DEBORAH ANDERSON, SCRIPT ENCODING INITIATIVE, UC BERKELEY

ULAANBAATAR, MONGOLIA APRIL 3-5, 2019 The Unicode Standard and the Unicode Approval Process

MWG/3-N6

Background on the Unicode Standard Makes it possible so

- text and documents are interchangeable
- platforms supporting Mongolian are interoperable

You want what you type to be received correctly:

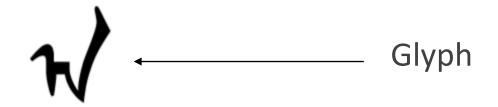


Background on the Unicode Standard

What users don't want...



Unicode assigns a number ("code point") to the letters and symbols in a script. It also includes a representative glyph and name.



1820 Code point

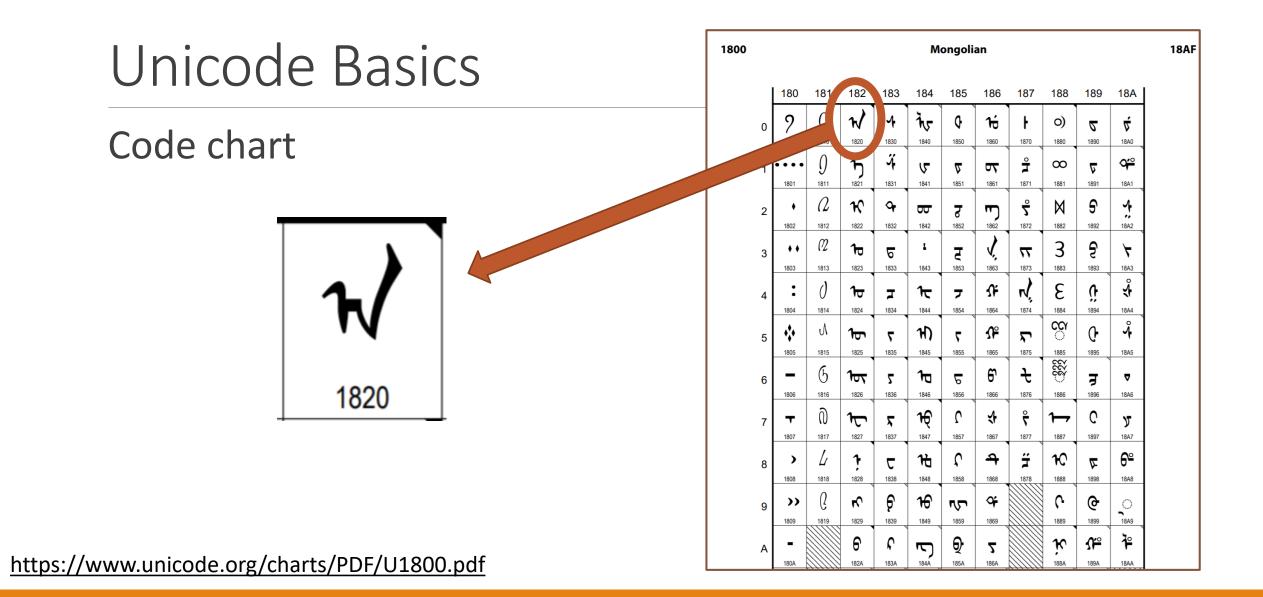
MONGOLIAN LETTER A - Name

Code chart

Ţ

1800	Mongolian							1				
	180	181	182	183	184	185	186	187	188	189	18A	
0	2	0	٦V	4	৳ৢ	Q	Τΰ	ŀ	0)	٩	र्ष	
	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	18A0	
1		0	Ŋ	4	দ	হ	ᠵ	٦	8	হ	Ŷ	
2	1801	1811 <i>()</i>	1821 K	1831	1841	1851	1861	1871 5	1881	1891	18A1	
2	1802	1812	1822	1832	1842	0 1852	1862	1872	1882	1892	18A2	
3	••	12	10	চ	1	ट	Į Į	~	3	ਿ	7	
	1803	1813	1823	1833	1843	1853	1863	1873	1883	1893	18A3	
4	1804	1814	10 1824	7 1834	T	フ 1854	∱	1874	E	(1844	
5	.*.	N		7	11)	7	٩	<u>ک</u>	জ	()	Å	
	1805	1815	1825	1835	1845	1855	1865	1875	1885	1895	18A5	
6	, –	G	ᠥ	2	₽	চ	೯	f	્રશ્	ਤ	⊽	
	1806	1816	1826	1836	1846	1856	1866	1876	1886	1896	18A6	
7		ର	Ŀ	2	HĘ	2	4	7	1-	C	۷	
8	1807	1817	1827 1	1837	1847 17	1857	1867	1877	1887	1897	18A7	
0	1808	1818	1828	1838	1848	1858	1868	1878	1888	1898	18A8	
9	>>	Q	r.	Ģ	ᡉ	ر ي،	4		<u>ب</u>	ଡ଼	्	
	1809	1819	1829	1839	1849	1859	1869		1889	1899	18A9	
A	-		6	6 183A	184A	Q 185A	5		ĸ	₽	~ ₽	

