# **Unicode support**

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This file is maintained by H. Peter Anvin <unicode@lanana.org> as part of the Linux Assigned Names And Numbers Authority (LANANA) project. The current version can be found at:

http://www.lanana.org/docs/unicode/admin-guide/unicode.rst

#### Introduction

The Linux kernel code has been rewritten to use Unicode to map characters to fonts. By downloading a single Unicode-to-font table, both the eight-bit character sets and UTF-8 mode are changed to use the font as indicated.

This changes the semantics of the eight-bit character tables subtly. The four character tables are now:

| Map symbol | Map name                 | Escape code (G0) |
|------------|--------------------------|------------------|
| LAT1_MAP   | Latin-1 (ISO 8859-1)     | ESC (B           |
| GRAF_MAP   | DEC VT100 pseudographics | ESC (0           |
| IBMPC_MAP  | IBM code page 437        | ESC (U           |
| USER MAP   | User defined             | ESC (K           |

In particular, ESC ( U is no longer "straight to font", since the font might be completely different than the IBM character set. This permits for example the use of block graphics even with a Latin-1 font loaded.

Note that although these codes are similar to ISO 2022, neither the codes nor their uses match ISO 2022; Linux has two 8-bit codes (G0 and G1), whereas ISO 2022 has four 7-bit codes (G0-G3).

In accordance with the Unicode standard/ISO 10646 the range U+F000 to U+F8FF has been reserved for OS-wide allocation (the Unicode Standard refers to this as a "Corporate Zone", since this is inaccurate for Linux we call it the "Linux Zone"). U+F000 was picked as the starting point since it lets the direct-mapping area start on a large power of two (in case 1024- or 2048-character fonts ever become necessary). This leaves U+E000 to U+EFFF as End User Zone.

[v1.2]: The Unicodes range from U+F000 and up to U+F7FF have been hard-coded to map directly to the loaded font, bypassing the translation table. The user-defined map now defaults to U+F000 to U+F0FF, emulating the previous behaviour. In practice, this range might be shorter; for example, vgacon can only handle 256-character (U+F000..U+F0FF) or 512-character (U+F000..U+F1FF) fonts.

### Actual characters assigned in the Linux Zone

In addition, the following characters not present in Unicode 1.1.4 have been defined; these are used by the DEC VT graphics map. [v1.2] THIS USE IS OBSOLETE AND SHOULD NO LONGER BE USED; PLEASE SEE BELOW.

| U+F800 | DEC VT GRAPHICS HORIZONTAL LINE SCAN 1 |
|--------|--|
| U+F801 | DEC VT GRAPHICS HORIZONTAL LINE SCAN 3 |
| U+F803 | DEC VT GRAPHICS HORIZONTAL LINE SCAN 7 |
| U+F804 | DEC VT GRAPHICS HORIZONTAL LINE SCAN 9 |

The DEC VT220 uses a 6x10 character matrix, and these characters form a smooth progression in the DEC VT graphics character set. I have omitted the scan 5 line, since it is also used as a block-graphics character, and hence has been coded as U+2500 FORMS LIGHT HORIZONTAL.

[v1.3]: These characters have been officially added to Unicode 3.2.0; they are added at U+23BA, U+23BB, U+23BC, U+23BD. Linux now uses the new values.

[v1.2]: The following characters have been added to represent common keyboard symbols that are unlikely to ever be added to Unicode proper since they are horribly vendor-specific. This, of course, is an excellent example of horrible design.

| U+F810 | KEYBOARD SYMBOL FLYING FLAG   |
|--------|-------------------------------|
| U+F811 | KEYBOARD SYMBOL PULLDOWN MENU |
| U+F812 | KEYBOARD SYMBOL OPEN APPLE    |
| U+F813 | KEYBOARD SYMBOL SOLID APPLE   |

### Klingon language support

In 1996, Linux was the first operating system in the world to add support for the artificial language Klingon, created by Marc Okrand for the "Star Trek" television series. This encoding was later adopted by the ConScript Unicode Registry and proposed (but ultimately rejected) for inclusion in Unicode Plane 1. Thus, it remains as a Linux/CSUR private assignment in the Linux Zone.

This encoding has been endorsed by the Klingon Language Institute. For more information, contact them at:

#### http://www.kli.org/

Since the characters in the beginning of the Linux CZ have been more of the dingbats/symbols/forms type and this is a language, I have located it at the end, on a 16-cell boundary in keeping with standard Unicode practice.

