

TKE User's Guide

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Chapter 1: Introduction

TKE is a source code editing environment built using Tcl/Tk which provides a clean user interface yet rich set of editing features and tools.

Feature Set

The following is a high-level list of features built-in to the tool.

Editor features

| Feature | Special Notes |
|----------------------|---|
| Syntax highlighting | <ul style="list-style-type: none"> • Over 70 languages currently supported, including: <ul style="list-style-type: none"> • ABAP, ActionScript, Ada, AppleScript • Bash • C#, C, C++, Clojure, Cobol, CoffeeScript, CSS, Cuda • D, Delphi, DocBook • Eiffel, Erlang • Fickle, Forth, Fortran • Go, Groovy • HTML, Haml, Haskell, Haxe, HelpSystem • J, JSON, Jade, Java, JavaScript, Julia • Lex, Lisp, Lua • MATLAB, Makefile, ManPage, Markdown, MySQL • Neko • Objective-C, OCaml • PHP, Pascal, Perl, Prolog, Python • R, RSS, Ruby, Rust • SASS, SCSS, Scala, Scheme, ShellScript, SQL, Swift, SystemVerilog • Taccle, Tcl • Vala, Verilog, VisualBasic, VHDL • XML, XSLT • YAML, Yacc • Syntax description files can be easily added • Preference control can select syntax types to highlight/not highlight • Built-in and customizable color themes • Support for mixed and embedded language syntax. |
| Multi-cursor support | <ul style="list-style-type: none"> • Cursor alignment • Enumeration insertion |

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| Feature | Special Notes |
|--|---|
| Built-in file difference viewer | Built-in support for Perforce, Git, Mercurial, Bazaar, Subversion and file diff. Also supports a custom difference command. Includes ability to jump to the file version where a given line was last changed. |
| Internationalization support | <ul style="list-style-type: none">• 17 languages currently supported |
| Customizable menu bindings | |
| Clipboard history | |
| Unlimited undo/redo | |
| Language-specific snippet support | <ul style="list-style-type: none">• Support for tab stops, variable substitution, and special value substitutions. |
| Built-in Emmet abbreviation support | <ul style="list-style-type: none">• HTML, XML, XSL, and CSS abbreviation syntax supported.• Support for custom Emmet commands. |
| Auto and smart indentation features | <ul style="list-style-type: none">• Selected code can have indentation policies applied• Pasted code can have indentation policies applied |
| Code line marking support | |
| Line number display | <ul style="list-style-type: none">• Includes support for both absolute and relative line numbering |
| Code folding | <ul style="list-style-type: none">• Based on indentation syntax markers found in the code or manually added (modal). |
| Customizable tab and shift/indentation stops | |
| Dozens of text transformation tools | |
| Built-in Vim support | |
| Expanded Vim functionality | <ul style="list-style-type: none">• Vim commands for setting/clearing multiple cursors• Auto-numbering functionality• Line bubbling |
| Regular expression in-file search (and optional replace) | <ul style="list-style-type: none">• Find and replace• Includes ability to quickly save and recall search input |
| Regular expression multi-directory file search | <ul style="list-style-type: none">• Includes ability to quickly save and recall search input |
| Symbol search function | <ul style="list-style-type: none">• Jump to a named procedure or function call |

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| Feature | Special Notes |
|--|---|
| Auto refresh | <ul style="list-style-type: none">Files modified outside of editor will be automatically updated (unless file is in a modified state) |
| File locking support | <ul style="list-style-type: none">File can be set to be read-only within the editor (regardless of actual file permissions) |
| Command launcher | |
| File system sidebar | <ul style="list-style-type: none">Contains functionality for creating, renaming, deleting files/directories |
| Multiple files can be opened at once | <ul style="list-style-type: none">Sidebar and tabs used to switch between opened files |
| Dual editor panel support | <ul style="list-style-type: none">Useful for viewing two files side-by-sideLine alignmentSynchronized pane scrolling support |
| Split view support | <ul style="list-style-type: none">Create two independent views into the same file. |
| Maximum column width display | |
| Support for NFS mounted file systems | |
| Plugin support | <ul style="list-style-type: none">Full plugin development documentation available. |
| Customizable theme and built-in theme editor | <ul style="list-style-type: none">Edit existing themesCreate new themesImport TKE and TextMate themesExport TKE themes that can be shared with others |
| Favorite file/directory support | |
| Automatic matching character insertion | <ul style="list-style-type: none">Curly bracket, square bracket, angled bracket, parenthesis, double and single string character matches are inserted as you type.Preference item to enable/disable any of the above character types.Each language syntax file specifies which characters are valid for auto-insertion. |
| Multi-platform EOL character support | Supports CR, CRLF and LF characters for end-of-line indicators. Also supports an 'orig' option which automatically infers the original EOL character when the file is read and an 'auto' option which infers the correct EOL character for the current platform. This setting is available through the preference system. |

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| Feature | Special Notes |
|-------------------------|---|
| Session support | <p>Allows for the creation and switching of customized TKE sessions.</p> <p>Saves the following reloadable information:</p> <ul style="list-style-type: none">• Opened files/directories• UI state information• Custom preferences• Saved search items |
| Templates | <p>Special snippet-like files that can be used for quickly generating new files. TKE allows for saving, using and managing template files.</p> |
| Automatic session save | |
| In-app update mechanism | <ul style="list-style-type: none">• Preference option to follow stable or development release track (not available for Windows). |
| Remote file editing | <ul style="list-style-type: none">• FTP/SFTP supported• View and edit remote files• Duplicate, rename and delete remote files/folders via the sidebar |
| Tab hiding | <p>Temporary hide tabs in the tab bar for improved workflow.</p> |

Chapter 2: Installation

Dependencies

The installation of TKE has a few dependencies that will need to be preinstalled before the application can begin to work. The dependencies are listed in the table below along with the URL path to find the source packages. The installation of these packages is outside the scope of this document. Please refer to each packages installation notes for this information.

| Package | Download URL |
|---|---|
| Tcl (8.5.x or 8.6.x versions) (Important note: Version 8.5.19 or later is recommended to avoid application crashes during editing) | http://sourceforge.net/projects/tcl/files/Tcl/ |
| Tk (8.5.x or 8.6.x versions) | http://sourceforge.net/projects/tcl/files/Tcl/ |
| Tcllib | https://sourceforge.net/projects/tcllib/files/tcllib/ |
| Tklib | https://sourceforge.net/projects/tcllib/files/tklib/ |
| Extended Tcl (Library should be installed in one of the standard Tcl paths) | http://sourceforge.net/projects/tclx/files/TclX/ |
| Tkdnd (optional) | https://sourceforge.net/projects/tkdnd/files/?source=navbar |
| Expect (optional - used to help provide SFTP support - not necessary for macOS) | https://sourceforge.net/projects/expect/files/ |
| PuTTY PSFTP client (Windows only, optional - used for SFTP support) | http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html |

All other Tcl/Tk packages required by TKE have been bundled in the TKE package.

Installing for Linux

Prior to downloading/installing the TKE package, you will need to make sure that you have all of the required packages installed on your system. Because various Linux distributions have different package managers, I will leave the exact details of how to accomplish this up to you. However, if you have an Ubuntu-based distribution, you can get the needed packages by performing the following command:

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```
sudo apt-get install tcl8.5 tk8.5 tclx8.4 tcllib tklib tkdnd  
expect
```

OR

```
sudo apt-get install tcl8.6 tk8.6 tclx8.4 tcllib tklib tkdnd  
expect
```

The TKE installation package is downloaded in a gzipped tarball. You can get the latest version of this tarball from the following URL:

<http://sourceforge.net/projects/tke/files/>

Select a tarball (i.e., *.tar.gz file) to download within this page and save the resulting tarball into a temporary directory. After the download has completed, unzip and untar the file using the given command:

```
gzip -dc tarball_filename | tar xvf -
```

After the tke directory has been untarred, you can delete the original tarball using the following command:

```
rm -rf tarball_filename
```

After all of the files have been uncompressed, change the working directory to the resulting "tke-X.X" directory using the following command:

```
cd tke-X.X
```

Once inside the TKE source directory, run the installation script found in that directory using the following command:

```
tclsh8.5 install.tcl
```

OR

```
tclsh8.6 install.tcl
```

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At the beginning of the installation process, the install script will check to make sure that you have both Tcl and Tk 8.5 installed along with a usable version of TclX. If all checks are good, the installation will continue; otherwise, it will provide an error message indicating the offending check. After the checks occur, you will be asked to provide a root directory to install both the TKE library directories/files and the TKE binary file. This can be any directory in your filesystem; however, popular directories are:

- /usr/local
- /usr

After specifying a file system directory, TKE will indicate the names of the directory and binary file that it will install. If everything looks okay, answer “Y” or “y” (or just hit the RETURN key); otherwise, hit the “N” or “n” keys to enter a different directory. Once you enter a directory, the installation script will check to see if a previous version of TKE has been installed at that directory location. If one is found, it will ask if you would like to replace the old version with the new version. Hit the “Y” or “y” key (or just hit the RETURN key) to confirm the replacement. To cancel the installation and select a new directory, hit the “N” or “n” key. If you have specified that the given directory should be replaced (or no replacement was necessary), the script will continue with the full installation. At any time you can quit the installation script by entering the CONTROL-c key combination.

Installing for Mac OS X

If you only plan on running tke from a terminal and are satisfied with running the application through the X11 server that runs on Mac, you can follow the same installation steps that is used for Linux-based systems. However, if you would like to install TKE like a native Mac OS X application (i.e., application available in the Applications folder, TKE icon displayed in the dock, etc.), follow these installation steps.

After downloading the TKE disk image into the Downloads folder, double-click the disk image file and then drag and drop the TKE application icon in the resulting window to the Applications directory.

Important note: The wish shell that is used is based on Cocoa and, as such, for Mac OS X versions 10.7 (Lion) and later have a feature that stops certain keys from being automatically repeated when its key is held down. This will make Vim-mode on these systems from working as expected. To disable this on your system, enter the following command within the Terminal application prior to starting TKE:

```
defaults write -g ApplePressAndHoldEnabled -bool false
```

Installing for Windows

The easiest installation process for Windows is fairly straightforward and creates a native Windows application on your machine. Download the TKE Windows executable installer from

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the SourceForge website, run the resulting download file, and follow the installation wizard steps. The application will then be available through the start window and, if enabled in the installation process, through a desktop shortcut.

You can alternatively install a Unix-like environment such as Cygwin and then install the tarball in a similar manner to installing for Linux (with the exception that Cygwin does not have a software update tool like 'apt-get' but rather maintains its own software packages available through the Cygwin installer). The process of installing Cygwin and configuring its environment properly for TKE is beyond the scope of this document.

It is important to note that on Windows, the in-app update mechanism is not available. Only stable releases of TKE will be available and only from the SourceForge website. Updating the application will require downloading and running the new installer.

Chapter 3: Starting the Application

After TKE has been installed on your system, there are a variety of ways to start the application, depending on your usage.

The Command-Line

For Unix-based systems that support a terminal, you can invoke TKE using the command-line. To make tke easier to use, it is recommended that you add the TKE installation's bin directory into your environment path variable (see your shell's documentation for how to do this as this will be different for different OS types as well as shells).

Next, if you want TKE to always use just one window for editing all files, make sure that your xhost is setup correctly. If you get a new TKE window every time you open a file in the terminal, it is likely that you have an xhost issue.

Assuming that you have added the TKE installation bin directory to your path, invoking TKE is as simple as typing the following at the shell prompt:

