## 1 A Step By Step Contribution

1.1 Using the GitHub web interface .................................................. 4
   1.1.1 Fork QGIS-Documentation .............................................. 4
   1.1.2 Make changes ................................................................. 4
   1.1.3 Modify files ................................................................. 6
   1.1.4 Share your changes via Pull Request ................................... 6
   1.1.5 Delete your merged branch .............................................. 9

1.2 Using Git command line tools .................................................. 9
   1.2.1 Local repository ............................................................ 10
   1.2.2 Add another remote repository ....................................... 11
   1.2.3 Update your base branch ............................................... 11
   1.2.4 Contribute to your production branch ................................. 12
   1.2.5 Share your Changes ....................................................... 12
   1.2.6 Clean-up your local and remote repository ......................... 12

1.3 Further reading ................................................................... 13

## 2 Writing Guidelines

2.1 Writing Documentation .......................................................... 15
   2.1.1 Headlines ................................................................. 15
   2.1.2 Lists .......................................................... 16
   2.1.3 Inline Tags ........................................................... 16
   2.1.4 Labels/references ..................................................... 17
   2.1.5 Figures and Images ................................................... 17
   2.1.6 Index .......................................................... 21
   2.1.7 Special Comments .................................................... 21
   2.1.8 Code Snippets .................................................... 21
   2.1.9 Footnotes ........................................................... 22

2.2 Managing Screenshots .......................................................... 22
   2.2.1 Add new Screenshots ................................................. 22
   2.2.2 Translated Screenshots ............................................... 23

2.3 Documenting Processing algorithms ...................................... 23

## 3 Writing code in the PyQGIS Cookbook

3.1 How to write testable code snippets ...................................... 27
   3.1.1 Doctest sphinx directives ........................................... 27
   3.1.2 Grouping tests .......................................................... 28

3.2 How to test snippets on your local machine .......................... 29

## 4 Translation Guidelines

4.1 Translation process .............................................................. 31

4.2 Translate a file ................................................................. 32
   4.2.1 Translation in Transifex ............................................ 32
   4.2.2 Translation in Qt Linguist ........................................... 34
   4.2.3 Translate a manual .................................................... 36
4.2.4 Summary Rules for translation ........................................ 37

5 Substitutions .................................................. 39
  5.1 Usage .................................................................... 40
  5.2 Common Substitutions ............................................. 40
    5.2.1 Platform Icons ............................................... 40
    5.2.2 Menu Items .................................................. 40
  5.3 Toolbar Button Icons ............................................. 41
    5.3.1 Manage Layers and overview ............................... 41
    5.3.2 File .......................................................... 42
    5.3.3 Edit .......................................................... 42
    5.3.4 Identity result ............................................... 42
    5.3.5 Digitizing and Advanced Digitizing ...................... 43
    5.3.6 Map Navigation and attributes ............................. 44
    5.3.7 Selection and Expressions ................................ 44
    5.3.8 Labels and Diagrams ........................................ 45
    5.3.9 Decorations .................................................. 45
    5.3.10 Help ......................................................... 45
    5.3.11 Colors ...................................................... 46
  5.4 Other basic icons .................................................. 46
  5.5 Attribute Table ................................................... 47
  5.6 Projections and Georeferencer ................................ 47
  5.7 Print Layout ...................................................... 47
  5.8 Layer Properties .................................................. 49
  5.9 Plugins ............................................................ 50
    5.9.1 Processing .................................................... 50
    5.9.2 Various Core Plugins ..................................... 50
    5.9.3 Grass integration ............................................ 51
QGIS Documentation will be built automatically on the server at 0, 8am, 4pm US/Pacific (Pacific Time). The current status is available at https://docs.qgis.org.

QGIS Documentation source files are available at https://github.com/qgis/QGIS-Documentation. They are mainly written using the reStructuredText (reST) format syntax, coupled with some scripts from the Sphinx toolset to post-process the HTML output. For general information on these tools, see http://docutils.sourceforge.net/docs/ref/rst/restructuredtext.html or https://www.sphinx-doc.org/en/master/usage/restructuredtext/basics.html.

The following chapters will guide you through learning:

- how to manage the documentation source files using git system and the GitHub platform on which they are stored
- how to modify the texts, provide screenshots… in a compliant way
- how to share and ensure your modifications are pushed to the official docs.

If you are looking for general information about how to contribute to the QGIS project, you may find help at Get Involved in the QGIS Community.
CHAPTER
ONE

A STEP BY STEP CONTRIBUTION

• Using the GitHub web interface
  – Fork QGIS-Documentation
  – Make changes
    • Alternative 1: Use the Edit on GitHub shortcut
    • Alternative 2: Create an ad hoc branch in your documentation repository
  – Modify files
  – Share your changes via Pull Request
    • Start a new pull request
    • Compare changes
    • Describe your pull request
    • Review and comment pull request
    • Make corrections
  – Delete your merged branch
• Using Git command line tools
  – Local repository
  – Add another remote repository
  – Update your base branch
  – Contribute to your production branch
  – Share your Changes
  – Clean-up your local and remote repository
• Further reading

Note: Though QGIS-Documentation is used to demonstrate the process, all commands and steps shown below also apply to QGIS-Website.

If you are reading these lines, it is certainly because you are willing to contribute to writing QGIS documentation and are looking for a how-to. You have come to the right place! The current document will guide you through the different ways to achieve this objective, showing you the main steps to follow, the tricks you can use and the traps you should be aware of.

For any help, do not hesitate to either ask in a comment on the issue report you are trying to fix or write to the QGIS-community-team list. More details at Get involved in documentation.
Let’s now dive into the process.

Documentation sources are stored using the git version control system and are available on GitHub at https://github.com/qgis/QGIS-Documentation. A list of issues to fix and features to explain can be found at https://github.com/qgis/QGIS-Documentation/issues.

Tip: If you are a first-time contributor and do not know where to start from, you may be interested in tackling our welcoming reports.

There are two main ways, not mutually exclusive, to modify the files:

1. Using the GitHub web interface
2. Using Git command line tools.

1.1 Using the GitHub web interface

The GitHub web interface allows you to do the following:

- edit files
- preview and commit your changes
- make a pull request to have your changes inserted into the main repository
- create, update, or delete branches

If you are not yet familiar with git and GitHub vocabulary, you may want to read the GitHub Hello-world project to learn some basic vocabulary and actions that will be used below.

Note: If you are fixing a reported issue

If you are making changes to fix an issue, add a comment to the issue report to assign it to yourself. This will prevent more than one person from working on the same issue.

1.1.1 Fork QGIS-Documentation

Assuming you already have a GitHub account, you first need to fork the source files of the documentation.

Navigate to the QGIS-Documentation repository page and click on the Fork button in the upper right corner.

In your GitHub account you will find a QGIS-Documentation repository (https://github.com/<YourName>/QGIS-Documentation). This repository is a copy of the official QGIS-Documentation repository where you have full write access and you can make changes without affecting the official documentation.

1.1.2 Make changes

There are different ways to contribute to QGIS documentation. We show them separately below, but you can switch from one process to the other without any harm.
Alternative 1: Use the Edit on GitHub shortcut

Pages on the QGIS documentation website can be edited quickly and easily by clicking on the Edit on GitHub link at the top right of each page.

1. This will open the file in the qgis:master branch with a message at the top of the page telling you that you don’t have write access to this repo and your changes will be applied to a new branch of your repository.

2. Do your changes. Since the documentation is written using the reStructureText syntax, depending on your changes, you may need to rely on the writing guidelines.

