DiagSap User Documentation

H. Andrew Black
SIL International
lingtree_support@sil.org
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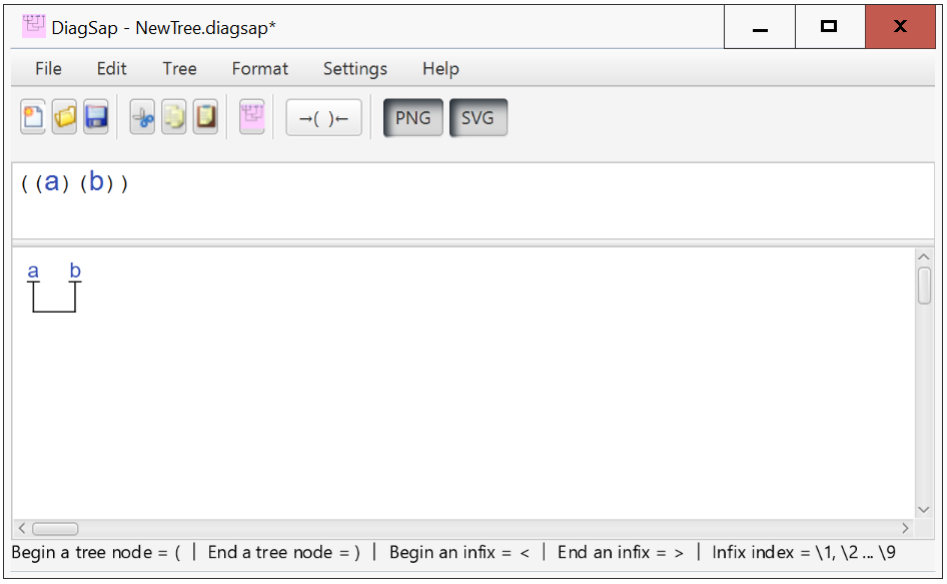
Contents

1 Introduction

DiagSap is a tool to produce Philippine-style word tree diagrams. DiagSap is pronounced diɑgsɑp[1] and is short for Tagalog diagramang sapin-sapin which means "layered diagram." You key in a description of the tree, process that description, and DiagSap shows what the tree looks like. The tree can be saved in up to two different file formats so that it can be included in papers or web pages.

DiagSap looks like what is shown in (1).

(1)



The file name where the tree information is stored is shown in the upper left part of the window. You key the description in the top pane, process the description, and then the tree appears in the bottom pane. Since each node in the tree has binary branching, it begins with two lexical forms as shown, using “a” and “b” for the forms. You change them to be what you need. We suggest starting from the innermost forms and building the tree outward.

See section 2 for information on keying a tree description and processing a tree.

You can drag the edges of the window to make it larger. You can also drag the bar between the panes to make either the tree display or the description larger (or smaller).

2 Keying a tree description

You key in a tree description in the top pane. To show the corresponding tree in the bottom pane, you "process" the description in any one of four ways:

- by clicking the "process the tree description tool bar button" ();
- by clicking on the Tree menu item and then Draw Tree;
- by typing **Ctrl-D** (holding the **Ctrl** key down while pressing the **D** key); or

[1] As opposed to daɪægsæp.

- by using the Settings menu item / Draw tree as you type option. This will draw the tree for each keystroke you use in the tree description.[2] (See section 4.2.)

All four do the same processing of the tree description and are equivalent in effect.

2.1 Basic tree description

A tree description consists of a set of nodes enclosed within parentheses. The parentheses may be nested according to the tree structure. Whenever you key a closing parenthesis ')', the matching opening parenthesis will be selected briefly. Similarly, when you key an opening parenthesis '(', any matching closing parenthesis will be selected briefly. (If you have selected the Settings menu item / Draw tree as you type option, the closing parenthesis is inserted automatically when you key an opening parenthesis.) This is to help you match nested opening and closing parentheses. You can control how long the matching parenthesis is selected; see section 4.4.

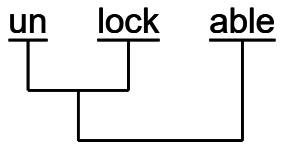
When keying a tree description, you can force a new line to occur by pressing the **Enter** key. You can also enter spaces and even tabs.

Here are three examples of how to key trees.

