
Git Extensions Documentation

Release 2.50

Contributors

Jun 15, 2017

Contents

1	Git Extensions	1
1.1	Features	1
1.2	Video tutorials	1
1.3	Links	2
2	Getting Started	3
2.1	Installation	3
2.2	Installation (Linux)	9
2.3	Installation (macOS)	10
2.4	Settings	11
2.5	Start Page	11
2.6	Clone repository	13
2.7	Clone SVN repository	14
2.8	Clone Github repository	14
2.9	Create new repository	14
3	Settings	16
3.1	Checklist	17
3.2	Git	17
3.3	Git Extensions	18
3.4	Commit dialog	19
3.5	Appearance	20
3.6	Revision Links	21
3.7	Colors	23
3.8	Start Page	24
3.9	Git Config	25
3.10	Build server integration	26
3.11	SSH	27
3.12	Scripts	28
3.13	Hotkeys	29
3.14	Shell Extension	29
3.15	Advanced	30
3.16	Detailed	31
3.17	Plugins	33
4	Browse Repository	37
4.1	View commit log	37

4.2	Search or filter the commit history	39
4.3	Singe file history	41
4.4	Blame	43
5	Commit	45
5.1	Commit changes	45
5.2	Cherry pick commit	51
5.3	Revert commit	52
5.4	Stash changes	52
6	Tag	54
6.1	Create tag	54
6.2	Delete tag	55
7	Branches	56
7.1	Create branch	57
7.2	Checkout branch	57
7.3	Merge branches	58
7.4	Rebase branch	60
7.5	Delete branch	61
8	Patches	62
8.1	Create patch	63
8.2	Apply patches	64
9	Remote feature	65
9.1	Manage remote repositories	65
9.2	Create SSH key	66
9.3	Pull changes	71
9.4	Push changes	73
10	Merge Conflicts	75
10.1	Handle merge conflicts	75
11	Modify Git history	78
11.1	Modify the last commit	78
11.2	Modify an older commit	79
12	Notes	83
13	Submodules	85
13.1	Manage submodules	85
13.2	Add submodule	86
13.3	Remove submodule	87
14	Maintenance	88
14.1	Compress Git database	88
14.2	Recover lost objects	88
14.3	Fix user names	90
14.4	Ignore files	91
15	Translations	93
15.1	Change language	93
15.2	Translate Git Extensions	93

16 Integration	95
16.1 Visual Studio	95
16.2 Windows Explorer	97
17 Command line	99
17.1 Git Extensions command line	99
18 Appendix	102
18.1 Git Cheat Sheet	103
18.2 Menu map	104
19 Plugins	105
19.1 List of the available plugins	105
19.2 GitFlow	105

CHAPTER 1

Git Extensions

Git Extensions is a toolkit aimed at making working with Git under Windows more intuitive (note that Git Extensions is also available on Linux and Macintosh OS X using Mono). The shell extension will integrate in Windows Explorer and presents a context menu on files and directories. There is also a Visual Studio plug-in to use Git from the Visual Studio IDE.

Features

- Windows Explorer integration for Git
- Visual Studio (2010 - 2015) plug-in for Git
- Feature rich user interface for Git
- Single installer installs Git, Git Extensions and the merge tool KDiff3
- 32bit and 64bit support
- Runs under Linux or Mac OS X using Mono

Video tutorials

There are video tutorials for some basic functions on YouTube.

1. [Clone](#)
2. [Commit changes](#)
3. [Push changes](#)
4. [Pull changes](#)
5. [Handle merge conflicts](#)
6. [Install Git Extensions on Ubuntu 11.04](#)

Links

See the following links for the Git Extensions download page, source code and documentation.

- Download page: <https://sourceforge.net/projects/gitextensions/>
- Source Code: <https://github.com/gitextensions/gitextensions>
- Source Code Issue tracker: <https://github.com/gitextensions/gitextensions/issues>
- Documentation: <https://github.com/gitextensions/GitExtensionsDoc>
- Documentation Issue tracker: <https://github.com/gitextensions/GitExtensionsDoc/issues>
- Wiki: <https://github.com/gitextensions/gitextensions/wiki>

Please feel free to raise any issues with Git Extensions or its documentation at the appropriate Issue tracker link as shown above.

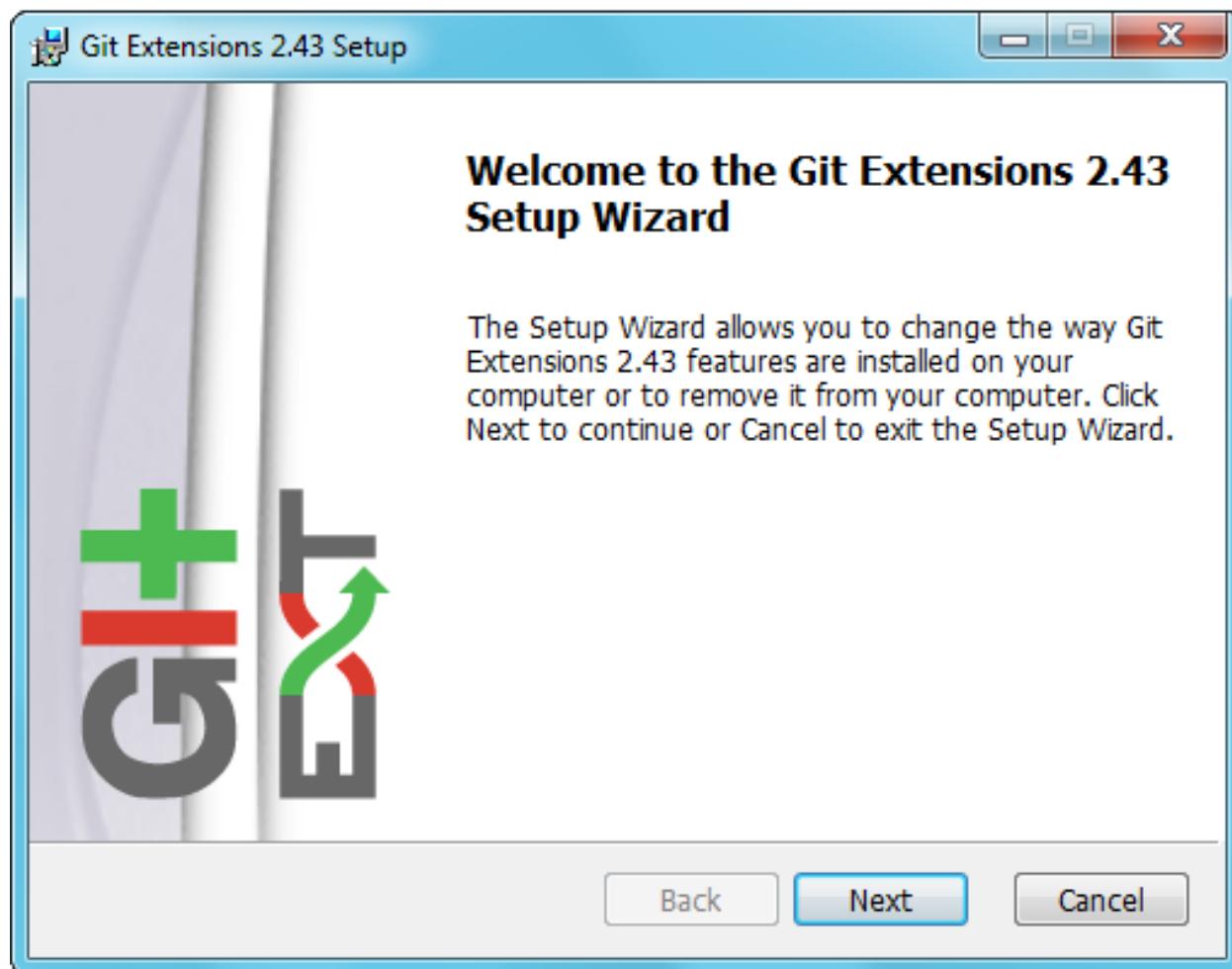
CHAPTER 2

Getting Started

This section is primarily written for Windows users. There are extra sections about installing Git Extensions on Linux and Mac OS X.

Installation

There is a single click installer `GitExtensions-X.XX.XX-SetupComplete.msi` that installs Git for Windows 32bit, Kdiff3 32bit and Git Extensions. The installer can be found [here](#).