3. When you finish, make a short comment about your changes and click on Propose changes. This will generate a new branch (patch–xxx) in your repository.

4. After you click on Propose changes, github will navigate to the Comparing changes page.

   • If you’re done making changes, skip to Compare changes in the Share your changes via Pull Request section below.

   • If there are additional changes that you want to make before submitting them to QGIS, follow these steps:

      1. Navigate to your fork of QGIS-Documentation (https://github.com/<YourName>/QGIS-Documentation)
      2. Click on and search for the patch–xxx branch. Select this patch branch.
      3. Jump down to Modify files below.

Note: The Edit on GitHub shortcut is also available in the drop-down menu at the bottom of the left sidebar.

Alternative 2: Create an ad hoc branch in your documentation repository

You can edit files directly from your fork of the QGIS Documentation.

Click on in the upper left corner of your forked QGIS-Documentation repository and enter a unique name in the text field to create a new branch. The name of the new branch should relate to the problem you intend to fix. The button should now say Branch: branch_name

Tip: Do your changes in an ad hoc branch, never in the master branch

By convention, avoid making changes in your master branch except when you merge the modifications from the master branch of qgis/QGIS-Documentation into your copy of the QGIS-Documentation repository. Separate branches allow you to work on multiple problems at the same time without interfering with other branches. If you make a mistake you can always delete a branch and start over by creating a new one from the master branch.
1.1.3 Modify files

1. Browse the source files of your fork of QGIS-Documentation to the file that needs to be modified
2. Make your modifications following the writing guidelines
3. When you finish, navigate to the Commit Changes frame at the bottom of the page, make a short comment about your changes, and click on Commit Changes to commit the changes directly to your branch. Make sure Commit directly to the branch_name branch is selected.
4. Repeat the previous steps for any other file that needs to be updated to fix the issue

1.1.4 Share your changes via Pull Request

You need to make a pull request to integrate your changes into the official documentation.

**Note:** If you used an Edit on GitHub link

After you commit your changes GitHub will automatically open a new page comparing the changes you made in your patch-xxx branch to the qgis/QGIS-Documentation master branch.

Skip to Step 2 below.

Start a new pull request

Navigate to the main page of the QGIS-Documentation repository and click on New pull request.

Compare changes

If you see two dialog boxes, one that says base:master and the other compare:branch_name (see figure), this will only merge your changes from one of your branches to your master branch. To fix this click on the compare across forks link.

![Comparing changes](image)

Fig. 1.1: If your Comparing changes page looks like this, click on the compare across forks link.

You should see four drop-down menus. These will allow you to compare the changes that you have made in your branch with the master branch that you want to merge into. They are:

- **base fork**: the fork that you want to merge your changes into
- **base**: the branch of the base fork that you want to merge your changes into
- **head fork**: the fork that has changes that you want to incorporate into the base fork
- **compare**: the branch with those changes

Select qgis/QGIS-Documentation as the base fork with master as base, set the head fork to your repository <YourName>/QGIS-Documentation, and set compare to your modified branch.
Fig. 1.2: Comparing changes between qgis/QGIS-Documentation and your repository

A green check with the words **Able to merge** shows that your changes can be merged into the official documentation without conflicts.

Click the **Create pull request** button.

**Warning:** If you see **Can’t automatically merge.**

This means that there are conflicts. The files that you are modifying are not up to date with the branch you are targeting because someone else has made a commit that conflicts with your changes. You can still create the pull request but you'll need to fix any conflicts to complete the merge.

**Tip:** Though being translated, the latest version of QGIS documentation is still maintained and existing issues are fixed. If you are fixing issues for a different release, change base from master to the appropriate release... branch in the steps above.

**Describe your pull request**

A text box will open: fill in any relevant comments for the issue you are addressing.

If this relates to a particular issue, add the issue number to your comments. This is done by entering # and the issue number (e.g. #1234). If preceded by terms like fix or close, the concerned issue will be closed as soon as the pull request is merged.

Add links to any documentation pages that you are changing.

Click on **Create pull request.**

**Review and comment pull request**

As seen above, anyone can submit modifications to the documentation through pull requests. Likewise anyone can review pull requests with questions and comments. Perhaps the writing style doesn’t match the project guidelines, the change is missing some major details or screenshots, or maybe everything looks great and is in order. Reviewing helps to improve the quality of the contribution, both in form and substance.

To review a pull request:

1. Navigate to the pull requests page and click on the pull request that you want to comment on.
2. At the bottom of the page you will find a text box where you can leave general comments about the pull request.
3. To add comments about specific lines,
1. Click on [Files changed] and find the file you want to comment on. You may have to click on Display the source diff to see the changes.

2. Scroll to the line you want to comment on and click on the [+] button. That will open a text box allowing you to leave a comment.

Specific line comments can be published either:

- as single comments, using the Add single comment button. They are published as you go. Use this only if you have few comments to add or when replying to another comment.

- or as part of a review, pressing the Start a review button. Your comments are not automatically sent after validation, allowing you to edit or cancel them afterwards, to add a summary of the main points of the review or global instructions regarding the pull request and whether you approve it or not. This is the convenient way since it’s more flexible and allows you to structure your review, edit the comments, publish when you are ready and send a single notification to the repository followers and not one notification for each comment. Get more details.

![Fig. 1.3: Commenting a line with a change suggestion](image)

Line comments can embed suggestions that the pull request writer can apply to the pull request. To add a suggestion, click the [Insert a suggestion] button on top of the comment text box and modify the text within the suggestion block.

**Tip: Prefer committing suggestions to your pull request as a batch**

As a pull request author, when directly incorporating reviewers’ feedback in your pull request, avoid using the Commit suggestion button at the bottom of the comment when you have many suggestions to address and prefer adding them as a batch commit, that is:

1. Switch to the [Files changed] tab
2. Press Add suggestion to batch for each rewording you’d like to include. You will see a counter increasing as you go.
3. Press any of the Commit suggestions button when you are ready to apply the suggestions to your pull request, and enter a message describing the changes.

This will add all the modifications to your branch as a single commit, resulting in a more legible history of changes and less notifications for the repository followers. Incidentally, proceeding as this will also save you many clicks.
Make corrections

A new pull request will automatically be added to the Pull requests list. Other editors and administrators will review your pull request and they may make suggestions or ask for corrections.

A pull request will also trigger automated build checks (eg, for rst formatting, python code syntaxes), and reports are displayed at the bottom of the page. If an error is found, a red cross will appear next to your commit. Click on the red cross or on Details in the summary section at the bottom of the pull request page to see the details of the error. You’ll have to fix any reported errors or warnings before your changes are committed to the qgis/QGIS-Documentation repository.

You can make modifications to your pull request until it is merged with the main repository, either to improve your request, to address requested modifications, or to fix a build error.

To make changes click on the Files changed tab in your pull request page and click the pencil button next to the filename that you want to modify.

Any additional changes will be automatically added to your pull request if you make those changes to the same branch that you submitted in your pull request. For this reason, you should only make additional changes if those changes relate to the issue that you intend to fix with that pull request.

If you want to fix another issue, create a new branch for those changes and repeat the steps above.

An administrator will merge your contribution after any build errors are corrected, and after you and the administrators are satisfied with your changes.

1.1.5 Delete your merged branch

You can delete the branch after your changes have been merged. Deleting old branches saves you from having unused and outdated branches in your repository.