https://www.unicode.org/charts/PDF/U1800.pdf



Names list

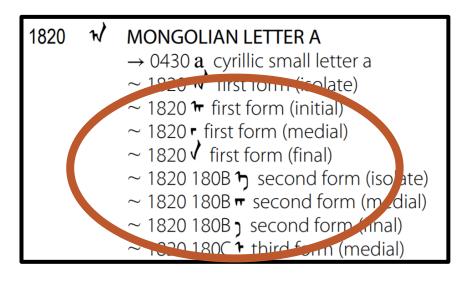
1800		Mon	goliar	۱	1825
Puncti	uati	on	Basic	lette	ers
		birgas are encoded in the Mongolian Supplement			ences show commonly used Cyrillic
		660-1167F.	transl		
1800 1801 · 1802	? 	MONGOLIAN BIRGA → 0F04 ∞ tibetan mark initial yig mgo mdun ma MONGOLIAN ELLIPSIS MONGOLIAN COMMA	witho squar expec	ut the ed qu ted to	pecified for distinct positional forms are shown em. Letters with unspecified positional forms use a lestion mark to indicate the gap. All vowels are o have explicit isolate forms. For consonants the form is the initial first form unless specified
1803	••	MONGOLIAN FULL STOP	other	wise.	
1804	:	MONGOLIAN COLON	1820	N	MONGOLIAN LETTER A
1805	۰.	MONGOLIAN FOUR DOTS			\rightarrow 0430 a, cyrillic small letter a
		 marks the end of a chapter 			∼ 1820 🖌 first form (isolate)
1806	-	MONGOLIAN TODO SOFT HYPHEN			~ 1820 🕶 first form (initial)
		 not a format control character, but simply a 			~ 1820 • first form (medial)
		hyphen for Todo			~ 1820 / first form (final)
		 also used in the Hudum (modern Mongolian) writing system 			~ 1820 1808) second form (isolate) ~ 1820 1808 = second form (medial)
		→ 00AD 🔤 soft hyphen			~ 1820 1808 second form (medial) ~ 1820 1808 second form (final)
1807	-	MONGOLIAN SIBE SYLLABLE BOUNDARY			$\sim 1820 \ 1800^{\circ}$ third form (medial)
		MARKER	1821	'n	MONGOLIAN LETTER E
1808	>	MONGOLIAN MANCHU COMMA			\rightarrow 044D \mathfrak{I} cyrillic small letter e
1809))	MONGOLIAN MANCHU FULL STOP			~ 1821) first form (isolate)
180A	•	MONGOLIAN NIRUGU			~ 1821 + first form (initial)
Forma	t co	ntrols			~ 1821 first form (medial)
180B	F V 81	MONGOLIAN FREE VARIATION SELECTOR ONE			~ 1821 / first form (final)
		 abbreviated FVS1 			~ 1821 180B + second form (initial)
180C	FV S2	MONGOLIAN FREE VARIATION SELECTOR TWO	1822	ĸ	~ 1821 1808 second form (final) MONGOLIAN LETTER I
	1217	abbreviated FVS2	1022		\rightarrow 0438 μ cyrillic small letter i
80D	FV S3	MONGOLIAN FREE VARIATION SELECTOR THREE			~ 1822 * first form (isolate)
		abbreviated FVS3			~ 1822 T first form (initial)
180E	M V S				~ 1822 🕈 first form (medial)
	1.5.1	abbreviated MVS			~ 1822 🗘 first form (final)
Digits					~ 1822 180B r second form (medial)
1810	0	MONGOLIAN DIGIT ZERO	1823	10	MONGOLIAN LETTER O
1811	0	MONGOLIAN DIGIT ONE			\rightarrow 043E o cyrillic small letter o
1812	2	MONGOLIAN DIGIT TWO			~ 1823 to first form (isolate) ~ 1823 to first form (initial)
813	02	MONGOLIAN DIGIT THREE			~ 1823 • first form (medial)
1814	0	MONGOLIAN DIGIT FOUR			~ 1823 first form (final)
1815	h	MONGOLIAN DIGIT FIVE			~ 1823 180B v second form (medial)
1816	G	MONGOLIAN DIGIT SIX			~ 1823 180B • second form (final)
1817	ი	MONGOLIAN DIGIT SEVEN	1824	1ਰ	MONGOLIAN LETTER U
1818	4	MONGOLIAN DIGIT EIGHT			\rightarrow 0443 y cyrillic small letter u
1819	G	MONGOLIAN DIGIT NINE			~ 1824 le first form (isolate)
					~ 1824 to first form (initial)
					~ 1824 • first form (medial)
					~ 1824 & first form (final) ~ 1824 1808 v second form (medial)
			1825	100	MONGOLIAN LETTER OE
			1025		\rightarrow 04E9 Θ cyrillic small letter barred o
					~ 1825 to first form (isolate)
					~ 1825 🐨 first form (initial)
					~ 1825 • first form (medial)
					~ 1825 first form (final)
					~ 1825 180B - second form (medial)
					~ 1825 180B • second form (final)
					~ 1825 180C 🚾 third form (medial)

