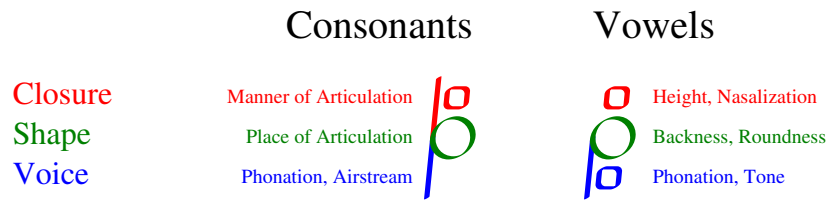


Yaps: Yet Another Phonetic Script

Teviet Creighton

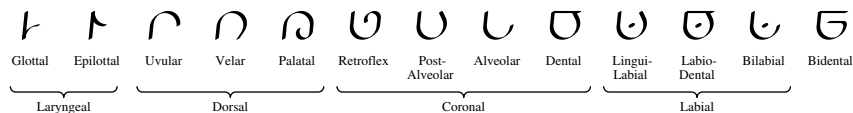
Yaps is a featural non-language-specific script for representing human speech. Like many such constructed alphabets, it is broadly inspired by Tolkien’s Tengwar writing system. Yaps follows particularly in the footsteps of scripts such as Belvar and Lierean, in that it seeks to represent all or most of the speech-sounds (*phones*) of the International Phonetic Alphabet. While lacking, say, Lierean’s calligraphic elegance, Yaps aims for a highly systematic – and somewhat iconic – arrangement of marks within each glyph.

Glyph Structure

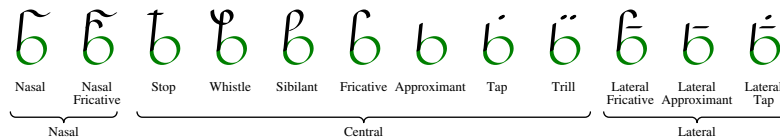


Consonants

Place of Articulation



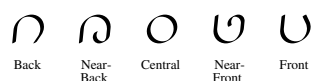
Manner of Articulation



Bare phonation (English “h”) can be represented as a glottal approximant. The “harder” h-sound in Arabic may be a true glottal fricative.

Vowels

Backness



Height

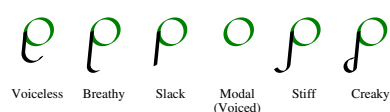


Tertiary Articulation

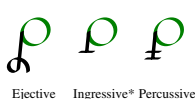


Voicing

Phonation: Pulmonic



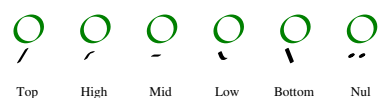
Non-Pulmonic



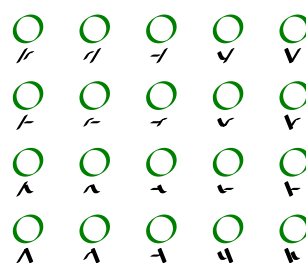
* Ingressives are always co-articulated with a glottal stop (*implosive*), or a velar or uvular stop or nasal (*click*).

Pulmonic phonation can apply to consonants and vowels, but most languages only distinguish voiceless and voiced *consonants*. Non-pulmonic phonation normally applies only to consonants.

Tones



Tone Contours



Tone marks go under vowels or syllabic consonants. Syllabic consonants with no other tone may be indicated with a null tone mark.

Tone contours may have additional tones, but more than 3 tones in a syllable is rare (and normally requires a *long* vowel).

Non-tonal languages may use tone marks to indicate intonation: ◌̎ for stress, ◌̍ for interrogative phrases, etc.

Finer pitch distinctions (e.g. melody) may be indicated in the voicing portion of the glyph, but Yaps does not at present specify musical notation.

Compounds and Punctuation

Extended Glyphs



* Includes aspiration, affrication, prenasalization, and diphthongs.

† Includes some semivowels, nasalized and doubly-articulated consonants, and intermediate (relative) articulations.

Affricates may optionally tie the “stop” stem to the fricative/sibilant glyph without repeating the place of articulation. E.g. $\text{tʃ} \rightarrow \text{tʃ}$ for $/tʃ/$.