1. Navigate to your fork of the QGIS-Documentation repository (https://github.com/<YourName>/QGIS-Documentation).

2. Click on the Branches tab. Below Your branches you’ll see a list of your branches.

3. Click on the Delete this branch icon to delete any unwanted branches.

1.2 Using Git command line tools

The GitHub web interface is an easy way to update the QGIS-documentation repo with your contributions, but it doesn’t offer tools to:

- group your commits and clean your change history
- fix possible conflicts with the main repo
- build the documentation to test your changes

You need to install git on your hard drive in order to get access to more advanced and powerful tools and have a local copy of the repository. Some basics you may often need are exposed below. You’ll also find rules to care about even if you opt for the web interface.

In the code samples below, lines beginning with $ show commands you should type while # are comments.
1.2.1 Local repository

Now you are ready to get a local clone of your QGIS-Documentation repository.

You can clone your QGIS repository using the web URL as follows:

```
# move to the folder in which you intend to store the local repository
$ cd ~/Documents/Development/QGIS/
$ git clone https://github.com/<YourName>/QGIS-Documentation.git
```

The former command line is simply an example. You should adapt both the path and the repository URL, replacing `<YourName>` with your github user name.

Check the following:

```
# Enter the local repository
$ cd ./QGIS-Documentation
$ git remote -v
origin https://github.com/<YourName>/QGIS-Documentation.git (fetch)
origin https://github.com/<YourName>/QGIS-Documentation.git (push)
$ git branch
* master
```

- **origin** is the name of the remote repository of your QGIS-Documentation repository.
- **master** is the default main branch. You should never use it to contribute! Never!

Alternatively you can clone your QGIS repository using the SSH protocol:

```
# move to the folder in which you intend to store the local repository
$ cd ~/Documents/Development/QGIS/
$ git clone git@github.com:<YourName>/QGIS-Documentation.git
```

Tip: Permission denied (publickey) error?

If you get a Permission denied (publickey) error with the former command, there may be a problem with your SSH key. See GitHub help for details.

Check the following if you used the SSH protocol:

```
# Enter the local repository
$ cd ./QGIS-Documentation
$ git remote -v
origin git@github.com:<YourName>/QGIS-Documentation.git (fetch)
origin git@github.com:<YourName>/QGIS-Documentation.git (push)
$ git branch
* master
```

You can start to work here but in the long term process you will get a lot of issues when you will push your contribution (called Pull Request in github process) as the master branch of the qgis/QGIS-Documentation repository will diverge from your local/remote repository. You then need to keep track of the main remote repository and work with branches.
1.2.2 Add another remote repository

To be able to follow the work in the main project, add a new remote repository in your local repository. This new remote repository is the QGIS-Documentation repository from QGIS project:

```
$ git remote add upstream https://github.com/qgis/QGIS-Documentation.git
$ git remote -v
origin https://github.com/<YourName>/QGIS-Documentation.git (fetch)
origin https://github.com/<YourName>/QGIS-Documentation.git (push)
upstream https://github.com/qgis/QGIS-Documentation.git (fetch)
upstream https://github.com/qgis/QGIS-Documentation.git (push)
```

Similarly, you can use the SSH protocol to add a remote repository in your local repository:

```
$ git remote add upstream git@github.com:qgis/QGIS-Documentation.git
$ git remote -v
origin git@github.com:<YourName>/QGIS-Documentation.git (fetch)
origin git@github.com:<YourName>/QGIS-Documentation.git (push)
upstream git@github.com:qgis/QGIS-Documentation.git (fetch)
upstream git@github.com:qgis/QGIS-Documentation.git (push)
```

So now you have the choice between two remote repository:

- **origin** to push your local branch in your remote repository
- **upstream** to merge (if you have right to do so) your contribution to the official one OR to update your master branch of local repository from the master branch of the official repository.

**Note:** *upstream* is just a label, a kind of standard name but you can call it as you want.

1.2.3 Update your base branch

Before working on a new contribution, you should always update your master branch in your local repository. Assuming you are willing to push changes to the testing documentation, run the following command lines:

```
# switch to master branch (it is easy to forget this step!)
$ git checkout master
# get "information" from the master branch in the upstream repository
# (aka qgis/QGIS-Documentation's repository)
$ git fetch upstream master
# merge update from upstream/master to the current local branch
# (which should be master, see step 1)
$ git merge upstream/master
# update **your** remote repository (aka <YourName>/QGIS-Documentation)
$ git push origin master
```

Now you have your local and remote repositories which both have their master branch up to date with the official master branch of QGIS-Documentation. You can start to work on your contribution.

**Note:** Switch the branch if you wish to contribute to released doc

Along with the testing documentation, we continue to fix issues in the latest release, meaning that you can also contribute to it. Follow the previous section sample code, replacing master with the corresponding branch of the latest documentation.
1.2.4 Contribute to your production branch

Now that your base branch is updated, you need to create a dedicated branch in which you add your contribution. Always work on a branch other than the base branch! Always!

```bash
# Create a new branch
$ git checkout -b myNewBranch
# checkout means go to the branch
# and -b flag creates a new branch if needed, based on current branch
# Let's check the list of existing branches (* indicates the current branch)
$ git branch
master
release_2.18
...
* myNewBranch
# You can now add your contribution, by editing the concerned file(s)
# with any application (in this case, vim is used)
$ vim myFile
# once done
$ git add myFile
$ git commit
```

Few words about commit/push commands:

- try to commit only one contribution (atomic change) i.e. address only one issue
- try to explain carefully what you change in the title of your commit and in the description. The first line is a title and should start by an upper case letter and have 80 characters length, don't end with a . Be concise. Your description can be longer, end with a . and you can give much more details.
- use a # with a number to refer to an issue. Prefix with Fix if you fix the ticket: your commit will close the ticket.

Now that your changes are saved and committed in your local branch, you need to send them to your remote repository in order to create pull request:

```
$ git push origin myNewBranch
```

1.2.5 Share your Changes

Now you can go to your github repository and create a Pull Request as exposed in a previous section. Ensure you create a PR from your branch to the remote branch you are targetting in the official QGIS-Documentation repository.

1.2.6 Clean-up your local and remote repository

After your PR has been merged into the official QGIS-Documentation, you can delete your branch. If you work a lot this way, in few weeks you will get a lot of unuseful branches. So keep your repository clean this way:

```bash
# delete local branch
$ git branch -d myNewBranch
# Remove your remote myNewBranch by pushing nothing to it
$ git push origin :myNewBranch
```

And do not forget to update the master branch in your local repository!
1.3 Further reading

- Other than the Github web interface and the git command line tools exposed above, there are also GUI applications you can use to create and manage your contributions to the documentation.

- When the changes in the pull request are conflicting with recent changes pushed to the target branch, the conflicts need to be resolved before a merge is possible:
  
  - if the conflict relates to few competing lines, a Resolve conflicts button is available in the Github pull request page. Press the button and resolve the issue as explained at https://help.github.com/articles/resolving-a-merge-conflict-on-github/
  
  - if the conflict involves files renaming or removal, then you’d need to resolve the conflict using git commands. Typically, you have to first rebase your branch over the target branch using git rebase targetBranch call and fix the conflicts that are reported. Read more at https://help.github.com/articles/resolving-a-merge-conflict-using-the-command-line/

- Sometimes, at the end of the proofreading process, you may end up with changes split into multiple commits that are not necessarily worth it. Git command lines help you squash these commits to a smaller number and more meaningful commit messages. Some details at https://help.github.com/articles/using-git-rebase-on-the-command-line/
In general, when creating reST documentation for the QGIS project, please follow the Python documentation style guidelines. For convenience, we provide a set of general rules we rely on for writing QGIS documentation below.