When you key what is in (2), it shows up as in (3).

(2) `(((un)(lock))(able))`

(3)

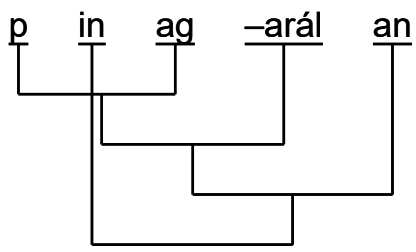


And if you key what is in (4)

(4) `((\1)(((p<in>ag) (-arál)) (an)))`

it will produce what is in (5)

(5)



In example (4), notice that the infix material is indicated by typing an opening wedge '<', the infix form, and then a closing wedge '>.' The node level of the infix

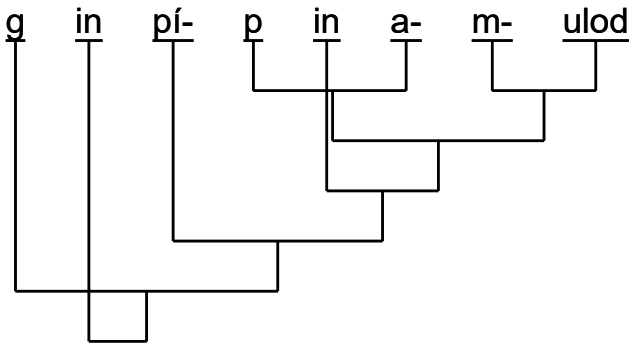
[2]When you key an opening parenthesis, it also automatically inserts a space and a closing parenthesis. Also, when you key an opening wedge '<', it automatically inserts a closing wedge '>'.

is indicated by the `(\1)` portion which we call an infix index. We use a backslash followed by a 1 (one) to indicate the first infix in the tree (from left-to-right); `(\2)` to indicate the second infix, etc.[3] The backslash is used to avoid the ambiguity that occurs when a font uses the same glyph for both the digit 1 and a lower case l.

The description in example (6) has two infixes in it and produces what is given in example (7).

(6) `((\1) ((g<in>) ((pí-)((\2) ((p<in>a-)((m-)(ulod))))))`

(7)



You may set font and color information for the lexical items. See section 3.3. When you do, the font and color will show in the description pane as well as in the drawn tree.

2.2 Handling parentheses

If you need to put an opening or closing parenthesis in your tree, quote the parenthesis by using a backslash immediately before it. Similarly, if you need to put an opening or closing wedge in your tree, quote the wedge by using a backslash immediately before it.

2.3 Restarting a tree

Sometimes you may decide that you want to just start all over when keying a tree description. To do so, click on the Tree menu item and then Erase Description; Start All Over. Whatever you have as your tree description will be removed and replaced with the standard initial "((a)(b))" description.

3 Formating a tree

You can adjust the positioning of the tree and its nodes as well as choose the fonts, sizes, and colors for the lexical forms. You can also set a background color and determine the color and thickness of the lines in the trees.

All of these parameters are available on the Format menu item.

[3] A maximum of nine infixes are allowed.

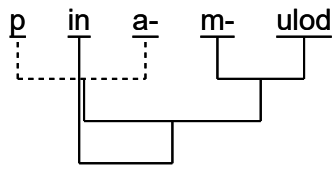
Please note that these settings are associated with each individual tree diagram. Thus, you can set them to make a given tree diagram look its best.

3.1 Use dashed lines for split infixed base

The first item under the main Format menu item is Use dashed lines for split infixed base. When this has a check mark before it, the horizontal and vertical lines connecting the infixed base's before and after portions will be drawn using dashed lines. For example, the description in example (8) will appear as in example (9).

(8) `((\1)((p<in>a-)((m-)(ulod))))`

(9)



3.2 Draw a tree right-to-left

The second item under the main Format menu item is Draw tree right-to-left. When this has a check mark before it, the tree will be drawn from right-to-left.

3.3 Setting the font and color information

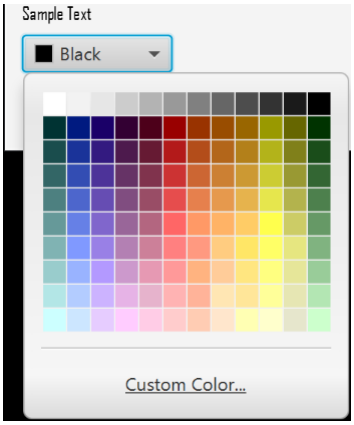
The next portion of the main Format menu item is for setting font and color information for the lexical material.