```
tke
```

If this is the first time that the application has been started, this will create a single TKE window with no tabs opened and an empty sidebar. If the application is not currently running, this will start the application and load the last TKE session information into the application, including the following information:

- Window dimensions and location
- Previously opened files when the application was exited
- Sidebar entries
- Current tab of previous session will be the current tab of this session

If TKE is already running, this command will simply bring the application to the foreground of the desktop.

This, however, is not the only way of starting the application from the command-line, you can also specify any number of directories and/or files as arguments to TKE. Any directories specified will be added to the sidebar while any specified files will be opened in new tabs in the editor and their respective directories will be added to the sidebar (if they don't already exist).

In addition to files and directories, the following options are also available on the command-line invocation.

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Command-Line Options

| Option | Description |
|------------------------|--|
| -h | Displays command-line usage information to standard output and exits immediately. |
| -v | Displays tool version information to standard output and exits immediately. |
| -nosb | Starts the UI without the sidebar being displayed. |
| -e | Exits the application when the last tab is closed (overrides preference setting) |
| -m | Creates a minimal editing environment (overrides preference settings) |
| -n | Opens a new window without attempting to merge with an existing window. |
| -s <i>session_name</i> | Starts a new session with (if a window does not exist) or switches the current window to a previously saved session specified with <i>session_name</i> . |

Mac OS X Desktop

On Mac OS X, the application installation will place the TKE application in the Applications directory. To launch the application, simply open the Application directory in the Finder and double-click on the application. This will launch TKE using the same session settings that TKE had when last launched.

You can also start the application using any other method available on your Mac OS X system, including Launchpad, Spotlight, third-party application launchers, etc.

If you want to execute tke from the Terminal on the command-line, you can do so by executing the `/Applications/TKE.app/Contents/bin/tke` script. The command-line options can then be used when invoking TKE.

Windows

On Windows, the application installation will place TKE in its own subfolder within the Programs directory available through the Start menu. To launch the application, simply traverse in the program hierarchy to the application icon and double-click it. This will launch TKE using the same session settings that TKE had when last launched.

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Like its Mac OS X counterpart, you can also start the application using any other method available methods normally used for starting an application.

Chapter 4: Application Settings

There are a number of files/directories that are created by TKE at application startup, during execution and at application exit. The following is a list of this application data:

- Emmet aliases
- Favorited files/directories
- Command launcher data
- Preferences
- Installed plugins
- Saved sessions data and preferences
- User and language snippets
- Saved file templates
- Imported themes
- Remote file settings

These files have historically been saved in the user's home directory in the .tke directory. As of version 2.7, TKE now has the ability to save these files in either the ~/.tke directory or another directory, called from this point on as the "share directory", which can be any directory accessible from the file system (but preferably in an automatically sync'ed directory like Dropbox, iCloud Drive, Google Drive, OneDrive, etc.) Placing files in a shared directory allows the application files to be shared between different computers which can access the shared directory. Additionally, if any computer setup to use the shared directory makes a change to this directory, other computers will see these changes when they are started.

In addition to specifying a share directory, you can also specify where each of the above items will be stored. If an items files/directories are stored in the user's home directory, any updates to those files will remain local to the machine and will not be seen by machines who are using the share directory. However, if an item is being shared then any changes made to that item will be seen by other sharers.

Setting Up a Share Directory

There are three ways the user can specify whether or not to use a share directory, specify its location and specify which items will be shared:

1. The first time that TKE is started after installation.
2. Using the Preferences GUI General / Sharing tab.
3. Using the Edit / Sharing / Edit... menu option

Let's take a look at each of these setup options.

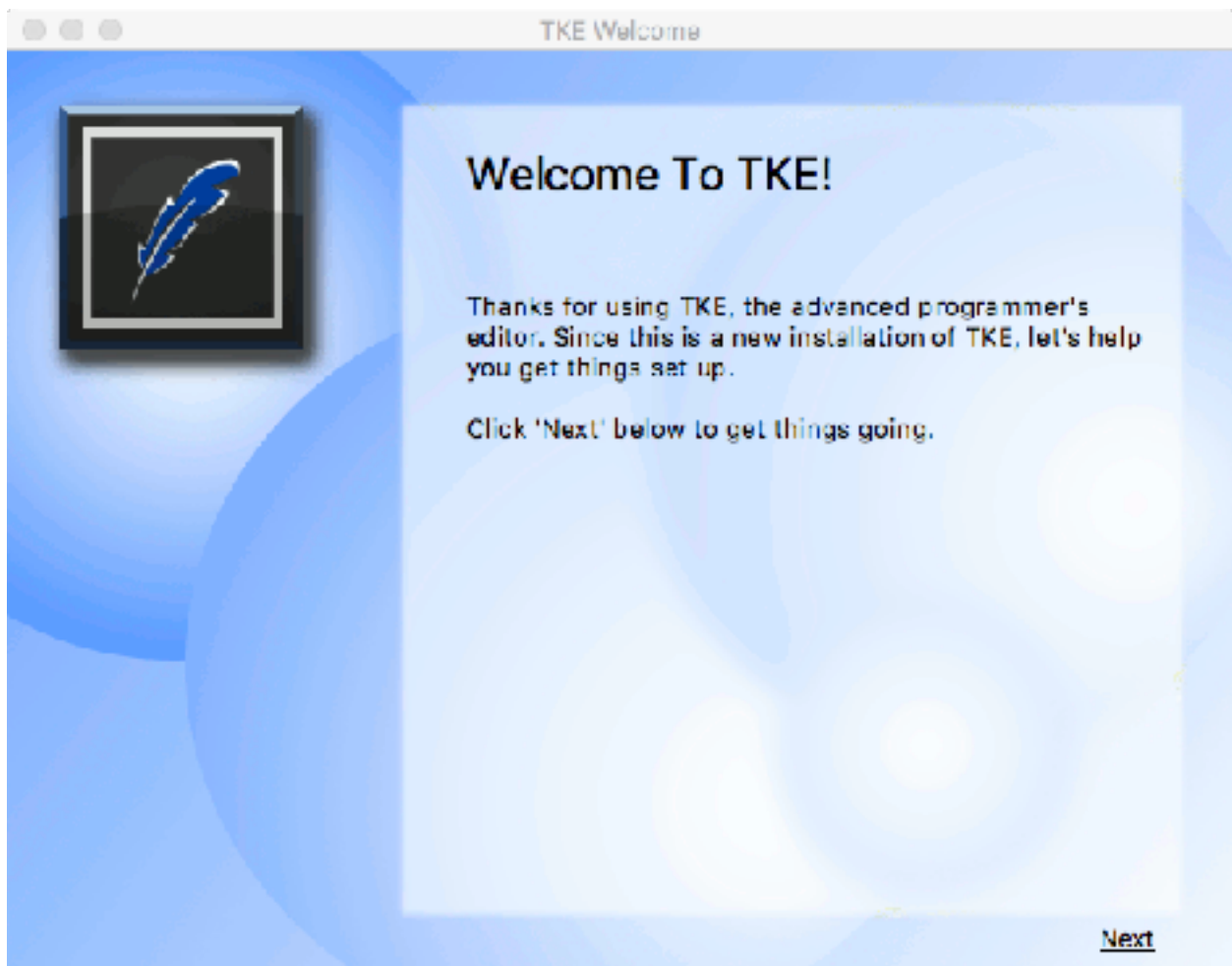
Setting Up On First Install

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After TKE is installed on a system, if the .tke directory in the user's home directory does not exist, TKE will display a first start wizard to aid the user in setting up the location of the application data prior to starting the application. The wizard is made up of four screens:

- Welcome screen
- Application data directory selector
- Share/Import directory and item selector
- Finish screen

These screens are shown below:

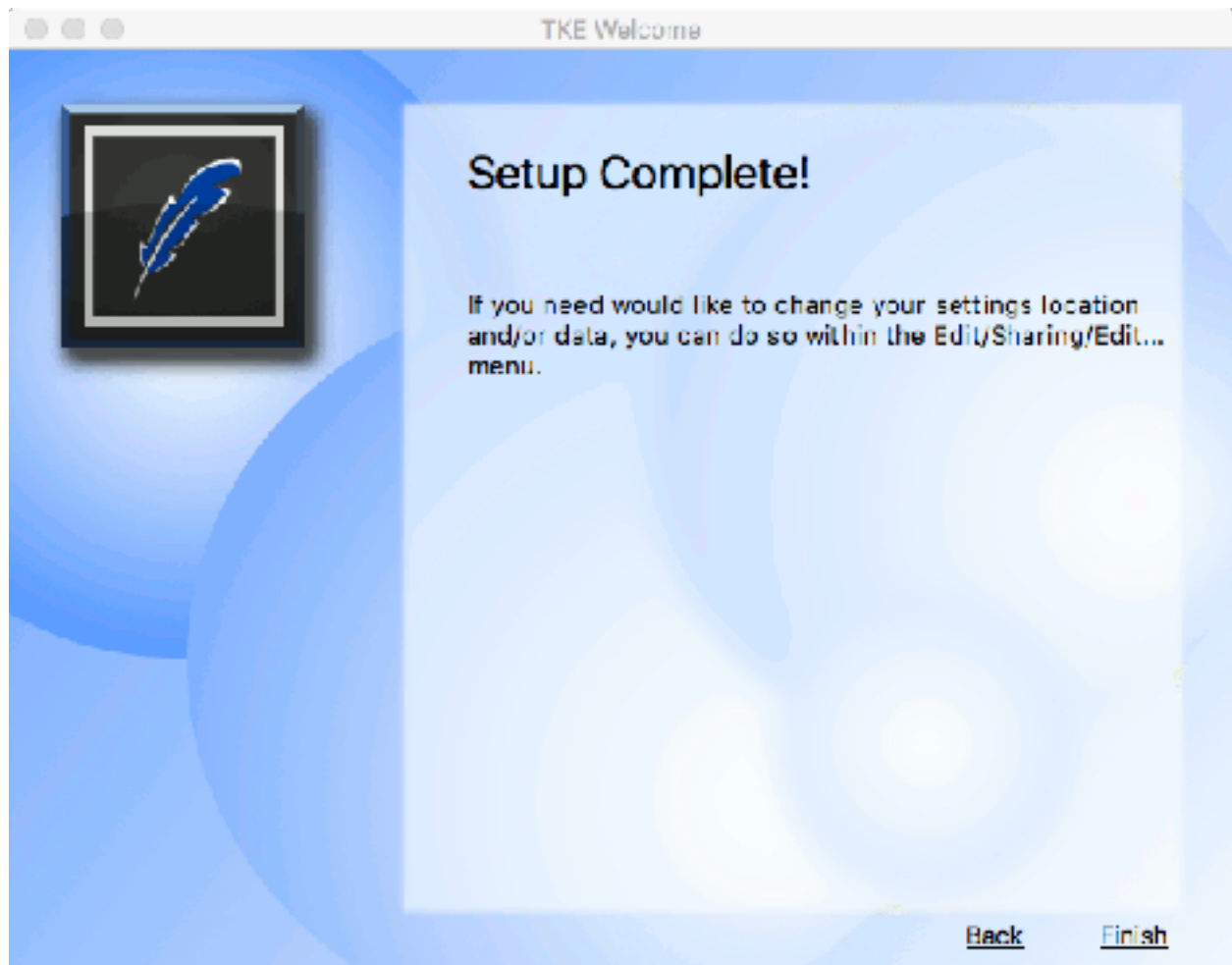


The Welcome Screen



The Application Data Directory Selection Screen

This screen allows the user to specify where the application data should be stored. If the “Create settings locally” option is selected all application data will be stored in the `~/tke` home directory (i.e., no items will be shared). If the “Copy settings from directory” option is selected, the user will be asked for the location of a directory containing existing application data which will be copied to the user’s `~/tke` home directory. If the “Use shared settings” option is selected, the user will be asked to specify a directory location to share application data. After selecting an option, click the “Next” button to continue.



Share/Import Directory and Item Selector Screen

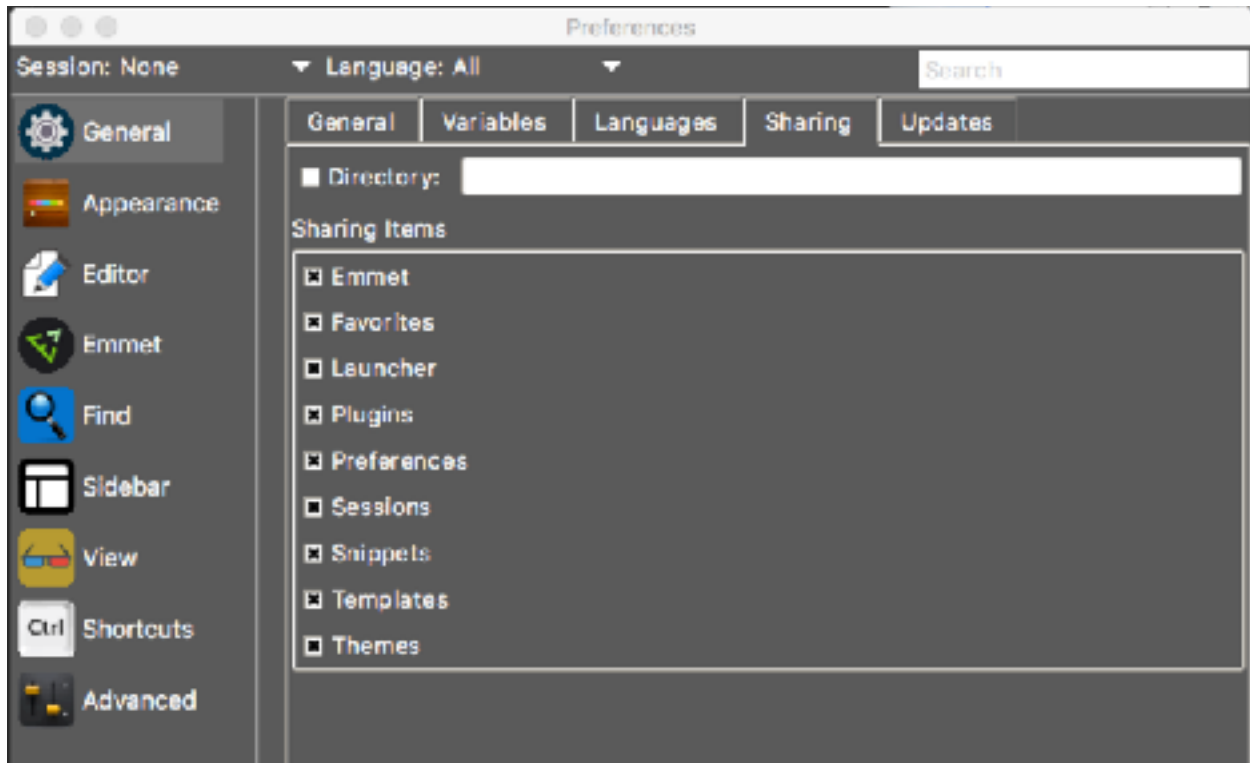
This screen will display the selected directory if either the import or share options were selected on the previous screen. You can change the directory by clicking on the "Change Directory" button. At the bottom of the screen is the list of application data items to import/share. If the user is doing an import, all selected items in the list will be copied to the user's .tke home directory (if that application data is available in the selected directory). If the user is sharing data, all selected items will be shared with other computers in the specified directory. All unselected items will be placed in the user's .tke home directory. Click "Next" after all items are filled out as desired. Click the "Back" button to return to the previous screen.

Setup Completion Screen

This screen just reminds the user that they can always change their settings from within TKE. Click on the “Finish” button will perform the application data setup and will start the application for use. Click on the “Back” button to return to the previous screen.

Changing Sharing Setup via Preferences GUI

Application data sharing options can be changed at any time within TKE using the preferences GUI. Start the preferences GUI using the “Edit / Preferences / Edit User - Global” menu option. This will display the preferences GUI. Make sure the “General” panel is selected on the right side of the preferences window and select the “Sharing” tab in the options panel. The following image is a depiction of this preference panel:



The Sharing panel displays the location of the share directory. If the field is empty, the checkbox will be unchecked. If the share directory is cleared, the application data is being stored in the user's local .tke directory within their home directory and the selected items in the “Sharing Items” list are unused. If the shared directory is specified, the “Sharing Items” list specifies which application data are stored in the shared directory (selected) and which are stored locally (unselected).

If the shared directory is empty and you would like to cause your application data to be stored in a shared directory, click on the checkbox to the right of the directory name. This will display a directory chooser window. If a directory is selected, its pathname will be displayed in the directory field. When the preferences window is closed, the sharing changes will be applied.

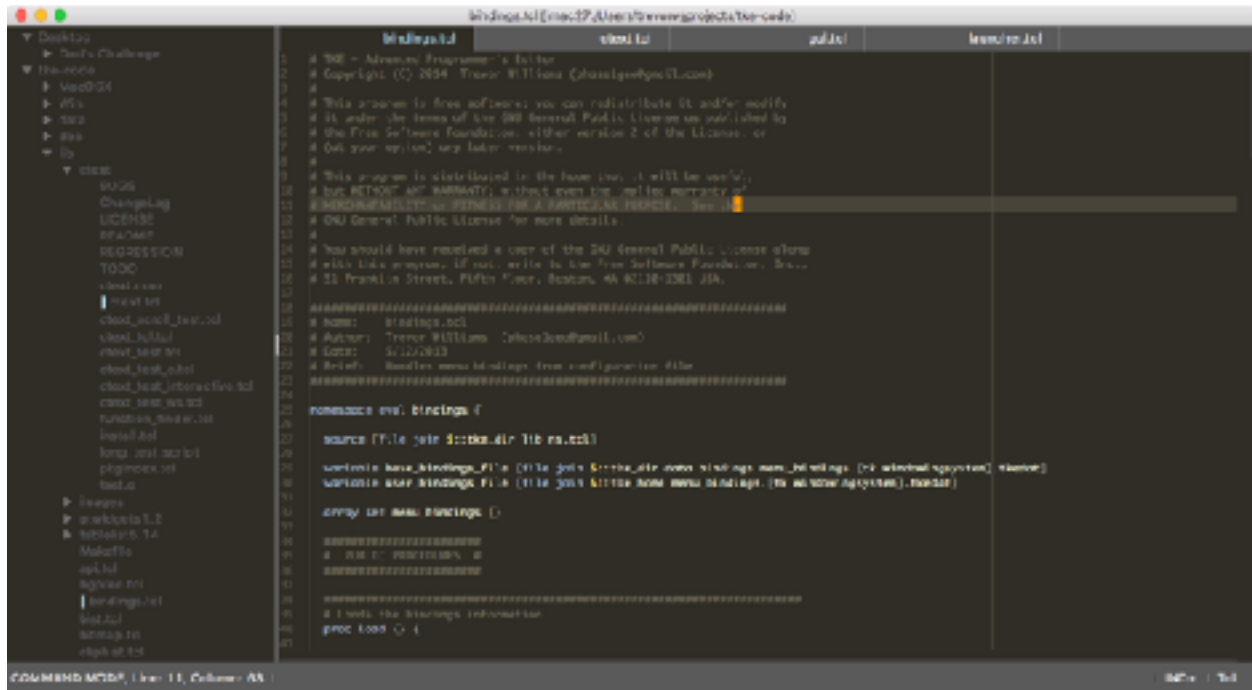
If the sharing directory was changed from local to shared, TKE will copy any local files/directories that were selected for sharing to the shared directory if those files/directories do not currently exist in the shared directory. If the sharing directory was changed from shared to local, TKE will copy the selected shared items from the sharing directory to the local directory, overriding any files/directories in the local directory.

Changing Sharing Setup via Editing Buffer

If the preferences GUI is disabled, selecting the “Edit / Sharing / Edit...” menu option will display the sharing settings in a new editing buffer in the UI. These options are documented within the settings file, so their makeup will not be re-documented here. When the file changes are saved, their settings will be applied in the same manner that the preferences GUI changes are applied.

Chapter 5: User Interface

By default, the editing environment consists of two panels: a file/directory sidebar and the tab-controlled editing buffer itself. As much as it possible, busy and redundant UI elements are removed from the screen when they are not in use. Most of the UI is only displayed as needed when the user calls up its functionality.



Title Bar

Within the title bar at the top of the window is the base name of the file currently being edited and the name of the current working directory. All commands that deal with the file system will be relative to this working directory.

Menu Bar

Below the title bar is the menu bar (on Windows and most Linux distributions). This contains a list of many of the available features within the tool. Any functionality that is contained within the listed menus can be assigned a keyboard shortcut, configurable via the menu binding file (see the “Menu Binding” Chapter for more details on the structure of this file). From left to right, the main menus are as follows:

- File
- Edit
- Find
- View
- Tools
- Sessions
- Plugins
- Help

File Menu

The File Menu contains commands that are related to either the currently selected file (i.e., the file in view within the editor which has the keyboard focus) or all files. The following table describes the listed menu items and their associated functionality

| Menu Item | Description |
|----------------------|---|
| New Window | Launches a new TKE session window. |
| New File | Creates a new, unnamed file in a new tab. |
| New From Template... | Creates a new file based on a previously saved template file. |
| Open File... | Displays an open file dialog, allowing the user to select one or more files to open. Each file will be opened in a separate tab in the editor. Any directories containing these files that are not in the sidebar will be added to the sidebar. |

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| Menu Item | Description |
|--------------------------|--|
| Open Directory... | Displays an open directory dialog, allowing the user to select one or more directories to add to the sidebar. |
| Open Remote... | Displays the remote file/directory dialog window which will allow you to connect to a remote file server via FTP/SFTP and select either a directory or a file to open. |
| Open Recent | Displays a list of directories and files that have been recently opened. Click on a directory to add it to the sidebar. Click on a file to open it in a separate tab in the editor. |
| Open Favorite | Displays the list of favorited files/directories for quick opening in either the editor (file) or sidebar (directory). |
| Reopen File | Reopens the current file for editing, destroying any unsaved changes. |
| Change Working Directory | Changes the current working directory. |
| Show File Difference | Displays a new tab containing the current file in a difference view. From within the view, the user can view file differences between any two versions of the given file (if managed by a version system) or between it and another file (using the diff utility). |
| Save | Saves the contents of the current file to its original name. If an original name does not exist for the content, a "Save As" dialog will be displayed allowing the user to specify a file name. |
| Save As... | Displays a save file dialog window, allowing the user to save the current file contents to the given filename. The original filename of the content will be changed to this new name. |
| Save As Remote... | Displays the remote file/directory dialog window to allow you to select a server, directory and filename to save the contents of the current editing buffer to via FTP/SFTP. |
| Save As Template... | Displays an entry field at the bottom of the window, allowing the current file to be saved as a template file under the given name. If you specify an extension to the template name, any new files based on this template will use the template's extension for syntax highlighting purposes. |
| Save Selection As... | Saves only the currently selected text to a file without saving the current editing buffer. |

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| Menu Item | Description |
|---------------------------|---|
| Save All | Saves all files opened in the editor to their original file names. Any files which do not have original names, will have a save file dialog window shown, allowing the user to specify the name. |
| Export... | If the current editing buffer language is set to Markdown, this option will run the file contents through the Markdown parser, generating either HTML or XHTML output (the General/DefaultMarkdownExportExtension specifies the default extension to use for Markdown exporting but can be overridden in the save file dialog window). Additionally, the user can embed snippet text within <code><tke:ExportString></tke:ExportString></code> tags. Any snippets will be generated at the time of export, replacing the tags and snippet text with the generated text. |
| Line Ending / Windows | Changes the line ending to use for the current file to CRLF when the file is saved. |
| Line Ending / Unix | Changes the line ending to use for the current file to LF when the file is saved. |
| Line Ending / Classic Mac | Changes the line ending to use for the current file to CR when the file is saved. |
| Rename | Renames and/or moves the location of the current file in the file system. |
| Duplicate | Creates a copy of the current file and immediately opens the file for editing. |
| Delete | Deletes the current file from the file system and removes the tab from the editor. |
| Lock/Unlock | The "Lock" option will change the state of the editor to not allow text modifications to the window (content is effectively "Read Only"). A small lock icon will be displayed in the associated tab to indicate that the file content is currently "locked". The "Unlock" option will change the state of the editor back to the modifiable state. |
| Favorite/Unfavorite | Marks the current file as a favorite (with the "Favorite" command) or removes the file as a favorite (with the "Unfavorite" command). Favorited files can be opened quickly with the "Open Favorite" menu list or the command launcher. Additionally, favorited files/directories can be used in the "Find in File" feature. |

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| Menu Item | Description |
|-----------|--|
| Close | Closes the current tab. If the text content is in the modified state (as indicated by the "*" character in the tab), a prompt will be displayed asking the user if the content should be saved prior to closing. |
| Close All | Closes all tabs in the editor. If text content in a tab has been modified, a prompt will be displayed asking the user if the content should be saved prior to closing. |
| Quit | Exits the application. Any modified files in the editor will prompt the user if the content should be saved prior to exiting the application. |

Edit Menu

The Edit menu contains menu items that affect the contents within the current file. The following table describes the items available within this menu.

| Menu Item | Description |
|------------------|---|
| Undo | Undoes the last change made to the file content. Each file can have an unlimited number of items that can be undone. Saving a file clears the undo stack for that file. |
| Redo | Re-applies the last undone change made to the file content. Saving a file clears the redo stack for that file. |
| Cut | Deletes the selected text, copying the deleted content to the clipboard. If no text is currently selected, the current line is deleted and sent to the clipboard. |
| Copy | Copies the selected text to the clipboard. If no text is currently selected, the current line is copied to the clipboard. |
| Paste | Pastes the content in the clipboard, inserting the text before the insertion cursor. The content is copied "as is". |
| Paste and Format | Pastes the content in the clipboard, inserting the text before the insertion cursor. The content is indented to fit into the current insertion point. |
| Select All | Selects all of the text in the current editor. |

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| Menu Item | Description |
|--------------------------------|---|
| Vim Mode | When selected, changes the editing environment to use Vim-style interaction. When deselected, changes the editing environment back to “normal” editing mode. |
| Toggle Comment | Detects the comment state of the current selection. If the selected text is not commented out, places a line comment in front of any selected text in the current file. If the selected text is commented out, the comments are removed from the selected lines. If a selection does not exist, the current line (or lines, if multicursors are enabled) is commented/uncommented in a similar fashion. |
| Indentation / Indent | Indents the selected text by one level of indentation. |
| Indentation / Unindent | Unindents the selected text by one level of indentation. |
| Indentation / Format Text | Modifies either the selected text or the entire file content (depending on whether text is currently selected or not) to match the indentation in the current context. |
| Indentation / Indent Off | Turns indentation mode off for the current editor. Hitting the ENTER key in the editing window will place the cursor in the first column of the next row. |
| Indentation / Auto-Indent | Turns auto-indentation mode on for the current editor. Hitting the ENTER key in the editing window will place the cursor in the same column as the previous line's starting character. |
| Indentation / Smart Indent | Turns smart indentation mode on for the current editor. Hitting the ENTER key in the editing window will perform the proper indentation based on the current language and context. If a character sequence is entered that completes an indentation, the character sequence will be adjusted to the proper indentation level. |
| Cursor / Move to First Line | Moves the cursor to the start of the first line of the file and adjusts the view so the cursor is visible. |
| Cursor / Move to Last Line | Moves the cursor to the start of the last line of the file and adjusts the view so the cursor is visible. |
| Cursor / Move to Next Page | Moves the cursor down by a single page and adjusts the view so the cursor is visible. |
| Cursor / Move to Previous Page | Moves the cursor up by a single page and adjusts the view so the cursor is visible. |

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| Menu Item | Description |
|--------------------------------|---|
| Cursor / Move to Screen Top | Moves the cursor to the start of the line at the top of the current screen. |
| Cursor / Move to Screen Middle | Moves the cursor to the start of the line in the middle of the current screen. |
| Cursor / Move to Screen Bottom | Moves the cursor to the start of the line at the bottom of the current screen. |
| Cursor / Move to Line Start | Moves the cursor to the start of the current line. |
| Cursor / Move to Line End | Moves the cursor to the end of the current line. |
| Cursor / Move to Next Word | Moves the cursor to the beginning of the next word. |
| Cursor / Move to Previous Word | Moves the cursor to the beginning of the previous word. |
| Cursor / Move Cursors Up | In multicursor mode, moves all of the cursors up by one line. |
| Cursor / Move Cursors Down | In multicursor mode, moves all of the cursors down by one line. |
| Cursor / Move Cursors Left | In multicursor mode, moves all of the cursors to the left by one character. |
| Cursor / Move Cursors Right | In multicursor mode, moves all of the cursors to the right by one character. |
| Cursor / Align Cursors | When multicursors are set in the current file, this command will adjust each line such that all cursors will be aligned to the same column. The cursors will be aligned to the highest column in the multicursor set. |
| Insert / Line Above Current | Inserts a blank line above the current line and places the cursor at the beginning of the blank line for editing. |
| Insert / Line Below Current | Inserts a blank line below the current line and places the cursor at the beginning of the blank line for editing. |
| Insert / File Contents | Prompts the user to select a file for insertion. If a file is selected, the entire contents of the file are inserted the line below the current line. |
| Insert / Command Result | Prompts the user to input a shell command. If a legal shell command is entered, the result of the command is inserted below the current line. |

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| Menu Item | Description |
|-------------------------|--|
| Insert / From Clipboard | Displays the command launcher in clipboard mode to allow the user to view and select one of the clipboard history elements to insert into the current editor. |
| Insert / Snippet | Displays the command launcher in snippet mode to allow the user to view and select one of the language-specific snippets to insert into the current editor. |
| Insert / Enumeration | <p>When one or more multicursors are set, allows the user to insert an ascending numerical values as specified in the subsequent "Starting number:" entry field. The content of the starting number determines what the base of the number will be.</p> <p>The following are valid starting number representations:</p> <p><i>prefix</i>[0-9]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a decimal value. <p><i>prefixd</i>[0-9]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a decimal value preceded by "d" <p><i>prefixb</i>[0-1]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a binary value preceded by "b" <p><i>prefixo</i>[0-7]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by an octal value preceded by "o" <p><i>prefix</i>[xh][0-9a-fA-F]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a hexadecimal value preceded by either "x" or "h". <p>Note: If a value is not specified, a value of zero is assumed.</p> |
| Delete / Current Line | Deletes the current line and places the cursor at the beginning of the next line. The deleted line is placed into the clipboard. |
| Delete / Current Word | Deletes the current word and places the cursor at the beginning of the next word. The deleted word is placed into the clipboard. |
| Delete / Current Number | Deletes the current number and places the cursor just after the deleted text. The deleted number is placed into the clipboard. |

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| Menu Item | Description |
|---------------------------------|--|
| Delete / Cursor to Line End | Deletes all characters between the current cursor and the end of the line, placing the cursor on the character previous to the current character. |
| Delete / Cursor to Line Start | Deletes all characters between the start of the current line and up to (but not including) the current cursor. |
| Delete / Whitespace Forward | Deletes all consecutive whitespace (i.e., space and tab) characters from the current cursor towards the end of the current line. |
| Delete / Whitespace Backward | Deletes all consecutive whitespace characters from the current cursor towards the start of the current line. |
| Delete / Text Between Character | Displays an input field allowing a single character to be entered. The character is searched for the first occurrence before the current cursor and the first occurrence after the current cursor. All characters between these two characters is deleted and placed in the clipboard. |
| Transform / Toggle Case | Toggles the case of the character at the current insertion cursor or of all selected characters. |
| Transform / Lower Case | Sets the case of the character at the current cursor or all selected characters to lower case. |
| Transform / Upper Case | Sets the case of the character at the current cursor or all selected characters to upper case. |
| Transform / Title Case | Sets the case of the character at the current cursor or all selected characters such that the first character of each word is capitalized while all other characters are placed into lower case. |
| Transform / Join Lines | If multiple lines are selected, joins all lines containing a selection are joined with a single space character into one line. If no lines are selected, the line below the current line is joined to the current line. |
| Transform / Bubble Up | If multiple lines are selected, all selected lines are moved up by one line (the line above will be moved below the bubbled line(s)); otherwise, the current line is bubbled up one line. |
| Transform / Bubble Down | If multiple lines are selected, all selected lines are moved down by one line (the line below will be moved above the bubbled line(s)); otherwise, the current line is bubbled down by one line. |

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| Menu Item | Description |
|---------------------------------------|--|
| Transform / Replace Line With Script | If the current line contains an executable shell command, the command is executed and the resulting output replaces the current line. |
| Preferences / Edit User - Global | Displays the user's global (cross-language) preferences in an editor tab. Saving changes made to this tab will immediately update the environment without restarting. |
| Preferences / Edit User - Language | Displays the user's current language preferences in an editor tab. Saving changes made to this tab will immediately update the environment without restarting. |
| Preferences / Edit Session - Global | Displays the current session's global (cross-language) preferences in an editor tab. This option will only be available if a named session is currently opened (see Session menu for details). Saving changes made to this tab will immediately update the environment without restarting. |
| Preferences / Edit Session - Language | Displays the current session's current language preferences in an editor tab. This option will only be available if a named session is currently opened. Saving changes made to this tab will immediately update the environment without restarting. |
| Preferences / View Base | Adds the base preferences file to the editor in "readonly" mode. |
| Preferences / Reset User to Base | Copies the base preferences file contents to the user's preference file (note: this action destroys all user preference settings that exist before this action takes place). |
| Menu Bindings / Edit User | Adds the user menu bindings file to the editor to allow the user to override global menu bindings values. |
| Menu Bindings / View Global | Adds the global menu bindings file to the editor in "readonly" mode. |
| Menu Bindings / Set User to Global | Copies the global menu bindings file contents to the user's menu bindings file (note: this action destroys all user menu binding settings that exist before this action takes place). |
| Snippets / Edit User | Adds the user's global snippet file into the editor. |
| Snippets / Edit Language | Adds the user's snippet file into the editor for the current language. |

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| Menu Item | Description |
|-----------------------------------|---|
| Snippets / Reload | Reloads the contents of the snippets for the current language and user. Useful if the snippet file contents are not usable within the editor. |
| Templates / Edit | Opens an existing named template for editing. |
| Templates / Delete | Deletes an existing named template. |
| Templates / Reload | Reloads the names of the existing templates. |
| Emmet / Expand Abbreviation | Expands the Emmet abbreviation syntax that is found to the left of the cursor (i.e., cursor must be placed on the right side of the abbreviation for proper expansion to occur). |
| Emmet / Edit Custom Abbreviations | Displays the custom Emmet abbreviation file in a new editing buffer allowing the user to change, remove or add custom Emmet syntax to their liking. Saving the editing buffer will cause the file changes to go into effect immediately. |
| Sharing / Edit... | If the preferences GUI is enabled, displays the preference GUI, displaying the General / Sharing tab to allow the user to change the sharing directory and items information (see the Application Data chapter in this document for more information on this window). |
| Sharing / Export Settings... | This option allows the user to export all of the application data that is being used to a new directory. |

Find Menu

The Find menu contains items for searching and, optionally, replacing text in the current file. It also contains items that can add search text to the current selection and items for finding text in a group of files (regardless if they are currently opened in the editor or not). The following table contains the items found in this menu along with the description of its functionality.

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| Menu Item | Description |
|----------------------------|---|
| Find | Searches the current file for a given regular expression. The displayed search bar also contains a checkbox for specifying whether a case sensitive search should be performed or not and a checkbox for saving the search input. Using the up/down keys while the input is in the entry field will allow you to traverse the find history and previously saved searches. Hitting the return key will cause all matches in the current file to be highlighted, the first match after the current cursor to be in view, and the cursor placed at the beginning of the match. |
| Find and Replace | Searches the current file for a given regular expression and replaces it with an associated string. The displayed search and replace bar also contains three checkboxes: one for specifying case sensitivity of the match, one for replacing the first match or all matches, and one for saving the search input. Using the up/down keys will traverse Find/Replace history and previously saved searches. Hitting the return key will perform the replacement. |
| Select Next Occurrence | Selects the next matched occurrence.. |
| Select Previous Occurrence | Selects the previous matched occurrence. |
| Select All Occurrences | Selects all matched occurrences. |
| Append Next Occurrence | Adds the next matched occurrence to the selection. |
| Jump Backward | Jumps to the last cursor position that was more than 2 lines from the current cursor position. The number of minimum lines can be adjusted in the preferences file. |
| Jump Forward | Jumps to the next cursor position. |
| Jump To Line | Displays a user input interface that allows the user to specify a line number to jump to. Sets the cursor to the given line number and makes the insertion cursor visible. |
| Next Difference | If the current buffer is in difference mode, jumps to the next difference that is not currently in view. If no difference exists below the current view, jumps to the first difference in the file. |
| Previous Difference | If the current buffer is in difference mode, jumps to the previous difference that is not currently in view. If no difference exists above the current view, jumps to the last difference in the file. |

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| Menu Item | Description |
|------------------------------------|--|
| Show Selected Line Change | If the current buffer is in difference mode and a line is currently selected, sets the first file version to the version that last modified the first line of the selection. |
| Markers / Create at Current Line | Sets a marker at the current insertion index. |
| Markers / Remove From Current Line | Clears the marker at the current insertion index if one exists. |
| Markers / Remove All Markers | Clears all markers in the current buffer. |
| Markers / <i>marker_name</i> | Jumps the cursor and file view to show the selected marker. The cursor will be placed at the beginning of the marked line. |
| Find Matching Bracket | Jumps the cursor and file view to show the parenthesis, bracket or quotation mark that matches the parenthesis, bracket or quotation mark under the current cursor. The cursor will be placed on the matched pair. If the cursor is currently not on a parenthesis, bracket or quotation mark, this option will set the cursor to the previous indentation character (if one exists for the current language). |
| Find Next Bracket Mismatch | If there is a bracket mismatch after the current insertion cursor, selecting this option will place the insertion cursor on the mismatching curly bracket, square bracket, parenthesis or angled bracket. To enable bracket mismatch highlighting, enable the Editor/HighlightMismatchingChars preference item. |
| Find Previous Bracket Mismatch | If there is a bracket mismatch before the current insertion cursor, selecting this option will place the insertion cursor on the mismatching curly bracket, square bracket, parenthesis or angled bracket. To enable bracket mismatch highlighting, enable the Editor/HighlightMismatchingChars preference item. |

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| Menu Item | Description |
|---------------|--|
| Find In Files | <p>Displays a user input interface that allows the user to specify a regular expression to find within files in one or more files/directories. The directory input field can contain one or more directories (each directory is handled as a “token” in the input field). A few directories are readily available by typing a portion of their name. They are as follows:</p> <ul style="list-style-type: none">• Base name of any file/directory in the sidebar• Base name of any favorited file/directory• “Opened Files” - searches any files opened in the editor• “Opened Directories” - searches all opened directories in the sidebar• “Current Directory” - searches the current working directory <p>The find interface also contains a checkbox specifying the case sensitivity to use in the search and a checkbox for saving the search input. Using the up/down keys in the “Find” entry field will display search history and saved searches. Hitting the return key (when both the “Find” and “In” input fields have valid values) will perform the find operation and display the results in a “FIF Results” readonly editor tab. Clicking on a highlighted match will automatically open the associated file, bring the matching line into view, and set the cursor at the beginning of the matched text.</p> |

View Menu

The View menu allows the user to change the interface as desired. The following table lists the available menu items.

| Menu Item | Description |
|-------------------|--|
| Show/Hide Sidebar | Shows or hides the sidebar panel. |
| Show/Hide Console | For operating systems that allow a Tcl/Tk console to be viewed, shows/hides this console window from view. This menu item is only displayed if a console is available. The console is mostly useful for debugging purposes only. |
| Show/Hide Tab Bar | Shows or hides the tab bar. |

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| Menu Item | Description |
|---------------------------------------|---|
| Show/Hide Status Bar | Shows or hides the status bar at the bottom of the window. |
| Show/Hide Line Numbers | Shows or hides the line numbers in the current buffer. |
| Line Numbering / Absolute | Displays line numbers starting at 1 and incrementing by one to the end of the file |
| Line Numbering / Relative | Displays the current line number as 0 and counts up above and below the current line. |
| Show/Hide Marker Map | Shows or hides the marker map in the text scrollbar region. |
| Show/Hide Meta Characters | Shows or hides any characters in the current edit tab that are syntax highlighted as “meta” characters. Examples of meta characters would be formatting characters used in languages like Markdown. |
| Display Text Info | Displays the current line count and character count for the current file in the information bar. |
| Split View | When selected, creates a second view into the current file. Each view can be independently manipulated; however, any text modifications made in either window will be available in the other view. Deselecting this menu option will return the file to only showing a single view of the file in the editor. |
| Move to Other Pane | Moves the current file to the other text pane. If only one text pane is currently viewable, a second pane will be displayed to the right of the current pane and the file will be moved to that pane. If a pane only contains the file that is being moved, that pane will be removed from view. This allows two files to be viewed “side by side”. |
| Panes / Enable Synchronized Scrolling | When selected, synchronizes the scrolling of both panes to keep the displayed lines in alignment with one another when either pane is scrolled. |
| Panes / Align Panes | Causes the current line in both panes to align to each other horizontally. |
| Panes / Merge Panes | Merges all tabs in both panes into a single pane. |
| Tabs / Goto Next Tab | Changes the current file to be the file in the next tab in the current pane to the right of the current tab. |
| Tabs / Goto Previous Tab | Changes the current file to be the file in the next tab in the current pane to the left of the current tab. |

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| Menu Item | Description |
|---|---|
| Tabs / Goto Last Tab | Changes the current file to be the file in the last viewed tab in the current pane. |
| Tabs / Goto Other Pane | Changes the current keyboard focus to the current tab in the other pane. This menu item is only available if both panes in viewable. |
| Tabs / Sort Tabs | Alphabetically sorts the tabs in the current pane. |
| Tabs / Hide Current Tab | Hides the current tab from view. |
| Tabs / Hide All Tabs | Hides all of the opened tabs from view. |
| Tabs / Show All Tabs | Displays all hidden tabs in the tabbar. |
| Folding / Enable Code Folding | <p>Enables/disables code folding in the current editing buffer. If this option is set to the enable state, the indentation mode dictates what type of code folding will be performed.</p> <ul style="list-style-type: none"> - OFF = Manual - IND = Indentation-based - IND+ = Syntax-based (if syntax doesn't contain indent/unindent/reindent tokens, indentation-based code folding will be used). |
| Folding / Create Fold From Selection | When manual code folding mode is enabled, creates a new fold such that the selected code will be folded. |
| Folding / Delete Current Fold | When manual code folding mode is enabled, removes the fold indicator at the current cursor's line. If the cursor is not on a fold indicator line, this command will be disabled. |
| Folding / Delete Selected Folds | When manual code folding mode is enabled, removes all opened/closed folds that are selected in the current editing buffer. |
| Folding / Delete All Folds | When manual code folding mode is enabled, deletes all of the folds in the current editing buffer. |
| Folding / Close Current Fold / One Level | Folds the code fold by one level on the cursor's current line. |
| Folding / Close Current Fold / All Levels | Folds all levels of the code fold located at the cursor's current line. |
| Folding / Close Selected Folds / One Level | Folds all selected folds by one level. |
| Folding / Close Selected Folds / All Levels | Folds all selected folds for all levels. |
| Folding / Close All Folds | Folds all of the code folds in the current editing buffer. |

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| Menu Item | Description |
|--|---|
| Folding / Open Current Fold / One Level | Unfolds the code fold by one level on the cursor's current line. |
| Folding / Open Current Fold / All Levels | Unfolds all levels of the code fold located at the cursor's current line. |
| Folding / Open Selected Folds / One Level | Unfolds all selected folds by one level. |
| Folding / Open Selected Folds / All Levels | Unfolds all selected folds for all levels. |
| Folding / Open All Folds | Unfolds all of the code folds in the current editing buffer. |
| Folding / Show Cursor | If the cursor is hidden inside of folded code, this command will unfold enough code folds to make the cursor visible. |
| Folding / Jump to Next Fold Mark | Moves the cursor to the next code fold indicator in the current editing buffer. |
| Folding / Jump to Previous Fold Mark | Moves the cursor to the previous code fold indicator in the current editing buffer. |
| Set Syntax | Changes the syntax highlighting and language-specific functionality to the specified language. By default, the language is determined by file extension. This menu allows the user to override the default behavior. To permanently add an extension to a language syntax handler, you will need to modify the associated syntax file. See the "Syntax Handling" chapter for more information about the structure of this file. Note: this menu option will not be shown on Mac OS X due to a system crash issue. Please change the menu using either the command launcher or the language selector on the bottom right corner of the editing buffer. |
| Set Theme | Changes the current syntax coloring scheme to one of the available themes. Setting the theme to this value will only be in effect while the application is running. If the application is quit and restarted, the default theme as specified in the preferences will be used. |

Tools Menu

The Tools menu contains various miscellaneous functions that are available within the editor. The following table describes the items found in this menu.

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| Menu Item | Description |
|----------------------------|---|
| Launcher | Displays the command launcher interface, allowing the user to quickly access commands and other useful functionality as described in the “Command Launcher” chapter. |
| Theme Editor | Displays the TKE theme editor, which will automatically load the currently used theme for editing. See the Theme Editor chapter for more details about this tool and how to use it. |
| Development Tools | |
| Start Profiling | Starts the UI profiling facility. This allows procedural performance evaluation. |
| Stop Profiling | Stops the current profiling run. After profiling information has been gathered, a profile report can be viewed within the editor. |
| Show Last Profiling Report | Displays the results of the last profiling run within the editor. |
| Show Diagnostic Logfile | Displays the diagnostic logfile for the current application. This file contains error information from the application and information useful for debugging transient tool issues. |
| Run BIST | Runs a built-in self test, displaying the resulting output to standard output. |
| Restart TKE | Allows the editor to be quit, restarted and returned to the current editing state. This is useful when TKE source code is modified and needs to be reloaded. |

Sessions Menu

The Sessions menu contains items for saving, deleting, opening, closing and switching named sessions (see the Sessions chapter for more details about sessions and their usage). The following table describes the items in this menu.

| Menu Item | Description |
|-----------|---|
| Switch To | Quickly closes the current session (named or unnamed) and opens the current window using the named session in the associated submenu. |

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| Menu Item | Description |
|---------------|---|
| Close Current | Closes the current named session and reverts the current window to the last state of the unnamed session. |
| Save Current | Saves the current state of the current named session. |
| Save As | Saves the current state of the editor as a given named session. |
| Delete | Permanently deletes a named session. |

Plugins Menu

The Plugins menu contains items that allow third-party plugins to be installed, uninstalled and reloaded. Additionally, if TKE is run in developer mode, provides a facility for creating a new plugin quickly. The following table describes the items in this menu.

| Menu Item | Description |
|-------------------|--|
| Install... | Allows new third-party plugins to be installed. See the “Plugins” chapter for more information. |
| Uninstall... | Allows third-party plugins to be uninstalled. See the “Plugins” chapter for more information. |
| Reload | Reloads all installed plugins. This is primarily useful when developing plugins. This menu option allows plugins to be quickly reloaded without requiring the application to be quit and relaunched. |
| Development Tools | |
| Create... | Creates the template for a new plugin and displays the file in the editor. See the “Plugin Development” chapter for more details about how to create third-party plugins. |

Help Menu

The Help menu provides instructional facilities to help you learn how to use this application and to describe the application version information. The following table describes the available items in this menu.

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| Menu Item | Description |
|------------------|--|
| User Guide | Displays this User's Guide in the default PDF or ePub viewer application in your environment. The format type to display can be controlled in your user preferences (see Help/UserGuideFormat). |
| Tips & Tricks | Displays the TKE Tips & Tricks blog in your browser. Information is added to this website on a weekly basis. Check it out to get the most out of using TKE. |
| Check for Update | Performs an in-app update. If an update is available, a window detailing the update information will be displayed. If the application is current with the latest available release, a window will be displayed indicating that this is the case. Upon successful completion, the application will be restarted into the new version. |
| Send Feedback | Creates an e-mail window populated with TKE's developer e-mail address and an appropriate subject line. Fill out the rest of the mail window and send it to provide tool feedback. Feedback is the best way to help us know how we can improve TKE to best meet the needs of its users. |
| Send Bug Report | Creates an e-mail window populated with TKE's developer e-mail address, an appropriate subject line and information from the application's diagnostic logfile. Add any helpful information about what you were doing at the time the problem occurred to help in understanding the problem. We appreciate good bug reports! |
| About TKE | Displays a window detailing the current application version and developer information. Clicking the email value will start a mail compose window addressed to TKE development. Clicking on the Twitter name will display the TKE Twitter page in a web browser. Clicking on the website URL will display the TKE website homepage in a web browser. Clicking on the license will display the license in a readonly editing tab. Clicking on the Credits button will change the About window display to show a list of credits to other projects that provided code for TKE (clicking the Back button in this view will display the main About window). |

Sidebar

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The sidebar is located on the left side of the window. It contains a tree-like view of one or more root directories (any directory in a file system can be a TKE root directory), subdirectories and files. By default, whenever a file is opened within TKE, the file's directory is automatically added to the sidebar. Additionally, the user can open a directory via the "File" menu which is added to the sidebar. This sidebar view allows the user to quickly open other files that are within the same directory without having to navigate through an open dialog box. You may also add a directory to the sidebar by dragging and dropping the directory onto the sidebar. When you have a valid directory dragged into the sidebar, the sidebar border color will turn green to indicate that the item may be dropped.

In addition to being able to quickly open files from the sidebar, several other functions are provided for each type of directory and file. The following subsections identify the different types and their associated functionalities. To access the menu of functionality for a given type, simply right-click on an item in the sidebar. This will display a contextual menu listing the available commands.

Whenever you open a remote file or directory (via the File / Open Remote...) menu option, the associated directory will be displayed in the sidebar alongside local directories. You may perform most of the same operations on remote files that you can with local files with the exception that you may not view difference information.

To hide or show a level of directory hierarchy, left-click on the disclosure triangle next to the directory to show/hide. Alternatively, you may use the space bar or return key to toggle the disclosure state. You may also use the left/right keys to specifically close or disclose directory information.

To operate on more than one file, you can select multiple files or directories by holding Control or Command while left-clicking and then right-click to display the contextual menu. Note that TKE will keep you from selecting both files and directories (whichever type the first selection is determines what will be allowed to be selected).

Files within the sidebar can be automatically filtered out of the sidebar via the "Sidebar/Ignore*" preference items. Any files that match any of these patterns will not be displayed in the sidebar. This is useful for de-cluttering the sidebar with files that cannot be edited within TKE (i.e. object files, image files, etc.)

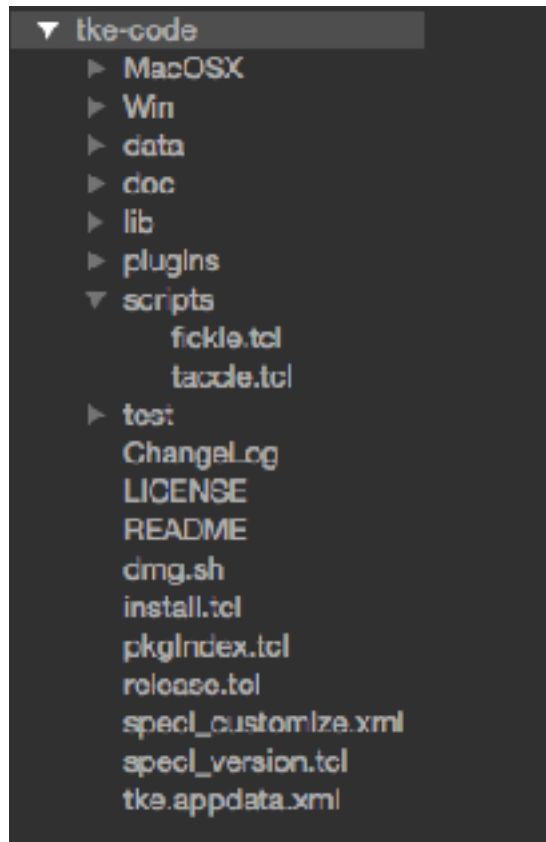
Files and directories are added in alphabetical order. If you would prefer to have all folders be listed first, followed by all of the files within the same directory, you can specify that in the View preferences pane.

Root Directory

A root directory in the sidebar is any directory that doesn't have a parent directory immediately shown in the sidebar. You may have more than root directory listed in the sidebar. To view the full pathname of a root directory, hover the cursor over the directory name until the tooltip appears.

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The following image is a depiction of the sidebar with the root directory highlighted.



The following table lists the available contextual menu functions available for root directories.

| Menu Item | Description |
|------------------------|---|
| New File | Adds a new file to the root directory. If this menu item is selected, an entry field at the bottom of the window displayed, allowing the user to specify a filename for the new file. Entering a name and hitting the RETURN key will create the new file in the directory and open the file in the editor. |
| New File From Template | Opens a new file to the selected directory in an editing buffer. A prompt for a filename will be displayed at the bottom of the main window. After a name is entered and the RETURN key pressed, a list of available templates will be displayed. Selecting a template will create the new tab, insert the text, and perform any snippet substitutions. |

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| Menu Item | Description |
|------------------------|--|
| New Directory | Adds a new directory to the root directory. If this menu item is selected, an entry field at the bottom of the window is displayed, allowing the user to specify a name for the directory. Entering a name and hitting the RETURN key will create the new directory. |
| Open Directory Files | Opens all shown files that are within the directory. |
| Close Directory Files | All open files in the editor that exist within the root directory and below it will be closed. Any files which require a save will prompt the user to save or discard the file modifications. |
| Disconnect From Server | This option will only be displayed for root directories that exist on a remote server. Selecting this item will automatically remove the associated directory hierarchy from the sidebar, close all files and disconnect the associated FTP/SFTP connection. |
| Hide Directory Files | Hides the tabs of any opened files in this directory in the tabbar. Useful for focused workflows. |
| Show Directory Files | Shows any hidden tabs of opened files within the selected directory. |
| Copy Pathname | Copies the pathname of the selected root directory to the clipboard. |
| Rename | Renames the root directory in the file system. The current full pathname will be specified in an entry field at the bottom of the application window. Once filename editing is complete, hit the RETURN key to cause the rename to occur. Hit the ESCAPE key to cancel the renaming operation. |
| Delete | Deletes the root directory from the filesystem and removes the directory from the sidebar. If this item is selected, an affirmation prompt will be displayed to confirm or cancel the deletion. |
| Favorite/Unfavorite | Marks the selected directory to be a favorite (if the Favorite command is selected) or removes it from the favorites list (if the Unfavorite command is selected). Favorited directories can be quickly added to the sidebar via the File / Open Favorite menu or the command launcher. |
| Remove from Sidebar | Removes the root directory from the sidebar (no modification to the file system will take place). If this item is selected, the entire root directory is removed from the sidebar. |

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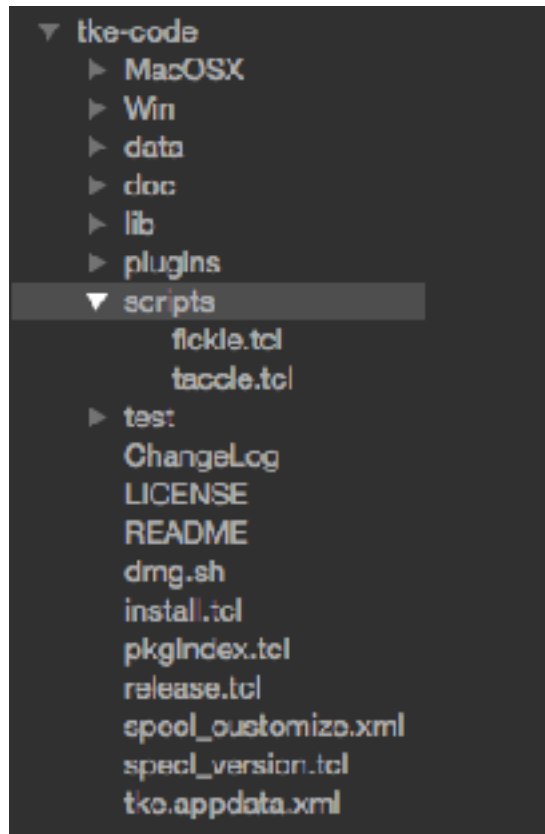
| Menu Item | Description |
|--------------------------------|--|
| Add Parent Directory | Adds the parent directory in the filesystem of the root directory. The current root directory will no longer be a root directory (replaced by the parent directory) but will become a standard directory underneath the parent. |
| Make Current Working Directory | Changes the current working directory to the root directory. Selecting this item will make all file operations within the editor relative to the selected directory. Additionally, the working directory information in the title bar will be updated to match this directory. |
| Refresh Directory Files | Updates the sidebar contents for the root directory. |

In addition to these functions, plugins can also add functionality beneath these items in the menu. See the Plugins and Plugin Development chapters for more information.

Directory

A non-root directory is any directory in the sidebar which has a parent directory associated with it (i.e., any directory in the sidebar that is not a root directory).

The following image depicts the sidebar with a non-root directory highlighted.



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The following table lists the available contextual menu functions available for non-root directories.

| Menu Item | Description |
|------------------------|---|
| New File | Adds a new file to the directory in both the sidebar and the file system. If this menu item is selected, an entry field at the bottom of the window displayed, allowing the user to specify a filename for the new file. Entering a name and hitting the RETURN key will create the new file in the directory and open the file in the editor. |
| New File From Template | Opens a new file to the selected directory in an editing buffer. A prompt for a filename will be displayed at the bottom of the main window. After a name is entered and the RETURN key pressed, a list of available templates will be displayed. Selecting a template will create the new tab, insert the text, and perform any snippet substitutions. |
| New Directory | Adds a new directory under the selected directory in both the sidebar and the file system. If this menu item is selected, an entry field at the bottom of the window is displayed, allowing the user to specify a name for the directory. Entering a name and hitting the RETURN key will create the new directory. |
| Open Directory Files | Opens all shown files that are within the directory. |
| Close Directory Files | All open files in the editor that exist within the directory and below it will be closed. Any files which require a save will prompt the user to save or discard the file modifications. |
| Hide Directory Files | Hides all opened file tabs within the selected directory in the tabbar. Useful for focused workflows. |
| Show Directory Files | Shows all hidden tabs in the tabbar whose associated files exist within the selected directory. |
| Copy Pathname | Copies the selected directory pathname to the clipboard. |

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| Menu Item | Description |
|--------------------------------|---|
| Rename | Renames the directory in the file system. The current full pathname will be specified in an entry field at the bottom of the application window. Once filename editing is complete, hit the RETURN key to cause the rename to occur. Hit the ESCAPE key to cancel the renaming operation. |
| Delete | Deletes the directory from the filesystem and removes the directory from the sidebar. If this item is selected, an affirmation prompt will be displayed to confirm or cancel the deletion. |
| Favorite/Unfavorite | Marks the selected directory to be a favorite (if the Favorite command is selected) or removes it from the favorites list (if the Unfavorite command is selected). Favorited directories can be quickly added to the sidebar via the File / Open Favorite menu or the command launcher. |
| Remove from Sidebar | Removes the directory from the sidebar (no modification to the file system will take place). If this item is selected, the entire directory is removed from the sidebar. |
| Remove Parent from Sidebar | Removes all parent directories of the selected directory from the the sidebar and makes the selected directory a root directory in the sidebar. |
| Make Current Working Directory | Changes the current working directory to the selected directory. Selecting this item will make all file operations within the editor relative to the selected directory. Additionally, the working directory information in the title bar will be updated to match this directory. |
| Refresh Directory Files | Updates the sidebar contents for the selected directory. |

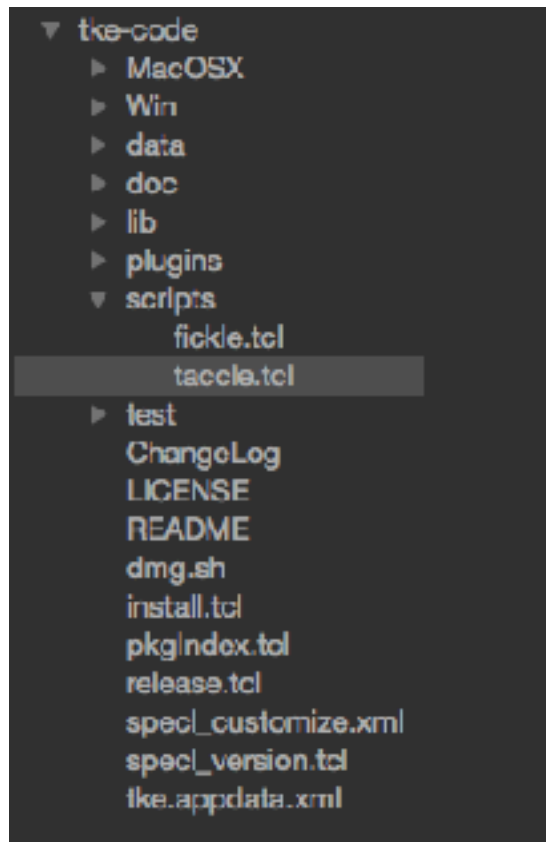
After these functions will be listed any directory popup menu items that are added via plugins. See the Plugins and Plugin Development chapters for how to create these plugin types.

Files

Files have different functions available to them than directories. Double-clicking any file will open the file in the editor.

The following image depicts the sidebar with a file highlighted.

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The following table lists the available functions for files.

| Menu Item | Description |
|-----------------|--|
| Open | Opens the selected file in the editor. An opened file will have a color applied to its background to make it easy to identify opened files in the sidebar. |
| Close | Closes the selected file in the editor. If the file has been modified, a prompt will be displayed asking if the changes should be saved or not. |
| Hide | Hides the tab of the selected file in the tabbar. |
| Show | Unhides the tab of the selected file in the tabbar. |
| Show Difference | Displays a difference view of the currently selected file. |
| Copy Pathname | Copies the selected file pathname to the clipboard. |

| Menu Item | Description |
|---------------------|---|
| Rename | Renames the selected file in the file system. The current full pathname will be specified in an entry field at the bottom of the application window. Once filename editing is complete, hit the RETURN key to cause the rename to occur. Hit the ESCAPE key to cancel the renaming operation. |
| Duplicate | Will create a duplicate file of the selected file in the same directory. The file will be named with a unique name and will be editable. Use the 'Rename' command to change the name, if necessary. |
| Delete | Deletes the file from the filesystem and removes the file from the sidebar. If this item is selected, an affirmation prompt will be displayed to confirm or cancel the deletion. |
| Favorite/Unfavorite | Marks the selected file to be a favorite (if the Favorite command is selected) or removes it from the favorites list (if the Unfavorite command is selected). Favorited files can be quickly opened in the editor via the File / Open Favorite menu or the command launcher. |

After these functions will be listed any file popup menu items that are added via plugins. See the Plugins and Plugin Development chapters for how to create these plugin types.

Editing Pane

The editing pane comprises the majority of the application window, displaying all files that are open for reading/writing. The following image shows a representation of this pane.

The pane is made up of four main areas:

1. Tab bar
2. Line number bar
3. Text window
4. Scrollbars

Tab Bar

| | gui.tcl | scroller.tcl | scroller.tcl | sidebar.tcl |
|------|---|--------------|--------------|-------------|
| 4300 | set last_found \$start_quote | | | |
| 4301 | if [!\$dir eq "-backwards"] { | | | |
| 4302 | set start \$start_quote | | | |
| 4303 | } else { | | | |
| 4304 | set start [lindex \$start_quote 1] | | | |
| 4305 | } | | | |
| 4306 | | | | |
| 4307 | if [!\$text::isEscaped \$text \$last_found] { | | | |
| 4308 | continue | | | |
| 4309 | } | | | |
| 4310 | | | | |
| 4311 | return \$last_found | | | |
| 4312 | | | | |
| 4313 | } | | | |
| 4314 | | | | |
| 4315 | } | | | |
| 4316 | | | | |
| 4317 | ##### | | | |
| 4318 | # Gets the index of the previous indentation character based on the | | | |
| 4319 | # location of the insert mark. | | | |
| 4320 | proc find_prev_indent [text] { | | | |
| 4321 | | | | |
| 4322 | set pos [lindex \$text index insert] | | | |
| 4323 | set last_found "" | | | |
| 4324 | | | | |
| 4325 | lassign [ns syntax::get_indentation_expressions \$text] indent unindent | | | |
| 4326 | | | | |
| 4327 | if {(\$indent eq "") [!\$text::isEscaped \$text \$pos]} { | | | |
| 4328 | return -1 | | | |
| 4329 | } | | | |
| 4330 | | | | |
| 4331 | # Calculate the endpos | | | |
| 4332 | if [!\$text::inCommentString \$text \$pos range] { | | | |
| 4333 | set endpos [lindex \$range 0] | | | |
| 4334 | } else { | | | |
| 4335 | set endpos "1.0" | | | |
| 4336 | } | | | |
| 4337 | | | | |
| 4338 | set search_re "([join \$indent])" | | | |
| 4339 | | | | |
| 4340 | while {1} { | | | |

The Tab Bar sits at the top of the editing pane, allowing for more than one file to be edited at a time and quick switching between text windows. To switch to a different tab, simply left-click on any tab in the tab bar.

By default, tabs are added to the tab bar in the order they were opened; however, the user can change this order by clicking on a given tab and dragging the tab to a new position in the tab bar. Additionally, you can sort the tabs in alphabetical order by selecting the “View / Tabs / Sort Tabs” menu item. If you would always like tabs to be sorted in alphabetical order, you can change this behavior in the user preference file (see the Preferences chapter for information on how to edit this file).

When more files are opened than the tab bar has space to hold, the tab bar will adjust itself to show as many tabs as is comfortable to display and then display some tab shift buttons on each

side of the tab bar (indicated with left and right arrows). To view tabs off-screen to the right, click on the right button. To view tabs off-screen to the left, click on the left button. Alternatively, you can use your mouse's scrolling capability with the mouse pointer within the tabbar to quickly scroll the list of tabs to the right or left. To see a list of all opened tabs, right-click on either the left or right arrow buttons and select a file from the displayed dropdown list. The resulting list will show an in-order list of tabs in the resulting menu with separators strategically placed, to quickly find which tabs are off-screen on each side of the currently displayed tab bar.

In addition to switching between different opened text windows, the tab bar also provides a number of other functions and visual indicators. When a file is locked, a locked icon will be displayed on the left side of the associated tab. If the tab contains a file in difference mode/view, a -/+ icon will be displayed on the left side of the associated tab. When a file has been modified, an asterisk will be displayed to the left of the file name, indicating that a save is needed to commit the changes to the file. The base name of the file is displayed in the tab along with file extension; however, if you would like to see the full pathname of the file, simply hover the mouse over any portion of the tab and a tooltip is displayed with this information. To close the tab, move the mouse cursor over the tab and a close icon is displayed on the right side of the tab, clicking on this button will close the associated tab (if the file is closed and the text has been modified, a prompt will be displayed indicating that the file has not been saved, allowing the user to save the file).

To help eliminate tab clutter, TKE now has a tab hiding feature built into the menu, the sidebar and the tab contextual menu that allows you to hide/show tabs within the tabbar. If a tab is hidden, its contents remain in tact (i.e., unsaved changes will exist) unlike if the tab is closed. This tab hiding feature can help you to create focused workflows while editing without losing the file state of the hidden tabs (ex., you can still see which files are opened but hidden in the sidebar by viewing the file's icon in the sidebar).

In addition to these functions, you can also access a drop down menu of functionality by right-clicking on a tab. The following table summarizes this functionality.

| Menu Item | Description |
|------------------|---|
| Close Tab | Closes the current tab. This is the exact same behavior as clicking on the close button within the tab. |
| Close Other Tabs | Closes all of the other tabs in the tab bar, leaving this tab as the only opened tab in the editing pane. |
| Close All Tabs | Closes all tabs in the tab bar. |
| Hide Tab | Hides the current tab from view. You can show the tab by either using the sidebar or by using the View / Tabs / Show All Tabs option. |

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| Menu Item | Description |
|--------------------|---|
| Split View | Creates another editing buffer in the same tab (it is placed above the current editing buffer). This buffer is a second view into the same file. This allows you to view and edit two different views of the same file. Selecting this command again will remove the second editing buffer view. |
| Locked | Indicator of the locked status of the file and allows the user to toggle the locked status of the file. If a checkmark is displayed next to this item, the file is locked and cannot be modified within TKE. If no checkmark exists, the file is modifiable. |
| Favorited | Indicator of the favorite status of the file and allows the user to toggle the favorite status of the file. Favorited files can be quickly opened via the File / Open Favorite menu or the command launcher. |
| Show in Sidebar | Causes the current file to be displayed in the sidebar (even if the directory is not disclosed). |
| Move to Other Pane | Moves the tab and associated text window to the other editing pane, allowing for side-by-side text editing. If the other editing pane does not exist, it will be created. If the current tab is the only tab in the current pane and it is moved, the current pane will disappear, leaving only a single pane displayed in the editing panel. This option will not be available if there is only one tab opened in the editing panel. |

Line Number Bar

The line number bar is displayed on the left side of the editing panel. Two line numbering schemes are available: absolute and relative. In absolute line numbering, each number is associated with a corresponding line in the text window starting with line 1. In relative line numbering, the line containing the insertion cursor is numbered 0. Line numbers increase by one above the current line and below the current line. You can select between the line numbering schemes in the View / Line Numbering menu option.

In addition to showing line numbers, the line number bar also provides some useful selection functionality. If the left-button is clicked on a line number, the entire corresponding line is selected in the text window. If the left-button is held down while the mouse cursor is moved, the clicked line and all lines between that line and the current mouse cursor will be selected. If the SHIFT button is held when the left mouse button is clicked, all lines between the last left-clicked line and the current line are selected.

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When code folding is enabled for the current editing buffer (via the View / Folding / Enable Code Folding menu option), the line number bar will contain graphical disclosure triangles for each foldable line in the editing buffer. Left-clicking on a disclosure triangle will toggle the code fold at that location, hiding one level of indentation. If the Shift key is held while left-clicking on a disclosure triangle, code folding will be toggled in a deep manner, affecting all levels of indentation at or below the selected code block. You can unfold all folded code or fold all foldable code using the View / Folding menu options.

Finally, the line number bar can be used to create markers. Markers are basically jump points in the text window. Any line can be marked by right-clicking on a line number. When this occurs, an entry field at the bottom of the window is displayed, allowing the user to provide a name for the marker. Giving a name to a marker is optional, but useful. To give the marker a name, enter a string and hit the RETURN key. To create an unnamed marker, simply hit the RETURN key in the name entry field. To cancel the creation of the marker, hit the ESCAPE key in the name entry field. After a marker has been created, the corresponding line number will be given an orange highlight in the line number bar.

To clear an existing marker, simply right-click on a line that has already been given a marker. The line highlight will be cleared to indicate that the marker no longer exists.

Text Window

The text window provides the main source of editing functionality. TKE supports two modes of editing functionality: Vim mode and standard mode. See the Vim chapter to see what functions are available when editing in this mode, the rest of this section will only mention functions available when the editor is not in Vim command mode (i.e., either Vim insert mode or standard mode).

Visually the text window contains two basic UI elements: the text editor pane and the scrollbars.

The text editor pane allows text to be read and modified. The following table specifies the different key and mouse bindings on the editor that the user can take advantage of.

| Key/Mouse Binding | Function |
|-------------------------|--|
| Left-mouse click | Sets insertion cursor just before the character underneath the mouse cursor. Clears any selections. If left-button is held while mouse is moved, selection is created between insertion cursor and under mouse cursor. |
| Left-mouse double click | Selects the word under the mouse and positions insertion cursor at the start of the word. Holding mouse button while dragging will select all words between insertion cursor and mouse cursor. |
| Left-mouse triple click | Selects the entire line under the mouse. Holding mouse button while dragging will select all lines between insertion line and mouse cursor line. |

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| Key/Mouse Binding | Function |
|--|---|
| Shift + Left-mouse click + drag | Adjusts the end of the selection nearest the mouse cursor when the left button is pressed. |
| Shift + Left-mouse double click + drag | Adjusts the end of the selection nearest the mouse cursor in whole word units. |
| Shift + Left-mouse triple click + drag | Adjusts the end of the selection nearest the mouse cursor in line units. |
| Control + left-mouse click | Repositions the cursor without affecting the selection. |
| Middle-mouse click | Selection is copied into the text at the position of the mouse cursor. |
| Middle-mouse click + drag | Moves the current view of the text window. |
| Insert key | Inserts the current selection at the position of the insertion cursor. |
| Left/Right key | Moves the insertion cursor one position to the left/right and clears the selection |
| Shift + left/right key | Moves the insertion cursor one position to the left/right and adds the character to the selection. |
| Control + left/right key | Moves the insertion cursor to the left/right by one word. |
| Shift + Control + left/right key | Moves the insertion cursor to the left/right by one word and adds the word to the selection. |
| Up/Down key | Moves the insertion cursor one line up/down and clears the selection. |
| Shift + up/down key | Moves the insertion cursor one line up/down, extending the selection. |
| Control + up/down key | Moves the insertion cursor by paragraphs (groups of lines separated by blank lines). |
| Shift + Control + up/down key | Moves the insertion cursor by paragraphs, extending the selection. |
| Next/Prior key | Moves insertion cursor forward/backward by one screenful of text and clears the selection. |
| Shift + next/prior key | Moves insertion cursor forward/backward by one screenful of text, extending the selection. |
| Control + next/prior key | Moves screen forward/backward by one screenful of text without affecting insertion cursor or selection. |
| Home key OR Control + 'a' key | Moves the insertion cursor to the beginning of its current line and clears any selection. |

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| Key/Mouse Binding | Function |
|------------------------------|--|
| Shift + Home key | Moves the insertion cursor to the beginning of the line, extending the selection to that point. |
| Control + Home key | Moves the insertion cursor to the beginning of the text and clears the selection |
| Shift + Control + Home key | Moves the insertion cursor to the beginning of the text, extending the selection. |
| End key OR Control + 'e' key | Moves the insertion cursor to the end of its current line and clears the selection. |
| Shift + End key | Moves the insertion cursor to the end of its current line, extending the selection to that point. |
| Control + End key | Moves the insertion cursor to the end of the text and clears the selection. |
| Shift + Control + End key | Moves the insertion cursor to the end of the text, extending the selection. |
| Control + '/' key | Selects all of the text. |
| Control + ` key | Clears the selection. |
| Delete key | Deletes the selection (if one exists) or deletes the character to the right of the insertion cursor. |
| Backspace key | Deletes the selection (if one exists) or deletes the character to the left of the insertion cursor. |
| Control + 'k' key | Deletes from the insertion cursor to the end of the line. If the insertion cursor is already at the end of the line, the newline character is deleted. |
| Control + 'o' key | Opens a new line by inserting a newline character in front of the insertion cursor without moving the insertion cursor. |
| Control + '+' key | Increases the font size of the editor text by a size of one. |
| Control + '-' key | Decreases the font size of the editor text by a size of one. |
| File drag-drop | Inserts the contents of the file at the location of the cursor (which will follow the mouse cursor) |
| Text drag-drop | Inserts the selected text associated with the drag-drop operation at the location of the cursor (which will follow the mouse cursor). |
| Multicursor Bindings | |

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| Key/Mouse Binding | Function |
|---------------------------------------|--|
| Alt + Left mouse click | Adds a cursor to the multicursor list at the character under the mouse cursor. Also makes the current cursor the anchor cursor. |
| Alt + Right mouse click | Adds one or more cursors between the anchor cursor and the current cursor such that one cursor will be placed on each line at the same column location as the anchor cursor. |
| Block Selection Binding | |
| Shift + Alt + Left mouse click + drag | Selects a column of text with the upper left corner of the selection starting at the button press position and the lower right corner ending at the button release position. |

On Mac OS X and Windows, you can drag a file into the text editing area to insert the file's contents into the editing buffer starting at the insertion cursor. You can also drag and drop text into the editing buffer to just insert that text into the editing buffer.

Scrollbars

The scrollbars allow you to change the text view displayed in the editing area. By default, both scrollbars display a minimalist, thin scrollbar. Using a mouse wheel gesture will also move the viewing area up and down (the slider in the vertical and horizontal scrollbars will give an indication as to what portion of the file is currently in view). If the text area is not scrollable, the associated scrollbars will be hidden from view. Moving the mouse cursor into the scrollbar area will make the slider larger so that it is easier to grab, if necessary.

Besides using mouse scrolling to change the view, you can grab the scroll slider and move it to any spot in the file. Left clicking in the scrollbar area will cause the view to jump to the selected point of the file. Right clicking in the scrollbar area will adjust the view by a single page (if the area above the slider is right-clicked, the view will move up by a page; if the area below the slider is right-clicked, the view will move down by a page). Right-clicking on the slider will not change the view.

If TKE is operating in multi-pane mode (i.e., two editing buffers are displayed side-by-side) and the View / Panes / Enable Synchronized Scrolling option is set, scrolling either editing buffer will automatically scroll the other pane's editing buffer in lock step. This is useful if you are manually viewing differences between two different files. When synchronized scrolling mode is enabled, the scrollbar sliders will change to a different color (red in most cases) to indicate the current mode. To assist in aligning the panes, you can set the current cursor in both panes to the lines that you would like to see aligned and choose the View / Panes / Align Panes menu option which will cause both panes to align their views such that the current lines in each pane will be vertically aligned. Once that has been set, enabling synchronized scrolling will keep those lines in vertical alignment.

In addition to changing the view, the vertical scrollbar on the left side of the editing buffer can also display a simple file map. If markers are set in the file, they will be displayed in the scrollbar area with a horizontal line using the same color of the marker in the line number area. For difference views, the difference lines will also be drawn in the scrollbar area. The top of the file scrollbar area will display map information for the first line in the file while the bottom of the file scrollbar area will display map information for the last line in the file.

Find Highlighting

TKE supports searching within a text window via the “Find” menu. When a string is searched within the text window, all matching text will be highlighted and the insertion cursor will be placed at the beginning of the first matched text. This allows you to quickly see all matches within the text window.

When either the “Find” or “Find and Replace” functions are invoked, if text is currently selected in the text window, that text will be automatically placed in the search field.

Find in Files

When the user performs a “Find in Files”, a special tab will be added to the editing pane. This file will contain snippets of lines of text from all files that have matches to the search text. Within the window, all matching text will be highlighted the same yellow that is used for normal searching. If the user left clicks or hits the space bar when the insertion cursor is within on any matching text within this tab, the corresponding file will automatically be added to the editing pane as a new tab and the insertion cursor will be placed at the beginning of the matching text in the file. This allows you to quickly find and get to the matches within the editor.

Status Bar

The status bar is the area located at the bottom of the application window. It's function is to display the following information to the user.

- Vim mode (if the editor is currently in Vim mode)
- Vim macro recording mode (only displayed when recording and includes the name of the buffer being recorded to).
- Current row and column position of cursor within the current editor
- Informational, temporal messages provided by the application
- Current mode of auto-insert for the current editor (includes ability to change the indentation mode for the current editor).
- Display current syntax applied to current editor (and ability to change that language).

The following image is a representation of the status bar.

Vim Mode

If the current editor is in Vim mode, the right-most indicator will specify the current mode that Vim is in.

Vim Macro Recording Status

If the current editor is in Vim mode, the next indicator on the left of the status bar will display this state along with the name of the buffer being recorded into. When recording mode is completed within the current editor, this status indicator will clear from the information bar.

Cursor Position Status

The cursor position status information is located on the left side of the status bar. If a file is currently being edited, the current row and column position of the cursor is displayed. Additionally, if the editor is running in Vim mode, the current Vim mode is displayed just to the right of the position information.

Message Display

To the right of the position status information is a typically blank area which can be used to display temporary informational messages to the user from the application. If a message is displayed in this area, it will appear and then disappear after several seconds (keeping the message area blank again).

Auto-Indent Indicator

Near the right side of the status bar is an indicator of the auto-indent mode. A value of "OFF" indicates that indentation mode is off. A value of "IND" indicates that auto-insertion mode is enabled. A value of "IND+" indicates that smart indentation mode is enabled. To change the indentation mode, you may either change it via the "Edit/Insert Mode" menu or simply click on the indentation indicator to display a popup menu where you can change the mode.

Syntax Display

On the right side of the status bar is the syntax display area. If a file is currently being edited, the current syntax highlighting language is displayed. To change the current language, simply left-click on the language name and select a different language from the list. If the current file cannot be automatically discerned by TKE, a value of "<None>" will be displayed in the status bar.

Chapter 6: Difference Viewer

When a file is displayed in the editor, the “Show File Difference” option in the File menu will create a new tab in the editor with the file shown in “Difference View”. This view is somewhat different than when a file is in edit mode. The purpose of this view is to allow the user to visually see file differences between two versions of the same file (available from a version control system like Mercurial, Git, Bazaar, Subversion or Perforce), between two different files (using the Posix standard diff utility), or using output from a customized command that produces unified difference output.

The following image shows what a difference view looks like.

