Phon Manual

Contents

Introduction

Phon is a software program that greatly facilitates a number of tasks related to the analysis of transcript-based and acoustically-measured speech data. Built to support research in phonological development (including babbling), second language acquisition, and phonological disorders, Phon can also be used for virtually all types of phonological investigations (e.g. loanword phonology, fieldwork in phonology, sociolinguistic studies). Phon supports multimedia data linkage, unit segmentation (e.g. utterance, word), multiple-blind transcription, automatic labeling of data (features, syllabification), and systematic comparisons between target (model) and actual (produced) phonological forms. Phon is also equipped with many facilities for data analysis, including query methods for phonology (e.g. phones, features, syllables, …) as well as acoustic data.

Version 2 of Phon brings together two of the most important areas of empirical investigation in the are of child phonology, as it integrates transcript-based analyses of phonological data with the facilities for acoustic analysis provided by Praat. With this new version of Phon, and in addition to the functions listed above, the user can now:

- Import existing TextGrids into Phon sessions
- Generate TextGrids from existing Phon records
- Visualize TextGrids directly into Phon
- Send TextGrids to Praat for editing in a single click
- Run speech analysis functions directly from the Phon Query menu
- Export speech measurement data for further analysis

All of these functions are accessible through a user-friendly graphical interface. Databases managed within Phon can also be queried using a powerful search system adapted for the needs of the phonologist. This software program works on Mac OS X, Windows and Linux platforms and is compliant with the CHILDES (*TalkBank*) XML data format. Phon is being made freely available to the community as open-source software. Phon facilitates data exchange among researchers and is currently used for the elaboration of the shared *PhonBank* database, designed to support empirical needs of research in all areas of phonology and phonological development.

Current development of Phon and PhonBank is supported by the National Institute of Health. Earlier development of Phon was funded by grants from National Science Foundation, Canada Fund for Innovation, Social Sciences and Humanities Research Council of Canada, Petro-Canada Fund for Young Innovators, and the Office of the Vice-President (Research) and the Faculty of Arts at Memorial University of Newfoundland.

While it is impossible to name everyone who ended up being involved in one way or another in this project, we owe special thanks to a wonderful group of early adopters and beta testers, students and researchers alike, without whom it would have been much more difficult to produce the current software program. We are also grateful to Paul Boersma for this tremendous collaboration toward the interactions between Praat and related functions within Phon 2.

Document Conventions

The following conventions may be used in this document:

Table 1: Document Conventions

Symbol	Description
*	Zero or more
+	One or more
?	Zero or one
,	Separates two or more items
|	Indicates a choice

Symbol	Description
-	Negation
[ ]	Indicates required information, remove brackets when replacing
< >	Specifies type of information to be entered, remove angle brackets when replacing
" "	Indicates a user input to be entered
>	Indicates a menu hierarchy

IPA Transcription

IPA Transcription in Phon

This document describes how IPA transcriptions are parsed within Phon.

IPA Elements

Phone

Phones are the main unit of an IPA transcription. They are composed of a vowel or consonant (or *base glyph*) along with optional diacritics. Diacritics are of the following types: prefix (e.g., pre-nasalization), combining (e.g., devoicing), length, suffix (e.g., aspiration), and tone. The following sections outline each part of a single Phone.

Prefix Diacritic

A prefix diacritic must appear before the base glyph. A phone may have multiple prefix diacritics.

Base Glyph

The base glyph can be any IPA vowel or consonant.

Combining Diacritic

Combining diacritics must appear directly after the base glyph; any number of combining diacritics may be used. Combining diacritics may also be added to prefix and suffix diacritics.

Length

Phone length is indicated using character 0x02D0 (long) and 0x02D1 (half-long.) Length diacritics must appear after the phone to which they belong.

Suffix Diacritic

A suffix diacritic must appear after the base glyph. A phone may have multiple suffix diacritics.

Tone

Tone diacritics (such as upstep or tone numbers) must appear as the last element in a phone.

Note: Please consult *Listing of IPA Characters* on page 47 for a list of possible IPA elements and their character types.

Some Possible Phones	Description
t̪ʰ	Aspirated dental [t]
a:::¹	Triple-long [a], Tone 1
ⁿd	Prenasalised [d]
m̤̀u	Prenasalised, breathy voiced [u], with combining diacritic low tone

Compound Phone

Compound phones are the combination of two phones using a ligature symbol (either character 0x0361 or 0x035c) between them. Each of the two phones may include prefix, combining, suffix, length, or tone diacritics.

Some Possible Compound Phones	Description
bð̞	Combined production of [b] and [ð]
a͡ʊː	Diphthong [a͡ʊ] with second component sound lengthened

Pause (Intra-word)

Intra-word pauses are transcribed using a '^' symbol.

Table 2: Intra-word pauses

Orthography	Transcription
ca^che	ˈkæ^s

Pause (Inter-word)

Inter-word pauses in speech may be transcribed in one of three ways, depending on their length.

Table 3: Inter-word pauses

Code	Meaning
(.)	Short pause
(..)	Medium-length pause
(...)	Long pause

Table 4: Example

Orthography	Transcription
cache (.) cache	ˈkaʃ (.) ˈkaʃ

Stress Marker

Prosodically prominant syllables may be coded for primary or secondary stress. Primary stress is transcribed using a superior vertical stroke (0x2C8) preceding the syllable. Secondary stress is transcribed using an inferior vertical stroke (0x2CC) preceding the syllable.

Table 5: Some Examples

Orthography	Transcription
cake	ˈkeɪk
revoke	ɹəˈvoʊk
epiglottis	ˈɛpɪˌglɑɾɪs

Syllable Boundary

In cases where syllable boundaries may not be obvious, they can be transcribed with a period between syllables.

Table 6: Some Examples

Orthography	Transcription
re-enter	ˈɹiːˌɛntəɹ
sighing	ˈsaɪ.ɪŋ

Word Boundary

Boundaries between words are indicated via a space.

Table 7: Some Examples

Orthography	Transcription
ten cats	ˈtʰɛn ˈkæts
on the roof	ˈan ðə ˈɹuːf

Other Transcription Items

Intonation Group

Intonation groups are prosodic domains or units which include complete intonational contours. Intonation groups can be minor (e.g. corresponding to noun, verb, or prepositional phrases) or major (e.g. corresponding to entire sentences). Minor groups are separated by a single pipe symbol (0x1C0), and major groups are separated by a double pipe symbol (0x1C1).

Table 8: Some Example Intonation Groups

Minor	Major
the dog ǀ jumped ǀ over the fence	It's twelve o'clock ǁ It's time for lunch
the cold wind ǀ gusted strongly	I'm tired ǁ Let's go inside

Compound Word

Compound words are transcribed using a plus sign between each word.

Table 9: Some Possible Compound Words

Orthography	Transcription
dog+house	ˈdag+haʊs
picture+frame	ˈpɪkʧə+fɹeːm

Sandhi

Description of sandhi.

Linkers are symbols to express a phonological relation between two words, for example in the case of external sandhi phenomenon. For example, while 'an' and 'apple' for two separate words, the final 'n' of the determiner is syllabified within the onset of the following syllable. We represent this relations as 'an‿apple' [əˈnæpəl].

Contraction

A contraction is a combination of two words within a phrase, involving the reduction of one of the words. In Phon, contractions may be transcribed using the overtie character, `0x2040`.

Contraction

```
Orthography: [l'ami]
IPA Actual:  [l⁀ami]
```

Linkers (including Liaison)

Linkers are transcribed using the undertie character `0x203f`.

Liaison

```
Orthography: [les‿ami]
IPA Target:  [le‿zami]
```

Phonex

Introduction

Phonex is a pattern matching language for IPA transcriptions. It was developed for the *Phon* application as a method of searching for phones and phone sequences using termonology familiar with liguists, for example though the use of phonetic features and syllable constituent types.

This document is a reference to version 2.0 of the phonex language. The following sections outline the various constructs and extensions provided with the language.

Language Reference

Phonex Constructs

A summary of phonex 2.0 constructs.

Table 10: Phone matchers

Construct	Matches
x	The phone *x*. Matches regardless of diacritics.
x_y	The compound phone consisting of phones matched by *x* and *y*.
\u*nnnn*	The phone with unicode value *nnnn* as a hexadecimal number.
*	The * cover symbol.
\.	The . syllable boundary marker.
\+	The + compound word marker.
\^	The ^ intra-word pause maker.
'*s*'	The phone with text that matches the regular expression *s*
$\{f_0, f_1 ..., f_n\}$	The phone with features $f_0 \ldots f_n$

Table 11: Phone classes

Construct	Matches
[*xyz*]	*x*, *y*, or *z*
[^*xyz*]	Not *x*, *y*, or *z*

Table 12: Predefined phone classes

Construct	Matches
.	Anything
\c	Any consonant
\g	Any glide
\v	Any vowel
\p	Any intra-word pause (i.e., ^)
\P	Any inter-word pause (e.g., (.), (..), …)
\w	Any word character (i.e., consonants, vowels, syllable boundaries, and syllable stress)
\W	Any non-word character (i.e., any character not matched by \w, e.g., same as [-\w])
\s	Any stress marker

Table 13: Boundary matchers

Construct	Matches
^	Beginning of input
$	End of input
\b	A word boundary including beginning of input, end of input, and whitespace.
\S	A syllable boundary including 'forced' syllable boundaries such as beginning of input, end of input, and whitespace; and, if syllable constituent types are available, 'soft' syllable boundaries detected at syllable edges.

Table 14: Plug-ins

Construct	Matches
x:*plugin*('*s*')	*x* if, and only if, the plug-in matcher identified by *plugin* matches with expression *s*

Table 15: Quantifiers (greedy)

Construct	Matches
X?	*X*, once or not at all
*X**	*X*, zero or more times
X+	*X*, one or more times
X<*n*>	*X*, exactly *n* times
X<*n*,>	*X*, at least *n* times
X<,*n*>	*X*, zero to *n* times
X<*n*,*m*>	*X*, at least *n* but not more than *m* times

Table 16: Quantifiers (reluctant)

Construct	Matches
X??	*X*, once or not at all
*X**?	*X*, zero or more times
X+?	*X*, one or more times
X<*n*>?	*X*, exactly *n* times
X<*n*,>?	*X*, at least *n* times
X<,*n*>?	*X*, zero to *n* times
X<*n*,*m*>?	*X*, at least *n* but not more than *m* times

Table 17: Quantifiers (possessive)

Construct	Matches
X?+	*X*, once or not at all
*X**+	*X*, zero or more times
X++	*X*, one or more times
X<*n*>+	*X*, exactly *n* times
X<*n*,>+	*X*, at least *n* times
X<,*n*>+	*X*, zero to *n* times
X<*n*,*m*>+	*X*, at least *n* but not more than *m* times

Table 18: Grouping

Construct	Matches
(*X*)	*X*, as a *capturing* group

Construct	Matches
(?=*X*)	*X*, as a *non-capturing* group
(*name*=*X*)	*X*, as a *named, capturing* group. *name* may consist of letters and numbers, but must start with a letter.
n	The content matched by group *n*
(?<*X*)	Look behind and match *X* as a non-capturing group
(?>*X*)	Look ahead and match *X* as a non-capturing group

Phone Matchers

Various methods of matching phones using phonex 2.0.

As outlined in the Phonex Constructs section, there are several methods for matching phones in phonex. This section describes these methods in more detail.

Character matchers

Character matchers are defined by simply typing the character for the desired phone. Character matchers will match any phone with the specified *base-character* - regardless of attached diacritics. Characters can be also be written using their unicode values.

Table 19: Character matcher examples

Expression	Matches
`a`	The vowel a
`ba`	The consonant b followed by the vowel a
`\u0068`	The consonant h

Feature set matchers

Every IPA character can be described using a set of phonetic features. Feature set matchers are denoted by enclosing a list of feature names inside braces. Features contained within a phonex feature set matcher can be required (default) or unwanted (prefixed by − (minus)). Feature names are case-insensitive and can be written using the full feature name or shorthand equivalent (e.g., `{consonant}` is the same as `{c}`.)

Table 20: Feature set matcher examples

Expression	Matches
`{consonant, coronal}`	All coronal consonants
`{c, -coronal}`	All non-coronal consonants
`{}`	Anything

Regex matchers

Since IPA transcriptions are composed of unicode strings, regular expressions can also be used to match phones. To use a regex matcher, place the desired regular expression inside single quote characters.

Table 21: Regex matcher examples

Expression	Matches
`'a'`	The vowel a. Unlike the un-quoted version, 'a' will not match cases that have attached diacritics.
`'[e-i]'`	Characters in the range 'e' to 'i'.

Phone class matchers

Phone class matchers combine several phone matchers into a 'class.' Phone classes are denoted by enclosing a set of phone matchers inside brackets. The phone class will match if any of the inner-matchers match. If the phone class starts with a − (minus) symbol, then the class will match any phone *not* matched by the inner-matchers.

Table 22: Phone class examples

Expression	Matches
`[{glide}\v]`	Any glide or vowel.
`[^{c,labial}]`	Anything not a labial consonant or a vowel.

Compound phone matchers

Compound phones are composed of two single-phones bi-sected by a ligature. To match compound phones in phonex, connect two phone matchers using a _ (underscore) character.

Table 23: Compound phone matcher examples

Expression	Matches
`t_{fricative}`	Any compound phone starting with the consonant 't' and ending with a fricative.
`._.`	Any compound phone.

Groups

Grouping in phonex 2.0.

Groups can be *capturing* or *non-capturing*. *Capturing* groups are numbered by counting the open parenthesis from left to right in the expression. *Non-capturing* groups do not count towards the group total. For example, in the expression `(h({v}))(?={c}+({-c}))` there are three groups:

1. `(h({v}))`
2. `({v})`
3. `({-c})`

Group zero is always the entire expression.

Back-references can be used to match content previously matched by the expression. A common example is to search for a repeated consonant (e.g., `({c})\1`) or syllable (e.g., `({c}{v})\1`.) Content matched by a back-reference will *not* check syllable constituent type or stress, however plug-in matchers can be added to the back-reference like any other phone matcher.

Quantifiers can be applied to groups, and also affect the value stored in a group after matching. The following examples illustrate this.

Table 24: Grouping Examples

Expression	Input	Group Values after Match
`(\s?{c}{v})+`	zu'ki:ni	group 1 = ni
`((\s?{c}{v})+)`	zu'ki:ni	group 1 = zu'ki:ni, group 2 = ni
`((lastsyll=\s?{c}{v})+)`	zu'ki:ni	group 1 = zu'ki:ni, group 'lastsyll' = ni
`(?=(lastsyll=\s?{c}{v})+)`	zu'ki:ni	group 'lastsyll' = ni
`(cv1=\s?{c}{v})(cv2=\s?{c}{v})(cv3=\s?{c}{v})`	zu'ki:ni	group 'cv1' = zu, group 'cv2' = 'ki:, group 'cv3' = ni
`(cv1=\s?{c}{v})(rem=(?=\s?{c}{v})<2>)`	zu'ki:ni	group 'cv1' = zu, group 'rem' = 'ki:ni

Boundaries

Description of special boundary markers.

Boundary markers perform special operations. Since they have the ability to match nothing, quantifiers and plug-in matchers cannot be applied to boundary matchers.

Beginning/End of Input

The beginning and end of input characters ('^' and '$' respectively) match exactly what their names imply and should only appear at the beginning/end of a phonex expression.

Word Boundaries

Word boundaries detect and match the edges of words in the given input. Words boundaries are detected at the beginning/end of input as well as whitespace.

Syllable Boundaries

Syllable boundaries detect and match the edges of syllables in the given input. Syllable boundaries are detected at the beginning/end of input, whitespace, ipa punctuation (stress, pauses, periods, etc.), and - if available - using syllabification information. When reading an input string from left to right, if a space and stress marker are adjacent then the syllable boundary will match *once* (i.e., only one syllable boundary is detected - not two.)

Quantifiers

Description of phonex quantifiers.

Quantifiers modify the number of times a phone matcher or group can be repeated. Quantifiers are always applied to the preceeding matcher or group. There are three types of quantifiers in phonex: *greedy*, *reluctant*, and *possessive*.

Greedy quantifiers are such called because they attempt to match the entire input on first match. If the match fails, the matcher backs off one phone at a time until a match is obtained or until the number of choices has been exhausted.

Reluctant quantifiers do the opposite; they will reluctantly process phones, only attempting a full input match as a last resort.

Possessive quantifiers never back off; they will always process as many phones as possible, never attempting to backtrack - even if doing so would allow the match to succeed.

To illustrate the difference between different quantifiers, considier the following examples using the input string: hello.

Table 25: Greedy vs. Reluctant Quantifiers

Expression	Finds
`.*\v` *(greedy)*	1 occurrences - hello
`.*?\v` *(reluctant)*	2 occurrences - he, llo
`.*+\v` *(possessive)*	0 occurrences since '.*+' initially matches the final 'o' in the input and will not backtrack

Look Ahead/Behind

Look ahead/behind in phonex allows matching based on adjacent elements. The elements matched by the look ahead-beind groups will not be included in the returned value. Look ahead groups will start with the sequence `(?>` while look behind groups will start with the sequence `(?<`.

One case where this feature is useful is when searching for patterns medially within transcriptions. For example, to seach for all word-medial consonants:

```
(?<\w)\c(?>\w)
```

This example has main parts:

1. `(?<\w)` *look behind* the current element and match if it is a consonant or vowel
2. `\c` match if the current element is a consonant
3. `(?>\w)` *look ahead* of the current element and match if it is a consonant or vowel

Supplementary Matchers

Overview

Supplementary matchers in phonex 2.0.