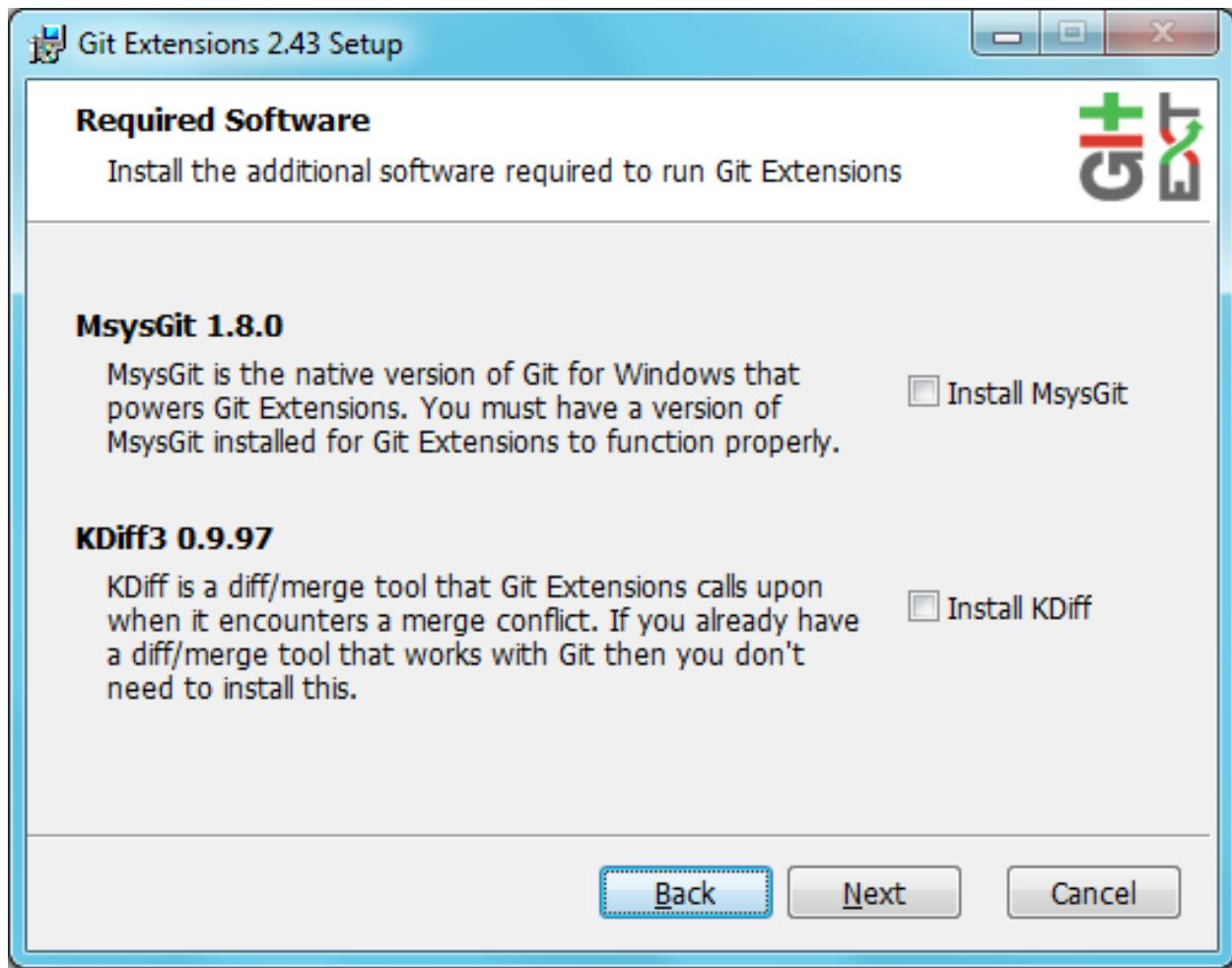
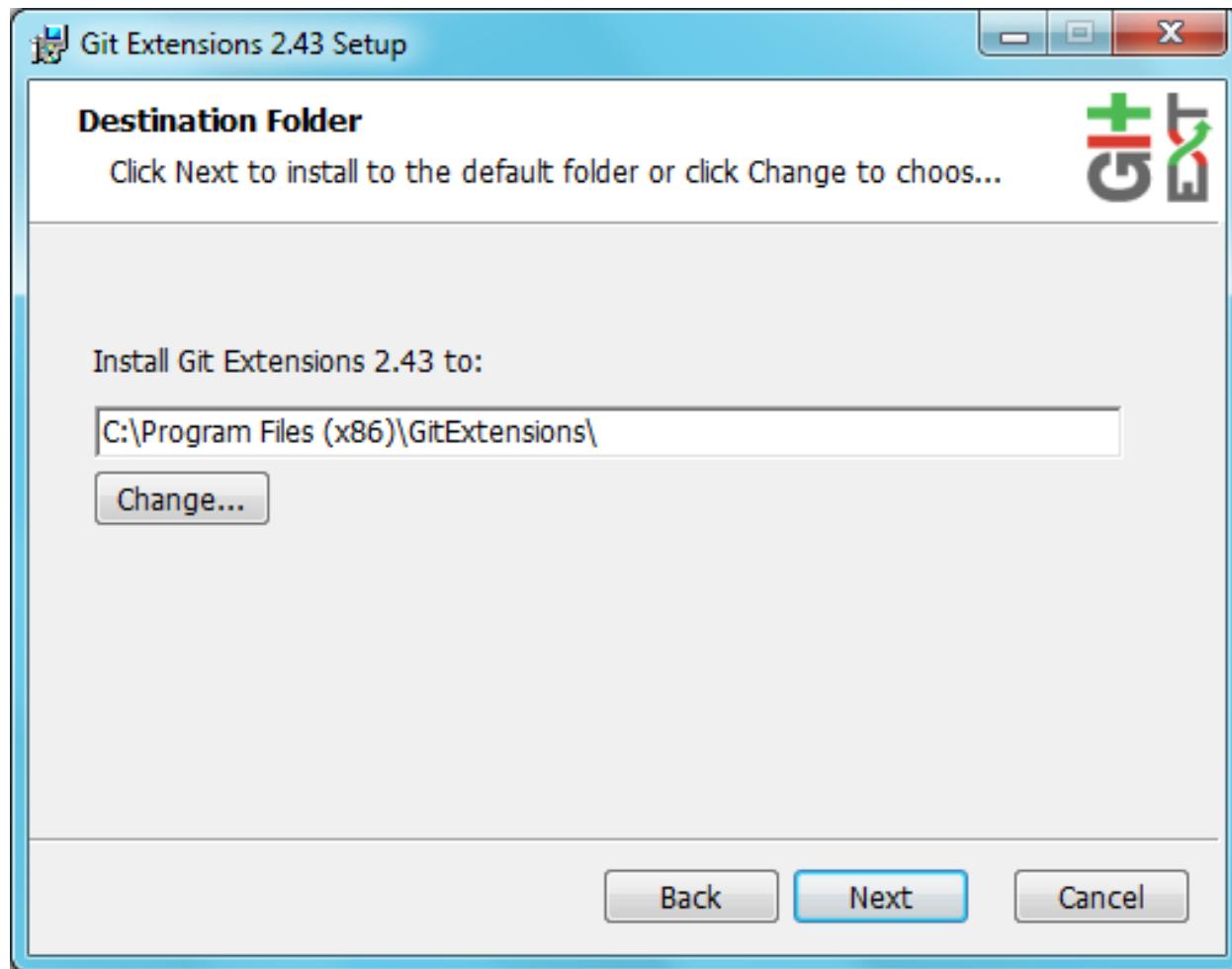


Fig. 2.1: Git Extensions depends heavily on Git for Windows. When Git for Windows is not installed, ensure the “Install Git for Windows” checkbox is checked. Kdiff3 is optional, but is advised as a merge tool.



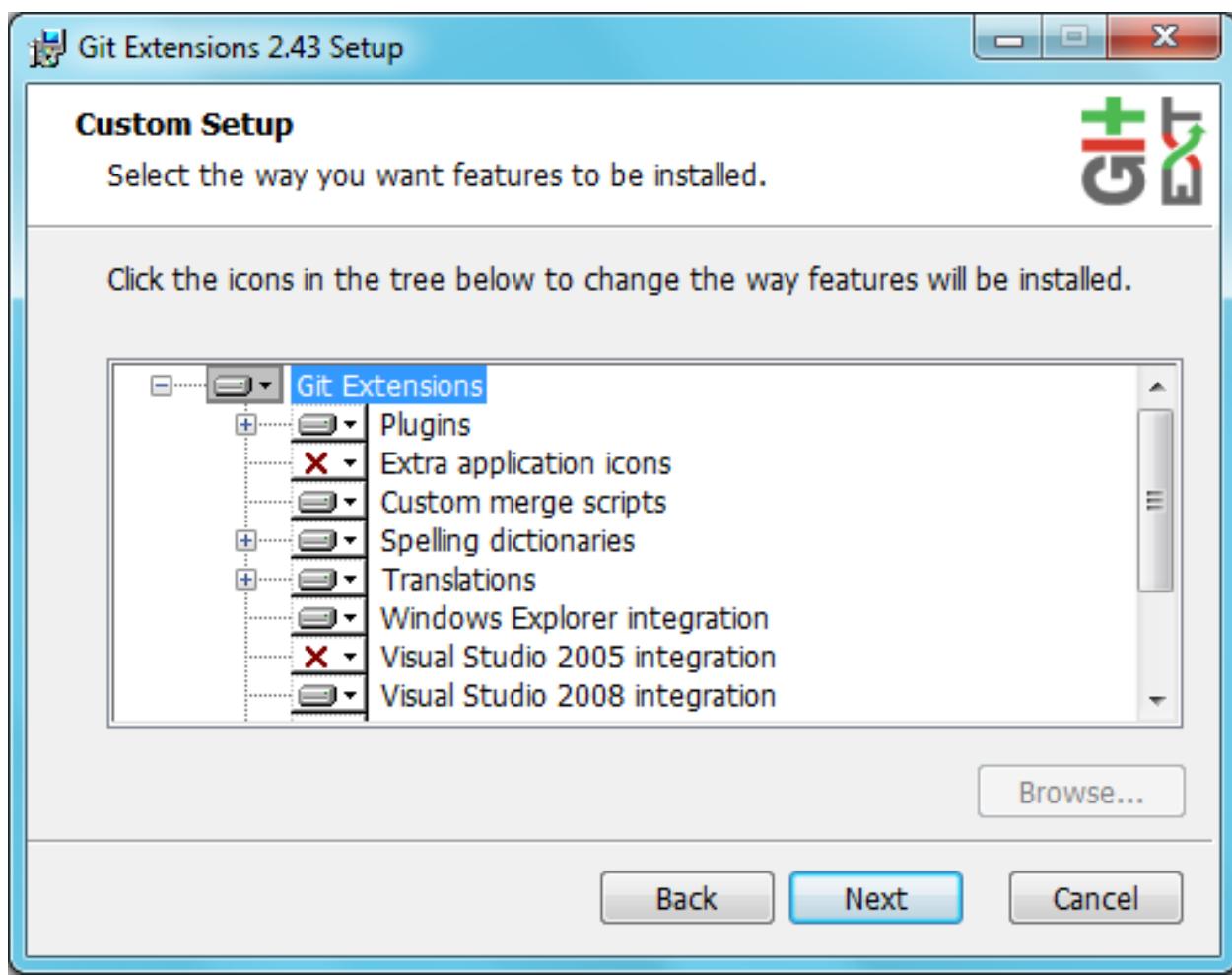


Fig. 2.2: Choose the options to install.

