Variant Generator User Documentation

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29 August, 2023
Version 1.1.0 Beta

Contents

1 Introduction

Variant Generator is a tool that works as a utility in *FieldWorks Language Explorer* (aka *FLEx*). *Variant Generator* allows you to define operations on a form in an entry to produce new variants of that entry. You can use what is in the Citation Form, Lexeme Form, or in the first Etymology Source form for what to match on. It is possible to use a custom field, too. *Variant Generator* defaults to using the Citation Form.

Variant Generator works with version 9.1.18 Beta or higher of *FLEx* and is only available on 64-bit Windows computers.

Each operation defined in *Variant Generator* describes a pattern that is used to match the indicated kind of form in the *FLEx* database. There also is a set of actions that are to be applied to each such form. The result of the action will produce a new variant of that entry.

1.1 Installation

To install *Variant Generator*, obtain the installer from https://github.com/sillsdev/ FLExAllomorphGenerator/blob/master/InstallerVarGen/Output/VariantGeneratorDllSetup.exe. The installer will check to see if you have installed *FieldWorks Language Explorer* version 9. If not, it will abort.

We recommend that you close *FieldWorks Language Explorer* before running the *Variant Generator* installer.

1.2 Invoking *Variant Generator* from within *FLEx*

While running *FLEx*, use Tools menu item / Utilities.... Find the "Variant Generator" item, check it, and then click on the "Run Checked Utilities Now" button.

1.3 Appearance

*Variant Generator* looks something like what is shown in (1).[1]

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[1]Since *Variant Generator* is based on *Allomorph Generator*, they share many portions. We use a different background color in the tabs for *Variant Generator* in order to provide a potentially more obvious visual distinction between the two tools.

(1)

The top portion shows the file containing the variant generation operations. Below it are three tabs, one for editing the operations, one for running them, and one for editing the master list of replace operations. See section 2 for information on using the Edit Operations tab. In one project, the Run Operations tab looks like what is in (2).

(2)
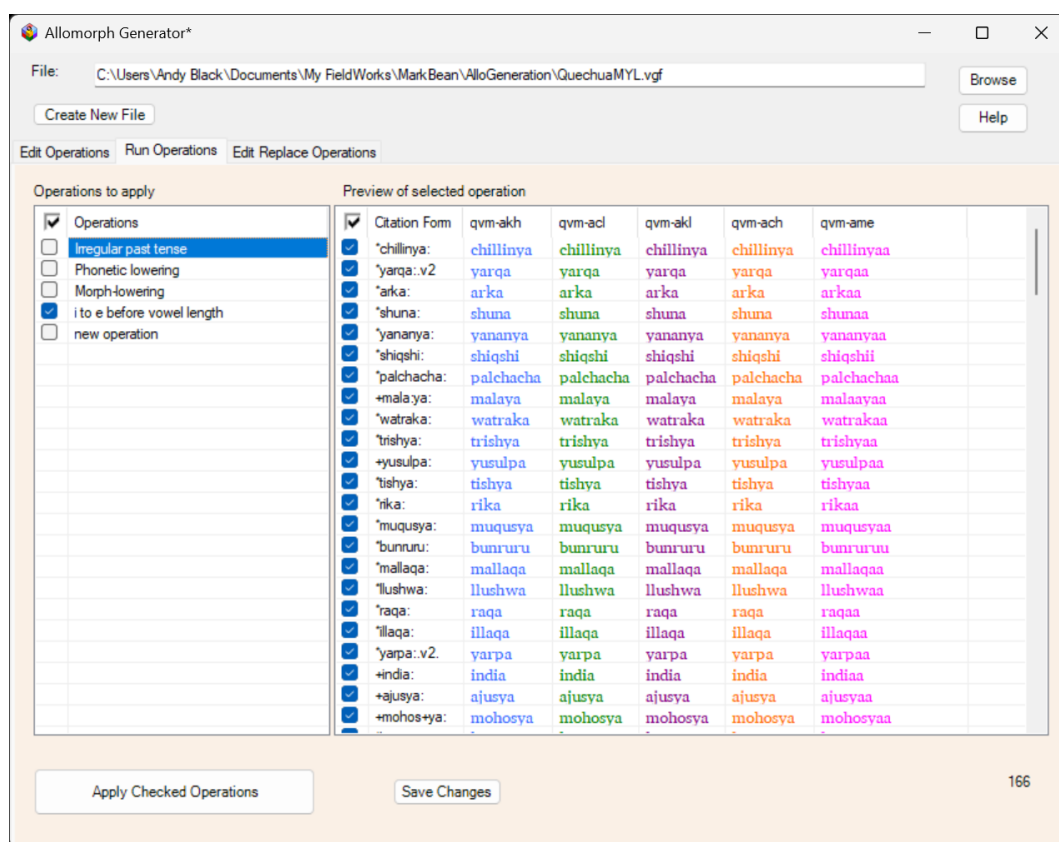
This tab is explained in section 3 below. In this same project, the Edit Replace Operations tab looks like what is in (3).