```

288 298
289 299     variable data
290 300
291 301     # Remove all canvas items
292 302     $data($win,canvas) delete all
293 303
294 304     # Calculate the slider height
295 305     lassign [eval $data($win,-command)] first last
296 306     if {$data($win,-orient) eq "vertical"} {
297 307         set size [wininfo height $data($win,canvas)]
298 308         lassign [list [expr ($data($win,-thickness) + $data($win,extra_width)) - $data(
299 309     ] else {
300 310         set size [wininfo width $data($win,canvas)]
301 311         lassign [list [expr $data($win,-thickness) - $data($win,minwidth)] @ $data($win
302 312     }
303 313
304 314     # Draw the markers
305 315     update_markers $win
306 316
307 317     # Add the slider
308 318     set data($win,slider) [$data($win,canvas) create rectangle $x1 $y1 $x2 $y2 -outline
309 319     set data($win,slider) [$data($win,canvas) create rectangle 0 0 1 1 -outline $cate
310 320
311 321     # Run the set command
312 322     widget_command $win set $first $last
313 323
314 324     # Draw the markers
315 325     update_markers $win
316 326     # Set the size and position of the slider
317 327     widget_command $win set [*][eval $data($win,-command)]
318 328
319 329 }
320 330
321 331 #####
322 332 # Draw the markers in the scrollbar.
323 333 proc update_markers {win} {
324 334     variable data
325 335
326 336     # Draw the markers
327 337
328 338 }
329 339
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Mercurial Start: 1542 End: 1544 Update

The window is comprised of 4 main parts:

- Line number bar (left)
- Main file viewing area (middle)
- Difference map (right)
- Control panel (bottom)

Line Number Bar

The line number displays two sets of line numbers, corresponding to the associated line numbers of each file that is part of the difference. The numbers on the left side correspond to the first file while the numbers on the right side correspond to the second file. Gaps in line numbers represent differences that the associated file has with the other file.

Like the line number bar in normal editing view, you can click on a set of line numbers to create a marker and you can click and drag in this bar to select all associated lines of text for the purposes of copying.

Main File Viewing Area

The main viewing area displays both of the files that are a part of the difference. Lines that are in common are displayed as a file normally when being edited. Lines that are a part of the first file, but not the second are displayed in a reddish color. Lines that are a part of the second file, but not the first are displayed in a green color. Text that is displayed in the main file viewing area are not editable; however, text may be selected and copied to the clipboard. You can also save the contents of the viewer under a supplied name (i.e., saving the buffer contents will not automatically overwrite the original file).

Difference Map

The difference map on the right-hand side of the window is displayed in lieu of the standard scrollbar, functioning in the same way but providing a quick view of the difference information in the entire file. Click on an area in the scrollbar to display that portion of the file in the file viewing area. Drag the scrollbar to any position in the difference map to also view that portion of the file. The inside of the slider is empty, allowing the user to easily see the difference information in the area that the slider resides.

Control Panel

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The control panel is displayed just below the main file viewing area. It provides the user a simple method of changing which versions of the given file are differenced in the main file viewing area.

On the left side of the control panel is the version system selection menu. By default, TKE will attempt to automatically determine which version system is managing the file. The following values are currently supported:

| System | Description |
|------------|--|
| Mercurial | Uses the Mercurial version control system. Select the first and second versions using the selectors in the control panel to change which versions are differenced. |
| Bazaar | Uses the Bazaar version control system. Select the first and second versions using the selectors in the control panel to change which versions are differenced. |
| Git | Uses the Git version control system. Select the first and second version using the selectors in the control panel to change which versions are differenced. Versions are represented by their shortened SHA-1 values. |
| Perforce | Uses the Perforce version control system. Select the first and second versions using the selectors in the control panel to change which versions are differenced. |
| Subversion | Uses the Subversion version control system. Select the first and second versions using the selectors in the control panel to change which versions are differenced. |
| diff | Allows the user to perform a Unix diff of the current file and another file in the file system. Simply enter the pathname of the file to compare to the file loaded in the main file viewing area to perform the difference. |
| custom | Allows the user to enter in a specific difference command to execute in the shell. The output of the difference command must be in unified difference output format. |

Note: If you have one of the above tools installed on your system, but TKE fails to identify which tool is to be used for the file, most likely the problem is that the tool is not in your environment's binary path. To fix this you can either add the directory to your PATH environment variable path (if you are starting tke from the command-line) or use the preference

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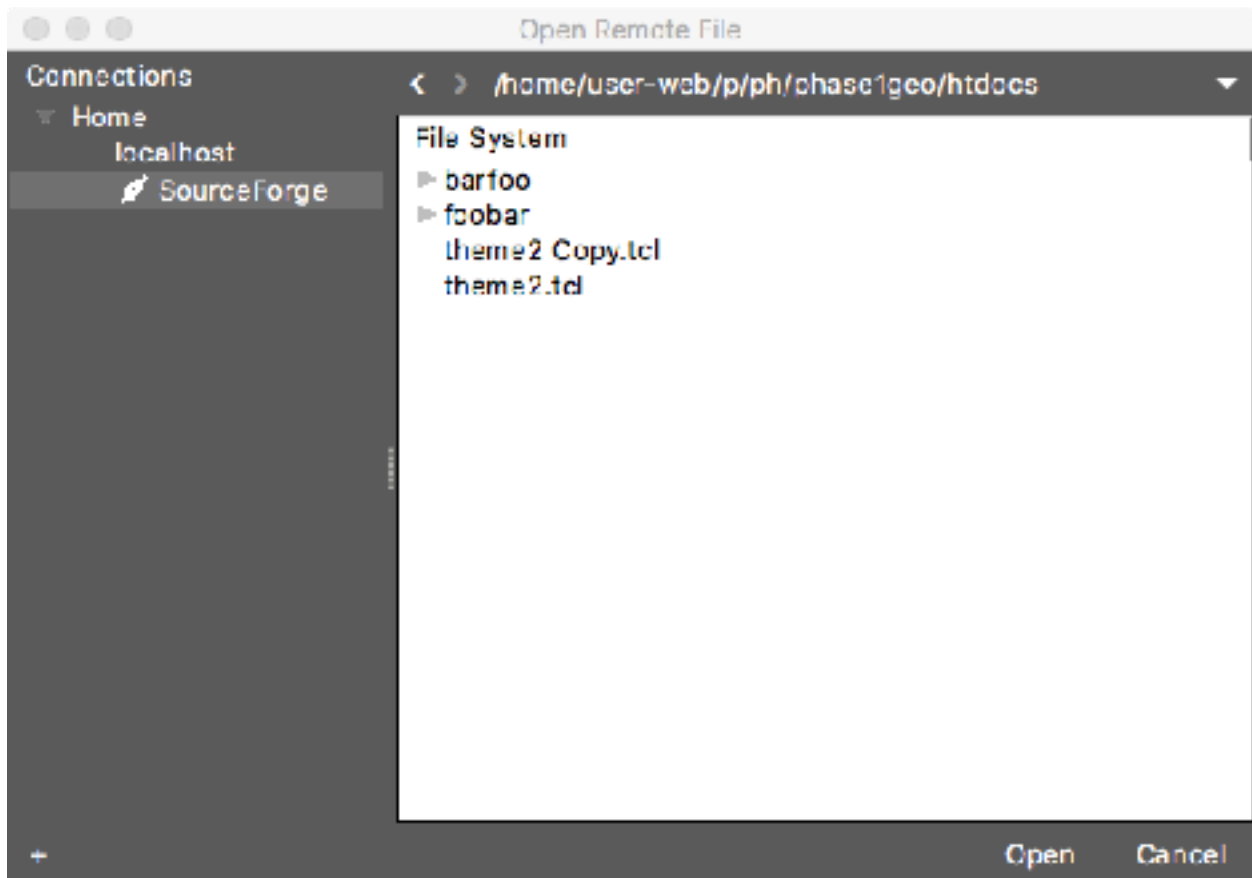
General panel, select the Variables tab and set the PATH environment variable within the Variables table. Once you have properly setup the PATH variable within the preferences panel, TKE should be able to (without a restart) find the proper tool that is managing the file.

To the right of the version system menu is either a group of version selectors (if the menu displays a file version system), a file entry box (if the menu displays the “diff” option), or a command entry box (if the menu displays the “custom” option). Use these widgets to quickly display the desired difference. By default, if TKE was able to automatically determine the version system being used, TKE will setup the selector widgets such that the first version is the last committed version and the second version is the current working copy of the file. The main file viewing area will automatically display the difference information. Whenever the user clicks on one of these widgets or changes the displayed version, an information window will be displayed just above the control panel displaying the logfile information of the current version in the widget. A preference value exists that can allow the user to show/hide this information when versions are changed. Changing the mouse/keyboard focus to another widget will hide this informational display from view.

To change the file versions, simply adjust the selector widgets to match the desired versions and click on the “Update” button that will be displayed on the right side of the control panel. The file viewing area will only be modified after the “Update” button is clicked. If the “Update” button is not available, it indicates that the output data in the main file viewer matches the current selections in the control panel.

Chapter 7: Remote File Editing

In addition to the ability to view/edit files on the local file system and across an NFS mounted drive, TKE also has the ability to view/edit files natively on remote systems using FTP/SFTP. To edit remote files, use the File / Open Remote... menu option to display the remote file dialog window. A depiction of this window is displayed below.



The window is comprised of three areas:

1. Connection bookmark sidebar (left)
2. Remote file viewer (right)
3. Button bar (bottom)

Connection Bookmark Sidebar

On the left side of the window is the connection bookmark sidebar. This is the area which shows all available connections that have been previously setup and saved. The sidebar is

organized by groups. By default, a single group called “Group” will occupy the sidebar. This group may be renamed and/or deleted (if another group exists in the sidebar — at least one group must exist in the sidebar). To create a new group, click the “+” button in the button bar and select the “New Group” option. This will display a small popup window allowing you to specify the new group name. Entering a unique name and clicking the “Create” button will create the new group in the sidebar. Groups may be moved around in the sidebar by selecting and dragging them to a new position in the sidebar.

To rename a group name, right click the group name and select the “Rename Group” menu option. This will display a renaming popup. Entering a name and selecting the “Rename” button will change the group name in the sidebar. Note that groups may only be renamed if they do not contain any active connections (i.e., all connections within the group are in the disconnected state — noted by the lack of a connection icon next to the connection name).

To delete a group name, right click the group name and select the “Delete Group” menu option. A confirmation popup will be displayed to confirm the group deletion (which will delete all connections within the group as well). Like the “Rename Group” option, this option will only be available if all of the group connections are in the disconnected state.

To create a new remote connection, either select a group name, right-click and select the “New Connection” menu option or select a group and click on the “+” button in the lower left corner of the window and select the “New Connection” option. This will make display the connection editor pane (described below). Clicking on the “Create” button after filling in all of the non-optional fields will add the connection to the sidebar under the group specified with the “Group” menu in the connection editor. You may move a disconnected connection to a different group or change its position within the group by dragging the connection to a new position within the sidebar.

To edit an existing connection, right click the connection and select the “Edit Connection” option. To delete the connection, right click the connection and select the “Delete Connection” option. A confirmation popup will be displayed prior to deleting the connection. To test a connection for connectivity, right click the connection and select the “Test Connection”, after a moment a popup will be displayed indicating the availability of the connection. To start a connection, either double-click the connection or right-click the connection and select the “Open Connection” option. After the remote connection has been made, the connection's directory contents will be displayed in the remote file viewer area on the right of the window. To disconnect an open connection, right-click the connection and select the “Close Connection” option. Note that when a connection is currently in the opened state (as indicated in the sidebar with the connected icon next to the connection name), only the “Close Connection” option will be enabled.

Remote File Viewer

The remote file viewer area of the window displays the currently selected and opened connection directory contents. To open a remote directory or file, navigate to the file/directory, select it and click on the “Open” button in the toolbar. If a directory is selected, the directory will be added to the sidebar in the TKE main window where you can interact with it just like a local filesystem. If a file is selected, an editing buffer will be created displaying the current contents

of the remote file and the file's directory will be loaded into the sidebar of the main TKE window. Any modifications and consequent saves made to this file will automatically be pushed back to the remote server.

To navigate the remote file viewer, double-click on any directory to view the contents of that directory in the viewer. To move up the file system, use the menu button at the top of the viewer area and select an ancestor directory to view. To move backward and forward through the directory history, use the back/forward buttons at the top left of the file viewer.

Connection Editor

The connection editor pane is displayed when adding a new connection or editing an existing connection. The following is a depiction of this pane.



The screenshot shows a dialog box titled "Open Remote File" with a dark gray background. It contains several labeled text input fields and two dropdown menus. The fields are filled with the following information:

| Field Label | Value |
|------------------------------|---------------------|
| Type: | SFTP ▼ |
| Group: | Home ▼ |
| Name: | SourceForge |
| Server: | frs.sourceforge.net |
| Username: | phase1gen |
| Password (Optional): | |
| Port: | 22 |
| Remote Directory (Optional): | |

At the bottom of the dialog, there are three buttons: "Test" on the left, and "Update" and "Cancel" on the right.

The "Type" field allows you to specify the protocol to use to connect to the remote server. At present you can connect via FTP or SFTP (if your system supports it — see the installation chapter for details).

TKE User's Guide

The “Group” menu contains the list of created connection groups. Use this to select which group the connection should be associated with.

The “Name” field is what you will refer to the connection as. The combination of the group and name fields must be unique within the TKE session, so you can name the connection anything that you would like. The field is required.

The “Server” field is either the URL server name or the TCP/IP identification of the server to connect to. This field is required.

The “Username” field is the name of the user to use for logging into the server. This field is required.

The “Password” field is the password to use along with the username for logging into the server. This field is optional to specify in the connection. If a password is entered here, opening the connection will not prompt for a password. If a password is not specified, opening the connection will prompt for the password. It is important to note that if a password is entered, it is NOT saved in an encrypted manner which is even more important to know if the remote connection file is stored on a service such as Dropbox or iCloud Drive.

The “Port” field specifies the server port that where the connection request will be sent to. The port value will automatically be set to the standard number whenever the “Type” field is changed; however, if the the server uses a different port, you can change that value in this field. This field is required.

The “Remote Directory” field specifies the initial directory that will be displayed after successfully connecting to the server. This field is optional. If not specified, the server will automatically choose the directory to display.

Once all required fields contain a value, you can use the “Test” button to check if the settings allow a successful connection or not. The pass or fail status will be displayed in a popup window. If you get a passing test status, click on the “Create”/“Update” button in the editor to save the connection settings and return the view to the main remote file dialog window. Click on the “Cancel” button to skip saving the settings changes and return to the main remote file dialog window.

Remote Save File Dialog

If you want to save an existing editing buffer to a remote server, select the File / Save Remote As... menu option. This will display the remote save file dialog window. This window will look almost identical to the remote open file dialog window with two exceptions. In the button bar, a “New Folder” button will be available. Clicking on this button when a directory is displayed in the remote file viewer will display a new folder popup window allowing you to specify the name of the new folder. The new folder will be added to the current remote directory.

Additionally, an entry field is displayed allowing you to specify the filename to save to. Clicking the “Save” button will save the specified filename into the currently selected directory. This will

also cause the remote directory to be added to the main window sidebar (if it does not already exist there). Once the file has been saved to the remote server, you may continue to edit the file and save it — the saves will be pushed to the remote file server automatically.

Main Sidebar

Once a remote directory is specified in the main window sidebar, you can perform most of the same operations to that remote directory and its related files as you can any local directory. You can open files directly, close files from editing, rename directories/files, duplicate files, delete directories/files, change the directory display, etc. The only operations that you cannot perform is a file difference (since running the file difference would require interacting with a file to perform the difference on the remote server, which is not supported via FTP/SFTP) and making a remote file/directory be a favorite.

In addition, TKE will not save remote directories/files states in-between TKE sessions. This means that if you have opened remote connections and quit TKE, restarting TKE will not automatically reconnect and display previous sidebar and file state.

Chapter 8: Sessions

As mentioned in various sections in this guide, TKE has support for named sessions. A session is simply defined as a single TKE window with the following attributes:

- Window geometry and location on the screen
- Fullscreen and zoomed status of the window
- Current working directory
- Command launcher position
- Set of opened directories in the sidebar
- Set of opened files, including information about their pane location, tab location, tab state (i.e., locked, readonly, buffer, language, indent mode, etc.), cursor and yview position
- Markers
- Difference view information including version system and first and second version values
- Global preferences
- Language-specific preferences
- Find, Find/Replace and Find in Files saved search input

Using sessions, you can quickly and efficiently create multiple named sessions and switch between them as the complete saved state of the session is remembered. This means no fiddling with session setups when working on more than one project or area of a project. Less friction with environments means more focus on the work.

By default, TKE will start in an unnamed session; however, at any time the user can save the current setup of TKE (whether in a named or unnamed session) as a new named session using the “Sessions / Save As...” option. This will display an input field at the bottom of the window, allowing the user to specify a name to call the session. Named sessions are persistent on disk, meaning that they will remain available for switching/opening after TKE has been quit and restarted.

Once the session has been saved under a given name, the title bar of the window will include the name of the session. A named session can be modified and resaved using the “Sessions / Save Current” menu option.

If you want to exit a given session, at any time you can use the “Sessions / Close Current” menu option. This will revert the current session back to the last state of the unnamed session.

If you are working in either a named or unnamed session and wish to change the current window to a different session setup, use “Sessions / Switch To” menu option, select one of the available named sessions. Doing so will change the current window to display the last saved state of the named session.

If you are in a Windows or Linux environment, you can open a new window using a given named session using the “Sessions / Open” menu option and select a previously saved name session.

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Finally, if you are done using a named session and would like to remove it from disk, simply select the “Sessions / Delete” menu option and select the named session to delete. After selecting the “Yes” option, the named session will be permanently removed.

If you are using TKE from the command-line, you can start TKE in a named session by using the ‘-s’ command-line option. The value passed to ‘-s’ is a name of a session.

Chapter 9: Command Launcher

The command launcher provides access to all of the available functionality from anywhere within the application. To call up the launcher, simply hit the key combination (by default, the key combination is Control-Space but this can be changed within the menu bindings file). The resulting widget is a simple entry field displayed in the upper center portion of the window. The cursor will be placed within the entry field for immediate command entry.

To perform a command, simply begin typing the name of the command that you wish to perform. As you enter characters, the command list will be immediately updated with the best matches. The command launcher uses a fuzzy search algorithm for matching that remembers the most used commands based on the input string, allowing you to quickly perform most commands with only a few typed characters.

If one or more matches are found, the top-most entry will be the best match. The best match will also be selected. To execute the best match, simply enter the RETURN key. To change the selection to another displayed match in the list, simply use the up/down arrow keys until the desired command is selected and hit the RETURN key.

The following table describes the types of commands that can be executed within the command launcher along with any special characters that call up specific functionality.

| Command Type | Description | Character Sequence |
|-------------------|---|--|
| Menu commands | Any menu item commands can be executed from within the launcher. | (Enter any portion of the menu command string) |
| Clipboard History | Inserts any of the items stored in the clipboard history into the current editor and/or copies the text into the clipboard. | #... |
| Snippet insertion | Inserts any of the language-specific snippets available for the current editor. | ;... |
| Symbol Jumping | Jump to any supported language symbol (i.e., procedure, function, etc.) in the current editor. | @... |
| Marker Jumping | Jump to any marker in the current editor. | ,... |
| Sidebar File Open | Open any shown file in the sidebar for editing. | >... |

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| Command Type | Description | Character Sequence |
|-----------------------|--|---|
| Calculator | Perform numerical calculator expressions (any valid numerical Tcl expression is allowed). Selected result is copied to the clipboard. | (Enter any valid Tcl calculation) |
| URL launcher | Open a specified URL in the local web browser or recall a previously used URL from history and open that location. | (Enter any valid URL) |
| URI launcher | <p>Executes the given URI and stores the URI in its history for quickly performing the same function later on.</p> <p>Example:</p> <p><u>dash://tcl.text</u></p> <p>Opens the Dash application (if installed) and displays the documentation for the Tcl/Tk text widget.</p> | (Enter any valid URI that is supported on your system). |
| Plugin installation | Displays all available plugins that can be installed. Selecting a plugin in the resulting list installs the plugin. | install |
| Plugin uninstallation | Displays all available plugins that can be uninstalled. Selecting a plugin in the resulting list uninstalls a plugin. | uninstall |
| Syntax modification | Changes the syntax highlighting rules for the current editor | <ul style="list-style-type: none"> • Enter a name of any supported language OR • Enter "Syntax:" for a full list of all available languages |
| Theme modification | Changes the syntax highlighting color scheme for all editors | <ul style="list-style-type: none"> • Enter a name of any installed theme OR • Enter "Theme:" for a full list of all available themes |

In addition to the normal command launcher UI (entry field with a list of matching commands listed below), the command launcher also has a preview window that is available for a subset of functionality. The preview window will be displayed below the entry field and to the right of the command list. Highlighting a command in the command list will update the preview window. The preview window is available for the following command launcher functions.

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| Function | Displayed in Preview |
|----------------------|---|
| Snippets | Raw snippet content from the snippet file |
| Clipboard history | Full content for a paste item |
| Plugin installations | Revision and description of the selected plugin |

Additionally, you may move the location of the command launcher widget by grabbing any edge of the launcher and drag it to a new location. If the associated preference value is set, the launcher will display in the new location each time that is invoked. If the preference value is cleared, the launcher widget will display in the default location the next time it is invoked.

Chapter 10: Vim Commands

The editor supports a subset of the classic Vim functionality as well as some useful extensions while operating in Vim mode. To edit documentation in Vim mode, go to the "Tools" menu and click on the "Vim mode" option. When the mode is selected in the menu, the editor will respond to Vim input. To place the editor back into standard editing mode, click on the "Vim mode" menu option again. To set the default editing mode, go to the preferences file and set the "Editing/VimMode" value to a value of 1 (for Vim mode) or 0 (for standard mode).

Standard Vim Commands

The following table describes the available standard Vim functionality.