Names list

- 1801 ···· MONGOLIAN ELLIPSIS
- 1802 · MONGOLIAN COMMA
- 1803 ··· MONGOLIAN FULL STOP
- 1804 : MONGOLIAN COLON
- 1805 🌵 MONGOLIAN FOUR DOTS
 - marks the end of a chapter
- 1806 MONGOLIAN TODO SOFT HYPHEN
 - not a format control character, but simply a hyphen for Todo
 - also used in the Hudum (modern Mongolian) writing system
 - → 00AD 🖭 soft hyphen
- 1807 MONGOLIAN SIBE SYLLABLE BOUNDARY MARKER
- 1808 > MONGOLIAN MANCHU COMMA
- 1809 » MONGOLIAN MANCHU FULL STOP
- 180A MONGOLIAN NIRUGU

1800)	Mon	golian	I	182
Punc	uati	on	Basic	lette	ers
Additi	onal	birgas are encoded in the Mongolian Supplement 660-1167F.		refer	rences show commonly used Cyrillic
1800	9	MONGOLIAN BIRGA → 0F04 >>> tibetan mark initial yig mgo mdun	Letter: witho	s uns ut th	pecified for distinct positional forms are shown em. Letters with unspecified positional forms use
180		MONGOLIAN ELLIPSIS MONGOLIAN COMMA	expect isolate	ted to e first	uestion mark to indicate the gap. All vowels are o have explicit isolate forms. For consonants the t form is the initial first form unless specified
1803	••	MONGOLIAN FULL STOP	otherv		
1804	:	MONGOLIAN COLON	1820	N	MONGOLIAN LETTER A
1805	*	MONGOLIAN FOUR DOTS			\rightarrow 0430 a, cyrillic small letter a
		 marks the end of a chapter 			~ 1820 V first form (isolate)
1806	-	MONGOLIAN TODO SOFT HYPHEN			~ 1820 t first form (initial)
		 not a format control character, but simply a humb an factor and and an analysis 			~ 1820 • first form (medial)
		hyphen for Todo			~ 1820 / first form (final)
		 also used in the Hudum (modern Mongolian) writing system 			~ 1820 1808 5 second form (isolate)
		→ 00AD soft hyphen			~ 1820 180B = second form (medial) ~ 1820 180B second form (final)
1807	-	MONGOLIAN SIBE SYLLABLE BOUNDARY			\sim 1820 180C \uparrow third form (medial)
1001		MARKER	1821	1	MONGOLIAN LETTER E
1808	>	MONGOLIAN MANCHU COMMA	1021	.,	\rightarrow 044D \Rightarrow cyrillic small letter e
1809	>>	MONGOLIAN MANCHU FULL STOP			~ 1821 h first form (isolate)
AUS	-	MONGOLIAN NIRUGU			~ 1821 first form (initial)
Form		ntrols			~ 1821 • first form (medial)
180B	EY 81	MOINGGEONTINEE VARIATION SELECTOR ONE			~ 1821 🗸 first form (final)
1000	81	abbreviated FVS1			~ 1821 180B * second form (initial)
180C	FV S2	MONGOLIAN FREE VARIATION SELECTOR TWO			~ 1821 180B ; second form (final)
1000	82	abbreviated FVS2	1822	ĸ	MONGOLIAN LETTER I
180D	FV S3	MONGOLIAN FREE VARIATION SELECTOR			\rightarrow 0438 μ cyrillic small letter i
	Local Second	THREE			~ 1822 🛠 first form (isolate)
		 abbreviated FVS3 			~ 1822 🕆 first form (initial)
180E	M V S	MONGOLIAN VOWEL SEPARATOR			~ 1822 r first form (medial)
		 abbreviated MVS 			~ 1822 ^c first form (final)
Digits			1823	10	~ 1822 1808 r second form (medial)
1810	0	MONGOLIAN DIGIT ZERO	1023		MONGOLIAN LETTER O \rightarrow 043E o cyrillic small letter o
1811	0	MONGOLIAN DIGIT ONE			\sim 1823 to first form (isolate)
1812	à	MONGOLIAN DIGIT TWO			\sim 1823 \bullet first form (isolate) \sim 1823 \bullet first form (initial)
1813	02	MONGOLIAN DIGIT THREE			$\sim 1823 \sigma$ first form (medial)
1814	0	MONGOLIAN DIGIT FOUR			$\sim 1823^{\circ}$ first form (final)
1815	h,	MONGOLIAN DIGIT FIVE			~ 1823 1808 v second form (medial)
1816	G	MONGOLIAN DIGIT SIX			~ 1823 180B • second form (final)
1817	ົດ	MONGOLIAN DIGIT SEVEN	1824	10	MONGOLIAN LETTER U
1818	4	MONGOLIAN DIGIT EIGHT			\rightarrow 0443 y cyrillic small letter u
1819	G	MONGOLIAN DIGIT NINE			~ 1824 to first form (isolate)
					~ 1824 🐱 first form (initial)
					~ 1824 • first form (medial)
					~ 1824 🖲 first form (final)
					~ 1824 180B 🖝 second form (medial)
			1825	100	
					\rightarrow 04E9 Θ cyrillic small letter barred o
					~ 1825 to first form (isolate)
					~ 1825 ter first form (initial)
					~ 1825 r first form (medial)
					~ 1825 ^e first form (final) ~ 1825 1808 ज second form (medial)
					~ 1675 ISOR & Second form (medial)
					~ 1825 180B - second form (final)