When you select this menu item, it brings up a dialog box showing font family, style, size and color options. The set of style options shown depends on what styles the selected font has. So if the font only has “Regular,” then only Regular will appear in the list of styles.

If you click in the Font list, then you can key a letter and it will go to the first font name that begins with that letter.

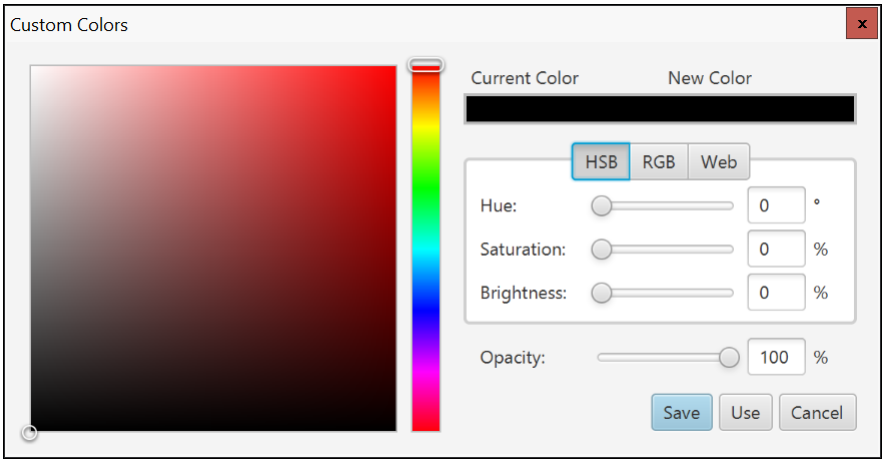
To get the color chooser, click on the drop-down box in the lower left portion of the dialog. It will look something like what is in (10).

(10)



You can click on the color you want or you can click on the “Custom Color” link. Doing so gives you what is in (11).

(11)



If you click on the Web tab, you can key in a code for the color. A list of color names, their color, and the code can be found at https://www.w3schools.com/cssref/css_colors.asp.

When you click on the main dialog's OK button, the tree description and tree diagram will reflect the new font and color information.

3.4 Set keyboards

The next item under the main Format menu item is Set keyboards. Currently, this is fully available on Windows and mostly available on macOS.[4] When you select this menu item, it brings up a dialog that looks like what is in (12).

(12)

You can control which keyboard is to be used with the various kinds of items in the tree description. Click on the drop-down arrow to select one of the available keyboards on your computer.

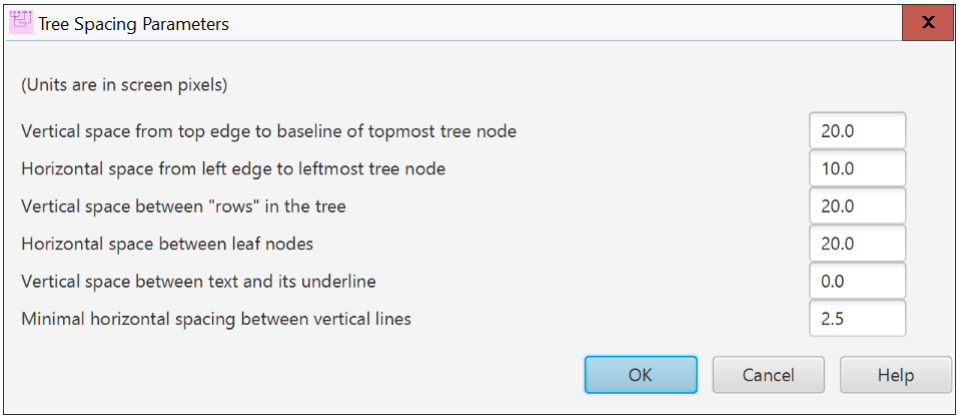
Note that whenever you move or copy a DiagSap description file from one computer to another, you will need to manually set each keyboard before they will be in effect.

