CopyQ Documentation

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The Basics

CopyQ is clipboard manager – a desktop application which stores content of the system clipboard whenever it changes and allows to search the history and copy it back to the system clipboard or paste it directly to other applications.

This documentation describes some basic concepts and workflows as well as more advanced topics like scripting and application development process.

CHAPTER 1

Installation

Packages and installation files are available at Releases page. Alternatively you can install the app with one of the following methods.

On **Windows** you can install Chocolatey package.

On **OS X** you can use Homebrew to install the app.

```
brew cask install copyq
```

On Debian unstable, **Debian 10+**, **Ubuntu 18.04+** and later derivatives can install stable version from official repositories:

```
sudo apt install copyq
# copyq-plugins and copyq-doc is splitted out and can be installed independently
```

On **Ubuntu** set up the official PPA repository and install the app from terminal.

```
sudo apt install software-properties-common python-software-properties
sudo add-apt-repository ppa:hluk/copyq
sudo apt update
sudo apt install copyq
```

On **Fedora**, install "copyq" package.

```
sudo dnf install copyq
```

On other Linux distributions, you can use Flapak to install the app.

```
# Install from Flathub.
flatpak install --user --from https://flathub.org/repo/appstream/com.github.hluk.
↪copyq.flatpakref

# Run the app.
flatpak run com.github.hluk.copyq
```

CHAPTER 2

Basic Usage

This page describes the basic functionality of CopyQ clipboard manager.

2.1 First Start

To start CopyQ, double-click the program icon or run command `copyq`. This starts the graphical interface which can be accessed from the tray. Click the tray icon to show application window or right-click the tray icon and select "Show/Hide" or run `copyq show` command.

The central element in the application window is **list with clipboard history**. By default the application **stores any new clipboard content** in the list.

If you copy some text it will immediately show at the top of the list. Try copying text or images from various application to see how this works.

See also:

How to disable storing clipboard?

2.2 Basic Item Manipulation

You can **edit selected text items** in the list by pressing `F2`. After editing **save the text** with `F2`.

Create **new item** with `Ctrl+N`, type some text and press `F2`.

Copy the selected items back to clipboard with Enter or `Ctrl+C`.

Move items around with `Ctrl+Down` and `Ctrl+Up`.

You can move important or special items to new tabs (see *Tabs* for more info).

2.3 Search

In the list you can simply **search for text by typing some text**.

For example typing "Example" will hide items that don't contain "Example" text. Press Enter to copy the first found item.

2.4 Tray

To quickly copy item to clipboard you can select the item from tray menu. To display the menu either right-click on tray icon, run command `copyq menu` or use a custom system shortcut.

After selecting an item in tray menu and pressing enter (pressing a number key works as well) the item is copied to the clipboard.

See also:

How to open application window or tray menu using shortcut?

How to paste double-clicked item from application window?

CHAPTER 3

Tabs and Items

3.1 Tabs

Tabs are means to organize texts, images and other data.

Initially there is only one tab which is used for storing clipboard and the tab bar is hidden.

User can create new tabs from "Tabs" menu or using `Ctrl+T`. The tab bar will appear if there is more than one tab. Using mouse, user can reorder tabs and drop items and other data into tabs.

If tab name contains `&`, the following letter is used for quick access to the tab (the letter is underlined in tab bar or tab tree and `&` is hidden). For example, tab named "&Clipboard" can be opened using `Alt+C` shortcut.

Option "Tab Tree" enables user to organize tabs into groups. Tabs with names "Job/Tasks/1" and "Job/Tasks/2" will create following structure in tab tree.

```
> Job
    > Tasks
        > 1
        > 2
```

3.2 Storing Clipboard

If "Store Clipboard" option is enabled (under "General" tab in config dialog) and "Tab for storing clipboard" is set (under "History" tab in config dialog), every time user copies something to clipboard a new item will be created in that particular tab. The item will contain only text and data that are needed by plugins (e.g. plugin "Images" requires `image/svg`, `image/png` or similar).

3.3 Organizing Items

Any data or item can be moved or copied to other tab by dragging it using mouse or by pasting it in item list.

Commands can automatically organize items into tabs. For example, following command will put copied images to "Images" tab (to use the command, copy it to the command list in configuration).

```
[Command]
Name=Move Images to Other Tab
Input=image/png
Automatic=true
Remove=true
Icon=\xf03e
Tab=&Images
```

CHAPTER 4

Keyboard

This page lists useful default shortcuts and key mappings for CopyQ and describes how to change them.

CopyQ is keyboard-friendly, i.e. it should be possible to quickly access any functionality with keyboard without using mouse.

4.1 Default Shortcuts

Note: On OS X, use key instead of Ctrl for the shortcuts.

- PgDown/PgUp, Home/End, Up/Down - item list navigation
- Left, Right, Ctrl+Tab, Ctrl+Shift+Tab - tab navigation
- Ctrl+T, Ctrl+W - create and remove tabs
- Ctrl+Up, Ctrl+Down - move selected items
- Esc - cancel search, hide window
- Ctrl+Q - exit
- F2 - edit selected items
- Ctrl+E - edit items in an external editor
- F5 - open action dialog for selected items
- Delete - delete selected items
- Ctrl+A - select all
- Enter - put current item into clipboard and paste item (optional)
- Ctrl+1…Ctrl+9 - focus a tab in given order
- Ctrl+0 - focus last tab

4.2 Search

Start typing a text to search items. This works in main application window and `copyq menu`.

4.3 Change Shortcuts

To change the shortcuts:

- open “File - Preferences”,
- select “Shortcuts” tab,
- click the button next to action you need to change,
- press a shortcut on keyboard,
- click OK to save the dialog.

4.4 Create new Shortcut

If and action with shortcut is missing in the Shortcuts configuration tab, you can use predefined ones:

- open “File - Commands/Global Shortcuts…”,
- click “Add” button,
- select command (e.g. “Show/hide main window”),
- press a shortcut on keyboard,
- click OK to save the dialog.

CHAPTER 5

Images

This page describes how to display and work with images in CopyQ.

5.1 Display Image Items

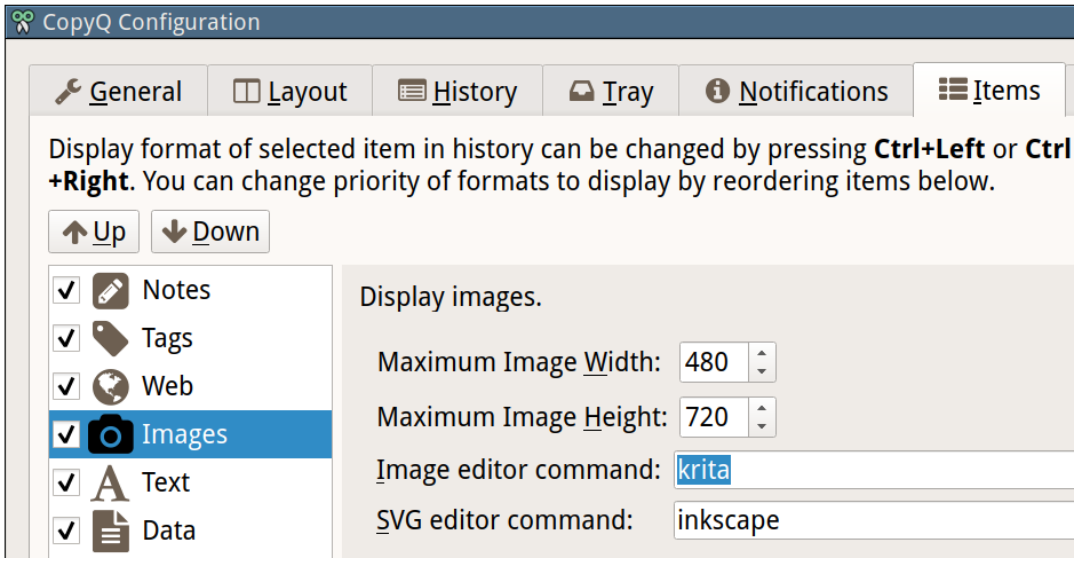
Displaying images can be configured in “Items” configuration tab.

On Windows, “Item Image” plugin needs to be installed.

To disable storing and displaying image, disable the Image plugin (uncheck the checkbox next to “Image” in configuration).

5.2 Editor

Editors for bitmap and SVG images can be set in the configuration.



Editing an image item (default shortcut is Ctrl+E) should open the image editor.

Unfortunately, sometimes an item looks like an image but is an HTML. You can list available formats in Content dialog F4.

5.3 Preview Image

It's useful to limit size of image item to a maximum width and height in the configuration.

You can still display the whole image in Preview dock (F7) or using Content dialog (F4).

5.4 Take Screenshots

You can use built-in functionality for taking screenshots of whole or part of the desktop.

Paste taken screenshots to CopyQ to store them for later use.

5.5 Save Image to a File

To save an image to a file, either copy it or drag'n'drop it to a file manager (if supported) or save it using command line.

```
copyq read image/png 0 > image.png
```

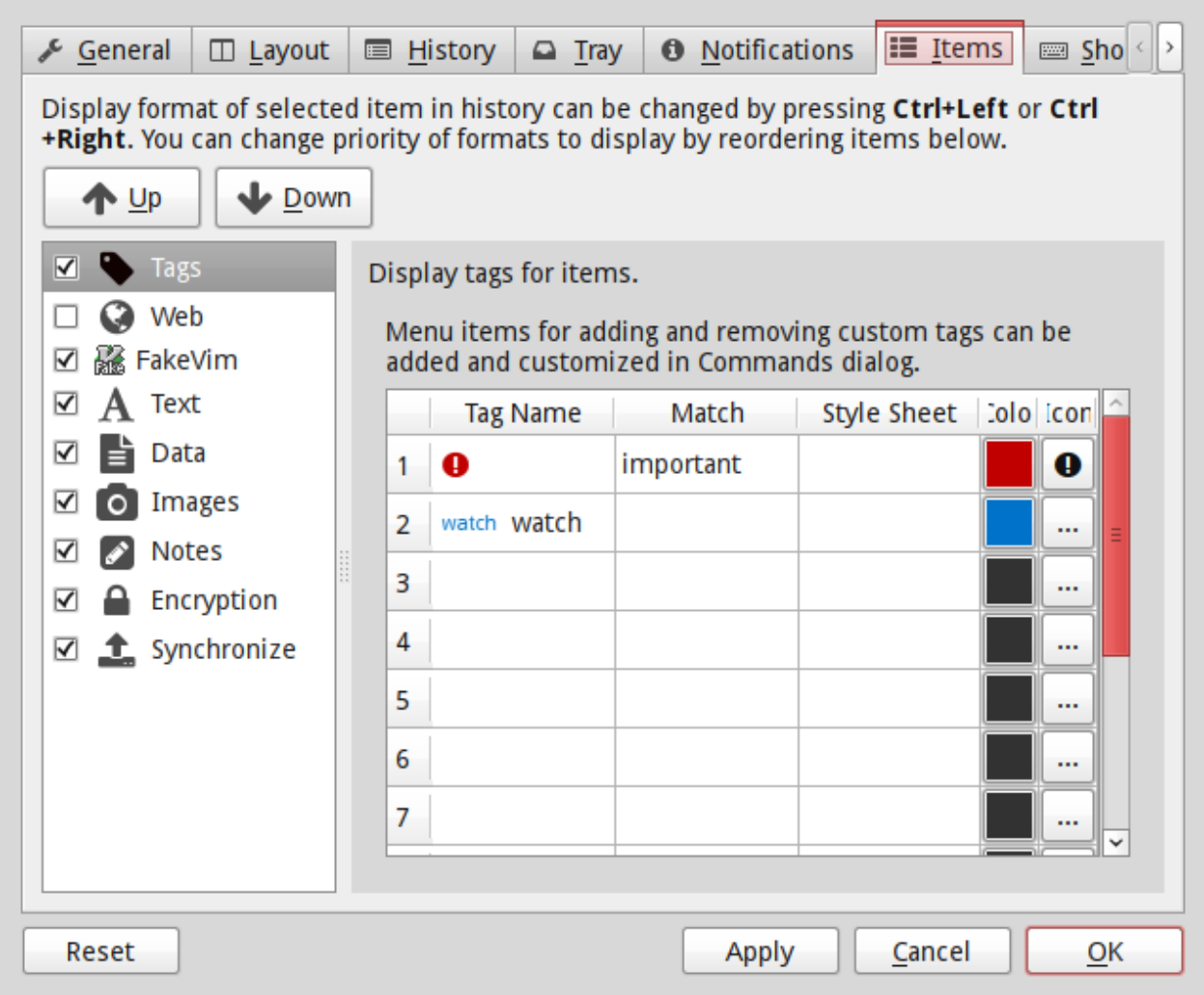
Alternatively use "Save Item/Clipboard To a File" command.

CHAPTER 6

Tags

Tags are small icons or short texts in upper right corner of an item used to mark important or special items.

Tags can be configured in “Items” configuration tab. On Windows, “Item Tags” plugin needs to be installed.



Configuration consists solely of table where each row contains matching and styling rules for tags.

Style from the first row which matches tag text is applied on the tag.

Column in the table are following.

- "Tag Name"

Text for the tag. This is used for matching if "Match" column is empty. Expressions like `\1`, `\2` etc. will be replaced with captured texts from "Match" column.

- "Match"

Regular expression for matching the tags.

E.g. `.*` (any tag), `Important:  .*` (match prefix), `\d\d\d\d-\d\d-\d\d.*` (date time).