## 2.1 Writing Documentation

### 2.1.1 Headlines

To each webpage of the documentation corresponds a `.rst` file.

Sections used to structure the text are identified through their title which is underlined (and overlined for the first level). Same level titles must use same character for underline adornment. In QGIS Documentation, you should use following styles for chapter, section, subsection and minisec.
2.1.2 Lists

Lists are useful for structuring the text. Here are some simple rules common to all lists:

• Start all list items with a capital letter
• Do not use punctuation after list items that only contain a single simple sentence
• Use period ( . ) as punctuation for list items that consist of several sentences or a single compound sentence

2.1.3 Inline Tags

You can use tags to emphasize items.

• **Menu GUI**: to mark a complete sequence of menu selections, including selecting submenus and choosing a specific operation, or any subsequence of such a sequence.
  
  ::menuselection:`menu --> submenu`

• **Dialogs and Tab titles**: Labels presented as part of an interactive user interface including window titles, tab titles, button and option labels.
  
  ::guilabel:`title`

• **Filenames and directories**
  
  ::file:`README.rst`

• **Icons with popup text**
  
  ![icon] ::sup:`popup_text`

  (see *image* below).

• **Keyboard shortcuts**
  
  ::kbd:`Ctrl+B`

  will show Ctrl+B

When describing keyboard shortcuts, the following conventions should be used:

– Letter keys are displayed using uppercase: S
– Special keys are displayed with an uppercase first letter: Esc
• Key combinations are displayed with a + sign between keys, without spaces: Shift+R

2.1.4 Labels/references

Anchors inside the text can be used to create hyperlinks to sections or pages. The example below creates the anchor of a section (e.g., Label/reference title)

.. _my_anchor:

**Label/reference**
---------------------

To call the reference in the same page, use

```
see my_anchor_ for more information.
```

which will return:

see *my_anchor* for more information.

Notice that it will jump to the line/thing following the ‘anchor’. You do not need to use apostrophes, but you do need to have empty lines after the anchor.

Another way to jump to the same place from anywhere in the documentation is to use the :ref: role.

```
see :ref:`my_anchor` for more information.
```

which will create a link with the caption instead (in this case the title of this section!):

see *Labels/references* for more information.

So, reference 1 (*my_anchor*) and reference 2 (*Labels/references*). Because the reference often displays a full caption, it is not really necessary to use the word section. Note that you can also use a custom caption to describe the reference:

```
see :ref:`Label and reference <my_anchor>` for more information.
```

which returns:

see *Label and reference* for more information.

2.1.5 Figures and Images

**Pictures**

To insert an image, use

```
.. figure:: /static/common/logo.png
   :width: 10 em
```

which returns
Replacement

You can put an image inside text or add an alias to use everywhere. To use an image inside a paragraph, first create an alias in the `source/substitutions.txt` file:

```
.. |nice_logo| image:: /static/common/logo.png
   :width: 1 em
```

and then call it in your paragraph:

```
My paragraph begins here with a nice logo |nice_logo|.
```

This is how the example will be displayed:

My paragraph begins here with a nice logo QGIS.

To allow preview rendering in GitHub that is as close as possible to HTML rendering, you will also need to add the image replacement call at the end of the file you changed. This can be done by copy-pasting it from `substitutions.txt` or by executing the `scripts/find_set_subst.py` script.

**Note:** Currently, to ensure consistency and help in the use of QGIS icons, a list of aliases is built and available in the *Substitutions* chapter.

Figure

```
.. _figure_logo:
```

```
.. figure:: /static/common/logo.png
   :width: 20 em
   :align: center

   A caption: A logo I like
```

The result looks like this:
Fig. 2.1: A caption: A logo I like

To avoid conflicts with other references, always begin figure anchors with _figure_ and use terms that easily connect to the figure caption. While only the centered alignment is mandatory for the image, feel free to use any other options for figures (such as width, height, scale...) if needed.

The scripts will insert an automatically generated number before the caption of the figure in the generated HTML and PDF versions of the documentation.

To use a caption (see My caption) just insert indented text after a blank line in the figure block.

A figure can be referenced using the reference label like this:

\[ \text{see :numref:`figure_logo`} \]

renders like this:

see Fig. 2.1

This is the preferred way of referencing figures.

**Note:** For :numref: to work, the figure must have a caption.

Avoid using :ref: instead of :numref: for reference, since this returns the full caption of the image.

\[ \text{see :ref:`figure_logo`} \]

renders like this:

see A caption: A logo I like

**Tables**

A simple table can be coded like this

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>y</td>
<td>z</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>
It will render like this:

\[
\begin{array}{ccc}
  x & y & z \\
  1 & 2 & 3 \\
  4 & 5
\end{array}
\]

Use a backslash followed by an empty space to leave an empty space.

You can also make more complicated tables and reference them:

\[
\begin{array}{|l|l|}
\hline
\text{Windows} & \text{macOS} \\
\hline
\text{win} & \text{osx} \\
\hline
\text{and of course not to forget nix} \\
\hline
\end{array}
\]

My drawn table, mind you this is unfortunately not regarded as a caption

You can reference it like this: my_drawn_table.

For even more complex tables, it is easier to use list-table:

\[
\begin{verbatim}
.. list-table::
:header-rows: 1
:widths: 20 20 20 40

* What
* Purpose
* Key word
* Description

**Test**
`Useful test`
complexity
Geometry. One of:
* Point
* Line
\end{verbatim}
\]

The result:

<table>
<thead>
<tr>
<th>What</th>
<th>Purpose</th>
<th>Key word</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>Useful test</td>
<td>complexity</td>
<td>Geometry. One of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* Point</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* Line</td>
</tr>
</tbody>
</table>
2.1.6 Index

An index is a handy way to help the reader find information in a document. QGIS documentation provides some essential indices. There are a few rules that help us provide a set of indices that are really useful (coherent, consistent and really connected to each other):

- An index should be human readable, understandable and translatable; an index can be made from many words but you should avoid any unneeded `_`-`...` characters to link them i.e., Loading layers instead of loading_layers or loadingLayers.
- Capitalize only the first letter of the index unless the word has a particular spelling. E.g., Loading layers, Atlas generation, WMS, pgsql2shp.
- Keep an eye on the existing Index list in order to reuse the most convenient expression with the right spelling and avoid unnecessary duplicates.

Several index tags exist in RST. You can use the inline :index: tag within normal text:

```
QGIS can load several :index:`Vector formats` supported by GDAL/OGR ...
```

Or you can use the .. index:: block-level markup which links to the beginning of the next paragraph. Because of the rules mentioned above, it is recommended to use the block-level tag:

```
.. index:: WMS, WFS, Loading layers
```

It is also recommended to use index parameters such as single, pair and see, in order to build a more structured and interconnected index table. See Index generating for more information on index creation.

2.1.7 Special Comments

Sometimes, you may want to emphasize some points of the description, either to warn, remind or give some hints to the user. In QGIS Documentation, we use reST special directives such as .. warning::..., seealso::`, `.. note:: and .. tip::. These directives generate frames that highlight your comments. See Paragraph Level markup for more information. A clear and appropriate title is required for both warnings and tips.

```
.. tip:: **Always use a meaningful title for tips**

Begin tips with a title that summarizes what it is about. This helps users to quickly overview the message you want to give them, and decide on its relevance.
```

2.1.8 Code Snippets

You may also want to give examples and insert code snippets. In this case, write the comment below a line with the :: directive inserted. For a better rendering, especially to apply color highlighting to code according to its language, use the code-block directive, e.g. .. code-block:: xml. More details at Showing code.