Any characters in bold (ex. **b**) represent the actual character. Any characters in all caps (ex. ESC or CONTROL-) represent its associated key on the keyboard (these are unprintable characters). Any characters in grey italics (ex. *num*) font represent variables whose value is described in the description field.

| Command or KEY | Description |
|-----------------------------|---|
| Line numbers | |
| . | Specifies current line. |
| ^ | Specifies the first line in the file. |
| \$ | Specifies last line in the file. |
| <i>number</i> | Specifies the line at line number <i>number</i> . |
| <i>marker_name</i> | Specifies the line marked by <i>marker_name</i> . |
| Undoing/Cancelling commands | |
| ESC | Cancels unexecuted command or if in editing mode, ends editing mode to return to command mode. If the current mode is the command mode, any selections or search highlighting is cleared from the current editor. |
| u | Counteracts last command that changed the buffer. |
| Repeating a command | |
| . | Repeats the last command that changed the buffer. |

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| Command or KEY | Description |
|---|---|
| q <i>a-z</i> | Starts recording the following keystrokes to the specified buffer labeled a through z. To stop recording to this buffer, enter q when in command mode. When you are recording, the information bar will display this state information and specify the buffer label storing the keystrokes. If q is entered immediately following the buffer label, it will effectively delete the buffer contents. |
| @ <i>a-z</i> | Replays the stored keystrokes in the specified buffer. |
| Editing a file | |
| :n | Edits the next file in the editor tab order. |
| :e <i>filename</i> | Edits the specified file (if the file is not already opened, opens the file in a new tab). |
| :e# | Edits the previously edited file. |
| :r <i>filename</i> | Places a copy of the specified file below the current line. |
| :r !command | Executes the provided shell command and inserts its standard output on the line below the cursor. |
| gf | Edits the file whose name is under or after the cursor. The file will be added to the sidebar including the contents of its directory. |
| CONTROL-g | Displays number of lines and characters in the current file in the status bar. |
| Saving/Closing a file | |
| :w | Writes file under the original name. If an original name has not been specified, a "Save As" window will be displayed. |
| ZZ or :wq or :wq! | Writes the file under the original name and closes the current tab. If an original name has not been specified, a "Save As" window will be displayed. |
| :wq <i>filename</i> or :wq! <i>filename</i> | Writes the file under the given filename and closes the current tab. |
| :q | Closes the current tab. If the text has been modified since the last save, a prompt will be displayed asking if you would like to save before closing. |
| :q! or :cq or ZQ | Closes the current tab regardless of the modification status. Changes will not be saved and a prompt will not be displayed. |

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| Command or KEY | Description |
|--|---|
| :w <i>filename</i> | Writes the current file under the specified filename. |
| :x,yw <i>filename</i> | Writes the specified range of lines to the given <i>filename</i> . |
| :x,yw! <i>filename</i> | Writes the specified range of lines to the given <i>filename</i> overwriting the contents of the file. |
| Searching/Replacing | |
| /string | Finds all occurrences of the given string, jumping the cursor to the first occurrence below the current line. |
| ?string | Finds all occurrences of the given string, jumping the cursor to the first occurrence above the current line. |
| n | Repeats the last '/' or '?' operation. |
| #n | Repeats the last '/' or '?' operation # times. |
| N | Repeats the last '/' or '?' operation in the opposite direction. |
| #N | Repeats the last '/' or '?' operation in the opposite direction # times. |
| ? | Jumps to the previous occurrence of the previous search. |
| :x,ys/oldstring/newstring/flags | <p>Finds and replaces one or more occurrences of "oldstring" with "newstring" where "oldstring" can be any Tcl regular expression.</p> <p>The "flags" value if empty, causes only the first match to be replaced in the given range. The following flags are valid:</p> <p>g = all matches are replaced in the given range i = ignores case in matching l = case sensitive matching</p> |
| * | Searches the text for the next occurrence of the current word. |
| Inserting/Replacing text | |
| i | Inserts before the current character. |
| a | Inserts after the current character. |
| A | Inserts at the end of the current line. |
| I | Inserts at the beginning of the current line. |

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| Command or KEY | Description |
|-------------------------|---|
| o | Inserts below the current line (opens new line). |
| O | Inserts above the current line (opens new line). |
| r | Replaces the current character (no ESC necessary). |
| R | Replaces from current cursor position to end of line; does not change characters not typed over. |
| cw | Replaces the current word |
| ci <i>char</i> | Replaces all text contained within the pair of <i>char</i> characters before and after the current insertion cursor. |
| cc | Replaces the current line |
| C | Replaces all text from the current insertion cursor to the end of the current line. |
| Joining text | |
| J | Joins the current line and the line below it. |
| #J | Joins # lines, starting with the current line |
| Changing case | |
| ~ | Changes case of the current character. If text is currently selected, all selected characters will have their case changed. |
| #~ | Changes case of the next # characters starting with the current character. |
| g~ <i>motion</i> | Transforms all text between the cursor and the indicated motion direction to invert the current case. |
| gu <i>motion</i> | Transforms all text between the cursor and the indicated motion direction to lower case. |
| gU <i>motion</i> | Transforms all text between the cursor and the indicated motion direction to upper case. |
| Moving around in a file | |
| h | Moves left one character |
| j | Moves down one line |
| k | Moves up one line |
| l | Moves right one character |

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| Command or KEY | Description |
|----------------------|--|
| w | Moves the insertion cursor to the beginning of the next word. |
| b | Moves the insertion cursor to the beginning of the previous word. |
| 0 or ^ | Moves to the beginning of current line |
| \$ | Moves to the end of the current line |
| :# | Moves to line # (note: # value of 0 or 1 takes you to the first line) |
| gg | Moves to the beginning of the file |
| G | Moves to the end of the file |
| #G | Moves to the line #. |
| RETURN | Moves the insertion cursor to the first non-whitespace character in the line after the current line. |
| SPACE | Moves the insertion cursor one character to the right, moving to the next line below the current line if the cursor is at the end of the line. |
| BACKSPACE | Moves the insertion cursor one character to the left, moving to the next line above the current line if the cursor is at the end of the line. |
| - | Moves the insertion cursor to the first non-whitespace character in the line before the current line. |
| H | Moves the insertion cursor to the first line on the screen. |
| M | Moves the insertion cursor to the middle line on the screen. |
| L | Moves the insertion cursor to the last line on the screen. |
| #I | Moves the insertion cursor to the specified column in the current line. |
| CONTROL-f | Scrolls forward one screen |
| CONTROL-b | Scrolls backward one screen |
| UP | Moves the cursor one line up |
| DOWN | Moves the cursor one line down |
| LEFT | Moves the cursor one character to the left |

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| Command or KEY | Description |
|--------------------|--|
| RIGHT | Moves the cursor one character to the right |
| Deleting text | |
| x or DELETE | Deletes the current character |
| #x | Deletes # characters, starting with current character |
| X | Deletes the character before the current character |
| #X | Deletes # characters before the current character |
| dw | Deletes current word |
| #dw | Deletes # words, starting with the current word |
| dd | Deletes current line (deleted contents are placed in clipboard) |
| #dd | Deletes # lines, starting with the current line (deleted contents are placed in clipboard). |
| D | Deletes from current cursor position to the end of the line. |
| d0 | Deletes from current cursor position to the beginning of the current line. |
| d\$ | Deletes from the current cursor position to the end of the current line. |
| :x,yd | Deletes lines x through y (deleted contents are placed in clipboard). |
| Copying text | |
| y | Yanks the current character (yanked contents are placed in clipboard). |
| #y | Yanks # characters, starting with the current character (yanked contents are placed in clipboard). |
| yw | Yanks the current word. |
| #yw | Yanks # words, starting with the current word. |
| yy | Yanks the current line (yanked contents are placed in clipboard). |
| #yy | Yanks # lines, starting with the current line (yanked contents are placed in clipboard). |
| :x,yy | Yanks lines x through y (yanked contents are placed in clipboard). |

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| Command or KEY | Description |
|-------------------------------|---|
| Pasting text | |
| p | Places contents in the clipboard below the current line. |
| P | Places contents in the clipboard above the current line. |
| Indentation | |
| >> | Indents the current line by one shift. |
| #>> | Indents the number of lines (starting at the current line) by one shift. |
| >i{ or >i} | Indents all lines between the surrounding curly brackets. |
| >i(or >i) | Indents all lines between the surrounding parenthesis. |
| >i[or >i] | Indents all lines between the surrounding square brackets. |
| >i< or >i> | Indents all lines between the surrounding angled brackets. |
| << | Unindents the current line by one shift. |
| #<< | Unindents the number of lines (starting at the current line) by one shift. |
| <i{ or <i} | Unindents all lines between the surrounding curly brackets. |
| <i(or <i) | Unindents all lines between the surrounding parenthesis. |
| <i[or <i] | Unindents all lines between the surrounding square brackets. |
| <i< or <i> | Unindents all lines between the surrounding angled brackets. |
| == | Applies automatic indentation formatting to the current line. |
| =G | Applies automatic indentation formatting from the beginning of the current line to the end of the file. |
| :set shiftwidth=# | Sets the number of spaces that shifting will use to shift once. |
| =i{ or =i} | Formats all text between the surrounding curly bracket pairs. |

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| Command or KEY | Description |
|-------------------------|---|
| =i(or =i) | Formats all text between the surrounding parenthesis. |
| =i[or =i] | Formats all text between the surrounding square brackets. |
| =i< or =i> | Formats all text between the surrounding angled brackets. |
| Visual (Selection) mode | |
| v | Changes the mode to visual mode. Using the navigation commands during visual mode will change the current selection. |
| V | Changes the mode to visual line mode. Using the navigation commands during visual line mode will change the current selection by lines. |
| vi{ or vi} | Selects all characters between the surrounding curly bracket pairs |
| vi(or vi) | Selects all characters between the surrounding parenthesis. |
| vi[or vi] | Selects all characters between the surrounding square brackets. |
| vi< or vi> | Selects all characters between the surrounding angled brackets. |
| Code Folding | |
| za | Toggles the fold that is at the current line. If no fold marker exists on this line, no action will be taken. |
| zA | Toggles all folds to the same state. |
| zc | Closes one level of folding at the current insertion cursor. |
| zC | Closes all levels of folding at the current insertion cursor. |
| zo | Opens one level of folding at the current insertion cursor. |
| zO | Opens all levels of folding at the current insertion cursor. |
| zR | Unfolds all folded code in the current editing buffer. |
| zM | Folds all foldable code in the current editing buffer. |

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| Command or KEY | Description |
|-------------------------|--|
| zf | When text is selected and we are in manual folding mode, causes the selected text to be folded. |
| zf#j | When we are in manual folding mode, causes the following # lines to be folded. |
| zf#k | When we are in manual folding mode, causes the previous # lines to be folded. |
| zd | When we are in manual folding mode and the cursor is in a line that contains a fold indicator, the fold indicator will be removed. |
| zE | When we are in manual folding mode, all fold indicators are removed. |
| zi | Toggles all folds by one level to the same state. |
| zj | Jumps the cursor to the next folded line indicator. |
| zk | Jumps the cursor to the previous folded line indicator. |
| zv | If the cursor is within folded code such that it is not currently visible, this command will open enough folds to make the cursor viewable. |
| :x,yfold | Specifies a range of lines to fold. This is only valid when the foldmethod is set to manual. |
| :x,yfoldclose[!] | Specifies a range of lines where any opened folds will be closed. If the ! character is specified, all fold levels will be closed; otherwise, one level of folding will be closed. |
| :x,yfoldopen[!] | Specifies a range of lines where any closed folds will be opened. If the ! character is specified, all fold levels will be opened; otherwise, one level of folding will be opened. |
| Miscellaneous | |
| % | Moves to matching (,), [,], {, }, >, <, “ or ‘ character. |

Extended Vim Commands

To provide additional functionality to the user, Vim command extensions have been added to the standard list. The following table specifies these Vim command extensions.

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| Command or KEY | Description |
|-----------------------------|---|
| Tab or text pane traversal | |
| :N | Changes to the previous tab. |
| :p | Changes focus to the tab in the other opened text pane (only available when the other pane exists). |
| Marker (bookmark) creation | |
| :m | Creates a marker (bookmark) for the current line. This marker can be named in the subsequent entry field that is displayed. Hitting return in the marker entry field will create a named marker (or if no text was typed, an unnamed marker). Hitting the ESC key in the entry field will cancel the marker creation process. |
| :m <i>marker</i> | Creates a marker (bookmark) for the current line using the provided name. |
| :cd <i>directory</i> | Changes the current working directory (as displayed in the title bar) to the specified directory. |
| Multicursor Functionality | |
| s | Sets a multicursor cursor on the current character. Also makes this character the anchor for any multiline cursor sets. |
| S | Sets multicursors for every line between the current line and the last multicursor anchor, inclusive. Each multicursor will match the column of the anchor multicursor. |
| J | When one or more multicursors are set, moves all of the cursors down one line |
| K | When one or more multicursors are set, moves all of the cursors up one line. |
| H | When one or more multicursors are set, moves all of the cursors to the left by one character. |
| L | When one or more multicursors are set, moves all of the cursors to the right by one character. |

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| Command or KEY | Description |
|--------------------------|--|
| # | <p>When one or more multicursors are set, allows the user to insert an ascending numerical values as specified in the subsequent "Starting number:" entry field. The content of the starting number determines what the base of the number will be.</p> <p>The following are valid starting number representations:</p> <p><i>prefix</i>[0-9]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a decimal value. <p><i>prefixd</i>[0-9]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a decimal value preceded by "d" <p><i>prefixb</i>[0-1]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a binary value preceded by "b" <p><i>prefixo</i>[0-7]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by an octal value preceded by "o" <p><i>prefix</i>[xh][0-9a-fA-F]+</p> <ul style="list-style-type: none"> • Inserts prefix followed by a hexadecimal value preceded by either "x" or "h". <p>Note: If a value is not specified, a value of zero is assumed.</p> |
| String/Bracket Insertion | |
| c' | <p>If a selection exists, all selected code will be encapsulated in single quotes. If no selection exists and current insertion cursor is within a single quote quotation, the right single quote is moved one word to the right. If none of the above is true, the current word is encapsulated in single quotes.</p> |
| c" | <p>If a selection exists, all selected code will be encapsulated in double quotes. If no selection exists and current insertion cursor is within a double quote quotation, the right double quote is moved one word to the right. If none of the above is true, the current word is encapsulated in double quotes.</p> |

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| Command or KEY | Description |
|------------------|--|
| c{ | If a selection exists, all selected code will be encapsulated in curly brackets. If no selection exists and current insertion cursor is within a curly bracketed code block, the right curly bracket is moved one word to the right. If none of the above is true, the current word is encapsulated in curly brackets. |
| c[| If a selection exists, all selected code will be encapsulated in square brackets. If no selection exists and current insertion cursor is within a square bracketed code block, the right square bracket is moved one word to the right. If none of the above is true, the current word is encapsulated in square brackets. |
| c(| If a selection exists, all selected code will be encapsulated in parenthesis. If no selection exists and current insertion cursor is within a parenthetical code block, the right parenthesis is moved one word to the right. If none of the above is true, the current word is encapsulated in parenthesis. |
| c< | If a selection exists, all selected code will be encapsulated in angled brackets. If no selection exists and current insertion cursor is within a angle bracketed code block, the right angle bracket is moved one word to the right. If none of the above is true, the current word is encapsulated in angled brackets. |
| Line Bubbling | |
| CONTROL-j | Moves the current line down one line, moving the line below the current line above it. If lines are selected, this command moves all of the selected lines down by one line. |
| CONTROL-k | Moves the current line up one line, moving the line above the current line below it. If lines are selected, this command moves all of the selected lines up by one line. |
| Deletion | |
| dn | Deletes all subsequent characters that are numbers. |
| dN | Deletes all preceding characters that are numbers. |
| ds | Deletes all subsequent space and tab characters. |
| dS | Deletes all preceding space and tab characters. |

Vim Options

Vim options are settings that apply to either the local editing buffer or all editing buffers and are accessed using the the following command:

```
:set option?=value? ?option=value...?
```

Where the value of option (and optionally value) corresponds to any of the following values.

| Option | Values | Default | Scope | Description |
|--|--|---------|--------|---|
| autochdir OR acd noautochdir OR noacd | None | off | Global | When set, the current working directory will automatically change to be the directory containing the currently active file and will change whenever the user makes a new file the active file. |
| autoindent OR ai noautoindent OR noai | None | off | Local | When set, the indentation mode of the current editing buffer will be set to auto-indent (IND) mode. When unset, the indentation mode of the current editing buffer will be set OFF. |
| browsedir OR bsdir | last , buffer , current <i>directory</i> | last | Global | <p>When the open file/directory dialog box is displayed, this value dictates the starting directory that will be displayed.</p> <ul style="list-style-type: none"> - last = Last used directory. - buffer = Directory containing the current file in the editing buffer. - current = Current working directory - <i>directory</i> = Uses the specified pathname as the starting directory location. <p>The default value for this option can be changed using the General/DefaultFileBrowserDirectory preference option.</p> |
| expandtab OR et noexpandtab OR noet | None | on | Local | When set, forces the use spaces instead of tabs when the TAB key is pressed. The number of spaces is determined by the value of the tabstop option (if specified) or the Editor/SpacesPerTab preference value. When unset, forces the use of tabs when the TAB key is pressed. |

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| Option | Values | Default | Scope | Description |
|---|---|---|--------|--|
| fileformat OR ff | dos, unix, mac | auto determined | Local | Overrides the end-of-line character that is used when saving an editing buffer. By default, this value is determined by Editor/ EndOfLineTranslation preference setting. |
| foldenable OR fen nofoldenable OR nofen | None | None | Local | This is option is only valid when the foldmethod is set to manual. If enabled, all existing folds are closed; otherwise, if unset, all existing folds are opened. |
| matchpairs OR mps | {:} (:) [:] <:> | determined by language | Local | Specifies character pairs that specify auto-completion characters. Examples: - Add angled brackets: :set mps+=<:> - To remove parenthesis and square brackets: :set mps-=(:),[:] - To use only curly brackets: :set mps={:} |
| modeline OR ml nomodeline OR noml | None | on | Local | When set, TKE will use any Vim modelines specified at the top of the file. When unset, TKE will ignore Vim modeline syntax. |
| modelines OR mls | Num | determined by preference value | Global | Specifies the number of lines starting at the top of the file that TKE will search for Vim modeline syntax. This value overrides the default value from the Editor/VimModelines preference value. |
| modifiable OR ma nomodifiable OR noma | None | on | Local | When set, sets the file lock status to locked. When unset, sets the file local status to unlocked. |
| modified OR mod nomodified OR nomod | None | off | Local | When set, causes the status of the editing buffer to indicate that it is currently modified. When unset, clears the modified state of the editing buffer. |
| number OR nu nonumber OR nonu | None | on | Local | When set, displays line numbers. When unset, hide the line numbers from view. |
| numberwidth OR nuw | Num | 4 | Global | Specifies the minimum width of the line number gutter in characters. |
| relativenumber OR rnu norelativenumber OR normu | None | off | Local | When set, displays the line numbers in relative numbering format. When unset, displays the line numbers in absolute numbering format. |

| Option | Values | Default | Scope | Description |
|--|--------|-----------------------------------|--------|--|
| shiftwidth OR sw | Num | determined by preference value | Local | Specifies the number of spaces to use when a left or right shift operation or an indentation/unindentation occurs. This overrides the default value specified with the Editor/IndentSpaces preference value. |
| showmatch OR sm noshowmatch OR nosm | None | on | Global | Specifies whether a matching bracket/quote character will be automatically highlighted when the cursor is on the associated bracket/quote character. |
| smartindent OR si nosmartindent OR nosi | None | on | Local | When set, the indentation mode of the current editing buffer will be set to smart-indent (IND+) mode. When unset, the indentation mode of the current editing buffer will be set to OFF. |
| splitbelow OR sb nosplitbelow OR nosb | None | off | Local | When set, splits the current editing buffer to provide two views of the same file. When unset, removes split view from the current editing buffer. |
| syntax OR syn | Lang | auto determined by file extension | Local | Overrides the default language syntax highlighting to apply to the current editing buffer with the given language. |
| tabstop OR ts | Num | determined by preference value | Local | Specifies the number of spaces that a TAB in the file counts for. |

Vim Modelines

By default, TKE will parse the first few lines of each opened file for Vim modeline syntax. If a valid modeline is found, the recognized Vim options within the modeline are parsed and applied. A valid modeline is in the following format.

```

vi:set opts:
vim:set opts:
vimversion:set opts:
vim<version:set opts:
vim=version:set opts:
vim>version:set opts:
ex:set opts:

```

```
vi:opts  
vim:opts  
vimversion:opts  
vim<version:opts  
vim=version:opts  
vim>version:opts  
ex:opts
```

The value of *opts* is a list of Vim options separated by colon or space characters. The spaces listed above are required, including the space prior to the beginning of the Vim options. The *version* value is disregarded though the syntax is parsed.

As an example of a valid Vim modeline, consider the following line which sets the tabstop value to 4, adds an angled bracket match pair and sets line numbering to relative.

```
vim:ts=4 mps+=<\:> rnu
```

Only local options will be used in the Vim modeline. Global options will be ignored without error.

Chapter 11: Snippets, Emmet and Templates

Snippets allow the user to enter a short bit of text (herein called the *abbreviation*) which will be replaced by a larger piece of text (called the *snippet*) when a whitespace character (selectable in the preference file) is entered. For example, suppose we have defined an abbreviation called “hw” which is assigned the snippet text “Hello, world!”. If we enter the following string in an editor:

```
cout << "hw
```

and follow it with hitting either the SPACE, RETURN or TAB key, the editor will replace the abbreviation to look like the following:

```
cout << "Hello, world!
```

In addition to simple ascii text, the snippet text can contain various styles of variables. For example, suppose we are editing a file called “foobar.cc” and have defined an abbreviation called “cf” which is assigned the snippet text “\$FILENAME”. If we enter the following string in an editor:

```
File: cf
```

and follow it with hitting either the SPACE, RETURN or TAB key, the editor will replace the abbreviation to look like the following:

```
File: foobar.cc
```

Snippet Variables

The following table represents the various variables that can be used within snippet text. Note that all variables are expanded at the time the snippet replacement occurs. Additionally, the DOLLARSIGN (\$) and BACKTICK (`) characters are special characters. If you require these characters to be treated as literal characters in your snippet, you will need to escape these characters by placing a BACKSLASH (\) character just before it.

| Variable | Description |
|------------------------|--|
| \$SELECTED_TEXT | Inserts the currently selected text at this variable's location. If no text is currently selected, an empty string is inserted in its place. |

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| Variable | Description |
|--------------------------|---|
| \$CLIPBOARD | Places the contents that are currently in the clipboard at this variable's location. |
| \$CURRENT_LINE | Places the current line contents (minus the abbreviation) at this variable's location. |
| \$CURRENT_WORD | Places the current word at this variable's location. |
| \$DIRECTORY | Places the current directory at this variable's location. |
| \$FILEPATH | Places the current file pathname at this variable's location. |
| \$FILENAME | Places the root file name at this variable's location. |
| \$LINE_INDEX | Places the position of the current insertion cursor (specified as <i>line.column</i>) at this variable's location. |
| \$LINE_NUMBER | Places the line position of the current insertion cursor at this variable's location. |
| \$CURRENT_DATE | Places the current date at this variable's location. The date is specified as MM/DD/YYYY. |
| \$CURRENT_TIME | Places the current time at this variable's location. The time is specified as HH:MM AM/PM. |
| \$CURRENT_MON | Shortened name of the current month (ex., Jan, Feb). |
| \$CURRENT_MONTH | Long name of the current month (ex., January, February). |
| \$CURRENT_MON1 | Numerical value for the current month expressed as either a one or two digit value. |
| \$CURRENT_MON2 | Numerical value for the current month expressed as a two digit value where the first digit will be a zero, if needed. |
| \$CURRENT_DAYN | Shortened name of the current day of the week (ex., Mon, Tue). |
| \$CURRENT_DAYNAME | Long name of the current day of the week (ex., Monday, Tuesday). |
| \$CURRENT_DAY1 | Numerical day of the current month expressed as either a one or two digit number. |
| \$CURRENT_DAY2 | Numerical day of the current month expressed as a two digit number where the first digit will be zero, if needed. |

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| Variable | Description |
|--|--|
| \$CURRENT_YEAR2 | Two digit representation of the current year where the first digit will be zero, if needed. |
| \$CURRENT_YEAR | Four digit representation of the current year. |
| \$0 | Places the cursor at this variable's location after the entire snippet has been expanded. |
| \$<i>number</i> | <p>Places the cursor at this variable's location in the order of <i>number</i>. Hitting the TAB key will jump the cursor to the next cursor stop.</p> <p>For example, if a snippet uses the variables "\$1 ... \$2", the cursor will first be placed at location "\$1" and when the TAB key is pressed, the cursor will jump to the location of "\$2".</p> <p>If more than one "\$1" is use within the same snippet, the text that is entered in the first occurrence of this variable will also be entered in all other places within the snippet that share the same number.</p> |
| \${<i>number:value</i>} | Places the cursor at this variable's location in the order of <i>number</i> , placing the string <i>value</i> at the cursor's location. The string <i>value</i> can be used as a placeholder to remind the user what information to insert at that location. The <i>value</i> string will be automatically selected when the snippet is inserted so that immediately typing text will delete the <i>value</i> string with the user's entered string. |
| `<i>shell_command</i>` | Executes the specified command between the back tick characters. |
| \${<i>number/pattern/format/opts</i>} | The value of number must be a tabstop previously specified in the snippet. Its value is run through a regular expression match against pattern (the specified options are passed to the regular expression parser (values of g, i and l are supported — see the Vim command for search/replace for a description of these flags). The resulting matches are used with format and the resulting value is inserted. See the following table for a description of format strings. |

| Variable | Description |
|---|--|
| <code>\${variable/pattern/format/opts}</code> | The value of variable must be one of the above variables (minus the starting dollar sign). Its value is run through a regular expression match against pattern (the specified options are passed to the regular expression parser (values of g, i and l are supported — see the Vim command for search/replace for a description of these flags). The resulting matches are used with format and the resulting value is inserted. See the following table for a description of format strings. |

Transform Format

A variable or mirror value text transformation is possible using the last two documented commands in the prior table. The value of format contains the resulting text that will replace the entire transformation string within the snippet. The following table describes valid syntax that can be used in this field.

Any numbers represented in the format text (preceded by a '\$' character when used on its own) refer to matched values in the transformation match pattern (represented by "(...)" regular expression syntax). Each match will be assigned to a corresponding match variable which can be referenced using '\$' followed by its match number. Any match variables will be substituted with their matched value (or the empty string if the match variable was not assigned).

| Syntax | Description |
|-----------------|--|
| <i>text</i> | Any normal text can be specified. The following characters are special and must be escaped with a BACKSLASH character if the literal value is required: '(', ')', and \. |
| \l | The case of the character immediately following this character sequence will be changed to lower case. |
| \u | The case of the character immediately following this character sequence will be changed to upper case. |
| \L... \E | The case of all characters between these character sequences will be changed to lower case. |
| \U... \E | The case of all characters between these character sequences will be changed to upper case. |

| Syntax | Description |
|----------------------------|---|
| (? <i>number</i> :...) | If the corresponding match variable was assigned a value, substitutes this syntax with the format text found to the right of the ':' (colon) character. |
| (? <i>number</i> :...:...) | If the corresponding match variable was assigned a value, substitutes this syntax with the format text found to the right of the first ':' (colon) character; otherwise, substitutes this syntax with the format text found to the right of the second ':' character. |

Creating Snippets

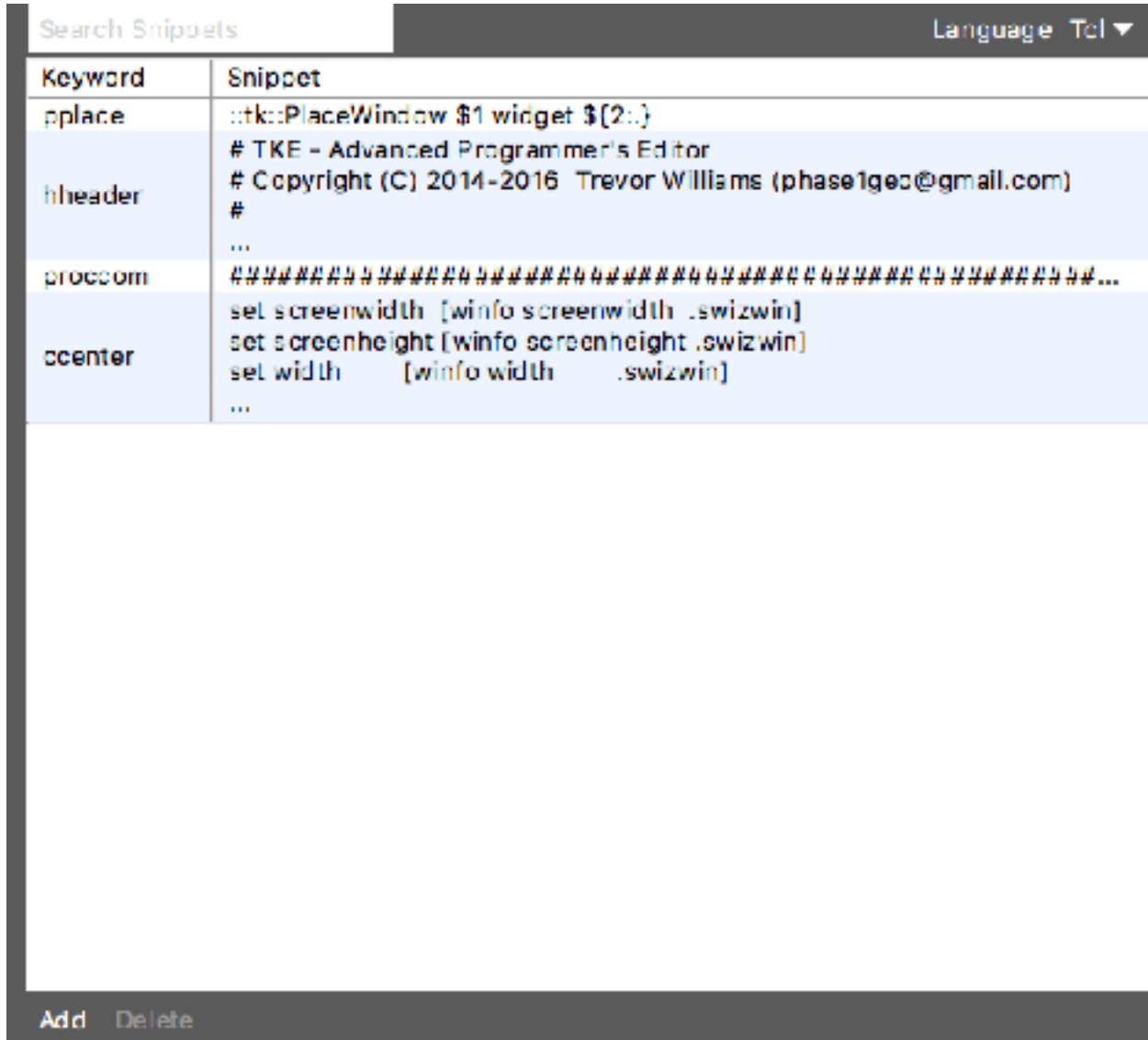
Snippets are maintained in individual files according to the syntax language of the buffer that uses them. Therefore, all Tcl snippets will be placed in a `Tcl.snippets` file within your `~/.tke/snippets` directory while C++ snippets will be placed in a `C++.snippets` file in the same directory. In addition, each user also has a global snippets file which is available in all buffers. These snippets are stored in `~/.tke/snippets/user.snippets`.

To create or edit a snippet for a specific language, make sure that the current editor language is set to the language of the snippet being created or modified and select the "Edit / Snippets / Edit Language" menu command. This will add the language-specific snippets file from your `~/.tke/snippets` directory into the editor in a new tab. If the file doesn't yet exist, TKE will automatically create it for you.

If you have the preference option to use the GUI for changing preference values, adding/editing/deleting snippets will be performed through the preference GUI using the Snippets preference pane. Otherwise, you will edit the snippet files directly using an editor buffer.

Editing Snippets Via Preferences GUI

The following image shows what the snippets editing pane looks like.



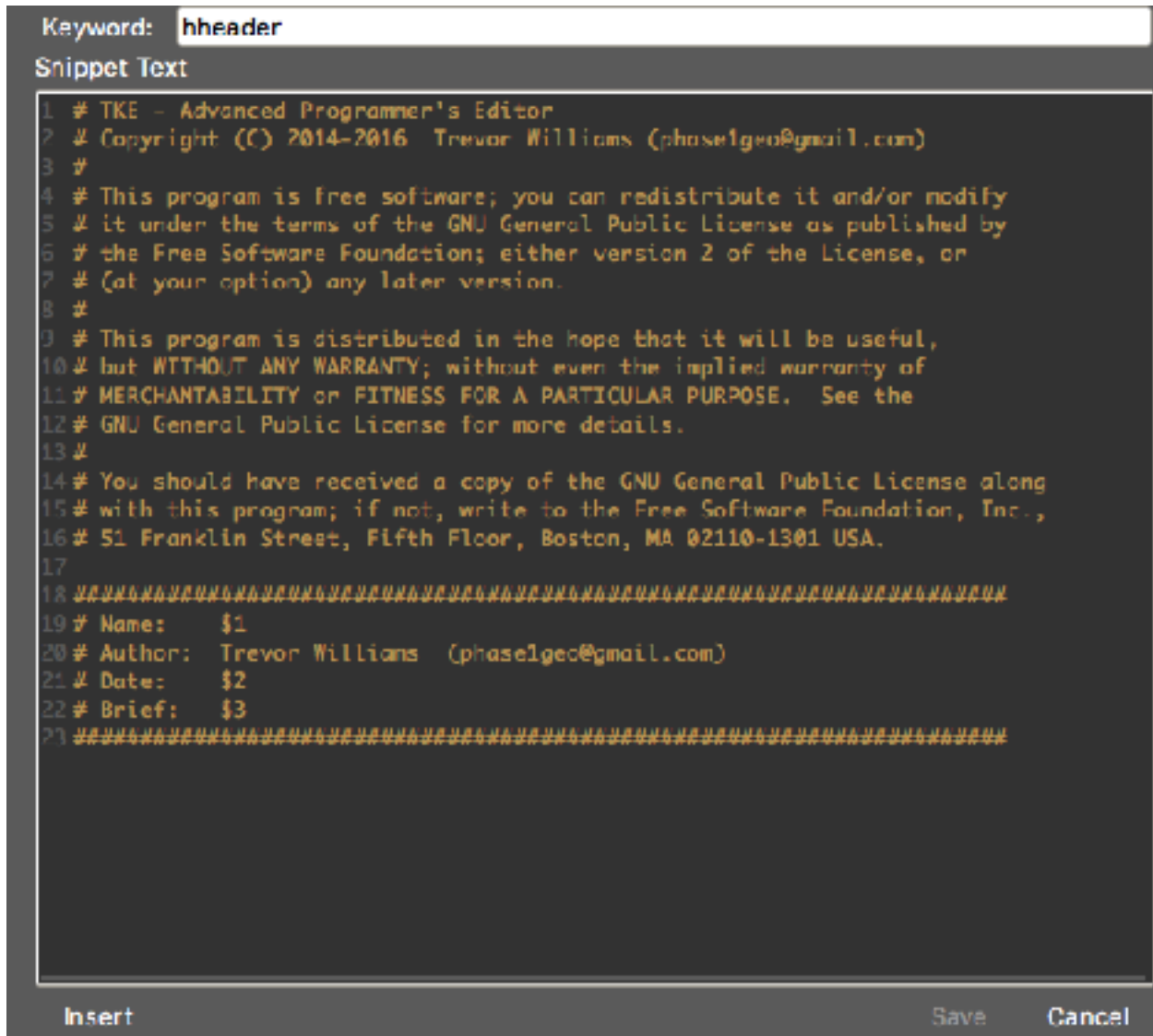
At the top left is a search bar that will display all snippet text within the table that matches the entered text. The search results are updated as you type. To view all items in the table, clear the search text.

At the top right is the language selection menu. To view/edit snippets in a different language, select the menu button and select a new language from the available list. If you would like to create a language agnostic snippet (i.e., a snippet that is available from any language), select the language menu button and choose the <All> language option.

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The main table displays the available snippets in the given language along with their associated keyword and the first four lines of the snippet text. To view/edit the snippet, double-click the snippet in the table. This will display the snippet editor pane within the preferences UI. To add a new snippet, click the “Add” button (which will also display the snippet editor pane). To delete a snippet, select the snippet to delete and click the “Delete” button. A confirmation will be displayed to confirm the deletion.

The snippet editor pane is depicted as shown.



The top entry allows you to associate a snippet keyword. Whenever this keyword is entered in an editing buffer, the keyword will be replaced with the associated snippet text. Make sure that the keyword that you use is meaningful but not a string that you normally enter when editing files.

The main editing area allows you to enter the snippet text. All code entered in the text field will be syntax highlighted in the current language to help with readability. In addition, auto-indentation will be applied to the file using the syntax rules and preference settings. It is important to note that when the snippet is inserted in an editing buffer that the inserted text will be automatically indented to match the current indentation.

At the bottom of the snippet editor pane is the button bar. The “Insert” button will display a menu containing a series of snippet syntax that can be inserted into the text field. Selecting an item from this list will insert the item at the current insertion cursor position. If current snippet has both a valid keyword and a non-empty snippet string entered, the “Save” button will be enabled. Clicking this button will save the snippet and return you to the snippet table view. To cancel adding/editing the current snippet, click on the “Cancel” button. This will also return you back to the snippet table view.

Editing Snippets Via Editing Buffer

To add a new snippet via the editing buffer, you will use the following syntax rules:

1. A new snippet is designated by the name “snippet” on a new line followed by whitespace and the abbreviation to use for the snippet.
2. Snippet text is terminated using the “endsnippet” keyword on a line by itself.
3. Abbreviations must not contain any whitespace characters.
4. All DOLLARSIGN (\$) and BACKTICK (`) characters within the snippet text will be treated as the start of variables or shell commands unless they are escaped by the BACKSLASH (\) character.
5. Any text that is specified between snippets is ignored by the snippet parser (i.e., you can use this space to document your snippets if desired).

The following is legal snippet syntax:

```
snippet hw
Hello, world!
endsnippet

snippet 2day
$CURRENT_DATE
endsnippet
snippet stuff
set stuff $foobar
endsnippet
```

The following snippet is invalid (i.e., “hw” would not be treated as an expandable abbreviation) because it breaks rule #1:

```
snip hw
```

```
Hello, world!  
endsnippet
```

The following snippet is invalid because it breaks rule #2

```
snippet hw  
Hello, world!
```

The following snippet is invalid (i.e., “h w” would not be treated as an expandable abbreviation) because it breaks rule #3:

```
snippet h w  
Hello, world!  
endsnippet
```

The following snippet is invalid (i.e., an error message would occur because \$foobar is not a valid variable name) because it breaks rule #4:

```
snippet stuff  
set stuff $foobar  
endsnippet
```

See the TextMate snippet documentation for various examples of things you can do with this powerful snippet syntax support.

Save as many snippets in the file as you need. Once you have saved the snippets file, the snippet will be immediately available for you to use within an editor, editing the same syntax as the snippet file.

Emmet

Emmet is primarily a syntax that allows for the creation of HTML/XML syntax as well as CSS syntax. It's minimalistic nature allows for quick generation of lots of code with a minimal number of input characters. This document will not attempt to describe the Emmet syntax (which can be found at <http://docs.emmet.io>) other than to state that TKE has full, built-in support for the Emmet abbreviation syntax for HTML/XML, Ipsum Lorem text insertion, and full support for CSS syntax.

Once an Emmet abbreviation has been entered in an editing buffer, make sure that the cursor is located at the right-hand side of the text and use the Edit / Emmet / Expand Abbreviation file option to expand the syntax (or use Control-E which is the default key binding for this option). If there is an error in the syntax, no expansion will be performed; otherwise, the abbreviation will be removed and its generated content will be inserted in its place (if the generated results span

multiple lines, those lines will be preceded by the proper amount of whitespace). Additionally, any tabstop points in the generated text will cause the insertion cursor to be placed at the first tabstop and hitting the TAB key will jump the cursor to the next tabstop until all tabstops have been traversed.

Additionally, you can create your own Emmet abbreviations using the Emmet / Edit Custom Abbreviations menu item. This will display the custom abbreviation file in an editing buffer. The contents of this file are self-documented. Saving the editing buffer will immediately update the available Emmet abbreviations such that restarting the application will not be necessary.

Templates

Templates are essentially files containing valid snippet code. When a template file is created, a new file can be created using this template file as a starting point and variable substitutions and other information in the file can be preset using snippet variables and other snippet syntax. Template files are specially managed by TKE and are saved in the user's ~/.tke/templates directory (though you should not have to deal with this directory).

To create a new template file, simply create a new file with the needed text or use an existing file and use the "File / Save As Template..." menu option. This will display an input text field allowing for a name to be used for the template file. Any name can be used, but if you add a valid file extension that TKE recognizes for syntax highlighting, when the file is created based on the template, that extension's syntax highlighter will automatically be used on the new file (even though the name of the file will be set to "Untitled" until it is saved).

To create a new file based on a template, choose the "File / New From Template..." menu option. This will display the template chooser. A list of available templates are displayed and the currently selected file is displayed in the viewer panel of the window. Left-clicking or selecting and hitting the RETURN key will add a new file editing buffer, insert the template information in the new file, perform any snippet variable substitutions, and position the cursor in the first input area. Fill in the file just as you would in a snippet.

To edit the contents of a snippet, use the "Edit / Templates / Edit" menu. This will display the template chooser window. Select any one of the available templates using the left mouse button or by hitting the RETURN key on a selected template name. This will add the template to the editing buffer where you can edit the template file as you would any other file.

To delete an existing template, use the "Edit / Templates / Delete" menu. This will display the template chooser window. Select any one of the available templates using the left mouse button or by hitting the RETURN key on a selected template name. A confirmation window will be displayed to confirm the deletion. Clicking the "Yes" button will permanently delete the template.

Chapter 12: Preferences

Preferences allow you to customize your experience with TKE by modifying various behaviors and/or appearances within the tool. TKE preferences are handled by four types of files:

1. Base preference file (located in the TKE installation directory — in data/preferences.tkedat)
2. User preference file (located at ~/.tke/preferences.tkedat)
3. User language preference files (loaded in the ~/.tke directory)
4. Session files (preference data is stored inside the session file itself)

The preferences files are read and handled at two event times: when TKE is started and when the user preference file is written/saved. If the user preference file does not exist, the base preference file is copied to the user's ~/.tke directory and the resulting file is read and its values used. If the user preference file already exists, its modification timestamp is compared to the timestamp of the base preference file — if the base file is newer than the user preference file, the base preference file is read in, the user preference file values are used in place of the base preference file and the resulting content is written back out to the user preference file. This makes sure that the user's preference file is always up-to-date with the preferences currently available in the tool. If the user preference file's modification time is the same as or newer than the base preference file, the user preference contents are used to configure the tool.