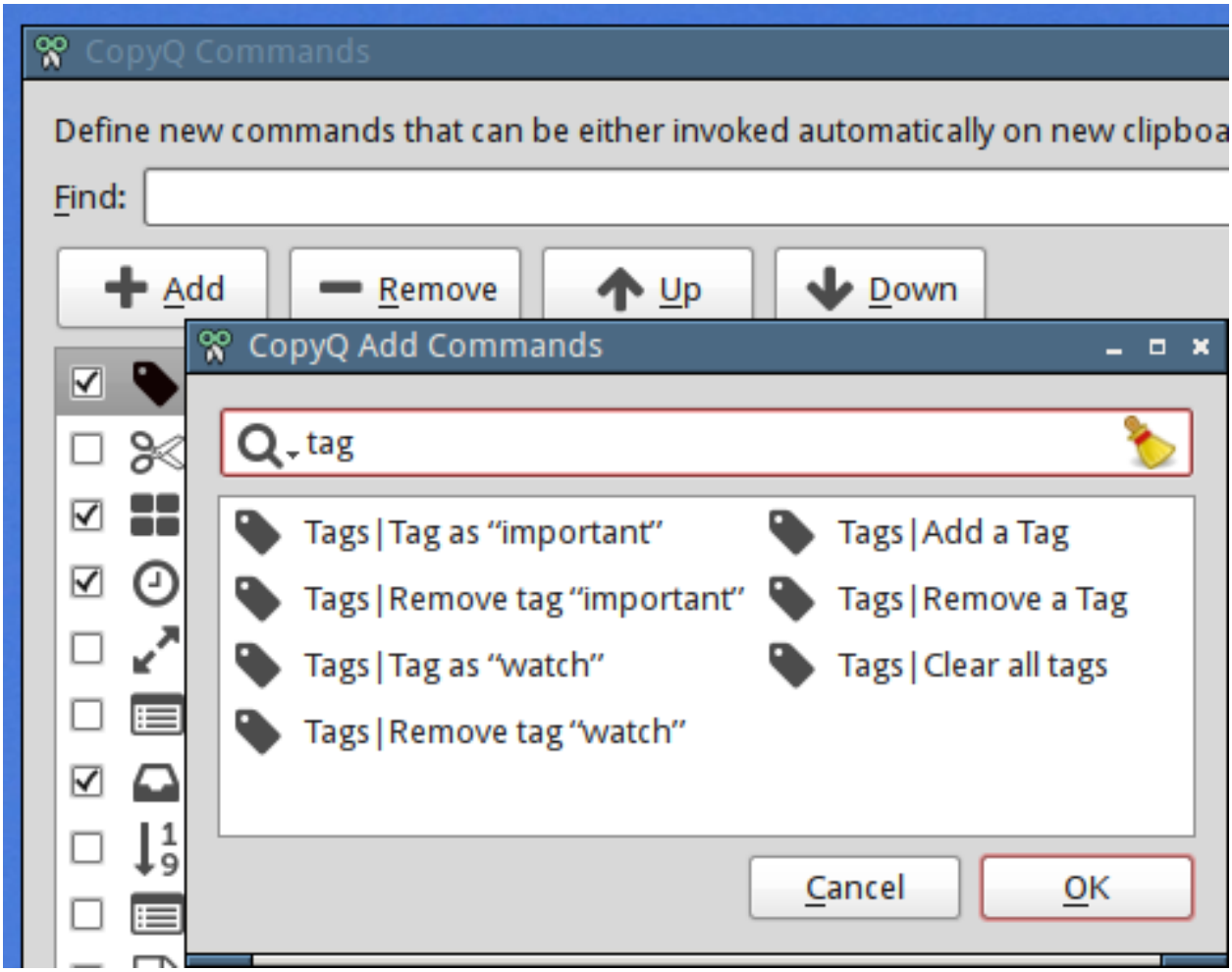
- "Style Sheet"

Simple style sheet (https://doc.qt.io/qt-5/stylesheet-reference.html).

E.g. `border:  1px solid white; border-radius:  3px; font-size:  7pt`.

- "Color" - Text color.
- "Icon" - Icon for tag. To show only icon without text you have to set "Match" and keep "Tag Name" field empty.

Tagging items can be accessed from context menu if appropriate commands are added in Command dialog (generated commands are available in the list under "Add" button).



Alternatively, tags are added to an item by setting "application/x-copyq-tags" format. It can contain multiple tags separated by comma. The tag text itself can be written as simple HTML.

Example:

```
copyq write text/plain "Item with tag" application/x-copyq-tags "Some tag text"
```

CHAPTER 7

FAQ - Frequently Asked Questions

7.1 How to open application window or tray menu using shortcut?

Add new command to open window or menu with global shortcut:

1. open "Command" dialog (`F6` shortcut),
2. click "Add" button in the dialog,
3. select "Show/hide main window" or "Show the tray menu" from the list and click "OK" button,
4. click the button next to "Global Shortcut" label and set the shortcut,
5. click "OK" button to save the changes.

For more information about commands see *Writing Commands and Adding Functionality*.

7.2 How to paste double-clicked item from application window?

1. Open "Preferences" (`Ctrl+P` shortcut),
2. go to "History" tab,
3. enable "Paste to current window" option.

Next time you open main window and activate an item it should be pasted.

7.3 How to paste as plain text?

To **paste clipboard as plain text**:

1. open "Command" dialog (`F6` shortcut),
2. click "Add" button in the dialog,

3. select “Paste clipboard as plain text” from the list and click “OK” button,
4. click the button next to “Global Shortcut” label and set the shortcut,
5. click “OK” button to save the changes.

To **paste selected items as plain text** (from application window) follow the steps above but add “Paste as Plain Text” command instead and change “Shortcut”.

7.4 How to store only plain text?

To **disallow storing HTML and rich text**:

1. Open “Preferences” (`Ctrl+P` shortcut),
2. go to “Items” tab,
3. disable “Web” item in the list,
4. select “Text” item,
5. and disable “Save and display HTML and rich text”.

Similarly you can also disable “Images” in the list to avoid storing and rendering images.

Existing items won’t be affected but **any data formats can be removed**:

1. Select an item,
2. press `F4` shortcut (“Item - Show Content...” in menu),
3. select format from list,
4. press `Delete` key.

7.5 How to disable storing clipboard?

To temporarily disable storing clipboard in item list, select menu item “File - Disable Clipboard Storing” (`Ctrl+Shift+X` shortcut). To re-enable the functionality select “File - Enable Clipboard Storing” (same shortcut).

To permanently disable storing clipboard:

1. Open “Preferences” (`Ctrl+P` shortcut),
2. go to “History” tab,
3. clear “Tab for storing clipboard” field.

7.6 How to back up tabs, configuration and commands?

From menu select “File - Export” and choose what tabs to export and whether to export configuration and commands.

To restore the backup select menu item “File - Import”, select the exported file and choose what to import back.

Note: Importing tabs and commands won’t override existing tabs but create new ones.

7.7 How to enable or disable displaying notification when clipboard changes?

To enable displaying the notifications:

1. open "Preferences" (`Ctrl+P` shortcut),
2. go to "Notifications" tab,
3. set non-zero value for "Interval in seconds to display notifications",
4. set non-zero value for "Number of lines for clipboard notification",
5. click "OK" button.

To enable displaying the notifications, set either of the options mentioned above to zero.

7.8 How to load shared commands and share them?

You can stumble upon code that looks like this.

```
[Command]
Name=Show/hide main window
Command=copyq: toggle()
Icon=\xf022
GlobalShortcut=ctrl+shift+1
```

This code represents a command that can used in CopyQ (specifically it opens main window on Ctrl+Shift+1). To use the command in CopyQ:

1. copy the code above,
2. open "Command" dialog (`F6` shortcut),
3. click "Paste Commands" button at the bottom of the dialog,
4. click OK button.

(Now you should be able to open main window with Ctrl+Shift+1.)

To share your commands, you can select the commands from command list in "Command" dialog and press "Copy Selected" button (or just hit Ctrl+C).

7.9 How to omit storing text copied from specific windows like a password manager?

Add and modify automatic command to ignore text copied from the window:

1. open "Command" dialog (`F6` shortcut),
2. click "Add" button in the dialog,
3. select "Ignore *Password* window" from the list and click "OK" button,
4. select "Show Advanced"
5. change "Window" text box to match the title (or part of it) of the window to ignore (e.g. `KeePass`),
6. click "OK" button to save the changes.

Note: This new command should be at top of the command list because automatic commands are executed in order they appear in the list and we don't want to process sensitive data in any way.

7.10 How to enable logging?

Set environment variable `COPYQ_LOG_LEVEL` to `DEBUG` for verbose logging and set `COPYQ_LOG_FILE` to a file path for the log.

You can copy current log file path to clipboard from Action dialog (F5 shortcut) by entering command `copyq 'copy(info("log"))'`. Alternatively, press `F12` to directly access the log.

7.11 How to preserve the order of copied items on copy or pasting multiple items?

a. Reverse order of selected items with `Ctrl+Shift+R` and copy them or

b. select items in reverse order and copy.

See #165.

7.12 How does pasting single/multiple items internally work?

`Return` key copies the whole item (with all formats) to the clipboard and – if the "Paste to current window" option is enabled – it sends `Shift+Insert` to previous window. So the target application decides what format to paste on `Shift+Insert`.

If you select more items and press `Return`, just the concatenated text of selected items is put into clipboard. Thought it could do more in future, like join HTML, images or other formats.

See #165.

7.13 How to open the menu or context menu with only the keyboard?

Use `Alt+I` to open the item menu or use the `Menu` key on your keyboard to open the context menu for selected items.

7.14 How to hide menu bar in main window?

Menu bar can be hidden by modifying style sheet of current theme.

1. Open "Preferences" (`Ctrl+P` shortcut),
2. go to "Appearance" tab,
3. enable checkbox "Set colors for tabs, tool bar and menus",
4. click "Edit Theme" button,
5. find `menu_bar_css` option and add `height: 0`:

```
menu_bar_css="
    ;height: 0
    ;background: ${bg}
    ;color: ${fg}"
```

7.15 How to reuse file paths copied from a file manager?

By default only the text is stored in item list when you copy of cut files from a file manager. Other data are usually needed to be able to copy/paste files from CopyQ.

You have to add additional data formats (MIME) using an automatic command (similar to one below). Commonly used format in many file managers is `text/uri-list`. Other special formats include `x-special/gnome-copied-files` for Nautilus, `application/x-kde-cutselection` for Dolphin. These formats are used to specify type of action (copy or cut).

```
[Command]
Automatic=true
Command="
    copyq:
    var formats = [
        mimeUriList,
        'x-special/gnome-copied-files',
        'application/x-kde-cutselection',
    ]

    for (var i in formats) {
        var format = formats[i]
        var data = clipboard(format)
        if ( data.size() > 0 )
           setData(format, data)
    }"
Icon=\xf56f
Name=Store File Manager Metadata
```

7.16 Why can I no longer paste from the application on macOS?

To fix this you can try following steps.

1. Go to System Preferences -> Security & Privacy -> Privacy -> Accessibility (or just search for "Allow apps to use Accessibility"),
2. click the unlock button,
3. select CopyQ from the list and remove it (with the "-" button).

See also Issue #1030.

7.17 Why does my external editor fail to edit items?

CopyQ creates a temporary file with content of the edited item and passes it as argument to custom editor command. If the file changes, the item is also modified.

Usual issues are:

- external editor opens an empty file,
- external editor warns that the file is missing or
- saving the file doesn't have any effect on the origin item.

This happens if **the command to launch editor exits but the editor application itself is still running**. Since the command exited, CopyQ assumes that the editor itself is no longer running and stops monitoring the changes in temporary file (and removes the file).

Here is the correct command to use for some editors:

```
gvim --nofork %1
sublime_text --wait %1
code --wait %1
open -t -W -n %1
```

7.18 Where to find saved items and configuration?

You can find configuration and saved items in:

- Windows folder `%APPDATA%\copyq` for installed version of the app or `config` folder in unzipped portable version,
- Linux directory `~/.config/copyq`.

Run `copyq info config` to get absolute path to the configuration file (parent directory contains saved items).

Note: Main configuration for installed version of the app on Windows is stored in registry.

7.19 Why are items and configuration not saved?

Check access rights to configuration directory and files.

7.20 Why global shortcuts don't work?

Global/system shortcuts (or specific key combinations) don't work in some desktop environments (e.g. Wayland on Linux).

As a workaround, you can try to assign the shortcuts in your system settings.

To get the command to launch for a shortcut:

1. open Command dialog (F6 from main window),
2. in left panel, click on the command with the global shortcut,
3. enable "Show Advanced" checkbox,
4. copy the content of "Command" text field.

Note: If the command looks like this:

```
copyq: toggle()
```

the actual command to use is:

```
copyq -e "toggle()"
```

7.21 Why does encryption ask for password so often?

Encryption plugin uses `gpg2` to decrypt tabs and items. The password usually needs to be entered only once every few minutes.

If the password prompt is showing up too often, either increase tab unloading interval ("Unload tab after an interval" option in "History" tab in Preferences), or change `gpg` configuration (see #946).

7.22 How to fix "copyq: command not found" errors?

If you're getting `copyq: command not found` or similar error, it means that `copyq` executable cannot be found by the shell or a language interpreter.

This usually happens if the executable's directory is not in the `PATH` environmental variable.

If this happens when running from within the command, e.g.

```
bash:
text="SOME TEXT"
copyq copy "$text"
```

you can **fix it by using** `COPYQ` environment variable instead.

```
bash:
text="SOME TEXT"
"$COPYQ" copy "$text"
```

7.23 What to do when application crashes or misbehaves?

When the application crashes or doesn't behave as expected, try to look up similar issue first and provide details in a comment.

If you cannot find any such issue, report a new bug.

Try to provide following detail.

1. Application version
2. Operating System (desktop environment, window manager etc.)
3. Steps to reproduce the issue.
4. Application log (see *How to load shared commands and share them?*)
5. Back trace if available (e.g. on Linux `coredumpctl dump --reverse copyq`)

CHAPTER 8

Glossary

Here is a list of frequent terms from CopyQ.

- Action - a command run from Action dialog
- Clipboard - system clipboard that stores and provides copied stuff (`Ctrl+C`)
- Command - user-defined command or script executed by the app
- Item - element stored in a tab, usually automatically created from a new clipboard content
- Main window - main application window shown by selecting “Show” from tray menu
- Plugin - a binary file which adds some functionality when app starts
- Process - an executed command
- Script - simple code written in internal scripting language used by the app
- Tray - tray or notification area in panel, contains small icons for various applications
- Tray menu - menu invoked from app icon in tray (usually by right mouse button click)
- Tab - container for multiple items, similar to tabs in modern web browsers

CHAPTER 9

Command Line

Tabs, items, clipboard and configuration can be changed through command line interface. Run command `copyq help` to see complete list of commands and their description.

To add new item to tab with name "notes" run:

```
copyq tab notes add "This is the first note."
```

To print the item:

```
copyq tab notes read 0
```

Add other item:

```
copyq tab notes add "This is second note."
```

and print all items in the tab:

```
copyq eval -- "tab('notes'); for(i=size(); i>0; --i) print(str(read(i-1)) + '\n');"
```

This will print:

```
This is the first note.
This is second note.
```

Among other things that are possible with CopyQ are:

- open video player if text copied in clipboard is URL with multimedia,
- store text copied from a code editor in "code" tab,
- store URLs in different tab,
- save screenshots (print-screen),
- load all files from directory to items (create image gallery),
- replace a text in all matching items,

- run item as a Python script.

CHAPTER 10

Sessions

You can run multiple instances of the application given that they have different session names.

10.1 Running Multiple Instances

Each application instance should have unique name.

To start new instance with `test1` name, run:

```
copyq --session=test1
```

This instance uses configuration, tabs and items unique to given session name.

You can still start default session (with empty session name) with just:

```
copyq
```

In the same manner you can manipulate the session. E.g. to add an item to first tab in `test1` session, run:

```
copyq --session=test1 add "Some text"
```

Default session has empty name but it can be overridden by setting `COPYQ_SESSION_NAME` environment variable.

You need to use same session name for clients launched outside the application.

```
$ copyq -s test2 tab
ERROR: Cannot connect to server! Start CopyQ server first.

$ copyq -s test1 tab
&clipboard
```

10.2 Configuration Path

Current configuration path can be overriden with `COPYQ_SETTINGS_PATH` environment variable.

```
$ copyq info config
/home/user/.config/copyq/copyq.conf

$ COPYQ_SETTINGS_PATH=$HOME/copyq-settings copyq info config
/home/user/copyq-settings/copyq/copyq.conf
```

You need to use same configuration path (and session name) for clients lauched outside the application.

```
$ copyq tab
ERROR: Cannot connect to server! Start CopyQ server first.

$ COPYQ_SETTINGS_PATH=$HOME/copyq-settings copyq tab
&clipboard
```

10.3 Icon Color

Icon for each session is bit different. The color is generated from session name and can be changed using `COPYQ_SESSION_COLOR` environment variable.

```
COPYQ_SESSION_COLOR="yellow" copyq
COPYQ_SESSION_COLOR="#f90" copyq
```

Note: On Linux, changing icon color won't work if current icon theme contains icon named "copyq-normal" or doesn't contain "copyq-mask" (and "copyq-busy-mask").