[4] On macOS, Keyman keyboards are handled as a unit. That is, if you have two or more of them, you will need to select the Keyman option with the dialog shown in (12). LingTree will use whichever is the currently selected Keyman keyboard. This is an issue with macOS.

3.5 Tree spacing parameters

The fourth item in the main Format menu item is Tree spacing parameters. When you select this menu item, it brings up a dialog that looks like what is in (13).

(13)

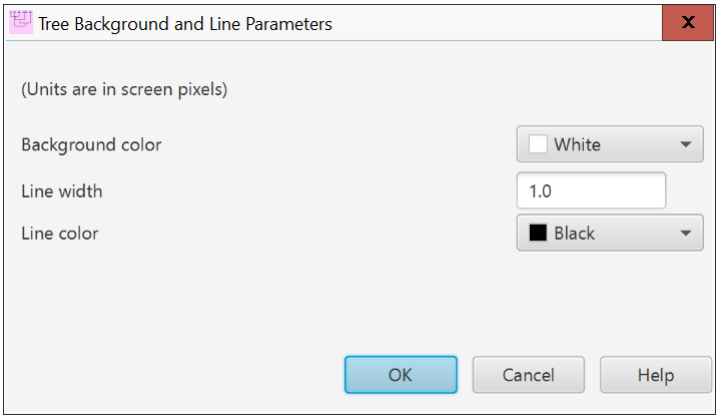


Each row has a description of the parameter and a box to key a numerical value. You can use negative numbers, if necessary.

3.6 Background and line parameters

The second from last item in the main Format menu item is Tree spacing parameters. When you select this menu item, it brings up a dialog that looks like what is in (14).

(14)



You can set the color of the tree background and the width and color of the lines.

3.7 Saving format information for use with new tree diagrams

The last item in the main Format menu item is Save the current tree parameters to use for new tree diagrams. When you select this menu item, the set of tree formatting values used for the current tree are remembered for any new tree diagrams in the future.

4 User convenience options

The Settings menu item has several options you can use to (hopefully) improve your experience with using DiagSap. These are described below along with one useful item under the Help menu.

Please note that these settings are associated with the DiagSap program on your computer. Once you set them, they will be used each time you use DiagSap (until you change them, of course).

4.1 Font size for tree description symbols

The first item under the main Settings menu item is Font size for tree description symbols. This lets you set the font size for the symbols used in a tree description, that is `(`, `)`, `<`, `>`, `\1`, `\2`, etc. The motivation for this is that some very high resolution screens may make it a bit difficult to see these or, alternatively, they may appear quite large in comparison to the other material in a tree description. So you can change their size.

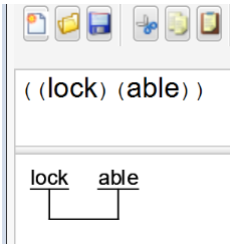
4.2 Draw the tree as you type

The second item under the main Settings menu item is Draw tree as you type. When this menu item has a check mark before it, each time you change or edit something in the tree description, DiagSap will redraw the tree diagram.

When using this mode, whenever you key an opening parenthesis, DiagSap will automatically insert a space, an “a” and a closing parenthesis. The idea is to help you keep opening and closing parentheses matched. It will also automatically insert a closing wedge whenever you key an opening wedge.

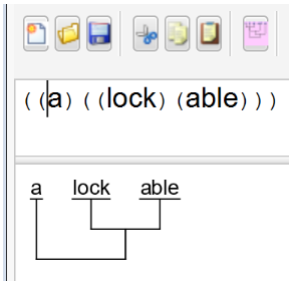
Furthermore, if you key an opening parenthesis after the initial opening parenthesis or before the final parenthesis, DiagSap will also insert additional parentheses to keep the tree in its correct shape. This is to help you build the tree one level at a time. For example, suppose you are creating a tree for one possible reading of the word “unlockable.” You begin with a new tree and change the “a” and “b” to “lock” and “able,“ respectively. It will look like what is shown in example (15).

(15)



If you then place the cursor after the initial opening parenthesis and type an opening parenthesis, it will look like what is in example (16).

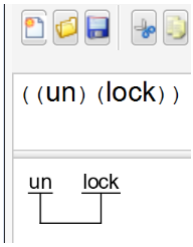
(16)



You would replace the “a” with “un.”