(3)

Name	From	To	Mode	qvm-akh	qvm-acl	qvm-akl	qvm-ach	qvm-ame	Description
Remove proto-form marker	*		Normal	X	X	X	X	X	
Remove Spanish loan marker	+		Normal	X	X	X	X	X	
	^(.*:)\..+$	$1	RegEx	X	X	X	X	X	
	:		Normal	X	X	X	X		
	^.+$		RegEx	X			X	X	
	[Uu]$[Uu]\..+$	o	RegEx		X	X			
k --> c / _ [ie]	k([^ie])	c$1	RegEx	X	X	X	X	X	Ortho change for ach and acl
	[UI]$[UI]\..+$	a	RegEx	X	X	X	X	X	
	i$	e	RegEx	X	X	X	X	X	
Final u --> o	u$	o	RegEx	X	X	X	X	X	
ME long vowel	([aeiou]):	$1$1	RegEx					X	
dieresis	ü	a:	Normal	X					

Edit   Add new   Delete   Save Changes   1 / 12

This tab is explained in section 4 below.

The "Create New File" button is used to create a new file containing a new set of operations. When saving a *Variant Generator* file, I suggest you put it in a folder under the "My FieldWorks" directory in your "Documents" folder.

The "Browse" button is used to select an operations file. *Variant Generator* files by convention have an extension of ".vgf" and this is what the file browser uses.

The "Help" button is used to get this user documentation file or to show the "About" dialog box.

2 Edit Operations tab

The Edit Operations tab has a list of operations in a column on the left. When you select one of them, the rest of the tab contains the information about the selected operation. See sections 2.1–2.5 for more.

You can create new operations, rearrange them, or delete them by right-clicking on one. You will then see a context menu like what is in (4).

(4)

- Duplicate
- Insert new before
- Insert new after
- Move up
- Move down
- Delete
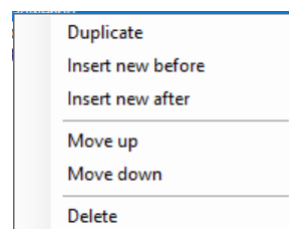
2.1 Operation name and description

The top two text boxes are where you give a name and a description for the operation. These are for your benefit so use something that makes sense to you.

2.2 Pattern section

The pattern section contains three parts which define which forms will be used: the Match pattern, the morpheme types to use, and an optional category.

2.2.1 Match

The "Match" part uses the same dialog box that *FLEx* uses for filter searches. To use it, click on the "Define match" button.

2.2.2 Morph Types

To set which morpheme types to use in the pattern, click on the "Edit" button to the right of the box showing the currently selected morpheme types.

2.2.3 Category

If you need to limit the pattern to a particular category, then click on the *FLEx*-like chooser button to the right of the category box.

2.3 Actions section

The Actions section allows you to define a set of ordered replace operations to be applied to the indicated form to create the shape of the new variant. You can also optionally select a set of variant types and/or indicate whether the newly created variant entry should show as a minor entry.