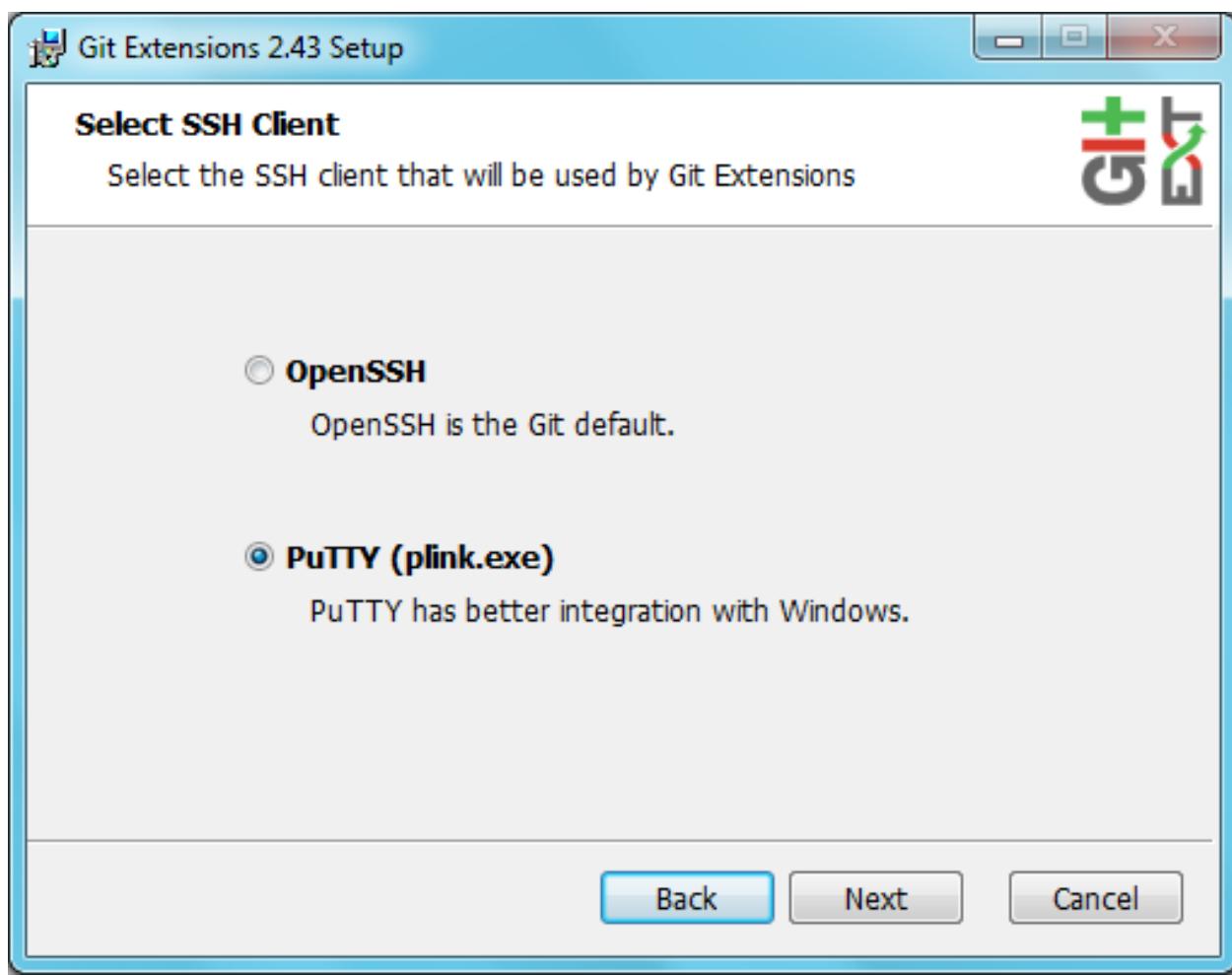
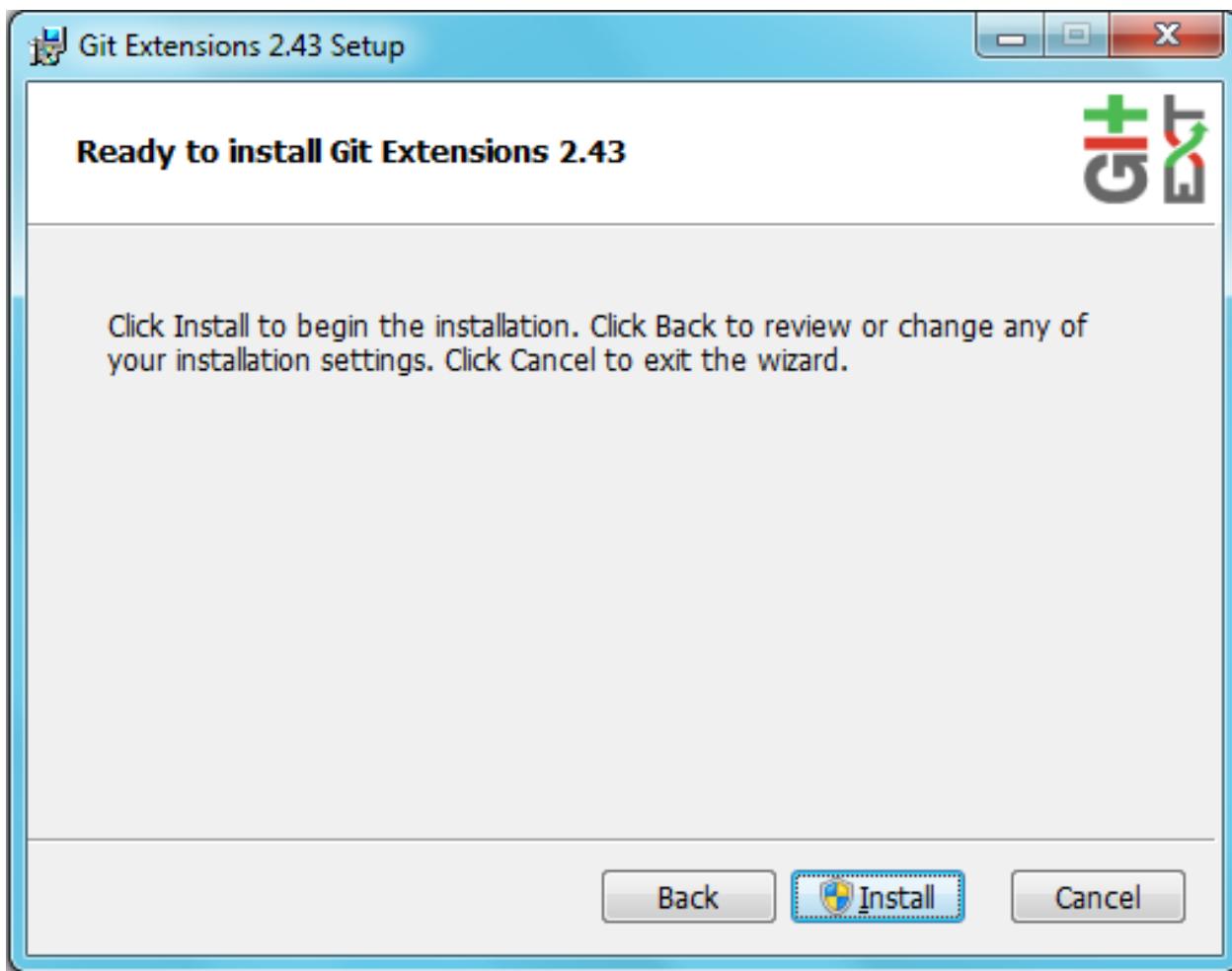


Fig. 2.3: Choose the SSH client to use. PuTTY is the default because it has better Windows integration.



Installation (Linux)

You can watch this video as a starting point: [Install Git Extensions on Ubuntu 11.04](#)

For further help go to <https://groups.google.com/forum/?fromgroups#!forum/gitextensions>

This section only covers mono installation, you should have git installed in your Linux at this point. Please refer to <https://git-scm.com/download/linux>

First, make sure you have the latest mono version on your Linux. This section will cover installation of Mono 4.6 on a Linux.

1. Install mono latest version. You can always check for this here: <http://www.mono-project.com/download/#download-lin>
2. If everything went okay, you should open your terminal and check mono version:

```
$ mono --version
Mono JIT compiler version 4.6.1 (Stable 4.6.1.5/ef43c15 Wed Oct 12 09:10:37 UTC
 ↵2016)
Copyright (C) 2002-2014 Novell, Inc, Xamarin Inc and Contributors. www.mono-
 ↵project.com
TLS:          __thread
SIGSEGV:      altstack
```

```

Notifications: epoll
Architecture: amd64
Disabled: none
Misc: softdebug
LLVM: supported, not enabled.
GC: sgen

```

3. Now download Git Extensions latest version from <https://github.com/gitextensions/gitextensions/releases/latest>. Remember to select the appropriate package otherwise you could have problems.
4. Browse into the folder where you extracted the package and just run mono command, like the example below:

```
$ mono GitExtensions.exe
```

Installation (macOS)

This section only covers mono installation, you should have git installed in your Mac at this point. Please refer to <https://git-scm.com/download/mac>

First, make sure you have the latest mono version on your Mac. This section will cover installation of Mono 4.6 on a Mac.

1. Download mono latest version. You can always check for this here: <http://www.mono-project.com/download/#download-mac>
2. After you have completed the download, you will see a .dmg file. Double click it to open the package.
3. Inside the .dmg file you will have MonoFramework-{version}.pkg. Double click to start the installation process.
4. Follow the wizard until it's completion.
5. If everything went okay, you should open your terminal and check mono version:

```

$ mono --version
Mono JIT compiler version 4.6.1 (mono-4.6.0-branch-c8sr0/abb06f1 Fri Sep 23
 ↵19:24:23 EDT 2016)
Copyright (C) 2002-2014 Novell, Inc, Xamarin Inc and Contributors. www.mono-
 ↵project.com
TLS: normal
SIGSEGV: altstack
Notification: kqueue
Architecture: x86
Disabled: none
Misc: softdebug
LLVM: yes(3.6.0svn-mono-master/8b1520c)
GC: sgen

```

6. Now download Git Extensions latest version from <https://github.com/gitextensions/gitextensions/releases/latest>. Remember to select the appropriate package otherwise you could have problems.
7. Browse into the folder where you extracted the package and just run mono command, like the example below:

```
$ mono GitExtensions.exe
```

This is the minimal setup you need in order to run Git Extensions.

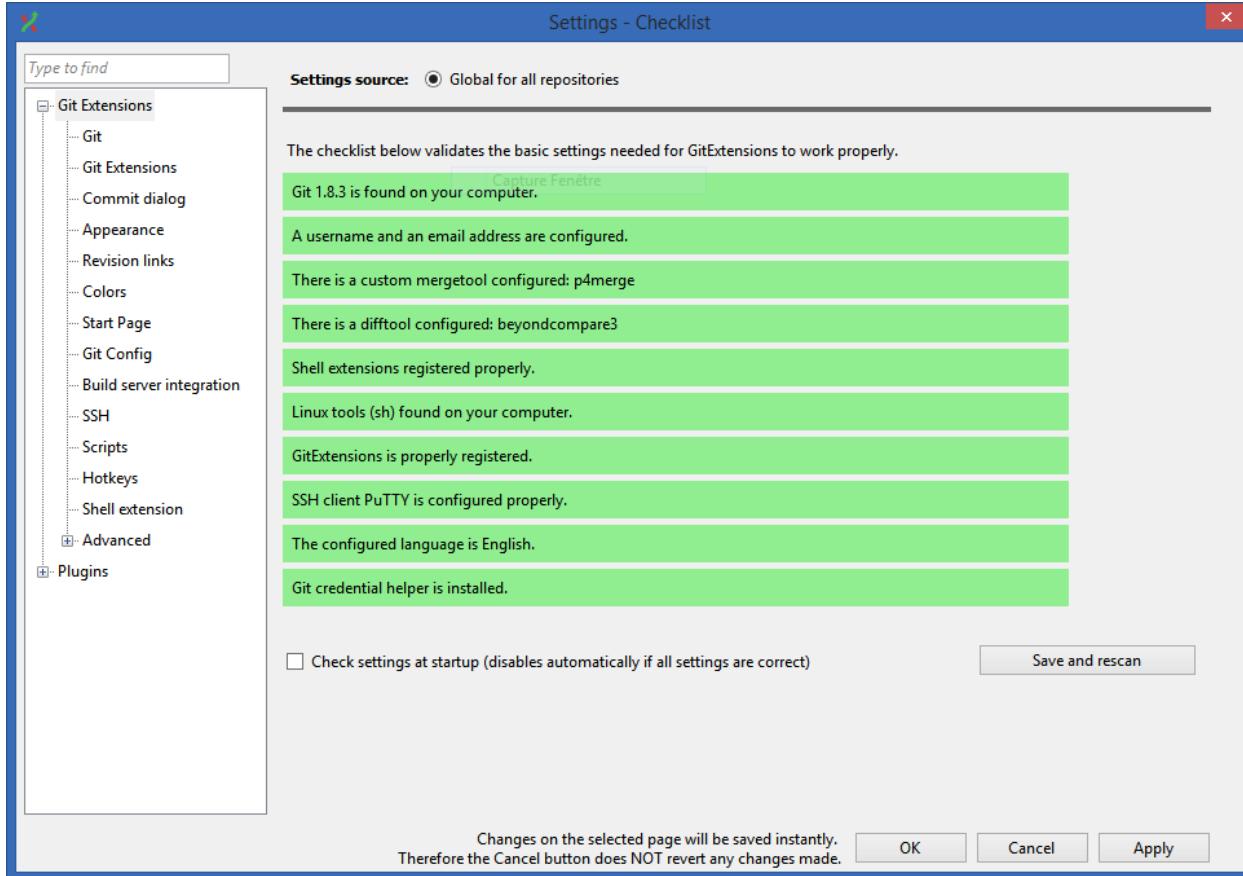
Troubleshooting Mac Installation

1. If your Git Extensions crashes with an exception that a font is missing (generic sans serif), you probably can fix this by installing Xquartz. This is a version of the X.Org X Windows System that runs on OS X. I am not sure what the side effects are. This can be installed from here: <http://xquartz.macosforge.org/landing/>
2. If Git Extensions still crashes because it is unable to load a plugin, empty the plugins folder.