CHAPTER 11

Pin Items

This page describes how to pin selected items in a tab so they cannot be accidentally removed or moved from current row.

11.1 Why pin items?

There are two main reasons to pin items.

If a new item is added to a list (e.g. automatically when clipboard changed), rest of the items need to move one row down, except pinned items which stay on the same row. This is useful to **pin important items to the top of the list**.

If a tab is full (see option "Maximum number of items in history" in "History" configuration tab), adding a new item removes old item from bottom of the list. **Pinned items cannot be removed** so the last unpinned item is removed instead.

Note: New items cannot be added to a tab if all its items are pinned and the tab is full.

11.2 Configuration

Note: On Windows, to enable this feature you need to install "Pinned Items" plugin.

To enable this functionality, assign keyboard shortcut for Pin and Unpin actions in "Shortcuts" tab in Preferences (`Ctrl+P`).

Note: Keyboard shortcut for both menu items can be the same since at most one of the menu items is always visible.

11.3 Pinning Items

If set up correctly, when you select items, Pin action should be available in toolbar, context menu and "Item" menu.

Selecting the Pin menu item (or pressing assigned keyboard shortcut) will pin selected items to their current rows.

Pinned items will show with **gray bar on the right side** in the list.

Deleting pinned items won't work, unpin the items first. Unpin action is available if an pinned item is selected.

Pinned items also will stay in same rows unless you **move them with mouse or using keyboard shortcuts** (`Ctrl+Up/Down/Home/End`).

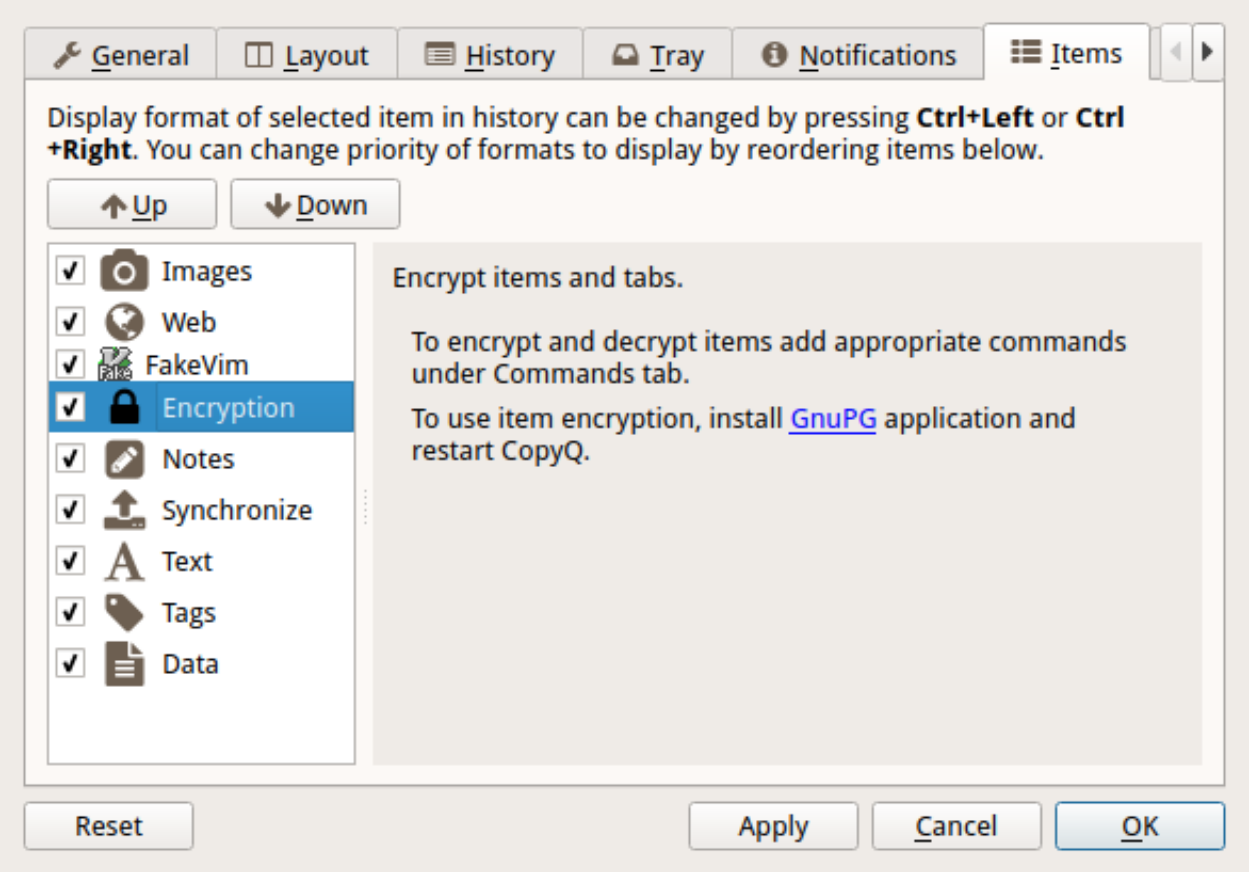
CHAPTER 12

Password Protection

This page describes how to encrypt and protect selected tabs and single items with a password.

12.1 Installation

To enable this feature you need to have “Encryption” item plugin.



The plugin configuration (under "Items" configuration tab in Configuration dialog) may prompt you to install GnuPG:

- For Windows you can use Chocolatey to install Gpg4win Vanilla:

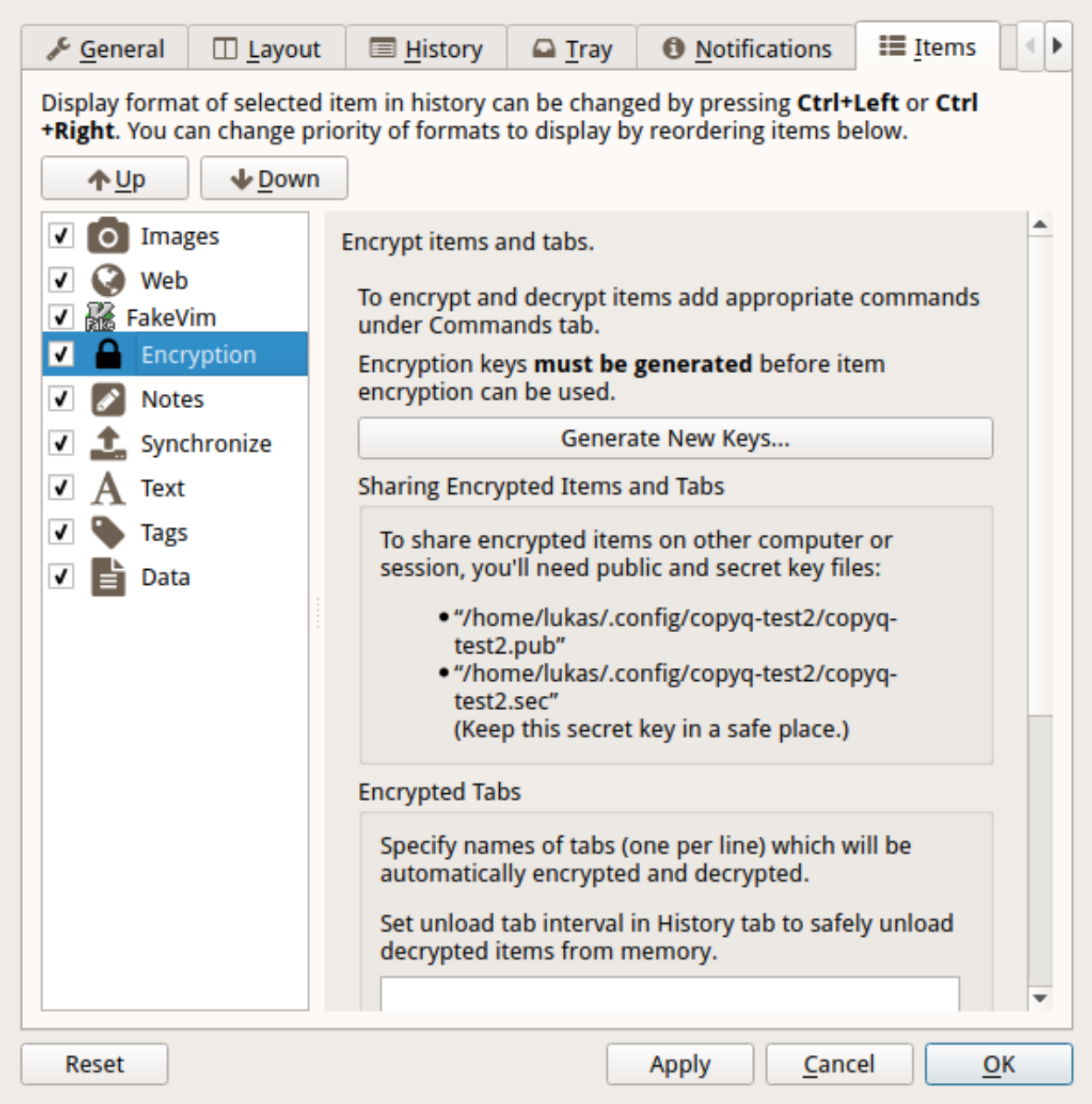
```
choco install gpg4win-vanilla
```

- For Linux install `gpg` command line utility. It's usually provided by `gnupg` package but the package name may differ on some distributions.

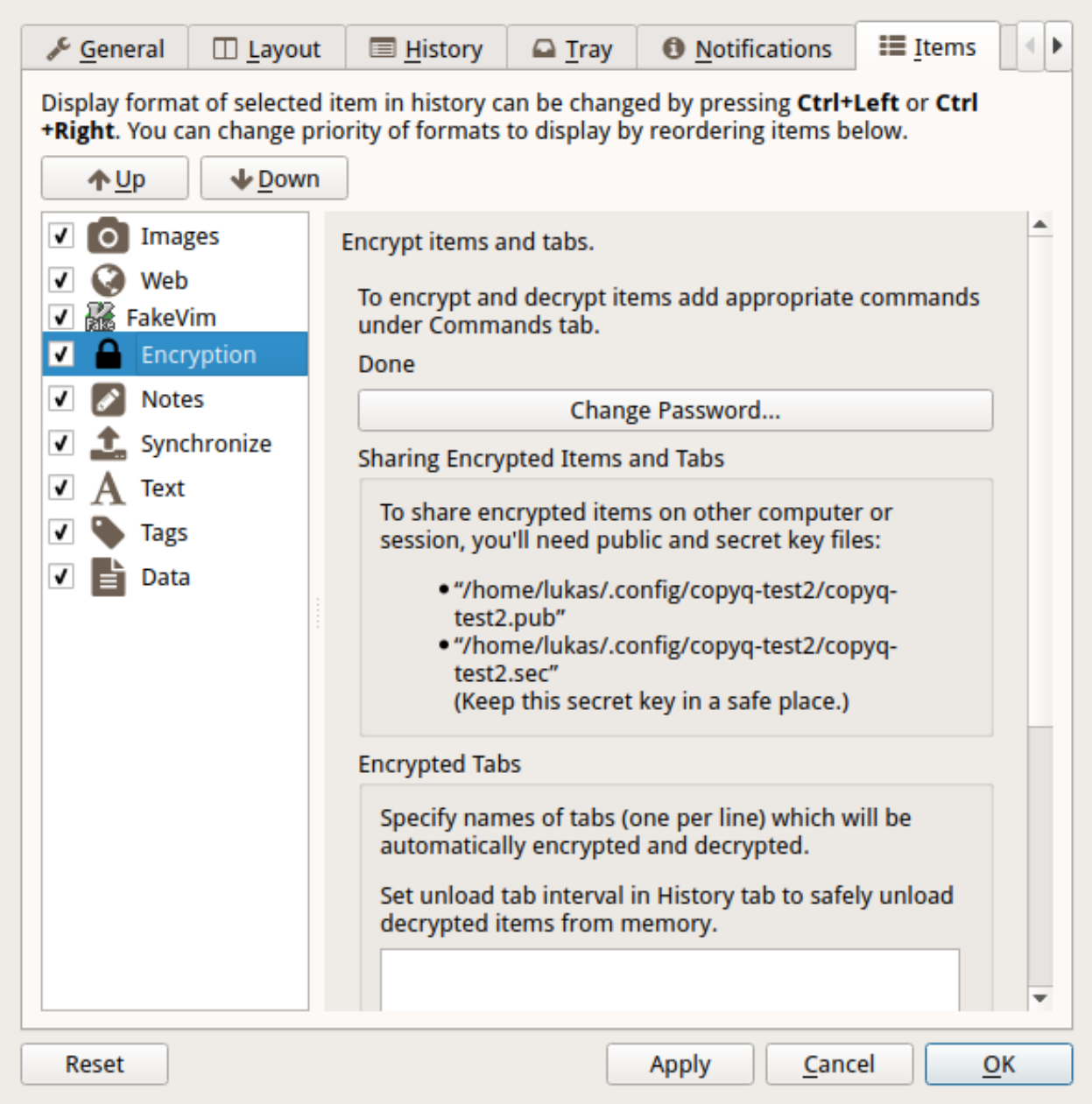
12.2 Generate Keys and Set Password

To be able to encrypt tabs and items you first need to generate private and public key files.