When a file is being edited that contains a previously created language preference file, that set of preferences override the user preference values for all tabs that use the given language.

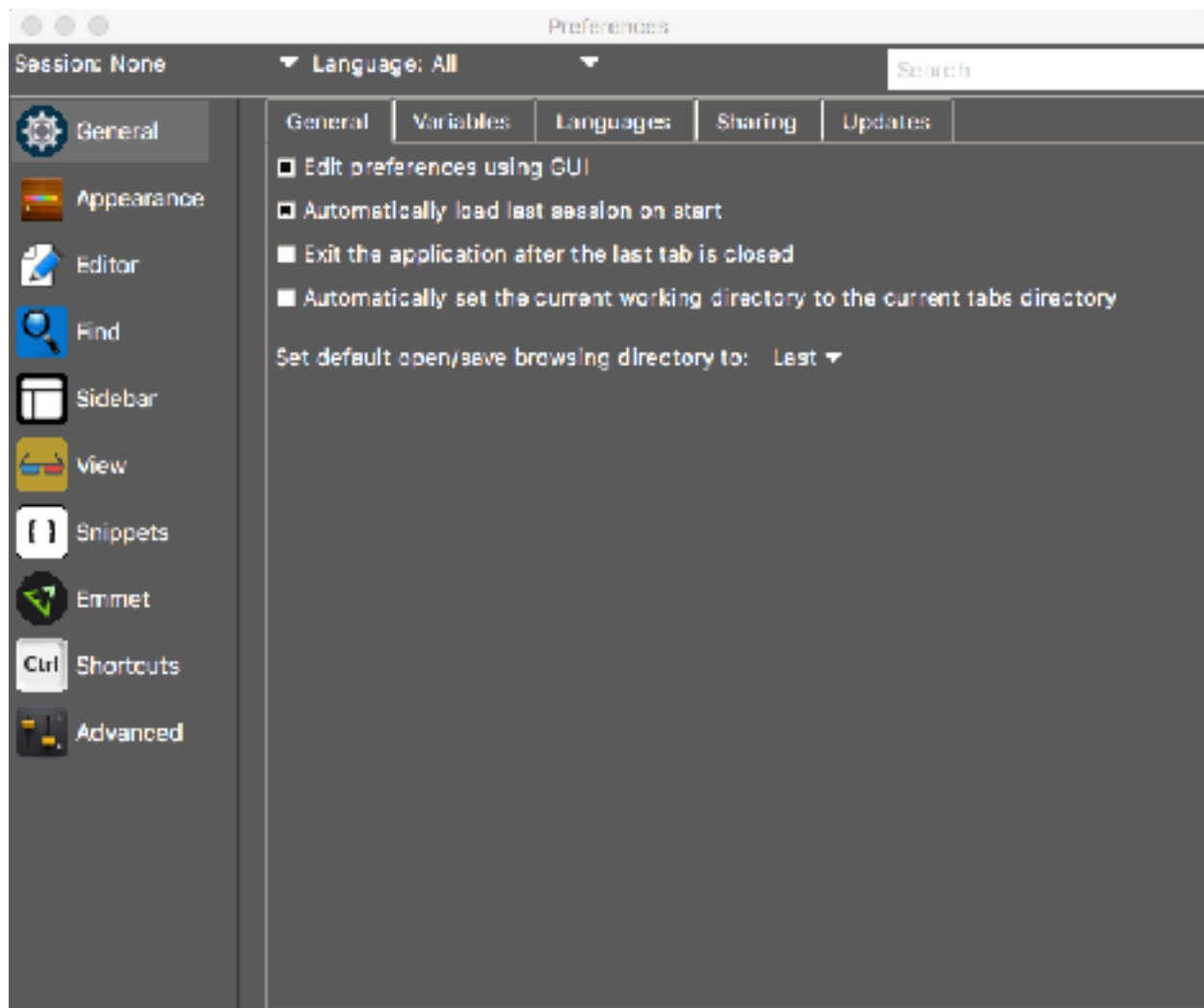
If a session is currently being used, the preferences associated with the session will be used instead of the user preference file. If file with a saved language preference file is being edited within the session, the language preferences within the session will override the session preference file.

Editing Preference Information

There are two methods for modifying preference information within TKE. By default, TKE will display preference information in a GUI window. However, if the user changes the preference editing option (i.e., set General/EditPreferencesUsingGUI to 0), the preferences can alternatively be edited within an editing tab within TKE.

GUI Preference Editing

The GUI preference window contains three main panes depicted in the following image.



At the top of the preference window is an area which allows you to select which preference types to modify. The **Session** menu button allows you to select whether you are editing the general user preferences (using the value of “None”) or preferences for a specific existing session. To change the main preference setting, simply click on the menu button and select the desired option. The **Language** menu button allows you to specify the preferences for any tabs opened with a specific language. Selecting a value of “All” will edit preferences that will be true for any language; however, selecting a language will display and save preference settings for the specific language chosen. Note that the session and language menu buttons are used in concert with each other to set the specified setting.

On the right side of the top panel is the search entry field. Use this field to quickly find a given preference value within any valid category pane in the GUI. The search value can be any set of printable characters where a “*” can serve as a wildcard character or set of characters. All matching search results will be immediately displayed and updated while typing just below the search field. In addition, the category tabs in the left sidebar will be highlighted showing which

tabs contain matches to the current search string. Selecting a match from the match list will immediately change the preference GUI to display the pane containing the preference item.

On the left side of the preference GUI is the preference category sidebar. This sidebar contains the list of available preferences for the currently selected session/language preference item displayed at the top of the window. Click on a category to display the associated preference pane in the area to the right of the sidebar.

The main area to the right of the sidebar is the preference pane area. In this area, all available preference items associated with the currently selected preference category will be displayed. In some categories, the preference pane will be further broken down into subcategories using a simple tabbed interface towards the top of the preference pane. Clicking on a tab will display the preference items associated with the subcategory.

It is important to note that depending on the session/language setting, the available preference categories may change. Generally, the following are true:

- All available categories will be displayed when the session is set to “None” and the language is set to “All”. This is the general user settings.
- If the session is set to a non-“None” value and the language is set to “All”, the “General” and “Advanced” categories will not be available for modification.
- If the language is set to a non-“All” value, only the “Editor” category will be displayed in the UI. This is accomplished by hiding the sidebar and using the entire lower portion of the window for editor preference display.

Any change made within the preferences window will be immediately applied/saved. When you are finished making preference changes, close the window using the window manager close option.

Text Preference Editing

If the General/EditPreferencesUsingGUI preference option is set to a value of 0, the text editor itself will be used to edit preference options. Like the GUI, all four types of preference settings can be modified using the Edit / Preferences menu.

The content found in each preference file is a fairly straightforward ASCII name-value pair. Strictly speaking, the file uses a Tcl list syntax; however, the file is specially handled to verify that it does not contain any syntax that can be executed for security purposes. All names and values must be hard-coded values. Additionally, Tcl-style comments are allowed and provided. When you view the preference file, you will notice that every preference option contains documentation (in the form of comments) directly above the value that it describes along with a list of valid values that the preference can be set to.

Within TKE, you will only be able to view the base preference file (since these values will effect more than just the individual user). To do so, go to the “Edit / Preferences / View Base” menu command. This will add the global preferences file in a separate editor tab in readonly mode. This allows you to see what each default global value is set to and allows you to read the preference documentation for setting your own value.

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To modify a preference value, it is preferred that you do so within the tool using any one of the “Edit / Preferences / Edit *” menu commands. This will add the selected preferences file in a separate editor tab and any saves performed on this window will automatically apply the preference setting changes to the application without requiring a restart.

Note that you will only be able to edit the current session's preferences (if you are currently using a named session) or the current tab language's preferences. You will not be able to edit other session preferences without first switching to the desired session. Additionally, you will not be able to edit other language preferences without first switching to a tab containing that language.

To get a user copy of the base preferences file or to “reset” the user preferences to match the base preferences (including documentation comments), use the “Edit / Preferences / Reset User to Base” command. This will create a copy of the global preferences in the current user's preference file. Note that this operation is destructive and irreversible — the old preference file will be destroyed and replaced with the new file.

Since all preference values are adequately documented in the preference file itself, this document will not duplicate this information.

Chapter 13: Menu Binding

The menu binding capability within TKE simply allows any user to customize the keyboard shortcuts to launch any menu command. By default, TKE contains a minimal set of menu bindings; however, any of the menu items can be overridden.

The default (global) menu binding file is located in the TKE installation directory (in `data/bindings/menu_bindings.windowingsystem.tkedat`). In addition to the global file, each user will have their own menu binding file which overrides the global file settings. This file is located at `~/.tke/menu_bindings.windowingsystem.tkedat`.

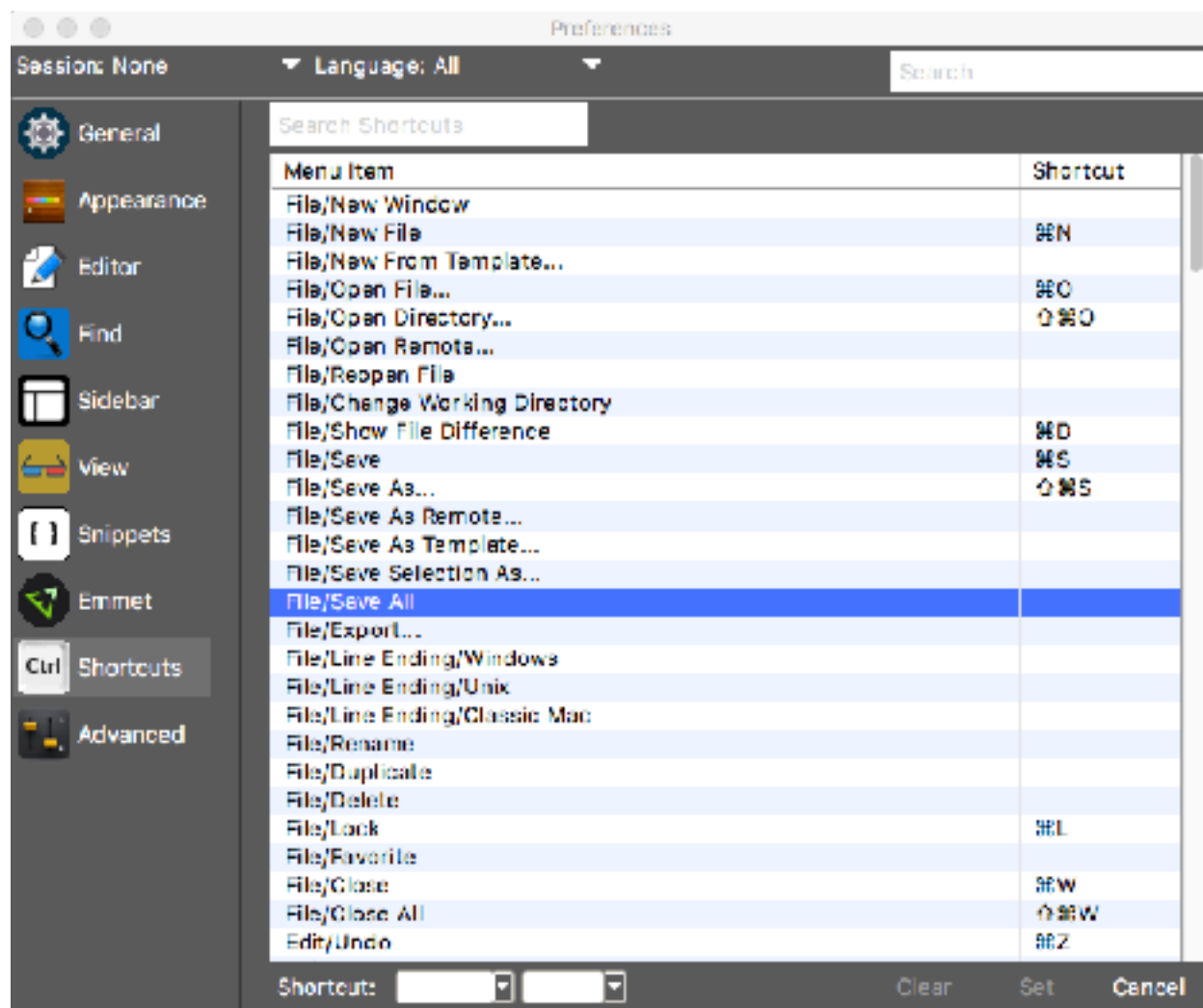
There are two ways to modify the menu bindings:

1. Preferences GUI
2. Within Editing Buffer

Let's take a closer look at editing in each mode.

Editing Menu Bindings via Preferences GUI

If the preferences GUI is enabled, you can change the menu shortcuts by either starting the Preferences via the “Edit / Preferences / Edit User - Global” menu option and selecting the Shortcuts panel or via the “Edit / Menu Bindings / Edit User” menu option which will display the preferences GUI with the Shortcuts panel immediately displayed. A representation of the Sharing panel is displayed below.



To the upper left, there is a search entry field which allows you to show only menu items in the table that match the given search criteria. The table will be updated as you type. To show all elements in the table, clear the search text.

To add or change a shortcut value, select a menu item in the shortcut table. This will display the shortcut editor below the table. Simply select a modifier combination and key via the two dropdown lists (the values available in the list boxes are automatically updated to guarantee that any available values will result in a unique key combination for the shortcut) and click on the “Set” button. To remove an existing shortcut, select it in the table and click on the “Clear” button. Click on the “Cancel” button or another table item to remove the menu item from being edited.

To quickly edit the shortcut on Linux systems, you can hold down the Control button while selecting any menu item in the main menu. This will automatically display the preference GUI and select the given menu item for editing purposes in the Shortcuts panel.

Editing Menu Bindings via Editing Buffer

To edit the user menu bindings file in an editing buffer from within TKE, go to the “File / Menu Bindings / Edit user” menu command when the preferences GUI is disabled. This will create a new tab in the editor with the user's own menu binding file loaded. Any saves of this file will immediately cause TKE to re-evaluate the menu bindings file, updating the menu shortcuts.

File Format

The format of the menu binding file is essentially a Tcl key-value list where each key is the hierarchical path to a menu command and the value is the keyboard shortcut that will invoke the command. However, before the file is read, it is parsed to verify that the file doesn't contain any Tcl commands.

The following is a breakdown of the rules governing the parsing of the menu values within this file.

- The menu specified must match the file command exactly (case-sensitive, space sensitive).
- Each submenu must be preceded by the SLASH (/) character (ex. File/Open File).
- The entire menu hierarchy must be surrounded by curly brackets (ex. {File/Open File}).

The following rules describe the parsing rules for the keyboard shortcut value.

- All keys that are part of the combination must be separated by a single DASH (-) character (ex. a combination of the CONTROL, ALT and 'a' keys should be described as Cntl-Alt-A).
- All alphabet keys must be capitalized.
- No whitespace is allowed in the shortcut value.
- The following special key values are specified as follows:
 - CONTROL: “Cntl”
 - ALT: “Alt”
 - SHIFT: “Shift”
 - COMMAND: “Cmd”
 - SUPER (Windows key): “Super”
 - SPACE: “Space”
 - TAB: “Tab”

The following is an example of a user menu binding file (this file was specified on a Mac hence the usage of the command key):

```
# File menu bindings
{File/New}                Cmd-N
{File/Open File...}       Cmd-O
{File/Open Directory...}  Cmd-Shift-O
{File/Save}               Cmd-S
```

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| | |
|-----------------------------------|-------------|
| {File/Save As...} | Cmd-Shift-S |
| {File/Lock} | Cmd-L |
| {File/Close} | Cmd-W |
| {File/Quit} | Cmd-Q |
| # Edit menu bindings | |
| {Edit/Undo} | Cmd-Z |
| {Edit/Redo} | Cmd-R |
| {Edit/Cut} | Cmd-X |
| {Edit/Copy} | Cmd-C |
| {Edit/Paste} | Cmd-Shift-V |
| {Edit/Paste and Format} | Cmd-V |
| {Edit/Toggle Comment} | Cmd-I |
| # Find menu bindings | |
| {Find/Find} | Cmd-F |
| {Find/Find and Replace} | Cmd-Shift-F |
| {Find/Select next occurrence} | Alt-N |
| {Find/Select previous occurrence} | Alt-P |
| {Find/Append next occurrence} | Alt-D |
| {Find/Select all occurrences} | Alt-A |
| # Tools menu bindings | |
| {Tools/Launcher} | Ctrl-Space |
| {Tools/View Sidebar} | Alt-B |
| {Tools/Vim Mode} | Cmd-M |

Chapter 14: Syntax Handling

TKE comes equipped with syntax highlighting support for several popular languages. However, adding support for other languages is supported through the application's syntax description files. All syntax files exist in the installation directory under the data/syntax directory and have a special ".snippet" extension. The base name of the file is the name of the language being supported (ex., the language file to support C++ is called "C++.syntax").

File Format

The format of the syntax file is essentially a Tcl list containing key-value pairs. As such, all values need to be surrounded by curly brackets (i.e, {...}). Tcl command calls are not allowed in the file (i.e., no evaluations or substitutions are performed).

The following subsections describe the individual components of this file along with examples.

filepatterns

The filepatterns value is a list of file extension patterns that are used to automatically identify the type of file to associate the syntax rules to. Whenever a file is opened in the editor, the file's extension is compared against all of the syntax extensions. A match causes the associated language syntax highlighting rules to be used. If a syntax cannot be found, the default "<None>" syntax is used (essentially no syntax highlighting is applied to the file). The format of this list should look as follows:

```
filepatterns {extension ...}
```

Each extension value must contain a PERIOD (.) followed by a legal filesystem extension (ex., ".cc" ".tcl" ".php", etc.) Zero or more extension values are allowed in the extension list.

vimsyntax

The vimsyntax value is a list of one or more names that match the corresponding *.vim syntax file (this can be found in the /usr/share/vim/vim{version}/syntax directory of your system, minus the .vim extension) that can also be used for syntax highlighting. This value is compared to any "syntax=*name*" Vim modeline information to determine which syntax highlighting language to use for the given file.

```
vimsyntax {name ...}
```

embedded

The embedded value is used to describe one or more language syntaxes that are either embedded in the language syntax between starting/ending syntax (ex., PHP within HTML) or are mixed in with the current language syntax (ex., C within C++). The value is made up of a list of embedded language descriptions where each language description contains either one or three elements as follows:

```
embedded {
    {language ?start_expression end_expression?}+
}
```

The specified language must be an existing language syntax that is provided natively with TKE or is provided via a plugin. The *start_expression* and *end_expression* values are regular expressions that describe the syntax for the start and end of the language syntax (if the language is embedded in the parent language as a block). If the embedded language is intermixed in syntax with the parent language (as is the case with C/C++), then no *start_expression* and *end_expression* values should be specified for the language description. For examples of embedded language description, see the HTML.syntax and C++.syntax files in the data/syntax installation directory.

matchcharsallowed

Specifies a list of characters that will be automatically, smartly inserted into or deleted from the editing buffer when its counterpart is inserted/deleted.

```
matchcharsallowed { ?value ...? }
```

The following is the list of legal values:

| Value | Description |
|--------|---|
| curly | Left curly bracket "{" insertion/deletion will cause the right curly bracket "}" to be added/removed. |
| square | Left square bracket "[" insertion/deletion will cause the right square bracket "]" to be added/removed. |
| paren | Left parenthesis "(" insertion/deletion will cause the right parenthesis ")" to be added/removed. |

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| Value | Description |
|--------|---|
| angled | Left angled bracket "<" insertion/deletion will cause the right angled bracket ">" to be added/removed. |
| double | Double quote " insertion/deletion will cause another double quote to be added/removed. |
| single | Single quote ' insertion/deletion will cause another single quote to be added/removed. |
| btick | Backtick ` insertion/deletion will cause another backtick to be added/removed. |

escapes

The escapes value is used to indicate to the syntax highlighter whether or not the escape character (\) should be treated as a C escape character (i.e., the character immediately following the escape character should not be considered its normal value) or as just another character in the syntax. A value of 1 is the default (consider the escape as in C).

```
escapes {0|1}
```

tabsallowed

The tabsallowed value is used to determine whether any TAB characters entered in the editor should be inserted as a TAB or should have the TAB substituted as space characters. It is recommended that unless the file type requires TAB characters in the syntax (ex., Makefiles) that this value should be set to false (0). This value should be either 0 (false) or 1 (true) and should be specified as follows:

```
tabsallowed {0|1}
```

casesensitive

The casesensitive value specifies if the language is case sensitive (1) or not (0). If the language is not case sensitive, TKE will perform any keyword/expression matching using a case insensitive method. This value should be either 0 or 1 and should be specified as follows:

```
casesensitive {0|1}
```

delimiters

The delimiters value allows a syntax specification to provide a custom regular expression that is used for determining word boundaries. This value is optional as a default delimiter expression will be used if this value is not specified. The default expression is as follows:

```
[^\s\(\{\[\]\}\.\t\n\r;:=\"'\\|,<>]+
```

The following specifies the syntax for this element:

```
delimiters {regular_expression}
```

indent

The indent value is a list of language syntax elements that should be used to cause a level of indentation to be automatically added when a newline character is inserted after a syntax match occurs. Each element in the list should be surrounded by curly brackets (ex., {...}) with whitespace added between elements. Any curly brackets used within an element should be escaped with the BACKSPACE (\) character (ex., {\}).

Any Tcl regular expressions can be specified for an indent element.

The following specifies the syntax for this element:

```
indent {{indentation_expression} *}
```

unindent

The unindent value is a list of language syntax elements that should be used to cause a level of indentation to be automatically removed when a matching syntax is found. Each element in the list should be surrounded by curly brackets (ex., {...}) with whitespace added between elements. Any curly brackets used within an element should be escaped with the BACKSPACE (\) character (ex. {\}).

Any Tcl regular expressions can be specified for an unindent element.

The following specifies the syntax for this element:

```
unindent {{unindentation_expression} *}
```

reindent

The reindent value is a list of language syntax elements that may cause both an unindent followed by an indent such as the case of C/C++ switch..case syntax. Each element of the list consists of a starting regexp element that starts the sequence of indentations. Each element in the list after it are potential reindent syntax where the first occurrence of the reindent element will not be unindented but all occurrences of one of the reindent elements afterwards (but in the same statement block as the the first occurrence) will be unindented.

This feature allows for proper automatic indentation in the syntax like C/C++ switch and C++ classes (code following “public”, “private” and “protected” lines will be indented) as the following example code shows:

```
switch( a ) {
  case 0 :
    ... // This code will be auto-indented properly
    break;
  case 1 : // 'case' will be unindented automatically
    ... // This line will be indented
    break;
}
```

See the C++.syntax file in the <TKE>/data/syntax directory for an example of what this code would look like to handle a switch/class case using reindent.

The following specifies the syntax for this element:

```
reindent {{start_expression expression ...} *}
```

icomment

The icomment value is a list of one or two elements that represent the character string to insert a comment when the user selects the “Text / Comment” menu item. If the list contains one character sequence, the sequence is assumed to be used as a line comment (i.e., it is inserted before each line of selected text at the beginning of the line). If the list contains two character sequences, the sequences are treated as the beginning and end of a block comment (i.e., the first character sequence will be inserted before a block of selected text while the second sequence will be inserted after a block of selected text). Note that the “Text / Uncomment” menu item will not use these values for removing comment characters, instead it uses a combination of the “lcomments” and “bcomments” regular expressions for comment parsing.

lcomments

The lcomments value is a list of language syntax elements that indicate a line comment. Whenever a match in the file occurs, the syntax and all other syntax after it until the newline character is found is syntax highlighted as a comment. Each element in the list should be surrounded by curly brackets (ex., {...}) with whitespace characters added between elements. Any curly brackets used within an element should be escaped with the BACKSPACE (\) character (ex., {\}).

Any Tcl regular expressions can be specified for an lcomments element.

The following specifies the syntax for this element:

```
lcomments {{element} *}
```

bcomments

The bcomments value is a list of language syntax element pairs that indicate the starting syntax and ending syntax elements to define a block comment. All text between these syntax elements are highlighted as comments. Each pair in the list should be surrounded by curly brackets (ex., {...}) as well as each element in the pair. All elements must contain whitespace between them and any curly brackets used within an element should be escaped with the BACKSPACE (\) character (ex., {\}).

Any Tcl regular expressions can be specified for elements in each bcomments pair.

The following specified the syntax for this element:

```
bcomments {{{start_element} {end_element}}} *
```

strings

The strings value is a list of language syntax elements that indicate the start and end of a string. All text found between two occurrences of an element will be highlighted as a string. Each element in the list should be surrounded by curly brackets (ex., {...}) with whitespace characters added between elements.

Any Tcl regular expressions can be specified for an strings element.

The following specifies the syntax for this element:

```
strings {{element} *}
```

keywords

The keywords value is a list of syntax keywords supported by the language. Each keyword must be a literal value (no regular expressions can be specified) and must be parseable as a word. All elements in the list must be separated by whitespace.

The following specifies the syntax for this element:

```
keywords {{keyword} *}
```

symbols

The symbols value is a list of syntax keywords and/or regular expressions that represent special markers in the code. The name of the symbol is the first word following this keyword/ expression. The user can find all symbols within the language and jump to them in the source code by specifying the '@' symbol in the command launcher and typing in the name of the symbol to search for.

For example, to make all Tcl procedures a symbol, a value of "proc" would be specified in the symbol keyword list. The list of symbols would then be the name of all procedures in the source code.

Whitespace must be used to separate all symbol values in the list.

The following specifies the syntax for this element:

```
symbols {
  {HighlightKeywords {symbol_keyword *}} *
  {HighlightClassForRegexp {regular_expression}} *
}
```

The value of *symbol_keyword* must be a literal value. The value of *regular_expression* must be a valid Tcl regular expression. You can have any number of HighlightClass and/or HighlightClassForRegexp lists in the symbols list.

numbers

The numbers value is a list of regular expressions that represent all valid numbers in the syntax. Any text matching one of these regular expressions will be highlighted with the number syntax color. Whitespace must be used to separate all number expressions in the list.

The following specifies the syntax for this element:

```
numbers {  
    {HighlightClassForRegexp {regular_expression}} *  
}
```

punctuation

The punctuation value is a list of regular expressions that represent all valid punctuation in the syntax. Any text matching one of these regular expressions will be highlighted with the punctuation syntax color. Whitespace must be used to separate all regular expressions in the list.

The following specifies the syntax for this element:

```
punctuation {  
    {HighlightClassForRegexp {regular_expression}} *  
}
```

precompile

The precompile value is a list of regular expressions that represent all valid precompiler syntax in the language (if the language supports it). Any text matching one of these regular expressions will be highlighted with the precompile syntax color. Whitespace must be used to separate all regular expressions in the list.

The following specifies the syntax for this element:

```
precompile {  
    {HighlightClassForRegexp {regular_expression}} *  
    {HighlightClassStartWithChar {character}} *  
}
```

The *regular_expression* value must be a valid Tcl expression. The *character* value must be a single keyboard character. The HighlightClassStartWithChar is a special case regular expression that finds a non-whitespace list of characters that starts with the given character and highlights it. From a performance perspective, it is faster to use this call than a regular expression if your situation can take advantage of it.

miscellaneous1, miscellaneous2, miscellaneous3

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The miscellaneous values are a list of literal keyword values or regular expressions that either don't fit in with any of the categories above or an additional color is desired. Each miscellaneous group is associated with its own color. Any values and/or regular expressions that match these values will be highlighted with the corresponding color. Whitespace is required between all values in this list.

The following specifies the syntax for this element:

```
miscellaneous {  
  {HighlightKeywords {{keyword} *}}  
  {HighlightClassForRegexp {regular_expression}} *  
  {HighlightClassStartsWithChar {character}} *  
}
```

highlight

The highlight section allows text to be syntax highlighted by colorizing the background color instead of the foreground color. The foreground color of this text will be the same as the background color of the editing window.

The following specifies the syntax for this element:

```
highlighter {  
  {HighlightClassForRegexp {regular_expression}} *  
  {HighlightClassStartsWithChar {character}} *  
}
```

meta

The meta section allows text to be syntax highlighted with a color that matches the warning width and line numbers. Any text matched with this type has the special ability to be shown or hidden by the user based on the setting of the View menu option. An example of where this is used is in marking up Markdown characters used for formatting purposes. Since the formatted text is viewable with Markdown, the formatting characters can be hidden to help make the document even easier to read.

The following specifies the syntax for this element:

```
meta {  
  {HighlightClassForRegexp {regular_expression}} *  
  {HighlightClassStartsWithChar {character}} *  
}
```

advanced

The advanced section allows for more complex language parsing scenarios (beyond what can be handled with a regular expression only) and allows the user to change the font rendering (i.e., bold, italics, underline, overstrike, superscript, subscript, and font size) and handle mouse clicks.

The advanced section is comprised of two parts. The first part is a list of highlight classes that are user-defined. A highlight class is defined using the following syntax:

```
HighlightClass class_name syntax_key {render_options}
```

where *tag_name* is a user-defined name that will be rendered with the color of the *syntax_key* and the options associated with *render_options*. The value of *syntax_key* can be any of the highlight classes for a syntax file (i.e., strings, keywords, symbols, numbers, punctuation, precompile, miscellaneous1, miscellaneous2, miscellaneous3). The list of *render_options* is a space-separated list of any of the following values:

| Value(s) | Description |
|------------------------|--|
| bold | Any text tagged with the associated <i>class_name</i> will be emboldened. |
| italics | Any text tagged with the associated <i>class_name</i> will be italicized. |
| underline | Any text tagged with the associated <i>class_name</i> will be underlined. |
| h1, h2, h3, h4, h5, h6 | Any text tagged with the associated <i>class_name</i> will have its font rendered the the specified font size where a value of h1 is the largest font while h6 is a font size one point size greater than the normal font size used in the editor. |
| overstrike | Any text tagged with the associated <i>class_name</i> will be overstricken. |
| superscript | Any text tagged with the associated <i>class_name</i> will be written in superscript. |
| subscript | Any text tagged with the associated <i>class_name</i> will be written in subscript. |
| click | Any text tagged with the associated <i>class_name</i> will be clickable. Any left-clicks associated with the text will call a specified Tcl procedure. |

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The second section in the advanced section is a list of highlight calls, associating values/regular expressions with Tcl procedure calls that will be executed whenever text is found that matches the value/regular expression. The highlight calls are defined using the following syntax:

| | | |
|-----------------------------|-------------------------------|-----------------------|
| HighlightRegexp | { <i>regular_expression</i> } | <i>procedure_name</i> |
| HighlightClassStartWithChar | { <i>character</i> } | <i>procedure_name</i> |

For user-created syntax files, the location of the Tcl procedures would be within the main.tcl plugin file. The purposes of the Tcl procedure is to take the matching contents of the text widget and return a list containing a list of tags, their starting positions in the text widget, their ending positions in the text widget, and any Tcl procedures to call (if the tag is clickable) along with an optional new starting position in the text widget to begin parsing (default is to start at the character just after the input matching text).

The following is a representation of this Tcl procedure:

```
proc foobar {txt start_pos end_pos ins} {  
    return [list [list [list tag new_start new_end cmd]] "" ]  
}
```

where the value of tag is one of the user-defined class names within the syntax advanced section, the value of new_start and new_end is a legal index value for a Tcl text widget, and the value of cmd is a Tcl procedure along with any parameters to pass when it is called. The last element of the list is a legal Tcl text widget index value to begin parsing in the main syntax parser. If this value is the empty string, the parser will resume parsing at the end_pos character passed to this function.

The parameters of the procedure include “txt” which is the name of the text widget, “start_pos” and “end_pos” which indicate the range of text that matched the HighlightRegexp or HighlightClassStartWithChar, and “ins” indicates if the procedure callback was due to text being inserted (1) or not (0).

The body of the function should perform some sort of advanced parsing of the given text that ultimately produces the return list. Care should be taken in the body of this function to produce as efficient of code as possible as this procedure could be called often by the syntax parser.

For an example of how to write your own advanced parsing code, refer to the “markdown_color” plugin located in the installation directory (*installation_directory/plugins/markdown_color*).

Example

The following example code is taken right from the Tcl syntax file (data/syntax/Tcl.syntax). It can give you an idea about how to create your own syntax file. Feel free to also take a look at any

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of the other language syntax files in the directory as example code. It is important to note that if a syntax highlight class is not needed, it does not need to be specified in the syntax file.

```
filepatterns
{*.tcl *.msg}

vimsyntax
{tcl}

matchcharsallowed
{curly square paren double}

tabsallowed
{0}

casesensitive
{1}

indent
{\}

unindent
{}}

icomment {{#}}

lcomments {{^[ \t]*#} {;#}}

strings {{''}}

keywords
{
  after append apply array auto_execok auto_import auto_load auto_mkindex
  auto_mkindex_old auto_qualify auto_reset berror binary break catch cd chan clock
  close concat continue dde dict else elseif encoding eof error eval exec exit expr
  fblocked fconfigure fcopy file fileevent filename flush for foreach format gets glob global
  history http if incr info interp join lappend lassign lindex linsert list llength load lrange
  lrepeat lreplace levers lsearch lset lsort mathfunc mathop memory msgcat namespace
  open package parray pid pkg::create pkg_mkIndex platform platform::shell puts pwd
  read refchan regexp registry regsub rename return scan seek set socket source split
  string subst switch tcl_endOfWord tcl_findLibrary tcl_startOfNextWord
  tcl_startOfPreviousWord tcl_wordBreakAfter tcl_wordBreakBefore tcltest tell time tm
  trace unknown unload unset update uplevel upvar variable vwait while bind bindtags
}

symbols
{
  HighlightClass proc syntax::get_prefixed_symbol
```

```

}

numbers
{
  HighlightClassForRegexp {\m([0-9]+|[0-9]+\.[0-9]*10x[0-9a-fA-F]+)} {}
}

punctuation
{
  HighlightClassForRegexp {\m[\{\}\]} {}
}

miscellaneous1
{
  HighlightClass {
    ctext button label text frame toplevel scrollbar checkbutton canvas
    listbox menu menubar menubutton radiobutton scale entry message
    tk_chooseDirectory tk_getSaveFile tk_getOpenFile tk_chooseColor tk_optionMenu
    ttk::button ttk::checkbutton ttk::combobox ttk::entry ttk::frame ttk::label
    ttk::labelframe ttk::menubutton ttk::notebook ttk::panedwindow
    ttk::progressbar ttk::radiobutton ttk::scale ttk::scrollbar ttk::separator
    ttk::sizegrip ttk::treeview
  } {}
}

miscellaneous2 {
  HighlightClass {
    -text -command -yscrollcommand -xscrollcommand -background -foreground -fg
    -bg -highlightbackground -y -x -highlightcolor -relief -width -height -wrap
    -font -fill -side -outline -style -insertwidth -textvariable -activebackground
    -activeforeground -insertbackground -anchor -orient -troughcolor -newline
    -expand -type -message -title -offset -in -after -yscroll -xscroll -forward
    -regexp -count -exact -padx -ipadx -filetypes -all -from -to -label -value
    -variable -regexp -backwards -forwards -bd -pady -ipady -state -row -column
    -cursor -highlightcolors -linemap -menu -tearoff -displayof -cursor -underline
    -tags -tag -weight -sticky -rowspan -columnspan
  } {}
}

miscellaneous3 {
  HighlightClassForRegexp {\m(\.[a-zA-Z0-9\_]+)+} {}
  HighlightClassWithOnlyCharStart \$ {}
}

```

Essentially this file is specifying the following about the Tcl language:

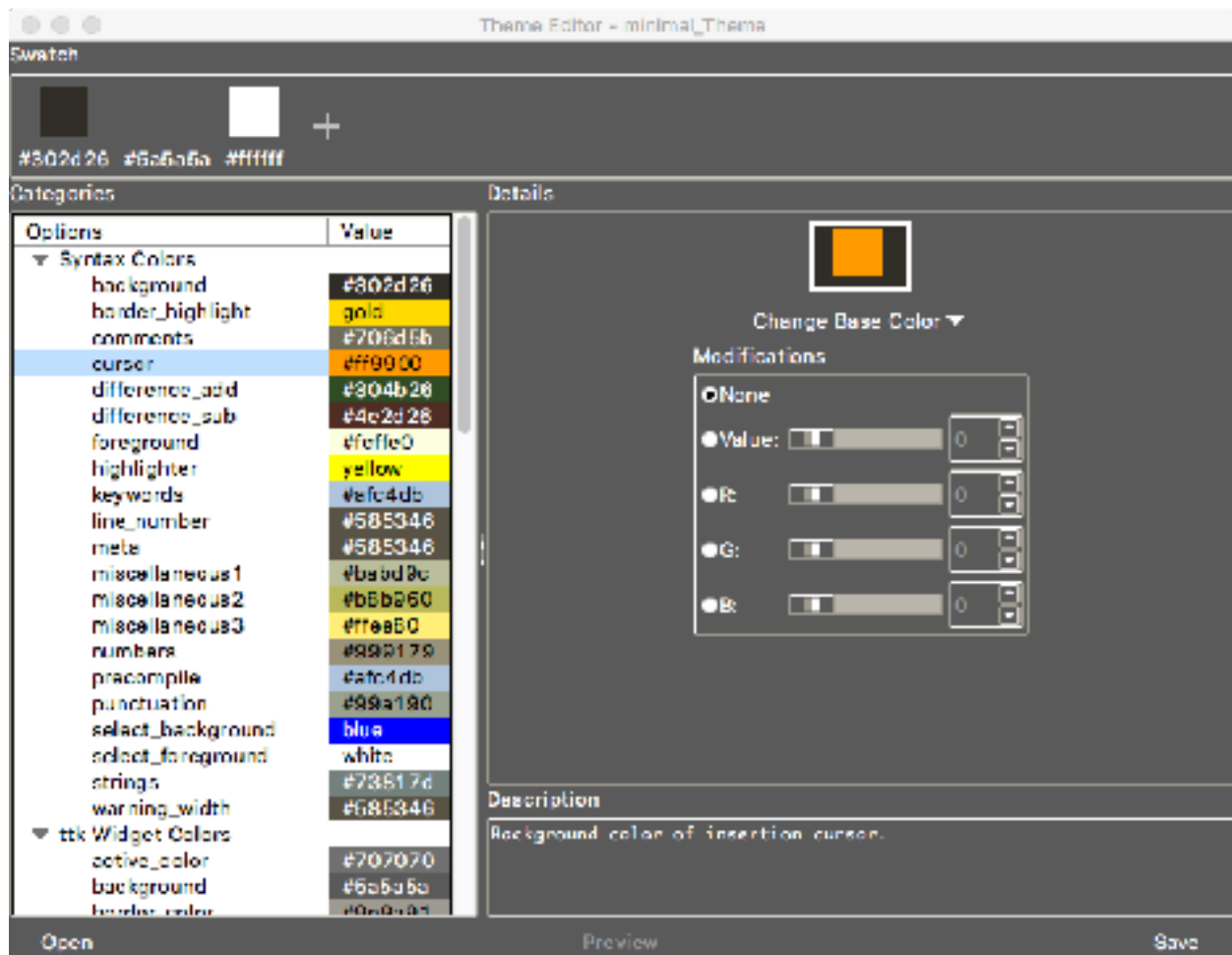
1. Any file that ends with .tcl or .msg should be parsed as a Tcl file.
2. If a Vim modeline is found with syntax=tcl, use this syntax highlighting information.