One or more supplementary matchers can be attached to a phone matcher, separated by a `:` (colon). Each supplementary matcher may take zero or more arguments, defined by the supplementary matcher. The following sections describe the supplementary matchers provided with Phon.

stress

Description of the phonex `stress` supplementary matcher.

The `stress` supplementary matcher will query the detected syllable stress of a phone. The argument given to the plug-in must be one of the following characters:

- `1` - primary stress
- `2` - secondary stress
- `A` - any stress
- `U` - unstressed

The `stress` matcher has a short-hand withing phonex. The stress type may be specified after a `!` character after a phone matcher.

Onsets of primary stress syllables

```
.:sctype("Onset"):stress("1")
```

or

```
.:O!1
```

sctype

Description of the phonex `sctype` supplementary matcher.

The `sctype` supplementary matcher queries the syllable constituent type of a phone. The expression given to the matcher must be a list of syllable constituent types from the following list, separated by a `|` (pipe.)

- `LeftAppendix` or `L`
- `Onset` or `O`
- `Nucleus` or `N`
- `Coda` or `C`
- `RightAppendix` or `R`
- `Ambisyllabic` or `A`
- `OEHS` or `E`
- `SyllableStress` or `S`
- `SyllableBoundary` or `B`
- `WordBoundary` or `W`
- `Unknown` or `U`

All constituent types are case-insensitive. Constituent types can also be prefixed by a `-` (minus) to indicate the constituent type is not-allowed.

The `sctype` matcher also has a shorthand within phonex. A single consitutuent type may be queried on a phone matcher by specifying one of the single-character codes shown above prefixed by a `:`.

Both of these expressions will search for 'b' in the onset position:

```
b:sctype("Onset")
```

or

```
b:O
```

diacritic

Description of the phonex `diacritic` supplementary matcher.

The `diacritic` supplementary matcher queries the diacritic sections of a phone. It accepts a single parameter which can be either:

- A single character
- A feature set matcher
- A phone class matcher

The matcher will match if any of the diacritics of the phone match the provide argument. This matcher also has a short-hand within phonex, the argument provided may be specified by using the `&` character after a phone matcher.

Search for any phone that has a diacritic.

```
.:diacritic("{}")
```

or

```
.&.
```

Both of these expressions will search for any phone with the diacritics which add the `{labial}` or `{aspirated}` features.

```
.:diacritic("[{aspirated}{labial}]")
```

or

```
.&[{aspirated}{labial}]
```

prefix

Description of the `prefix` supplementary matcher.

The `prefix` supplementary matcher queries the prefix section of a phone. It accepts a single parameter which can be either:

- A single character
- A feature set matcher
- A phone class matcher

The matcher will match if any of the diacritics of the phone match the provide argument.

Search for a phone with the prefix diacritic `\u02b0`

```
.:prefix("\u1d50")
```

suffix

Description of the `suffix` supplementary matcher.

The `prefix` supplementary matcher queries the prefix section of a phone. It accepts a single parameter which can be either:

- A single character
- A feature set matcher
- A phone class matcher

The matcher will match if any of the diacritics of the phone match the provide argument.

Search for a phone with the suffix diacritic `\u02b0`

```
.:suffix("\u02b0\")
```

comb

Description of the `comb` supplementary matcher.

The `comb` supplementary matcher queries the combining diacritic section of a phone. It accepts a single parameter which can be either:

- A single character
- A feature set matcher
- A phone class matcher

The matcher will match if any of the combining diacritics of the phone match the given argument.

Search for a phone that has the combining diacritic `\u0300`

```
.:comb("\u0300")
```

tone

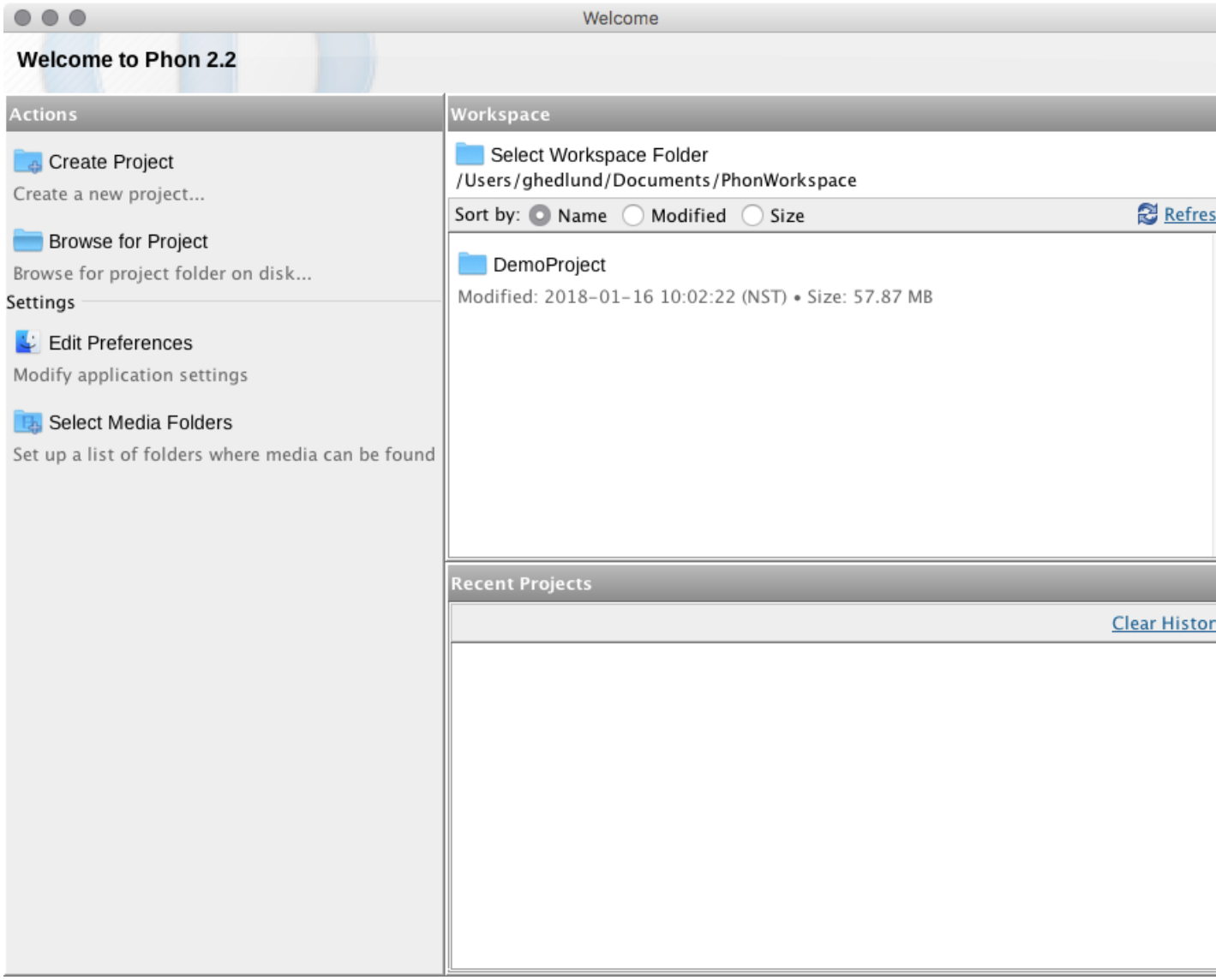
Description of the `tone` supplementary matcher.

The `tone` supplementary matcher queries the detected tone of the phone. The superscript number diacritics for tone apply to all elements of a syllable. One argument is accepted denoting the allowed tones accepted, with multiple allowed values separated by a '|'. The numbers 1-9 may be used to identifiy tone type with '*' being any tone.

Search for a cluster of phones with tone 1

```
.:tone("1")+
```

Welcome Window



The *Welcome* window is the first window displayed when opening *Phon*. It is divided into three sections: Actions, Workspace, and Recent Projects.

Actions

Create Project

Create a new *Phon* project.

From the **Workspace** window:

1. Click the **Create Project** button in the **Workspace Actions** pane.
   A text field will appear in which you can enter a project name.
2. If you do not wish to create a project at this time, click **Cancel create new project/X** or press `ESC`. Otherwise, type a name for your project and click the **Create new project in workspace/+** button or press `Enter`.

This action will save the project in your current workspace folder and open it in the **Project Manager**.

Open Project

Open an existing *Phon* project.

From the **Workspace** window:

If the project is in your current workspace folder, click on it in the **Project List**, or right-click (`CMD/CTRL +click`) and choose **Open project** from the context menu. If the project is not in your current workspace folder, click the **Browse for Project** button in the **Other Actions** pane, locate the project using the resulting dialog and click **Open**.
The **Project Manager** window will appear.

Note: If the project was created using an earlier version of *Phon* (and is a *.phon* or *.zip* file), you must extract the project before you can open it (see *Extract Project* on page 23 for instructions).

Workspace

Workspace Folder

The *Phon* workspace is the default location for *Phon* projects. Operations which are available from the **Welcome** window (such as creating, extracting, or archiving projects) affect files in the workspace folder. The default workspace folder is `<userhome>/Documents/PhonWorkspace`.

The workspace folder may contain a folder called '*backups*'. Compressed *Phon* projects are moved to this folder when they are archived or extracted from the workspace folder.

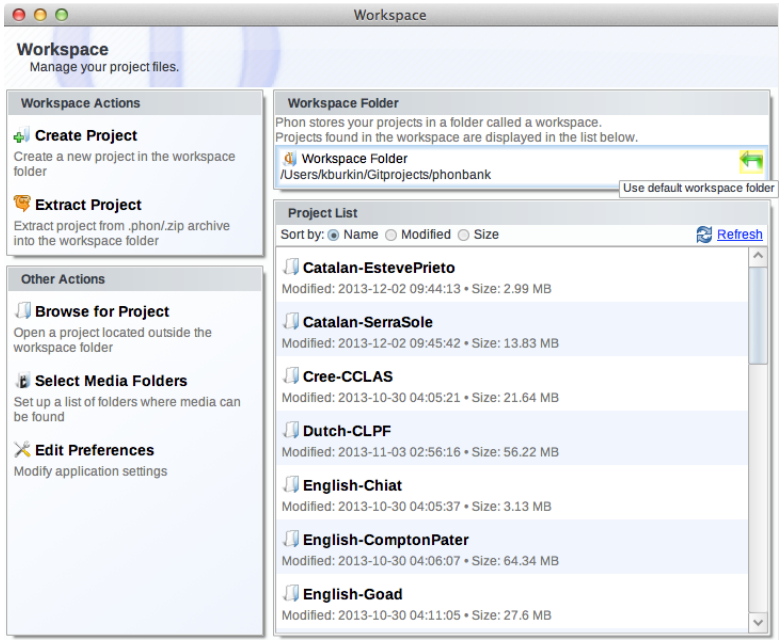
Change Workspace Folder

Change the default workspace folder.

From the **Workspace** window:

1. Click the specified folder name in the **Workspace Folder** pane.
   A **Browse** window will appear.
2. If desired, click **New Folder** to create a new directory in the current location. Browse to the appropriate directory and click **Open**.
   The chosen directory will be your new workspace folder.

Note: To reset the workspace folder to its default location, mouse over the specified **Workspace Folder** and click the **Use default workspace folder** button on the right.

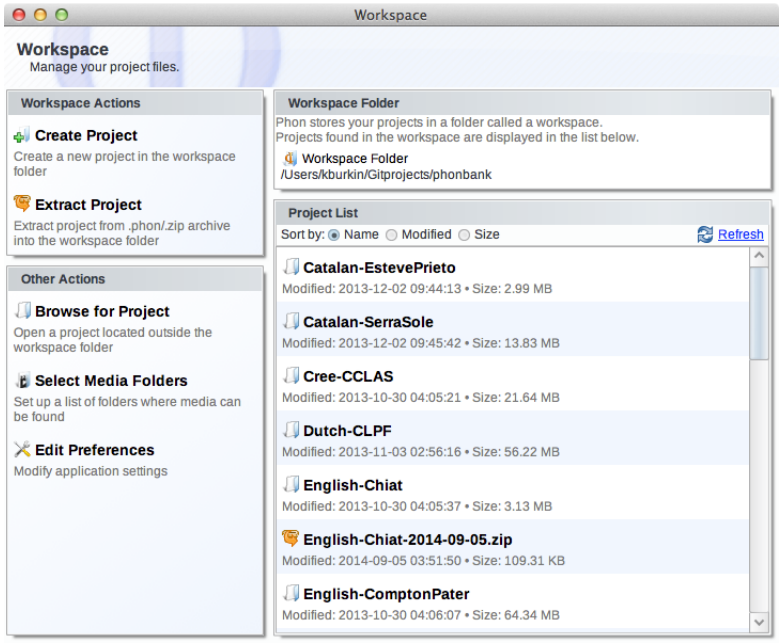


Project List

The **Project List** pane displays the projects that are located in the current workspace folder.

This pane lists expanded projects (see *About Project File Structure* on page 26) with a folder icon next to them, and compressed projects with an orange arrow next to them.

Compressed projects may be expanded by clicking on them in the list, or by right-clicking (`CTRL+click`) and choosing **Extract project** from the context menu.

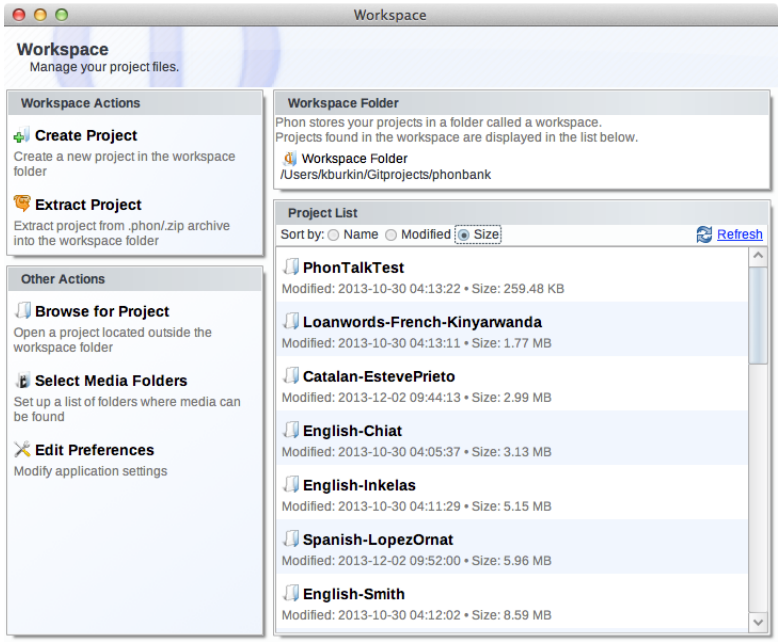


Sort Project List

Sort the **Project List** in the **Workspace** window by name, date modified, or size.

From the **Workspace** window:

To sort the **Project List** by name, click **Name** in the **Sort by** field of the **Project List** pane. To sort by date modified, click **Modified**. To sort projects by their size on disk, click **Size**.



Your projects will appear in the **Project List** pane in the order specified.

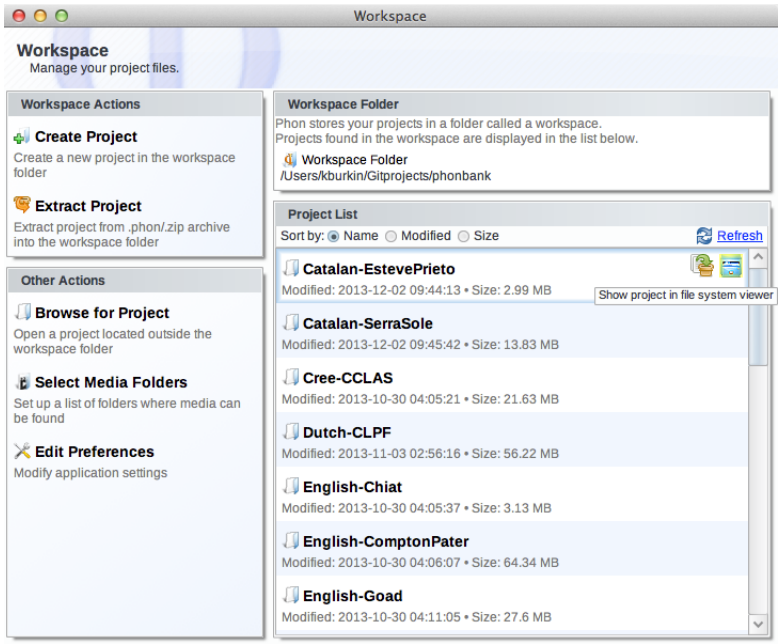
Note: When sorting by name, projects that start with uppercase letters will be sorted before ones with lowercase letters.

Show Project in File System Viewer

Show a project's location using your computer's file system viewer.

From the **Workspace** window:

1. Mouse over the project you wish to archive in the **Project List** pane.
   Two buttons will appear next to your project name; **Create .zip archive of phon project...** and **Show project in file system viewer**.



2. Click **Show project in file system viewer**. Alternately, right-click (`CTRL+click`) on your project and choose **Show project** from the context menu.
   Your computer's file system viewer will open to the folder containing your project, which will be highlighted.

Open Project

Open an existing *Phon* project.