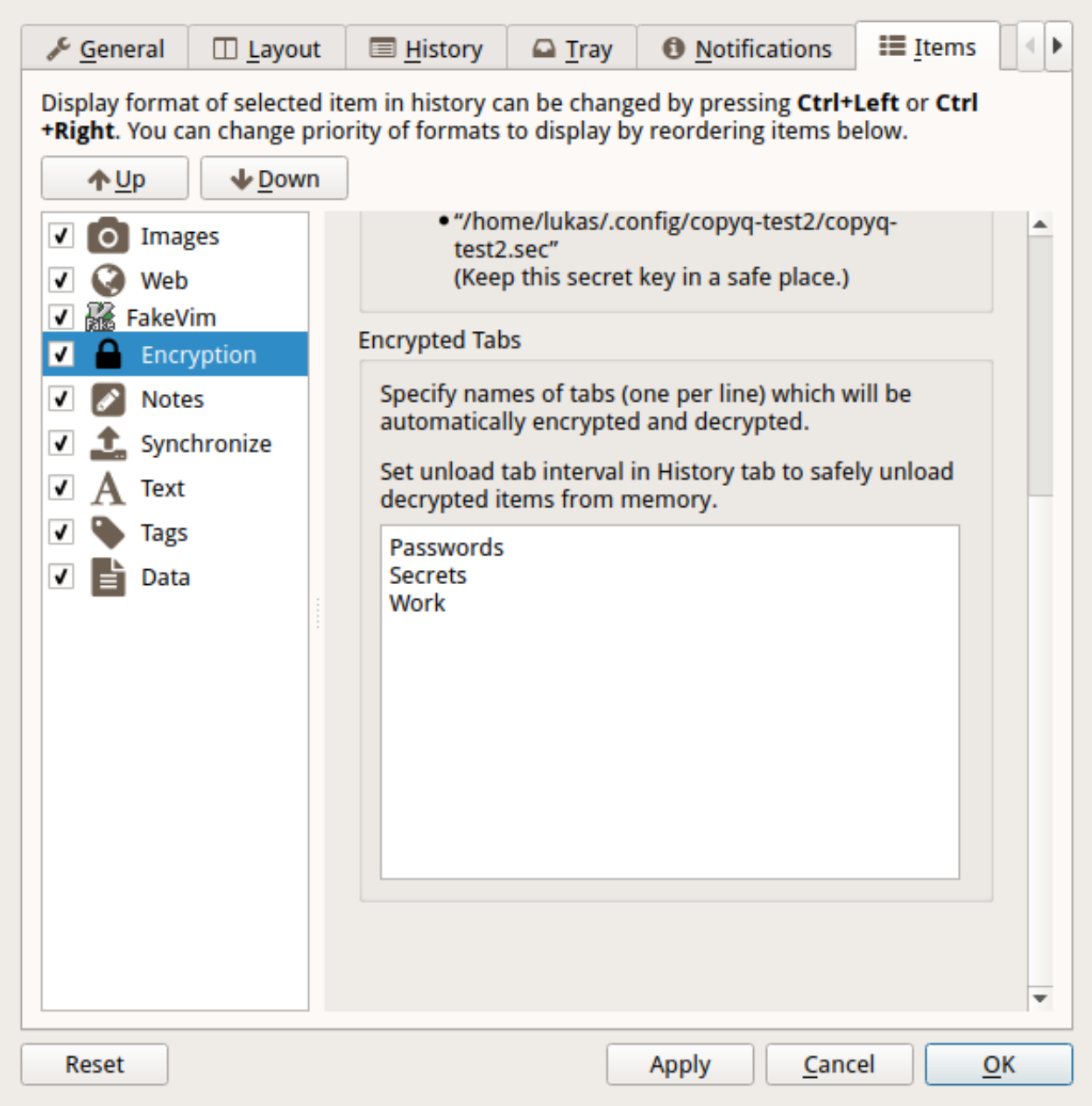
Click on the "Generate Ney Keys…" button and wait.



If didn't set a password in previous step click "Change Password. . . " button and set it.



Last step in configuration is to set tabs to encrypt. You can skip this step if you only need to encrypt single item in each tab (see next section).

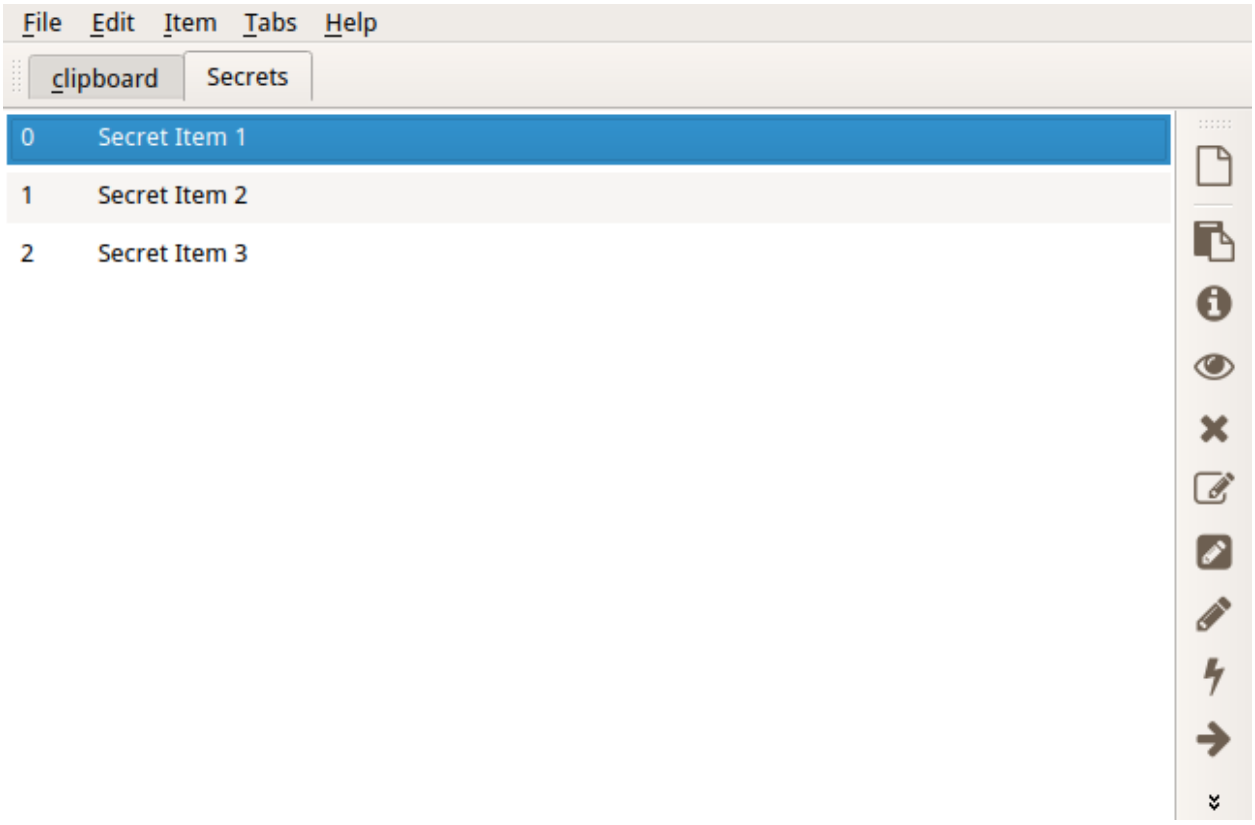


Click "OK" button to confirm Configuration dialog.

12.3 Protect Tabs

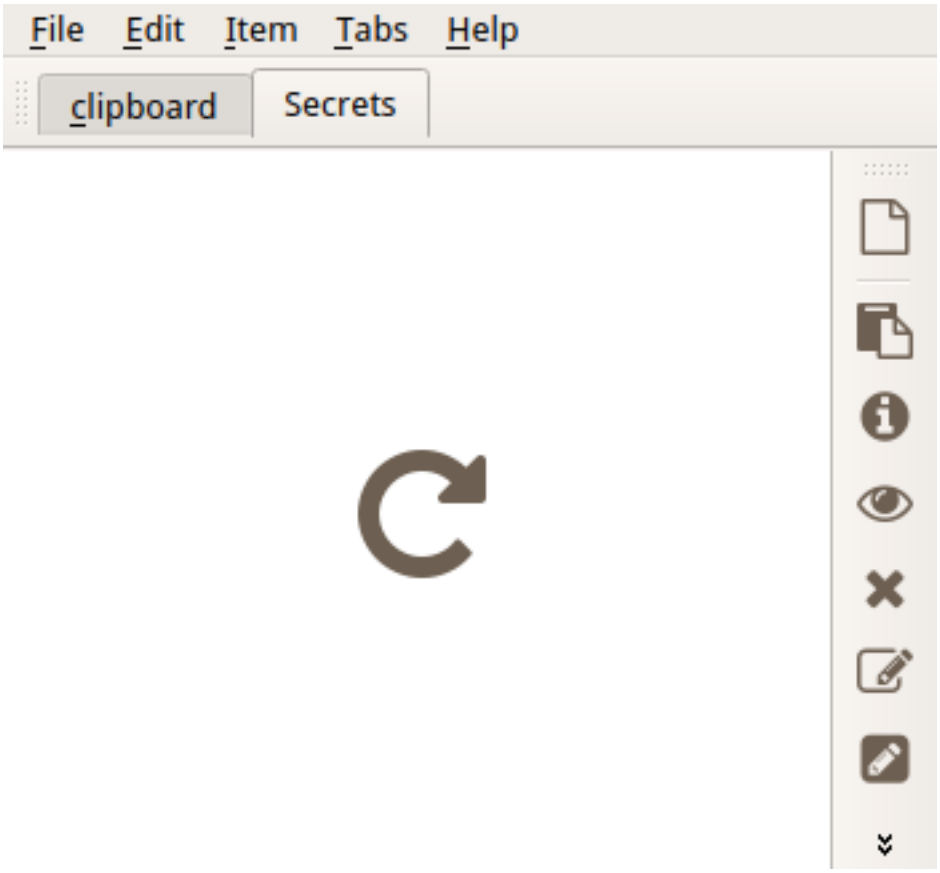
Now you can create the tabs you want to encrypt (Ctrl+T to create new tab).

The tab name should be same as one of the tabs entered in plugin configuration in previous step.



You'll be prompt to enter password in future (you only need to enter it once in a while).

If you enter wrong password or cancel the password prompt you can later click on "Reload" button in tab to enter password again.



12.4 Protect Single Items

To protect items in unprotected tab you can add menu and tool bar actions with keyboard shortcut.

Go to Command dialog F6, click on “Add” button, “Encryption” commands from list and confirm dialogs with “OK” button.

Now you can select items and press Ctrl+L to encrypt (“Items - Encryption - Encrypt” in menu).

To decrypt selected item press Ctrl+L (“Items - Encryption - Decrypt” in menu).

CHAPTER 13

Synchronize with Documents

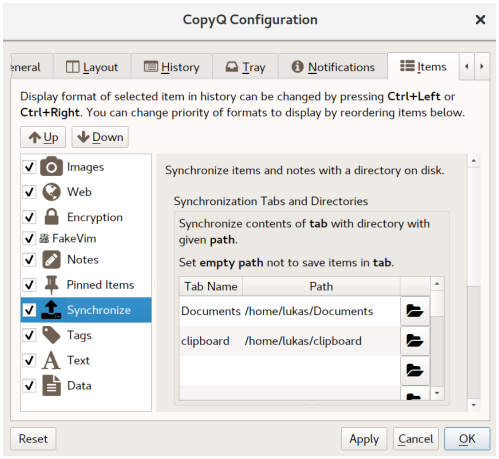
This page describes how to keep items in a tab synchronized with files in a directory on a disk (or a Dropbox folder).

13.1 Configuration

Note: On Windows, to enable this feature you need to install "Synchronize" plugin.

Set path synchronization directory for a tab.

1. Open "Preferences" (`Ctrl+P` shortcut),
2. go to "Items" tab,
3. select "Synchronize",



4. double-click an empty space in **Tab Name** column and enter name of the tab to synchronize,
5. click the browse button on the same row and select directory for the tab,

6. click OK to save changes.

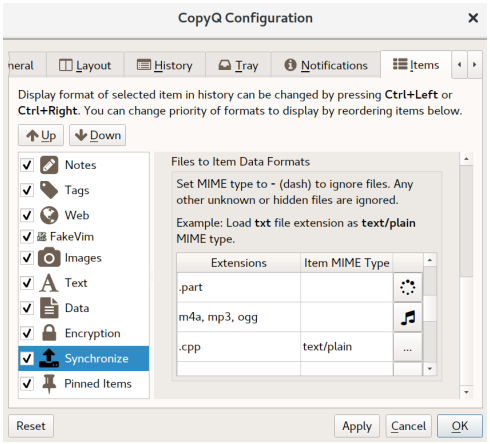
Now any items in the synchronized tab will be saved in the directory and existing files will show up in the tab even if the tab or a file is created later.

Synchronized items can be copied and edited as normal items.

13.2 File Types

Only files with known format can be shown as items. By default files with `.txt` suffix show up as text items, files with `.html` suffix show up as formatted text items, files with `.png` suffix show up as images etc.

To show other files as items you need to set their file suffix in the second table in the configuration. Here you can set icon and MIME format for the file data.



The configuration in the image above allows for content of all files with `.cpp` suffix in synchronized directories to show up text items, i.e. items have `text/plain` format containing the file data.

CHAPTER 14

Writing Commands and Adding Functionality

CopyQ allows you to extend its functionality through commands in following ways.

1. Add custom commands to context menu for selected items in history.
2. Run custom commands automatically when clipboard changes.
3. Assign global/system-wide shortcuts to custom commands.

Here are some examples what can be achieved by using commands.

- Automatically store web links or other types of clipboard content in special tabs to keep the history clean.
- Paste current date and time or modified clipboard on a global shortcut.
- Pass selected items or clipboard to external application (e.g. web browser or image editor).
- Keep TODO lists and tag items as "important" or use custom tags.
- See *Command Examples* for some other ideas and useful commands.

14.1 Command Dialog

You can create new commands in Command dialog. To open the dialog either:

- press default shortcut F6 or
- select menu item "Commands/Global Shortcuts…" in "File" menu.

Command dialog contains:

- list of custom commands on the left,
- settings for currently selected command on the right,
- command filter text field at the top,
- buttons to modify the command list (add, remove and move commands) at the top,
- buttons to save, load, copy and paste commands at the bottom.

14.1.1 Create New Command

To create new command click the "Add" button in Command dialog. This opens list with predefined commands.

"New Command" creates new empty command (but it won't do anything without being configured). One of the most frequently used predefined command is "Show/hide main window" which allows you to assign global shortcut for showing and hiding CopyQ window.

If you double click a predefined command (or select one or multiple commands and click OK) it will be added to list of commands. The right part of the Command dialog now shows the configuration for the new command.

For example, for the "Show/hide main window" you'll most likely need to change only the "Global Shortcut" option so click on the button next to it and press the shortcut you want to assign.

Commands can be quickly disabled by clicking the check box next to them in command list.

By clicking on "OK" or "Apply" button in the dialog all commands will be saved permanently.

Command Options

The following options can be set for commands.

If unsure what an option does, hover mouse pointer over it and tool tip with description will appear.

Name

Name of the command. This is used in context menu if "In Menu" check box is enabled. Use `/` in the name to create sub-menus.

Group: Type of Action

This group sets the main type of the command. Usually only one sub-option is set.

Automatic

If enabled, the command is triggered whenever clipboard changes.

Automatic items are run in order they appear in the command list. No other automatic commands will be run if a triggered automatic command has "Remove Item" option set or calls `copyq ignore`.

The command is **applied on current clipboard data** - i.e. options below access text or other data in clipboard.

In Menu

If enabled, the command can be run from main window either with application shortcut, from context menu or "Item" menu. The command can be also run from tray menu.

Shortcuts can be assigned by clicking on the button next to the option. These **application shortcuts work only while CopyQ window has focus**.

If the command is run from **tray menu**, it is **applied on clipboard data**, otherwise it's **applied on data in selected items**.

Global Shortcut

Global or system shortcut is a keyboard shortcut that **works even if the main application window is not focused**.

If enabled, the command is triggered whenever assigned shortcut is pressed.

This command is **not applied on data** in clipboard nor selected items.

Script

If enabled, the command is script which is loaded before any other script is started. This allows overriding existing functions and creating new ones (allowing new command line arguments to be used).

See *Script Commands*.

Display

If enabled, the command is used to modify item data before displaying. Use `data()` to retrieve current item data and `setData()` to modify the data to display (these are not stored permanently).

See *Display Commands*.

Group: Match Items

This group is visible only for "Automatic" or "In Menu" commands. Sub-options specify when the command can be used.