Settings

All settings will be verified when Git Extensions is started for the first time. If Git Extensions requires any settings to be changed, the Settings dialog will be shown. All incorrect settings will be marked in red. You can ask Git Extensions to try to fix the setting for you by clicking on it. When installing Git Extensions for the first time (and you do not have Git already installed on your system), you will normally be required to configure your username and email address.

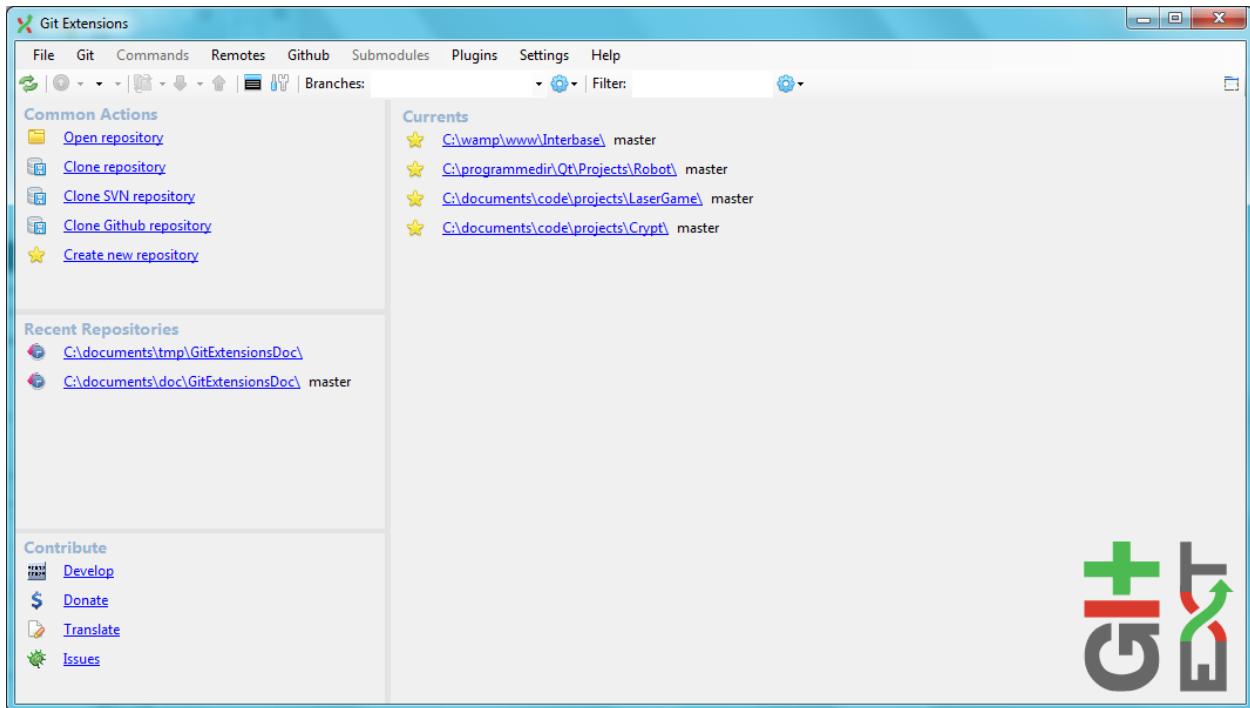
The settings dialog can be invoked at any time by selecting *Settings* from the *Tools* menu option.



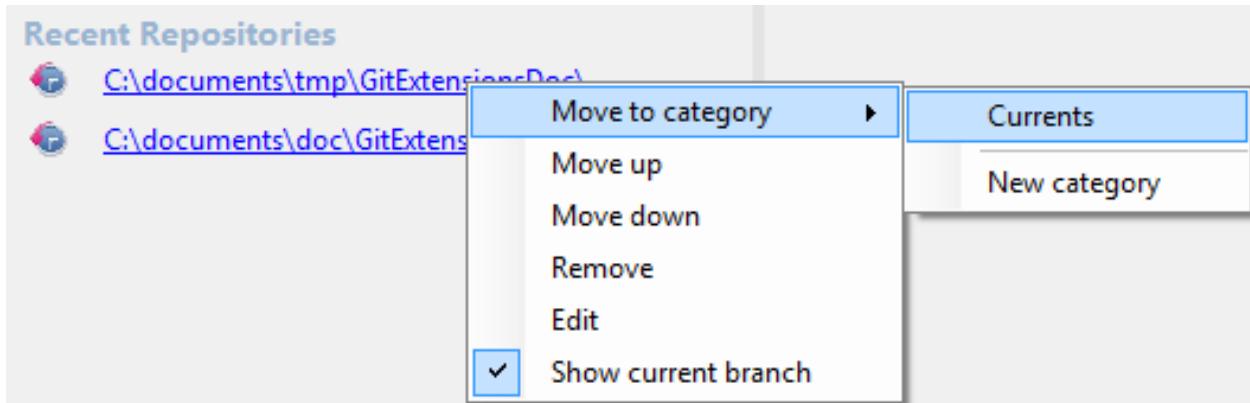
For further information see [Settings](#).

Start Page

The start page contains the most common tasks, recently opened repositories and favourites. The left side of the start page (Common Actions and Recent Repositories) is static. The right side of the page is where favourite repositories can be added, grouped under Category headings.



Recent Repositories can be moved to favourites using the repository context menu. Choose Move to category / New category to create a new category and add the repository to it, or you can add the repository to an existing category (e.g. ‘Currents’ as shown below).



A context menu is available for both the category and the repositories listed underneath it.

Entries on Category context menu

Move Up	Move the category (and any repositories under it) higher on the page.
Move Down	Move the category (and any repositories under it) lower on the page.
Remove	Remove the category (and any repositories under it) from the page. Note: Git repositories are <i>not</i> physically removed either locally or remotely.
Edit	Shows the <i>Start Page</i> settings window where both category and repository details can be modified.

Entries on repository context menu

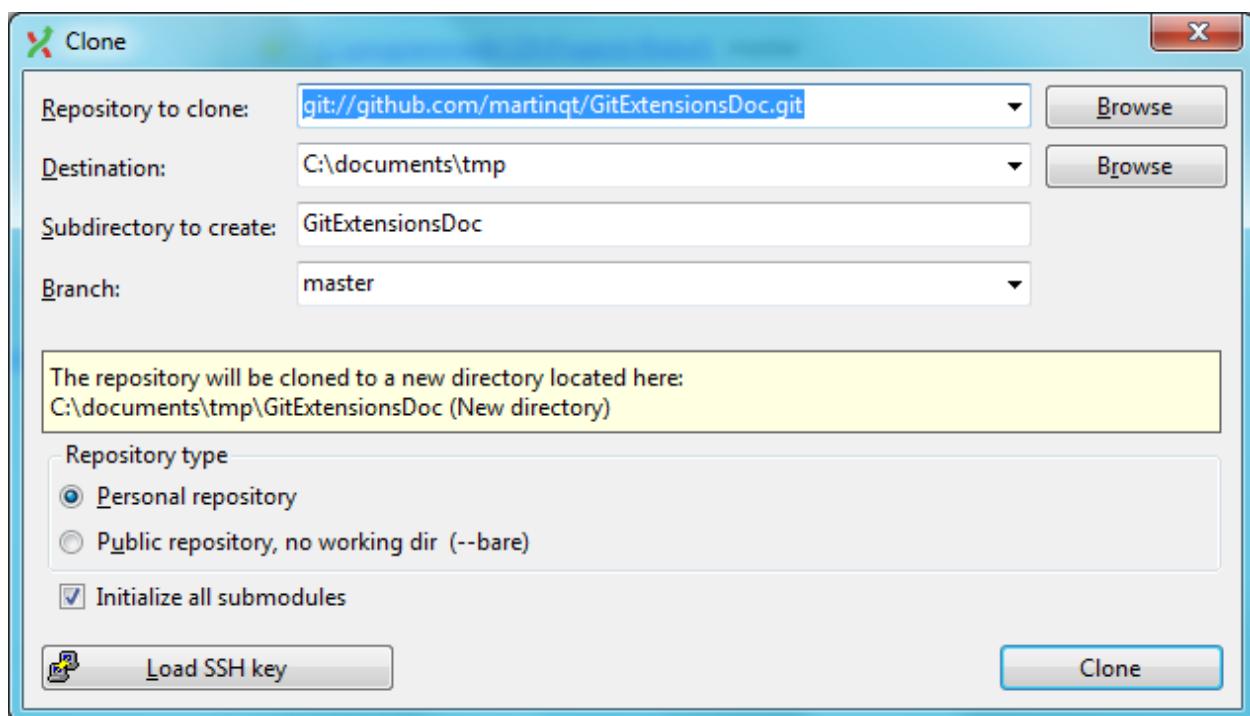
Move to category	Move the repository to a new or existing category.
Move up	Move the repository higher (within the category).
Move down	Move the repository lower (within the category).
Remove	Remove the repository from the category. Note: the repository is <i>not</i> physically removed either locally or remotely.
Edit	Shows the Start Page settings window where both category and repository details can be modified.
Show current branch	Toggles the display of the branch name next to the repository name. This identifies the currently checked out branch for the repository.

To open an existing repository, simply click the link to the repository under Recent Repositories or within the Categories that you have set up, or select Open repository (from where you can select a repository to open from your local file system).

To create a new repository, one of the following options under Common Actions can be selected.