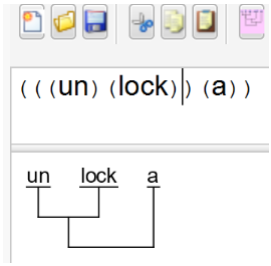
Alternatively, you could begin with a new tree and change the “a” and “b” to “un” and “lock,” respectively, so it would look like example (17).

(17)



If you then place the cursor just before the final opening parenthesis and type an opening parenthesis, it will look like what is in example (18).

(18)



You would replace the “a” with “able.”

Sometimes the automatic drawing of the tree diagram will cause an error message to appear where the tree diagram normally shows; for example, if you have deleted a parenthesis and no longer have a matching opening or closing one, then there will be a message about a missing opening or closing parenthesis. As soon as the tree description is well-formed, the tree diagram will appear.

4.3 Show matching parenthesis with arrow keys

As mentioned in section 2.1, when you key a parenthesis, DiagSap will temporarily select the matching parenthesis to help you see the nested structure of the description. There are times, however, when you need to see matching parentheses and it would be nice if you did not have to delete a parenthesis and immediately re-key it. For this reason, there is the third item under the main Settings menu item: Show matching parenthesis with arrow keys. When this is checked, whenever you use an arrow key to cross over a parenthesis in the description, DiagSap will temporarily select the parenthesis that matches the one crossed over.

Besides using this menu option, you can also use the toolbar button shown in (19).

(19)

Show matching with arrows	Do not show matching with arrows
	

4.4 Delay to use when showing matching parentheses

The fourth item under the main Settings menu item is Delay to use when showing matching parentheses. The default delay is 750 milliseconds (i.e., three quarters of a second). Depending on your typing speed, you may want to change this value. Use this menu item to change the delay value to be shorter or longer. The shortest allowed value is 125 milliseconds (i.e., one eighth of a second) and the longest value allowed is 4000 milliseconds (i.e., 4 seconds).

4.5 Change the interface language

You can set the user interface language by using the Settings / Change the interface language menu item. This brings up a dialog box showing the current interface language in a drop down chooser. Click on the chooser's drop down button to see other interface language choices. The choices given use the name of the language in the current interface language (so if the current interface language is English, then it will show “Spanish” as an option; if the current interface language is Spanish, it will show English as “inglés”).

The current version has English, some French and a rough, most likely often inaccurate version of Spanish. Any corrections to the Spanish or French are welcome.

4.6 Quick Reference Guide

The main Help menu item has a Quick Reference Guide item. When you select this item, it brings up a dialog box containing a list of the special symbols you can key to get a particular result. You can position and/or resize this dialog so that you can see it while also keying a tree description. That is, unlike most dialog boxes, you do not have to close this dialog box before you can continue working. It will stay open until you close it.

5 Saving the tree

While the resulting tree looks nice within the DiagSap program, what one usually wants to do is to embed the tree diagram in some other document. DiagSap allows you to save the tree in up to two formats:

- A Portable Network Graphics (*.png) file.
- Scalable Vector Graphics format (*.svg) file.

You select which of these formats you wish to save by clicking on the File menu item and then clicking on the Save tree as .png and/or Save tree as .svg items.

Besides using these menu options, you can also use the toolbar buttons shown in (20) and (21).

(20)

Save tree as .png	Do not save tree as .png
	

(21)

Save tree as .svg	Do not save tree as .svg
	

You merely check the formats you wish to use. DiagSap will produce a file with the given extension for each checked format. The file name (i.e., the part before the extension) is the same for all of them.

In addition, you will find a file with an extension of ".diagsap" which contains information for DiagSap to draw the tree. Do not edit this file. This has all the information about the tree description that DiagSap uses.

Note that once you set these Save Formats, they stay in effect for all ensuing trees you build.

Of these two formats, we highly recommend that you use the Scalable Vector Graphics format (*.svg) whenever possible. This is because SVG format will always look nice in a web browser or a PDF file, no matter how large the user makes the page appear.

Another reason for using the SVG format is that if you find that DiagSap cannot do everything you need for a particular tree diagram, you can produce the SVG form and then use a tool like InkScape to do the rest. See https://inkscape.org/en/ for more on InkScape.

If you do find yourself in a situation where you absolutely must have a pure graphics image file and the Portable Network Graphics (*.png) form is not acceptable, you can use various tools to convert your PNG file to some other graphics image format. Example (22) lists some possibilities.