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3. Auto-match curly brackets ({ }), square brackets ([]), parenthesis (()) and double-quotes ("").
4. Tab characters should not be used for indentation.
5. Use case sensitive matching for parsing purposes.
6. Whenever an open curly bracket is found, increase the indentation level, and whenever a closing curly bracket is found, decrease the indentation level.
7. Insert line comments with the HASH (#) character.
8. All comments start with the HASH (#) character.
9. All strings start and end with the QUOTE (") character.
10. Apply keyword coloring to the list of keywords (ex., "after", "bindtags", "uplevel", etc.)
11. Whenever a "proc" keyword is found, use the name of the proc as a searchable symbol in the file.
12. Highlight any integer values as numbers.
13. Highlight the], [, {, } characters as punctuation
14. There are no precompiler syntax to be colored.
15. Highlight Tk keywords in a different color than Tcl keywords.
16. Highlight Tcl/Tk option values in a different color than normal Tcl keywords.
17. Highlight Tk window pathnames in the miscellaneous3 color.
18. Highlight variables in the miscellaneous3 color.

Chapter 15: Theme Editor

The Theme Editor is a GUI interface for creating, editing, importing and/or exporting themes within TKE. To access the theme editor, select the “Tools / Theme Editor” menu command. The window displays a preview of the syntax highlighting scheme in a sample window. The following image is a representation of this window.



Interface

The theme editor interface contains 5 basic UI elements:

- Title bar
- Color swatch editor
- Category table
- Option detail pane

- Option description pane
- Button action bar

Title Bar

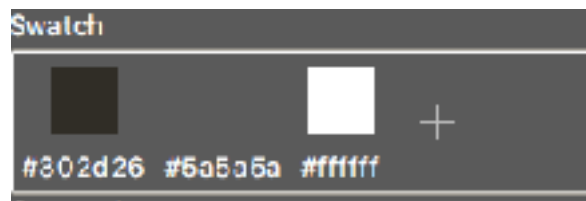
The title bar displays the name of the theme that is currently being edited. If the current theme was previously imported and contains attribution information (i.e., the name of the creator and/or creator's website) the attribution information will also be displayed in the title bar.

In addition to this theme information, the title bar also displays the modified status of the theme. Whenever you make a savable change to the theme, the character between "Theme Editor" and the name of the theme will change to an asterisk (*). When the theme is saved, this character will be changed to a dash (-) character indicating that the theme contains no unsaved changes.

Finally, to exit the theme editor, use the title bar window quit button. If the theme has unsaved changes, a prompt will be displayed allowing you to save the changes prior to exiting the window (or you can cancel the quit operation through this prompt as well).

Color Swatch Editor

To help with color editing, the theme editor provides an area at the top of the window which can optionally contain one or more colors that are deemed to be important colors in the theme. These colors are saved as part of the theme file such that they will be displayed in the swatch area whenever the theme is viewed in the theme editor. Swatch colors can be used directly or indirectly in the color assignment of various UI elements. This means that all of these UI elements that are dependent on a swatch color will be changed whenever the swatch color is changed.



Within the swatch editing area, each swatch is displayed by color and by color name. Within various theme editor menus, color swatches are only displayed by color name. The swatch area helps map the name to the color.

To add a swatch color simply click on the "+" button in the swatch area. This will display a color picker window. Select the desired color using this window and click the "OK" button to add the swatch color. Alternately, you can make any category color a swatch color by selecting the color

row in the category table and click the “+” swatch button. This will also display the color picker window but the default color will match the selected color in the table, allowing you to save an exact color more quickly. You can add up to 8 swatch colors per theme.

To edit a swatch color, simply left-click on the swatch color. This will display a color picker window where the default color will be current swatch color. Choosing a different color and clicking the “OK” button will change the swatch color and any other theme colors that are dependent on the swatch color.

Finally, to delete an existing swatch color, right-click on the swatch color. A confirmation window will be displayed. Clicking the “Yes” button will confirm the deletion. If there were any colors that were dependent of the color, their colors will not be altered but they will no longer be dependent on the given swatch color.

Category Table

The category table is displayed on the left side of the window and displays all of the UI elements that can be customized as part of the theme. They are organized in the table by category. Left-clicking on the disclosure triangle of the category will show/hide all options within the category. Left-clicking on a category option row will select the row and display the associated option information in the option detail pane which allows the options value to be changed. Each category option displays the name of the option as well as displays the current value (and potential representation of the value, if possible).

| Categories | |
|--------------------|---------|
| Options | Value |
| ▼ Syntax Colors | |
| background | #302d26 |
| border_highlight | gold |
| comments | #706d5b |
| cursor | #ff0000 |
| difference_add | #304b28 |
| difference_sub | #4a2d28 |
| foreground | #c0c0c0 |
| highlighter | yellow |
| keywords | #4c4eb |
| line_number | #595346 |
| meta | #595346 |
| miscellaneous1 | #5ab59c |
| miscellaneous2 | #595346 |
| miscellaneous3 | #ffcc00 |
| numbers | #888179 |
| precompile | #4c4eb |
| punctuation | #888179 |
| select_background | blue |
| select_foreground | white |
| strings | #73817d |
| warning_width | #595346 |
| ▼ Tk Widget Colors | |
| dark | #4c4eb |
| darker | #5ab59c |
| darkest | #302d26 |

There are a few operations that can be performed on the category table which are accessible by left-clicking on the header of the table. This will display a menu containing the following features:

Category Table Search

To help find a specific category option, the category table provides a simple search mechanism. Clicking on the **Table Search** option will display the search entry field just above the category table. Entering text in this field will modify the displayed category options that match the current search string. If you hit the **Return** key while entering text, the current text will be selected. If text is selected, entering an additional character will delete the search string and replace it with the entered character. If you hit the **Escape** key, the search field will be closed and all options in the category table will be displayed. You can also select the **Table Search** option in the table menu a second time to hide the search field as well.

Category Table Filtering

To help make viewing or searching for items in the category table simpler, it also provides for some basic filtering functionality. The filter submenu contains the following filtering capabilities:

| Menu Name | Description |
|----------------------|--|
| Show All | Displays all items in the table. This filtering option is useful when the table is hiding information from a previously applied filter. |
| Show Category | Displays a submenu containing a list of all theme categories. Selecting a category in this list will hide all other categories and display only the selected category. |
| Show Color | Displays a submenu containing a list of all colors assigned to UI elements within the theme. The first colors displayed will be the swatch colors, followed by a menu separator, followed by all other colors. Selecting a color will display only those options whose color matches the chosen color. |
| Show Selected Value | This option will only be valid when an option row is selected in the category table. All options in the table that have a value that match the selected row's value will be displayed. |
| Show Selected Option | This option will only be valid when an option row is selected in the category table. All options in the table that have the same option name as the selected row will be displayed. |

Category Table Copy/Paste

To help make creating new themes easier, the theme editor also allows you to copy multiple theme options from one or more themes (all options are appended to the theme copy buffer) and consequently paste those options into a new theme.

To copy items, you will need to put the category table into copy mode by selecting the category table menu's **Enable Copy Mode** option. Selecting this option will display two buttons below the category table: **Copy** and **Close**. Once the table is in copy mode, you can select/deselect options by left-clicking on the option. Additionally, you can select/deselect an entire category's options by left-clicking on the category row in the table. Once you have the options selected that you want to copy, click on the **Copy** button to add these to the theme copy buffer (this buffer is separate from the clipboard). You can continue to select and copy in the same manner. When you are done copying items in the category table, click on the **Close** button to exit copy mode and return the table to normal operation.

To paste the current theme copy buffer to a theme, open the theme and choose the **Paste Theme Items** option in the category menu. This will update the current theme options and empty the theme copy buffer. You can also empty the theme copy buffer by closing the theme editor and redisplaying it.

Option Detail Pane

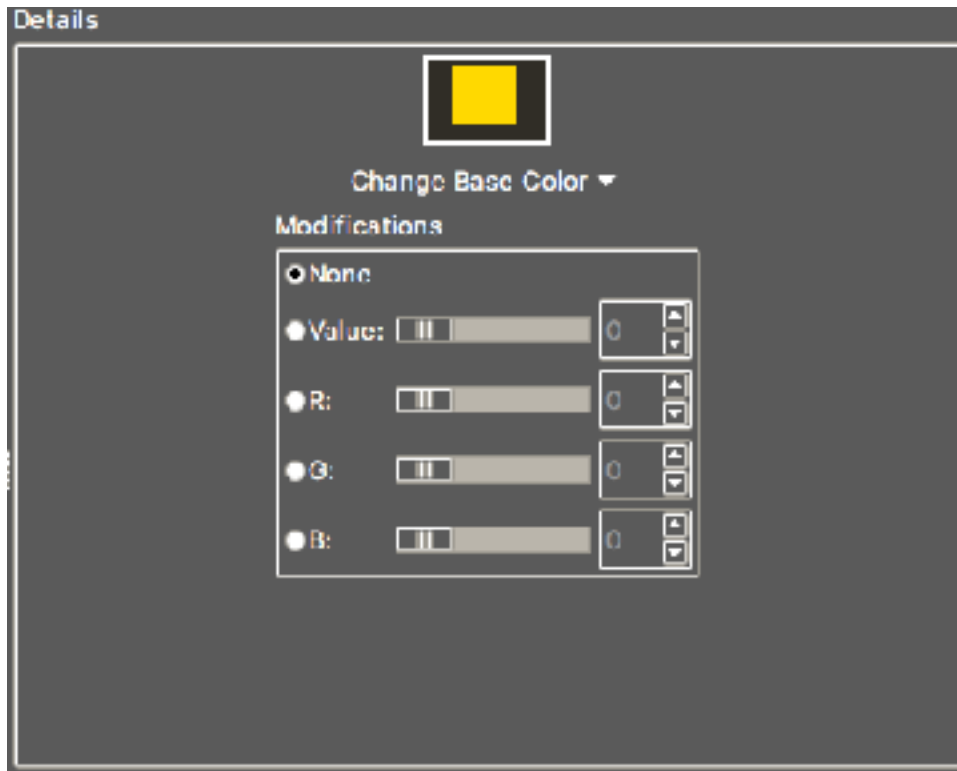
The option detail pane displays the option editor UI for the selected row in the category table. Any changes made within this pane will be immediately reflected in the category table. The detail pane will change its UI dependent upon the type of option being edited. Currently, there are 5 types of options can be changed:

1. Color
2. Number
3. Relief
4. Image

Each detail pane type is described in the following subsections.

Color

The color pane allows for editing a single color by either selecting a color through a standard color chooser, selecting a swatch color and, optionally, modifying the selected color with some simple modifications. A representation of the color pane is shown below.



The top image shows two colors. The background color is the base color that the given color will be surrounded by. Showing the base color along with the color being edited should help in choosing an appropriate color. The foreground color is the color being selected.

Below the color preview is the main color chooser. Left-clicking the button will allow you to either select a color with a standard color picker or select one of the swatch colors.

Below the color picker is the color modification panel. Choosing the “None” option will use the color as is. Choosing the “Value” option will change the current color’s HSV value by the given number. You can change this value by either using the slider, editing the value in the entry field or using the up/down buttons. As you change this value, the foreground preview color will display two colors. The color on the left is the selected color, the color on the right is the color with the modification applied (the actual color that will be used). The “R”, “G”, or “B” options, if selected, will change the color by the specified color value. You can only use one modification on the selected color. You are not permitted to combine modifications.

Any color changes made in this pane will be immediately reflected in the category option table.

Number

The number pane allows you to modify the value of an option that has a numerical value. You can modify the value using the entry field and/or up/down arrows. Any changes made in this

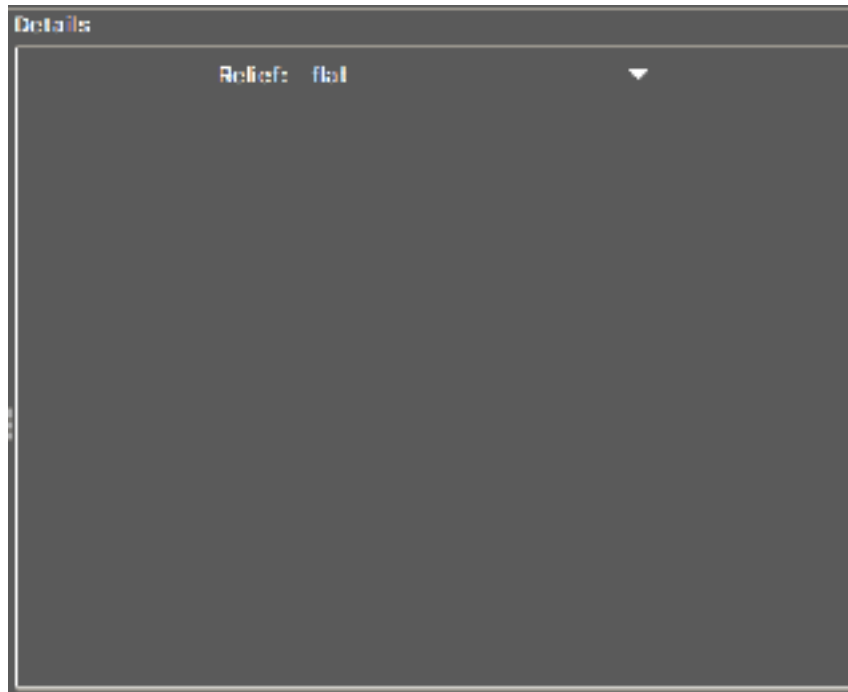
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pane will be immediately reflected in the category option table. A representation of the number pane is displayed below.



Relief

The relief pane displays a drop-down list allowing you to select from the available relief values. Any changes made will be immediately reflected in the category option table. A representation of this window is shown below.



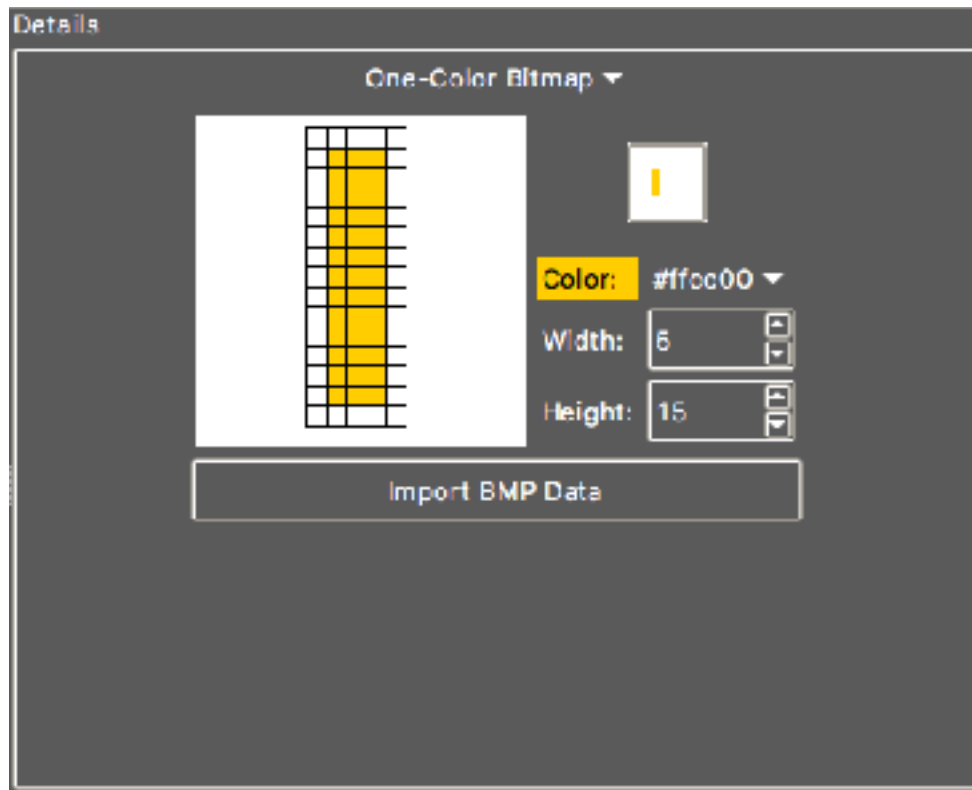
Image

The image pane is a powerful way to create and edit one or two-color bitmaps, or select a GIF image to use for a given UI image. The top-most selection menu allows you to switch between these three image editors.

Single-Color Bitmap Editor

The one-color bitmap editor creates a simple bitmap image that can contain one color. Any uncolored pixels will be transparent, taking on the background color of the window behind the image. To help represent what the image will look like, the background color of the editor and image preview area match the actual background color of the window. The following is a representation of the single-color bitmap editor.

On the left side of the pane is the bitmap editor. The grid of squares represents the pixels in the bitmap image. To set a pixel, simply left-click on the given pixel. To make the pixel transparent, simply left-click on a given pixel that is set.



On the right top is a preview of the image shown in actual size. Below the preview is the color chooser which allows you to change the color used in the image. You can select a color via a standard color chooser or you can select a color swatch value. Below the color picker are selection tools for setting the pixel width and height of the image.

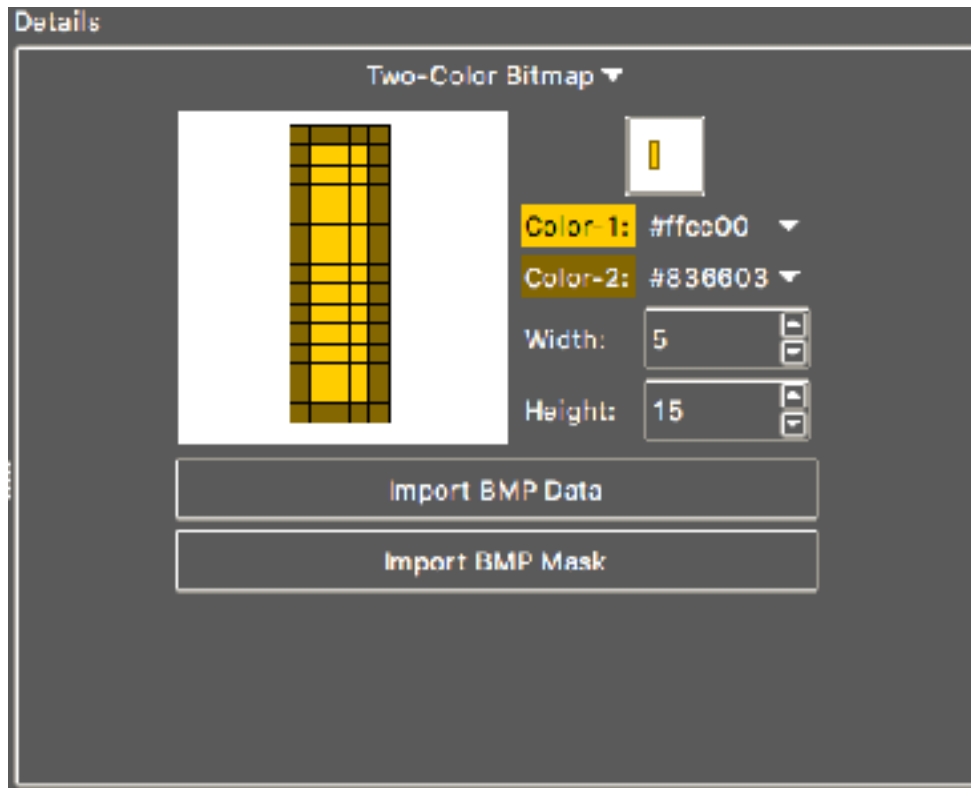
If you already have a BMP file containing the image, you can click the “Import BMP Data” button, select the file in the file chooser, and the bitmap image will be displayed in the selected color.

Two-Color Bitmap Editor

The two-color bitmap editor is much like the single-color bitmap editor except that the bitmap image is made up of two colors with any uncolored pixels being transparent. The following is a representation of this window.

On the left side, is the image editor. To set a pixel to a given color (or make it transparent), left or right-click on a pixel to change the pixel's display.

The image preview is shown in the upper right-hand corner in actual size. Below this preview are two color choosers to select the first and second colors of the image. With the color choosers, you can select a color via a standard color picker or use one of the swatch colors. Beneath the color selectors, are widgets to change the height and width of the image.



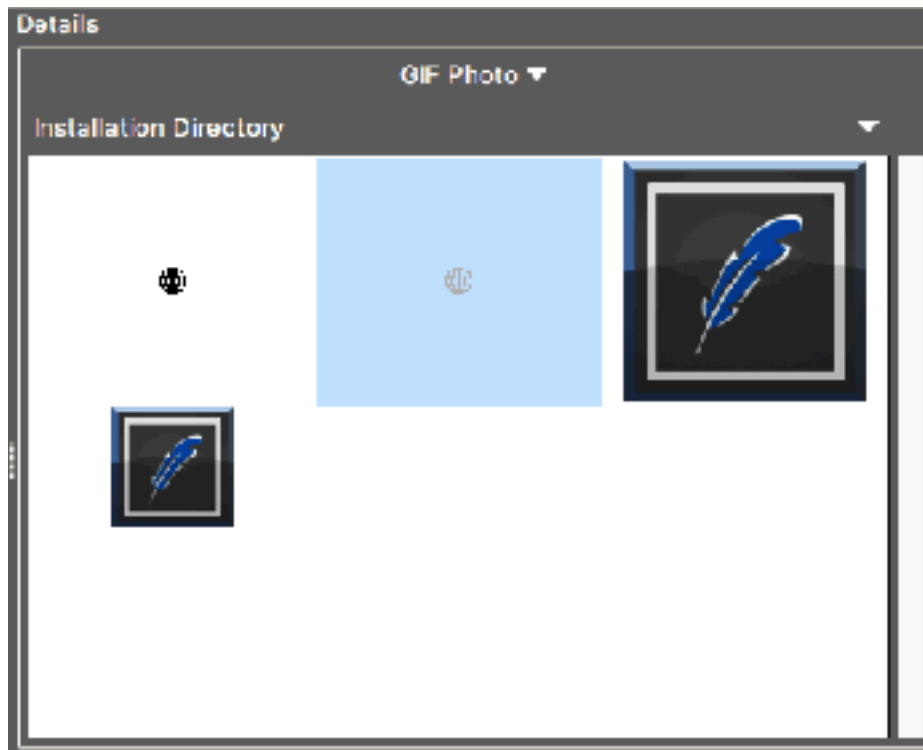
If you already have a BMP image in a file, you can click on the “Import BMP Data” or “Import BMP Mask” buttons will set the image’s bitmap data or bitmap mask fields to the given value. The mask defines which pixels are drawn and which are transparent. The data defines which pixels are drawn in the first (pixel set) and second (pixel clear) colors.

GIF Photo

The GIF photo browser allows the user to choose an existing GIF photo image from either the installed image directory, the user’s theme directory or an existing file on the file system. In the latter case, the image will be copied to the user’s theme directory when the theme is saved so that the image can be used even if the original copy is moved or discarded. The following image is a representation of this window.

At the top of the pane is a directory chooser for selecting an image. Three options are provided: installation directory (the image directory in the installed version of TKE), the user directory (user-owned directory in ~/.tke/themes) that contains the current theme data and related images, or choose a directory from anywhere in the filesystem. When an option is selected, any files with a .gif extension will be displayed in the grid view below.

The grid view shows previews of the available images. The background color of the grid will match the background color that the image will be displayed onto. To select an image to use, simply select it with the mouse. This will immediately update the image in the category option table.



Option Description Pane

This pane is located just below the option detail pane. Its contents simply help describe what the currently selected option in the category table controls.

Button Action Bar

At the bottom of the theme editor window is the button action bar. This area displays the UI buttons and other widgets used for opening themes for edit, saving theme changes, creating new themes, importing themes into TKE, exporting themes from TKE (for the purposes of sharing themes with other users), and previewing theme changes within the current TKE session.

The displayed content in this area is contextually aware. By default, the main open/preview/save button bar is displayed.

To open another theme for editing or import a theme into TKE, click on the “Open” button. This will change the button bar to the open/import button bar.

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To import a `.tkethemz` theme file (TKE theme file package) or a `.tmtheme` (TextMate theme file), click on the “Import” button. This will display a file picker window. Find the desired theme file and click on the “Open” button. This will install the theme into the user's theme directory (located in `~/.tke/themes`) and immediately display the theme in the theme editor. Doing this will also redisplay the open/preview/save button bar.

To open a different theme for editing, click on the “Choose Theme” button. This will display a list of installed themes. Selecting a theme from this list will display the theme contents in the theme editor and automatically preview them in the current TKE session. The import/open button bar will remain visible, allowing you to quickly open theme after theme without extra clicks. When you are done using the import/open button bar, you can either click the “Done” button or simply make a change to any part of the opened theme. Both actions will dismiss the import/open button bar and display the open/preview/save button bar.

When you want to see a live preview of the current theme changes in the current TKE session, click on the “Preview” button in the open/preview/save button bar. After a second or two, the current TKE session will be updated with the theme edits made in the theme editor (whether the changes have been saved or not).

If you want to save the current theme changes under a new theme name, left-click on the “Save” button. This will display the export/save button bar. You can change the name of the theme in the name entry field. If you are a TKE developer, a directory selection button will allow you to specify whether the theme should be saved in the TKE installation directory or the user's theme directory. If you are not a developer, all new themes will be saved in the user's theme directory. Clicking on the “Save” button will save the changes to the new theme and redisplay the open/preview/save button bar. Clicking on the “Cancel” button in the export/save button bar will cancel the theme creation and redisplay the open/preview/save button bar.

If you want to save the changes back to the current theme, either left-click on the “Save” button in the open/preview/save button bar and then click the “Save” button in the export/save button bar or, even more simply, right-click on the “Save” button in the open/preview/save button bar which will immediately save the changes to the current theme file without changing the button bar state.

To export the current theme to a theme package which can be shared with and imported by other TKE users, click the “Save” button in the open/preview/save button bar and then click the “Export” button. This will display a popup window which is represented in the following image.



| Export Theme As | |
|---|--|
| Created By: | <input type="text"/> |
| Website: | <input type="text"/> |
| Theme Name: | <input type="text" value="minimal_theme"/> |
| Output Directory: | <input type="text"/> Choose |
| Export Cancel | |

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The first two entries allow the user to enter attribution information. This information will be displayed in the title bar of the theme editor when a user imports the theme and views it within the theme editor. Both fields are optional, but it is encouraged that at least the “Created By” field is filled in.

The last two fields contain the name of the theme being exported. By default, this field will be filled in with the current theme name being edited in the theme editor; however, you can change this name to be anything you want though short, memorable, unique names are preferable. The theme name is not optional. If no theme name is specified, the “Export” button at the bottom of the window will be disabled. The “Output Directory” field specified the name of the directory that will contain the exported theme package. The field is not editable; however, you can select a directory by clicking on the “Choose” button to the right of the display field. This field is also mandatory. Once the contents of this window have been properly filled out such that the “Export” button is clickable, clicking this button will dismiss the window and create the theme package file in the specified directory. The theme package file is a zipped file that can be shared in any method necessary with other users. You can install a TKE theme package by using the import functionality of the theme editor as described above, or, on Mac OS X, by dragging and dropping the file on the TKE application icon.

Chapter 16: Plugins

In addition to all of the built-in functionality that comes standard, TKE also provides a plugin API which can allow development of new functionality and tools without needing to modify the source code. TKE ships with a small set of these plugins which are located in the TKE installation directory under the “plugins” directory.

Out of the box, plugins are not installed and available from within the tool; however, any plugin can be installed, uninstalled or reloaded within TKE (no restart is required). This will save those plugin settings to the user's “plugin.dat” file in their ~/.tke directory. When TKE is exited and restarted, any previously installed plugins will be installed on application start.

Plugins can interface to TKE in a variety of ways. Which interfaces are used is entirely up to the developer of the plugin. Each plugin can create multiple interfaces into the tool to accomplish its purposes. The following table lists the various ways that plugins can interface into TKE.

| Interface Type | Description |
|----------------------------------|---|
| menu | Plugins can create an entire subdirectory structure under the “Plugins” menu. |
| tab popups | Create menu items within a tab's popup menu. |
| sidebar popups | Create menu items within any of the sidebar's popup menus. |
| application events | Plugins can be run at certain application events (i.e., on start, opening a file, closing a file, saving a file, receiving editor focus, on exit, etc.) |
| syntax highlighting descriptions | Provide a file containing a syntax highlighting description which is added to the built-in list of syntax highlighting schemes. |

Installing a Plugin

Installing a new plugin is accomplished from the “Plugins / Install...” menu command. Doing so will display the command launcher in plugin installation mode. Any uninstalled plugins will be displayed in the launcher. To install a plugin from the list, simply select a plugin name from the list or begin typing a portion of the plugin name in the entry field until it is selected, and hit the RETURN key.

This will cause the plugin to be immediately installed. No application restart is required.

Uninstalling a Plugin

Uninstalling a plugin is similar to the process of installing a plugin. Select the “Plugins / Uninstall...” menu command. This will display the command launcher in plugin uninstallation mode. Any installed plugins will be displayed in the launcher. To uninstall a plugin from the list, simply select a plugin name from the list or begin typing a portion of the plugin name in the entry field until it is selected, and hit the RETURN key.

This will cause the plugin to be immediately uninstalled. No application restart is required.

Reloading a Plugins

Reloading plugins is only necessary in two cases. In the first case, the user installs a new plugin in the TKE installation's “plugins” directory. In this case, the plugins will need to be reloaded so that the new plugin name will be viewable in the plugin install list without requiring an application restart. The second case where plugin reloading is needed is in plugin development (more on this process is described in the “Plugin Development” chapter within this document).

To reload plugins, simply select the “Plugins / Reload” menu command. This will cause all plugins to be immediately reloaded. No application restart is necessary.

Chapter 17: Plugin Development

This chapter is written for anyone who is interested in writing plugins for TKE. The material found in the rest of the document is not necessary to know to use TKE for all other coding purposes and may be ignored.

TKE contains a plugin framework that allows external Tcl/Tk code to be included and executed in a TKE application. Plugins can be attached to the GUI via various menus, text bindings, the command launcher, and events. This document aims to document the plugin framework, how it works, and, most importantly, how to create new plugins using TKE's plugin API.

Plugin Framework

Starting up

When TKE is started, one of the startup tasks is to read the file contents contained in the TKE plugin directory. This directory contains all of the TKE plugin bundles.

The plugin directory exists in the TKE installation directory under the “plugins” directory. Only bundles in this directory that are properly structured (as described later on in this chapter) are considered for plugin access.

Each plugin bundle is a directory that must contain at least the following two files:

| File | Description |
|---------------|--|
| header.tkedat | Contains plugin information that describes the plugin and is used by the plugin installer. |
| main.tcl | The main Tcl file that is sourced by the plugin installer. This file must contain a call to the <code>api::register</code> procedure. In addition, this file should either contain the plugin namespace and action procedures or source one or more other files in the plugin bundle that contain the action code. |

After both files are found and the header file is properly parsed, the header contents are stored in a Tcl array. If a plugin bundle does not parse correctly, it is ignored and not made available for usage.

Once this process has completed, the TKE plugin configuration file is read. This file is located at `~/.tke/plugins.tkedat`. If this file does not exist, TKE continues without error and its default values take effect. If this file is found, the contents of this file are stored in a Tcl array within TKE. Information stored in this file include which plugins the user has previously selected to

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use and whether the user has granted the plugin trust (note: trusted plugins are allowed to view and modify the file system and execute system commands) when the plugin was installed.

If a plugin was previously selected by a previous TKE session, the plugin file is included into a separate Tcl interpreter via the Tcl "source" command. If there were any Tcl syntax errors in a given plugin file that are detectable with this source execution, the plugin is marked to be in error. If no syntax errors are found in the file, the plugin registers itself with the plugin framework at this time.

The plugin registration is performed with the `api::register` procedure. This procedure call associates the plugin with its stored header information. All of the plugin action types associated with the plugin are stored for later retrieval by the plugin framework.

Once all of the selected plugins have been registered, TKE continues on, building the GUI interface and performing other startup actions.

Plugin management

At any time after initial startup time, the user may install/uninstall plugins via the Plugins menu or the command launcher. If a plugin is installed, the associated plugin file is sourced. If there are any errors in a newly sourced plugin, the plugin will remain in the uninstalled state. If the plugin is uninstalled, its associated namespace is deleted from memory and any hooks into the UI are removed.

Once a plugin is installed or uninstalled, the status of all of the plugins is immediately saved to the plugin configuration file (if no plugin configuration file exists in the current directory, it is created).

Interpreter Creation

Two types of plugin interpreters are available. The first interpreter is a "safe" interpreter that restricts a plugin's ability to view and modify the file system and eliminates the ability to execute subprocesses (i.e., `exec` and network calls). It essentially provides a clean "sandboxed" environment for the plugin to run in. By default, all plugins are run in this mode of operation. If the plugin requires extended functionality, it can mark its "trust_required" header option to a value of "yes". If a plugin has this attribute set, when the plugin is installed it will notify the user that the plugin requires extended functionality. The user can then decide whether to grant the plugin trust or reject the request. If trust is granted, the plugin will be installed in an interpreter that will have the full Tcl command library available to do what the plugin requires. If trust is rejected, the plugin will not be installed.

It is preferable that all plugins are written with the intention of running in sandboxed mode, if at all possible.

Safe (Untrusted) Interpreter Description

Safe interpreters all their plugins to view and modify files within three directories:

- `~/.tke/plugins/plugin_name`
- `installation_directory/plugins/plugin_name`
- `installation_directory/plugins/images`

Where *installation_directory* is the pathname to the directory where TKE is installed and *plugin_name* is the name of the plugin. The filenames of these directories are managed in such a way that the “`~/.tke/plugins`” and “`installation_directory/plugins`” pathnames are hidden encoded in such a way that they cannot be discerned by the plugin. Specifying any of these directories or files/subdirectories within these directories in any Tcl/Tk command that uses filenames will decode the full pathname within the TKE master interpreter and handle their usage in that interpreter.

The following table lists the differences in standard Tcl commands within a safe plugin interpreter to their standard counterparts.

Tcl Command Differences in Untrusted Mode

| Command | Difference Description |
|--|---|
| <code>cd</code> | This command is unavailable. |
| <code>encoding</code> | You may get the system encoding value, but you may not set the system encoding value. All other encoding subcommands are allowed. |
| <code>exec</code> | This command is unavailable. |
| <code>exit</code> | This command is unavailable. |
| <code>fconfigure</code> | This command is unavailable. |
| <code>file atime</code> <code>file attributes</code> <code>file exists</code> <code>file executable</code> <code>file isdirectory</code> <code>file isfile</code> <code>file mtime</code> <code>file owned</code> <code>file readable</code> <code>file size</code> <code>file type</code> <code>file writable</code> | The name argument passed must be a file/directory that exists under one of the sandboxed directories. |
| <code>file delete</code> | Only names passed to the delete command that exist under one of the sandboxed directories will be deleted. |

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| Command | Difference Description |
|---|--|
| file dirname | If the resulting directory of this call is a directory under one of the sandboxed directories (or the a sandboxed directory itself), the name of the directory will be returned in encoded form. |
| file mkdir | Only names that exist under one of the sandboxed directories will be created. |
| file join file extension file rootname file tail file separator file split | These can be called with any pathname since they neither operate on a file system directory/file nor require a valid directory/file for their operation to perform. |
| file channels file copy file link file lstat file nativename file normalize file pathtype file readlink file rename file stat file system file volumes | These commands are not available. |
| glob | Only names that exist under one of the sandboxed directories (specified with the -directory or -path options) will be checked. |
| load | The requested file, a shared object file, is dynamically loaded into the safe interpreter if it is found. The filename exist in one of the sandboxed directories. Additionally, the shared object file must contain a safe entry point; see the manual page for the load command for more details. |
| open | You may only open files that exist under one of the three sandboxed directories. |
| pwd | This command is unavailable. |
| socket | This command is unavailable. |
| source | The given filename must exist under one of the sandboxed directories. Additionally, the name of the source file must not be longer than 14 characters, cannot contain more than one period (.) and must end in either .tcl or be named tclIndex. |
| unload | This command is unavailable. |

Plugin GUI Element Creation

Menus

When a menu is about to be displayed to the user (i.e., when the user clicks on a menu entry that creates a menu window to be displayed), the menu is first recursively cleared of all current elements. After everything has been deleted from the menu, the menu is repopulated with the TKE core menu elements (if there are any). Once these elements have been added to the menu, the plugin framework searches for any menu plugin action types in the selected plugin list. When it finds a plugin action type that needs to be added to this menu, the element is added to the menu, creating any cascading menus that are needed to store the menu element (menus can contain a submenu hierarchy so that menu items can be intelligently grouped). Once all of the missing cascading menus have been created (if needed), the menu action command is added to the last menu and its "-command" option is setup to call the plugin's "do" procedure. The "do" procedure for a plugin action type performs the main action of the plugin action type (which can basically be anything). Once the command has been added to the window, the current plugin's associated "handle_state" procedure is called. The purpose of the "handle_state" procedure is to determine whether the menu item should be enabled (by returning a value of 1) or disabled (by returning a value of 0).

This process is repeated for each menu plugin action type. Once all of the menu items have been added to the menu window, the window is displayed to the user. If the user selects a menu item that corresponds to a plugin action, the "do" procedure for that action is invoked, allowing the plugin to do something meaningful. If the menu item is associated with a table GUI element, the Tk reference to the table is given to the "do" procedure along with the row within the table that the user right-clicked in. If the menu item is associated with a text GUI element, the Tk reference to the text widget is given to the "do" procedure.

Text Bindings

When a new file is opened in the editor, the editor UI is created and TKE core bindings are added to the text widget that contains the file text. After TKE core bindings have been applied, the plugin framework is invoked to find any text binding actions used within plugins. If a plugin has text bindings to add, the plugin framework creates a binding tag that is unique for the plugin and inserts the new tag into the tag binding list for the text widget in one of two places (depending on what has been specified in the action registration). If the action specifies the "pretext" location, the binding is added prior to any TKE core bindtags. It is important to note that any changes to the text widget will not be visible to the commands that are bound at this point. If the action specifies the "posttext" location, the binding is added immediately after the text bind command is executed. Any commands run at this point will be able to see the changes to the text widget (if any exist).

Take a look at the text_binding example plugin in the plugin installation directory for an example of how text bindings can be used.

Tk Windows

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The creation and manipulation of Tk windows (widgets) by a plugin is actually handled within the master. When the plugin interpreter needs to create a Tk widget, the widget is specified just as though the widget was being created in the plugin interpreter. For example, to create a top-level window with a single button in the window, the plugin would perform the following:

```
toplevel .mywin
ttk::button .mywin.b -text "Click Me" -command { foo::click_me }
pack .mywin.b
```

In this example, a single button will be created in a new toplevel window with the text "Click Me". If the button is clicked, the procedure `foo::click_me` (which would exist in the plugin interpreter) would be executed. Since all Tk commands are run in the master, a restricted set of the Tk command set is provided. However, all widgets will be themed and configured to match the look and feel of the rest of the Tk window (and they will change to match the UI theme if the user changes the UI theme). The following table lists the available Tk commands and any usage differences between the plugin Tk command set and the standard Tk command set.