1. Content

Regular expression to match text of selected items (for "In Menu" command) or clipboard (for "Automatic" command).

For example, `^https?://` will match simple web addresses (text starting with `http://` or `https://`).

2. Window

Regular expression to match window title of active window (only for "Automatic" command).

For example, `- Chromium$` or `Mozilla Firefox$` to match some web browser window titles (`$` in the expression means end of the title).

3. Filter

A command for validating text of selected items (for "In Menu" command) or clipboard (for "Automatic" command).

If the command exits with non-zero exit code it won't be shown in context menu and automatically triggered on clipboard change.

Example, `copyq: if (tab().indexOf("Web") == -1) fail()` triggers the command only if tab "Web" is available.

4. Format

Match format of selected items or clipboard.

The data of this format will be sent to **standard input** of the command - this doesn't apply if the command is triggered with global shortcut.

Command

The command to run.

This can contain either:

- simple command line (e.g. `copyq popup %1` - expression `%1` means text of the selected item or clipboard),
- input for command interpreter (prefixed with `bash:`, `powershell:`, `python:` etc.) or
- CopyQ script (prefixed with `copyq:`).

You can use `COPYQ` environment variable to get path of application binary.

Current CopyQ session name is stored in `COPYQ_SESSION_NAME` environment variable (see *Sessions*).

Example (call CopyQ from Python):

```
python:
import os
from subprocess import call
copyq = os.environ['COPYQ']
call([copyq, 'read', '0'])
```

Example (call CopyQ from PowerShell on Windows):

```
powershell:
$Item1 = (& "$env:COPYQ" read 0 | Out-String)
echo "First item: $Item1"
```

Group: Action

This group is visible only for "Automatic" or "In Menu" commands.

1. Copy to tab

Creates new item in given tab.

2. Remove Item

Removes selected items. If enabled for "Automatic" command, the clipboard will be ignored and no other automatic commands will be executed.

Group: Menu Action

This group is visible only for "In Menu" commands.

1. Hide main window after activation

If enabled, main window will be hidden after the command is executed.

Group: Command options

This group is visible only for "Automatic" or "In Menu" commands.

1. Wait

Show action dialog before applying options below.

2. Transform

Modify selected items - i.e. remove them and replace with **standard output** of the command.

3. Output

Format of **standard output** to save as new item.

4. Separator

Separator for splitting output to multiple items (`\n` to split lines).

5. Output tab

Tab for saving the output of command.

14.1.2 Save and Share Commands

You can back up or share commands by saving them in a file ("Save Selected Commands…" button) or by copying them to clipboard.

The saved commands can be loaded back to command list ("Load Commands…" button) or pasted to the list from clipboard.

You can try some examples by copying commands from *Command Examples*.

CHAPTER 15

Scripting

If you need to process items in some non-trivial way you can take advantage of the scripting interface the application provides. This is accessible on command line as `copyq eval SCRIPT` or `copyq -e SCRIPT` where `SCRIPT` is string containing commands written in JavaScript-similar scripting language (Qt Script is ECMAScript scripting language, currently equivalent to ES5).

Every command line option is available as function in the scripting interface. Command `copyq help tab` can be written as `copyq eval 'print(help("tab"))'` (note: `print` is needed to print the return value of `help("tab")` function call).

15.1 Searching Items

You can print each item with `copyq read N` where N is item number from 0 to `copyq size` (i.e. number of items in the first tab) and put item to clipboard with `copyq select N`. With these commands it's possible to search items and copy the right one with a script. E.g. having file `script.js` containing

```
var match = "MATCH-THIS";
var i = 0;
while (i < size() && str(read(i)).indexOf(match) === -1)
    ++i;
select(i);
```

and passing it to CopyQ using `cat script.js | copyq eval -` will put first item containing "MATCH-THIS" string to clipboard.

15.2 Working with Tabs

By default commands and functions work with items in the first tab. Calling `read(0, 1, 2)` will read first three items from the first tab. To access items in other tab you need to switch the current tab with `tab("TAB_NAME")` (or `copyq tab TAB_NAME` on command line) where `TAB_NAME` is name of the tab.

For example to search for an item as in the previous script but in all tabs you'll have to run:

```
var match = "MATCH-THIS";
var tabs = tab();
for (var i in tabs) {
    tab(tabs[i]);
    var j = 0;
    while (j < size() && str(read(j)).indexOf(match) === -1)
        ++j;
    if (j < size())
        print("Match in tab \"" + tabs[i] + "\" item number " + j + ".\n");
}
```

15.3 Scripting Functions

As mentioned above, all command line options are also available for scripting e.g.: `show()`, `hide()`, `toggle()`, `copy()`, `paste()`.

Reference for available scripting functions can be found at *Scripting API*.

Other supported functions can be found at ECMAScript Reference.

CHAPTER 16

Command Examples

Here are some useful commands for creating custom menu items, global shortcuts and automatically process new clipboard content in CopyQ.

If you want to use any of the commands below, copy it to clipboard and paste it to the command list in Command dialog (opened with F6 shortcut). For detailed info see *How to load shared commands and share them?*.

All these and more commands are available at CopyQ command repository.

16.1 Join Selected Items

Creates new item containing concatenated text of selected items.

```
[Command]
Name=Join Selected Items
Command=copyq add %1
InMenu=true
Icon=\xf066
Shortcut=Space
```

16.2 Paste Current Date and Time

Copies current date/time text to clipboard and pastes to current window on global shortcut Win+Alt+T.

```
[Command]
Command="
    copyq:
    var time = dateString('yyyy-MM-dd hh:mm:ss')
    copy('Current date/time is ' + time)
    paste()"
GlobalShortcut=meta+alt+t
```

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```
Icon=\xf017
Name=Paste Current Time
```

16.3 Play Sound when Copying to Clipboard

Following command will play an audio file whenever something is copied clipboard.

On Windows:

```
[Command]
Name=Play Sound on Copy
Command="
     powershell:
     (New-Object Media.SoundPlayer \"C:\\Users\\copy.wav\").PlaySync()"
Automatic=true
Icon=\xf028
```

On Linux (requires VLC multimedia player):

```
[Command]
Name=Play Sound on Copy
Command="
     bash:
     cvlc --play-and-exit ~/audio/example.mp3"
Automatic=true
Icon=\xf028
```

16.4 Edit and Paste

Following command allows to edit current clipboard text before pasting it. If the editing is canceled the text won't be pasted.

```
[Command]
Command="
    copyq:
    var text = dialog('paste', str(clipboard()))
    if (text) {
      copy(text)
      copySelection(text)
      paste()
    }"
GlobalShortcut=ctrl+shift+v
Icon=\xf0ea
Name=Edit and Paste
```

16.5 Remove Background and Text Colors

Removes background and text colors from rich text (e.g. text copied from web pages).

Command can be both automatically applied on text copied to clipboard and invoked from menu (or using custom shortcut).

```
[Command]
Automatic=true
Command="
    copyq:
    var html = str(input())
    html = html.replace(/color\\s*:/g, 'xxx:')
    setData('text/html', html)"
Icon=\xf042
InMenu=true
Input=text/html
Name=Remove Background and Text Colors
```

16.6 Linkify

Creates interactive link from plain text.

```
[Command]
Name=Linkify
Match=^(https?|ftps?|file|mailto)://
Command="
    copyq:
    var link = str(input());
    var href = '<a href=\"###\">###</a>';
    write(
      'text/plain', link,
      'text/html', href.replace(/###/g, link)
    );"
Input=text/plain
Automatic=true
Remove=true
Icon=\xf127
```

16.7 Highlight Text

Highlight all occurrences of a text (change `x = "text"` to match something else than `text`).

```
[Command]
Name=Highlight Text
Command="
    copyq:
    x = 'text'
    style = 'background: yellow; text-decoration: underline'

    text = str(input())
    x = x.toLowerCase()
    lowertext = text.toLowerCase()
    html = ''
    a = 0
    esc = function(a, b) {
        return escapeHTML( text.substr(a, b - a) )
```

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```
    }

    while (1) {
        b = lowertext.indexOf(x, a)
        if (b != -1) {
            html += esc(a, b) + '<span>' + esc(b, b + x.length) + '</span>'
        } else {
            html += esc(a, text.length)
            break
        }
        a = b + x.length;
    }

    tab( selectedtab() )
    write(
        index(),
        'text/plain', text,
        'text/html',
            '<html><head><style>span{'
            + style +
            '}</style></head><body>'
            + html +
            '</body></html>'
    )"
Input=text/plain
Wait=true
InMenu=true
```

16.8 Render HTML

Render HTML code.

```
[Command]
Name=Render HTML
Match=^\\s*<(!|html)
Command="
    copyq:
    tab(selectedtab())
    write(index() + 1, 'text/html', input())"
Input=text/plain
InMenu=true
```

16.9 Translate to English

Pass to text to Google Translate.

```
[Command]
Name=Translate to English
Command="
    copyq:
    text = str(input())
```

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```
    url = \"https://translate.google.com/#auto/en/???\"

    x = url.replace(\"???\", encodeURIComponent(text))
    html = '<html><head><meta http-equiv=\"refresh\" content=\"0;url=' + x + '\" /></
↪head></html>'

    tab(selectedtab())
    write(index() + 1, \"text/html\", html)"
Input=text/plain
InMenu=true
```

16.10 Paste and Forget

Paste selected items and clear clipboard.

```
[Command]
Name=Paste and Forget
Command="
    copyq:
    tab(selectedtab())
    items = selecteditems()
    if (items.length > 1) {
        text = ''
        for (i in items)
            text += read(items[i]);
        copy(text)
    } else {
        select(items[0])
    }

    hide()
    paste()
    copy('')"
InMenu=true
Icon=\xf0ea
Shortcut=Ctrl+Return
```

16.11 Render Math Equations

Render math equations using MathJax (e.g. `$$x = {-b \pm \sqrt{b^2-4ac} \over 2a}$$`).

```
[Command]
Name=Render Math Equations
Command="
    copyq:
    text = str(input())
    js = 'http://cdn.mathjax.org/mathjax/latest/MathJax.js?config=TeX-AMS-MML_
↪HTMLorMML'

    html = '<html><head><script type=\"text/javascript\" src=\"' + js + '\"></script>
↪</head><body>' + escapeHTML(text) + '</body></html>';
```

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```
    tab(selectedtab())
    write(index() + 1, 'text/html', html)"
Input=text/plain
InMenu=true
Icon=\xf12b
```

16.12 Move Images to Other Tab

With this command active, images won't be saved in the first tab. This can make application a bit more snappier since big image data won't need to be loaded when main window is displayed or clipboard is stored for the first time.

```
[Command]
Name=Move Images to Other Tab
Input=image/png
Automatic=true
Remove=true
Icon=\xf03e
Tab=&Images
```

16.13 Copy Clipboard to Window Tabs

Following command automatically adds new clipboard to tab with same name as title of the window where copy operation was performed.

```
[Command]
Name=Window Tabs
Command="copyq:
    item = unpack(input())
    window_title = item[\"application/x-copyq-owner-window-title\"]
    if (window_title) {
        // Remove the part of window title before dash
        // (it's usually document name or URL).
        tabname = str(window_title).replace(/.* (-|\x2013) /, \"\")
        tab(\"Windows/\" + tabname)
        write(\"application/x-copyq-item\", input())
    }
    "
Input=application/x-copyq-item
Automatic=true
Icon=\xf009
```

16.14 Quickly Show Current Clipboard Content

Quickly pop up notification with text in clipboard using `Win+Alt+C` system shortcut.

```
[Command]
Name=Show clipboard
Command="
    copyq:
```

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```
    seconds = 2;
    popup(\"\", clipboard(), seconds * 1000)"
GlobalShortcut=Meta+Alt+C
```

16.15 Replace All Occurrences in Selected Text

```
[Command]
Name=Replace in Selection
Command="
    copyq:
    // Copy without changing X11 selection (on Windows you can use "copy" instead).
    function copy2() {
      try {
        var x = config('copy_clipboard')
        config('copy_clipboard', false)
        try {
          copy.apply(this, arguments)
        } finally {
          config('copy_clipboard', x)
        }
      } catch(e) {
        copy.apply(this, arguments)
      }
    }

    copy2()
    var text = str(clipboard())

    if (text) {
      var r1 = 'Text'
      var r2 = 'Replace with'
      var reply = dialog(r1, '', r2, '')

      if (reply) {
        copy2(text.replace(new RegExp(reply[r1], 'g'), reply[r2]))
        paste()
      }
    }"
Icon=\xf040
GlobalShortcut=Meta+Alt+R
```

16.16 Copy Nth Item

Copy item in row depending on which shortcut was pressed. E.g. Ctrl+2 for item in row “2”.

```
[Command]
Name=Copy Nth Item
Command="
    copyq:
    var shortcut = str(data(\"application/x-copyq-shortcut\"))
    var number = shortcut ? shortcut.replace(/^\\D+/g, '') : currentItem();
```

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```
    selectItems(number)
    copy(\"application/x-copyq-item\", pack(getItem(number)))"
InMenu=true
Icon=\xf0cb
Shortcut=ctrl+1, ctrl+2, ctrl+3, ctrl+4, ctrl+5, ctrl+6, ctrl+7, ctrl+8, ctrl+9,␣
↪ctrl+0
GlobalShortcut=meta+shift+w, meta+shift+e, meta+shift+q, DISABLED
```

16.17 Edit File

Opens file referenced by selected item in external editor (uses "External editor command" from "History" config tab).

Works with following path formats (some editors may not support all of these).

- `C:/...`
- `file://...`
- `~...` (some shells)
- `%...%...` (Windows environment variables)
- `$...` (environment variables)
- `/c/...` (gitbash)

```
[Command]
Name=Edit File
Match=^([a-zA-Z]:[\\\\/]|~|file://|%\\w+%|$\\w+|/)
Command="
    copyq:
    var editor = config('editor')

    var fileName = str(input())
      .replace(/^\\/([a-zA-Z])\\//, '$1:/')
      .replace(/^file:\\/\\//, '')

    hide()
    execute(editor, fileName)"
Input=text/plain
InMenu=true
Icon=\xf040
Shortcut=f4
```

16.18 Change Monitoring State Permanently

Disables clipboard monitoring permanently, i.e. the state is restored when clipboard changes even after application is restarted.

Should be the first automatic command in the list of commands so other commands are not invoked.

```
[Command]
Automatic=true
Command="
```

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```
    copyq:
    var option = 'disable_monitoring'
    var disabled = str(settings(option)) === 'true'

    if (str(data('application/x-copyq-shortcut'))) {
      disabled = !disabled
      settings(option, disabled)
      popup('', disabled ? 'Monitoring disabled' : 'Monitoring enabled')
    }

    if (disabled) {
      disable()
      ignore()
    } else {
      enable()
    }"
GlobalShortcut=meta+alt+x
Icon=\xf05e
Name=Toggle Monitoring
```

16.19 Show Window Title

Shows source application window title for new items in tag ("Tags" plugin must be enabled in "Items" config tab).

```
[Command]
Automatic=true
Command="
    copyq:
    var window = str(data('application/x-copyq-owner-window-title'))
    var tagsMime = 'application/x-copyq-tags'
    var tags = str(data(tagsMime)) + ', ' + window
    setData(tagsMime, tags)"
Icon=\xf009
Name=Store Window Title
```

16.20 Show Copy Time

Shows copy time of new items in tag ("Tags" plugin must be enabled in "Items" config tab).