From the **Workspace** window:

If the project is in your current workspace folder, click on it in the **Project List**, or right-click (`CMD/CTRL +click`) and choose **Open project** from the context menu. If the project is not in your current workspace folder, click the **Browse for Project** button in the **Other Actions** pane, locate the project using the resulting dialog and click **Open**.
The **Project Manager** window will appear.

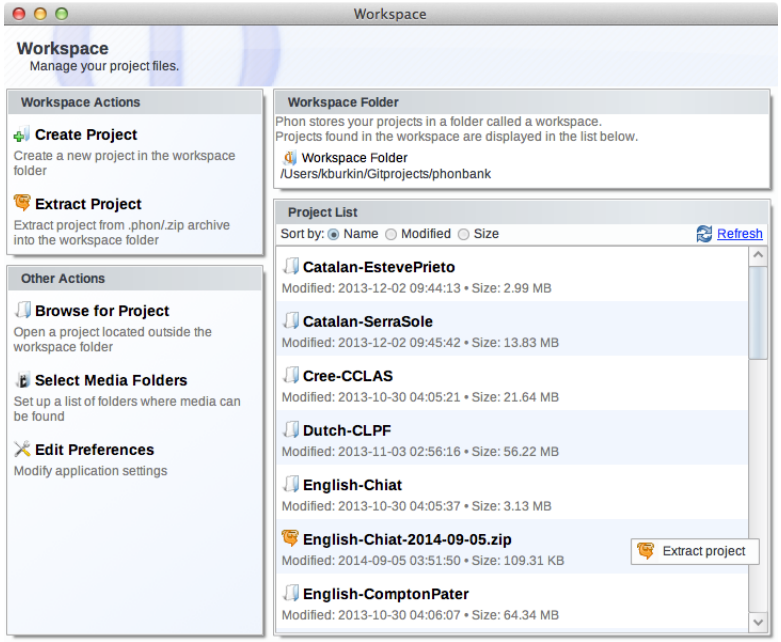
Note: If the project was created using an earlier version of *Phon* (and is a *.phon* or *.zip* file), you must extract the project before you can open it (see *Extract Project* on page 23 for instructions).

Extract Project

Expand an old *.phon* or *.zip* project for use with the current version of *Phon*.

From the **Workspace** window:

Click on a compressed project in the **Project List** pane to extract it to a directory in your workspace folder, or right-click (`CTRL+click`) on it and choose **Extract project** from the context menu.



The project will be extracted to the workspace folder, and it will appear as an expanded (regular) project in the **Project List**. The original compressed project will be moved to the *backups* folder in your workspace.

Note: If the compressed project is not located in your current workspace folder, click **Extract Project** in the **Workspace Actions** pane, find and select the project in the **Browse** window, and click **Open**. This will extract the compressed project to your workspace folder. Original compressed projects extracted from locations outside the workspace folder will not be moved to the *backups* folder.

Recent Projects

A second project list is displayed below the Workspace section of the *Welcome* window which displays a list of recently opened projects. A button to clear the recent project history is shown in the top-left portion of the list.

Preferences

Change *Phon* preferences.

1. From any *Phon* window, choose the **Edit** > **Preferences** (`CMD/CTRL+,`) menu item, or from the **Workspace** window, click the **Edit Preferences** button in the **Other Actions** pane.
   The **Preferences** dialog will appear.
2. From the **General** tab of the **Preferences** dialog, choose whether to **Check for updates when application starts** using the check box. You may also choose to re-enable any disabled information messages in the Phon interface by clicking **Reset Information Messages**.
3. From the **Session Editor** tab, you may change the settings for *Dictionary Language*, *Syllabifier Language*, and *Autosave Sessions* as you see fit.
4. From the **Media** tab, specify any default media folders you wish to use, following instructions in *Change Default Media Folders* on page 25.
5. From the **Fonts** tab, change font sizes or options for different fields.
6. When you are finished editing preferences, simply close the **Preferences** dialog. If a session was already open before the preferences were changed, close and reopen that session in order to implement the changes.

Autosaves

To prevent loss of data in the event of an unexpected shutdown, *Phon* has the option of auto-saving sessions at regular intervals. Session autosaves are named with the '__autosave_' prefix.

If an unexpected shutdown occurs and the user was unable to save changes to a session, the next time an auto-saved session is opened *Phon* will prompt the user to open the session in either its last user-saved state, or its last auto-saved state.

To use the auto-saved session as the main session file, open it and then save it.

To change the interval between autosaves, open the **Preferences** dialog. In the **Session Editor** tab, click on the menu in the **Autosave Sessions** field and choose the desired time interval.

To de-activate the autosave option, select **Never** as the autosave interval.

Change Application Fonts

Change tier fonts and/or user interface (UI) fonts.

From the **Fonts** tab of the **Preferences** dialog:

1. Click the font listed underneath each UI element to change it.
   The **Choose font** dialog will appear.
2. Choose the desired **Font** and **Size**, select **Bold** and/or **Italic** if required, then click **Ok**.
   The font displayed in **Session Editor** will reflect your choices.
3. Adjust size for all UI fonts using the slider.

Note: To reset default options for a UI element, mouse over that element and click the **Reset to default** button which appears on the right.

Change Dictionary Language

Change the default **Dictionary Language** for use within sessions.

From the **Session Editor** tab of the **Preferences** dialog:

Click the **Dictionary Language** combo box and select the appropriate language.

Change Syllabifier Language

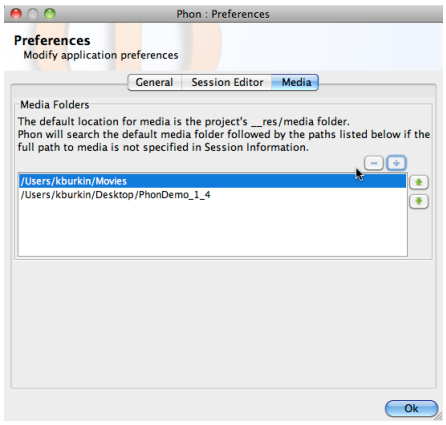
Change the default **Syllabifier Language** for use within sessions.

From the **Session Editor** tab of the **Preferences** dialog:

Click the **Syllabifier Language** combo box and select the appropriate language.

Media Folders

A list of *Media Folders* can be set up using the **Media** tab of the **Preferences** dialog. *Phon* will look at each of these folders (in the order in whicy they appear) for media files.



The media folders can be internally structured to match *Phon's* project/corpus layout. *Phon* will search the following locations for media (where <media> is the media folder defined in **Preferences**, <project> is the project name, <corpus> is the corpus name, and <session> is the session name):

- <media>/<project>/<corpus>/<session>.[aif;avi;mov;mpg;mp4;wav;mp3;m4a;...]
- <media>/<project>/<session>.[...]
- <media>/<corpus>/<session>.[...]
- <media>/<session>.[...]

If the **Media** field in the **Session Information** view of the **Session Editor** has been manually changed:

- if the path is absolute (or fully-specified), the above rules are ignored and the media file is loaded from the specified path
- if the path is relative, the value of '<session>' above is replaced by the value in the media field.

Change Default Media Folders

Change the default location for project media.

From the **Workspace** window:

1. Click the **Select Media Folders** button in the **Other Actions** pane.
   The **Preferences** dialog will open, with the **Media** tab selected.

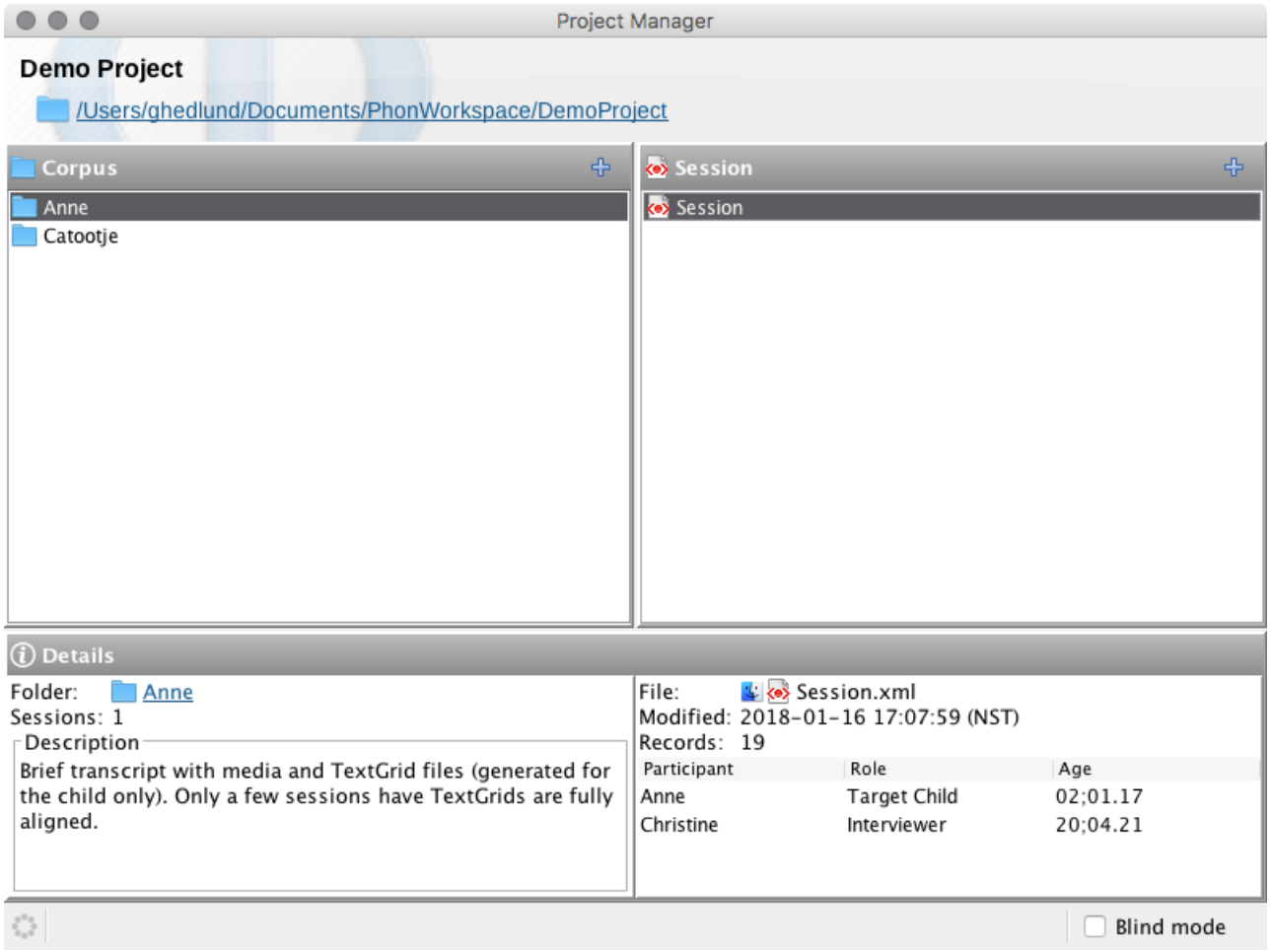
   Note: This tab is accessible from any *Phon* window by choosing the **Edit** > **Preferences** menu item and selecting **Media** from the **Preferences** dialog.
2. Click the **Add folder to list.../+** button, locate the desired folder in the resulting **Browse** window and click **Open**.

The selected folder will appear in the **Media Folders** field.

3. Repeat Step 2 for all desired media folders.
4. To sort the list of media folders by priority, select a folder from the list and click the **up/down arrows** to the right of the **Media Folders** field.
   If media files in two or more default media folders have the same name, the ones in the lower-priority folders will be displayed in **Session Information** with their full path.

Project Manager

The *Project Manager* window is displayed when you open a project from the *Welcome* window or by using the `File -> Open` menu item.



About Project File Structure

Phon projects are stored on a hard drive as directories.

The directory for each project will contain the following:

- A *project.xml* file which contains the information *Phon* requires for the project.
- A series of folders which correspond to each of the project's *corpora* (usually a collection of transcribed sessions for a specific target speaker).

- Within each corpus folder are a series of xml files corresponding to each session. The xml files which are named beginning with '~' are session autosaves, created in order to prevent loss of data in the event of an unexpected shutdown.

The directory for each project may also contain the following:

- A project resources folder called '*__res*', which is a system directory created by *Phon* to contain useful components for the project. This folder may contain:
  - A media folder, which is the default location for the media for the project and may contain media segments exported from *Phon*.
- A folder to contain saved query results, called '*__search*'.

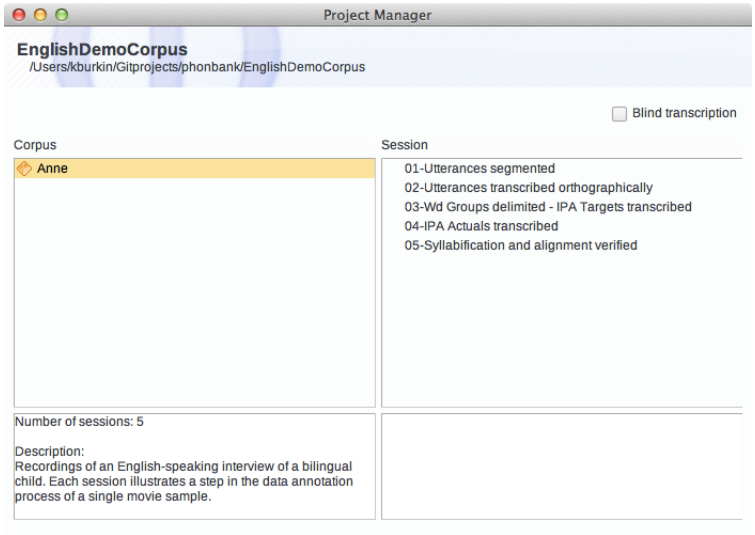
Note: Projects created using earlier versions of *Phon* may exist as *.phon* files. These projects will need to be extracted (i.e. expanded to directories using the **Workspace** window) to be used with the current version of *Phon*.

About Corpora

Within a project, individual transcripts (or *sessions*) are organized into a series of one or more *corpora*.

Each corpus typically contains a series of sessions relating to one specific participant in a study. The corpus may contain as many sessions as desired for that participant, spanning any length of time. This allows the user to easily search all transcripts relating to one participant, by searching within the relevant corpus.

When a corpus is selected, the number of sessions and a description of that corpus is displayed at the bottom of the list of corpora.



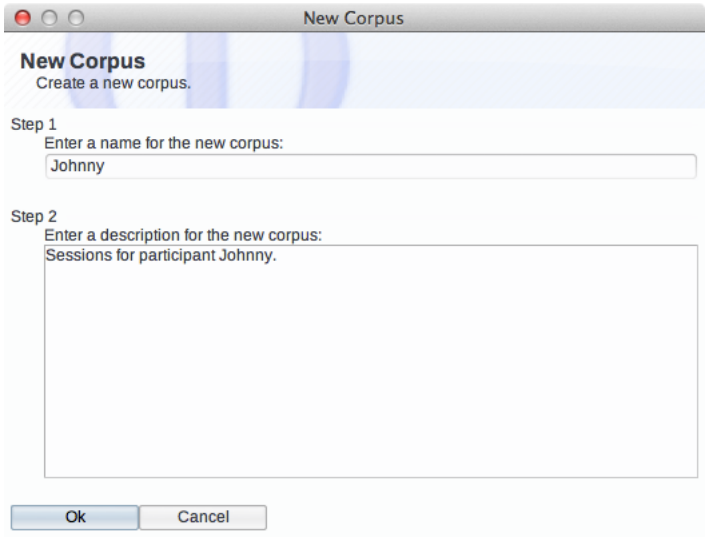
Create Corpus

Create a new corpus in an existing project.

First, a project must be open.

From the **Project Manager** window:

1. Choose the **Project** > **New Corpus...** menu item.
   The **New Corpus** dialog will appear.



2. Enter a name (and optionally a description) for the new corpus. Click **Ok**.
   This creates a new corpus with the specified name inside the open project. An error message will appear if a corpus with that name already exists.

   Note: You may return to edit the description at any time by clicking on the corpus name in the **Project Manager** and typing a description in the field below the *Corpus list*.

Duplicate Corpus

Dupliate a corpus folder in your project.

From the **Project Manager** window:

Right-click (`CTRL+click`) on the corpus you wish to duplicate and choose **Duplicate Corpus** from the context menu.
The corpus folder will be duplicated with an integer suffix (e.g., '(1)') appended.

Edit Corpus Template

Set default participants and tiers for all sessions to be created in a corpus.

From **Project Manager** window:

1. Right-click (`CTRL+click`) on the corpus whose template you wish to edit and select **Edit corpus template...** from the context menu.
   A **Session Template** window will appear for the selected corpus, showing the **Session Information** and **Tier Management** views.
2. Edit options as you see fit. Close this window when you are finished making changes.
   These settings will be applied to any sessions subsequently created within the corpus.

   Note: For further instructions on how to specify information in the **Session Information** and **Tier Management** views, consult *Input Session Language* on page 40, *About Participants*, *Link Media to Transcript* on page 40, *Edit Tier Display Options*, and other related pages.

Rename Corpus

Rename a corpus in your project.

From the **Project Manager** window:

1. Right-click (`CTRL+click`) on the corpus you wish to rename and choose **Rename Corpus** from the context menu.
   The **Rename Corpus** window will appear.

2. Follow the instructions in the **Rename Corpus** window. If you are unsure whether you want to rename your corpus, click **Cancel**. To continue and rename the corpus, click **OK**.
   You will return to the **Project Manager** window and the corpus will be renamed accordingly.

Delete Corpus

Delete a corpus in your project.