Clone repository

You can clone an existing repository using this option. It displays the following dialog.



The repository you want to clone could be on a network share or could be a repository that is accessed through an internet or intranet connection. Depending on the protocol (http or ssh) you might need to load a SSH key into PuTTY. You also need to specify where the cloned repository will be created and the initial branch that is checked out. If the cloned repository contains submodules, then these can be initialised using their default settings if required.

There are two different types of repositories you can create when making a clone. A personal repository contains the complete history and also contains a working copy of the source tree. A central repository is used as a public repository where developers push the changes they want to share with others to. A central repository contains the complete history but does not have a working directory like personal repositories.

Clone SVN repository

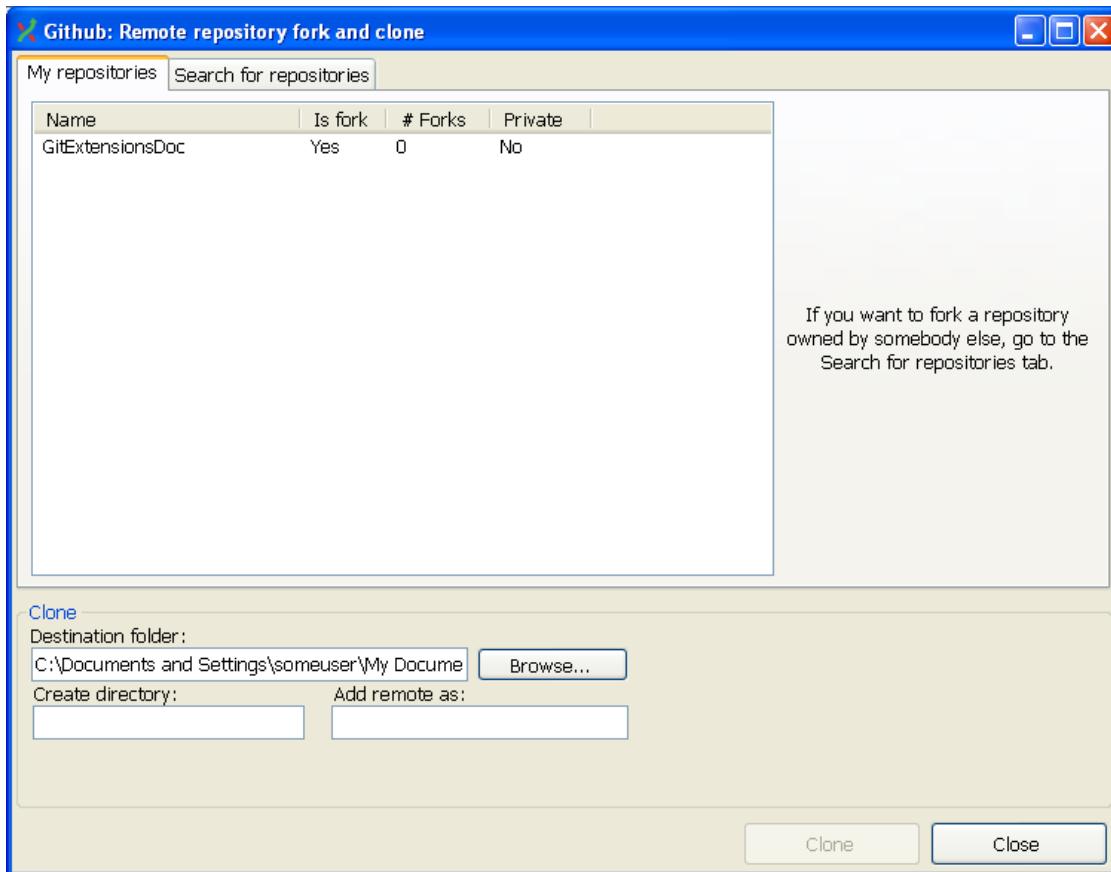
You can clone an existing SVN repository using this option, which creates a Git repository from the SVN repository you specify. For further information refer to the [Pro Git book](#).

Clone Github repository

This option allows you to

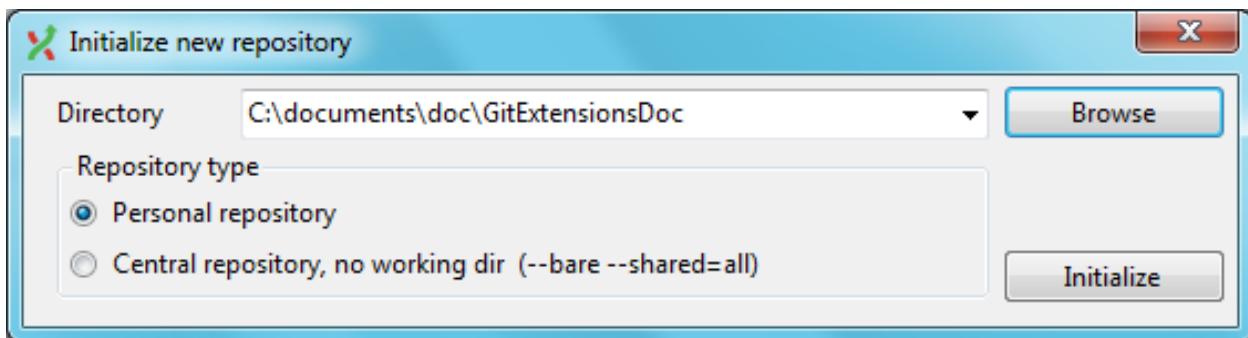
1. Fork a repository on GitHub so it is created in your personal space on GitHub.
2. Clone any repositories on your personal space on GitHub so that it becomes a local repository on your machine.

You can see your own personal repositories on GitHub, and also search for repositories using the [Search for repositories tab](#).



Create new repository

When you do not want to work on an existing project, you can create your own repository using this option.



Select a directory where the repository is to be created. You can choose to create a Personal repository or a Central repository.

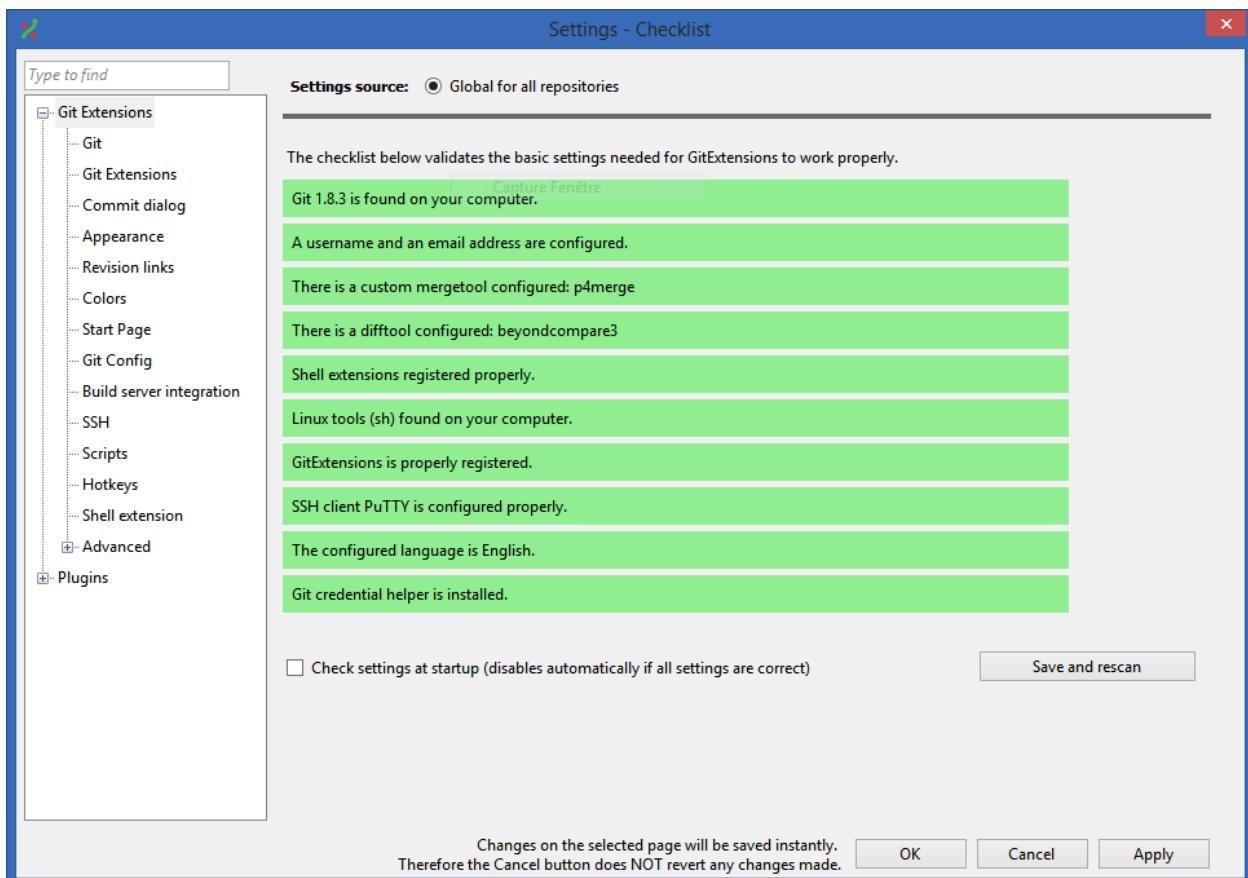
A personal repository looks the same as a normal working directory but has a directory named `.git` at the root level containing the version history. This is the most common repository.

Central repositories only contain the version history. Because a central repository has no working directory you cannot checkout a revision in a central repository. It is also impossible to merge or pull changes in a central repository. This repository type can be used as a public repository where developers can push changes to or pull changes from.

CHAPTER 3

Settings

The settings dialog can be invoked at any time by selecting **Settings** from the **Tools** menu option.



The following buttons are always available on any page of the Settings dialog. Sometimes the **Cancel** button has no effect for the page - this will be noted on the page in the area next to the buttons.

Button	Description
OK	Save any entered changes made in <i>any</i> settings page and close the Settings dialog.
Cancel	Any entered changes in <i>any</i> settings page are <i>not</i> saved. The Settings dialog is closed.
Apply	Any entered changes in <i>any</i> settings page are saved.

Settings that are specific to Git Extensions and apply globally will be stored in a file called `GitExtensions.settings` either in the user's application data path or with the program. The location is dependant on the `IsPortable` setting in the `GitExtensions.exe.config` file that is with the program. Settings that are specific to Git Extensions but apply to only the current repository will be stored in a file of the same name, `GitExtensions.settings`, but in either the root folder of the repository or the `.git` folder of the repository, depending on whether or not they are distributed with that repository. The settings that are used by Git are stored in the configuration files of Git. The global settings are stored in the file called `.gitconfig` in the user directory. The local settings are stored in the `.git\config` file of the repository.

Checklist

This page is a visual overview of the minimal settings that Git Extensions requires to work properly. Any items highlighted in red should be configured by clicking on the highlighted item.