#### Note

This range is now officially managed by the ConScript Unicode Registry. The normative reference is at:

https://www.evertype.com/standards/csur/klingon.html

Klingon has an alphabet of 26 characters, a positional numeric writing system with 10 digits, and is written left-to-right, top-to-bottom

Several glyph forms for the Klingon alphabet have been proposed. However, since the set of symbols appear to be consistent throughout, with only the actual shapes being different, in keeping with standard Unicode practice these differences are considered font variants.

| U+F8D0 KLINGON LETTER A  U+F8D1 KLINGON LETTER B  U+F8D2 KLINGON LETTER D  U+F8D3 KLINGON LETTER D  U+F8D4 KLINGON LETTER GH  U+F8D5 KLINGON LETTER GH  U+F8D6 KLINGON LETTER GH  U+F8D7 KLINGON LETTER I  U+F8D8 KLINGON LETTER I  U+F8D8 KLINGON LETTER J  U+F8D8 KLINGON LETTER J  U+F8D8 KLINGON LETTER N  U+F8D8 KLINGON LETTER N  U+F8D8 KLINGON LETTER N  U+F8D8 KLINGON LETTER N  U+F8D9 KLINGON LETTER N  U+F8D0 KLINGON LETTER N  U+F8D1 KLINGON LETTER O  U+F8D2 KLINGON LETTER Q - Written <□ in standard Okrand Latin transliteration  U+F8D6 KLINGON LETTER Q - Written <□ in standard Okrand Latin transliteration  U+F8D6 KLINGON LETTER R  U+F8D7 KLINGON LETTER T  U+F8D8 KLINGON LETTER T  U+F8D8 KLINGON LETTER T  U+F8D9 KLINGON LETTER T  U+F8D9 KLINGON LETTER T  U+F8D9 KLINGON LETTER V  U+F8D9 KLINGON LETTER W  U+F8D9 KLINGON LETTER W  U+F8D9 KLINGON LETTER W  U+F8D9 KLINGON DIGIT TONE  U+F8D9 KLINGON DIGIT TONE  U+F8D9 KLINGON DIGIT THRE  U+F8D9 KLINGON DIGIT TINE  U+F8D9 KLINGON DIGIT TINE  U+F8D9 KLINGON DIGIT TINE  U+F8D9 KLINGON DIGIT SEVEN  |        |  |
|---|--------|--|
| U+F8D2 KLINGON LETTER CH U+F8D3 KLINGON LETTER D U+F8D4 KLINGON LETTER B U+F8D5 KLINGON LETTER H U+F8D6 KLINGON LETTER H U+F8D7 KLINGON LETTER J U+F8D8 KLINGON LETTER J U+F8D8 KLINGON LETTER J U+F8D8 KLINGON LETTER M U+F8D8 KLINGON LETTER N U+F8D9 KLINGON LETTER N U+F8D0 KLINGON LETTER NG U+F8D0 KLINGON LETTER P U+F8D7 KLINGON LETTER Q - Written < <li>U+F8D6 KLINGON LETTER Q - Written &lt;</li> <li>U+F8D6 KLINGON LETTER R U+F8E0 KLINGON LETTER R U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER R U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER T U+F8E5 KLINGON LETTER T U+F8E5 KLINGON LETTER T U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER V U+F8E7 KLINGON LETTER V U+F8E8 KLINGON LETTER V U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8E9 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT TWO U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT TWO U+F8F5 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SEVEN U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT TINE U+F8F8 KLINGON DIGIT TINE U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN</li> | U+F8D0 | KLINGON LETTER A   |
| U+F8D3 KLINGON LETTER D U+F8D4 KLINGON LETTER E U+F8D5 KLINGON LETTER GH U+F8D6 KLINGON LETTER GH U+F8D7 KLINGON LETTER I U+F8D8 KLINGON LETTER I U+F8D8 KLINGON LETTER J U+F8D8 KLINGON LETTER L U+F8D9 KLINGON LETTER N U+F8D9 KLINGON LETTER N U+F8D0 KLINGON LETTER N U+F8D0 KLINGON LETTER N U+F8D0 KLINGON LETTER NO U+F8D0 KLINGON LETTER O U+F8D1 KLINGON LETTER O U+F8D2 KLINGON LETTER Q - Written < U+F8D3 KLINGON LETTER Q U+F8D4 KLINGON LETTER Q U+F8D5 KLINGON LETTER Q U+F8D6 KLINGON LETTER R U+F8D6 KLINGON LETTER R U+F8D7 KLINGON LETTER R U+F8D8 KLINGON LETTER R U+F8D8 KLINGON LETTER R U+F8D8 KLINGON LETTER R U+F8D9 KLINGON LETTER S U+F8D1 KLINGON LETTER S U+F8D2 KLINGON LETTER S U+F8D3 KLINGON LETTER V U+F8D4 KLINGON LETTER U U+F8D5 KLINGON LETTER U U+F8D6 KLINGON LETTER V U+F8D6 KLINGON LETTER V U+F8D8 KLINGON LETTER V U+F8D9 KLINGON LETTER Y U+F8D9 KLINGON LETTER S U+F8D9 KLINGON DIGIT TERO U+F8D9 KLINGON DIGIT TERO U+F8D9 KLINGON DIGIT TERO U+F8D9 KLINGON DIGIT THREE U+F8D6 KLINGON DIGIT THREE U+F8D7 KLINGON DIGIT THREE U+F8D7 KLINGON DIGIT FIVE U+F8D6 KLINGON DIGIT FIVE U+F8D7 KLINGON DIGIT FIVE         | U+F8D1 | KLINGON LETTER B   |