From the **Project Manager** window:

1. Right-click (`CTRL+click`) on the corpus you wish to delete and choose **Delete Corpus** from the context menu.
   A dialog will appear asking you to confirm whether you would like to delete this corpus and informing you that this action cannot be undone.
2. If you are unsure, click **No**. To continue and delete the corpus, click **Yes**.
   The deleted corpus will no longer appear in the **Project Manager** window.

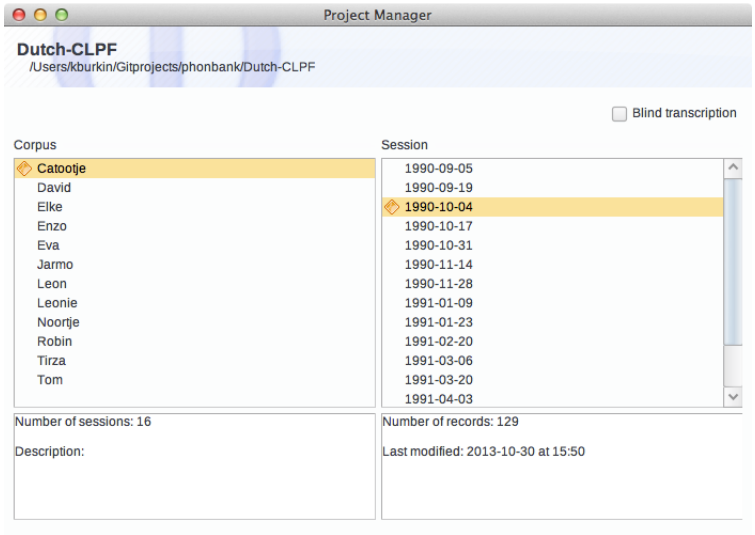
About Sessions

A session in *Phon* is a transcript of a portion of field data targeting one or more participants in a project.

Phon is designed to facilitate the transcription of media recordings (audio or video) taken of participants in a study. As such, a *Phon* session usually corresponds to one media recording and the transcript of this recording.

A session is organized into a series of records which correspond to individual utterances.

Sessions can be viewed in the **Project Manager** window. When a session is selected, the number of records in that session and the date it was last modified are displayed at the bottom of the list of sessions.



Create Session

Create a new session in an existing corpus.

A project with at least one corpus must be open.

From the **Project Manager** window:

1. Select the **Project** > **New Session** menu item, or right-click (`CTRL+click`) in the **Corpus** list.
   The **New Session** dialog will appear.
2. Enter a name for the new session, choose the destination corpus and click **Ok**. If you require a new corpus for the new session, click the plus sign to the right of the corpus selection field and enter the new corpus information as per the description at *Create Corpus* on page 27, and then select this new corpus as your destination.

The new session will be created in the specified corpus and opened for editing. An error message will appear if a session with that name already exists.

Note: Each new session is created with an empty record at the beginning of it.

Open Session: Default Mode

Open a session in the default mode.

From the **Project Manager** window:

Ensure that the **Blind transcription** box is deselected to open a session in default mode. Click the desired corpus, and double-click on the session that you would like to transcribe.
The selected session will open in the **Session Editor**.

Open Session: Blind Transcription

Transcribe in multi-blind mode.

From the **Project Manager** window:

1. Select the **Blind transcription** check box and double-click on the session that you would like to transcribe.
   This will open a dialog prompting you to indicate whether you are a new or existing transcriber.
2.
   - If you are a new transcriber, choose the first option and enter your full name as well as a username. If you wish to use a password, select **Use password** and enter your chosen password into the two fields provided (the text in both fields must match). There is no password reminder function in *Phon*. Ensure that your password is memorable or store it in a safe location. Click **Ok** to continue.
   - If you are a returning transcriber, choose the second option and select your username from the list. If you have chosen to use a password, you will be prompted to enter that password now. Do so and click **Ok**.

   This will open the **Session Editor** window.

   Note: Upon opening a session for the first time, there will be an empty record at the beginning of each session.

Duplicate Session

Create a copy of a session within the corpus that contains it.

From **Project Manager** window:

Right-click (`CTRL+click`) on the session you wish to duplicate, and choose **Duplicate Session** from the context menu.
A duplicate of your session, with the suffix "(copy)" will appear in the **Project Manager**.

Derive Session

Derive a new session using records from existing sessions.

From the **Project Manager** window:

1. Choose the **Project** > **Derive Session...** menu item.
   A **Merge Sessions** dialog will appear.
2. Enter a **Session name** and Destination **Corpus** in the provided fields. Select one or more of the sessions for the split or merge and click **Next**.
   The second page of the **Merge Sessions** dialog will appear.

   Note: If you chose only one session, the selected records will be put into the new session. If you select more than one session, the selected records will be merged into a new session.
3. Select a session from the **Session** list at the left and choose whether to merge or split **All records**, a subset of **Specific records**, **Records for participant(s)** or **Records from Search results**. Repeat this process for all sessions in the **Session** list. Click **Next**.
   This will begin the merging of the selected records/sessions.

Note: If you choose to merge only specific records, you will have to specify the relevant record numbers. To specify several individual records, separate them with a comma and a space. To specify a range, separate the beginning and end record numbers with two periods and a space. If you choose to merge records for specific participants, you must select the participants from the list. If you choose to merge records from search results, you must select a past search from the list.

4. Once the *Session Merger shutdown* alert appears, click **Close**.
   The newly derived session will appear in the specified **Corpus** in the **Project Manager**.

Move Session

Move a session to a different corpus.

From **Project Manager** window:

Right-click (`CTRL+click`) on the session you wish to move, choose **Move Session To** from the context menu, and click on the corpus you wish to move your session to.
A dialog will appear asking you to confirm that you would like to delete the session from its original location. Click **Yes**. Your session will be moved to the selected corpus.

Note: You may move your session to a corpus within the current project, to another open project, or to any project in your workspace folder.

Rename Session

Change a session name in your project.

From **Project Manager** window:

1. Right-click (`CTRL+click`) on the session you wish to rename, and choose **Rename Session** from the context menu.
   The **Rename Session** window will appear.
2. Follow the steps in the **Rename Session** window and click **OK**.
   You will be returned to the **Project Manager** window, with the session renamed.

Copy Session to Disk/Other Application

Save a copy of a session to a location outside your project.

From **Project Manager** window:

1. Select the sessions you wish to copy in the **Project Manager** window.
2. Drag the selected sessions from the **Project Manager** window to a location on your host computer. (e.g., To the Desktop, an open folder in explorer/Finder, or an open application such as a mail client.)

Delete Session

Remove a session from your project.

From **Project Manager** window:

1. Right-click (`CTRL+click`) on the session you wish to delete, and choose **Delete Session** from the context menu.
   A dialog will appear asking you to confirm that you would like to delete this session and informing you that this action cannot be undone.
2. If you are unsure, click **No**. To continue and delete the session, click **Yes**.
   The session will no longer appear in the **Project Manager** window.

Check Transcriptions

Check sessions for phone transcription errors.

From the **Project Manager** window:

1. Select the **Project** > **Check Transcriptions...** menu item.
   This will open the **Check Transcriptions** window.
2. Select the **Check IPA Tiers** option.
3. Select the project, corpora, or sessions whose transcriptions you wish to check, and click **Next**.
   Phon will check each selected session, and any phone transcription errors will be printed in red, with their corpus, session, record number, and tier (*IPA Target* or *IPA Actual*).

   Note: To resolve a reported error, return to the **Project Manager** window and open the session in which the error occurred, then navigate to the relevant record and visually check its IPA tiers.

Reset Syllabification

In the event of display issues in *Target Syllables* or *Actual Syllables* in the **Syllabification & Alignment** view, it may be necessary to reset the syllabification of *IPA Target* and *IPA Actual* transcriptions.

From the **Project Manager** window:

1. Select the **Project** > **Check Transcriptions...** menu item.
   This will open the **Check Transcriptions** window.
2. Select the **Reset syllabification** option. To reset phone alignment as well, select the **also reset phone alignment** check box.
3. Choose an appropriate syllabifier by selecting it from the drop-down menu.
4. Select the project, or the corpora or sessions whose syllabification you wish to reset, and click **Next**.
   Phon will re-perform the syllabification for each selected session using the *Syllabifier Language* chosen in the **Preferences** dialog.

   Note: After resetting syllabification or alignment, it will be necessary to visually verify these tiers.

Reset Phone Alignment

In the event of display issues in the *Alignment* tier of the **Syllabification & Alignment** view, it may be necessary to reset the phone alignment of *IPA Target* and *IPA Actual* transcriptions.

From the **Project Manager** window:

1. Select the **Project** > **Check Transcriptions...** menu item.
   This will open the **Check Transcriptions** window.
2. Select the **Reset phone alignment** option.
3. Select the project, corpora, or sessions whose alignment you wish to reset, and click **Next**.
   Phon will re-perform the alignment for each selected session.

   Note: After resetting syllabification or alignment, it will be necessary to visually verify these tiers.

Refresh Project

Refresh **Project Manager** window to reflect changes.

From the **Project Manager** window:

Choose the **Project** > **Refresh** menu item or press `F5`.

Import from CSV file(s)

Import a folder of CSV (comma-separated values) files into *Phon* as sessions.

The CSV import module can import a folder of CSV files with identical column formats into *Phon*. Where possible, CSV column labels should match *Phon* default tiers. *Phon* can automatically extract session date information from a CSV file if its name reflects its session date, in YYYY-MM-DD format.

From the **Project Manager** window:

1. Select the **Plugins** > **Import from CSV...** menu item.
   This action will generate a **CSV Import** window.
2. Click the **Browse** button to the right of the **Folder** field and locate the directory containing the CSV files for import. Also, ensure you select the proper **File encoding** option from the drop-down menu. Click the **Next** button.
   This action will prompt you to select files for import and the destination corpus.
3. Enter a corpus name in the **Destination Corpus** field and using the check boxes, select the files for import into that corpus. For each file, edit **Session Name** and **Session Date** as desired by double-clicking on either of them. Click the **Next** button.
   This will prompt you to set up the participants for that corpus: any participant information entered here will appear in all imported sessions for that corpus.
4. Click the **Add Participant**/+ button at the right of the window. Enter participant name, sex, date of birth, language and other pertinent information in the appropriate fields and click **Ok**. To delete a participant from the import, highlight the participant in the table and use the `Delete/Backspace` key. Then click the **Next** button.
5. Set up column mapping such that each CSV column header has been assigned a tier name in *Phon*. To do this, highlight an item in the **CSV column** on the left, then use the drop down menu on the right to select the appropriate *Phon* **Tier** or enter a new tier into **Tier Name** field. You may also select the **Don't Import** menu item for columns that are repetitive or unnecessary. In the **Options** section, you may use the **Syllabifier** drop down menu to specify the correct syllabifier and the **Transcription filter** to convert the *IPA Target* and/or *IPA Actual* tiers from YAPA, SAMPA, IPAPhon or IPAKiel. Click the **Next** button.
   This action will activate the import.

   Note: If the column name in the CSV file is the same as a *Phon* default tier name, the CSV column will be automatically mapped to the appropriate tier in *Phon*.

   Note: If mapping a CSV column to the *Segment* tier in *Phon*, segments times must be listed in mmm:ss.uuu format (minutes:seconds:milliseconds).
6. Once the *Import finished* alert appears at the bottom of the **CSV Import** window, click the **Close** button.
   This action will return the user to the **Project Manager** window with the newly imported corpus. Each row from your CSV file will become one record in *Phon* with the tiers as specified.

After import, each CSV file should become a new session in Phon. The number of records in the session should match the number of rows in the CSV file (minus the header.) A file named *importsettings.xml* is also created in the source folder. If this file is present when the directory is selected in Step 1 the previous import settings are loaded (except for Syllabifier and Filter settings).

Export to CSV file(s)

Export *Phon* sessions as CSV (comma-separated values) files.

The CSV export module can export Phon sessions into a specified folder as UTF-8 encoded CSV files.

From the **Project Manager** window:

1. Select the **Plugins** > **Export to CSV...** menu item.
   This action will generate a **CSV Export** window.
2. To select the destination folder for the export, click the **Browse for folder...** button to the right of the **Destination folder** field, locate the desired folder and click **Open**. Select the sessions you would like to export using the check boxes at the left of the **Sessions** list. Click the **Next** button.
   This action will prompt you to set up columns for the export.
3. To add a column to the export, type its name in the provided field and press `Enter` or click **Add column**/+. To remove a tier from the list, select it and click the **Remove Column**/- button. To export a tier which is not available

in the existing list, type "`Tier:<tier name>`" in the provided field and click the **Add Column**/+ or press `Enter`. Click on any tier name in the list and use the **up/down arrow** buttons to change the column ordering. Click the **Next** button.

This action will activate the export.

Note: The default column list for export includes: Session Name, Record #, and all default *Phon* tiers. The default can be restored by using the **Reset to default** button on the bottom right corner of the column list. This list of columns is saved after export and re-loaded the next time CSV export is opened.

Note: To export blind user transcriptions, add the tier "`IPA [Target|Actual] (<username>)`" (e.g. Tier:IPA Target (JSmith)).

4. Once the *Export complete* alert appears at the bottom of the **CSV Export** window, click the **Close** button. Session files for all corpora in the exported project will appear in the chosen directory with the format *Corpus name-Session name.csv*.

Session Editor

Session Editor - Keyboard Shortcuts

Editor keystrokes:

Command	Mac	Windows	Notes
Save	`CMD+S`	`CTRL+S`	
New Record	`CMD+N`	`CTRL+N`	The new record will be added after the current record in the session.
Cut Record	`Shift+CMD+X`	`Shift+CRTL+X`	The current record will be deleted and its contents will be copied to your system's clipboard.
Copy Record	`Shift+CMD+C`	`Shift+CTRL+C`	All tiers and and tier content visible in **Record Data** will be copied to your system's clipboard.
Paste Record	`Shift+CMD+V`	`Shift+CTRL+V`	The most recently copied or cut record will appear as a new record at the current position in **Record Data**.
Next Record	`PAGE_UP`	`PAGE_UP`	
Previous Record	`PAGE_DOWN`	`PAGE_DOWN`	
Last Record	`CTRL+SHIFT+N`	`ALT+SHIFT+N`	
First Record	`CTRL+SHIFT+P`	`ALT+SHIFT+P`	
Play Segment (Media Player)	`CMD+R`	`CTRL+R`	Only available when the external media player is open.
Play Segment/Selection (Speech Analysis)	`Shift+CMD+R`	`Shift+CTRL+R`	Only available when the waveform is displayed.

Command	Mac	Windows	Notes
View IPA Chart	CMD+M	CTRL+M	

The following keystrokes are available when a tier is focused:

Command	Mac	Windows	Notes
Next Group/Tier	Tab	Tab	Will move the caret to the beginning of the next group or the next tier.
Previous Group/Tier	Shift+Tab	Shift+Tab	Will move the caret to the beginning of the previous group or previous tier.
New Group	CMD+G	CTRL+G	Creates a new group after the current (or end if no current group is focused.)
Merge Group	CTRL+ALT+G	CTRL+ALT+G	Merges the current group with the next group.
Split/New Group	CTRL+ALT+K	CTRL+ALT+K	Creates a new group at the caret position. Creates a new group at the beginning of the record if caret is at beginning of first group.
Delete Group	CMD+ALT+Shift+G	CTRL+ALT+Shift+G	Delete the current group.

About Editor Views

Information in each session is displayed in a series of small windows within the **Session Editor**, called views. There are several types of views:

1. Views with access/reference to the entire session:
   - **Session Information**
   - **Tier Management**
2. Views with information relating to individual records:
   - **Record Data**
   - **Syllabification & Alignment**
   - **IPA Validation**
3. Views with media functions:
   - **Media Player**
   - **Speech Analysis** (formally **Waveform**)
   - **Segmentation**
4. Views that allow you to search for text within a session:
   - **Find & Replace**
5. Utility views which help with IPA transcription:
   - **IPA Lookup**

To open a view, select it from the **View** menu. Functions for open views are available both within the views themselves, and in the **View** menu. To close a view, click the **Close/X** in the top right corner of that viewor choose the **View** > **<view title>** > **Close** menu selection.

Not all views must be open at any given time, and views may be moved around within the **Session Editor** or "undocked" as their own separate window.

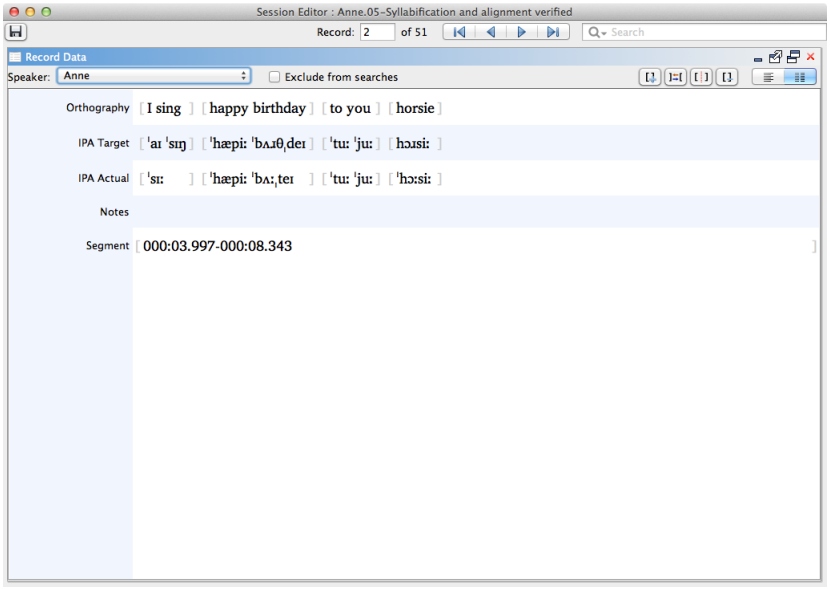
Views retain their currently defined size and position each time you exit *Phon*.