```
[Command]
Automatic=true
Command="
    copyq:
    var time = dateString('yyyy-MM-dd hh:mm:ss')
    setData('application/x-copyq-user-copy-time', time)

    var tagsMime = 'application/x-copyq-tags'
    var tags = str(data(tagsMime)) + ', ' + time
    setData(tagsMime, tags)"
Icon=\xf017
Name=Store Copy Time
```

16.21 Mark Selected Items

Toggles highlighting of selected items.

```
[Command]
Command="
    copyq:
    var color = 'rgba(255, 255, 0, 0.5)'
    var mime = 'application/x-copyq-color'

    var firstSelectedItem = selectedItems()[0]
    var currentColor = str(read(mime, firstSelectedItem))
    if (currentColor != color)
      setData(mime, color)
    else
      removeData(mime)"
Icon=\xf1fc
InMenu=true
Name=Mark/Unmark Items
Shortcut=ctrl+m
```

16.22 Change Upper/Lower Case of Selected Text

```
[Command]
Command="
    copyq:
    if (!copy())
      abort()

    var text = str(clipboard())

    var newText = text.toUpperCase()
    if (text == newText)
      newText = text.toLowerCase()

    if (text == newText)
      abort();

    copy(newText)
    paste()"
GlobalShortcut=meta+ctrl+u
Icon=\xf034
Name=Toggle Upper/Lower Case
```

CHAPTER 17

Script Commands

Script command is type of command which allows overriding existing functions and creating new ones (allowing new command line arguments to be used).

The command is executed before any script and all defined variables and functions are available to the scripts.

Script commands can be created in Command dialog by setting Type of Action to *Script*.

17.1 Extending Command Line Interface

By adding following script command you can use `hello()` from other script or on command line (`copyq hello`).

```
global.hello = function() {
    print('Hello, World!\n')
}
```

Script commands are executed in own scope so as to avoid adding temporary variables in the global scope which contains all functions like `copy()` or `add()`. Using `global` object allows to modify the global scope.

It's useful to move code used by multiple commands to a new script command.

It can also simplify using `copyq` from another application or shell script.

17.2 Override Functionality

Existing functions can be overridden from script commands.

Specifically *`onClipboardChanged`* and functions it calls can be overridden to customize handling of new clipboard content.

E.g. following command saves only textual clipboard data and removes any formatted text.

```
var saveData_ = saveData

saveData = function() {
    if ( str(data(mimeText)) != "" ) {
        popup('Saving only text')
        removeData(mimeHtml)
        saveData_()
    } else {
        popup('Not saving non-textual data')
    }
}
```

E.g. following command overrides `paste()` to use an external utility for pasting clipboard.

```
paste = function() {
    var x = execute(
        'xdotool',
        'keyup', 'alt', 'ctrl', 'shift', 'super', 'meta',
        'key', 'shift+Insert')
    if (!x)
        throw 'Failed to run xdotool'
    if (x.stderr)
        throw 'Failed to run xdotool: ' + str(x.stderr)
}
```

E.g. show custom notifications for clipboard and X11 selection changes.

```
function clipboardNotification(owns, hidden) {
    var id = isClipboard() ? 'clipboard' : 'selection'
    var icon = isClipboard() ? '\uf0ea' : '\uf246'
    var owner = owns ? 'CopyQ' : str(data(mimeWindowTitle))
    var title = id + ' - ' + owner
    var message = hidden ? '<HIDDEN>' : data(mimeText).left(100)
    notification(
    '.id', id,
    '.title', title,
    '.message', message,
    '.icon', icon
    )
}

var onClipboardChanged_ = onClipboardChanged
onClipboardChanged = function() {
    clipboardNotification(false, false)
    onClipboardChanged_()
}

var onOwnClipboardChanged_ = onOwnClipboardChanged
onOwnClipboardChanged = function() {
    clipboardNotification(true, false)
    onOwnClipboardChanged_()
}

var onHiddenClipboardChanged_ = onHiddenClipboardChanged
onHiddenClipboardChanged = function() {
    clipboardNotification(true, true)
    onHiddenClipboardChanged_()
}
```

CHAPTER 18

Display Commands

Display command is type of command that modifies item data before displaying. The modified data are only used for displaying the item and are not stored.

The command is executed just before an item needs to be displayed. This can sometimes happen multiple times for the same item if the data or configuration changes or the tab was unloaded.

Display commands can be created in Command dialog by setting Type of Action to *Display*.

Use `data()` to retrieve current item data and `setData()` to set the data to display (these are not stored permanently).

E.g. use slightly different color for plain text items.

```
copyq:
if ( str(data(mimeText)) && !str(data(mimeHtml)) ) {
    html = escapeHtml(data(mimeText))
    setData(mimeHtml, '<span style="color:#764">' + html + '</span>')
}
```

E.g. try to interpret text as Markdown (with `marked` external utility).

```
copyq:
var text = data(mimeText)
var result = execute('marked', null, text)
if (result && result.exit_code == 0) {
    setData(mimeHtml, result.stdout)
}
```

CHAPTER 19

Backup

This page describes how to back up tabs, configuration and commands in CopyQ.

19.1 Back Up Manually

To back up all the data, **exit the application** first and **copy the configuration directory**.

Path to configuration is usually:

- Windows: `%APPDATA%\copyq`
- Portable version for Windows: `config` sub-folder in unzipped application directory
- Linux: `~/.config/copyq`

To copy the configuration path to clipboard from CopyQ:

1. open Action dialog (`F5` shortcut),
2. enter command

```
copyq:
dir = Dir(info('config') + '/..')
copy(dir.absolutePath())
```

3. click OK dialog button.

To restore the backup, exit the application and replace the configuration directory.

> **Warning:** Before making or restoring back up, always exit CopyQ (don't only close the main window).

19.2 Export and Import

You can easily export selected tabs and optionally configuration and commands within the application.

Warning: Tabs are always exported **unencrypted** and if a tab is synchronized with directory on disk the files themselves won't be exported.

To export the data click "Export…" in "File" menu and select what to export, confirm with OK button and select file to save the stuff to.

To restore the data click "Import…" in "File" menu, select file to import and select what to import.

Note: Import won't overwrite existing tabs and commands but create new ones.

Alternatively you can use command line for export and import everything (selection dialogs won't be opened).

```
copyq exportData {FILE/PATH/TO/EXPORT}
copyq importData {FILE/PATH/TO/IMPORT}
```

CHAPTER 20

Writing Raw Data

Application allows you to save any kind of data using *drag and drop* or scripting interface.

To add an image to `Images` tab you can run:

```
cat image1.png | copyq tab Images write image/png -
```

This works for any other MIME data type (though unknown formats won't be displayed properly).

CHAPTER 21

Scripting API

CopyQ provides scripting capabilities to automatically handle clipboard changes, organize items, change settings and much more.

In addition to features provided by Qt Script there are following *functions*, *types*, *objects* and *MIME types*.

21.1 Execute Script

The scripts can be executed:

- from commands (in Action or Command dialogs – F5, F6 shortcuts) if the first line starts with `copyq:`,
- from command line as `copyq eval '<SCRIPT>'`,
- from command line as `cat script.js | copyq eval -`,
- from command line as `copyq <SCRIPT_FUNCTION> <FUNCTION_ARGUMENT_1> <FUNCTION_ARGUMENT_2> ...`.

When run from command line, result of last expression is printed on stdout.

Command exit values are:

- 0 - script finished without error,
- 1 - `fail()` was called,
- 2 - bad syntax,
- 3 - exception was thrown.

21.2 Command Line

If number of arguments that can be passed to function is limited you can use

```
copyq <FUNCTION1> <FUNCTION1_ARGUMENT_1> <FUNCTION1_ARGUMENT_2> \
          <FUNCTION2> <FUNCTION2_ARGUMENT> \
              <FUNCTION3> <FUNCTION3_ARGUMENTS> ...
```

where `<FUNCTION1>` and `<FUNCTION2>` are scripts where result of last expression is functions that take two and one arguments respectively.

E.g.

```
copyq tab clipboard separator "," read 0 1 2
```

After `eval` no arguments are treated as functions since it can access all arguments.

Arguments recognize escape sequences `\n` (new line), `\t` (tabulator character) and `\\` (backslash).

Argument `-e` is identical to `eval`.

Argument `-` is replaced with data read from stdin.

Argument `--` is skipped and all the remaining arguments are interpreted as they are (escape sequences are ignored and `-e`, `-`, `--` are left unchanged).

21.3 Functions

Argument list parts `...` and `[...]` are optional and can be omitted.

String version()
: Returns version string.

String help()
: Returns help string.

String help(*searchString*, ...)
: Returns help for matched commands.

show()
: Shows main window.

show(*tabName*)
: Shows tab.

showAt()
: Shows main window under mouse cursor.

showAt(*x*, *y*[, *width*, *height*])
: Shows main window with given geometry.

showAt(*x*, *y*, *width*, *height*, *tabName*)
: Shows tab with given geometry.

hide()
: Hides main window.

bool toggle()
: Shows or hides main window.

  Returns true only if main window is being shown.

menu()
: Opens context menu.

menu(*tabName*[, *maxItemCount*[, *x*, *y*]])
Shows context menu for given tab.

This menu doesn't show clipboard and doesn't have any special actions.

Second argument is optional maximum number of items. The default value same as for tray (i.e. value of `config('tray_items')`).

Optional arguments x, y are coordinates in pixels on screen where menu should show up. By default menu shows up under the mouse cursor.

exit()
Exits server.

disable(*), enable(*)
Disables or enables clipboard content storing.

bool monitoring()
Returns true only if clipboard storing is enabled.

bool visible()
Returns true only if main window is visible.

bool focused()
Returns true only if main window has focus.

filter(*filterText*)
Sets text for filtering items in main window.

String filter()
Returns current text for filtering items in main window.

ignore()
Ignores current clipboard content (used for automatic commands).

This does all of the below.

- Skips any next automatic commands.
- Omits changing window title and tray tool tip.
- Won't store content in clipboard tab.

ByteArray clipboard([*mimeType*])
Returns clipboard data for MIME type (default is text).

Pass argument `"?"` to list available MIME types.

ByteArray selection([*mimeType*])
Same as `clipboard()` for Linux/X11 mouse selection.

bool hasClipboardFormat(*mimeType*)
Returns true only if clipboard contains MIME type.

bool hasSelectionFormat(*mimeType*)
Same as `hasClipboardFormat()` for Linux/X11 mouse selection.

bool isClipboard()
Returns true only in automatic command triggered by clipboard change.

This can be used to check if current automatic command was triggered by clipboard and not Linux/X11 mouse selection change.

copy(*text*)
Sets clipboard plain text.

Same as `copy(mimeText, text)`.

copy (*mimeType, data, [mimeType, data]...*)
Sets clipboard data.

This also sets `mimeOwner` format so automatic commands are not run on the new data and it's not stored in clipboard tab.

Exception is thrown if clipboard fails to be set.

Example (set both text and rich text):

```
copy(mimeText, 'Hello, World!',
     mimeHtml, '<p>Hello, World!</p>')
```

copy ()
Sends `Ctrl+C` to current window.

Exception is thrown if clipboard doesn't change (clipboard is reset before sending the shortcut).

copySelection (...)
Same as `copy(...)` for Linux/X11 mouse selection.

paste ()
Pastes current clipboard.

This is basically only sending `Shift+Insert` shortcut to current window.

Correct functionality depends a lot on target application and window manager.

String[] tab ()
Returns array of tab names.

tab (*tabName*)
Sets current tab for the script.

E.g. following script selects third item (index is 2) from tab "Notes".

```
tab('Notes')
select(2)
```

removeTab (*tabName*)
Removes tab.

renameTab (*tabName*, *newTabName*)
Renames tab.

String tabIcon (*tabName*)
Returns path to icon for tab.

tabIcon (*tabName*, *iconPath*)
Sets icon for tab.

String[] unload ([*tabNames...*])
Unload tabs (i.e. items from memory).

If no tabs are specified, unloads all tabs.

If a tab is open and visible or has an editor open, it won't be unloaded.

Returns list of successfully unloaded tabs.

forceUnload ([*tabNames...*])
Force-unload tabs (i.e. items from memory).

If no tabs are specified, unloads all tabs.

Refresh button needs to be clicked to show the content of a force-unloaded tab.

If a tab has an editor open, the editor will be closed first even if it has unsaved changes.

count(), *length()*, *size()*
Returns amount of items in current tab.

select(*row*)
Copies item in the row to clipboard.

Additionally, moves selected item to top depending on settings.

next()
Copies next item from current tab to clipboard.

previous()
Copies previous item from current tab to clipboard.

add(*text|item...*)
Same as `insert(0, ...)`.

insert(*row*, *text|item...*)
Inserts new items to current tab.

Throws an exception if space for the items cannot be allocated.

remove(*row*, ...)
Removes items in current tab.

Throws an exception if some items cannot be removed.

edit(*[row|text]* ...)
Edits items in current tab.

Opens external editor if set, otherwise opens internal editor.

ByteArray read([*mimeType*])
Same as `clipboard()`.

ByteArray read(*mimeType*, *row*, ...)
Returns concatenated data from items, or clipboard if row is negative.

Pass argument `"?"` to list available MIME types.

write(*row, mimeType, data, [mimeType, data]...*)
Inserts new item to current tab.

Throws an exception if space for the items cannot be allocated.

change(*row, mimeType, data, [mimeType, data]...*)
Changes data in item in current tab.

If data is `undefined` the format is removed from item.

String separator()
Returns item separator (used when concatenating item data).

separator(*separator*)
Sets item separator for concatenating item data.

action()
Opens action dialog.

action(*row*, ..., *command*, *outputItemSeparator*)
Runs command for items in current tab.

popup(*title*, *message*[, *time=8000*])
Shows popup message for given time in milliseconds.

If `time` argument is set to -1, the popup is hidden only after mouse click.

notification(...)
Shows popup message with icon and buttons.

Each button can have script and data.

If button is clicked the notification is hidden and script is executed with the data passed as stdin.

The function returns immediately (doesn't wait on user input).

Special arguments:

- '.title' - notification title
- '.message' - notification message (can contain basic HTML)
- '.icon' - notification icon (path to image or font icon)
- '.id' - notification ID - this replaces notification with same ID
- '.time' - duration of notification in milliseconds (default is -1, i.e. waits for mouse click)
- '.button' - adds button (three arguments: name, script and data)

Example:

```
notification(
      '.title', 'Example',
      '.message', 'Notification with button',
      '.button', 'Cancel', '', '',
      '.button', 'OK', 'copyq:popup(input())', 'OK Clicked'
      )
```

exportTab(*fileName*)
Exports current tab into file.

Throws an exception if export fails.

importTab(*fileName*)
Imports items from file to a new tab.

Throws an exception if import fails.

exportData(*fileName*)
Exports all tabs and configuration into file.

Throws an exception if export fails.

importData(*fileName*)
Imports all tabs and configuration from file.

Throws an exception if import fails.

String config()
Returns help with list of available application options.

String config(*optionName*)
Returns value of given application option.

Throws an exception if the option is invalid.

String config(*optionName*, *value*)
Sets application option and returns new value.

Throws an exception if the option is invalid.

String config(*optionName*, *value*, ...)
Sets multiple application options and return list with values in format `optionName=newValue`.

Throws an exception if there is an invalid option in which case it won't set any options.

bool toggleConfig(*optionName*)
Toggles an option (true to false and vice versa) and returns the new value.

String info([*pathName*])
Returns paths and flags used by the application.

E.g. following command prints path to configuration file.