| U+F8D4 KLINGON LETTER E U+F8D5 KLINGON LETTER GH U+F8D6 KLINGON LETTER H U+F8D7 KLINGON LETTER I U+F8D8 KLINGON LETTER I U+F8D9 KLINGON LETTER J U+F8D9 KLINGON LETTER M U+F8D0 KLINGON LETTER M U+F8D0 KLINGON LETTER M U+F8D0 KLINGON LETTER NG U+F8D0 KLINGON LETTER NG U+F8D1 KLINGON LETTER Q U+F8D2 KLINGON LETTER Q U+F8D5 KLINGON LETTER Q U+F8D6 KLINGON LETTER Q U+F8D6 KLINGON LETTER Q U+F8D6 KLINGON LETTER Q U+F8D7 KLINGON LETTER Q U+F8D8 KLINGON LETTER R U+F8E2 KLINGON LETTER R U+F8E3 KLINGON LETTER R U+F8E4 KLINGON LETTER T U+F8E5 KLINGON LETTER T U+F8E6 KLINGON LETTER T U+F8E7 KLINGON LETTER T U+F8E8 KLINGON LETTER V U+F8E9 KLINGON LETTER W U+F8E9 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8E9 KLINGON LETTER S U+F8E9 KLINGON LETTER S U+F8E9 KLINGON LETTER S U+F8E9 KLINGON LETTER S U+F8E9 KLINGON DIGIT THRE U+F8E9 KLINGON DIGIT THRE U+F8E7 KLINGON DIGIT THRE U+F8E8 KLINGON DIGIT THRE U+F8E8 KLINGON DIGIT THRE U+F8E9 KLINGON DIGIT THRE U+F8E9 KLINGON DIGIT THRE U+F8E9 KLINGON DIGIT THRE U+F8E9 KLINGON DIGIT SEVEN U+F8E9 KLINGON DIGIT NINE U+F8E9 KLINGON FULL STOP  | U+F8D2 | KLINGON LETTER CH  |
| U+F8D5 KLINGON LETTER H U+F8D6 KLINGON LETTER I U+F8D7 KLINGON LETTER I U+F8D8 KLINGON LETTER I U+F8D8 KLINGON LETTER I U+F8D9 KLINGON LETTER L U+F8D0 KLINGON LETTER M U+F8D0 KLINGON LETTER N U+F8D0 KLINGON LETTER N U+F8D0 KLINGON LETTER N U+F8D0 KLINGON LETTER P U+F8D1 KLINGON LETTER P U+F8D2 KLINGON LETTER P U+F8D6 KLINGON LETTER Q U+F8D6 KLINGON LETTER Q U+F8D7 KLINGON LETTER P U+F8D8 KLINGON LETTER R U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER R U+F8E2 KLINGON LETTER T U+F8E4 KLINGON LETTER T U+F8E5 KLINGON LETTER T U+F8E5 KLINGON LETTER T U+F8E6 KLINGON LETTER V U+F8E7 KLINGON LETTER V U+F8E8 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8E1 KLINGON LETTER Y U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER W U+F8E5 KLINGON LETTER S U+F8E6 KLINGON LETTER S U+F8E7 KLINGON DIGIT TERO U+F8F1 KLINGON DIGIT TERO U+F8F2 KLINGON DIGIT TRO U+F8F5 KLINGON DIGIT TRO U+F8F5 KLINGON DIGIT TRO U+F8F6 KLINGON DIGIT TRO U+F8F7 KLINGON DIGIT FOUR U+F8F8 KLINGON DIGIT FIVE U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT NINE U+F8F8 KLINGON FULL STOP  | U+F8D3 | KLINGON LETTER D   |
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| U+F8D7 KLINGON LETTER I U+F8D8 KLINGON LETTER L U+F8D9 KLINGON LETTER M U+F8D6 KLINGON LETTER M U+F8D7 KLINGON LETTER M U+F8D8 KLINGON LETTER M U+F8D8 KLINGON LETTER N U+F8D8 KLINGON LETTER N U+F8D9 KLINGON LETTER N U+F8D0 KLINGON LETTER P U+F8D6 KLINGON LETTER P U+F8D7 KLINGON LETTER Q - Written <q> in standard Okrand Latin transliteration U+F8E0 KLINGON LETTER QH - Written <q> in standard Okrand Latin transliteration U+F8E1 KLINGON LETTER S U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER T U+F8E5 KLINGON LETTER T U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER W U+F8E8 KLINGON LETTER GLOTTAL STOP U+F8F1 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT TWO U+F8F2 KLINGON DIGIT THRE U+F8F4 KLINGON DIGIT THRE U+F8F5 KLINGON DIGIT FIVE U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT FIVE U+F8F7 KLINGON DIGIT FIVE U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SINE U+F8F9 KLINGON DIGIT FINE U+F8F9 KLINGON DIGIT FINE</q></q>  | U+F8D5 | KLINGON LETTER GH  |