Maximize View

Maximize a view within the Session Editor window.

From the **Session Editor** or an undocked view:

1. Click the maximize button near the top right corner of the view you wish to maximize, or when the view is focused, press `CTRL+M`.
   If the view was docked, it will expand to fill the **Session Editor** window. If the view was undocked, it will expand to fill your computer screen.



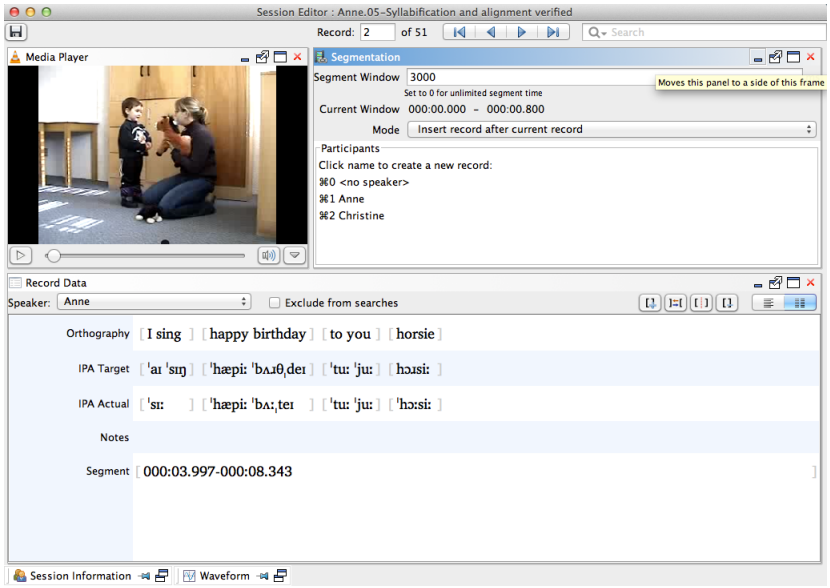
2. To restore the view to its previous size, click the restore button near the top right corner (this button looks like two windows), or press `CTRL+N` when the view is in focus.
   The view will return to its previous unmaximized position.

Minimize View

Minimize a view within the **Session Editor** window.

From the **Session Editor** or an undocked view:

1. Click the **minimize/_** button near the top right corner of the view.
   A small title bar for that view will appear at an edge of the **Session Editor**.



2. To make a minimized view temporarily reappear, click on its name or icon.
When the focus is changed to another view (i.e. another view is selected), the view will return to its minimized position.

> **Note:** To make the view retain its opened position when focus is lost, click the thumbtack button near the top right corner of the title bar. To deactivate this option, click the thumbtack again.

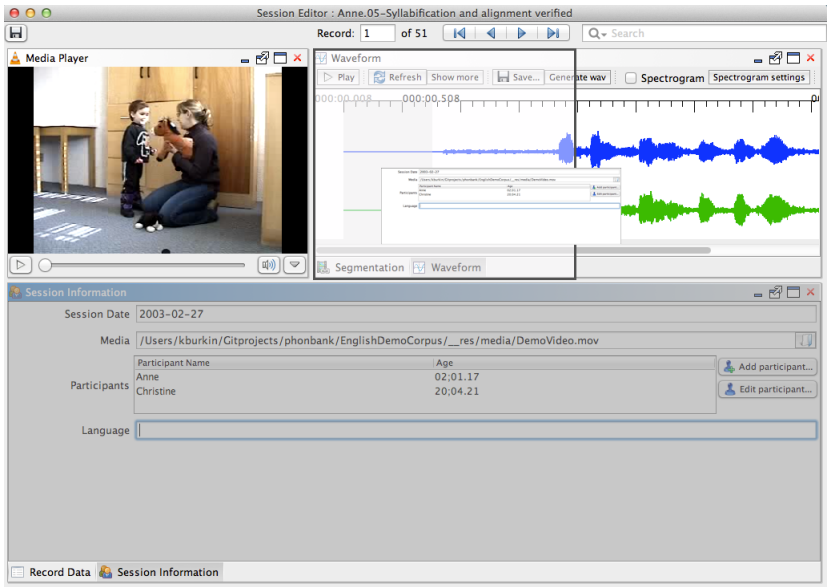
3. To restore the minimized view to a normal position within the **Session Editor** frame, click the restore button near the top right corner (this button looks like two windows), or press `CTRL+N` when the view is in focus.
The view will return to its previous docked position in the **Session Editor**, even if it was undocked when you minimized it.

Relocate View

Move a view to a new position within the **Session Editor**.

From the **Session Editor** window:

1. Click on the view's title bar and drag it to the desired location within the **Session Editor** window.
As you drag the view, the **Session Editor** will show the alternate position of that view. When it appears as you wish, release the mouse button.



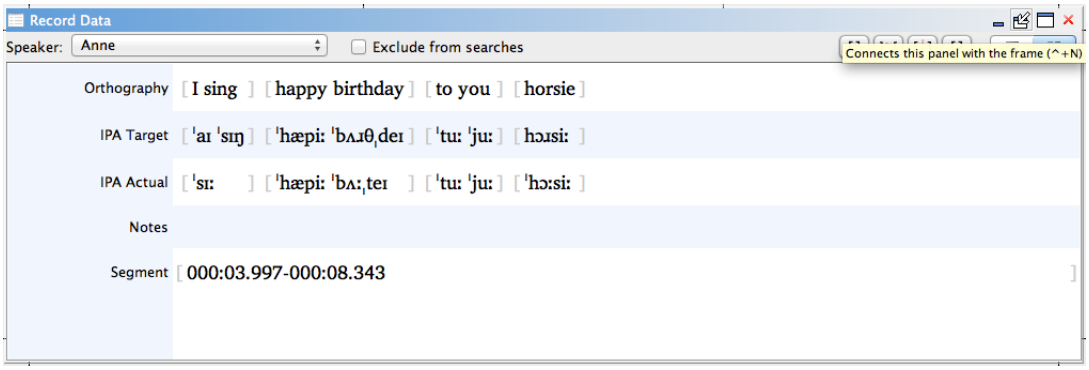
2. Two or more views may occupy the same location in the **Session Editor**. To do so, drag and drop one view to the title bar of the other view.
   You can switch between views in the same position by selecting the appropriate tab at the bottom of either view.

Dock View

Return an undocked view to the **Session Editor** window.

From the **Session Editor** window, with a view undocked:

In the top right corner of the view, click the button that looks like a window with an inward arrow (on mouseover it will say **Connects this panel with the frame**). Alternately, select the title bar of the view and press `CTRL+N`.



The view will reappear in the **Session Editor** window in its previous docked position.

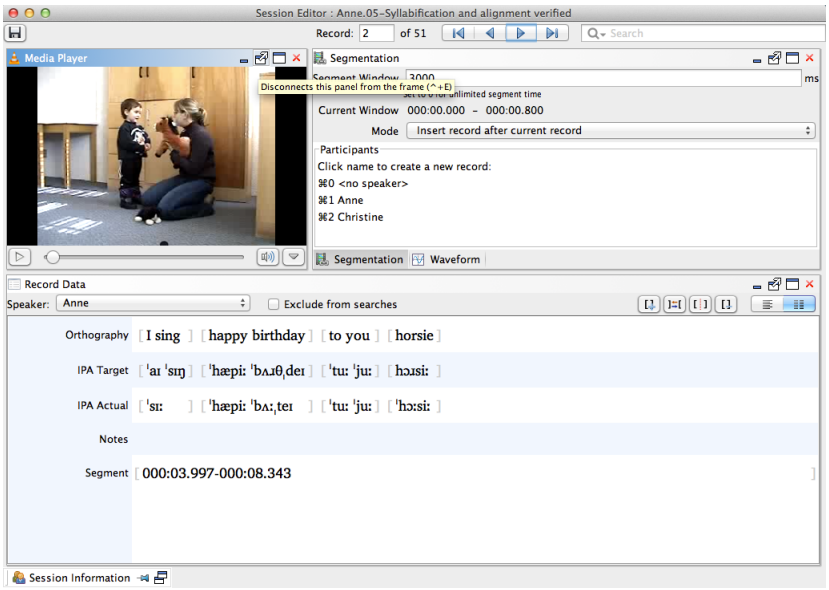
Note: You may also click and drag the view's title bar to return it to the **Session Editor** window in a different position.

Undock View

Disconnect or "undock" a view from the **Session Editor**, making it its own separate window.

From the **Session Editor** window, with the view you wish to undock open:

1. In the top right corner of the view, click the button that looks like a window with an outward arrow (on mouseover it will say **Disconnects this panel from the frame**). Alternately, select the title bar of the view and press `CTRL+E`.



The view will appear as a separate window in front of the **Session Editor**.

2. To move the view while it is undocked, click and drag on the small bar centred above the title bar. To resize the view, click and drag on any other edge or corner.

The view will retain its undocked size and position when you exit and reopen *Phon*.

Save Current Layout

Save currently visible **Session Editor** layout for future use.

From the **Session Editor** window, with views arranged in desired format:

1. Click the **Select layout** button at the top left corner of the **Session Editor** window and choose **Save current layout...**, or select the **View** > **Save current layout...** menu item.
   A window will appear prompting you to give the layout a name.
2. Enter a name for the layout (usually reflective of the task you would use that layout to perform). Click **OK**, or click **Cancel** if you are unsure.
   The new layout will now be available in layout menus.

Delete Saved Layout

Delete a user-created **Session Editor** layout.

From the **Session Editor** window:

1. Click the **Select layout** button at the top left of the **Session Editor** window and go to the **Delete layout** menu item, or go to the **View** > **Delete layout** menu, and select the layout you wish to delete.
   A confirmation dialog will appear, asking whether you wish to delete the layout.
2. If you are unsure whether you'd like to delete this layout, click **No**. Otherwise, click **Yes** to continue.
   The user-created layout will no longer appear in layout menus.

Change to Preset Editor Layout

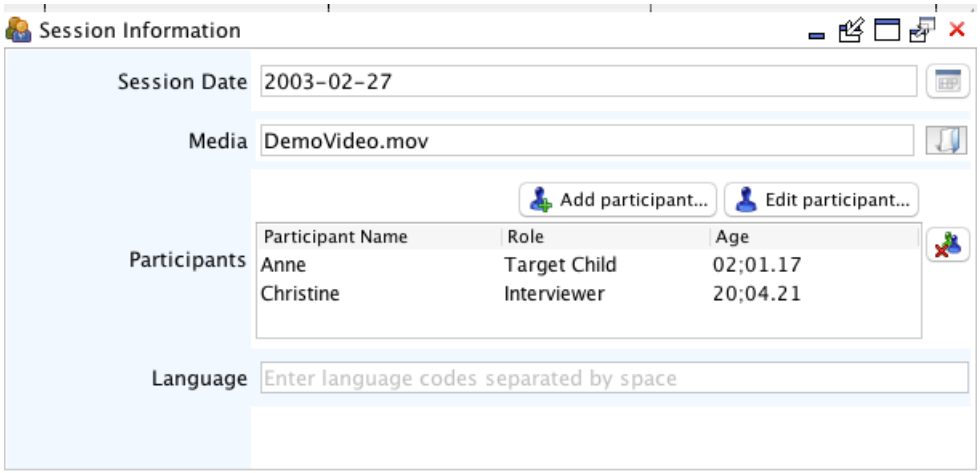
Quickly change the arrangement of views within the **Session Editor** to the default layout or to a previously saved layout.

From the **Session Editor**:

Click the **Select layout** button at the top left of the **Session Editor** window, or go to the **View** > **Load layout** menu and select the desired layout.
The views in the **Session Editor** will move to reflect the chosen layout.

View: Session Information

The *Session Information* displays and edits the session date, media file, participant list, and language list for the session.



Edit Session Date

Edit a session's date to reflect the date of its associated media recording.

From the **Session Information** view:

Click on the existing **Session Date** and type the new date over it.
Participants' ages will be calculated using their birthday and the session date.

Link Media to Transcript

Link a media file to the corresponding session.

From the **Session Information** view:

1. Click on the **Browse** button to the right of the **Media** field.
   A **Browse** window will appear allowing you to search your file system for the desired media file.
2. Locate and select the media file and click **Open**.
   This action will return the user to the **Session Editor**, from which the **Media File** will be available.

Note: The project resources folder is the default media location for an individual project ('*__res/media*'). Placing your media in this folder allows you to keep your project's media within the project folder, and allows *Phon* to display the media's filename in the **Session Information** view without specifying the full path to it.

Note: You may set one or more default media folders in *Phon*. Media files stored in your default media folders can also be displayed without their full file path.

Add Participant

Add a new participant to a session.

From the **Session Information** view:

1. Click the **Add Participant** button at the right of the **Participants** field.
   The **Edit Participant** window will appear.
2. Enter the participants *Name*, *Birthday*, *Language*, *Group*, *Gender*, *Education* and *Role*. Click **Ok**.

Note: The age for each participant is calculated automatically based on the birth date and the session date. You must enter a birthday (or a best guess) such that the application will not calculate a negative age.

3. Repeat Steps 1 and 2 for each participant.

Edit Participant

Edit a participant for a session.

From the **Session Information** view:

1. Select an existing participant's name and click the **Edit Participant** button to the right.
   The **Edit Participant** window will appear.
2. Edit the participant's **Name**, **Birthday**, **Language**, **Group**, **Gender**, **Education** and **Role** as you see fit and click **Ok**.
   Any changes to the participant's name or age will be reflected in the **Session Information** view.

Input Session Language

The main language for each session can be specified in the **Language** field in **Session Information**.

From the **Session Information** view:

1. Select the **Tools** > **ISO-639-3 Language Codes** menu item for a list of the ISO-639-3 language codes.
   This will bring up the **ISO-639-3 Language Codes** window, which displays a list of languages and language codes which you can look through.

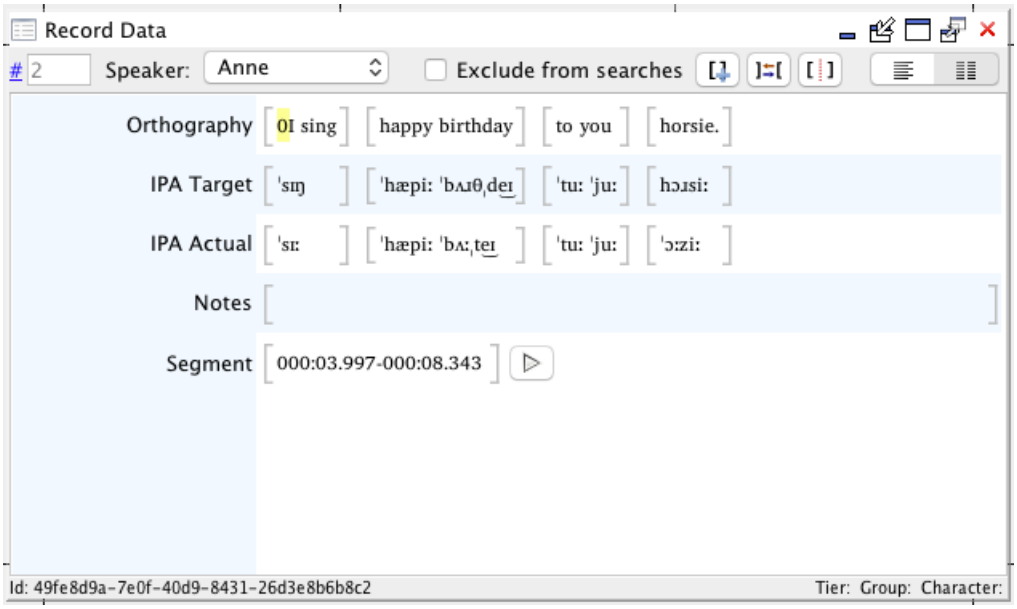
Note: By default, the list is organized by language code. To sort by language name, click on the **Language Name** column heading.

2. Find the desired language code. In the **Session Information** view, click in **Language** field and type language name or code.

Note: The search field in the **ISO-639-3 Language Codes** is case-sensitive.

View: Record Data

The record data view displays tier data for the current record.



Query Project

IPA Map

About IPA Map

About the **IPA Map** in *Phon*.