This page contains the following settings and buttons.

Check settings at startup

Forces Git Extensions to re-check the minimal set of required settings the next time Git Extensions is started. If all settings are ‘green’ this will be automatically unchecked.

Save and rescan

Saves any setting changes made and re-checks the settings to see if the minimal requirements are now met.

Git

This page contains the settings needed to access git repositories. The repositories will be accessed using external tools. For Windows usually “Git for Windows” or Cygwin are used. Git Extensions will try to configure these settings automatically.

Git

Command used to run git (git.cmd or git.exe)

Needed for Git Extensions to run Git commands. Set the full command used to run git (“Git for Windows” or Cygwin). Use the `Browse` button to find the executable on your file system.

Path to Linux tools (sh).

A few linux tools are used by Git Extensions. When Git for Windows is installed, these tools are located in the bin directory of Git for Windows. Use the `Browse` button to find the directory on your file system. Leave empty when it is in the path.

Environment

Change HOME

This button opens a dialog where the HOME directory can be changed.

The global configuration file used by git will be put in the HOME directory. On some systems the home directory is not set or is pointed to a network drive. Git Extensions will try to detect the optimal setting for your environment. When there is already a global git configuration file, this location will be used. If you need to relocate the home directory for git, click the `Change HOME` button to change this setting. Otherwise leave this setting as the default.

Git Extensions

This page contains general settings for Git Extensions.

Performance

Show number of changed files on commit button

When enabled, the number of pending commits are shown on the toolbar as a figure in parentheses next to the Commit button. Git Extensions must be stopped and restarted to activate changes to this option.

Show current working directory changes in revision graph

When enabled, two extra revisions are added to the revision graph. The first shows the current working directory status. The second shows the staged files. This option can cause slowdowns when browsing large repositories.

Use FileSystemWatcher to check if index is changed

Using the FileSystemWatcher to check index state improves the performance in some cases. Turn this off if you experience refresh problems in commit log.

Show stash count on status bar in browse window

When you use the stash a lot, it can be useful to show the number of stashed items on the toolbar. This option causes serious slowdowns in large repositories and is turned off by default.

Check for uncommitted changes in checkout branch dialog

Git Extensions will not allow you to checkout a branch if you have uncommitted changes on the current branch. If you select this option, Git Extensions will display a dialog where you can decide what to do with uncommitted changes before swapping branches.

Limit number of commits that will be loaded in list at start-up

This number specifies the maximum number of commits that Git Extensions will load when it is started. These commits are shown in the Commit Log window. To see more commits than are loaded, then this setting will need to be adjusted and Git Extensions restarted.

Behaviour

Close Process dialog when process succeeds

When a process is finished, close the process dialog automatically. Leave this option off if you want to see the result of processes. When a process has failed, the dialog will automatically remain open.

Show console window when executing git process

Git Extensions uses command line tools to access the git repository. In some environments it might be useful to see the command line dialog when a process is executed. An option on the command line dialog window displayed allows this setting to be turned off.

Use patience diff algorithm

Use the Git ‘patience diff’ algorithm instead of the default. This algorithm is useful in situations where two files have diverged significantly and the default algorithm may become ‘misaligned’, resulting in a totally unusable conflict file.

Include untracked files in stash

If checked, when a stash is performed as a result of any action except a manual stash request, e.g. checking out a new branch and requesting a stash then any files not tracked by git will also be saved to the stash.

Follow renames in file history (experimental)

Try to follow file renames in the file history.

Follow exact renames and copies only

Follow file renames and copies for which similarity index is 100%. That is when a file is renamed or

copied and is committed with no changes made to its content.

Open last working dir on startup

When starting Git Extensions, open the last used repository (bypassing the Start Page).

Play Special Startup Sound

Play a sound when starting Git Extensions. It will put you in a good moooooood!

Default clone destination

Git Extensions will pre-fill destination directory input with value of this setting on any form used to perform repository clone.

Revision grid quick search timeout [ms]

The timeout (milliseconds) used for the quick search feature in the revision graph. The quick search will be enabled when you start typing and the revision graph has the focus.

Email settings for sending patches**SMTP server name**

SMTP server to use for sending patches.

Port

SMTP port number to use.

Use SSL/TLS

Check this box if the SMTP server uses SSL or TLS.

Commit dialog

This page contains settings for the Git Extensions Commit dialog.

Behaviour**Provide auto-completion in commit dialog**

Enables auto-completion in commit dialog message box. Auto-completion words are taken from the changed files shown by the commit dialog. For each file type there can be configured a regular expression that decides which words should be considered as candidates for auto-completion. The default regular expressions included with Git Extensions can be found here: <https://github.com/gitextensions/gitextensions/blob/master/GitExtensions/AutoCompleteRegexes.txt> You can override the default regular expressions by creating an AutoCompleteRegexes.txt file in the Git Extensions installation directory.

Show errors when staging files

If an error occurs when files are staged (in the Commit dialog), then the process dialog showing the results of the git command is shown if this setting is checked.

Ensure the second line of commit message is empty

Enforces the second line of a commit message to be blank.

Compose commit messages in Commit dialog

If this is unchecked, then commit messages cannot be entered in the commit dialog. When the Commit button is clicked, a new editor window is opened where the commit message can be entered.

Number of previous messages in commit dialog

The number of commit messages, from the top of the current branch, that will be made available from the Commit message combo box on the Commit dialog.

Remember 'Amend commit' checkbox on commit form close

Remembers the state of the 'Amend commit' checkbox when the 'Commit dialog' is being closed. The

remembered state will be restored on the next ‘Commit dialog’ creation. The ‘Amend commit’ checkbox is being unchecked after each commit. So, when the ‘Commit dialog’ is being closed automatically after committing changes, the ‘Amend commit’ checkbox is going to be unchecked first and its state will be saved after that. Therefore the checked state is remembered only if the ‘Commit dialog’ is being closed by an user without committing changes.

Show additional buttons in commit button area

Tick the boxes in this sub-group for any of the additional buttons that you wish to have available below the commit button. These buttons are considered additional to basic functionality and have consequences if you should click them accidentally, including resetting unrecorded work.

Appearance

This page contains settings that affect the appearance of the application.

General**Show relative date instead of full date**

Show relative date, e.g. 2 weeks ago, instead of full date. Displayed on the commit tab on the main Commit Log window.

Show current branch in Visual Studio

Determines whether or not the currently checked out branch is displayed on the Git Extensions toolbar within Visual Studio.

Auto scale user interface when high DPI is used

Automatically resize controls and their contents according to the current system resolution of the display, measured in dots per inch (DPI).

Truncate long filenames

This setting affects the display of filenames in a component of a window e.g. in the Diff tab of the Commit Log window. The options that can be selected are:

- None - no truncation occurs; a horizontal scroll bar is used to see the whole filename.
- Compact - no horizontal scroll bar. Filenames are truncated at both start and end to fit into the width of the display component.
- Trimstart - no horizontal scroll bar. Filenames are truncated at the start only.
- FileNameOnly - the path is always removed, leaving only the name of the file, even if there is space for the path.

Author images**Get author image from gravatar.com**

If checked, [gravatar](#) will be accessed to retrieve an image for the author of commits. This image is displayed on the commit tab on the main Commit Log window.

Image size

The display size of the user image.

Cache images

The number of days to elapse before gravatar is checked for any changes to an authors image.

No image service

If the author has not set up their own image, then gravatar can return an image based on one of these services.

Clear image cache

Clear the cached avatars.

Fonts**Code font**

Change the font used for the display of file contents.

Application font

Change the font used on Git Extensions windows and dialogs.

Commit font

Change the font used for entering a commit message in the Commit dialog.

Language**Language (restart required)**

Choose the language for the Git Extensions interface.

Dictionary for spelling checker

Choose the dictionary to use for the spelling checker in the Commit dialog.

Revision Links

You can configure here how to convert parts of a revision data into clickable links. These links will be located under the commit message on the Commit tab in the Related links section.

Author:	Laury Lafage <lowrey97x@hotmail.fr>
Author date:	1 year ago (2016-04-10 12:11:19)
Committer:	Janusz Białobrzewski <jbialobr@o2.pl>
Commit date:	2 weeks ago (2017-04-20 17:59:04)
Commit hash:	2f6a8b6a93435e91f0c51b206898d6c92077d0fe
Children:	8d298ad761
Parent(s):	6389aa4fd1



Add Edit functionality in Advanced menu #3167

This commit adds the possibility
to edit a commit.

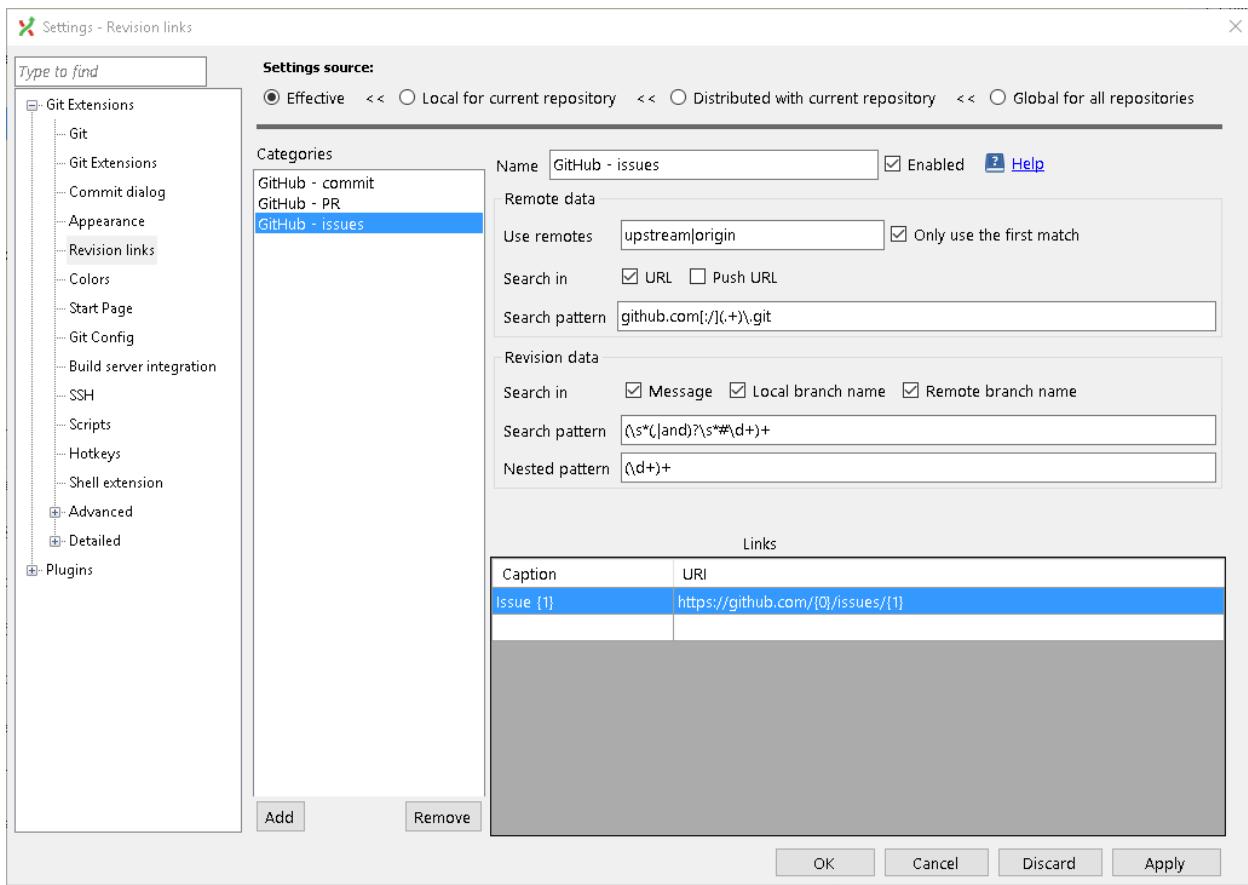
Right click on a commit -> choose Advanced command
-> edit commit

(cherry picked from commit [d7a6af0321f532016967bc646e09ef6be349cd93](#))

Related links: [View on GitHub](#), [Issue 3167](#)

Contained in tags: [jb/copyLink](#), [jb/bcomp](#)

The most common case is to convert an issue number given as a part of commit message into a link to the corresponding issue-tracker page. The screenshot below shows an example configuration for GitHub issues.