2.3.1 Replace operations

The first box in the actions section contains an ordered set of replace operations. They are ordered in the sense that the output of one is the input to the next. You can edit one by double-clicking on it or by right-clicking and choosing an appropriate option from the ensuing context menu. Example (5) shows what this menu might look like.

(5)
```
Edit

Duplicate
Insert new before
Insert existing before
Insert new after
Insert existing after

Move up
Move down

Delete
```
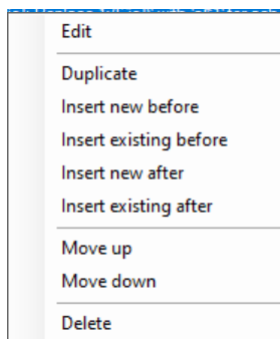
When you edit a replace operation, you will see a dialog box that will look something like what is in (6).

(6)
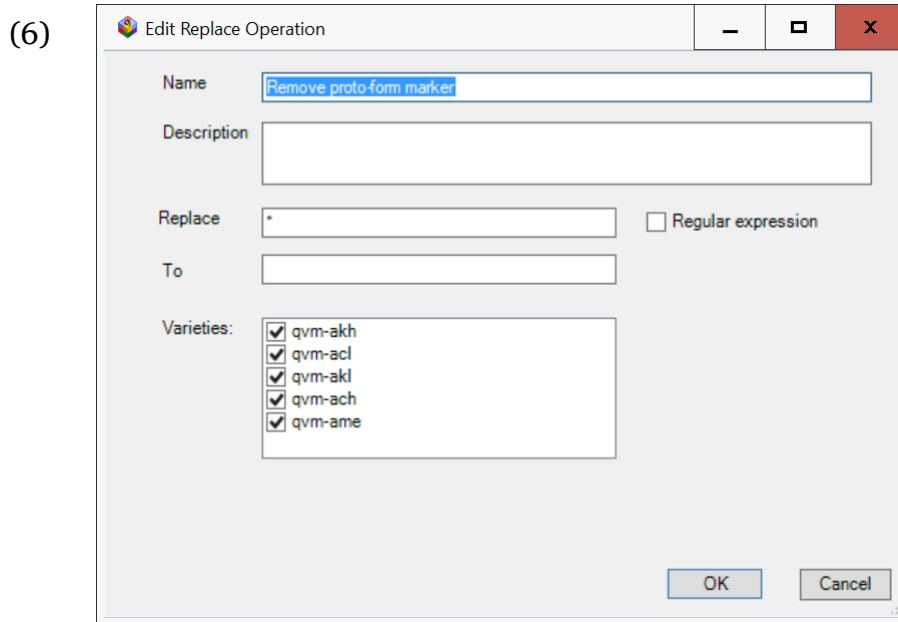
There are four text boxes:

1. A name to use for this replace operation;
2. a description for it;
3. what to look for ("Replace") and
4. what to change what matches ("To").

There is also a set of vernacular writing systems names, each with a check box before it. Be sure to check each vernacular writing system that this replace operation should apply to.

The replace can be a portion of the content of the indicated form. That is, you do not have to try to match the entire content. There is an option to use regular expressions for what to replace and what to change it to. Simply check the "Regular expression" check box or leave it unchecked. When you edit any replace here, the changes made will also be made in the corresponding replace in the Edit Replace Operations tab. That is, you do not need to make the same change here and in the Edit Replace Operations tab. You only need to make the change once in either place.

Each replace operation can be applied to one or more of the currently defined vernacular writing systems. Check all that apply.

When you choose either the "Insert new before" or "Insert new after" option, a new replace operation will be inserted and you will see the "Edit Replace Operation" dialog box. Any new replace operation is automatically added to the master list of replace operations shown in the Edit Replace Operations tab.

When you choose either the "Insert existing before" or "Insert existing after" option, you will see the "Replace Operations Chooser" dialog box. It will look something like what is in example (7).