(22)

Operating System	Tool	Potential formats
Windows	Paint	.bmp, .jpg, .gif, .tif
Mac OS X	Preview	.jpeg, .tiff
Linux	Image Viewer	.bmp, .jpeg, .gif, .tiff

In addition, there is the XnConvert program available at https://www.xnview.com/en/xnconvert/. It runs on all three operating systems and can convert to many different image formats.

6 Error messages

Whenever you process a tree description, if DiagSap notices any error in the description, it will show the error message in the same place where the tree diagram usually appears. The message tries to indicate what the problem is and where it was found (in terms of line number and character position). It also shows where in the tree description the error was found. While these messages are intended to be helpful, sometimes it may be the case that what needs to be done to fix the error is not necessarily what the message implies will fix it.

For example, when the message is about a missing closing parenthesis, the message actually indicates the innermost place where the outer parentheses match. So it may not be the best place to insert a closing parenthesis; but, on the other hand, it may work just fine. You may want to use the arrow keys to find the best place to fix the problem (see section 4.3).

Another thing to note is that for longer, more complicated tree descriptions, it may take a 2-3 times longer for the tree drawing process to happen if it finds an error.

Example (23) lists the error types DiagSap reports along with a brief description of what the error type might mean.

(23)

Error Type	Meaning
Missing closing parenthesis	At least one closing parenthesis is missing.
Missing closing wedge	A closing wedge is missing.
Missing constituent	There is a node but it does not have both a left and a right portion; it needs another portion (enclosed within parentheses).
Missing constituent on the right	There is a node that has a left portion, but not a right portion; it needs a right portion (enclosed within parentheses).
Missing content	Some lexical material was expected but not found.
Missing content and closing parenthesis	Some lexical material was expected but not found. In addition, there should be a closing parenthesis after that content.
Missing opening parenthesis	An opening parenthesis needs to be inserted.
Missing opening wedges	An opening wedge needs to be inserted.
Syntax error in description	Perhaps obviously, this indicates some kind of error, but DiagSap failed to identify it. Look at where it was found and see if you can guess what might be wrong.
The infix "xyz" has no matching index.	The infix (indicated by what is inside the quotes) does not have a corresponding infix index (which is indicated by `(\1)`, `(\2)`, etc.)

The infix index "xyz" appears more than once. It must only be there one time.	The same infix index occurs more than once. E.g., there are two instances of `(\1)`.
The infix index "xyz" has no matching infix. This is not allowed; change its number or add an infix base.	An infix index was found that does not have a corresponding infix.
There is content after a completed tree	A "completed tree" means that there is a matching closing parenthesis for the first opening parenthesis. This error indicates that some content or nodes occur after the closing parenthesis which matches the first opening parenthesis. It may be that you need another opening parenthesis before the first opening parenthesis or maybe some content was keyed in the wrong place at the end.
Too many closing parentheses	A closing parenthesis was found that does not have a matching opening parenthesis.
Two consecutive nodes found between "xyz" and "abc". This is not allowed; change one to lexical material, an infix index, or an infix base.	Since every node is binary, one part must be lexical material, an infix, or an infix index and the other part must be the same or a node. DiagSap found that there were two nodes one after the other.

7 Known problems

The following items are known to be less than desirable with this version of DiagSap:

- The splitter bar between the description and the drawing may change between invocations of DiagSap.
- When showing matching parentheses while using arrow keys (see section 4.3), if you type several arrow keys quickly, the cursor caret may not be where you expect it. Either
  - turn off the show matching parentheses with the arrow keys option;
  - set the delay to be shorter (see section 4.4); or
  - wait for the matching parenthesis to show before pressing the next arrow key.
- Undo and redo do not always work as expected.

- On macOS: if you double click a tree description file in Finder, then DiagSap will open the last opened file, not the one you clicked on. This is due to a communication problem between the macOS operating system and the Java language DiagSap is written in.
- When you move a DiagSap file from one computer to another, you may well need to reset the keyboards manually. This is because the keyboard settings may be different on the two machines.

8 Support

If you have any questions with DiagSap or find bugs in it, please send an email to lingtree_support@sil.org or go to the DiagSap web site at https://software.sil.org/lingtree/.