Categories

Lists all the currently defined Categories. Click the Add button to add a new empty Category. The default name is ‘new’. To remove a Category select it and click the Remove button.

Name

This is the Category name used to match the same categories defined on different levels of the Settings.

Enabled

Indicates whether the Category is enabled or not. Disabled categories are skipped while creating links.

Remote data

It is possible to use data from remote’s URL to build a link. This way, links can be defined globally for all repositories sharing the same URL schema.

Use remotes

Regex to filter which remotes to use. Leave blank to create links not depending on remotes. If full names of remotes are given then matching remotes are sorted by its position in the given Regex.

Only use the first match

Check if you want to create links only for the first matching remote.

Search in

Define whether to search in URL, Push URL or both.

Revision data

Search in

Define which parts of the revision should be searched for matches.

Search pattern

Regular expression used for matching text in the chosen revision parts. Each matched fragment will be used to create a new link. More than one fragment can be used in a single link by using a capturing group. Matches from the Remote data group go before matches from the Revision data group. A capturing group value can be passed to a link by using zero-based indexed placeholders in a link format definition e.g. {0}.

Nested pattern

Nested pattern can be used when only a part of the text matched by the *Search pattern* should be used to format a link. When the Nested pattern is empty, matches found by the *Search pattern* are used to create links.

Links: Caption/URI

List of links to be created from a single match. Each link consists of the Caption to be displayed and the URI to be opened when the link is clicked on. In addition to the standard zero-based indexed placeholders, the %COMMIT_HASH% placeholder can be used to put the commit's hash into the link. For example:
https://github.com/gitextensions/gitextensions/commit/%COMMIT_HASH%

Colors

This page contains settings to define the colors used in the application.

Revision graph**Multicolor branches**

Displays branch commits in different colors if checked. If unchecked, all branches are shown in the same color. This color can be selected.

Striped branch change

When a new branch is created from an existing branch, the common part of the history is shown in a 'hatch' pattern.

Draw branch borders

Outlines branch commits in a black border if checked.

Draw non relatives graph gray

Show commit history in gray for branches not related to the current branch.

Draw non relatives text gray

Show commit text in gray for branches not related to the current branch.

Highlight authored revisions

Highlight all the revisions authored by the same author as the author of the currently selected revision (matched by email). If there is no revision selected, then the current user's email is used to match revisions to be highlighted.

Color tag

Color to show tags in.

Color branch

Color to show branch names in.

Color remote branch

Color to show remote branch names in.

Color other label

Color to show other labels in.

Color authored revisions

Color to show authored revisions in.

Application Icon**Icon style**

Change icons. Useful for recognising various open instances.

Icon color

Changes color of the selected icons.

Difference View**Color removed line**

Highlight color for lines that have been removed.

Color added line

Highlight color for lines that have been added.

Color removed line highlighting

Highlight color for characters that have been removed in lines.

Color added line highlighting

Highlight color for characters that have been added in lines.

Color section

Highlight color for a section.

Start Page

This page allows you to add/remove or modify the Categories and repositories that will appear on the Start Page when Git Extensions is launched. Per Category you can either configure an RSS feed or add repositories. The order of both Categories, and repositories within Categories, can be changed using the context menus in the Start Page. See [Start Page](#) for further details.

Categories

Lists all the currently defined Categories. Click the Add button to add a new empty Category. The default name is ‘new’. To remove a Category select it and click Remove. This will delete the Category and any repositories belonging to that Category.

Caption

This is the Category name displayed on the Start Page.

Type

Specify the type: an RSS feed or a repository.

RSS Feed

Enter the URL of the RSS feed.

Path/Title/Description

For each repository defined for a Category, shows the path, title and description. To add a new repository, click on a blank line and type the appropriate information. The contents of the Path field are shown on the Start Page as a link to your repository *if* the Title field is blank. If the Title field is non-blank, then this text is shown as the link to your repository. Any text in the Description field is shown underneath the repository link on the Start Page.

An RSS Feed can be useful to follow repositories on GitHub for example. See this page on GitHub: <https://help.github.com/articles/about-your-profile/>. You can also follow commits on public GitHub repositories by:

1. In your browser, navigate to the public repository on GitHub.
2. Select the branch you are interested in.
3. Click on the Commits tab.
4. You will find a RSS icon next to the words “Commit History”.
5. Copy the link
6. Paste the link into the RSS Feed field in the Settings - Start Page as shown above.

Your Start Page will then show each commit - clicking on a link will open your browser and take you to the commit on GitHub.

Git Config

This page contains some of the settings of Git that are used by and therefore can be changed from within Git Extensions.

If you change a Git setting from the Git command line using `git config` then the same change in setting can be seen inside Git Extensions. If you change a Git setting from inside Git Extensions then that change can be seen using `git config --get`.

Git configuration can be global or local configuration. Global configuration applies to all repositories. Local configuration overrides the global configuration for the current repository.

User name

User name shown in commits and patches.

User email

User email shown in commits and patches.

Editor

Editor that git.exe opens (e.g. for editing commit message). This is not used by Git Extensions, only when you call git.exe from the command line. By default Git will use the built in editor.

Mergetool

Merge tool used to solve merge conflicts. Git Extensions will search for common merge tools on your system.

Path to mergetool

Path to merge tool. Git Extensions will search for common merge tools on your system.

Mergetool command

Command that Git uses to start the merge tool. Git Extensions will try to set this automatically when a merge tool is chosen. This setting can be left empty when Git supports the mergetool (e.g. kdiff3).

Keep backup (.orig) after merge

Check to save the state of the original file before modifying to solve merge conflicts. Refer to Git configuration setting `mergetool.keepBackup`.

Difftool

Diff tool that is used to show differences between source files. Git Extensions will search for common diff tools on your system.

Path to difftool

The path to the diff tool. Git Extensions will search for common diff tools on your system.

DiffTool command

Command that Git uses to start the diff tool. This setting should only be filled in when Git doesn't support the diff tool.

Path to commit template

A path to a file whose contents are used to pre-populate the commit message in the commit dialog.

Line endings**Checkout/commit radio buttons**

Choose how git should handle line endings when checking out and checking in files. Refer to <https://help.github.com/articles/dealing-with-line-endings/#platform-all>

Files content encoding

The default encoding for files content.

Build server integration

This page allows you to configure the integration with build servers. This allows the build status of each commit to be displayed directly in the revision log, as well as providing a tab for direct access to the Build Server build report for the selected commit.

General**Enable build server integration**

Check to globally enable/disable the integration functionality.

Show build status summary in revision log

Check to show a summary of the build results with the commits in the main revision log.

Build server type

Select an integration target.

AppVeyor**Account name**

AppVeyor account name. You don't have to enter it if the projects you want to query for build status are public.

API token

AppVeyor API token. Required if the *Account name* is entered. See <https://ci.appveyor.com/api-token>

Project(s) name(s)

Projects names separated with ‘|’, e.g. `gitextensions/gitextensions|jbialobr/gitextensions`

Display tests results in build status summary for every build result

Include tests results in the build status summary for every build result.

Display GitHub pull requests builds

Display build status for revisions which GitHub pull requests are based on. If you have fetched revisions from other users' forks, GitExtensions will show a build status for those revisions for which a build was performed as a part of a pull request's check.

GitHubToken

Token to allow access the GitHub API. You can generate your private token at <https://github.com/settings/tokens>

Jenkins

Jenkins server URL

Enter the URL of the server (and port, if applicable).

Project name

Enter the name of the project which tracks this repository in Jenkins.

TeamCity**TeamCity server URL**

Enter the URL of the server (and port, if applicable).

Project name

Enter the name of the project which tracks this repository in TeamCity. Multiple project names can be entered separated by the | character.

Build Id Filter

Enter a regexp filter for which build results you want to retrieve in the case that your build project creates multiple builds. For example, if your project includes both devBuild and docBuild you may wish to apply a filter of “devBuild” to retrieve the results from only the program build.

Team Foundation**Tfs server (Name or URL)**

Enter the URL of the server (and port, if applicable).

Team collection name**Project name**

Enter the name of the project which tracks this repository in Tfs.

Build definition name

Use first found if left empty.

SSH

This page allows you to configure the SSH client you want Git to use. Git Extensions is optimized for PuTTY. Git Extensions will show command line dialogs if you do not use PuTTY and user input is required (unless you have configured SSH to use authentication with key instead of password). Git Extensions can load SSH keys for PuTTY when needed.

Specify which ssh client to use**PuTTY**

Use PuTTY as SSH client.

OpenSSH

Use OpenSSH as SSH client.

Other ssh client

Use another SSH client. Enter the path to the SSH client you wish to use.

Configure PuTTY**Path to plink.exe**

Enter the path to the plink.exe executable.

Path to puttygen

Enter the path to the puttygen.exe executable.

Path to pageant

Enter the path to the pageant.exe executable.

Automatically start authentication

If an SSH key has been configured, then when accessing a remote repository the key will automatically be used by the SSH client if this is checked.

Scripts

This page allows you to configure specific commands to run before/after Git actions or to add a new command to the User Menu. The top half of the page summarises all of the scripts currently defined. If a script is selected from the summary, the bottom half of the page will allow modifications to the script definition.

A hotkey can also be assigned to execute a specific script. See [Hotkeys](#).

Add

Adds a new script. Complete the details in the bottom half of the screen.

Remove

Removes a script.

Up/Down Arrows

Changes order of scripts.

Name

The name of the script.

Enabled

If checked, the script is active and will be performed at the appropriate time (as determined by the On Event setting).