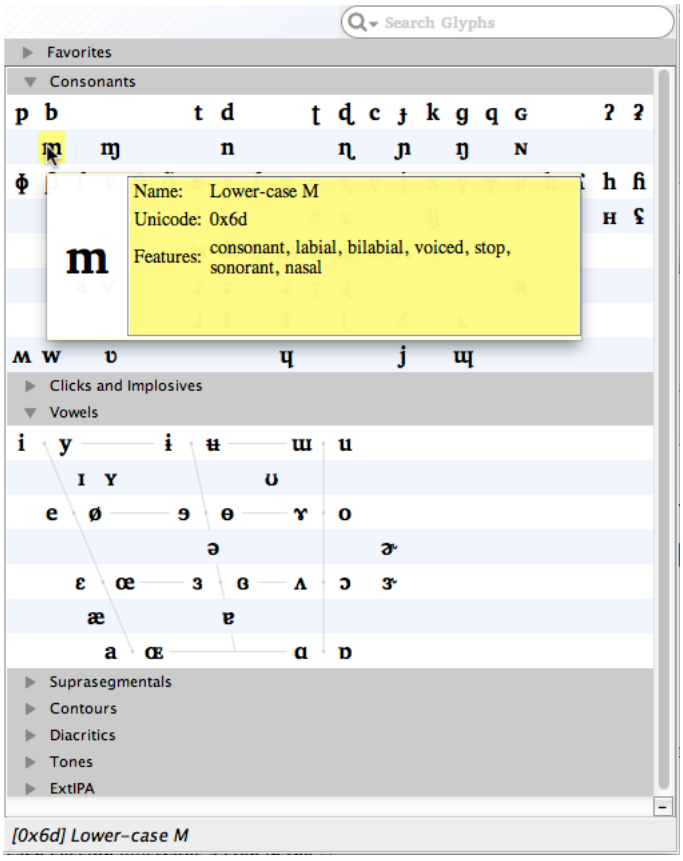
Phon's **IPA Map** provides an easy-to-use interface for composing phonetic transcriptions. There are eight sections in the window, each with a layout which aids in the lookup of phones and diacritics. These sections may be collapsed or expanded by clicking on the appropriate title bar.

IPA Map sections:

- Consonants
- Clicks and Implosives
- Vowels
- Suprasegmentals
- Contours
- Diacritics
- Tones
- ExtIPA

Not all characters in the **IPA Map** are meant to be the base glyph in a phone (e.g. suprasegmentals, word boundaries, diacritics). Often, a dependent character is displayed in the **IPA Map** with a circle to represent its relation to the base glyph.

To view the *Name*, *Unicode* value, and *Features* of a character in the **IPA Map**, mouse over the character and a **Tooltip** window will appear.



Input Text with IPA Map

Create or modify phonetic transcriptions using the **IPA Map**.

The **IPA Map** can be used in any text-input field in *Phon*.

1. Place the cursor in a text-input field and select the **Tools** > **IPA Map** (`CMD/CTRL+M`) menu item.
   This will generate a window containing the **IPA Map**.
2. Click on the buttons in the **IPA Map** which correspond to the characters you would like to enter into the text-input field.
   The data in the text-input field will reflect your selections.

   Note: While the **IPA Map** is open, you may still proceed to type normally.
3. To close the **IPA Map**, select the **Tools** > **IPA Map** (`CMD/CTRL+M`) menu item.

Copy Character

Copy a character to your computer's clipboard.

From the **IPA Map** window:

Right-click (`CTRL+click`) on any character in the **IPA Map**. From the context menu, select either **Copy character** to copy as a plain text string, **Copy as HTML** to copy as an HTML code, or **Copy as Unicode HEX** to copy the unicode number.
The character will be copied to your computer's clipboard in the chosen format and can then be pasted into text fields both within *Phon* and in other programs.

Add Character to Favorites

Add and remove characters from **Favorites** in the **IPA Map**.

From the **IPA Map** window:

1. Right-click (`CTRL+click`) on any character in the **IPA Map** and select **Add to favorites** from the context menu.
   The selected character will appear at the top of the **IPA Map** window in the **Favorites** section. The character will remain in this section until it you remove it.
2. To remove a character from the **Favorites** section, right-click (`CTRL+click`) on it either in the **Favorites** section or in its original section, and select **Remove from favourites** from the context menu.

Scroll to a Section

Jump to a specific section in the **IPA Map**.

From the **IPA Map** window:

Right-click (`CTRL+click`) within any section of the **IPA Map** and select a section from the **Scroll to** list.
The **IPA Map** will scroll such that the selected section appears within the window.

Resize Font and Window

Change the font display size and window size of the **IPA Map**.

From the **IPA Map** window:

Right-click (`CTRL+click`) within any section in the **IPA Map** and move the **Font size** slider to the preferred font size.
The characters in the **IPA Map** will be displayed in the selected font size; the window will resize itself accordingly.

Note: The font display size in the **IPA Map** will not affect the size of characters when input into text fields.

Highlight Recently Used Characters

Highlight recently used characters in the **IPA Map**.

From the **IPA Map** window:

1. Right-click (`CTRL+click`) within any section of the **IPA Map** and select **Highlight recently used** from the context menu.
   The last twenty characters entered with the **IPA Map** will be highlighted in yellow; the most recently used characters will be the brightest.
2. To turn off this feature, right-click (`CTRL+click`) within any section of the **IPA Map** and deselect **Highlight recently used** from the context menu.

Appendix

Listing of phonetic features

Listing of phonetic features.

The following is a listing of all the supported phonetic features.

Table 26: Features

Name	Synonyms	Primary Family	Secondary Family
null			
diacritic			
unintelligible			
unreleased		diacritic	
consonant	c		
vowel	v		
glide	g		
cover			
schwa	sch		
labial	lab	place	labial
bilabial	bil	place	labial
round		place	labial
palatal	pal	place	dorsal
dorsal	dor	place	dorsal
velar	vel	place	dorsal
uvular	uvu	place	dorsal
guttural	gut	place	guttural
pharyngeal	pha	place	guttural
laryngeal	lar glottal	place	guttural
epiglottal	epi	place	guttural
dental	den	place	coronal
labiodental		place	coronal
interdental		place	coronal
apical	api	place	coronal
laminal	lam	place	coronal
coronal	cor	place	coronal
lingual	lin	place	
anterior	ant	place	coronal
posterior	pos	place	coronal
alveolar	alv	place	coronal
alveopalatal	alp postalveolar	place	coronal
retroflex		place	coronal
distributed	dis	place	coronal
voiceless	vcl	voicing	voicing

Name	Synonyms	Primary Family	Secondary Family
voiced	vcd	voicing	voicing
aspirated		voicing	voicing
weaklyaspirated		voicing	voicing
unaspirated		voicing	voicing
approximant	app	manner	continuancy
liquid	liq	manner	continuancy
lateral	lat	manner	continuancy
rhotic	rho	manner	continuancy
stop	plosive	manner	continuancy
continuant	cnt	manner	continuancy
obstruent	obs	manner	continuancy
sonorant	son	manner	continuancy
fricative	fri	manner	continuancy
affricate	aff delayedrelease	manner	continuancy
click		manner	continuancy
implosive		manner	continuancy
flap	tap	manner	continuancy
trill		manner	continuancy
ejective		manner	continuancy
nasal	nas	manner	nasality
oral		manner	nasality
prenasalized		manner	nasality
strident	str	manner	stridency
low		height	
mid		height	
high		height	
tense		tongue root	
atr		tongue root	
rtr		tongue root	
lax		tongue root	
front		backness	
central		backness	
back		backness	
derhoticized		diacritic	
syllabic	syl	diacritic	
nonsyllabic		diacritic	

Name	Synonyms	Primary Family	Secondary Family
advanced		diacritic	
retracted		diacritic	
lowered		diacritic	
raised		diacritic	
fronted		diacritic	
backed		diacritic	
morerounded		diacritic	
lessrounded		diacritic	
long		diacritic	
halflong		diacritic	
extrashort		diacritic	
breathyvoiced		diacritic	
creakyvoiced		diacritic	
prstress	1	diacritic	
secstress	2	diacritic	
toneglobalrise		diacritic	
tonedownstep		diacritic	
tonefalling		diacritic	
tonerisingfalling		diacritic	
tonefallingrising		diacritic	
tonelowrising		diacritic	
tonehighrising		diacritic	
tonerising		diacritic	
tonehigh		diacritic	
tonemid		diacritic	
toneglobalfall		diacritic	
toneextrahigh		diacritic	
tonelow		diacritic	
toneupstep		diacritic	
toneextralow		diacritic	
tone1		diacritic	
tone2		diacritic	
tone3		diacritic	
tone4		diacritic	
tone5		diacritic	
tone6		diacritic	

Name	Synonyms	Primary Family	Secondary Family
tone7		diacritic	
tone8		diacritic	
tone9		diacritic	
pause		diacritic	
denasalized		diacritic	nasality
egressive		diacritic	manner
ingressive		diacritic	manner
labialspread		diacritic	labial
lowerdental		diacritic	place
narealfricative		nasality	manner
percussive		manner	
sliding		diacritic	manner
strongarticulation		diacritic	manner
weakarticulation		diacritic	manner
distorted		diacritic	
subapical		place	coronal
velopharyngeal		place	
velopharyngealfricative		diacritic	manner
whistled		diacritic	manner
lenis		diacritic	manner
sandhi		diacritic	
quasiresonant		place	
semiresonant		place	
raspberry		place	
transition		place	

Listing of IPA Characters

Listing of IPA characters.

The following is a lising of all supported IPA characters along with the glyph unicode value, name, token type and feature set.

Table 27: Supported IPA Characters

Glyph	Unicode Value	Name	Type	Features
∅	0x2205	Empty Set	cover symbol	null
	0x20	Space	space	diacritic
$	0x24	Dollar Sign	dollar sign	

Glyph	Unicode Value	Name	Type	Features
{	0x7B	Open Brace	open brace	
}	0x7D	Close Brace	close brace	
:	0x3A	Colon	colon	
0	0x30	Zero	digit	
1	0x31	One	digit	
2	0x32	Two	digit	
3	0x33	Three	digit	
4	0x34	Four	digit	
5	0x35	Five	digit	
6	0x36	Six	digit	
7	0x37	Seven	digit	
8	0x38	Eight	digit	
9	0x39	Nine	digit	
^	0x5E	Caret	intra word pause	
↔	0x2194	Left Right Arrow	alignment	diacritic
!	0x1C3	Latin Letter Retroflex Click	consonant	consonant coronal lingual alveolar voiceless stop obstruent click oral ingressive
(	0x28	Left Parenthesis	open paren	diacritic
)	0x29	Right Parenthesis	close paren	diacritic
*	0x2A	Asterisk	cover symbol	unintelligible cover
+	0x2B	Plus sign	plus	diacritic
.	0x2E	Full Stop	period	diacritic
A	0x41	Latin Capital Letter A	cover symbol	cover
B	0x42	Latin Capital Letter B	cover symbol	cover
C	0x43	Latin Capital Letter C	cover symbol	consonant cover oral
D	0x44	Latin Capital Letter D	cover symbol	cover
E	0x45	Latin Capital Letter E	cover symbol	cover
F	0x46	Latin Capital Letter F	cover symbol	cover semiresonant
G	0x47	Latin Capital Letter G	cover symbol	consonant glide cover oral

Glyph	Unicode Value	Name	Type	Features
H	0x48	Latin Capital Letter H	cover symbol	cover
I	0x49	Latin Capital Letter I	cover symbol	cover
J	0x4A	Latin Capital Letter J	cover symbol	cover
K	0x4B	Latin Capital Letter K	cover symbol	cover
L	0x4C	Latin Capital Letter L	cover symbol	cover
M	0x4D	Latin Capital Letter M	cover symbol	cover
N	0x4E	Latin Capital Letter N	cover symbol	cover
O	0x4F	Latin Capital Letter O	cover symbol	cover
P	0x50	Latin Capital Letter P	cover symbol	cover
Q	0x51	Latin Capital Letter Q	cover symbol	cover quasiresonant
R	0x52	Latin Capital Letter R	cover symbol	cover raspberry
S	0x53	Latin Capital Letter S	cover symbol	cover
T	0x54	Latin Capital Letter T	cover symbol	cover
U	0x55	Latin Capital Letter U	cover symbol	cover
V	0x56	Latin Capital Letter V	cover symbol	vowel cover
W	0x57	Latin Capital Letter W	cover symbol	cover
X	0x58	Latin Capital Letter X	cover symbol	unintelligible cover
Y	0x59	Latin Capital Letter Y	cover symbol	cover
Z	0x5A	Latin Capital Letter Z	cover symbol	cover
>	0x3E	Greater-than Sign	glide	consonant glide transition
a	0x61	Latin Letter Small A	vowel	vowel low lax central

Glyph	Unicode Value	Name	Type	Features
b	0x62	Latin Letter Small B	consonant	consonant labial bilabial voiced stop obstruent oral
c	0x63	Latin Letter Small C	consonant	consonant palatal coronal lingual posterior voiceless stop obstruent oral
d	0x64	Latin Letter Small D	consonant	consonant coronal lingual anterior alveolar voiced stop obstruent oral
e	0x65	Latin Letter Small E	vowel	vowel mid tense atr front
f	0x66	Latin Letter Small F	consonant	consonant labial labiodental voiceless continuant obstruent fricative oral
g	0x67	Latin Letter Small G	consonant	consonant dorsal velar lingual voiced stop obstruent oral
h	0x68	Latin Letter Small H	consonant	consonant guttural laryngeal voiceless continuant obstruent fricative oral
i	0x69	Latin Letter Small I	vowel	vowel high tense atr front
j	0x6A	Latin Letter Small J	glide	consonant glide palatal coronal lingual posterior voiced approximant continuant sonorant oral
k	0x6B	Latin Letter Small K	consonant	consonant dorsal velar lingual voiceless stop obstruent oral
l	0x6C	Latin Letter Small L	consonant	consonant coronal lingual anterior alveolar voiced approximant liquid lateral continuant sonorant oral
m	0x6D	Latin Letter Small M	consonant	consonant labial bilabial voiced stop sonorant nasal
n	0x6E	Latin Letter Small N	consonant	consonant coronal lingual anterior alveolar voiced stop sonorant nasal
o	0x6F	Latin Letter Small O	vowel	vowel round mid tense atr back
p	0x70	Latin Letter Small P	consonant	consonant labial bilabial voiceless stop obstruent oral
q	0x71	Latin Letter Small Q	consonant	consonant dorsal uvular lingual voiceless stop obstruent oral
r	0x72	Latin Letter Small R	consonant	consonant coronal lingual anterior alveolar voiced approximant liquid rhotic continuant sonorant trill oral
s	0x73	Latin Letter Small S	consonant	consonant coronal lingual anterior alveolar voiceless continuant obstruent fricative oral strident
t	0x74	Latin Letter Small T	consonant	consonant coronal lingual anterior alveolar voiceless stop obstruent oral
u	0x75	Latin Letter Small U	vowel	vowel round high tense atr back

Glyph	Unicode Value	Name	Type	Features
v	0x76	Latin Letter Small V	consonant	consonant labial labiodental voiced continuant obstruent fricative oral
w	0x77	Latin Letter Small W	glide	consonant glide labial bilabial dorsal velar lingual voiced approximant continuant sonorant oral
x	0x78	Latin Letter Small X	consonant	consonant dorsal velar lingual voiceless continuant obstruent fricative oral
y	0x79	Latin Letter Small Y	vowel	vowel round high tense atr front
z	0x7A	Latin Letter Small Z	consonant	consonant coronal lingual anterior alveolar voiced continuant obstruent fricative oral strident
¡	0xA1	Inverted Exclamation Mark	consonant	consonant coronal lingual anterior voiceless stop click oral ingressive subapical
¹	0xB9	Superscript One (Number 1)	tone	diacritic tone1
²	0xB2	Superscript Two (Number 2)	tone	diacritic tone2
³	0xB3	Superscript Three (Number 3)	tone	diacritic tone3
⁴	0x2074	Superscript Four (Number 4)	tone	diacritic tone4
⁵	0x2075	Superscript Five (Number 5)	tone	diacritic tone5
⁶	0x2076	Superscript Six (Number 6)	tone	diacritic tone6
⁷	0x2077	Superscript Seven (Number 7)	tone	diacritic tone7
⁸	0x2078	Superscript Eight (Number 8)	tone	diacritic tone8
⁹	0x2079	Superscript Nine (Number 9)	tone	diacritic tone9
æ	0xE6	Latin Letter Small AE	vowel	vowel low lax front
ç	0xE7	Latin Letter Small C with cedilla	consonant	consonant palatal coronal lingual posterior voiceless continuant obstruent fricative oral strident

Glyph	Unicode Value	Name	Type	Features
ð	0xF0	Latin Letter Small Eth	consonant	consonant interdental coronal lingual anterior distributed voiced continuant obstruent fricative oral
ø	0xF8	Latin Letter Small O with Stroke	vowel	vowel round mid tense atr front
ħ	0x127	Latin Letter Small H with Stroke	consonant	consonant guttural pharyngeal voiceless continuant obstruent fricative oral
ŋ	0x14B	Latin Letter Small Eng	consonant	consonant dorsal velar lingual voiced stop sonorant nasal
œ	0x153	Latin Small Ligature OE	vowel	vowel round mid rtr lax front
ƀ	0x180	Latin Letter Small B with Stroke	consonant	consonant labial bilabial voiced continuant obstruent fricative oral
ƈ	0x188	Latin Letter Small C with Hook	consonant	consonant palatal coronal lingual posterior voiceless stop obstruent implosive oral
ƙ	0x199	Latin Letter Small K with Hook	consonant	consonant dorsal velar lingual voiceless stop obstruent implosive oral
ƛ	0x19B	Latin Letter Small Lamda with Stroke	consonant	consonant coronal lingual anterior alveolar voiceless lateral obstruent affricate oral
ɳ	0x19E	Latin Letter Small N with Long Right Leg	consonant	consonant coronal lingual anterior alveolar voiced stop sonorant nasal
ƥ	0x1A5	Latin Letter Small P with Hook	consonant	consonant labial bilabial voiceless stop obstruent implosive oral
ʈ	0x1AB	Latin Letter Small T with Palatal Hook	consonant	consonant palatal coronal lingual anterior posterior alveolar voiceless stop obstruent oral
ƹ	0x1B9	Latin Letter Small Ezh Reversed	consonant	consonant guttural pharyngeal voiced continuant obstruent fricative oral
ƺ	0x1BA	Latin Letter Small Ezh with Tail	consonant	consonant palatal coronal lingual posterior alveopalatal distributed voiced continuant obstruent fricative oral strident
ǀ	0x1C0	Latin Letter Dental Click	consonant	consonant dental coronal lingual anterior voiceless stop obstruent click oral ingressive

