *148*	• 2022 *149*	– 2013 *150*	— 2014 *151*	˜ 02DC *152*	™ 2122 *153*	š 0161 *154*	› 203A *155*	œ 0153 *156*		ž 017E *158*	Ÿ 0178 *159*
A_ 160	NBSP 00A0 *160*	¡ 00A1 *161*	¢ 00A2 *162*	£ 00A3 *163*	¤ 00A4 *164*	¥ 00A5 *165*	¦ 00A6 *166*	§ 00A7 *167*	¨ 00A8 *168*	© 00A9 *169*	ª 00AA *170*	« 00AB *171*	¬ 00AC *172*	SHY 00AD *173*	® 00AE *174*	¯ 00AF *175*
B_ 176	° 00B0 *176*	± 00B1 *177*	² 00B2 *178*	³ 00B3 *179*	´ 00B4 *180*	µ 00B5 *181*	¶ 00B6 *182*	· 00B7 *183*	¸ 00B8 *184*	¹ 00B9 *185*	º 00BA *186*	» 00BB *187*	¼ 00BC *188*	½ 00BD *189*	¾ 00BE *190*	¿ 00BF *191*
C_ 192	À 00C0 *192*	Á 00C1 *193*	Â 00C2 *194*	Ã 00C3 *195*	Ä 00C4 *196*	Å 00C5 *197*	Æ 00C6 *198*	Ç 00C7 *199*	È 00C8 *200*	É 00C9 *201*	Ê 00CA *202*	Ë 00CB *203*	Ì 00CC *204*	Í 00CD *205*	Î 00CE *206*	Ï 00CF *207*
D_ 208	Ð 00D0 *208*	Ñ 00D1 *209*	Ò 00D2 *210*	Ó 00D3 *211*	Ô 00D4 *212*	Õ 00D5 *213*	Ö 00D6 *214*	× 00D7 *215*	Ø 00D8 *216*	Ù 00D9 *217*	Ú 00DA *218*	Û 00DB *219*	Ü 00DC *220*	Ý 00DD *221*	Þ 00DE *222*	ß 00DF *223*
E_ 224	à 00E0 *224*	á 00E1 *225*	â 00E2 *226*	ã 00E3 *227*	ä 00E4 *228*	å 00E5 *229*	æ 00E6 *230*	ç 00E7 *231*	è 00E8 *232*	é 00E9 *233*	ê 00EA *234*	ë 00EB *235*	ì 00EC *236*	í 00ED *237*	î 00EE *238*	ï 00EF *239*
F_ 240	ð 00F0 *240*	ñ 00F1 *241*	ò 00F2 *242*	ó 00F3 *243*	ô 00F4 *244*	õ 00F5 *245*	ö 00F6 *246*	÷ 00F7 *247*	ø 00F8 *248*	ù 00F9 *249*	ú 00FA *250*	û 00FB *251*	ü 00FC *252*	ý 00FD *253*	þ 00FE *254*	ÿ 00FF *255*

Letter Number Punctuation Symbol Other Undefined Differences from ISO-8859-1

Initial mapping of QB64 character display

unicode -> CP437

000: 32,9786,9787,9829,9830,9827,9824,8226,9688,9675,9689,9794,9792,9834,9835,9788
016: 9658,9668,8597,8252,182,167,9644,8616,8593,8595,8594,8592,8735,8596,9650,9660
032: 32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47
048: 48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63
064: 64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79
080: 80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95
096: 96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111
112: 112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,8962
128: 199,252,233,226,228,224,229,231,234,235,232,239,238,236,196,197
144: 201,230,198,244,246,242,251,249,255,214,220,162,163,165,8359,402
160: 225,237,243,250,241,209,170,186,191,8976,172,189,188,161,171,187
176: 9617,9618,9619,9474,9508,9569,9570,9558,9557,9571,9553,9559,9565,9564,9563,9488
192: 9492,9524,9516,9500,9472,9532,9566,9567,9562,9556,9577,9574,9568,9552,9580,9575
208: 9576,9572,9573,9561,9560,9554,9555,9579,9578,9496,9484,9608,9604,9612,9616,9600
224: 945,223,915,960,931,963,181,964,934,920,937,948,8734,966,949,8745
240: 8801,177,8805,8804,8992,8993,247,8776,176,8729,183,8730,8319,178,9632,32

As you can see the codes from 32 to 126 that are original ASCII, that match both unicode, CP1252, and CP437, but for the rest the unicode characters most similar to the symbols of CP437 have been brought to his place in then CP437.

For example MAPUNICODE 199 to 128, takes the image of 199 (Hex: C7), which is Ç, to code 128, as corresponds to the old page CP437 of the original PC from 1980, so if the CHR $ (128) a Ç comes out, but if you press the [Ç] key, obtains another character, due to lack of key maping.

Keyboard mapping

The sequence of numbers that follow are pairs of numbers that represent _KEYHIT key codes to be replaced by the one that follows after a >, that is, if a 128 is received, it must be replaced by a 235, a 160 by a 255 and so on. successively. In short, keyboard mapping.

This sequence has been obtained by taking the list of codes less than 256 from the presentation mapping of the CP437 and ordering it.

128>235 160>255 161>173 162>155 163>156 165>157 170>166 171>174 172>170 176>248
177>241 178>253 181>230 183>250 186>167 187>175 188>172 189>171 191>168 196>142
197>143 198>146 199>128 201>144 209>165 214>153 220>154 223>225 224>133 225>160
226>131 228>132 229>134 230>145 231>135 232>138 233>130 234>136 235>137 236>141
237>161 238>140 239>139 241>164 242>149 243>162 244>147 246>148 247>246 249>151
250>163 251>150 252>129

These mappings have been expressed in the function by means of two constants KeyLook that represents the key code obtained by _KEYHIT and KeyMapi that represents the code that must be replaced to bring it to the CP437 page of QB64. In the function they appear as two constants:

```
CONST KeyLook = "€ ¡¢£¥ª«¬°±²µ·º»¼½¿ÄÅÆÇÉÑÖÜßàáâäåæçèéêëìíîïñ•¢ôö÷ùúûü"
CONST KeyMapi = "îÿ›œ¦®ªøñýæú§¯¬«¨Ž❹’€❺¥™šá… ƒ„†‘‡Š,ˆ‰❷¡Œ‹¤•¢“”ö–£–①"
```

NOTE: If you copy this constants in the QB64 IDE, they appear correctly.