**Note:** While texts in note, tip and warning frames are translatable, be aware that code block frames do not allow translation. So avoid comments not related to the code and keep comments as short as possible.
2.1.9 Footnotes

Please note: Footnotes are not recognized by any translation software and it is also not converted to pdf format properly. So, if possible, don't use footnotes within any documentation.

This is for creating a footnote (showing as example¹)

| blabla [1] |

Which will point to:

2.2 Managing Screenshots

2.2.1 Add new Screenshots

Here are some hints to create new, nice looking screenshots. The images should be placed in an image(img/) folder that is located in the same folder as the referencing .rst file.

- You can find some prepared QGIS-projects that are used to create screenshots in the ./qgis-projects folder of this repository. This makes it easier to reproduce screenshots for the next version of QGIS. These projects use the QGIS Sample Data (aka Alaska Dataset), which should be placed in the same folder as the QGIS-Documentation Repository.

- Reduce the window to the minimal space needed to show the feature (taking the whole screen for a small modal window > overkill)

- The less clutter, the better (no need to activate all the toolbars)

- Don't resize them in an image editor; the size will be set into the .rst files if necessary (downscaling the dimensions without properly upping the resolution > ugly)

- Cut the background

- Make the top corners transparent if the background is not white

- Set print size resolution to 135 dpi (e.g. in Gimp set the print resolution Image ▶ Print size and save). This way, images will be at original size in html and at a good print resolution in the PDF. You can also use ImageMagick convert command to do a batch of images:

  ```
  convert -units PixelsPerInch input.png -density 135 output.png
  ```

- Save them as .png (to avoid .jpeg artifacts)

- The screenshot should show the content according to what is described in the text

Tip: If you are on Ubuntu, you can use the following command to remove the global menu function and create smaller application screens with menus:

```bash
sudo apt autoremove appmenu-gtk appmenu-gtk3 appmenu-qt
```
2.2.2 Translated Screenshots

Here are some additional hints for those that want to create screenshots for a translated user guide:

Translated images should be placed in a `img/<your_language>/` folder. Use the same filename as the English 'original' screenshot.

2.3 Documenting Processing algorithms

If you want to write documentation for Processing algorithms, consider these guidelines:

- Processing algorithm help files are part of QGIS User Guide, so use the same formatting as User Guide and other documentation.
- Each algorithm documentation should be placed in the corresponding `provider` folder and `group` file, e.g. the algorithm `Voronoi polygon` belongs to the QGIS provider and to the group `vectorgeometry`. So the correct file to add the description is: `source/docs/user_manual/processing_algs/qgis/vectorgeometry.rst`.

**Note:** Before starting to write the guide, check if the algorithm is already described. In this case, you can enhance the existing description.

- It is extremely important that each algorithm has an anchor that corresponds to the provider name + the unique name of the algorithm itself. This allows the Help button to open the Help page of the correct section. The anchor should be placed above the title, e.g. (see also the Labels/references section):

```
.. _qgisvoronoipolygons:
Voronoi polygons
```

To find out the algorithm name you can just hover the mouse on the algorithm in the Processing toolbox.

- Avoid using “This algorithm does this and that…” as the first sentence in the algorithm description. Try to use more general expressions like:

```
Takes a point layer and generates a polygon layer containing the...
```

- Avoid describing what the algorithm does by replicating its name and please don’t replicate the name of the parameter in the description of the parameter itself. For example if the algorithm is `Voronoi polygon` consider to describe the `Input layer` as `Layer to calculate the polygon from`.
- Indicate in the description whether the algorithm has a default shortcut in QGIS or supports in-place editing.
- Add images! A picture is worth a thousand words! Use `.png` format and follow the general guidelines for documentation (see the Figures and Images section for more info). Put the image file in the correct folder, i.e. the `img` folder next to the `.rst` file you are editing.
- If necessary, add links in the “See also” section that provide additional information about the algorithm (e.g., publications or web-pages). Only add the “See also” section if there is really something to see. As a good practice, the “See also” section can be filled with links to similar algorithms.
- Give clear explanation for algorithm parameters and outputs: take inspiration from existing algorithms.
- Avoid duplicating detailed description of algorithm options. Add this information in the parameter description.
- Avoid adding information about the vector geometry type in the algorithm or parameter description, as this information is already available in the parameter descriptions.
- Add the default value of the parameter, e.g.:
### QGIS Documentation Guidelines

* - **Number of points**
  = `NUMBER_OF_POINTS`
  = [number]

Default: 1
- Number of points to create

- Describe the type of input supported the parameters. There are several types available you can pick one from:

<table>
<thead>
<tr>
<th>Parameter/Output type</th>
<th>Description</th>
<th>Visual indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point vector layer</td>
<td>vector: point</td>
<td><img src="point_icon.png" alt="Point icon" /></td>
</tr>
<tr>
<td>Line vector layer</td>
<td>vector: line</td>
<td><img src="line_icon.png" alt="Line icon" /></td>
</tr>
<tr>
<td>Polygon vector layer</td>
<td>vector: polygon</td>
<td><img src="polygon_icon.png" alt="Polygon icon" /></td>
</tr>
<tr>
<td>Generic vector layer</td>
<td>vector: any</td>
<td><img src="generic_icon.png" alt="Generic icon" /></td>
</tr>
<tr>
<td>Vector field numeric</td>
<td>tablefield: numeric</td>
<td><img src="numeric_field_icon.png" alt="Numeric field icon" /></td>
</tr>
<tr>
<td>Vector field string</td>
<td>tablefield: string</td>
<td><img src="string_field_icon.png" alt="String field icon" /></td>
</tr>
<tr>
<td>Vector field generic</td>
<td>tablefield: any</td>
<td><img src="any_field_icon.png" alt="Any field icon" /></td>
</tr>
<tr>
<td>Raster layer</td>
<td>raster</td>
<td><img src="raster_icon.png" alt="Raster icon" /></td>
</tr>
<tr>
<td>Raster band</td>
<td>raster band</td>
<td><img src="raster_band_icon.png" alt="Raster band icon" /></td>
</tr>
<tr>
<td>HTML file</td>
<td>html</td>
<td><img src="html_icon.png" alt="HTML file icon" /></td>
</tr>
<tr>
<td>Table layer</td>
<td>table</td>
<td><img src="table_icon.png" alt="Table icon" /></td>
</tr>
<tr>
<td>Expression</td>
<td>expression</td>
<td><img src="expression_icon.png" alt="Expression icon" /></td>
</tr>
<tr>
<td>Point geometry</td>
<td>coordinates</td>
<td><img src="point_geometry_icon.png" alt="Point geometry icon" /></td>
</tr>
<tr>
<td>Extent</td>
<td>extent</td>
<td><img src="extent_icon.png" alt="Extent icon" /></td>
</tr>
<tr>
<td>CRS</td>
<td>crs</td>
<td><img src="crs_icon.png" alt="CRS icon" /></td>
</tr>
<tr>
<td>Enumeration</td>
<td>enumeration</td>
<td><img src="enumeration_icon.png" alt="Enumeration icon" /></td>
</tr>
<tr>
<td>List</td>
<td>list</td>
<td><img src="list_icon.png" alt="List icon" /></td>
</tr>
<tr>
<td>Number</td>
<td>number</td>
<td><img src="number_icon.png" alt="Number icon" /></td>
</tr>
<tr>
<td>String</td>
<td>string</td>
<td><img src="string_icon.png" alt="String icon" /></td>
</tr>
<tr>
<td>Boolean</td>
<td>boolean</td>
<td><img src="boolean_icon.png" alt="Boolean icon" /></td>
</tr>
<tr>
<td>Folder path</td>
<td>folder</td>
<td><img src="folder_path_icon.png" alt="Folder path icon" /></td>
</tr>
<tr>
<td>File</td>
<td>file</td>
<td><img src="file_icon.png" alt="File icon" /></td>
</tr>
<tr>
<td>Matrix</td>
<td>matrix</td>
<td><img src="matrix_icon.png" alt="Matrix icon" /></td>
</tr>
<tr>
<td>Layer</td>
<td>layer</td>
<td><img src="layer_icon.png" alt="Layer icon" /></td>
</tr>
<tr>
<td>Same output type as input type</td>
<td>same as input</td>
<td><img src="same_output_type_icon.png" alt="Same output type as input type icon" /></td>
</tr>
<tr>
<td>Definition</td>
<td>definition</td>
<td><img src="definition_icon.png" alt="Definition icon" /></td>
</tr>
<tr>
<td>Point</td>
<td>point</td>
<td><img src="point_icon.png" alt="Point icon" /></td>
</tr>
<tr>
<td>MultipleLayers</td>
<td>multipleLayers</td>
<td><img src="multipleLayers_icon.png" alt="MultipleLayers icon" /></td>
</tr>
<tr>
<td>Range</td>
<td>range</td>
<td><img src="range_icon.png" alt="Range icon" /></td>
</tr>
<tr>
<td>AuthConfig</td>
<td>authconfig</td>
<td><img src="authconfig_icon.png" alt="AuthConfig icon" /></td>
</tr>
<tr>
<td>Mesh</td>
<td>mesh</td>
<td><img src="mesh_icon.png" alt="Mesh icon" /></td>
</tr>
<tr>
<td>Layout</td>
<td>layout</td>
<td><img src="layout_icon.png" alt="Layout icon" /></td>
</tr>
<tr>
<td>LayoutItem</td>
<td>layoutitem</td>
<td><img src="layoutItem_icon.png" alt="LayoutItem icon" /></td>
</tr>
<tr>
<td>Color</td>
<td>color</td>
<td><img src="color_icon.png" alt="Color icon" /></td>
</tr>
<tr>
<td>Scale</td>
<td>scale</td>
<td><img src="scale_icon.png" alt="Scale icon" /></td>
</tr>
</tbody>
</table>