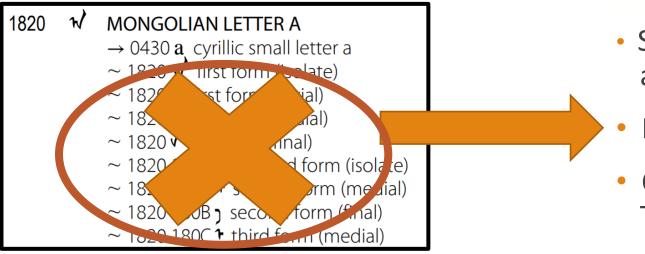
Names list



Including variant information in names list poses problems:

- Not the usual approach
- Can't capture all the details of writing system
- Hard to maintain
- Recommend a *different* approach

Names list



Unicode® Technical Notes

- Separate from Unicode publication and its publishing cycle
- Easy to edit
- Contents could become a Unicode Technical Standard, after community agreement

The Unicode Standard *also* includes information on characters' behavioral properties (such as line breaking, text segmentation, etc.)

Technical Reports	
	Unicode® Standard Annex #14
	UNICODE LINE BREAKING ALGORITHM
Version	Unicode 12.0.0
Editors	Andy Heninger (andy.heninger@gmail.com)
Date	2019-02-15
This Version	http://www.unicode.org/reports/tr14/tr14-43.html
Previous Version	http://www.unicode.org/reports/tr14/tr14-41.html

https://www.unicode.org/reports/tr14/

Character Approval and Support Process

Preparation of proposal

Example from a 2017 proposal to add one character:

MONGOLIAN LETER CHA WITH TWO DOTS Note that proposals should include evidence:

```
Fig. 2: Tsydendambaev 1972 р. 304

днакритический знак. Правда, стремление как-то разграничить бук-

вы g и k, омонимичные по своему изображению в классическом

монгольском языке (С · С · ), имеет известное основание: в жи-

вой речи они приобрели фонематические различия. В "Истории пере-

кочевки в Баргузин..." путем постановки точек справа от знака

sādhē ( ;) показано, что монгольская буква č в сурятском

язчке произносится как звук š.
```