Glyph	Unicode Value	Name	Type	Features
ǁ	0x1C1	Latin Letter Lateral Click	consonant	consonant coronal lingual anterior alveolar voiceless lateral stop obstruent click oral ingressive
ǂ	0x1C2	Latin Letter Alveopalatal Click	consonant	consonant coronal lingual posterior alveopalatal voiceless stop obstruent click oral ingressive
ɻ	0x234	Latin Letter Small L with Curl	consonant	consonant palatal coronal lingual posterior voiced approximant liquid lateral continuant sonorant oral
ɳ	0x235	Latin Letter Small N with Curl	consonant	consonant coronal lingual posterior alveopalatal voiced stop sonorant nasal
ʇ	0x236	Latin Letter Small T with Curl	consonant	consonant coronal lingual posterior alveopalatal voiceless stop obstruent oral
ɐ	0x250	Latin Letter Small Turned A	vowel	vowel low lax central
ɑ	0x251	Latin Letter Small Alpha	vowel	vowel low lax back
ɒ	0x252	Latin Letter Small Turned Alpha	vowel	vowel round low lax back
ɓ	0x253	Latin Letter Small B with Hook	consonant	consonant labial bilabial voiced stop obstruent implosive oral
ɔ	0x254	Latin Letter Small Open O	vowel	vowel round mid rtr lax back
ɕ	0x255	Latin Letter Small C with Curl	consonant	consonant palatal laminal coronal lingual posterior distributed voiceless continuant obstruent fricative oral strident
ɖ	0x256	Latin Letter Small D with Tail	consonant	consonant coronal lingual posterior retroflex voiced stop obstruent oral
ɗ	0x257	Latin Letter Small D with Hook	consonant	consonant coronal lingual anterior alveolar voiced stop obstruent implosive oral
ɘ	0x258	Latin Letter Small Reversed E	vowel	vowel mid tense atr central
ə	0x259	Latin Letter Small Schwa	vowel	vowel schwa mid rtr lax central
ɚ	0x25A	Latin Letter Small Schwa with Hook	vowel	vowel schwa rhotic mid rtr lax central

Glyph	Unicode Value	Name	Type	Features
ɛ	0x25B	Latin Letter Small Open E	vowel	vowel mid rtr lax front
ɜ	0x25C	Latin Letter Small Reversed Open E	vowel	vowel mid rtr lax central
ɝ	0x25D	Latin Letter Small Reversed Open E with Hook	vowel	vowel rhotic mid rtr lax central
ɞ	0x25E	Latin Letter Small Closed Reversed Open E	vowel	vowel round mid rtr lax central
ɟ	0x25F	Latin Letter Small Dotless J with Stroke	consonant	consonant palatal coronal lingual posterior voiced stop obstruent oral
ɠ	0x260	Latin Letter Small G with Hook	consonant	consonant dorsal velar lingual voiced stop obstruent implosive oral
ɡ	0x261	Latin Letter Small Script G	consonant	consonant dorsal velar lingual voiced stop obstruent oral
ɢ	0x262	Latin Letter Small Capital G	consonant	consonant dorsal uvular lingual voiced stop obstruent oral
ɣ	0x263	Latin Letter Small Gamma	consonant	consonant dorsal velar lingual voiced continuant obstruent fricative oral
ɤ	0x264	Latin Letter Small Ram's Horns	vowel	vowel mid tense atr back
ɥ	0x265	Latin Letter Small Turned H	glide	consonant glide labial bilabial palatal coronal lingual voiced approximant continuant sonorant oral
ɦ	0x266	Latin Letter Small H with Hook	consonant	consonant guttural laryngeal voiced continuant obstruent fricative oral
ɧ	0x267	Latin Letter Small Heng with Hook	consonant	consonant dorsal velar coronal lingual posterior alveopalatal voiceless continuant obstruent fricative oral
ɨ	0x268	Latin Letter Small I with Stroke	vowel	vowel high tense atr central
ɩ	0x269	Latin Letter Small Iota	vowel	vowel high rtr lax front

Glyph	Unicode Value	Name	Type	Features
ɪ	0x26A	Latin Letter Small Capital I	vowel	vowel high rtr lax front
ɬ	0x26B	Latin Letter Small L with middle Tilde	consonant	consonant velar coronal lingual anterior posterior voiced approximant liquid lateral continuant sonorant oral
ɬ	0x26C	Latin Letter Small L with Belt	consonant	consonant coronal lingual anterior alveolar voiceless lateral continuant obstruent fricative oral
ɭ	0x26D	Latin Letter Small L with Retroflex Hook	consonant	consonant coronal lingual posterior retroflex voiced approximant liquid lateral continuant sonorant oral
ɮ	0x26E	Latin Letter Small LEzh	consonant	consonant coronal lingual anterior alveolar voiced lateral continuant obstruent fricative oral
ɯ	0x26F	Latin Letter Small Turned M	vowel	vowel high tense atr back
ɰ	0x270	Latin Letter Small Turned M with Long Leg	glide	consonant glide dorsal velar lingual voiced approximant continuant sonorant oral
ɱ	0x271	Latin Letter Small M with Hook	consonant	consonant labial labiodental voiced stop sonorant nasal
ɲ	0x272	Latin Letter Small N with Left Hook	consonant	consonant palatal coronal lingual posterior voiced stop sonorant nasal
ɳ	0x273	Latin Letter Small N with Retroflex Hook	consonant	consonant coronal lingual posterior retroflex voiced stop sonorant nasal
ɴ	0x274	Latin Letter Small Capital N	consonant	consonant dorsal uvular lingual voiced stop sonorant nasal
ɵ	0x275	Latin Letter Small Barred O	vowel	vowel round mid tense atr central
œ	0x276	Latin Letter Small Capital OE	vowel	vowel round low lax front
ɷ	0x277	Latin Letter Small Closed Omega	vowel	vowel round high rtr lax back
ɸ	0x278	Latin Letter Small Phi	consonant	consonant labial bilabial voiceless continuant obstruent fricative oral

Glyph	Unicode Value	Name	Type	Features
ɹ	0x279	Latin Letter Small Turned R	consonant	consonant coronal lingual anterior alveolar voiced approximant liquid rhotic continuant sonorant oral
ɺ	0x27A	Latin Letter Small Turned R with Long Leg	consonant	consonant coronal lingual anterior alveolar voiced approximant liquid lateral continuant sonorant flap oral
ɻ	0x27B	Latin Letter Small Turned R with Hook	consonant	consonant coronal lingual posterior retroflex voiced approximant liquid rhotic continuant sonorant oral
ɼ	0x27C	Latin Letter Small R with Long Leg	consonant	consonant coronal lingual alveolar voiced approximant rhotic continuant sonorant trill oral
ɽ	0x27D	Latin Letter Small R with Tail	consonant	consonant coronal lingual posterior retroflex voiced approximant liquid rhotic continuant sonorant flap oral
ɾ	0x27E	Latin Letter Small R with Fish Hook	consonant	consonant coronal lingual anterior alveolar voiced approximant liquid rhotic continuant sonorant flap oral
ʀ	0x280	Latin Letter Small Capital R	consonant	consonant dorsal uvular lingual voiced approximant liquid rhotic continuant sonorant trill oral
ʁ	0x281	Latin Letter Small Capital Inverted R	consonant	consonant dorsal uvular lingual voiced rhotic continuant obstruent fricative oral
ʂ	0x282	Latin Letter Small S with Hook	consonant	consonant coronal lingual posterior retroflex voiceless continuant obstruent fricative oral strident
ʃ	0x283	Latin Letter Small Esh	consonant	consonant laminal coronal lingual posterior alveopalatal distributed voiceless continuant obstruent fricative oral strident
ʄ	0x284	Latin Letter Small Dotless J with Stroke and Hook	consonant	consonant palatal coronal lingual posterior voiced stop obstruent implosive oral
ʆ	0x286	Latin Letter Small Esh with Curl	consonant	consonant palatal coronal lingual posterior alveopalatal distributed voiceless continuant obstruent fricative oral strident
ʇ	0x287	Latin Letter Small Turned T	consonant	consonant coronal lingual anterior voiceless stop obstruent click oral ingressive
ʈ	0x288	Latin Letter Small T with Retroflex Hook	consonant	consonant coronal lingual posterior retroflex voiceless stop obstruent oral
ʉ	0x289	Latin Letter Small U Bar	vowel	vowel round high tense atr central

Glyph	Unicode Value	Name	Type	Features
ʊ	0x28A	Latin Letter Small Upsilon	vowel	vowel round high rtr lax back
ʋ	0x28B	Latin Letter Small V with Hook	consonant	consonant glide labial voiced approximant continuant sonorant oral
ʌ	0x28C	Latin Letter Small Turned V	vowel	vowel mid rtr lax back
ʍ	0x28D	Latin Letter Small Turned W	consonant	consonant labial bilabial dorsal velar lingual voiceless continuant obstruent fricative oral
ʎ	0x28E	Latin Letter Small Turned Y	consonant	consonant palatal coronal lingual posterior voiced approximant liquid lateral continuant sonorant oral
ʏ	0x28F	Latin Letter Small Capital Y	vowel	vowel round high rtr lax front
ʐ	0x290	Latin Letter Small Z with Retroflex Hook	consonant	consonant coronal lingual posterior retroflex voiced continuant obstruent fricative oral strident
ʑ	0x291	Latin Letter Small Z with Curl	consonant	consonant palatal laminal coronal lingual posterior distributed voiced continuant obstruent fricative oral strident
ʒ	0x292	Latin Letter Small Ezh	consonant	consonant laminal coronal lingual posterior alveopalatal distributed voiced continuant obstruent fricative oral strident
ʓ	0x293	Latin Letter Small Ezh with Curl	consonant	consonant palatal coronal lingual posterior alveopalatal distributed voiced continuant obstruent fricative oral strident
ʔ	0x294	Latin Letter Glottal Stop	consonant	consonant guttural laryngeal voiceless stop obstruent oral
ʕ	0x295	Latin Letter Pharyngeal Voiced Fricative	consonant	consonant guttural pharyngeal voiced continuant obstruent fricative oral
ʖ	0x296	Latin Letter Inverted Glottal Stop	consonant	consonant coronal lingual anterior alveolar voiceless lateral stop obstruent click oral ingressive
ʗ	0x297	Latin Letter Stretched C	consonant	consonant coronal lingual anterior alveolar voiceless stop obstruent click oral ingressive
ʘ	0x298	Latin Letter Bilabial Click	consonant	consonant labial bilabial voiceless stop obstruent click oral ingressive
ʙ	0x299	Latin Letter Small Capital B	consonant	consonant labial bilabial labiodental voiced approximant continuant sonorant trill oral

Glyph	Unicode Value	Name	Type	Features
ɚ	0x29A	Latin Letter Small Closed Open E	vowel	vowel round mid rtr lax central
ɢ̆	0x29B	Latin Letter Small Capital G with Hook	consonant	consonant dorsal uvular lingual voiced stop obstruent implosive oral
ʜ	0x29C	Latin Letter Small Capital H	consonant	consonant guttural epiglottal voiceless continuant obstruent fricative oral
ʝ	0x29D	Latin Letter Small J with Crossed-Tail	consonant	consonant palatal coronal lingual posterior voiced continuant obstruent fricative oral strident
ʞ	0x29E	Latin Letter Small Turned K	consonant	consonant dorsal velar lingual voiceless stop obstruent click oral ingressive
ʟ	0x29F	Latin Letter Small Capital L	consonant	consonant dorsal velar lingual voiced approximant liquid lateral continuant sonorant oral
ɠ	0x2A0	Latin Letter Small Q with Hook	consonant	consonant dorsal uvular lingual voiceless stop obstruent implosive oral
ʡ	0x2A1	Latin Letter Glottal Stop with Stroke	consonant	consonant guttural epiglottal voiceless stop obstruent oral
ʢ	0x2A2	Latin Letter Reversed Glottal Stop with Stroke	consonant	consonant guttural epiglottal voiced continuant obstruent fricative oral
ʣ	0x2A3	Latin Letter Small DZ Digraph	consonant	consonant coronal lingual anterior alveolar voiced obstruent affricate oral strident
ʤ	0x2A4	Latin Letter Small DEzh Digraph	consonant	consonant laminal coronal lingual posterior alveopalatal distributed voiced obstruent affricate oral strident
ʥ	0x2A5	Latin Letter Small DZ Digraph with Curl	consonant	consonant palatal laminal coronal lingual posterior distributed voiced obstruent affricate oral strident
ʦ	0x2A6	Latin Letter Small TS Digraph	consonant	consonant coronal lingual anterior alveolar voiceless obstruent affricate oral strident
ʧ	0x2A7	Latin Letter Small TEsh Digraph	consonant	consonant laminal coronal lingual posterior alveopalatal distributed voiceless obstruent affricate oral strident

Glyph	Unicode Value	Name	Type	Features
ʨ	0x2A8	Latin Letter Small TC Digraph with Curl	consonant	consonant palatal laminal coronal lingual posterior distributed voiceless obstruent affricate oral strident
ʩ	0x2A9	Latin Letter Small FEng Digraph	consonant	consonant obstruent fricative nasal velopharyngeal
ʪ	0x2AA	Latin Letter Small LS Digraph	consonant	consonant coronal lingual anterior alveolar voiceless lateral continuant obstruent fricative oral
ʫ	0x2AB	Latin Letter Small LZ Digraph	consonant	consonant coronal lingual anterior alveolar voiced lateral continuant obstruent fricative oral
ʬ	0x2AC	Latin Letter Bilabial Percussive	consonant	consonant labial bilabial stop obstruent oral percussive
ʭ	0x2AD	Latin Letter Bidental Percussive	consonant	consonant dental stop obstruent oral lowerdental percussive
ʮ	0x2AE	Latin Letter Small Turned H with Fish Hook	vowel	vowel round high rtr lax back
ʰ	0x2B0	Modifier Letter Small H	suffix diacritic	diacritic aspirated
ʱ	0x2B1	Modifier Letter Small H with Hook	suffix diacritic	diacritic breathyvoiced
ʲ	0x2B2	Modifier Letter Small J	suffix diacritic	diacritic palatal
ʳ	0x2B3	Modifier Letter Small R	suffix diacritic	diacritic rhotic
ʴ	0x2B4	Modifier Letter Small Turned R	suffix diacritic	diacritic rhotic
ʵ	0x2B5	Modifier Letter Small Turned R with Hook	suffix diacritic	diacritic rhotic
ʶ	0x2B6	Modifier Letter Small Capital Inverted R	suffix diacritic	diacritic rhotic
ʷ	0x2B7	Modifier Letter Small W	suffix diacritic	diacritic labial
ʸ	0x2B8	Modifier Letter Small Y	suffix diacritic	diacritic labial

Glyph	Unicode Value	Name	Type	Features
ʻ	0x2BB	Modifier Letter Turned Comma	suffix diacritic	diacritic aspirated
ʼ	0x2BC	Modifier Letter Apostrophe	suffix diacritic	diacritic ejective
ʽ	0x2BD	Modifier Letter Reversed Comma	suffix diacritic	diacritic weaklyaspirated
ʾ	0x2BE	Modifier Letter Right Half Ring	suffix diacritic	diacritic morerounded
ʿ	0x2BF	Modifier Letter Left Half Ring	suffix diacritic	diacritic lessrounded
ˀ	0x2C0	Modifier Letter Glottal Stop	suffix diacritic	diacritic laryngeal
ˁ	0x2C1	Modifier Letter Reversed Glottal Stop	suffix diacritic	diacritic epiglottal
ˈ	0x2C8	Modifier Letter Vertical Line	primary stress	diacritic prstress
ˌ	0x2CC	Modifier Letter Low Vertical Line	secondary stress	diacritic secstress
ː	0x2D0	Modifier Letter Triangular Colon	long	diacritic long
ˑ	0x2D1	Modifier Letter Half Triangular Colon	half long	diacritic halflong
˞	0x2DE	Modifier Letter Rhotic Hook	suffix diacritic	diacritic rhotic
ˠ	0x2E0	Modifier Letter Small Gamma	suffix diacritic	diacritic velar
ˡ	0x2E1	Modifier Letter Small L	suffix diacritic	diacritic lateral
˥	0x2E5	Modifier Letter Extra-High Tone Bar	suffix diacritic	diacritic toneextrahigh
˦	0x2E6	Modifier Letter High Tone Bar	suffix diacritic	diacritic tonehigh
˧	0x2E7	Modifier Letter Mid Tone Bar	suffix diacritic	diacritic tonemid
˨	0x2E8	Modifier Letter Low Tone Bar	suffix diacritic	diacritic tonelow