| U+F8D8 KLINGON LETTER J U+F8D9 KLINGON LETTER M U+F8DB KLINGON LETTER M U+F8DB KLINGON LETTER N U+F8DC KLINGON LETTER NG U+F8DD KLINGON LETTER O U+F8DE KLINGON LETTER O U+F8DE KLINGON LETTER Q - Written <q> in standard Okrand Latin transliteration U+F8DF KLINGON LETTER Q - Written <q> in standard Okrand Latin transliteration U+F8E0 KLINGON LETTER Q - Written <q> in standard Okrand Latin transliteration U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER T U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER T U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER W U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F1 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT TWO U+F8F2 KLINGON DIGIT THRE U+F8F4 KLINGON DIGIT THRE U+F8F5 KLINGON DIGIT THRE U+F8F5 KLINGON DIGIT THRE U+F8F6 KLINGON DIGIT FIVE U+F8F7 KLINGON DIGIT FIVE U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT FINE U+F8F9 KLINGON DIGIT FINE U+F8F9 KLINGON DIGIT NINE U+F8F9 KLINGON COMMA U+F8FE KLINGON FULL STOP</q></q></q>  | U+F8D6 | KLINGON LETTER H   |
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| U+F8DD KLINGON LETTER O U+F8DE KLINGON LETTER P U+F8DF KLINGON LETTER Q - Written <q> in standard Okrand Latin transliteration U+F8E0 KLINGON LETTER QH - Written <q> in standard Okrand Latin transliteration U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER T U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER W U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT TWO U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FOUR U+F8F6 KLINGON DIGIT SEVEN U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON DIGIT NINE U+F8FD KLINGON DIGIT NINE U+F8FE KLINGON COMMA U+F8FE KLINGON FULL STOP</q></q>  | U+F8DB | KLINGON LETTER N   |
| U+F8DF KLINGON LETTER P U+F8DF KLINGON LETTER Q - Written <q> in standard Okrand Latin transliteration U+F8E0 KLINGON LETTER QH - Written <q> in standard Okrand Latin transliteration U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER TLH U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F1 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT TWO U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT FIVE U+F8F4 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SIX U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT NINE U+F8F9 KLINGON DIGIT NINE U+F8F6 KLINGON COMMA U+F8FE KLINGON COMMA</q></q>   |        |  |
| U+F8DF KLINGON LETTER Q - Written <q> in standard Okrand Latin transliteration U+F8E0 KLINGON LETTER QH - Written <q> in standard Okrand Latin transliteration U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER TLH U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER V U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT TWO U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THRE U+F8F4 KLINGON DIGIT THRE U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT TNINE U+F8F9 KLINGON DIGIT TINE U+F8FF KLINGON DIGIT TINE U+F8FF KLINGON DIGIT TINE U+F8FF KLINGON DIGIT TINE U+F8FF KLINGON DIGIT TINE</q></q>   |        |  |
| U+F8E0 KLINGON LETTER QH - Written <q> in standard Okrard Latin transliteration U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER TLH U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FOUR U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SIX U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT TINEE U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT NINE U+F8F9 KLINGON DIGIT NINE U+F8FF KLINGON COMMA U+F8FF KLINGON FULL STOP</q>  |        |  |
| U+F8E1 KLINGON LETTER R U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER TLH U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8E9 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT THREE U+F8F5 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT SIX U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT NINE U+F8F9 KLINGON DIGIT NINE U+F8FF KLINGON COMMA U+F8FF KLINGON FULL STOP  | U+F8DF |  |
| U+F8E2 KLINGON LETTER S U+F8E3 KLINGON LETTER TLH U+F8E4 KLINGON LETTER U U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER GLOTTAL STOP U+F8E9 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FOUR U+F8F6 KLINGON DIGIT SIX U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F9 KLINGON DIGIT FIVE U+F8F9 KLINGON DIGIT FIVE U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT NINE U+F8F9 KLINGON COMMA U+F8FF KLINGON COMMA   | U+F8E0 | KLINGON LETTER QH - Written <q> in standard Okrand Latin transliteration</q> |