https://www.unicode.org/L2/L2017/17007-n4781-mongolian.pdf

Preparation of proposal

Review by Unicode Script Ad Hoc



 Reviews proposals and makes recommendations to standards committees

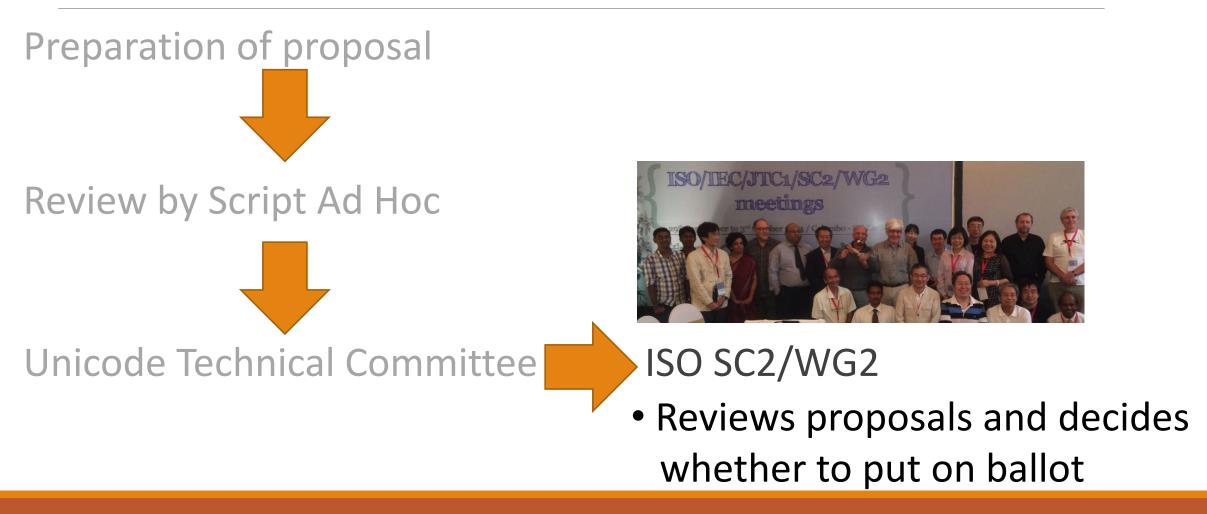
Preparation of proposal

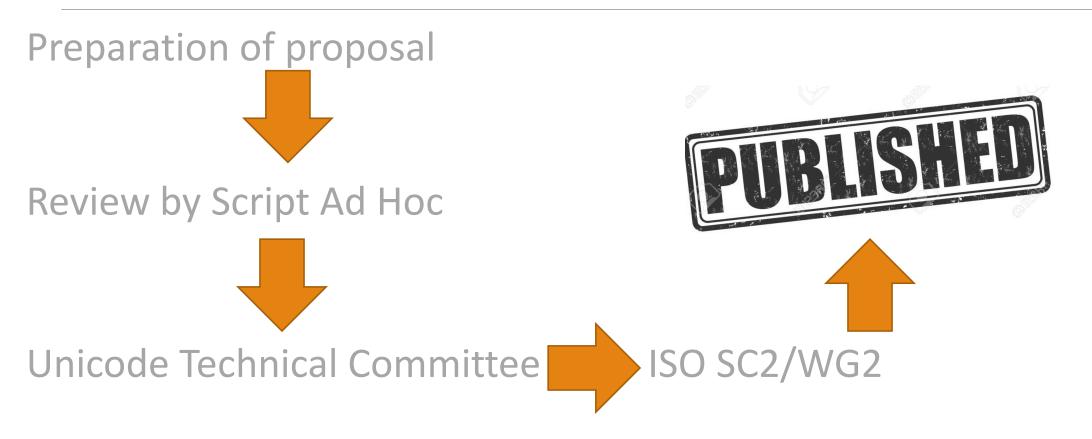
Review by Unicode Script Ad Hoc

Unicode Technical Committee

 Reviews proposals and makes decisions on proposals







Character Support Process

• After publication need:

Fonts and keyboard definition

D Ω M U Λ G ∂ L Q 0
▶ ♥ H I I I I → 1500 1524 1535 1521 1525 1521 1531 1538
Caps 9 ₹ \$ 7 ₹ > 7 ₹ > 7 ₹ 1824 1825 1820 1827 1823 1827 1823 1827 1823 1828
^① フリチネスタク Shift 1536 1534 1530 1822 1532 1538 ^① Shift
Ctrl WIN ALT

Locale data



Character Approval and Support Process - Summary

- Many steps are involved in getting characters approved
- Can take several years for characters to be approved and implemented on devices



Working together helps the process go smoothly

Character Approval and Support Process - Summary

- Many steps involved in getting characters approved
- Can take several years for characters to be approved and implemented on devices
- Working together helps the process go smoothly

Баярлалаа!