- Study an existing and well documented algorithm, and copy all the useful layouts.
- When you are finished, just follow the guidelines described in *A Step By Step Contribution* to commit your changes and make a Pull Request

Here is an example of an existing algorithm to help you with the layout and the description:
Count points in polygon
-----------------------
Takes a point and a polygon layer and counts the number of points from the
point layer in each of the polygons of the polygon layer.
A new polygon layer is generated, with the exact same content as the input
polygon layer, but containing an additional field with the points count
corresponding to each polygon.

An optional weight field can be used to assign weights to each point.
Alternatively, a unique class field can be specified. If both options
are used, the weight field will take precedence and the unique class field
will be ignored.

``Default menu``: :menuselection:`Vector --> Analysis Tools`

Parameters
..........  
.. list-table::
   :header-rows: 1
   :widths: 20 20 20 40

   * Label  
     - Name  
     - Type  
     - Description
   * = **Polygons**
     - `POLYGONS`
     - [vector: polygon]
     - Polygon layer whose features are associated with the count of
     points they contain
   * = **Points**
     - `POINTS`
     - [vector: point]
     - Point layer with features to count
   * = **Weight field**

Optional
   - `WEIGHT`
   - [tablefield: numeric]
   - A field from the point layer.
   - The count generated will be the sum of the weight field of the
   points contained by the polygon.

* = **Class field**

Optional
   - `CLASSFIELD`
   - [tablefield: any]
   - Points are classified based on the selected attribute and if
   several points with the same attribute value are within the
   polygon, only one of them is counted.
   - The final count of the points in a polygon is, therefore, the
   count of different classes that are found in it.

* = **Count field name**
   - `FIELD`
Default: 'NUMPOINTS'
- The name of the field to store the count of points

* - **Count**
- `"OUTPUT`
- [vector: polygon]

Default: [Create temporary layer]
- Specification of the output layer type (temporary, file, GeoPackage or PostGIS table).
  Encoding can also be specified.

### Outputs

<table>
<thead>
<tr>
<th>Label</th>
<th>Name</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Count</strong></td>
<td><code>&quot;OUTPUT</code></td>
<td>[vector: polygon]</td>
<td>Resulting layer with the attribute table containing the new column with the points count</td>
</tr>
</tbody>
</table>
CHAPTER
THREE

WRITING CODE IN THE PYQGIS COOKBOOK

- How to write testable code snippets
  - Doctest sphinx directives
  - Grouping tests
- How to test snippets on your local machine

If you are planning to add or update some chapters of the PyQGIS-Developer-Cookbook, then you should follow some rules to enable automatic testing of the code snippets.

Testing is really important because it allows automatic checking of the code. Code snippets with errors or code that uses outdated methods will fail and the notification will help you fix the problems.

For testing, we use the Sphinx doctest extension. Refer to the extension documentation for more detailed information.

3.1 How to write testable code snippets

Writing testable code snippets is not so different from the old method. Basically, you need to use a different Sphinx directive.

3.1.1 Doctest sphinx directives

Instead of embedding the code in a .. code-block:: python directive (which would highlight the code syntax automatically), you now need to embed it in a .. testcode::. That is, instead of this:

```python
.. code-block:: python

crs = QgsCoordinateReferenceSystem("EPSG:4326")
assert crs.isValid()
```

You now use this:

```testcode::

crs = QgsCoordinateReferenceSystem("EPSG:4326")
assert crs.isValid()
```

After you wrote the example code, you should add some assertion that will evaluate the code and that will be run automatically.

In the above example, you are creating a crs and with assert crs.isValid() you test if it is valid. If the code has a wrong python syntax or the crs.isValid() returns False, this code snippet will fail during testing.
To successfully run the tests on snippets, you must import all the classes and declare any variables used in the code snippets. You can include those in the code snippet itself (visible in the HTML pages) or you can add them to a `.. testsetup::` directive (hidden in the HTML pages). The `.. testsetup::` needs to be placed before the `.. testcode::`

```python
.. testsetup::
    from qgis.core import QgsCoordinateReferenceSystem

.. testcode::
    crs = QgsCoordinateReferenceSystem("EPSG:4326")
    assert crs.isValid()
```

If the code snippet doesn’t create objects (and therefore you cannot use something like `assert object.is Valid()`) you can test the code using the `print()` method, then add the expected results within a `.. testoutput::` directive to compare the expected output:

```python
.. testcode::
    print("QGIS CRS ID:", crs.srsid())
    print("PostGIS SRID:", crs.postgisSrid())

.. testoutput::
    QGIS CRS ID: 3452
    PostGIS SRID: 4326
```

By default, the content of `.. testoutput::` is shown in the HTML output. To hide it from the HTML use the `:hide:` option:

```python
.. testoutput::
    :hide:
    QGIS CRS ID: 3452
    PostGIS SRID: 4326
```

**Note:** If the code snippet contains any print statements, you MUST add a `testoutput` with the expected outputs; otherwise the test will fail.

### 3.1.2 Grouping tests

For each rst document, the code snippets are tested sequentially, which means you can use one `.. testsetup::` for all the following code snippets and that later snippets will have access to variables declared in earlier ones in the document.

Alternatively, you can use groups to break down the examples on the same page in different tests.