Glyph	Unicode Value	Name	Type	Features
˩	0x2E9	Modifier Letter Extra-Low Tone Bar	suffix diacritic	diacritic toneextralow
ˬ	0x2EC	Modifier Letter Voicing	suffix diacritic	diacritic voiced
˭	0x2ED	Modifier Letter Unaspirated	suffix diacritic	diacritic unaspirated
◌̀	0x300	Combining Grave Accent	combining diacritic	diacritic tonelow
◌́	0x301	Combining Acute Accent	combining diacritic	diacritic tonehigh
◌̂	0x302	Combining Circumflex Accent	combining diacritic	diacritic tonefalling
◌̃	0x303	Combining Tilde	combining diacritic	diacritic nasal
◌̄	0x304	Combining Macron	combining diacritic	diacritic tonemid
◌̆	0x306	Combining Breve	combining diacritic	diacritic extrashort
◌̇	0x307	Combining Dot Above	combining diacritic	diacritic lenis
◌̈	0x308	Combining Diaeresis	combining diacritic	diacritic central
◌̊	0x30A	Combining Ring Above	combining diacritic	diacritic voiceless
◌̋	0x30B	Combining Double Acute Accent	combining diacritic	diacritic toneextrahigh
◌̌	0x30C	Combining Caron	combining diacritic	diacritic tonerising
◌̏	0x30F	Combining Double Grave Accent	combining diacritic	diacritic toneextralow
◌̑	0x311	Combining Inverted Breve	combining diacritic	diacritic fronted
◌̘	0x318	Combining Left Tack Below	combining diacritic	diacritic atr
◌̙	0x319	Combining Right Tack Below	combining diacritic	diacritic rtr

Glyph	Unicode Value	Name	Type	Features
◌˺	0x31A	Combining Left Angle Above	combining diacritic	diacritic unreleased
◌˹	0x31C	Combining Left Half Ring Below	combining diacritic	diacritic lessrounded
◌˔	0x31D	Combining Up Tack Below	combining diacritic	diacritic raised
◌˕	0x31E	Combining Down Tack Below	combining diacritic	diacritic approximant sonorant lowered
◌˖	0x31F	Combining Plus Sign Below	combining diacritic	diacritic advanced
◌˗	0x320	Combining Minus Sign Below	combining diacritic	diacritic retracted
◌̣	0x323	Combining Dot Below	combining diacritic	diacritic lenis
◌̤	0x324	Combining Diaeresis Below	combining diacritic	diacritic breathyvoiced
◌̥	0x325	Combining Ring Below	combining diacritic	diacritic voiceless
◌̩	0x329	Combining Vertical Line Below	combining diacritic	diacritic syllabic
◌̪	0x32A	Combining Bridge Below	combining diacritic	diacritic dental
◌̬	0x32C	Combining Caron Below	combining diacritic	diacritic voiced
◌̯	0x32F	Combining Inverted Breve Below	combining diacritic	diacritic nonsyllabic
◌̰	0x330	Combining Tilde Below	combining diacritic	diacritic creakyvoiced
◌̴	0x334	Combining Tilde Overlay	combining diacritic	diacritic pharyngeal
◌̹	0x339	Combining Right Half Ring Below	combining diacritic	diacritic morerounded
◌̺	0x33A	Combining Inverted Bridge Below	combining diacritic	diacritic apical

Glyph	Unicode Value	Name	Type	Features
◌̻	0x33B	Combining Square Below	combining diacritic	diacritic laminal
◌̼	0x33C	Combining Seagull Below	combining diacritic	diacritic labial
◌̽	0x33D	Combining X Above	combining diacritic	diacritic mid
◌͆	0x346	Combining Bridge Above	combining diacritic	diacritic lowerdental
◌͇	0x347	Combining Equal Sign Below	combining diacritic	diacritic alveolar
◌͈	0x348	Combining Double Vertical Line Below	combining diacritic	diacritic strongarticulation
◌͉	0x349	Combining Left Angle Below	combining diacritic	diacritic weakarticulation
◌͊	0x34A	Combining Not Tilde Above	combining diacritic	diacritic denasalized
◌͋	0x34B	Combining Homothetic Above	combining diacritic	diacritic nasal
◌͌	0x34C	Combining Almost Equal To Above	combining diacritic	diacritic velopharyngeal
◌͍	0x34D	Combining Left Right Arrow Below	combining diacritic	diacritic labialspread
◌͎	0x34E	Combining Upwards Arrow Below	combining diacritic	diacritic whistled
◌͓	0x354	Combining Left Arrow Head Below	combining diacritic	diacritic fronted
◌͔	0x355	Combining Right Arrow Head Below	combining diacritic	diacritic backed
◌͜	0x35C	Combining Double Breve Below	ligature	diacritic
◌͡	0x361	Combining Double Inverted Breve	ligature	diacritic

Glyph	Unicode Value	Name	Type	Features
͡	0x362	Combining Double Rightwards Arrow Below	ligature	diacritic sliding
α	0x3B1	Greek Small Letter Alpha	vowel	vowel low lax central
β	0x3B2	Greek Small Letter Beta	consonant	consonant labial bilabial voiced continuant obstruent fricative oral
δ	0x3B4	Greek Small Letter Delta	consonant	consonant dental coronal lingual anterior distributed voiced continuant obstruent fricative oral
θ	0x3B8	Greek Small Letter Theta	consonant	consonant interdental coronal lingual anterior distributed voiceless continuant obstruent fricative oral
λ	0x3BB	Greek Small Letter Lamda	consonant	consonant coronal lingual anterior alveolar voiced lateral obstruent affricate oral
π	0x3C0	Greek Small Letter Pi	consonant	consonant labial dental voiced stop obstruent oral
χ	0x3C7	Greek Small Letter Chi	consonant	consonant dorsal uvular lingual voiceless continuant obstruent fricative oral
ᵊ	0x1D4A	Modifier Letter Small Schwa	suffix diacritic	diacritic schwa
ᵐ	0x1D50	Modifier Letter Small M	prefix diacritic	diacritic bilabial nasal
ᵑ	0x1D51	Modifier Letter Small Eng	prefix diacritic	diacritic velar nasal
ⁿ	0x207F	Modifier Letter Small N	prefix diacritic	diacritic nasal
ᵯ	0x1DAC	Modifier Letter Small M with Hook	prefix diacritic	diacritic labial dental nasal
ᶮ	0x1DAE	Modifier Letter Small N with Left Hook	prefix diacritic	diacritic palatal nasal
ᶯ	0x1DAF	Modifier Letter Small N with Retroflex Hook	prefix diacritic	diacritic retroflex nasal
ᴺ	0x1DB0	Modifier Letter Small Capital N	prefix diacritic	diacritic uvular nasal
ᶑ	0x1D91	Latin Letter Small D with Hook and Tail	consonant	consonant coronal lingual posterior alveolar retroflex voiced stop implosive oral

Glyph	Unicode Value	Name	Type	Features
‖	0x2016	Double Vertical Line	major group	diacritic
|	0x7C	Vertical Line	minor group	diacritic
↑	0x2191	Upwards Arrow	tone	diacritic egressive
↓	0x2193	Downwards Arrow	tone	diacritic ingressive
↗	0x2197	Northeast Arrow	tone	diacritic toneglobalrise
↘	0x2198	Southeast Arrow	tone	diacritic toneglobalfall
#	0xA71B	Up Arrow	tone	diacritic toneupstep
#	0xA71C	Down Arrow	tone	diacritic tonedownstep
̵	0x335	Combining Short Stroke Overlay - Affix Diacritic Role Switcher	role reversal	diacritic
ƒ	0x192	Latin Letter Small F with Hook	consonant	consonant labial bilabial voiceless continuant obstruent fricative oral
‿	0x203F	Undertie	sandhi	diacritic sandhi
⁀	0x2040	Overtie	sandhi	diacritic
ɻ	0x1AA	Latin Letter Reversed Esh with Loop	consonant	consonant coronal lingual posterior alveopalatal distributed voiceless continuant obstruent fricative oral
ƭ	0x1AD	Latin Letter Small T with Hook	consonant	consonant coronal lingual anterior alveolar voiceless stop obstruent implosive oral
ɥ	0x265	Latin Letter Small Turned H	consonant	consonant glide labial bilabial palatal coronal lingual voiced approximant continuant sonorant oral
ɯ̟	0x270	Latin Letter Small Turned M with Long Leg	consonant	consonant glide dorsal velar lingual voiced approximant continuant sonorant oral
ɪ	0x131	Latin Letter Small Dotless I	vowel	vowel high tense atr front
◌̏	0x1DC4	Combining Macron-Acute	combining diacritic	diacritic tonerising tonehigh
◌̎	0x1DC5	Combining Grave-Macron	combining diacritic	diacritic tonelowrising

Glyph	Unicode Value	Name	Type	Features
◌᷆	0x1DC6	Combining Macron-Grave	combining diacritic	diacritic
◌᷇	0x1DC7	Combining Acute-Macron	combining diacritic	diacritic
◌᷈	0x1DC8	Combining Grave-Acute-Grave	combining diacritic	diacritic tonerisingfalling
↑	0x2191	Upwards Arrow	tone	diacritic egressive
↓	0x2193	Downwards Arrow	tone	diacritic ingressive
↗	0x2197	North-East arrow	tone	diacritic toneglobalrise
↘	0x2198	South-East Arrow	tone	diacritic toneglobalfall
#	0xA71B	Modifier Letter Raised Up Arrow	tone	diacritic toneupstep
#	0xA71C	Modifier Letter Raised Down Arrow	tone	diacritic tonedownstep
<	0x2C2	Modifier Letter Left Arrowhead	suffix diacritic	diacritic fronted
>	0x2C3	Modifier Letter Right Arrowhead	suffix diacritic	diacritic backed
∧	0x2C4	Modifier Letter Up Arrowhead	suffix diacritic	diacritic raised
∨	0x2C5	Modifier Letter Down Arrowhead	suffix diacritic	diacritic lowered
ˆ	0x2C6	Modifier Letter Circumflex Accent	tone	diacritic tonefalling
ˇ	0x2C7	Caron	tone	diacritic tonerising
ˉ	0x2C9	Modifier Letter Macron	tone	diacritic tonemid
ˊ	0x2CA	Modifier Letter Acute Accent	tone	diacritic tonehigh
ˋ	0x2CB	Modifier Letter Grave Accent	tone	diacritic toneextrahigh
˭	0x2D4	Modifier Letter Up Tack	tone	diacritic raised

Glyph	Unicode Value	Name	Type	Features
˵	0x2D5	Modifier Letter Down Tack	tone	diacritic lowered
˖	0x2D6	Modifier Letter Plus Sign	suffix diacritic	diacritic advanced
˗	0x2D7	Modifier Letter Minus Sign	suffix diacritic	diacritic retracted
˜	0x2DC	Small Tilde	suffix diacritic	diacritic nasal
ˢ	0x2E2	Modifier Letter Small S	suffix diacritic	diacritic affricate
ˣ	0x2E3	Modifier Letter Small X	suffix diacritic	diacritic velar
ˤ	0x2E4	Modifier Letter Small Reversed Glottal Stop	suffix diacritic	diacritic pharyngeal
˯	0x2EF	Modifier Letter Low Down Arrowhead	suffix diacritic	diacritic lowered
˰	0x2F0	Modifier Letter Low Up Arrowhead	suffix diacritic	diacritic raised
˱	0x2F1	Modifier Letter Low Left Arrowhead	suffix diacritic	diacritic fronted
˲	0x2F2	Modifier Letter Low Right Arrowhead	suffix diacritic	diacritic backed
˵	0x2F5	Modifier Letter Middle Double Grave Accent	tone	diacritic toneextralow
˶	0x2F6	Modifier Letter Middle Double Acute Accent	tone	diacritic toneextrahigh
ː	0x2F8	Modifier Letter Raised Colon	tone	diacritic long
˹	0x2F9	Modifier Letter Begin High Tone	tone	diacritic tonehigh
˺	0x2FA	Modifier Letter End High Tone	tone	diacritic tonehigh
˻	0x2FB	Modifier Letter Begin Low Tone	tone	diacritic tonelow

Glyph	Unicode Value	Name	Type	Features
˩	0x2FC	Modifier Letter End Low Tone	tone	diacritic tonelow
˭	0x2FD	Modifier Letter Shelf	tone	diacritic
ˮ	0x2FE	Modifier Letter Open Shelf	tone	diacritic
˯	0x2FF	Modifier Letter Low Left Arrow	tone	diacritic
ᶻ	0x1DBB	Modifier Letter Small Z	suffix diacritic	diacritic affricate
ᶴ	0x1DB4	Modifier Letter Small Esh	suffix diacritic	diacritic affricate
ᶾ	0x1DBE	Modifier Letter Small Ezh	suffix diacritic	diacritic affricate
ᶿ	0x1DBF	Modifier Letter Small Theta	suffix diacritic	diacritic dental coronal lingual anterior distributed voiceless continuant obstruent
ᵖ	0x1D56	Modifier Letter Small P	suffix diacritic	diacritic labial
ᵗ	0x1D57	Modifier Letter Small T	suffix diacritic	diacritic coronal
ᵏ	0x1D4F	Modifier Letter Small K	suffix diacritic	diacritic dorsal
ᵇ	0x1D47	Modifier Letter Smalll B	suffix diacritic	diacritic labial
ᵈ	0x1D48	Modifier Letter Small D	suffix diacritic	diacritic coronal
ᵍ	0x1D4D	Modifier Letter Small G	suffix diacritic	diacritic dorsal
⁼	0x207C	Superscript Equals Sign	suffix diacritic	diacritic unaspirated
◌̉	0x309	Combining Hook Above	combining diacritic	diacritic
◌̐	0x310	Combining Candrabindu	combining diacritic	diacritic
◌̒	0x312	Combining Turned Comma Above	combining diacritic	diacritic aspirated
◌̓	0x314	Combining Reversed Comma Above	combining diacritic	diacritic weaklyaspirated

Glyph	Unicode Value	Name	Type	Features
◌̖	0x316	Combining Grave Accent Below	combining diacritic	diacritic tonerising
◌̫	0x32B	Combining Inverted Double Arch Below	combining diacritic	diacritic
◌̮	0x32E	Combining Breve Below	combining diacritic	diacritic derhoticized
◌̱	0x331	Combining Macron Below	combining diacritic	diacritic retracted
◌̲	0x332	Combining Low Line	combining diacritic	diacritic alveolar
◌̳	0x333	Combining Double Low Line	combining diacritic	diacritic
◌̾	0x33E	Combining Vertical Tilde	combining diacritic	diacritic distorted
◌̿	0x33F	Combining Double Overline	combining diacritic	diacritic unaspirated
◌͐	0x350	Combining Right Arrowhead Above	combining diacritic	diacritic backed
◌͑	0x351	Combining Left Half Ring Above	combining diacritic	diacritic lessrounded
◌͒	0x352	Combining Fermata	combining diacritic	diacritic
◌͓	0x353	Combining X Below	combining diacritic	diacritic
◌͖	0x356	Combining Right Arrowhead and Up Arrowhead Below	combining diacritic	diacritic
◌͗	0x357	Combining Right Half Ring Above	combining diacritic	diacritic morerounded
◌͝	0x35D	Combining Double Breve	combining diacritic	diacritic
◌͞	0x35E	Combining Double Macron	combining diacritic	diacritic

Glyph	Unicode Value	Name	Type	Features
◌͟	0x35F	Combining Double Macron Below	combining diacritic	diacritic
◌͠	0x360	Combining Double Tilde	combining diacritic	diacritic
◌ᵃ	0x363	Combining Latin Letter Small A	combining diacritic	diacritic
◌ᵉ	0x364	Combining Latin Letter Small E	combining diacritic	diacritic
◌ⁱ	0x365	Combining Latin Letter Small I	combining diacritic	diacritic
◌ᵒ	0x366	Combining Latin Letter Small O	combining diacritic	diacritic
◌ᵘ	0x367	Combining Latin Letter Small U	combining diacritic	diacritic
◌ᶜ	0x368	Combining Latin Letter Small C	combining diacritic	diacritic
◌ᵈ	0x369	Combining Latin Letter Small D	combining diacritic	diacritic
◌ʰ	0x36A	Combining Latin Letter Small H	combining diacritic	diacritic aspirated
◌ᵐ	0x36B	Combining Latin Letter Small M	combining diacritic	diacritic nasal
◌ʳ	0x36C	Combining Latin Letter Small R	combining diacritic	diacritic rhotic
◌ᵗ	0x36D	Combining Latin Letter Small T	combining diacritic	diacritic
◌ᵛ	0x36E	Combining Latin Letter Small V	combining diacritic	diacritic
◌ˣ	0x36F	Combining Latin Letter Small X	combining diacritic	diacritic

Glyph	Unicode Value	Name	Type	Features
˙	0x387	Greek Ano Teleia	suffix diacritic	diacritic halflong
◌᷾	0x1DC9	Falling Rising Tone	combining diacritic	diacritic tonefallingrising
#	0x2C71	Latin Letter Small V with Right Hook	consonant	consonant labial labiodental lingual voiced approximant continuant sonorant flap oral
#	0xA71D	MODIFIER LETTER AFRICANIST DOWNSTEP	suffix diacritic	diacritic tonedownstep
#	0xA71E	MODIFIER LETTER AFRICANIST UPSTEP	suffix diacritic	diacritic toneupstep
ᵻ	0x1DA6	MODIFIER LETTER SMALL CAPITAL I	suffix diacritic	diacritic palatal
ᵚ	0x1DB7	MODIFIER LETTER SMALL UPSILON	suffix diacritic	diacritic labial

Document Conventions

The following conventions may be used in this document:

Table 28: Document Conventions

Symbol	Description
*	Zero or more
+	One or more
?	Zero or one
,	Separates two or more items
|	Indicates a choice
-	Negation
[ ]	Indicates required information, remove brackets when replacing
< >	Specifies type of information to be entered, remove angle brackets when replacing
" "	Indicates a user input to be entered
>	Indicates a menu hierarchy