```
copyq info config
```

Value eval(*script*)
Evaluates script and returns result.

Value source(*fileName*)
Evaluates script file and returns result of last expression in the script.

This is useful to move some common code out of commands.

```
// File: c:/copyq/replace_clipboard_text.js
replaceClipboardText = function(replaceWhat, replaceWith)
{
    var text = str(clipboard())
    var newText = text.replace(replaceWhat, replaceWith)
    if (text != newText)
        copy(newText)
}
```

```
source('c:/copyq/replace_clipboard_text.js')
replaceClipboardText('secret', '*****')
```

currentPath([*path*])
Set current path.

String currentPath()
Get current path.

String str(*value*)
Converts a value to string.

If ByteArray object is the argument, it assumes UTF8 encoding. To use different encoding, use `toUnicode()`.

ByteArray input()
Returns standard input passed to the script.

String toUnicode(*ByteArray*, *encodingName*)
Returns string for bytes with given encoding.

String toUnicode(*ByteArray*)
Returns string for bytes with encoding detected by checking Byte Order Mark (BOM).

ByteArray fromUnicode(*String*, *encodingName*)
Returns encoded text.

ByteArray data(*mimeType*)
Returns data for automatic commands or selected items.

If run from menu or using non-global shortcut the data are taken from selected items.

If run for automatic command the data are clipboard content.

ByteArray setData(*mimeType*, *data*)
Modifies data for `data()` and new clipboard item.

Next automatic command will get updated data.

This is also the data used to create new item from clipboard.

E.g. following automatic command will add creation time data and tag to new items.

```
copyq:
var timeFormat = 'yyyy-MM-dd hh:mm:ss'
setData('application/x-copyq-user-copy-time', dateString(timeFormat))
setData(mimeTags, 'copied: ' + time)
```

E.g. following menu command will add tag to selected items.

```
copyq:
setData('application/x-copyq-tags', 'Important')
```

ByteArray removeData(*mimeType*)
Removes data for `data()` and new clipboard item.

String[] dataFormats()
Returns formats available for `data()`.

print(*value*)
Prints value to standard output.

serverLog(*value*)
Prints value to application log.

String logs()
Returns application logs.

abort()
Aborts script evaluation.

fail()
Aborts script evaluation with nonzero exit code.

setCurrentTab(*tabName*)
Focus tab without showing main window.

selectItems(*row*, ...)
Selects items in current tab.

String selectedTab()
Returns tab that was selected when script was executed.

See *Selected Items*.

int[] selectedItems()
Returns selected rows in current tab.

See *Selected Items*.

Item selectedItemData(*index*)
Returns data for given selected item.

The data can empty if the item was removed during execution of the script.

See *Selected Items*.

bool setSelectedItemData(*index*, *item*)
Set data for given selected item.

Returns false only if the data cannot be set, usually if item was removed.

See *Selected Items*.

Item[] selectedItemsData()
Returns data for all selected items.

Some data can be empty if the item was removed during execution of the script.

See *Selected Items*.

setSelectedItemsData(*item[]*)
Set data to all selected items.

Some data may not be set if the item was removed during execution of the script.

See *Selected Items*.

int currentItem(), *int index()*
Returns current row in current tab.

See *Selected Items*.

String escapeHtml(*text*)
Returns text with special HTML characters escaped.

Item unpack(*data*)
Returns deserialized object from serialized items.

ByteArray pack(*item*)
Returns serialized item.

Item getItem(*row*)
Returns an item in current tab.

setItem(*row*, *text|item*)
Inserts item to current tab.

String toBase64(*data*)
Returns base64-encoded data.

ByteArray fromBase64(*base64String*)
Returns base64-decoded data.

ByteArray md5sum(*data*)
Returns MD5 checksum of data.

ByteArray sha1sum(*data*)
Returns SHA1 checksum of data.

ByteArray sha256sum(*data*)
Returns SHA256 checksum of data.

ByteArray sha512sum(*data*)
Returns SHA512 checksum of data.

bool open (*url*, ...)
Tries to open URLs in appropriate applications.

Returns true only if all URLs were successfully opened.

FinishedCommand execute (*argument*, ..., *null*, *stdinData*, ...)
Executes a command.

All arguments after `null` are passed to standard input of the command.

If argument is function it will be called with array of lines read from stdout whenever available.

E.g. create item for each line on stdout:

```
execute('tail', '-f', 'some_file.log',
        function(lines) { add.apply(this, lines) })
```

Returns object for the finished command or `undefined` on failure.

String currentWindowTitle ()
Returns window title of currently focused window.

Value dialog (...)
Shows messages or asks user for input.

Arguments are names and associated values.

Special arguments:

- '.title' - dialog title
- '.icon' - dialog icon (see below for more info)
- '.style' - Qt style sheet for dialog
- '.height', '.width', '.x', '.y' - dialog geometry
- '.label' - dialog message (can contain basic HTML)

```
dialog(
  '.title', 'Command Finished',
  '.label', 'Command <b>successfully</b> finished.'
  )
```

Other arguments are used to get user input.

```
var amount = dialog('.title', 'Amount?', 'Enter Amount', 'n/a')
var filePath = dialog('.title', 'File?', 'Choose File', new File('/home'))
```

If multiple inputs are required, object is returned.

```
var result = dialog(
  'Enter Amount', 'n/a',
  'Choose File', new File(str(currentPath))
  )
print('Amount: ' + result['Enter Amount'] + '\n')
print('File: ' + result['Choose File'] + '\n')
```

Editable combo box can be created by passing array. Current value can be provided using `.defaultChoice` (by default it's the first item).

```
var text = dialog('.defaultChoice', '', 'Select', ['a', 'b', 'c'])
```

List can be created by prefixing name/label with `.list:` and passing array.

```
var items = ['a', 'b', 'c']
var selected_index = dialog('.list:Select', items)
if (selected_index)
    print('Selected item: ' + items[selected_index])
```

Icon for custom dialog can be set from icon font, file path or theme. Icons from icon font can be copied from icon selection dialog in Command dialog or dialog for setting tab icon (in menu 'Tabs/Change Tab Icon').

```
var search = dialog(
  '.title', 'Search',
  '.icon', 'search', // Set icon 'search' from theme.
  'Search', ''
  )
```

String[] settings()
Returns array with names of all custom user options.

Value settings(*optionName*)
Returns value for a custom user option.

settings(*optionName*, *value*)
Sets value for a new custom user option or overrides existing one.

String dateString(*format*)
Returns text representation of current date and time.

See QDateTime::toString() for details on formatting date and time.

Example:

```
var now = dateString('yyyy-MM-dd HH:mm:ss')
```

Command[] commands()
Return list of all commands.

setCommands(*Command[]*)
Clear previous commands and set new ones.

To add new command:

```
var cmds = commands()
cmds.unshift({
        name: 'New Command',
        automatic: true,
        input: 'text/plain',
        cmd: 'copyq: popup("Clipboard", input())'
        })
setCommands(cmds)
```

Command[] importCommands(*String*)
Return list of commands from exported commands text.

String exportCommands(*Command[]*)
Return exported command text.

NetworkReply networkGet(*url*)
Sends HTTP GET request.

Returns reply.

NetworkReply networkPost (*url*, *postData*)
Sends HTTP POST request.

Returns reply.

ByteArray env (*name*)
Returns value of environment variable with given name.

bool setEnv (*name*, *value*)
Sets environment variable with given name to given value.

Returns true only if the variable was set.

sleep (*time*)
Wait for given time in milliseconds.

afterMilliseconds (*time*, *function*)
Executes function after given time in milliseconds.

String[] screenNames ()
Returns list of available screen names.

ByteArray screenshot (*format='png'*[, *screenName*])
Returns image data with screenshot.

Default `screenName` is name of the screen with mouse cursor.

You can list valid values for `screenName` with `screenNames()`.

Example:

```
copy('image/png', screenshot())
```

ByteArray screenshotSelect (*format='png'*[, *screenName*])
Same as `screenshot()` but allows to select an area on screen.

String[] queryKeyboardModifiers ()
Returns list of currently pressed keyboard modifiers which can be 'Ctrl', 'Shift', 'Alt', 'Meta'.

int[] pointerPosition ()
Returns current mouse pointer position (x, y coordinates on screen).

setPointerPosition (*x*, *y*)
Moves mouse pointer to given coordinates on screen.

String iconColor ()
Get current tray and window icon color name.

iconColor (*colorName*)
Set current tray and window icon color name.

Resets color if color name is empty string.

Throws exception is the color name is not empty and invalid.

```
// Flash icon for few moments to get attention.
var color = iconColor()
for (var i = 0; i < 10; ++i) {
  iconColor("red")
  sleep(500)
  iconColor(color)
  sleep(500)
}
```

String iconTag()
Get current tray and window tag text.

iconTag(*tag*)
Set current tray and window tag text.

String iconTagColor()
Get current tray and window tag color name.

iconTagColor(*colorName*)
Set current tray and window tag color name.

Throws exception is the color name is invalid.

onClipboardChanged()
Called when clipboard or X11 selection changes.

Default implementation is:

```
if (!hasData()) {
    updateClipboardData();
} else if (runAutomaticCommands()) {
    saveData();
    updateClipboardData();
} else {
    clearClipboardData();
}
```

onOwnClipboardChanged()
Called when clipboard or X11 selection changes by a CopyQ instance.

Owned clipboard data contains `mimeOwner` format.

Default implementation calls `updateClipboardData()`.

onHiddenClipboardChanged()
Called when hidden clipboard or X11 selection changes.

Hidden clipboard data contains `mimeHidden` format set to `1`.

Default implementation calls `updateClipboardData()`.

onClipboardUnchanged()
Called when clipboard or X11 selection changes but data remained the same.

Default implementation does nothing.

onStart()
Called when application starts.

onExit()
Called just before application exists.

bool runAutomaticCommands()
Executes automatic commands on current data.

If an executed command calls `ignore()` or have "Remove Item" or "Transform" check box enabled, following automatic commands won't be executed and the function returns false. Otherwise true is returned.

clearClipboardData()
Clear clipboard visibility in GUI.

Default implementation is:

```
if (isClipboard()) {
    setTitle();
    hideDataNotification();
}
```

updateTitle()
Update main window title and tool tip from current data.

Called when clipboard changes.

updateClipboardData()
Sets current clipboard data for tray menu, window title and notification.

Default implementation is:

```
if (isClipboard()) {
    updateTitle();
    showDataNotification();
    setClipboardData();
}
```

setTitle([*title*])
Set main window title and tool tip.

synchronizeToSelection(*text*)
Synchronize current data from clipboard to X11 selection.

Called automatically from clipboard monitor process if option `copy_clipboard` is enabled.

Default implementation calls `provideSelection()`.

synchronizeFromSelection(*text*)
Synchronize current data from X11 selection to clipboard.

Called automatically from clipboard monitor process if option `copy_selection` is enabled.

Default implementation calls `provideClipboard()`.

saveData()
Save current data (depends on *mimeOutputTab*).

bool hasData()
Returns true only if some non-empty data can be returned by data().

Empty data is combination of whitespace and null characters or some internal formats (*mimeWindowTitle*, *mimeClipboardMode* etc.)

showDataNotification()
Show notification for current data.

hideDataNotification()
Hide notification for current data.

setClipboardData()
Sets clipboard data for menu commands.

21.4 Types

class ByteArray()
Wrapper for QByteArray Qt class.

See QByteArray.

`ByteArray` is used to store all item data (image data, HTML and even plain text).

Use `str()` to convert it to string. Strings are usually more versatile. For example to concatenate two items, the data need to be converted to strings first.

```
var text = str(read(0)) + str(read(1))
```

class File()

Wrapper for QFile Qt class.

See QFile.

To open file in different modes use:

- *open()* - read/write
- *openReadOnly()* - read only
- *openWriteOnly()* - write only, truncates the file
- *openAppend()* - write only, appends to the file

Following code reads contents of "README.md" file from current directory.

```
var f = new File('README.md')
if (!f.openReadOnly())
  raise 'Failed to open the file: ' + f.errorString()
var bytes = f.readAll()
```

Following code writes to a file in home directory.

```
var dataToWrite = 'Hello, World!'
var filePath = Dir().homePath() + '/copyq.txt'
var f = new File(filePath)
if (!f.openWriteOnly() || f.write(dataToWrite) == -1)
  raise 'Failed to save the file: ' + f.errorString()

// Always flush the data and close the file,
// before opening the file in other application.
f.close()
```

class Dir()

Wrapper for QDir Qt class.

Use forward slash as path separator, e.g. "D:/Documents/".

See QDir.

class TemporaryFile()

Wrapper for QTemporaryFile Qt class.

See QTemporaryFile.

```
var f = new TemporaryFile()
f.open()
f.setAutoRemove(false)
popup('New temporary file', f.fileName())
```

To open file in different modes, use same open methods as for *File*.

class Item(*Object*)
Object with MIME types of an item.

Each property is MIME type with data.

Example:

```
var item = {}
item[mimeText] = 'Hello, World!'
item[mimeHtml] = '<p>Hello, World!</p>'
write(mimeItems, pack(item))
```

class FinishedCommand(*Object*)
Properties of finished command.

Properties are:

- `stdout` - standard output
- `stderr` - standard error output
- `exit_code` - exit code

class NetworkReply(*Object*)
Received network reply object.

Properties are:

- `data` - reply data
- `error` - error string (set only if an error occurred)
- `redirect` - URL for redirection (set only if redirection is needed)
- `headers` - reply headers (array of pairs with header name and header content)

class Command(*Object*)
Wrapper for a command (from Command dialog).

Properties are same as members of Command struct.

21.5 Objects

arguments
Array for accessing arguments passed to current function or the script (`arguments[0]` is the script itself).

global
Object allowing to modify global scope which contains all functions like `copy()` or `add()`. This is useful for *Script Commands*.

21.6 MIME Types

Item and clipboard can provide multiple formats for their data. Type of the data is determined by MIME type.

Here is list of some common and builtin (start with `application/x-copyq-`) MIME types.

These MIME types values are assigned to global variables prefixed with `mime`.

Note: Content for following types is UTF-8 encoded.

mimeText
Data contains plain text content.

mimeHtml
Data contains HTML content.

mimeUriList
Data contains list of links to files, web pages etc.

mimeWindowTitle
Current window title for copied clipboard.

mimeItems
Serialized items.

mimeItemNotes
Data contains notes for item.

mimeOwner
If available, the clipboard was set from CopyQ (from script or copied items).

Such clipboard is ignored in CopyQ, i.e. it won't be stored in clipboard tab and automatic commands won't be executed on it.

mimeClipboardMode
Contains `selection` if data is from X11 mouse selection.

mimeCurrentTab
Current tab name when invoking command from main window.

Following command print the tab name when invoked from main window.