You add the code snippet to groups by adding one or more group names (separated by commas) in the respective directive:

```python
.. testcode:: crs_crsfromID [, morenames]
    crs = QgsCoordinateReferenceSystem("EPSG:4326")
    assert crs.isValid()
```

The `doctest` will pick each group snippets and run them independently.
Note: Use group names that make sense with the related content. Use something similar to `<chapter>_<subchapter>`, for example: crs_intro, crs_fromwkt. In case of failures, this will help identifying where the failures occur.

If you don’t declare any group, the code snippet will be added to a group named default. If instead, you use * as a group name, the snippet will be used in all testing groups, something normally useful to use in the test setup:

```python
from qgis.core import QgsCoordinateReferenceSystem
```

### 3.2 How to test snippets on your local machine

**Note:** Instructions are valid for Linux system.

To test Python code snippets, you need a QGIS installation. For this, there are many options. You can:

- Use your system QGIS installation with Sphinx from a Python virtual environment:

  ```bash
  make -f venv.mk doctest
  ```

- Use a manually built installation of QGIS. You’d need to:
  1. Create a custom Makefile extension on top of the venv.mk file, for example a user.mk file with the following content:

```makefile
# Root installation folder
QGIS_PREFIX_PATH = /home/user/apps/qgis-master

include venv.mk
```

Or

```makefile
# build output folder
QGIS_PREFIX_PATH = /home/user/dev/QGIS-build-master/output

include venv.mk
```

2. Then, use it to run target doctest:

```bash
make -f user.mk doctest
```

- Run target doctest inside the official QGIS docker image:

```bash
make -f docker.mk doctest
```

You have to install Docker first because this uses a docker image with QGIS in it.
TRANSLATION GUIDELINES

• Translation process
• Translate a file
  – Translation in Transifex
  – Translation in Qt Linguist
  – Translate a manual
  – Summary Rules for translation

This manual is aiming to help the translator. First the general process of how technically a translation is done is explained. Later the translation is explained from an actual English rst document that is translated to Dutch. Finally a summary of Rules of translation is given.

Note: Although these guidelines focus on QGIS documentation, the methods and the rules described below are also applicable to QGIS applications and website translation.

4.1 Translation process

QGIS Documentation is written in English with .rst files. In order to provide translations:

2. These “originals” are then copied by the script to the locale folders for other languages.
3. The sentences in the .po files are pushed to the Transifex web platform, and made available for translators who can begin to translate from English to their language with the editor.
4. At the end of the day, a script pulls back all validated translations
5. At the next build of the documentation (which occurs at least once a day), a script reuses the sentences to create translated output
6. When afterwards an .rst document is updated a new .po file is created in the English part. The contents of this new file will be merged with already existing .po files for each language. This means that when a new line is added to an .rst document that was already translated, only the new/updated sentences are added in the translated .po file and needs to be translated. The amount of work for updating translations for next release should be relatively small.

Note: The process above is the same followed to translate QGIS website, QGIS Desktop and QGIS Server. The difference with the applications is that instead of .po files, all the translatable strings in the .py, .cpp, .yaml and
Two different tools are currently used to do translations in QGIS:

- The Transifex web platform, the easiest and recommended way to translate QGIS, transparently does the process described above and pulls all the translatable texts in one place for the translator. Just pick the files you want and translate. Translated files are stored in the platform until another release is pushed.
- Qt Linguist, a Qt development tool, requires the translator to pull locally the .po (or .ts) files from the source code, translate and then push back.

Note that whatever tool you choose, rules of translations are the same.

### 4.2 Translate a file

To explain how translation works, we will use the heatmap plugin as an example. In this example we will translate it from English to Dutch, but it will be practically the same for other documents in all languages.

The source of the document can be found here:

```bash
QGIS-Documentation/source/docs/user_manual/plugins/plugins_heatmap.rst
```

So why did I choose this document?

1. It includes images, captions, headers, references and replacements.
2. I wrote it so it is easier for me to translate ;-)  

The build process has created the English .po file which can be found here:

```bash
```

The equivalent Dutch .po file (basically a copy) can be found here:

```bash
QGIS-Documentation/locale/nl/LC_MESSAGES/docs/user_manual/plugins/plugins_heatmap.
```

Along this file you will see a tiny .mo file which indicates that it does not hold any translations yet.

### 4.2.1 Translation in Transifex

In order to translate using Transifex, you need to:

1. create an account on Transifex and join the QGIS project.
2. Once you are part of a language team, click on the corresponding project (in this case QGIS Documentation). A list of available languages with their ratio of translation is displayed.
3. Hover over your language and click either:
   - **View resources**: translatable .po files with their ratio of translation, number of strings and some more metadata are now displayed.
   - or **Translate**: opens the interface of translation with all the available .po files

4. Identify the file you’d like to translate (in our case we are looking for the `docs_user-manual_plugins_plugins-heatmap`, the heatmap plugin file) or any unfinished file and click on it: strings in the files are loaded and you can use the interface to filter, translate, suggest translation…

   **Tip:** For the documentation or the website, clicking the **Fix me** link in the footer of a page brings you directly to its corresponding translation page in Transifex.

5. All you need to do is select each text and translate following the guidelines.

For further information on the use of Transifex Web Editor, see https://docs.transifex.com/translation/translating-with-the-web-editor.
4.2.2 Translation in Qt Linguist

With Qt Linguist, you need to:

1. manually grab the `.po` or `.ts` file(s). This can be achieved by downloading the file(s) either from Transifex platform or from the `locale/$language` folder of the source repository (in GitHub),
2. proceed to the translation locally
3. upload the modified files to their sources (Transifex or GitHub).

While downloading and uploading translatable files can be done with Transifex, it's not advised to use this process. Since there's no versioning system on Transifex, the file you upload will simply replace the existing one and potentially overwrite any modification made by others on the platform in the meantime.

When you open the file in Qt Linguist for the first time you will see the following dialog:

![Fig. 4.2: Select language for translation in linguist menu](image)

The Target language should be filled correctly. The Source language can be left as is with language POSIX and Country/Region on Any Country.

When you press the `OK` button Qt Linguist is filled with sentences and you can start translating, see Fig. 4.3.
In the menu you see the following buttons which are convenient to use.

- **The Translation Done Next button**, is the most important button. If the item needs translation, you enter a translation in the text field, then hit this button. If the item does not need translation just leave the text field for translation empty and also hit this button which indicates the item is done and you continue with the next item.

- **The Goto Previous button**, can be used to go to the previous translation item.

- **The Goto Next button**, can be used to go to the next translation item.

- **The Next Todo button**, jumps to the first translation item that still needs a translation. Handy when the original document has changed and only several new/changed sentences need to be translated.

- **The Previous Todo button**, searches backward and jumps to the first translation item it finds that still needs a translation.

For further information on the use of Qt Linguist, see [https://doc-snapshots.qt.io/qt5-5.12/linguist-translators.html](https://doc-snapshots.qt.io/qt5-5.12/linguist-translators.html)

**Warning:** If you want to download content to translate from the source repository, never do this in the `master` branch. For translations there are always translation branches available, once a document is fully updated in English for a certain version. As an example, to translate the manual of QGIS 2.8, you have to use the `manual_en_v2.8` branch.
Now we start to translate the plugin_heatmap manual!

Translating most of the sentences should be straightforward. During this translation session I will point out which parts (rst statements) need special translation.