Plugin Tk Command Set

| Command | Difference Description |
|--|---|
| canvas listbox menu text toplevel ttk::button ttk::checkboxbutton ttk::combobox ttk::entry ttk::frame ttk::label ttk::labelframe ttk::menubutton ttk::notebook ttk::panedwindow ttk::progressbar ttk::radiobutton ttk::scale ttk::scrollbar ttk::separator ttk::spinbox ttk::treeview | None. All commands are executed in the plugin interpreter and any variables referenced are variables which exist in the plugin interpreter. Any Tk widgets that are created on behalf of the plugin are destroyable by that plugin. Any other widgets that are passed to the plugin may not be destroyed by the plugin. |

TKE User's Guide

| Command | Difference Description |
|---|---|
| clipboard event focus font grid pack place tk_messageBox | None. All commands are executed in the plugin interpreter and any variables referenced are variables which exist in the plugin interpreter. Any Tk widgets that are created on behalf of the plugin are destroyable by that plugin. Any other widgets that are passed to the plugin may not be destroyed by the plugin. |
| destroy | Any Tk widgets created by the plugin are destroyed; however, any plugins not created by the plugin are not destroyable. An error will be returned instead. |
| bind | All commands specified are executed in the plugin interpreter. |

TKE User's Guide

| Command | Difference Description |
|--|--|
| wininfo atom wininfo atomname wininfo cells wininfo children wininfo class wininfo colormapfull wininfo depth wininfo exists wininfo fpixels wininfo geometry wininfo height wininfo id wininfo ismapped wininfo manager wininfo name wininfo pixels wininfo pointerx wininfo pointerxy wininfo pointery wininfo reqheight wininfo reqwidth wininfo rgb wininfo rootx wininfo rooty wininfo screen wininfo screencells wininfo screendepth wininfo screenheight wininfo screenmmheight wininfo screenmmwidth wininfo screenvisual wininfo screenwidth wininfo viewable wininfo visual wininfo visualsavailable wininfo vrootheight wininfo vrootwidth wininfo vrootx wininfo vrooty wininfo width wininfo x wininfo y | <p>Only Tk widgets created by the plugin may be interrogated via the wininfo command.</p> |
| wininfo containing wininfo parent wininfo pathname wininfo toplevel | <p>If the result from executing this command is the name of a window which was created by the plugin, a valid result will be returned; otherwise, an error will be returned.</p> |
| wm | <p>If the passed window was created by the plugin, the wm command may be executed; otherwise, an error will be returned.</p> |

| Command | Difference Description |
|---|---|
| image | If the -file or -maskfile options are specified, the image command will allow these files to be read if the file exists in a directory/subdirectory of one of the trusted directories. If a file is specified with options outside of an trusted directory, an error will be returned. Only images created by the plugin will be deletable by the plugin. If the plugin is uninstalled, the images created by the plugin will be automatically destroyed. |
| tk::TextSetCursor tk::TextUpDownLine | |

Creating Launcher Commands

TKE has a powerful launcher capability that allows the user to interact with the GUI via keyboard commands. This functionality is also available to plugins via the plugin launcher registration procedure. This procedure is called once for each plugin command that is available. To register a launcher command, call the following procedure from within one of the "do" style procedures.

```
api::register_launcher description command
```

The argument *plugin_name* is the name of the plugin that is associated with this launcher command. The *description* argument is a short description of the launcher command. This string is displayed in the launcher results. The *command* argument is the Tcl command to execute when the user selects the launcher entry. The contents of this command can be anything.

Here is a brief example of how to use this command:

```
...
namespace eval foobar {

    ...

    proc launcher_command {} {
        puts "FOOBAR"
    }

    proc do {} {
```

```
    api::register_launcher "Print FOOBAR" \  
        foobar::launcher_command  
}  
  
...  
  
}  
  
...
```

The above code will create a launcher that will print the string "FOOBAR" to standard output when invoked in the command launcher.

To unregister a previously registered command launcher command, call the following:

```
api::unregister_launcher description
```

Plugin Bundle Structure

As stated previously, all plugin bundles must reside in the TKE installation's "plugins" directory, must contain the header.tkedat and main.tcl files (with the required elements). These elements are described in detail in this section.

header.tkedat

Every plugin bundle must contain a valid header.tkedat file which is a specially formatted in a tkedat format. The header file can contain comments (ignored by the parser) by specifying the “#” character at the beginning of a line. Any other lines must be specified as follows:

Name

```
name {value}
```

The value of *value* must be the name of the plugin. This name should match the name of the bundle directory and it must match the name used in the plugin::register procedure call (more about this later). The name of the plugin must be a valid variable name (i.e., no spaces, symbols, etc.)

Author

```
author {name}
```

The value of *name* should be the name of the user who originally created the plugin.

Email

```
email {e-mail address}
```

The value of *email* should be the e-mail address of the user who original created the plugin.

Version

```
version {version}
```

The value of *version* is a numbering system in the format of "major.minor".

Include

```
include {value}
```

The value of *value* is either "yes" or "no". This line specifies whether this plugin should be included in the list of available plugins that user's can install. Typically this value should be set to the value "yes" which will allow the plugin to be used by users; however, setting this value to "no" allows a plugin which is incomplete or currently not working to be temporarily disabled.

Trust Required

```
trust_required {value}
```

The value of *value* is either "yes" or "no". If the value is set to "no" (the default value if this option is not specified in the header file), the plugin will not ask the user to grant it trust and the plugin will be run in "safe" or "untrusted" mode (see the "Safe Interpreter Description" section for details). If the value is set to "yes", the user will be prompted to grant the plugin trust to operate. If trust is granted, the plugin will be installed and the plugin will be given the full Tcl command set to use. If trust is rejected, the plugin will not be installed.

Description

```
description {paragraph}
```

The value of *paragraph* should be a paragraph (multi-lined and formatted) which describes what this plugin does and how to operate it.

The following is an example of what a plugin header looks like:

```
name          {p4_filelog}
author        {John Smith}
email         {jsmith@bubba.com}
version       {1.0}
include       {yes}
trust_required {no}
description   {Adds a function to the sidebar menu popup for
               files that, when selected, displays the entire
               Perforce filelog history for that file in a
               new editor tab.}
```

Registration

Each plugin needs to register itself with the plugin architecture by calling the `api::register` procedure (from the `main.tcl` bundle file) which has the following call structure:

```
api::register name action_type_list
```

The value of *name* must match the plugin name in the plugin header. As such, the name must be a valid variable name.

The *action_type_list* is a Tcl list that contains all of the plugin action types used by this plugin. Each plugin action type is a Tcl list that contains information about the plugin action item. Every plugin must contain at least one plugin action type. The contents that make up a plugin action type list depend on the type of plugin action type, though the first element of the list is always a string which names the action type. Appendix A describes each of the plugin action types.

As an example of what a call to the `api::register` procedure looks like, consider the following example. This example shows what a fairly complex plugin can do.

```
api::register word_count {
    {menu command "Display word count"
      word_count::menu_do
      word_count::menu_handle_state}
}
```

This plugin's purpose is going to display the number of words that exist in the current text widget in the information bar. The menu command will be available in the "Plugins" menu. The menu element is a command type where the `word_count::menu_do` will be run when the command is selected. The `word_count::menu_handle_state` call can be executed to set the menu state to

disabled if no text widget currently is displayed or it will be enabled if there is a current text widget displayed.

Plugin Action Namespace and Procedures

The third required group of elements within a plugin file is the plugin namespace and namespace procedures that are called out in the action type list within the plugin. Every plugin must contain a namespace that matches the name of the plugin in the header. Within this namespace are all of the variables and procedures used for the plugin. It is important that no global variables get created within the plugin to avoid naming collisions.

The makeup and usage of the namespace procedures are fully described in Appendix A.

Other Elements

In addition to the required three elements of a plugin file, the user may include any other procedures, variables, packages, etc. that are needed for the plugin within the file. It is important to note that all plugin variables and procedures reside within the plugin namespace.

Creating a New Plugin Template

Creating a new plugin file template is a straightforward process. First, you must open a new terminal and set the TKE development environment variable to a value of 1 as follows:

```
setenv TKE_DEVEL 1
```

After this command has been entered, run TKE from that same shell. When the application is ready, go to the "Plugins / Create..." menu command (the "Create..." command will be missing from the Plugins menu if TKE is started without the TKE_DEVEL environment variable set).

This will display an entry field at the bottom of the window, prompting you to enter the name of the plugin being created. This name must be a legal variable name (i.e., no whitespace, symbols, etc.) Once a name has been provided and the RETURN key pressed, a new plugin bundle will be created (in the TKE installation's "plugins" directory) which is named the same as the entered name. Within the bundle, TKE will create a partially filled out template for both the header.tkedat and main.tcl, and these files will displayed within two editor tabs so that the developer can start coding the new plugin behavior.

Supposing that we entered a plugin name of "foobar", the resulting directory (bundle) "foobar" would be created. The following files will exist in the directory:

header.tkedat

```
name          {foobar}  
author        {}  
email         {}  
version       {1.0}  
include       {yes}  
trust_required {no}  
description   {}
```

main.tcl

```
namespace eval foobar {  
  
}  
  
api::register foobar {  
  
}
```

You may, optionally, place any other files that are needed by your plugin within the plugin bundle, including, but not limited to, other Tcl source files, packages, README files, data files, and images.

You cannot use any content that requires a compilation on the installation machine.

Appendix A. Plugin Action Types

menu

Description

The menu plugin type allows the user to add a new menu command to the Plugins menu in the main application menubar. All menu plugins can optionally append any number of “.submenu” items to the menubar menu representing a cascading menu hierarchy within the menu that the command will be placed in. This allows the user to organize plugin menu items into groups, making the menu easier to find commands and easier to read/understand.

Tcl Registration

```
{menu command hierarchy do_procname handle_state_procname}
{menu {checkboxbutton variable} hierarchy do_procname handle_state_procname}
{menu {radiobutton variable value} hierarchy do_procname handle_state_procname}
{menu separator hierarchy}
```

The “menu command” type creates a menu command that, when clicked, runs the procedure called *do_procname*. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “menu checkbox” type creates a menu command has an on/off state associated with it. When the menu item is clicked, the state of the menu item is inverted and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the current on/off value associated with the menu item. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “menu radiobutton” type creates a menu command that has an on/off state such that in a group of multiple menu items that share the same variable, only one is on at a time. When the menu item is clicked, the state of the menu item is set to on and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the menu item that is currently on. The *value* value specifies a unique identifier for this menu within the group. When the value of variable is set to value, this menu option will have the on state. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The "menu separator" type creates a horizontal separator in the menu which is useful for organizing menu options. The hierarchy value, in this case, only refers to the menu hierarchy to add the separator to (menu separators don't have text associated with them).

Tcl Procedures

The "do" procedure

The "do" procedure contains the code that will be executed when the user invokes the menu item in the menubar.

Example:

```
proc foobar_menubar_do {} {  
    puts "Foobar menu item has been clicked!"  
}
```

The "handle_state" procedure

The "handle_state" procedure is called when the Plugin menu is created (when the "Plugins" menubar item is clicked). This procedure is responsible for determining the state of the menu item to normal (1) or disabled (0) as deemed appropriate by the plugin creator.

Example:

```
proc foobar_menubar_handle_state {} {  
    return $some_test_condition  
}
```

tab_popup

Description

The `tab_popup` plugin type allows the user to add a new menu command to the popup menu in an editor tab. All `tab_popup` plugins can optionally append any number of “*.submenu*” items to the menubar menu representing a cascading menu hierarchy within the menu that the command will be placed in. This allows the user to organize plugin menu items into groups, making the menu easier to find commands and easier to read/understand.

Tcl Registration

```
{tab_popup command hierarchy do_procname handle_state_procname}  
{tab_popup {checkboxbutton variable} hierarchy do_procname handle_state_procname}  
{tab_popup {radiobutton variable value} hierarchy do_procname \  
    handle_state_procname}  
{tab_popup separator hierarchy}
```

The “`tab_popup command`” type creates a menu command that, when clicked, runs the procedure called *do_procname*. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “`tab_popup checkboxbutton`” type creates a menu command has an on/off state associated with it. When the menu item is clicked, the state of the menu item is inverted and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the current on/off value associated with the menu item. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “`tab_popup radiobutton`” type creates a menu command that has an on/off state such that in a group of multiple menu items that share the same variable, only one is on at a time. When the menu item is clicked, the state of the menu item is set to on and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the menu item that is currently on. The *value* value specifies a unique identifier for this menu within the group. When the value of variable is set to value, this menu option will have the on state. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “`tab_popup separator`” type creates a horizontal separator in the menu which is useful for organizing menu options. The hierarchy value, in this case, only refers to the menu hierarchy to add the separator to (menu separators don't have text associated with them).

Tcl Procedures

The "do" procedure

The "do" procedure contains the code that will be executed when the user invokes the menu item in the menubar.

Example:

```
proc foobar_tab_popup_do {} {  
    puts "Foobar tab popup item has been clicked!"  
}
```

The "handle_state" procedure

The "handle_state" procedure is called when the popup menu is created (when a right click occurs within a tab). This procedure is responsible for determining the state of the menu item of normal (1) or disabled (0) as deemed appropriate by the plugin creator.

Example:

```
proc foobar_menubar_handle_state {} {  
    return $some_test_condition  
}
```

root_popup

Description

The `root_popup` plugin type allows the user to add a new menu command to the popup menu in the sidebar when a root directory (i.e., a directory that doesn't have a parent directory in the sidebar pane) is right-clicked. All `root_popup` plugins can optionally append any number of ".submenu" items to the menubar menu representing a cascading menu hierarchy within the menu that the command will be placed in. This allows the user to organize plugin menu items into groups, making the menu easier to find commands and easier to read/understand.

Tcl Registration

```
{root_popup command hierarchy do_procname handle_state_procname}  
{root_popup {checkboxbutton variable} hierarchy do_procname handle_state_procname}  
{root_popup {radiobutton variable value} hierarchy do_procname \  
    handle_state_procname}  
{root_popup separator hierarchy}
```

The "root_popup command" type creates a menu command that, when clicked, runs the procedure called `do_procname`. The `hierarchy` value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The "root_popup checkboxbutton" type creates a menu command has an on/off state associated with it. When the menu item is clicked, the state of the menu item is inverted and the `do_procname` procedure is called. The `variable` argument is the name of a variable containing the current on/off value associated with the menu item. The `hierarchy` value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The "root_popup radiobutton" type creates a menu command that has an on/off state such that in a group of multiple menu items that share the same variable, only one is on at a time. When the menu item is clicked, the state of the menu item is set to on and the `do_procname` procedure is called. The `variable` argument is the name of a variable containing the menu item that is currently on. The `value` value specifies a unique identifier for this menu within the group. When the value of variable is set to value, this menu option will have the on state. The `hierarchy` value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The "root_popup separator" type creates a horizontal separator in the menu which is useful for organizing menu options. The hierarchy value, in this case, only refers to the menu hierarchy to add the separator to (menu separators don't have text associated with them).

Tcl Procedures

The "do" procedure

The "do" procedure contains the code that will be executed when the user invokes the menu item in the menubar.

Example:

```
proc foobar_root_popup_do {} {  
    puts "Foobar root popup item has been clicked!"  
}
```

The "handle_state" procedure

The "handle_state" procedure is called when the popup menu is created (when a right click occurs within a tab). This procedure is responsible for determining the state of the menu item of normal (1) or disabled (0) as deemed appropriate by the plugin creator.

Example:

```
proc foobar_root_popup_handle_state {} {  
    return $some_test_condition  
}
```

dir_popup

Description

The `dir_popup` plugin type allows the user to add a new menu command to the popup menu in the sidebar when any non-root directory is right-clicked. All `root_popup` plugins can optionally append any number of “*.submenu*” items to the menubar menu representing a cascading menu hierarchy within the menu that the command will be placed in. This allows the user to organize plugin menu items into groups, making the menu easier to find commands and easier to read/understand.

Tcl Registration

```
{dir_popup command hierarchy do_procname handle_state_procname}  
{dir_popup {checkboxbutton variable} hierarchy do_procname handle_state_procname}  
{dir_popup {radiobutton variable value} hierarchy do_procname \  
    handle_state_procname}  
{dir_popup separator hierarchy}
```

The “`dir_popup command`” type creates a menu command that, when clicked, runs the procedure called *do_procname*. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “`dir_popup checkboxbutton`” type creates a menu command has an on/off state associated with it. When the menu item is clicked, the state of the menu item is inverted and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the current on/off value associated with the menu item. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “`dir_popup radiobutton`” type creates a menu command that has an on/off state such that in a group of multiple menu items that share the same variable, only one is on at a time. When the menu item is clicked, the state of the menu item is set to on and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the menu item that is currently on. The *value* value specifies a unique identifier for this menu within the group. When the value of variable is set to value, this menu option will have the on state. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “`dir_popup separator`” type creates a horizontal separator in the menu which is useful for organizing menu options. The hierarchy value, in this case, only refers to the menu hierarchy to add the separator to (menu separators don't have text associated with them).

Tcl Procedures

The "do" procedure

The "do" procedure contains the code that will be executed when the user invokes the menu item in the menubar.

Example:

```
proc foobar_dir_popup_do {} {  
    puts "Foobar directory popup item has been clicked!"  
}
```

The "handle_state" procedure

The "handle_state" procedure is called when the popup menu is created (when a right click occurs within a tab). This procedure is responsible for determining the state of the menu item of normal (1) or disabled (0) as deemed appropriate by the plugin creator.

Example:

```
proc foobar_dir_popup_handle_state {} {  
    return $some_test_condition  
}
```

file_popup

Description

The file_popup plugin type allows the user to add a new menu command to the popup menu in the sidebar when any file is right-clicked. All file_popup plugins can optionally append any number of “.submenu” items to the menubar menu representing a cascading menu hierarchy within the menu that the command will be placed in. This allows the user to organize plugin menu items into groups, making the menu easier to find commands and easier to read/understand.

Tcl Registration

```
{file_popup command hierarchy do_procname handle_state_procname}  
{file_popup {checkboxbutton variable} hierarchy do_procname handle_state_procname}  
{file_popup {radiobutton variable value} hierarchy do_procname \  
    handle_state_procname}  
{file_popup separator hierarchy}
```

The “file_popup command” type creates a menu command that, when clicked, runs the procedure called *do_procname*. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “file_popup checkbox” type creates a menu command has an on/off state associated with it. When the menu item is clicked, the state of the menu item is inverted and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the current on/off value associated with the menu item. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “file_popup radiobutton” type creates a menu command that has an on/off state such that in a group of multiple menu items that share the same variable, only one is on at a time. When the menu item is clicked, the state of the menu item is set to on and the *do_procname* procedure is called. The *variable* argument is the name of a variable containing the menu item that is currently on. The *value* value specifies a unique identifier for this menu within the group. When the value of variable is set to value, this menu option will have the on state. The *hierarchy* value specifies the menu hierarchy (optional) and string text in the menu (joined with periods). The hierarchy will be created if it does not exist.

The “file_popup separator” type creates a horizontal separator in the menu which is useful for organizing menu options. The hierarchy value, in this case, only refers to the menu hierarchy to add the separator to (menu separators don't have text associated with them).

Tcl Procedures

The "do" procedure

The "do" procedure contains the code that will be executed when the user invokes the menu item in the menubar.

Example:

```
proc foobar_file_popup_do {} {  
    puts "Foobar file popup item has been clicked!"  
}
```

The "handle_state" procedure

The "handle_state" procedure is called when the popup menu is created (when a right click occurs within a tab). This procedure is responsible for determining the state of the menu item as normal (1) or disabled (0) as deemed appropriate by the plugin creator.

Example:

```
proc foobar_file_popup_handle_state {} {  
    return $some_test_condition  
}
```

text_binding

Description

The `text_binding` plugin action creates a unique bindtag to all of the text and Ctext pathnames in the entire UI based on the location and name suffix specified and calls a plugin provided procedure with the name of that binding. The procedure can then add whatever bindings are required on the given bindtag name. This allows a plugin to handle various keyboard, focus, configuration, mapping and mouse events that occur in any editor.

~~Additionally, if the plugin code needs to make changes to or otherwise access information about a text widget, it is required that this plugin action is specified. Attempting to access a text widget without requesting binding will result in an error. If the plugin only needs to access a text widget without binding, the body of the `text_binding do_procedure` can be empty.~~

Tcl Registration

```
{text_binding location bindtag_suffix bind_type do_procedure}
```

The value of *location* is either the value “pretext” or “posttext”. If a value of “pretext” is specified, any bindings on the text widget will be called prior to the text/cursor being applied to the text widget. If a value of “posttext” is specified, any bindings on the text widget will be called after the text/cursor has been applied to the widget.

The value of *bindtag_suffix* is any unique name for the plugin (i.e., if the plugin specifies more than one `text_binding` action, each action must have a different value specified for *bindtag_suffix*).

The value of *bind_type* is either “all” or “only”. A value of all means that the text binding will be added to all text widgets in the window. A value of “only” means that the text binding will only be added to the text widgets that have a tag list containing the value of *bindtag_suffix* (see `api::file::add_buffer` or `api::file::add_file` procedure for details about the `-tag` option. Using a value of “only” can only be used if the same plugin adds a file/buffer of its own.

The value of *do_procedure* is the name of the procedure that is called when a text widget is adding bindtags and bindings to itself and the given bindtag name has not been previously created.

Tcl Procedures

The “do” procedure

The “do” procedure is called when the associated text bindtag is being initially created. The name of the associated bindtag created and applied by the plugin framework is passed to the procedure. The return value of the procedure is ignored. This procedure should only add various text bindings to associate functionality with different events that will occur on the text widgets.

The following example allows any changes to the cursor to invoke the procedure called “update_line”.

```
namespace eval current_line {

    proc do_cline {btag} {

        bind $btag <<Modified>>      "after idle [list
current_line::update_line %W]"
        bind $btag <ButtonPress-1> "after idle [list
current_line::update_line %W]"
        bind $btag <B1-Motion>      "after idle [list
current_line::update_line %W]"
        bind $btag <KeyPress>      "after idle [list
current_line::update_line %W]"

    }

    proc update_line {txt} {

        ...

    }

}

api::register current_line {
    {text_binding pretext cline all current_line::do_cline}
}
```

on_start

Description

The `on_start` plugin action is called when the application starts. More precisely, the following actions will take place prior to running procedures associated with this action type.

- Preferences are loaded
- Plugins are loaded
- Snippet contents are loaded
- Clipboard history is loaded
- Syntax highlighting information is loaded
- User interface components are built (but not yet displayed to the user)

At this point, any `on_start` action procedures are run. The following events occur after this occurs.

- Command-line files are added to the interface
- Last session information is restored to the interface

The action type allows plugins to initialize or make user interface modifications.

Tcl Registration

`{on_start do_procname}`

The value of `do_procname` is the name of the procedure to run when Tcl is started.

Tcl Procedures

The “do” procedure

The “do” procedure contains the code that will be executed when the application starts. It is passed no options and has no return value. You can perform any type of initialization within this procedure.

on_open

Description

The `on_open` plugin action is called after a new tab has been created and after the file associated with the tab has been read and added to the editor in the editor pane.

Tcl Registration

```
{on_open do_procname}
```

The *do_procname* is the name of the procedure that is called for this action type.

Tcl Procedures

The “do” procedure

The “do” procedure is called when the file has been added to the editor. The procedure takes a single argument, the file index of the added file. You can use this file index to get various pieces of information about the added file using the `api::file::get_info` API procedure. The return value is ignored.

The following example will display the full pathname of a file that was just added to the editor.

```
proc foobar_do {file_index} {  
    set fname [api::file::get_info $file_index fname]  
    puts "File $fname was just opened"  
}
```

on_focusin

Description

The `on_focusin` action type is called whenever a text widget receives input focus (i.e., the text widget's tab was selected, the file was viewed by clicking the filename in the sidebar, etc.)

Tcl Registration

```
{on_focusin do_procname}
```

The `do_procname` procedure is called whenever focus is given to a text widget.

Tcl Procedures

The “do” procedure

The “do” procedure is called whenever focus is given to a text widget. It is passed a single argument, the file index of the file that was given focus. This value can be used to get information about the file. The return value is ignored.

The following example displays the read-only status of the currently selected file.

```
proc focus_do {file_index} {  
    if {[api::file::get_info $file_index readonly]} {  
        puts "Selected file is readonly"  
    } else {  
        puts "Selected file is read/write"  
    }  
}
```


on_close

Description

The `on_close` action type is called when a file is closed in the editor pane. More specifically, the associated procedure is called prior to the file actually closed; therefore, you can get information about the file being closed in this procedure.

Tcl Registration

```
{on_close do_procname}
```

The *do_procname* value is a procedure that is called when this event occurs.

Tcl Procedures

The “do” procedure

The “do” procedure is called when the `on_close` action occurs. It is passed a single argument, the file index of the file being closed. This argument value can be used to get information about the associated file. The return value is ignored.

The following example displays the name of the file being closed.

```
proc foobar_do {file_index} {  
    set fname [api::file::get_info $file_index fname]  
    puts "File $fname is being closed"  
}
```

on_update

Description

The `on_update` plugin type allows the user to add an action to take whenever the contents of an editor is automatically updated by the application. This event is triggered when a file that is loaded into the editor is updated outside of the editor and focus is given back to the editor. If the file content within the editor is not in the modified state, TKE will automatically load the new file content and trigger this event. If the file content is in the modified state, a popup window will be presented to the user, letting them know that the file content has changed and asking them if they would like to accept the update or ignore it. If the user accepts the update request, the file content will be updated and this event will be triggered.

Tcl Registration

```
{on_update do_procname}
```

The value of `do_procname` is the name of the procedure that will be called after the file content has been updated in the editor.

Tcl Procedures

The “do” procedure

The “do” procedure is called after a file is updated in the UI. It is passed a single argument, the file index of the file being closed. This argument value can be used to get information about the associated file. The return value is ignored.

The following example displays the name of the file that was updated.

```
proc foobar_do {file_index} {  
    set fname [api::file::get_info $file_index fname]  
    puts "File $fname has been updated"  
}
```

on_quit

Description

The on_quit plugin type allows the user to add an action to take just before the tkdv session is quit. This can be used to perform file cleanup or other types of cleanup.

Tcl Registration

```
{on_quit do_procname}
```

The value of do_procname is the name of the procedure that will be called prior to the application quitting.

Tcl Procedures

The "do" procedure

The "do" procedure contains the code that will be executed when the tkdv session is quit.

Example:

```
proc foobar_on_quit_do {} {  
    file delete -force foobar.txt  
}
```

on_reload

Description

The on_reload plugin type allows the user to store/restore internal data when the user performs a plugin reload operation. In the event that a plugin is reloaded, any internal data structures/state will be lost when the plugin is reloaded (re-sourced). The plugin may choose to store any internal data/state to non-corruptible memory within the plugin architecture just prior to the plugin being resourced and then restore that memory back into the plugin after it has been re-sourced.

Tcl Registration

```
{on_reload store_procname restore_procname}
```

The value of store_procname is the name of a procedure which will be called just prior to the reload operation taking place. The value of restore_procname is the name of a procedure which will be called after the reload operation has occurred.

Tcl Procedures

The "store" procedure

The "store" procedure contains code that saves any necessary internal data/state to non-corruptible memory. It is called just prior to the plugin being re-sourced by the plugin architecture. The TKE API contains a procedure that can be called to safely store a variable along with its value such that the variable name and value can be restored properly.

Example:

```
proc foobar_on_reload_store {index} {  
    variable some_data  
  
    # Save the value of some_data to non-corruptible memory  
    api::plugin::save_variable $index "some_data" $some_data  
  
    # Save the geometry of a plugin window if it exists  
    if {[winfo exists .mywindow]} {  
        api::plugin::save_variable $index "mywindow_geometry" \  
            [winfo geometry .mywindow]  
        destroy .mywindow  
    }  
}
```

```
}
```

In this example, we have a local namespace variable called "some_data" that contains some information that we want to preserve during a plugin reload. The example uses a user-available procedure within the plugin architecture called "api::plugin::save_variable" which takes three arguments: the unique identifier for the plugin (which is the value of the parameter called "index"), the string name of the value that we want to save, and the value to save. Note that the value must be given in a "pass by value" format. The example also saves the geometry of a plugin window if it currently exists.

The "restore" procedure

The "restore" procedure contains code that restores any previously saved information from the "store" procedure from non-corruptible memory back to the plugin memory. It is called immediately after the plugin has been re-sourced.

Example:

```
proc foobar_on_reload_restore {index} {

    variable some_data

    # Retrieve the value of some_data and save it to the
    # internal variable
    set some_data [api::plugin::load_variable $index "some_data"]

    # Get the plugin window dimensions if it previously existed
    set geometry [api::plugin::load_variable $index "mywindow_geometry"]
    if {$geometry ne ""} {
        create_mywindow
        wm geometry .mywindow $geometry
    }

}
```

In this example, we restore the value of some_data by calling the plugin architecture's built-in "api::plugin::load_variable" procedure which takes two parameters (the unique index value for the plugin and the name of the variable that was previously stored) and returns the stored value (the procedure also removes the stored data from its internal memory). If the index/name combination was not previously stored, a value of empty string is returned. The example also checks to see if the mywindow geometry was saved. If it was it means that the window previously existed, so the restore will recreate the window (with an internal procedure called "create_mywindow" in this case) and then sets the geometry of the window to the saved value.

on_save

Description

The on_save action calls a procedure when a file is saved in the editor pane. Specifically, the action is called after the file is given a save name (the “fname” attribute of the file will be set) but before the file is actually written to the save file.

Tcl Registration

```
{on_save do_procname}
```

The *do_procname* value is a procedure that is called when this event occurs.

Tcl Procedures

The “do” procedure

The “do” procedure is called when this event occurs. It is passed a single parameter value, the file index of the file being save. This value can be used in calls to the `api::file::get_info` to get information about the saved file. The return value is ignored.

The following example displays the name of the file being saved.

```
proc foobar_do {file_index} {  
    set fname [api::file::get_info $file_index fname]  
    puts "File $fname is being saved"  
}
```

on_uninstall

Description

The `on_uninstall` action calls a procedure when the associated plugin is uninstalled by the user. Because uninstalling does not cause the application to quit (i.e., the UI remains in view), this plugin action allows the plugin writer to cleanup the UI that might have been affected by this plugin.

Tcl Registration

```
{on_uninstall do_procname}
```

The *do_procname* value is a procedure that is called when this event occurs.

Tcl Procedures

The “do” procedure

The “do” procedure is called when this event occurs. No arguments are passed and the return value is ignored by the calling code. The body of this procedure should only be used to clean up any UI changes that this plugin may have previously made.

The following example removes a text tag called “foobar” that was previously added.

```
proc foobar_do {} {  
    variable txt  
  
    $txt tag delete foobar  
}
```

on_rename

Description

The `on_rename` action calls a procedure when a file or directory is renamed within the sidebar. Specifically, this procedure will be called just prior to the rename being performed to allow the plugin to take any necessary actions on the given file/directory.

Tcl Registration

```
{on_rename do_procname}
```

The *do_procname* value is a procedure that is called when this event occurs.

Tcl Procedures

The “do” procedure

The “do” procedure is called when this event occurs. Two arguments are passed. The first parameter is the full original pathname. The second parameter is the full new pathname. The return value is ignored.

The following example displays the original and new filenames.

```
proc foobar_do {old_name new_name} {  
    puts "File $old_name has been renamed to $new_name"  
}
```


on_duplicate

Description

The `on_duplicate` action calls a procedure immediately after a file or directory is duplicated within the sidebar.

Tcl Registration

```
{on_duplicate do_procname}
```

The `do_procname` value is a procedure that is called when this event occurs.

Tcl Procedures

The “do” procedure

The “do” procedure is called when this event occurs. Two arguments are passed. The first parameter is the full original pathname. The second parameter is the full pathname of the duplicated file. The return value is ignored.

The following example displays the new filename.

```
proc foobar_do {orig_name new_name} {  
    puts "File $orig_name has been duplicated ($new_name)"  
}
```

on_delete

Description

The `on_delete` action calls a procedure just before a file is deleted from the file system within the sidebar.

Tcl Registration

```
{on_delete do_procname}
```

The `do_procname` value is a procedure that is called when this event occurs.

Tcl Procedures

The “do” procedure

The “do” procedure is called when this event occurs. One parameter is passed — the full pathname of the file being deleted. The return value is ignored.

The following example displays the deleted filename.

```
proc foobar_do {name} {  
    puts "File $name is deleted"  
}
```

syntax

Description

The syntax action specifies the name of a .syntax file that will be added to the list of available syntax highlighters in the UI.

Tcl Registration

`{syntax filename}`

The syntax filename must be located in the same directory as the main.tcl plugin file and it must contain the .syntax extension. The base name of the syntax file will be the name displayed in the UI. For a description of the contents of this file, please refer to the syntax file chapter of this document.

VCS

Description

The `vcs` action allows a plugin to provide the functionality required to create a new version control system handler for the TKE difference view. When a `vcs` action is created, the action's name will appear in the version control list within a difference view, and that version control system will be checked to see if it manages an opened file when a difference view is requested.

This action allows a plugin to extend the supported version control systems available.

If your plugin contains the `vcs` action, you will need to request permission from the user to run your plugin as `vcs` plugin actions will be given filenames and will be required to run shell commands to perform necessary action.

Tcl Registration

```
{vcs name handles versions get_file_cmd get_diff_cmd find_version  
get_version_log}
```

The *name* option specifies the Version Control system name that will be displayed in the difference viewer version control list. The name does not need to match the version control system; however, it is preferred that the name does match to avoid user confusion.

Tcl Procedures

The “handles” procedure

The “handles” procedure is given the full pathname of a file and must return a boolean value of true if the version control system is managing this file; otherwise, it must return a value of false. This procedure should be written in a performance optimized manner as it will be called after the user requests to view a file's difference view and before the file difference is viewed.

The following example is from the `vcs_example` plugin which represents how a Mercurial plugin would operate.

```
proc handles {fname} {  
    return [expr {![catch hg status $fname]}]  
}
```

The “versions” procedure

The “versions” procedure will return a Tcl list containing the version identifiers that are associated with the filename that is passed to the procedure.

```
proc versions {fname} {
    set versions [list]
    if {![catch { exec hg log $fname } rc]} {
        foreach line [split $rc \n] {
            if {[regexp {changeset:\s+(\d+):} $line -> version]} {
                lappend versions $version
            }
        }
    }
    return $versions
}
```

The “get_file_cmd” procedure

Given the specified filename and version identifier, returns the command to execute which will return the full contents of the given version of the given filename.

```
proc get_file_cmd {fname version} {
    return "|hg cat -r $version $fname"
}
```

The “get_diff_cmd” procedure

Given the specified filename and two versions, return the difference command that will output a unified difference between the two versions of the given file. The value of the v2 parameter can be a value of “Current” which should be interpreted as the version of the file that is currently being edited.

```
proc get_diff_cmd {fname v1 v2} {
    if {$v2 eq "Current"} {
        return "hg diff -r $v1 $fname"
    } else {
        return "hg diff -r $v1 -r $v2 $fname"
    }
}
```

The “find_version” procedure

The “find_version” procedure will return the file version that contained the last change to the specified line number which is no later than the given version number. Keep in mind that the value of the v2 input parameter may be a value of “Current” which should be interpreted to be the version of the file that is currently being edited. If the change could not be found, return an empty string.

```
proc find_version {fname v2 linenum} {
  if {$v2 eq "Current"} {
    if {![catch { exec hg annotate $fname } rc]} {
      if {[regexp {^\s*(\d+):} [lindex [split $rc \n] [expr
$linenum-1]] -> version]} {
        return $version
      }
    }
  } else {
    if {![catch { exec hg annotate -r $v2 $fname } rc]} {
      if {[regexp {^\s*(\d+):} [lindex [split $rc \n] [expr
$linenum-1]] -> version]} {
        return $version
      }
    }
  }
  return ""
}
```

The “get_version_log” procedure

The “get_version_log” procedure returns the change descriptions for the specified version of the specified filename. If no change description could be found, return the empty string.

```
proc get_version_log {fname version} {
  if {![catch { exec hg log -r $version $fname } rc]} {
    return $rc
  }
  return ""
}
```

Appendix B. Plugin API

`api::tke_development`

Specifies if the application is being run in development mode or normal user mode. This can be useful if your plugin is meant to be used for TKE development purposes only.

Call structure

| |
|-----------------------------------|
| <code>api::tke_development</code> |
|-----------------------------------|

Return value

Returns a value of 1 if the application is being run in development mode; otherwise, returns a value of 0.

`api::get_plugin_directory`

Returns the full pathname of the TKE installation directory.

Call structure

```
api::get_plugin_directory
```

Return value

Returns the full pathname of the TKE plugin installation directory for the calling plugin.

`api::get_images_directory`

Returns the full pathname to the directory which contains all of the plugin images used by TKE in the installation directory.

Call structure

| |
|--|
| <code>api::get_images_directory</code> |
|--|

Return value

Returns the full pathname to the directory which contains all of the plugin images used by TKE in the installation directory.

`api::get_home_directory`

This procedure returns the full pathname to the plugin-specific home directory. If the directory does not currently exist, it will be automatically created when this procedure is called. The plugin-specific home directory exists in the user's TKE home directory under `~/.tke/plugins/name_of_plugin`. This directory will be unique for each plugin so you may store any plugin-specific files in this directory.

Call structure

```
api::get_home_directory
```

Return value

Returns the full pathname to the plugin-specific home directory.

api::normalize_filename

Takes a NFS-attached host where the file resides along with the pathname on that host where the file resides and returns the normalized filename to access the file on the current host.

Call structure

```
api::normalize_filename host filename
```

Return value

Returns the normalized pathname of the given file relative to the current host machine.

Parameters

| Parameter | Description |
|-----------|--|
| host | Name of host server where the file actually resides. |
| filename | Name of file on the host server. |

api::register_launcher

Registers a plugin command with the TKE command launcher. Once a command is registered, the user can invoke the command from the command launcher by entering a portion of the description string that is passed via this command.

Call structure

```
api::register_launcher description command
```

Return value

None

Parameters

| Parameter | Description |
|-------------|--|
| description | String that is displayed in the command launcher matched results. This is also the string that is used to match against. |
| command | Command to run when this entry is executed via the command launcher. |

api::unregister_launcher

Unregisters a previously registered command from the command launcher.

Call structure

```
api::unregister_launcher description
```

Return value

None

Parameters

| Parameter | Description |
|-------------|---|
| description | The initial description string that was passed to the api::register_launcher command. |

api::invoke_menu

Invokes the functionality associated with a menu item. This allows plugins to perform “workflows”. The menu hierarchy is defined by taking the names of all menus in the hierarchy (case is important) and joining them with the “/” character. Therefore, to invoke the File -> Format Text -> All command, you would pass the following:

```
api::invoke_menu "File/Format Text/All"
```

Call structure

```
api::invoke_menu menu_hierarchy_path
```

Return value

None. Returns an error if the given menu hierarchy string cannot be found.

Parameters

| Parameter | Description |
|---------------------|---|
| menu_hierarchy_path | String representing the hierarchical menu path to the menu command to execute. Each portion of the menu path must match the menu exactly and all menu portions must be joined by the “/” character. |

api::log

Displays a logging message to standard output. This is useful for debugging plugin issues.