(7)
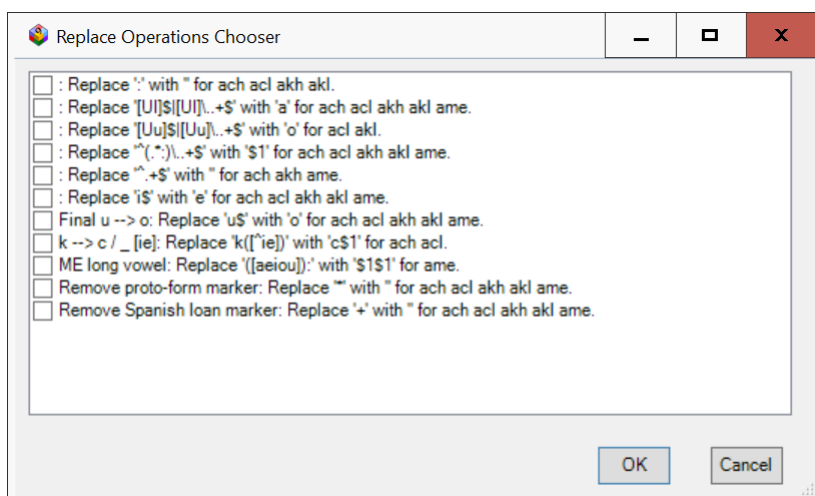
You can choose as many replace operations as are appropriate. They will be inserted together.

When you choose either the "Move up" or "Move down" option, the currently selected replace operation will be moved up or down in the list of replace operations.

When you choose the "Delete" option, the currently selected replace operation will be removed from the list of replace operations for the current operation. *Variant Generator* will also show you a list of which other operations, if any, are using the currently selected replace operation and ask if you want to delete the currently selected replace operation from the master list of all replace operations.

2.3.2 Variant types

If you need to have one or more variant types be associated with the variant entry that will be produced, click on the "Edit" button to the right of the variant types box. This brings up a chooser showing all currently available variant types in the *FLEx* project. Click on the check box before all those that you need to be used.[2]

2.3.3 Show minor entry

When the new variant entry is created, you can make it so it will show as a minor entry or not. Check the box if you want it to show as a minor entry.

2.4 Apply operations to drop-down box

In the bottom left hand corner, there is a drop-down box. You can click on the button and choose which field in an entry to use for matching and applying replace operations. There are at least three options available:

1. Citation Form

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[2]Unlike the variant types chooser in *FLEx*, this chooser flattens all the types into one list. That is, the chooser does not show a hierarchical list.

   2. Lexeme Form
   3. Etymology Form

Variant Generator will use the default vernacular writing system in each case. If there is more than one etymology field, it will use the first one.

It will also show any custom fields you have at the entry level which were created with the pattern illustrated by what is in example (8).

(8)

In particular, the custom field must have:

• A Location of "Entry"
• A Type of "Single-line Text" and
• A Writing Systems(s) of "First Vernacular Writing System."

2.5 Save changes button

Use the "Save Changes" button to save any changes you have made to the operations file.

3 Run Operations tab

The Run Operations tab lists the same set of operations as are shown in the Edit Operations tab except that each one has a check box in front of it. Whichever operation is currently selected will be applied and the resulting forms will be shown in the "Preview of selected operation" portion of the tab.[3] These forms will appear as the Lexeme Form of the newly created variant entry.

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[3]In the preview portion, we try to set the various column widths automatically by the longest width in each column. This can sometimes make the view appear to "dance" a bit. Be patient and it will settle down.

Note that the preview portion only shows entries having the indicated form for which there is no Lexeme Form of some variant entry already in the database. In addition, the indicated forms shown are for the default vernacular writing system. You can click on a column header to sort the rows by the content of that column. Note that it sorts by Unicode code points, not the way it might in *FLEx*.

Both of the items in the Run Operations tab have check boxes and both have a checked check box as the column header of the first column. When you click on this checked box in the top row, you will see the menu shown in example (9).