```
copyq data application/x-copyq-current-tab
copyq selectedTab
```

mimeSelectedItems
Selected items when invoking command from main window.

mimeCurrentItem
Current item when invoking command from main window.

mimeHidden
If set to `1`, the clipboard or item content will be hidden in GUI.

This won't hide notes and tags.

E.g. if you run following, window title and tool tip will be cleared.

```
copyq copy application/x-copyq-hidden 1 plain/text "This is secret"
```

mimeShortcut
Application or global shortcut which activated the command.

```
copyq:
var shortcut = data(mimeShortcut)
popup("Shortcut Pressed", shortcut)
```

mimeColor
Item color (same as the one used by themes).

Examples: #ffff00 rgba(255,255,0,0.5) bg - #000099

mimeOutputTab
Name of the tab where to store new item.

The clipboard data will be stored in tab with this name after all automatic commands are run.

Clear or remove the format to omit storing the data.

E.g. to omit storing the clipboard data use following in an automatic command.

```
removeData(mimeOutputTab)
```

Valid only in automatic commands.

21.7 Selected Items

Functions that get and set data for selected items and current tab are only available if called from Action dialog or from a command which is in menu.

Selected items are indexed from top to bottom as they appeared in the current tab at the time the command is executed.

21.8 Plugins

Use `plugins` object to access functionality of plugins.

`plugins.itemsync.`**selectedTabPath**`()`
Returns synchronization path for current tab (mimeCurrentTab).

```
var path = plugins.itemsync.selectedTabPath()
var baseName = str(data(plugins.itemsync.mimeBaseName))
var absoluteFilePath = Dir(path).absoluteFilePath(baseName)
// NOTE: Known file suffix/extension can be missing in the full path.
```

class `plugins.itemsync.`**tabPaths**(*Object*)
Object that maps tab name to synchronization path.

```
var tabName = 'Downloads'
var path = plugins.itemsync.tabPaths[tabName]
```

`plugins.itemsync.`**mimeBaseName**
MIME type for accessing base name (without full path).

Known file suffix/extension can be missing in the base name.

`plugins.itemtags.`**userTags**
List of user-defined tags.

`plugins.itemtags.`**tags**(*row*, ...)
List of tags for items in given rows.

`plugins.itemtags.`**tag**(*tagName*[, *rows*, ...])
Add given tag to items in given rows or selected items.

See *Selected Items*.

plugins.itemtags.**untag**(*tagName*[, *rows*, ...])
Remove given tag from items in given rows or selected items.

See *Selected Items*.

plugins.itemtags.**clearTags**([*rows*, ...])
Remove all tags from items in given rows or selected items.

See *Selected Items*.

plugins.itemtags.**hasTag**(*tagName*[, *rows*, ...])
Return true if given tag is present in any of items in given rows or selected items.

See *Selected Items*.

plugins.itemtags.**mimeTags**
MIME type for accessing list of tags.

Tags are separated by comma.

plugins.itempinned.**isPinned**(*rows*, ...)
Returns true only if any item in given rows is pinned.

plugins.itempinned.**pin**(*rows*, ...)
Pin items in given rows or selected items or new item created from clipboard (if called from automatic command).

plugins.itempinned.**unpin**(*rows*, ...)
Unpin items in given rows or selected items.

CHAPTER 22

Build from Source Code

This page describes how to build the application from source code.

22.1 Get the Source Code

Download the source code from git repository

```
git clone https://github.com/hluk/CopyQ.git
```

or download the latest source code archive from:

- latest release
- master branch in zip
- master branch in tar.gz

22.2 Install Dependencies

The build requires:

- CMake
- Qt

22.2.1 Ubuntu

On **Ubuntu** you can install all build dependencies with:

```
sudo apt install \
  git cmake \
  qtbase5-private-dev \
  qtscript5-dev \
  qttools5-dev \
  qttools5-dev-tools \
  libqt5svg5-dev \
  libqt5x11extras5-dev \
  libxfixes-dev \
  libxtst-dev \
  libqt5svg5
```

22.2.2 Fedora / RHEL / Centos

On **Fedora** and derivatives you can install all build dependencies with:

```
sudo yum install \
  gcc-c++ git cmake \
  libXtst-devel libXfixes-devel \
  qt5-qtbase-devel \
  qt5-qtsvg-devel \
  qt5-qttools-devel \
  qt5-qtscript-devel \
  qt5-qtx11extras-devel
```

22.3 Build and Install

Build the source code with CMake and make or using an IDE of your choice (see next sections).

```
cd CopyQ
cmake -DCMAKE_BUILD_TYPE=Release -DCMAKE_INSTALL_PREFIX=/usr/local .
make
make install
```

22.4 Qt Creator

Qt Creator is IDE focused on developing C++ and Qt applications.

Install Qt Creator from your package manager or by selecting it from Qt installation utility.

Set up Qt library, C++ compiler and CMake.

See also:

Adding Kits

Open file `CMakeLists.txt` in repository clone to create new project.

22.5 Visual Studio

You need to install Qt for given version Visual Studio.

In Visual Studio 2017 open folder containing repository clone using “File - Open - Folder”.

In older versions, create solution manually by running `cmake -G "Visual Studio 14 2015 Win64" .` (select appropriate generator name) in repository clone folder.

See also:

CMake - Visual Studio Generators

22.6 Building and Packaging for OS X

On OS X, required Qt 5 libraries and utilities can be easily installed with Homebrew.

```
brew install qt5
```

Build with the following commands.

```
cmake -DCMAKE_PREFIX_PATH="$(brew --prefix qt5)" .
cmake --build .
cpack
```

This will produce a self-contained application bundle `CopyQ.app` which can then be copied or moved into `/Applications`.

CHAPTER 23

Fixing Bugs and Adding Features

This page describes how to build, fix and improve the source code.

23.1 Making Changes

Pull requests are welcome at github project page.

For more info see Creating a pull request from a fork.

Try to keep the code style consistent with the existing code.

23.2 Build the Debug Version

```
mkdir build
cd build
cmake -DCMAKE_BUILD_TYPE=Debug -DWITH_TESTS=ON ..
make
```

23.3 Run Tests

You can run automated tests if the application is built either in debug mode, with CMake flag `-DWITH_TESTS=ON`.

Run the tests with following command.

```
copyq tests
```

This command will execute all test cases in new special CopyQ session so that user configuration, tabs and items are not modified. It's better to close any other CopyQ session before running tests since they can affect test results.

While running tests there must be **no keyboard and mouse interaction**. Preferably you can execute the tests in separate virtual environment. On Linux you can run the tests on virtual X11 server with `xvfb-run`.

```
xvfb-run sh -c 'openbox & sleep 1; copyq tests'
```

Test invocation examples:

- Print help for tests: `copyq tests --help`
- Run specific tests: `copyq tests commandHelp commandVersion`
- Run specific tests for a plugin: `copyq tests 'PLUGINS:pinned' isPinned`
- Run tests only for specific plugins: `copyq tests 'PLUGINS:pinned|tags'`
- List tests: `copyq tests -functions`
- List tests for a plugin: `copyq tests PLUGINS:tags -functions`
- Less verbose tests: `copyq tests -silent`
- Slower GUI tests: `COPYQ_TESTS_KEYS_WAIT=1000 COPYQ_TESTS_KEY_DELAY=50 copyq tests editItems`

CHAPTER 24

Source Code Overview

This page describes application processes and source code.

24.1 Applications, Frameworks and Libraries

The application is written in C++11 and uses Qt framework.

Source code can be build either with CMake.

Most icons in the application are taken from theme by default (which currently works only on Linux) with fallback to built-in icons provided by FontAwesome.

Application logo was created in Blender (scene source is here).

The logo is used for bigger application icon. Smaller icons were created in Inkscape (icon source is here).

24.2 Application Processes

There are these system processes:

- main GUI application,
- clipboard monitor (started from main application),
- multiple clients (run scripts in main application).

24.2.1 Main GUI Application

The main GUI application (or server) can be executed by running `copyq` binary without attributes (session name can be optionally specified on command line).

It creates local server allowing communication with clipboard monitor process and other client processes.

Each user can run multiple main application processes each with unique session name (default name is empty).

24.2.2 Clipboard Monitor

Clipboard monitoring happens in separate process because otherwise it would block GUI (in Qt clipboard needs to be accessed in main GUI thread). The process is allowed to crash or loop indefinitely due to bugs on some platforms.

Setting and retrieving clipboard can still happen in GUI thread (copying and pasting in various GUI widgets) but it's preferred to send and receive clipboard data using monitor process.

The monitor process is launched as soon as GUI application starts and is restarted whenever it doesn't respond to keep-alive requests.

24.2.3 Clients and Scripting

Scripting language is Qt Script (mostly same syntax and functions as JavaScript).

API is described in *Scripting API*.

A script can be started by passing arguments to `copyq`. This tells the server (main GUI application) to run the script.

After script finishes, the server sends back output of last command and exit code (non-zero if script crashes).

```
copyq eval 'read(0,1,2)' # prints first three items in list
copyq eval 'fail()' # exit code will be non-zero
```

While script is running, it can send print requests to client.

```
copyq eval 'print("Hello, "); print("World!\n")'
```

Scripts can ask for stdin from client.

```
copyq eval 'var client_stdin = input()'
```

The script run in current directory of client process.

```
copyq eval 'Dir().absolutePath()'
copyq eval 'execute("ls", "-l").stdout'
```

Single function call where all arguments are numbers or strings can be executed by passing function name and function arguments on command line. Following commands are equal.

```
copyq eval 'copy("Hello, World!")'
copyq copy "Hello, World!"
```

Getting application version or help mustn't require the server to be running.

```
copyq help
copyq version
```

Scripts run in separate thread and communicate with main thread by calling methods on an object of `ScriptableProxy` class. If called from non-main thread, these methods invoke a slot on an `QObject` in main thread and pass it a function object which simply calls the method again.

```
bool ScriptableProxy::loadTab(const QString &tabName)
{
    // This section is wrapped in an macro so to remove duplicate code.
    if (!m_inMainThread) {
        // Callable object just wraps the lambda so it's possible to send it to a␣
↪slot.
```

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```
        auto callable = createCallable([&]{ return loadTab(tabName); });

        m_inMainThread = true;
        QMetaObject::invokeMethod(m_wnd, "invoke", Qt::BlockingQueuedConnection, Q_
↪ARG(Callable*, &callable));
        m_inMainThread = false;

        return callable.result();
    }

    // Now it's possible to call method on an object in main thread.
    return m_wnd->loadTab(tabName);
}
```

24.3 Platform-dependent Code

Code for various platforms is stored in src/platform.

This leverages amount of `#ifs` and similar preprocessor directives in common code.

Each supported platform implements PlatformNativeInterface and `platformNativeInterface()`.

The implementations can contain:

- creating Qt application objects,
- clipboard handling (for clipboard monitor),
- focusing window and getting window titles,
- getting system paths,
- setting "autostart" option,
- handling global shortcuts (**note:** this part is in qxt/).

For unsupported platforms there is simple implementation to get started.

24.4 Plugins

Plugins are built as dynamic libraries which are loaded from runtime plugin directory (platform-dependent) after application start.

Code is stored in plugins.

Plugins implement interfaces from src/item/itemwidget.h.

To create new plugin just duplicate and rewrite an existing plugin. You can build the plugin with `make {PLUGIN_NAME}`.

24.5 Continuous Integration (CI)

The application binaries and packages are built and tested on multiple CI servers.

- **Travis CI**

  - Builds packages for OS X.
  - Builds and runs tests for Linux binaries.
- **GitLab CI**
  - Builds and runs tests for Ubuntu 16.04 binaries.
  - Screenshots are taken while GUI tests are running. These are available if a test fails.
- **AppVeyor**
  - Builds installers and portable packages for Windows.
  - Provides downloads for recent commits.
  - Release build are based on gcc-compiled binaries (Visual Studio builds are also available).
- **OBS Linux Packages**
  - Builds release packages for various Linux distributions.
- **Beta OBS Linux Packages**
  - Builds beta and unstable packages for various Linux distributions.
- **Coveralls**
  - Contains coverage report from tests run with Travis CI.

CHAPTER 25

Translations

Translations can be done either via Weblate (preferred) or by using Qt utilities.

For explanation for some frequent words see *Glossary*.

25.1 Translating Keyboard Accelerators

Some texts contain single `&` character that is not visible in UI and is used to mark the following character as keyboard accelerator (the character is usually underlined in UI). This is used to quickly access labels, menu items etc. with keyboard shortcut.

E.g. `&File` menu item can be accesses with `Alt+F` shortcut on most systems.

If multiple UI elements have the same keyboard accelerator, associated shortcut cycles through them (if pressed multiple times). It's better to avoid this by defining **unique accelerator**, but that's not always easy.

If unsure, use the original one enclosed in parentheses, e.g. label `For&mat:` can be translated to simplified Chinese as `(&M):`.

25.2 Writing Translatable Code

All GUI strings should be translatable. This is indicated in code with `tr("Some GUI text", "Hints for translators")`.

25.3 Adding New Language

To add new language for the application follow these steps.

1. Create new translation file with `utils/lupdate.sh translations/copyq_<LANGUAGE>.ts`.
2. Add new language file to Git repository.

3. Translate with Weblate service or locally with `linguist translations/copyq_<LANGUAGE>.ts`.

CHAPTER 26

Text Encoding

This page serves as concept for adding additional CopyQ command line switch to print and read texts in UTF-8 (i.e. without using system encoding).

Every time the bytes are read from a command (standard output or arguments from client) the input is expected to be either just series of bytes or text in system encoding (possibly Latin1 on Windows). But texts/strings in CopyQ and in clipboard are UTF-8 formatted (except some MIME types with specified encoding).

When reading system-encoded text (MIME starts with "text/") CopyQ re-encodes the data from system encoding to UTF-8. That's not a problem if the received data is really in system encoding. But if you send data from Perl with the UTF-8 switch, CopyQ must also know that UTF-8 is used instead of system encoding.

The same goes for other way. CopyQ sends texts back to client or to a command in system encoding so it needs to convert these texts from UTF-8.

As for the re-encoding part, Qt does nice job transforming characters from UTF-8 but of course for lot of characters in UTF-8 there is no alternative in Latin1 and other encodings.

CHAPTER 27

Customize and Build the Windows Installer

27.1 Translations

Most of the translations for the installer are taken directly from the installer generator Inno Setup (http://www.jrsoftware.org/isinfo.php).

You can add translations for CopyQ-specific messages in `shared/copyq.iss`. Just copy lines starting with `en.` from `[Custom Messages]` section and change prefix to `de.` (for german translation).

27.2 Modify and Test Installation

Normally the installation file is generated automatically by Appveyor which executes appveyor-after-build.bat to generate portable app folder from build files and runs Inno Setup (the last line).

So you basically don't have to build the app, you just need: - the unzipped portable version of the app, - clone of this repository and - Inno Setup.

Open shared/copyq.iss in Inno Setup and add few lines at the beginning of the file.

```
#define AppVersion 2.8.1-beta
#define Source C:\path\to\CopyQ-repository-clone
#define Destination C:\path\to\CopyQ-portable
```

You should now be able to modify the file in Inno Setup and run it easily.

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