Call structure

```
api::log message
```

Return value

None.

Parameters

| Parameter | Description |
|-----------|--|
| message | Message to display to standard output. |

api::show_info

Takes a user message and a delay time and displays the message in the bottom status bar which will automatically clear from the status bar after the specified period of time has elapsed. This is useful for communicating status information to the user, but should not be used to indicate error information (the `api::show_error` procedure should be used for this purpose).

Call structure

```
api::show_info message ?clear_delay?
```

Return value

None

Parameters

| Parameter | Description |
|-------------|---|
| message | Message to display to user. It is important that no newline characters are present in this message and that the message is no more than 100 or so characters in length. |
| clear_delay | Optional value. Allows for the message to be cleared in "clear_delay" milliseconds. By default, this value is set to 3000 milliseconds (i.e., 3 seconds). |

api::show_error

Takes a user message and optional detail information and displays the message in a popover window. This window is the standard error window used by TKE internal code and, therefore, is the recommended way to display error information to the user.

Call Structure

```
api::show_error message ?detail?
```

Return value

None

Parameters

| Parameter | Description |
|-----------|---------------------------------------|
| message | Short error message. |
| detail | Optional. Detailed error description. |

api::get_user_input

Displays a prompt message and an entry field, placing the cursor into the entry field for immediate text entry. Once a value has been input, the value will be assigned to the variable passed to this procedure. Allows the plugin to get user input.

Call structure

```
api::get_user_input message variable ?allow_vars?
```

Return value

Returns a value of 1 if the user hit the RETURN key in the text entry field to indicate that a value was obtained by the user and stored in the provided variable. Returns a value of 0 if the user hit the ESCAPE key or clicked on the close button to indicate that the value of variable was not set and should not be used.

Parameters

| Parameter | Description |
|------------|---|
| message | Message to prompt user for input (should be short and not contain any newline characters). |
| variable | Name of variable to store the user-supplied response in. If a value of 1 is returned, the contents in the variable is valid; otherwise, a return value 0 indicates the contents in the variable is not valid. |
| allow_vars | Optional. If set to 1, any environment variables specified in the user string will have value substitution performed and the resulting string will be stored in the variable parameter. If set to 0, no substitutions will be performed. By default, substitution is performed. |

Example

```
set filename ""

if {[api::get_user_input "Filename:" filename 1]} {
  puts "File $filename was given"
} else {
  puts "No filename specified"
}
```


`api::file::current_file_index`

Returns a unique index to the currently displayed file in the editor. This index can be used for getting information about the file.

Call structure

| |
|--|
| <code>api::file::current_file_index</code> |
|--|

Return value

Returns a unique index to the currently displayed file in the editor panel.

api::file::get_info

Returns information about the file specified by the given index based on the attribute that this passed.

Call structure

`api::file::get_info file_index attribute`

Return value

Returns the attribute value for the given file. If an invalid `file_index` is specified or an invalid attribute is specified, an error will be thrown.

Parameters

| Parameter | Description |
|-------------------------|---|
| <code>file_index</code> | Unique identifier for a file as returned by the <code>get_current_index</code> procedure |
| <code>attribute</code> | One of the following values: <ul style="list-style-type: none">• <code>fname</code> normalized file name• <code>mtime</code> last modification timestamp• <code>lock</code> specifies the current lock status of the file• <code>readonly</code> specifies if the file is readonly• <code>modified</code> specifies if the file has been modified since the last save• <code>sb_index</code> specifies the index of the file in the sidebar• <code>txt</code> returns the pathname of the text widget associated with the <code>file_index</code>• <code>current</code> returns a boolean value of true if the file is the current one being edited• <code>vimmode</code> returns a boolean value of true if the editor is in “Vim mode” (i.e., any Vim mode that is not insert/edit mode).• <code>lang</code> returns the name of the syntax language associated with the given file. |

api::file::add_buffer

Adds a new tab to the editor which is a blank editing buffer (no file is associated with the contents of the editing buffer).

Call structure

`api::file::add_buffer name save_command ?options?`

Return value

Returns the pathname of the created ctext widget.

Parameters

| Parameter | Description |
|--------------|---|
| name | Title of editor tab. |
| save_command | Command to run when the user attempts to save the contents of the buffer. If the save command returns a value of 1, TKE will prompt the user for a filename and the contents will be saved to the specified file. From that point on, the editing buffer will transition to a normal file and the save command will no longer be invoked on future saves. If the save command returns a value of 1, the save_command will continue to be used for future saves. |

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| Parameter | Description |
|-----------|--|
| options | <p>Optional. The following options are available:</p> <ul style="list-style-type: none">• <code>-lock <i>boolean</i></code> Initial value of the lock setting of the buffer (the user does have permission to unlock the file).• <code>-readonly <i>boolean</i></code> Specifies if the buffer will be editable by the user.• <code>-gutters <i>gutter_list</i></code> Creates one or more gutters in the editor (one character wide vertical strip to the left of the line number gutter which allows additional information/functionality to be provided for each line in the editor). See the <code>gutter_list</code> description below for additional details about the structure of this option.• <code>-other <i>boolean</i></code> Specifies if the buffer should be added to pane that does not currently have the focus.• <code>-tags <i>tags</i></code> Specifies a list of text bindings that can only be associated with this tab.• <code>-lang <i>language</i></code> Specifies the initial syntax highlighting language to use for highlighting the buffer.• <code>-background <i>boolean</i></code> If true, causes the added buffer tab to be created but not made the current editing buffer; otherwise, if false, the tab will be made the current tab. |
| | |

api::file::add_file

Adds a new tab to the editor. If a filename is specified, the contents of the file are added to the editor. If no filename is specified, the new tab file will be blanked and named “Untitled”.

Call structure

```
api::file::add_file ?filename? ?options?
```

Return value

Returns the pathname of the created ctext widget.

Parameters

| Parameter | Description |
|-----------|--|
| filename | Optional. If specified, opens the given file in the added tab. |

| Parameter | Description |
|-----------|--|
| options | <p>Optional. The following options are available:</p> <ul style="list-style-type: none"> • <code>-savecommand <i>command</i></code> Specifies the name of a command to execute after the file is saved. • <code>-lock <i>boolean</i></code> If set to 0, the file will begin in the unlocked state (i.e., file is editable); otherwise, the file will begin in the locked state. • <code>-readonly <i>boolean</i></code> If set to 1, the file will be considered readonly (file will be indefinitely locked); otherwise, the file will be editable. • <code>-sidebar <i>boolean</i></code> If set to 1 (default), the file's directory contents will be included in the sidebar; otherwise, the file's directory components will not be added to the sidebar. • <code>-diff <i>boolean</i></code> If set to 0 (default), the file will be added as an editable file; however, if set to 1, the file will be inserted as a difference viewer, allowing the user to view file differences visually within the editor. • <code>-gutters <i>gutter_list</i></code> Creates one or more gutters in the editor (one character wide vertical strip to the left of the line number gutter which allows additional information/functionality to be provided for each line in the editor). See the <code>gutter_list</code> description below for additional details about the structure of this option. • <code>-other <i>boolean</i></code> If set to 0 (default), the file will be added to the current pane; however, if set to 1, the file will be added to the other pane (the other pane will be created if it currently does not exist). • <code>-tags <i>tags</i></code> Specifies a list of text bindings that can only be associated with this tab. • <code>-name <i>filename</i></code> If this option is specified when the filename is not specified, it will add a new tab to the editor whose name matches the given name. If the user saves the file, the contents will be saved to disk with the given file name. The given filename does not need to exist prior to calling this procedure. |

api::sidebar::get_selected_indices

Returns the index of the currently selected files/directories in the sidebar. This value is useful for future calls to the api::sidebar::get_info procedure.

Call structure

`api::sidebar::get_selected_indices`

Return value

A list of integer values specifying the indices of the currently selected files/directories in the sidebar. An empty list will be returned if no file/directory is currently selected.

Parameters

None.

api::sidebar::get_info

Returns information for the sidebar file/directory at the given index.

Call structure

```
api::sidebar::get_info sb_index attribute
```

Return value

Returns the value associated with the given index/attribute. If the specified index is not a valid index value for the sidebar, an empty string will be returned.

Parameters

| Parameter | Description |
|-----------|---|
| sb_index | Index of file/directory in the sidebar. Calling api::sidebar::get_current_index will provide the currently selected element in the sidebar. |
| attribute | <p>Specifies the type of information to obtain for the given index. The valid values are as follows:</p> <ul style="list-style-type: none">• fname Normalized filename• file_index The file index of the file. This value can be used in the api::file::get_info API call to get other information about the file. |

api::plugin::save_variable

Saves the value of the given variable name to non-corruptible memory so that it can be later retrieved when the plugin is reloaded.

Call structure

```
api::plugin::save_variable index name value
```

Return value

None.

Parameters

| Parameter | Description |
|-----------|---|
| index | Unique index provided by the plugin framework (passed to the writeplugin action command). |
| name | Name of a variable to save |
| value | Value of a variable to save |

api::plugin::load_variable

Retrieves the value of the named variable from non-corruptible memory (from a previous `save_variable` call).

Call structure

`api::plugin::load_variable index name`

Return value

Returns the saved value of the given variable. If the given variable name does not exist, an empty string will be returned.

Parameters

| Parameter | Description |
|-----------|---|
| index | Unique index provided by the plugin framework (passed to the <code>readplugin</code> action command). |
| name | Name of a variable to retrieve the value for. |

api::utils::open_file

Opens a file in the default external web browser.

Call structure

```
api::utils::open_file filename ?in_background?
```

Return value

Returns a boolean value of true if the file was successfully opened; otherwise, returns false.

Parameters

| Parameter | Description |
|---------------|--|
| filename | Name of file to display in an external web browser. |
| in_background | Optional. If set to a boolean value of true, keeps the focus within TKE (i.e., opening web browser in the background). If set to a bool value of false, changes the focus to the web browser window. |

api::get_default_foreground

Returns the color associated with the foreground color of a standard UI element (i.e., a button).

Call structure

```
api::get_default_foreground
```

Return value

Returns an RGB color value.

Parameters

None.

`api::get_default_background`

Returns the color associated with the background color of a standard UI element (i.e., a button).

Call structure

```
api::get_default_background
```

Return value

Returns an RGB color value.

Parameters

None.

api::color_to_rgb

Returns a list containing three values, the R, G and B integer values of the specified color.

Call structure

```
api::color_to_rgb color
```

Return value

Returns the R, G and B color values of the input color.

Parameters

Either an RGB color value (i.e., #RRGGBB or #RGB) or a valid color name as specified in the TK colors list.

`api::get_complementary_mono_color`

Assuming that the specified RGB color is a background color, determines whether a black or white foreground color would show up best.

Call structure

```
api::get_complementary_mono_color color
```

Return value

Returns a color value of either “white” or “black”.

Parameters

The value of *color* should be a valid RGB color.

`api::rgb_to_hsv`

Converts the given RGB color into an HSV value.

Call structure

```
api::rgb_to_hsv R G B
```

Return value

Returns a list containing the H, S and V values of the given RGB color.

Parameters

The *R*, *G* and *B* values must be a value between 0 and 255, inclusive.

`api::hsv_to_rgb`

Converts the given HSV color into an RGB value.

Call structure

| |
|---|
| <code>api::hsv_to_rgb <i>H S V</i></code> |
|---|

Return value

Returns a list containing the R, G and B values of the given HSV color.

Parameters

The *H*, *S* and *V* values must be an integer value.

`api::rgb_to_hsl`

Converts the given RGB color to an equivalent HSL color value.

Call structure

| |
|---|
| <code>api::rgb_to_hsl <i>R G B</i></code> |
|---|

Return value

Returns a list containing the H, S and L values of the given RGB color value.

Parameters

The *R*, *G* and *B* colors must be an integer value between 0 and 255, inclusive.

`api::hsl_to_rgb`

Converts the given HSL color to an equivalent RGB color value.

Call structure

| |
|---|
| <code>api::hsl_to_rgb <i>H S L</i></code> |
|---|

Return value

Returns a list containing the R, G and B values of the given HSL color value.

Parameters

The *H*, *S* and *L* color values must be integer values.

api::get_color_values

Returns a number of different versions of the given RGB color value.

Call structure

```
api::get_color_values color
```

Return value

Returns a list of five elements described as follows:

1. The V value from the HSV value.
2. The R value from the RGB value.
3. The G value from the RGB value.
4. The B value from the RGB value.
5. The RGB value expressed as #RRGGBB form.

Parameters

The *color* can be any legal RGB value accepted by TK.

api::auto_adjust_color

Automatically adjusts the given RGB color by a value equal to *diff* such that if the color is a darker color, the value will be lightened or if a color is a lighter color, the value will be darkened.

Call structure

```
api::auto_adjust_color color diff ?mode?
```

Return value

Returns an RGB color value in the #RRGGBB format.

Parameters

The *color* value is any legal RGB color value. The *diff* value is an integer value that describes the value difference to create from the *color* value. The *mode* value can be either “auto” (default) or “manual”. The auto mode will automatically discern the darkness of the *color* value and lighten or darken the color by the given value of *diff*. The manual mode will change the color value by the amount specified by *diff* (a negative value will darken the value while a positive value will lighten the value).

api::auto_mix_colors

Adjusts the hue of the given RGB color by the value of the specified difference.

Call structure

```
api::auto_mix_colors color type diff
```

Return value

Returns an RGB color value in the #RRGGBB format.

Parameters

The *color* value is any legal TK RGB color. The value of *type* can be either “r”, “g” or “b” which will adjust the RGB color value by the given *diff* amount.

api::color_difference

Returns the RGB color value which is exactly between two specified RGB colors.

Call structure

| |
|--|
| <pre>api::color_difference <i>color1</i> <i>color2</i></pre> |
|--|

Return value

Returns an RGB color value in the #RRGGBB format.

Parameters

Both *color1* and *color2* must be valid RGB TK values.

Appendix C. Ctext Widget

The Ctext widget that is supplied with TKE is a custom version that is originally based on the original 4.0 version of ctext. Due to the significant number of changes to the usage API, it makes sense to document the widget in this document for purposes of plugin development.

The Ctext widget is essentially a wrapper around the Tk text widget. All text widget commands and options are valid for the Ctext widget. The documentation for these options and commands are not provided in this document (read the Tk text documentation for more details). Instead, all Ctext-specific options and commands will be documented in this appendix. Any deviations of Tk text options, commands and bindings will also be documented in this appendix.

Differences from the original Ctext widget

Like the original Ctext widget, the main purpose of the new Ctext widget is to allow text to be edited such that syntax highlighting is actively performed while the user enters information in the editor. It also provides line numbering support.

In addition to these functions, the new Ctext widget provides several new functions:

- Gutter support
 - In addition to line numbers, the Ctext widget provides a set of APIs to add additional programmable gutter information such that each line can be tagged with a symbol and/or colors in the gutter area to convey additional information about the line. Each symbol displayed can receive on_leave, on_enter and on_click events and execute a command when the user causes any of the events to occur.
 - Each gutter operates independently of other gutters in the same Ctext widget.
 - Gutter tagging stays on the assigned line even if the line changes to a new location due to text being inserted or deleted from the Ctext widget.
- Difference mode
 - Displays a new version of the gutter which shows two sets of line numbers per line.
 - Enables the 'diff' command API (more on this command in the command section of this appendix) to allow the developer to mark lines as changed which are displayed visually to the user.
 - Change lines can respond to developer supplied on_enter, on_leave, and on_click events.
- Enhanced syntax highlighting capabilities
 - Though the original Ctext widget provides several syntax highlighting API procedures, languages like HTML, XML and Markdown require more complex syntax highlighting requirements which require more than a single regular expression to properly support.

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- The new Ctext widget provides the ability to handle more complex syntax by specifying a callback procedure that is called when a certain kind of syntax is detected via a regular expression.
 - The return value from the callback procedure can cause the syntax parser current index to be set to a value less than or greater than the index returned from the original regular expression check.
 - In addition to highlighting text, the new Ctext widget can allow text to be clickable, underlined, italicized, emboldened, overstricken, superscripted, subscripted, and sized to six different sizes. If the gutter is displayed, any line height changes are automatically reflected in the gutter such that all line numbers and symbols in the gutter correlate to the lines in the editing area.
- Customized undo/redo support
 - Due to limitations in the Tk text widget support for the undo/redo buffer, the Ctext widget provides its own undo/redo function that provides an enhanced API for querying information about the undo/redo stack, provides support for cursor memory and re-positioning, and provides all of this while remaining extremely efficient in terms of memory and performance.
- Enhanced <<Modified>> event support
 - The %d variable contains a list of information about what caused the widget to go modified, including:
 - operation: 'insert' or 'delete' (replace operations cause two modify events, one for the delete and one for the insert)
 - starting cursor position
 - number of characters inserted or deleted
 - number of lines inserted or deleted
 - an optional, user-specified list of information such that any insert, delete and replace commands can pass specialized information to the callback procedure handling the modified event.
 - Note: Because TKE specifies the modify callback procedure, this is not a feature that is useful for TKE development but rather for any other project that wishes to use the version of Ctext provided with TKE.
- Optimized
 - The new Ctext widget syntax highlighter and linemap code has been modified to optimize performance while editing to make the widget feel snappier and more usable.
 - Many improvements have been also made to improve the correctness of highlighting and bracket matching.
 - Includes support for the replace command such that undo/redo will behave as expected as well as provides the proper syntax highlighting support.
- New version number
 - The new Ctext widget provided with TKE is set to version 5.0. The original version set its version number to 4.0. This allows development environments to use both widgets, if

necessary (although 5.0 is a superset of 4.0 such that 4.0 should no longer be necessary to use).

Options

The following options are available in the Ctext widget.

| Option | Default Value | Description |
|-----------------------|--------------------------------------|--|
| -highlightcolor | yellow | Specifies the color that will be drawn around the outside of the editor window when the window has keyboard input focus. |
| -unhighlightcolor | None | Specifies the color that will be drawn around the outside of the editor window when the window does not have keyboard input focus. |
| -linemap | TRUE | If true displays the line number information in the gutter; otherwise, hides the line number information. |
| -linemapfg | Same as the value of the -fg option. | Specifies the color of the foreground in the line information in the gutter. |
| -linemapbg | Same as the value of the -bg option. | Specifies the color of the background in the line information in the gutter. |
| -linemap_mark_command | None | Specifies a command to execute when the user creates a marker in the gutter area. The command has the following information appended to this command: <ul style="list-style-type: none"> • pathname of the ctext widget • a value of "marked" (if a marker was added to the gutter) or "unmarked" (if a marker was deleted from the gutter) • the tag name of the marker created. |
| -linemap_markable | TRUE | If true, specifies that the linemap can be clicked on to create and remove markers. If -linemap is false when this option is true, the line numbers will not be displayed, but a one character area will be visible allowing the user to click on a line to create a visible marker. |
| -linemap_select_fg | black | Specifies the foreground color of line numbers when they are marked with a marker. |

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| Option | Default Value | Description |
|--------------------|---------------------------------------|---|
| -linemap_select_bg | yellow | Specifies the background color of line numbers when they are marked with a marker. |
| -linemap_cursor | left_ptr | Specifies the name of a Tk cursor to display when the mouse cursor is within the linemap gutter area. |
| -linemap_relief | Same value as the -relief text option | Specifies the relief to use when displaying the linemap area. |
| -linemap_minwidth | 1 | Specifies the minimum number of characters to show for line numbers. If the number of characters required to display the last line number of the current file exceeds this value, that value is used instead. |
| -linemap_type | absolute | Specifies if line numbering should use absolute line numbering (i.e., the first line of the file is numbered 1 and subsequent line numbers increment from there) or relative line numbering (i.e., the line containing the insertion cursor is numbered 0 with lines above incrementing by 1 from 0 and lines below the current line incrementing by 1). Legal values are: absolute or relative |
| -warnwidth | None | If set to a positive number, sets the width warning line just after the specified text column. If set to the empty string, the warning line will be removed from the display. |
| -warnwidth_bg | red | Specifies the color of the width warning line (if it is displayed). |
| -casesensitive | 1 | Specifies the case-sensitivity of the syntax highlight parser. |
| -maxundo | 0 | Specifies the maximum number of undo operations stored in memory. If this value is set to 0, unlimited undo is supported (if the Tk text -undo option is set to a value of true). |

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| Option | Default Value | Description |
|------------|---------------|--|
| -diff_mode | 0 | If set to true, runs the Ctext editor in diff mode. In this mode, the gutter displays two sets of line numbers (one for each file in the diff). This option also enables the diff commands (documented in the Commands section of this appendix). If set to false, runs the editor in normal editing mode. Note that diff mode still allows syntax highlighting to occur. Additionally, if we are running in diff mode, the line number gutter will always be displayed regardless of the value of -linemap. |
| -diffsubbg | pink | Specifies the background color of difference lines from the first file (i.e., lines that are not a part of the second file). |
| -diffaddbg | {light green} | Specifies the background color of difference lines from the second file (i.e., lines that are not a part of the first file). |

Command API

Like the widget options, only those commands which differ from the standard Tk text widget will be included in this Appendix.

delete

The delete command works almost exactly the same as the standard text delete command with one exception, it can accept an optional “-moddata” option. The moddata option allows the user to pass user-specific information to the callback procedure that handles the <<Modified>> virtual event.

In TKE, there is only one value that is used for -moddata, the value of “ignore”. Adding the “-moddata ignore” option will cause the deletion to not change the modified state of the text widget. This allows plugin code to delete data from the buffer without making it look like the user modified the contents of the buffer.

Call Structure

```
pathname delete ?-moddata value? index1 ?index2?
```

Return Value

None.

diff reset

This command must be called prior to calling any of the other diff-related commands. If the difference information needs to be changed (i.e., one of the files in the difference is changed), this command must be called to remove all embedded difference information and reset the widget.

Call structure

```
pathname diff reset
```

Return value

None.

Parameters

None.

Example

```
proc apply_diff {txt} {  
    # Reset the widget for difference display  
    $txt diff reset  
  
    # Show that the second file had two lines added, starting  
    # at line 5  
    $txt diff add 5 2  
  
}
```

diff ranges

Returns a list of text indices that specify the start and end ranges of text marked as different in the Ctext widget. The differences from the first file (sub), second file (add) or both can be returned. All indices are returned in index order.

Call Structure

```
pathname diff ranges type
```

Return Value

A Tcl list containing an even number of text indices specifying the start and end of each difference range.

Parameters

| Parameter | Description |
|-----------|--|
| type | One of three values: <ul style="list-style-type: none">• sub<ul style="list-style-type: none">- Returns the ranges of all differences in the first file.• add<ul style="list-style-type: none">- Returns the ranges of all differences in the second file.• both<ul style="list-style-type: none">- Returns the ranges of all differences in both files. |

diff sub

Adds a difference change for the first file (as it would be displayed in unified diff format). Before any calls can be made to this command, the diff reset command must be called.

When the editor operates in diff mode, it is important the the second file in the diff is displayed in the Ctext widget in its entirety. The 'diff sub' command contains an extra parameter when called which contains the text that exists in the first file but not in the second file. This text is inserted into the widget at the given line number and line numbers in the gutter are adjusted accordingly. All inserted text will be highlighted in the background color specified by the -diffsubbg option.

Call Structure

```
pathname diff sub startline linecount text
```

Return value

None.

Parameters

| Parameter | Description |
|-----------|--|
| startline | Starting line containing file difference information. |
| linecount | Specifies the number of lines that will be inserted into the widget. |
| text | String containing text that exists in the first file but not in the second file. If a unified diff file is parsed, this string would be all contiguous lines prefixed by a single '-' character in the output. |

diff add

Like its other diff command 'diff sub', the 'diff add' command marks lines in the text widget as being different from the first file. All lines marked with this command are highlighted using the background color specified by the -diffaddbg option. After this command has been called, the line numbers in the linemap area will be automatically changed to match the difference information.

Call Structure

```
pathname diff add startline linecount
```

Return Value

None.

Parameters

| Parameter | Description |
|-----------|--|
| startline | Starting line containing file difference information. |
| linecount | Specifies the number of lines that will be inserted into the widget. |

fastdelete

This command performs a standard deletion without repairing any syntax highlighting due to removing the text.

Call Structure

pathname fastdelete ?options? startpos endpos

Return Value

None.

Parameters

| Parameter | Description |
|-----------|---|
| options | <ul style="list-style-type: none">• -moddata <i>data</i> Value that will be passed to any <<Modified>> callback procedures via the %d bind variable.• -update <i>bool</i> If set to 1 will cause the <<Modified>> and <<CursorChanged>> events to be triggered; otherwise, these events will not be generated. |
| startpos | Starting text position of character range to delete. |
| endpos | Ending test position of character range to delete. |

fastinsert

This command performs a standard insertion without performing any syntax highlighting on the inserted text.

Call Structure

pathname fastinsert ?options? startpos text

Return Value

None.

Parameters

| Parameter | Description |
|-----------|---|
| options | <ul style="list-style-type: none">• -moddata <i>data</i> Value that will be passed to any <<Modified>> callback procedures via the %d bind variable.• -update <i>bool</i> If set to 1 will cause the <<Modified>> and <<CursorChanged>> events to be triggered; otherwise, these events will not be generated. |
| startpos | Starting text position to begin inserting the given text. |
| text | Text to insert. |

fastreplace

This command performs a standard text replacement without performing any syntax highlighting on the inserted text.

Call Structure

```
pathname fastreplace ?options? startpos endpos text
```

Return Value

None.

Parameters

| Parameter | Description |
|-----------|---|
| options | <ul style="list-style-type: none">• -moddata <i>data</i> Value that will be passed to any <<Modified>> callback procedures via the %d bind variable.• -update <i>bool</i> If set to 1 will cause the <<Modified>> and <<CursorChanged>> events to be triggered; otherwise, these events will not be generated. |
| startpos | Starting position of text range to delete and starting position to insert text. |
| endpos | Ending position of text range to delete. |
| text | Text to insert in replacement of the deleted text. |

highlight

Causes all text between the specified line positions to be re-evaluated for syntax highlighting. This is most often used after a number of fastdelete or fastinsert commands are called. This eliminates a lot of syntax highlighting calls which can improve the performance of the widget in certain situations.

Call Structure

```
pathname highlight ?options? startpos endpos
```

Return Value

None.

Parameters

| Parameter | Description |
|-----------|--|
| options | <ul style="list-style-type: none">• moddata <i>data</i> Value that will be passed to any <<Modified>> callback procedures via the %d bind variable.• insert <i>bool</i> Set to a value of 1 if the highlight is being performed after inserting text; otherwise, set it to a value of 0.• dotags <i>list</i> Set to any string value to force comment/string parsing to be performed during the highlight process. |
| startpos | Character position index to begin highlighting. The starting character position will be the beginning of the line of this character. |
| endpos | Character position index to end highlighting. The ending character position will be the end of the line containing this character. |

insert

The insert command works almost exactly the same as the standard text insert command with one exception, it can accept an optional “-moddata” option. The moddata option allows the user to pass user-specific information to the callback procedure that handles the <<Modified>> virtual event.

In TKE, there is only one value that is used for -moddata, the value of “ignore”. Adding the “-moddata ignore” option will cause the insertion to not change the modified state of the text widget. This allows plugin code to initially insert data into the buffer without making it look like the user modified the contents of the buffer.

Call Structure

```
pathname insert ?-moddata value? index chars ?taglist chars  
taglist ...?
```

Return Value

None.

inBlockComment

The `inBlockComment` command returns a value of true if the specified index exists within a block comment. It can also return the range of the comment in the given text widget.

Call Structure

`cwidget::inBlockComment pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a block comment; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the block comment that surrounds the given index. This value will only be valid when the procedure returns a value of true.

inComment

The `inComment` command returns a value of true if the specified index exists within a line or block comment. It can also return the range of the comment in the given text widget.

Call Structure

`cwidget::inComment pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a block or line comment; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the comment that surrounds the given index. This value will only be valid when the procedure returns a value of true.

inCommentString

The `inCommentString` command returns a value of true if the specified index exists within a comment or a string. It can also return the range of the comment/string in the given text widget.

Call Structure

`cwidget::inCommentString pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a comment or string; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the comment/string that surrounds the given index. This value will only be valid when the procedure returns a value of true.

inDoubleQuote

The `inDoubleQuote` command returns a value of true if the specified index exists within a double-quoted string. It can also return the range of the string in the given text widget.

Call Structure

`cwidget::inDoubleQuote pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a double-quoted string; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the string that surrounds the given index. This value will only be valid when the procedure returns a value of true.

inLineComment

The `inLineComment` command returns a value of true if the specified index exists within a line comment. It can also return the range of the comment in the given text widget.

Call Structure

`cwidget::inLineComment pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a line comment; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the comment that surrounds the given index. This value will only be valid when the procedure returns a value of true.

inSingleQuote

The `inSingleQuote` command returns a value of true if the specified index exists within a line comment. It can also return the range of the comment in the given text widget.

Call Structure

`cwidget::inSingleQuote pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a single-quoted string; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the quote that surrounds the given index. This value will only be valid when the procedure returns a value of true.

inString

The `inString` command returns a value of true if the specified index exists within a single-, double- or triple-quoted string. It can also return the range of the string in the given text widget.

Call Structure

`cwidget::inString pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a string; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the string that surrounds the given index. This value will only be valid when the procedure returns a value of true.

inTripleQuote

The `inTripleQuote` command returns a value of true if the specified index exists within a triple-quoted string. It can also return the range of the string in the given text widget.

Call Structure

`cwidget::inTripleQuote pathname index ?rangeref?`

Return Value

Returns a value of true if the specified index exists within a triple-quoted string; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check. The *rangeref* parameter, if specified, will be populated with a list containing the starting and ending position of the string that surrounds the given index. This value will only be valid when the procedure returns a value of true.

isEscaped

The `isEscaped` command returns a value of true if the specified character has an odd number of subsequent escape (`\`) characters preceding it on the same line. This procedure has been optimized for speed so it is recommended to use this if this information needs to be retrieved.

Call Structure

| |
|---|
| <code>cwidget::isEscaped <i>pathname index</i></code> |
|---|

Return Value

Returns a value of true if the character at the given index is immediately preceded by an odd number of escape (`\`) characters; otherwise, returns a value of false.

Parameters

The *pathname* references the ctext widget to check. The *index* value refers to the ctext index to check.

edit undoable

Returns a boolean value of true if the undo stack contains at least one set of changes. Returns a boolean value of false if the undo stack is empty.

Call Structure

| |
|-------------------------------|
| <i>pathname</i> edit undoable |
|-------------------------------|

Return Value

Returns false if the undo stack is empty; otherwise, returns true.

Parameters

None.

edit redoable

Returns a boolean value of true if the redo stack contains at least one set of changes. Returns a boolean value of false if the redo stack is empty.

Call Structure

| |
|-------------------------------|
| <i>pathname</i> edit redoable |
|-------------------------------|

Return Value

Returns false if the redo stack is empty; otherwise, returns true.

Parameters

None.

edit cursorhist

Returns a list of cursor indices from the undo stack such that the first index corresponds to the oldest cursor in the stack while the newest cursor position is at the end of the list.

Call Structure

| |
|--|
| <pre><i>pathname</i> edit cursorhist</pre> |
|--|

Return Value

Returns a list of indices containing the history of stored cursor positions from oldest to newest. If the undo stack is empty, an empty list will be returned.

Parameters

None.

gutter create

A gutter is a single character column drawn in the linemap area of the widget. All gutters are added to the right of the line number column (if displayed). Each row in the gutter will correspond to the associated line in the editing area. Each gutter row can display a background color and/or a symbol (i.e., unicode character). If the user moves the mouse over a gutter row an `on_enter` or `on_leave` event can be bound to handle the event. Additionally, if the user left clicks on a gutter row, an `on_click` event can be bound to handle the event.

The 'gutter create' command must be called prior to calling any other gutter commands. Each gutter is given a developer-provided *name*. This name is used in all of the other gutter commands to refer to which gutter to operate on.

This command adds the gutter to the gutter area and, optionally, configures its setup/behavior.

Call Structure

```
pathname gutter create name ?symbol_name symbol_opt_list ...?
```

Return Value

None.

Parameters

| Parameter | Description |
|-----------------|---|
| name | Developer-supplied name of the gutter to create. All other gutter commands require this name. |
| symbol_name | Name of a symbol that will exist in the gutter |
| symbol_opt_list | List containing an even number of option/value pairs that will be associated with the symbol called <i>symbol_name</i> . The possible values contained in this list are represented in the Gutter Symbol Options table. |

Gutter Symbol Options

The following options are used in the 'gutter create', 'gutter cget' and 'gutter configure' commands.

| Option | Value(s) | Description |
|---------|-------------------|---|
| -symbol | Unicode character | Specifies the character to draw in all gutter rows associated with the given symbol name. |

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| Option | Value(s) | Description |
|-----------------|----------|---|
| -bg | color | Specifies background color to use for all rows tagged with the associated symbol name. |
| -fg | color | Specifies foreground color to use for all rows tagged with the associated symbol name. |
| -onenter | command | Command to execute whenever the user mouse cursor enters a row represented by the associated symbol name. The pathname of the widget is appended to the command when executed. |
| -onleave | command | Command to execute whenever the user mouse cursor leaves a row represented by the associated symbol name. The pathname of the widget is appended to the command when executed. |
| -onclick | command | Command to execute whenever the user left clicks on a row represented by the associated symbol name. The pathname of the widget and the line number of the clicked symbol is appended to the command when executed. |
| -onshiftclick | command | Command to execute whenever the user holds the Shift key while left clicking on a row represented by the associated symbol name. The pathname of the widget and the line number of the clicked symbol is appended to the command when executed. |
| -oncontrolclick | command | Command to execute whenever the user holds the Control key while left clicking on a row represented by the associated symbol name. The pathname of the widget and the line number of the clicked symbol is appended to the command when executed. |

gutter destroy

Removes a previously created gutter from the gutter and destroys all memory associated with the gutter. If the specified gutter name does not refer to a created gutter, nothing is done.

Call Structure

pathname gutter destroy name

Return Value

None.

Parameters

| Parameter | Description |
|-----------|----------------------------|
| name | Name of gutter to destroy. |

gutter set

Tags one or more rows in the gutter with one or more gutter symbols. If a gutter row in one of the lists already is tagged with a different symbol, that symbol is replaced with the new symbol.

Call Structure

```
pathname gutter set name ?symbol_name rows ...?
```

Return Value

None.

Parameters

| Parameter | Description |
|-------------|--|
| name | Name of gutter to modify. |
| symbol_name | Name of symbol to associate the given list of rows with. The value of symbol_name must be created prior to the 'gutter set' call in either the 'gutter create' or 'gutter configure' commands. |
| rows | A list containing one or more integer values ranging from 1 to the maximum number of lines in the widget. |

gutter delete

Removes one or more symbol names from the gutter.

Call Back

```
pathname gutter delete name symbol_name_list
```

Return Value

None.

Parameters

| Parameter | Description |
|------------------|---|
| name | Name of gutter to modify. |
| symbol_name_list | List of symbol names to delete from the specified gutter. |

gutter get

Returns a list of information about the specified gutter, depending on the call structure. In the first call structure where only the name of the gutter is specified, the command returns a list of all symbol names stored in the gutter. If both the name of the gutter and the name of a symbol is specified, returns a list of rows that are tagged with the given symbol.

Call Structure

```
pathname gutter get name  
pathname gutter get name symbol_name
```

Return Value

Returns a list of symbol names in the first case.

Returns a list of rows tagged with the given symbol in the second case.

Parameters

| Parameter | Description |
|-------------|---------------------------------|
| name | Name of gutter to query. |
| symbol_name | Name of gutter symbol to query. |

gutter clear

Clears all rows in the specified row range of all tagged symbols.

Call Structure

```
pathname gutter clear name first ?last?
```

Return Value

None.

Parameters

| Parameter | Description |
|-----------|--|
| name | Name of gutter to modify. |
| first | First row in range to clear |
| last | Last row in range to clear (inclusive). If last is not specified, only the row specified with first is affected. |

gutter cget

Retrieves the gutter option value associated with the given gutter value.

Call Structure

pathname gutter cget name symbol_name option

Return Value

Returns the value associated with the given gutter name / symbol name / gutter option.

Parameters

| Parameter | Description |
|-------------|--|
| name | Name of gutter to query. |
| symbol_name | Name of gutter symbol name to query. |
| option | Name of gutter option to query the value of. |

gutter configure

Either allows gutter options to be set to different values or retrieves a list of all option/value pairs associated with the given gutter/symbol name.

Call Structure

```
pathname gutter configure name symbol_name ?option? ?value option  
value ...?
```

Return Value

If the first call is made, returns a list of all symbol names and associated gutter symbol options assigned to the given gutter.

Parameters

| Parameter | Description |
|-------------|--|
| name | Name of gutter to modify/query. |
| symbol_name | Name of gutter symbol to modify/query. |
| option | Name of gutter symbol option to modify. |
| value | Value to assign to the associated symbol option. |

gutter names

Returns a list of names for all of the stored gutters.

Call Structure

| |
|------------------------------|
| <i>pathname</i> gutter names |
|------------------------------|

Return Value

Returns a list of stored gutter names.

Parameters

None.

replace

The replace command works almost exactly the same as the standard text replace command with one exception, it can accept an optional “-moddata” option. The moddata option allows the user to pass user-specific information to the callback procedure that handles the <<Modified>> virtual event.

In TKE, there is only one value that is used for -moddata, the value of “ignore”. Adding the “-moddata ignore” option will cause the replacement to not change the modified state of the text widget. This allows plugin code to modify data in the buffer without making it look like the user modified the contents of the buffer.

Call Structure

```
pathname replace ?-moddata value? index1 index2 chars ?taglist  
chars taglist ...?
```

Return Value

None.

Appendix D. Packages

The following is a list of available packages to the plugin code that is already included in TKE.

Tclx

Documentation for the tclx package can be found at <http://www.tcl.tk/man/tclx8.2/TclX.n.html>

Tablelist

Documentation for the tablelist package can be found at <http://www.nemethi.de/tablelist/index.html>. TKE currently uses version 5.14.

tooltip

Documentation for the tooltip package can be found at <http://docs.activestate.com/activeperl/8.5/tklib/tooltip/tooltip.html>

msgcat

Documentation for the msgcat package can be found at <http://www.tcl.tk/man/tcl8.5/TclCmd/msgcat.htm>

tokenentry

Documentation for the tokenentry package can be found at <http://ptwidgets.sourceforge.net/page3/files/tokenentry.html>

tabbar

Documentation for the tabbar package can be found at <http://ptwidgets.sourceforge.net/page3/files/tabbar.html>

fontchooser

The fontchooser packet provides a UI for selecting a font. If the window is canceled, an empty string is returned; otherwise, the font value of the selected font is returned. The returned font will be in the option/value Tcl font form. This package provides a single user command:

```
fontchooser ?option value ...?
```

The available options are specified as follows:

| Option | Description |
|----------------------------------|---|
| -parent <i>window</i> | Makes <i>window</i> the logical parent of the fontchooser dialog. The file dialog is displayed on top of its parent window. |
| -initialfont <i>font</i> | Specifies the initial font to display in the window. The value of <i>font</i> can be any legal Tcl font description. |
| -title <i>titleString</i> | Specifies a string to display as the title of the dialog box. If this option is not specified, no title is displayed. |