| U+F8E3 KLINGON LETTER T U+F8E4 KLINGON LETTER TLH U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E7 KLINGON LETTER Y U+F8E8 KLINGON LETTER GLOTTAL STOP U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F1 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT TWO U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8F9 KLINGON DIGIT NINE U+F8F0 KLINGON COMMA U+F8FE KLINGON COMMA   | U+F8E1 | KLINGON LETTER R   |
| U+F8E4 KLINGON LETTER TLH U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER V U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8F9 KLINGON DIGIT NINE U+F8F0 KLINGON COMMA U+F8FE KLINGON COMMA  | U+F8E2 | KLINGON LETTER S   |
| U+F8E5 KLINGON LETTER U U+F8E6 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER Y U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F6 KLINGON DIGIT SEVEN U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8F0 KLINGON DIGIT NINE U+F8F0 KLINGON COMMA U+F8FE KLINGON FULL STOP  | U+F8E3 | KLINGON LETTER T   |
| U+F8E6 KLINGON LETTER V U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SIT SIT SEVEN U+F8F9 KLINGON DIGIT NINE U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP   | U+F8E4 | KLINGON LETTER TLH   |
| U+F8E7 KLINGON LETTER W U+F8E8 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP   |        |  |
| U+F8E8 KLINGON LETTER Y U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP  | U+F8E6 |  |
| U+F8E9 KLINGON LETTER GLOTTAL STOP U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP  | U+F8E7 | KLINGON LETTER W   |
| U+F8F0 KLINGON DIGIT ZERO U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP   | U+F8E8 | KLINGON LETTER Y   |
| U+F8F1 KLINGON DIGIT ONE U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP   | U+F8E9 | KLINGON LETTER GLOTTAL STOP  |
| U+F8F2 KLINGON DIGIT TWO U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP  | U+F8F0 | KLINGON DIGIT ZERO   |
| U+F8F3 KLINGON DIGIT THREE U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP   |        |  |
| U+F8F4 KLINGON DIGIT FOUR U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP  |        |  |
| U+F8F5 KLINGON DIGIT FIVE U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP  |        |  |
| U+F8F6 KLINGON DIGIT SIX U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP  |        |  |
| U+F8F7 KLINGON DIGIT SEVEN U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP   |        |  |
| U+F8F8 KLINGON DIGIT EIGHT U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP  |        |  |
| U+F8F9 KLINGON DIGIT NINE U+F8FD KLINGON COMMA U+F8FE KLINGON FULL STOP   | U+F8F7 |  |
| U+F8FD KLINGON COMMA<br>U+F8FE KLINGON FULL STOP  |        |  |
| U+F8FE KLINGON FULL STOP  |        |  |
|   |        |  |
| U+F8FF   KLINGON SYMBOL FOR EMPIRE  | U+F8FE |  |
|   | U+F8FF | KLINGON SYMBOL FOR EMPIRE  |

## Other Fictional and Artificial Scripts

Since the assignment of the Klingon Linux Unicode block, a registry of fictional and artificial scripts has been established by John Cowan <jcowan@reutershealth.com> and Michael Everson@evertype.com>. The ConScript Unicode Registry is

accessible at:

### https://www.evertype.com/standards/csur/

The ranges used fall at the low end of the End User Zone and can hence not be normatively assigned, but it is recommended that people who wish to encode fictional scripts use these codes, in the interest of interoperability. For Klingon, CSUR has adopted the Linux encoding. The CSUR people are driving adding Tengwar and Cirth into Unicode Plane 1; the addition of Klingon to Unicode Plane 1 has been rejected and so the above encoding remains official.