(9)
Select All
Clear All
Toggle
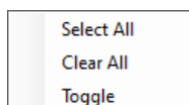
This works like the bulk edit check box menu does in *FLEx*. For operations, you choose which operations you want to be applied when you press the "Apply Checked Operations" button. For the preview portion, it works like it does in bulk edit in *FLEx*: if an item is checked, a new variant will be produced for the entry containing that indicated form. If an item is not checked, it will be ignored (i.e., it will remain as it currently is).

See section 5 for more on what the "Apply Checked Operations" button does.

4 Edit Replace Operations tab

The Edit Replace Operations tab contains the master list of all replace operations. It lists them in a tabular form. Like in the Run Operations tab, you can click on the table column headers to sort the table by that column.

This tab has four buttons:

1. Edit: this brings up the Edit Replace Dialog shown in example (6).
2. Add new: this also brings up that dialog but it is empty so you can add a new replace operation.
3. Delete: this allows you to delete replace operations you no longer wish to maintain. When you click on the "Delete" button, *Variant Generator* will show you a list of which operations, if any, are using the currently selected replace operation and ask if you want to delete it.
4. Save Changes: this is the same as the "Save Changes" buttons in the other two tabs.

Alternatively, you can right-click in the table and use the context menu shown in example (10).

(10)
Edit
Duplicate
Add
Delete
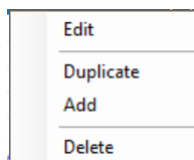
5 Applying operations

When you use the "Apply Checked Operations" button, *Variant Generator* will first check to see if there are any variant types which are not currently valid in the *FLEx* project and give you a message about which ones they are and which operation they are in. While not necessarily likely, it is possible that a given variant type may have been deleted in the *FLEx* project since you created the operation.

If there are no problematic variant types, then *Variant Generator* will insert a new variant entry for each checked operation. When it is done, the preview portion will no longer show those indicated forms which have had a variant entry added. In addition, in *FLEx*, the Edit / Undo menu item will show the last operation performed. You can use this to reverse the changes it made. In fact, the Undo/Redo menus will list the operations performed in reverse order.

If the replace operations for a particular writing system results in an empty form, *Variant Generator* will use a non-breaking space to avoid the *FLEx* parser using a non-empty value in some other writing system for that Lexeme Form.

6 Restarting *Variant Generator*

Whenever you exit and restart *Variant Generator*, it will do the following:

1. remember its window size, location, and layout;
2. remember which *Variant Generator* file you last chose;
3. remember which tab you last selected;
4. remember which operation you last selected for each tab.

7 Error messages

In certain situations, *Variant Generator* will issue an error message.

Table 1 lists the errors *Variant Generator* reports along with a brief description of what the error might mean.

Error	Meaning
The category '*category name*' was not found in the FLEx database	The indicated category is no longer found in the *FLEx* project. Try to change it to one that is now present.
No operations are selected, so there's nothing to do	This is shown when the "Apply Checked Operations" button is pressed but no operations have been checked. Try checking at least one operation.
The variant type '*variant type*' is no longer found. Please fix it in operation '*operation name*'.	The indicated variant type is no longer in the *FLEx* project. You will need to fix it in the indicated operation.

Table 1: *Error messages*

If you get an error message not in the list above, please report it. See section 9.

8 Known problems

The following items are known to be less than desirable with this version of *Variant Generator*:

1. *Variant Generator* only works with version 9.1.18 Beta or higher of *FLEx*.
2. The user interface is in English only.
3. When you start *Variant Generator*, if *FLEx* is showing as full screen, you may not see the *Variant Generator* dialog. You may have to either make *FLEx* be in its "Restore" mode or find the *Variant Generator* dialog and move it to another screen.
4. Whenever you upgrade your version of *FLEx*, you may have to re-install *Variant Generator*. In particular, the "Variant Generator" item under Tools menu item / Utilities... may not show.
5. Every newly added Lexeme Form will have the same Morph Type as does the Lexeme Form of the main entry. If this is incorrect, you will need to use Lexicon / Bulk Edit Entries / List Choice (with the Morph Type column showing) to fix this.

9 Support

If you have any questions with *Variant Generator* or find bugs in it, please send an email to blackhandrew@gmail.com.