Below we see an interesting sentence to translate:

```
The |heatmap| :sup:`Heatmap` plugin allows to create a heatmap from a point vector map. A heatmap is a raster map showing the density or magnitude of point related information. From the result "hotspots" can easily be identified.
```

This sentence contains two rst statements:

1. |heatmap| words between | are replacements and these should never be translated! This will be replaced by the heatmap plugin icon!

2. :sup:`Heatmap`, the :sup: statement is a superposition statement and prints the following text a bit higher. This is used to show the popup texts that appear when you hover above the toolbar item and this may be different when it is actually translated in the QGIS application. In the Dutch case it is not!

All other plaintext in this sentence can be translated!

The next translation item contains the :ref: statement that is commonly used to refer to another section somewhere in the manual! The text following a :ref: statement should never be changed because it is a unique identifier!

```
First this core plugin needs to be activated using the Plugin Manager (see Section :ref:`load_core_plugin`). After activation the heatmap icon |heatmap| can be found in the Raster Toolbar.
```

In this case load_core_plugin is a unique reference identifier placed before an rst item that has a caption. The ref statement will be replaced with the text of the header and turned into a hyperlink. When the header this reference is referring to is translated, all references to this header will be automatically translated as well.

The next item contains the rst-tag :menuselection: followed by text actually displayed in a menu in QGIS application, this may be translated in the application and therefore should be changed when this is the case.

```
Select from menu :menuselection:`View --> Toolbars --> Raster` to activate the Raster Toolbar when it is not yet activated.
```

In above item “View–>” is actually translated to “Beeld–>” because this is the translation used in the Dutch localized QGIS application.

A bit further we meet the following tricky translation item:

```
The |heatmap| :sup:`Heatmap` tool button starts the Dialog of the Heatmap plugin (see :numref:`figure_heatmap_settings`).
```

It holds a reference to a figure figure_heatmap_settings_, and like a reference to a section this reference should not be changed!! The reference definition from the rst-document is not included in the .po file and can therefore not be changed. This means the reference to figures can not be translated. When HTML is created you will see figure_heatmap_settings. When a PDF document is created figure_heatmap_settings_ is replaced with a figure number.

The next translation item with rst attributes is the following item:

```
**Input Point dialog**: Provides a selection of loaded point vector maps.
```

Do not remove the stars in above line. It will print the text it holds in bold. The text itself is often text included in the dialog itself and may well be translated in the application.

The following translation item contains the :guilabel: rst tag.
When the |checkbox| :guilabel:`Advanced` checkbox is checked it will give access to additional advanced options.

The text Advanced of the guilabel tag may well be translated in the QGIS application and probably needs to be changed!

The following translation item contains ``airports``. The quotes are used to give the text another text font. In this case it is a literal value and does not need translation.

For the following example, we will use the `airports` vector point layer from the QGIS sample dataset (see :ref:`label_sampledata`). Another excellent QGIS tutorial on making heatmaps can be found on `https://www.qgistutorials.com<https://www.qgistutorials.com/en/docs/creating_heatmaps.html>`_.

This item also includes a hyperlink with an url and an external presentation. The url should of course be left intact, you are allowed to change the external text `https://www.qgistutorials.com` which is visible by the reader. Never remove the underscore at the end of the hyperlink which forms an essential part of it!!

4.2.4 Summary Rules for translation

1. Do not change text between two | characters like |bronze|, |checkbox|, |labels|, |select-String|, |addLayer| ... These are special tags used to replace images

2. Do not change references that start with roles like :ref:, :file:, :numref: unless they include a title. In that case, you can translate the title but keep unchanged the link (i.e., the text between < and >)

   **Tip:** When a title is provided for a reference, Transifex may display a number in the English source text in replacement of the link part. Click on the number in the source text to add the reference link next to the title being translated.

3. Do not change references that end with an underscore like figure_labels_1_

4. Do not change the url in hyperlinks, but you may change the external description. Leave the underscore at the end of the hyperlink, without additional spacing (> _)

5. Change the text inside quotes following :index:, :sup:, :guilabel: and :menuselection: tags. Check if/how it is translated in the QGIS Application. Do not change the tag itself.

6. Text between double stars and double quotes often indicate values or fieldnames, sometimes they need translation sometimes not.

7. Be aware to use exactly the same (number of) special characters of the source text such as ``, ``, `*, **, ::. These contribute to the cosmetics of the information provided

8. Do not begin nor end the text hold by special characters or tags with a space

9. Do not end the translated strings with a new paragraph, otherwise the text will not be translated during the html generation.

Stick to above presented rules and the translated document will look fine!

For any question, please contact the QGIS Community Team or the QGIS Translation Team.

4.2. Translate a file 37
CHAPTER
FIVE

SUBSTITUTIONS

• Usage
• Common Substitutions
  – Platform Icons
  – Menu Items
• Toolbar Button Icons
  – Manage Layers and overview
  – File
  – Edit
  – Identity result
  – Digitizing and Advanced Digitizing
  – Map Navigation and attributes
  – Selection and Expressions
  – Labels and Diagrams
  – Decorations
  – Help
  – Colors
• Other basic icons
• Attribute Table
• Projections and Georeferencer
• Print Layout
• Layer Properties
• Plugins
  – Processing
  – Various Core Plugins
  – Grass integration
5.1 Usage

To ease the use of icons in QGIS manuals, replacements are defined for each icon in /source/substitutions.txt file at QGIS-Documentation repository and some of these substitutions are listed below. Thus, when you want to use an icon from QGIS application in the documentation there is a big chance that there is already a substitution that can/should be used.

If no replacement exists:

1. check the documentation repository whether the icon is available in /static/common folder. If no image, then you need to find and copy the icon image file from QGIS repository (often under https://github.com/qgis/QGIS/blob/release-3_16/images/themes/default folder) and paste (in .png format) under /static/common folder. For convenience and update, it’s advised to keep filename when possible.

2. create the reference to the substitution in the /source/substitutions.txt file following the example below. The replacement text should be in camelCase:

```
.. |splitLayer| image:: /static/common/split_layer.png
    :width: 1.5em
```

3. run the scripts/find_set_subst.py script to update the substitution definitions in the rst files and include the new substitution(s).

4. (optional) add the reference to the icon and its substitution to the list below.

5.2 Common Substitutions

Below are given some icons and their substitution to use when writing documentation. Can be used/found in many places in manuals.

5.2.1 Platform Icons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Substitution</th>
</tr>
</thead>
<tbody>
<tr>
<td>logo</td>
<td></td>
</tr>
<tr>
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<td>nix</td>
<td></td>
</tr>
<tr>
<td>osx</td>
<td></td>
</tr>
<tr>
<td>win</td>
<td></td>
</tr>
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</table>

5.2.2 Menu Items

<table>
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</tr>
</thead>
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</tr>
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</tr>
<tr>
<td>radioButtonOff</td>
<td></td>
</tr>
<tr>
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</tr>
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<tr>
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</table>
5.3 Toolbar Button Icons

5.3.1 Manage Layers and overview

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<th>Icon</th>
<th>Substitution</th>
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### 5.3.2 File

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### 5.3.3 Edit

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### 5.3.4 Identity result

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## 5.3.5 Digitizing and Advanced Digitizing

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### 5.3.6 Map Navigation and attributes

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</tr>
<tr>
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<td>zoomActual</td>
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### 5.3.7 Selection and Expressions

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5.3.8 Labels and Diagrams

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5.4 Other basic icons

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## 5.6 Projections and Georeferencer

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## 5.7 Print Layout

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continues on next page
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5.9 Plugins

5.9.1 Processing

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5.9.2 Various Core Plugins

Standard provided with basic install, but not loaded with initial install

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### 5.9.3 Grass integration

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