Nasalized approximants may optionally use the vowel nasal mark in place of a co-articulated nasal occlusive. E.g. $\text{h̃} \rightarrow \text{h̃}$ for $/j̃/$.

Clicks with velar co-articulation may optionally omit the velar shape mark and combine the phonation stems. E.g. $\text{b}^{\text{h}} \rightarrow \text{b}^{\text{h}}$ for $/!/$.

Interglyphs

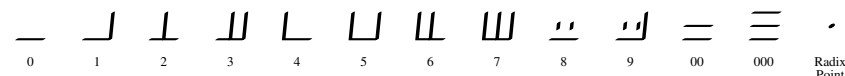


Other non-phonemic punctuation (e.g. parentheses, ellipses, quotation marks) may be imported from other scripts, until Yaps analogues are established.

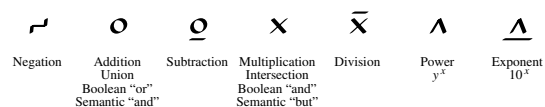
Ideograms

Ideograms from other scripts may be used alongside Yaps characters. Yaps also has its own ideograms for numerals and basic arithmetic.

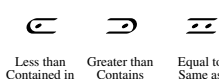
Numerals



Operations



Relations



E.g. the number 853,000,000 could be written as $\text{853} \text{000} \text{000}$, or in scientific notation as $\text{853} \text{000} \text{000}$.

IPA Charts

Pulmonic Consonants

	Labial			Coronal				Dorsal			Laryngeal	
	Bilabial	Labio-dental	Linguo-labial	Dental	Alveolar	Post-alveolar	Retroflex	Palatal	Velar	Uvular	Epi-glottal	Glottal
Nasal	$\overset{\circ}{m}$ Ṁ	$\overset{\circ}{m}$ Ṁ	$\overset{\circ}{m}$ Ṁ	$\overset{\circ}{n}$ Ṇ	$\overset{\circ}{n}$ Ṇ	$\overset{\circ}{n}$ Ṇ	$\overset{\circ}{ṇ}$ ṇ	$\overset{\circ}{ṇ}$ ṇ	$\overset{\circ}{ṇ}$ ṇ	$\overset{\circ}{ṇ}$ ṇ	$\overset{\circ}{ṇ}$ ṇ	
Stop	$\overset{\circ}{p}$ Ṁ	$\overset{\circ}{p}$ Ṁ	$\overset{\circ}{p}$ Ṁ	$\overset{\circ}{t}$ Ṁ	$\overset{\circ}{t}$ Ṁ	$\overset{\circ}{t}$ Ṁ	$\overset{\circ}{ṭ}$ ṭ	$\overset{\circ}{c}$ Ṁ	$\overset{\circ}{k}$ Ṁ	$\overset{\circ}{q}$ Ṁ	$\overset{\circ}{ʔ}$ ʔ	$\overset{\circ}{ʔ}$ ʔ
Sibilant				$\overset{\circ}{s}$ Ṁ	$\overset{\circ}{z}$ Ṁ	$\overset{\circ}{ʃ}$ Ṁ	$\overset{\circ}{ʂ}$ Ṁ	$\overset{\circ}{ç}$ Ṁ	$\overset{\circ}{ʁ}$ Ṁ			
Fricative	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{\theta}$ Ṁ	$\overset{\circ}{\delta}$ Ṁ	$\overset{\circ}{\theta}$ Ṁ	$\overset{\circ}{\delta}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{h}$ Ṁ	$\overset{\circ}{h}$ Ṁ
Approximant	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{v}$ Ṁ	$\overset{\circ}{v}$ Ṁ	$\overset{\circ}{\delta}$ Ṁ	$\overset{\circ}{\delta}$ Ṁ	$\overset{\circ}{\delta}$ Ṁ	$\overset{\circ}{\delta}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ
Tap	$\overset{\circ}{v}$ Ṁ	$\overset{\circ}{v}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ
Trill	$\overset{\circ}{B}$ Ṁ	$\overset{\circ}{B}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ	$\overset{\circ}{f}$ Ṁ
Lateral fricative				$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{h}$ Ṁ	$\overset{\circ}{h}$ Ṁ
Lateral approximant				$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ
Lateral tap				$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{l}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ	$\overset{\circ}{j}$ Ṁ

Non-Pulmonic Consonants

Ejective stop	$\overset{\circ}{p}$ Ṁ			$\overset{\circ}{t}$ Ṁ	$\overset{\circ}{t}$ Ṁ	$\overset{\circ}{t}$ Ṁ	$\overset{\circ}{c}$ Ṁ	$\overset{\circ}{k}$ Ṁ	$\overset{\circ}{q}$ Ṁ	$\overset{\circ}{ʔ}$ ʔ	
Ejective fricative	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{f}$ Ṁ		$\overset{\circ}{\theta}$ Ṁ	$\overset{\circ}{s}$ Ṁ	$\overset{\circ}{ʃ}$ Ṁ	$\overset{\circ}{ç}$ Ṁ	$\overset{\circ}{x}$ Ṁ	$\overset{\circ}{χ}$ Ṁ		
Ejective lateral fricative				$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ		
Nasal click	$\overset{\circ}{\phi}$ Ṁ			$\overset{\circ}{\theta}$ Ṁ	$\overset{\circ}{s}$ Ṁ	$\overset{\circ}{ʃ}$ Ṁ	$\overset{\circ}{ç}$ Ṁ	$\overset{\circ}{x}$ Ṁ	$\overset{\circ}{χ}$ Ṁ		
Click	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\theta}$ Ṁ	$\overset{\circ}{s}$ Ṁ	$\overset{\circ}{ʃ}$ Ṁ	$\overset{\circ}{ç}$ Ṁ	$\overset{\circ}{x}$ Ṁ	$\overset{\circ}{χ}$ Ṁ		
Lateral click				$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ	$\overset{\circ}{\chi}$ Ṁ		
Implosive	$\overset{\circ}{\phi}$ Ṁ	$\overset{\circ}{\beta}$ Ṁ		$\overset{\circ}{\theta}$ Ṁ	$\overset{\circ}{s}$ Ṁ	$\overset{\circ}{ʃ}$ Ṁ	$\overset{\circ}{ç}$ Ṁ	$\overset{\circ}{x}$ Ṁ	$\overset{\circ}{χ}$ Ṁ		

For each entry, glyphs on the left are unvoiced, right are voiced, top are IPA, bottom are Yaps equivalents.

Semivowels and Liquids

Approximant	Unvoiced	Voiced	Nasal	Syllabic
Glottal	h t	? ɸ	ḥ ẖ	
Pharyngeal		ʕ ħ	Ḥ ẖ	ɑ ŋ
Velar	ɰ k	w g	ṡ ḫ	ɯ ŋ
Palatal	j̥ ç	j̄ ɟ	j̃ ȝ	i̥ y̆
Post-alveolar		ɻ ʒ		ʁ, ʁ̥ ʁ̥
Lateral alveolar		l ɭ		ɭ̥ ɭ̥
Labio-velar	ɱ ɸ	w β	ṡ ẖ	u w̥
Labio-palatal	q̊ ɸ	q̄ β		y̥ w̥

Glyphs on the top are IPA, bottom are Yaps equivalents.

ASCII Mapping

The following keys allow Yaps glyphs to be entered feature-by-feature on a standard keyboard.

Consonants:

Place

ƒ ƚ ɸ ɨ ɥ ɬ ɮ ɳ ɹ ɻ ɿ ɾ
 H X Q K C R S Z D F V B P

Manner

ñ g t h s f p r l

Phonation

Interglyphs

[illegible]

Punctuation

$\circ \sim \circ, \circ \vee \circ \wedge \circ \vee$
 $\square \sim \square, \square \vee \square \wedge \square \vee$

Numerals

0 1 2 4 8 5 6 :

Vowels:

Backness

U O E I A

Height

ó ô ó õ ò ö o
w u y i e a

Tertiary

$\tilde{O}$ ωO Ω $\odot$
 m□ Y□ □J o□

Tones

/ (|) \ ;

Contours

Diagram illustrating the complexity of the naive algorithm for finding the maximum subarray sum. It shows four cases:

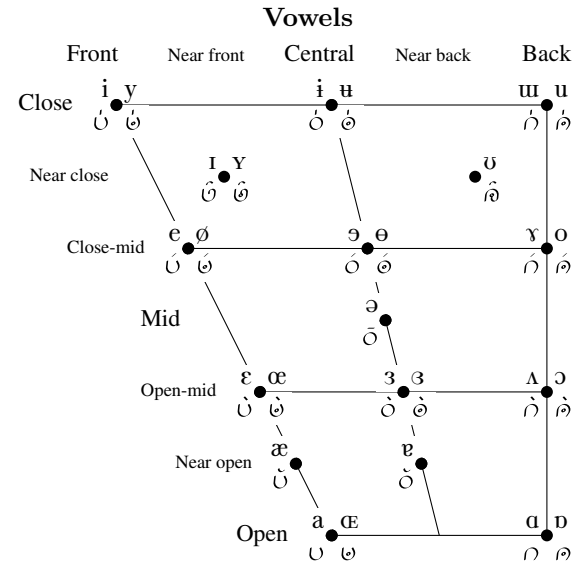
- Case 1: Array size 1. Subarrays: $[a_1]$. Complexity: $O(1)$.
- Case 2: Array size 2. Subarrays: $[a_1]$, $[a_2]$, $[a_1, a_2]$. Complexity: $O(2)$.
- Case 3: Array size 3. Subarrays: $[a_1]$, $[a_2]$, $[a_3]$, $[a_1, a_2]$, $[a_2, a_3]$, $[a_1, a_2, a_3]$. Complexity: $O(3)$.
- Case 4: Array size 4. Subarrays: $[a_1]$, $[a_2]$, $[a_3]$, $[a_4]$, $[a_1, a_2]$, $[a_2, a_3]$, $[a_3, a_4]$, $[a_1, a_2, a_3]$, $[a_2, a_3, a_4]$, $[a_1, a_2, a_3, a_4]$. Complexity: $O(4)$.

Relations

$$\begin{array}{ccc} \subset & \supset & \equiv \\ < & > & = \end{array}$$

Operations

^ ° ° × ¯x ^ ^
 - + - * % ^ #



At each point glyphs on the left are unrounded, right are rounded, top are IPA, bottom are Yaps equivalents.

Example

[illegible]

• ԴԱՆՏԵ ԴՆԵ ԿՈՆՏԵՆԵՐԵ ԼՍԻԵՆՍԻՍԵՐԵ ԴՆ ԽՈՆՏԵՆ ԼՍԻՍԵՐԵ

ASCII Entry:

```
oeUlZ vHC/wUnBiEnZ tB/wA~uInKsZ US tBoeUSnZ vfVSwA~
aAnZtZ /wA~vtKK@BiElZ uInZ tZ/uItKnZuIvtZwA aAnZtZ
SAuIvtZvsZ. fDyAuI US uInZtZ/AouOtZ K@BuIvfD
S/wA~sZiEnZ aAnZtZ vtK/oUnZvsSiEnZvsZ aAnZtZ vsSouOtZ
eAvtKvtZ vtZouOK@B/oeUStZsZ K@BeUnZ aAnZ/eUtZ;S uInZ
yAuI vsZvtB/wASuIvtZ eUfV tBS/eUfD;SvHouOtZ.

: /USvtZuIvtK;lZ 10 eUfV fDwA C/wUnZuIfV(SvsZ;lZ
tZ/eAvtKlZiES(yAuIvsSiEnZ eUfV vHC/wUnBiEnZ SAuIvtZvsZ
```

Broad IPA Transcription:

/ɔl 'hjumən 'bi:ɪŋz ɑɪ bɔ:m fɪ: ænd 'i:kwəl m 'dɪɡnɪtɪ ænd ɪ.arts.
 ðeɪ ɑɪ m'daʊd wɪθ 'ɪ:zən ænd 'kɒnfəns ænd fʊd ækt tʊ'wɔ:dz
 wʌn æn'ɒðə m eɪ 'spɪrɪt ʌv 'bɪ.ɒðə'hʊd.
 – ɑ:rtɪkl 1 ʌv ðɪ 'ju:nɪvəsl 'dekleɪfən ʌv 'hjumən ɪ.arts/

Translation:

All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.

– Article 1 of the Universal Declaration of Human Rights