Ask for confirmation

If checked, then a popup window is displayed just before the script is run to confirm whether or not the script is to be run. Note that this popup is *not* displayed when the script is added as a command to the User Menu (On Event setting is ShowInUserMenuBar).

Run in background

If checked, the script will run in the background and Git Extensions will return to your control without waiting for the script to finish.

Add to revision grid context menu

If checked, the script is added to the context menu that is displayed when right-clicking on a line in the Commit Log page.

Is PowerShell

If checked, the command is started through a powershell.exe process. If the [Run in background](#) is checked, the powershell console is closed after finishing. If not, the powershell console is left for the user to close it manually.

Command

Enter the command to be run. This can be any command that your system can run e.g. an executable program, a .bat script, a Python command, etc. Use the [Browse](#) button to find the command to run.

Arguments

Enter any arguments to be passed to the command that is run. The [Help](#) button displays items that will be resolved by Git Extensions before executing the command e.g. {cBranch} will resolve to the currently checked

out branch, {UserInput} will display a popup where you can enter data to be passed to the command when it is run.

On Event

Select when this command will be executed, either before/after certain Git commands, or displayed on the User Menu bar.

Icon

Select an icon to be displayed in a menu item when the script is marked to be shown in the user menu bar.

Hotkeys

This page allows you to define keyboard shortcuts to actions when specific pages of Git Extensions are displayed. The HotKeyable Items identifies a page within Git Extensions. Selecting a Hotkeyable Item displays the list of commands on that page that can have a hotkey associated with them.

The Hotkeyable Items consist of the following pages

1. Commit: the page displayed when a Commit is requested via the `Commit` User Menu button or the `Commands / Commit` menu option.
2. Browse: the Commit Log page (the page displayed after a repository is selected from the Start Page).
3. RevisionGrid: the list of commits on the Commit Log page.
4. FileViewer: the page displayed when viewing the contents of a file.
5. FormMergeConflicts: the page displayed when merge conflicts are detected that need correcting.
6. Scripts: shows scripts defined in Git Extensions and allows shortcuts to be assigned. Refer [Scripts](#).

Hotkey

After selecting a Hotkeyable Item and the Command, the current keyboard shortcut associated with the command is displayed here. To alter this shortcut, click in the box where the current hotkey is shown and press the new keyboard combination.

Apply

Click to apply the new keyboard combination to the currently selected Command.

Clear

Sets the keyboard shortcut for the currently selected Command to ‘None’.

Reset all Hotkeys to defaults

Resets all keyboard shortcuts to the defaults (i.e. the values when Git Extensions was first installed).

Shell Extension

When installed, Git Extensions adds items to the context menu when a file/folder is right-clicked within Windows Explorer. One of these items is `Git Extensions` from which a further (cascaded) menu can be opened. This settings page determines which items will appear on that cascaded menu and which will appear in the main context menu. Items that are checked will appear in the cascaded menu.

To the right side of the list of check boxes is a preview that shows you how the Git Extensions menu items will be arranged with your current choices.

By default, what is displayed in the context menu also depends on what item is right-clicked in Windows Explorer; a file or a folder (and whether the folder is a Git repository or not). If you want Git Extensions to always include all of its context menu items, check the box `Always show all commands`.

Advanced

This page allows advanced settings to be modified. Clicking on the '+' symbol on the tree of settings will display further settings. Refer [Confirmations](#).

Checkout

Always show checkout dialog

Always show the Checkout Branch dialog when swapping branches. This dialog is normally only shown when uncommitted changes exist on the current branch

Use last chosen "local changes" action as default action.

This setting works in conjunction with the 'Git Extensions/Check for uncommitted changes in checkout branch dialog' setting. If the 'Check for uncommitted changes' setting is checked, then the Checkout Branch dialog is shown only if this setting is unchecked. If this setting is checked, then no dialog is shown and the last chosen action is used.

General

Don't show help images

In the Pull, Merge and Rebase dialogs, images are displayed by default to explain what happens with the branches and their commits and the meaning of LOCAL, BASE and REMOTE (for resolving merge conflicts) in different merge or rebase scenarios. If checked, these Help images will not be displayed.

Always show advanced options

In the Push, Merge and Rebase dialogs, advanced options are hidden by default and shown only after you click a link or checkbox. If this setting is checked then these options are always shown on those dialogs.

Check for release candidate versions

Include release candidate versions when checking for a newer version.

Use Console Emulator for console output in command dialogs

Using Console Emulator for console output in command dialogs may be useful the running command requires an user input, e.g. push, pull using ssh, confirming gc.

Auto normalise branch name

Controls whether branch name should be automatically normalised as per git branch naming rules. If enabled, any illegal symbols will be replaced with the replacement symbol of your choice.

Confirmations

This page allows you to turn off certain confirmation popup windows.

Don't ask to confirm to

Amend last commit

If checked, do not display the popup warning about the rewriting of history when you have elected to amend the last committed change.

Commit when no branch is currently checked out

When committing changes and there is no branch currently being checked out, then GitExtensions warns you and proposes to checkout or create a branch. Enable this option to continue working with no warning.

Apply stashed changes after successful pull

In the Pull dialog, if Auto stash is checked, then any changes will be stashed before the pull is per-

formed. Any stashed changes are then re-applied after the pull is complete. If this setting is checked, the stashed changes are applied with no confirmation popup.

Apply stashed changes after successful checkout

In the Checkout Branch dialog, if Stash is checked, then any changes will be stashed before the branch is checked out. If this setting is checked, then the stashed changes will be automatically re-applied after successful checkout of the branch with no confirmation popup.

Add a tracking reference for newly pushed branch

When you push a local branch to a remote and it doesn't have a tracking reference, you are asked to confirm whether you want to add such a reference. If this setting is checked, a tracking reference will always be added if it does not exist.

Push a new branch for the remote

When pushing a new branch that does not exist on the remote repository, a confirmation popup will normally be displayed. If this setting is checked, then the new branch will be pushed with no confirmation popup.

Update submodules on checkout

When you check out a branch from a repository that has submodules, you will be asked to update the submodules. If this setting is checked, the submodules will be updated without asking.

Resolve conflicts

If enabled, then when conflicts are detected GitExtensions will start the Resolve conflicts dialog automatically without any prompt.

Commit changes after conflicts have been resolved

Enable this option to start the Commit dialog automatically after all conflicts have been resolved.

Confirm for the second time to abort a merge

When aborting a merge, rebase or other operation that caused conflicts to be resolved, an user is warned about the consequences of aborting and asked if he/she wants to continue. If the user chooses to continue the aborting operation, then he/she is asked for the second time if he/she is sure that he/she wants to abort. Enable this option to skip this second confirmation.

Detailed

This page allows detailed settings to be modified. Clicking on the '+' symbol on the tree of settings will display further settings.

Push window

Get remote branches directly from the remote

Git caches locally remote data. This data is updated each time a fetch operation is performed. For a better performance GitExtensions uses the locally cached remote data to fill out controls on the Push dialog. Enable this option if you want GitExtensions to use remote data received directly from the remote server.

Merge window

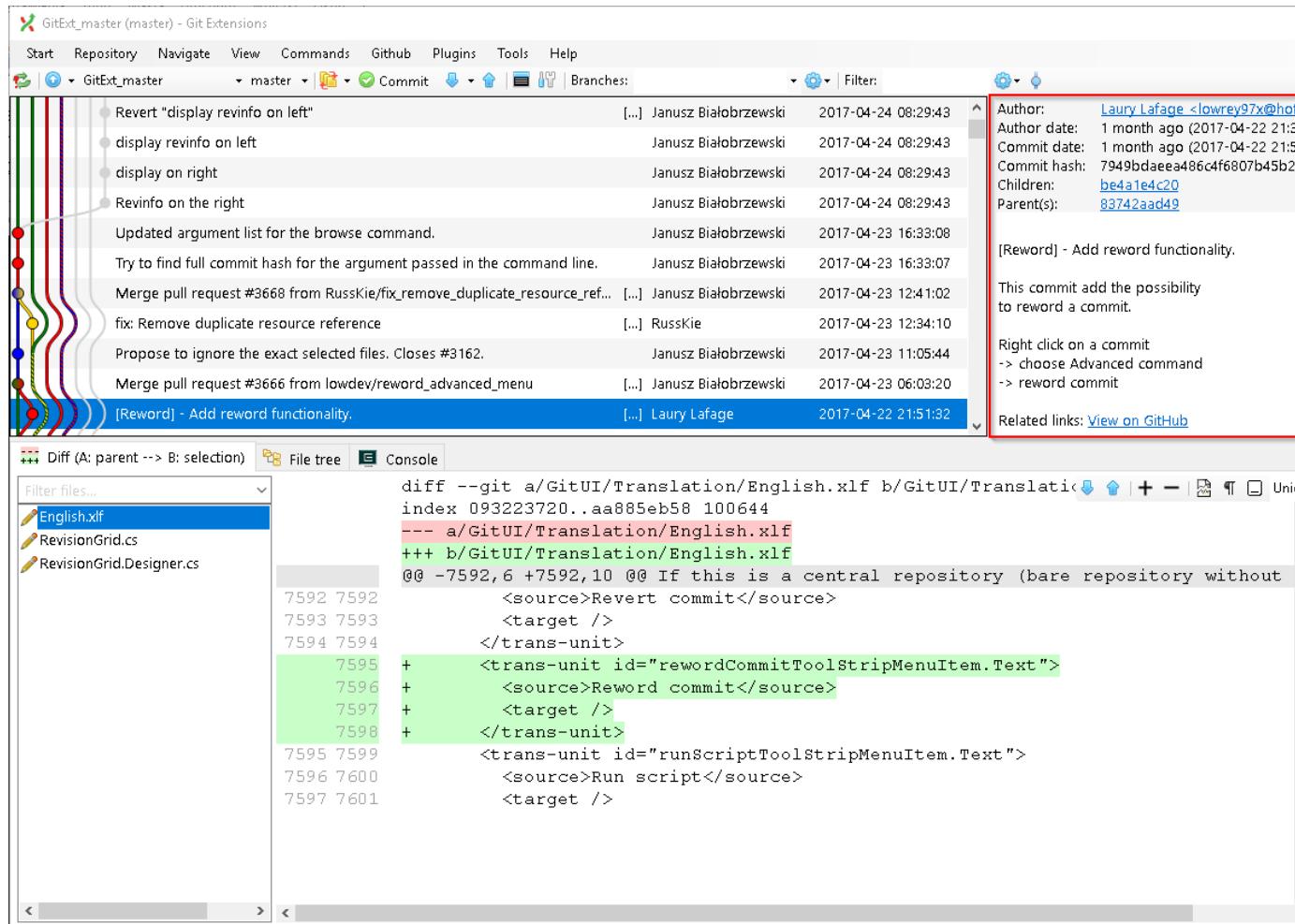
Add log messages

If enabled, then in addition to branch names, git will populate the log message with one-line descriptions from at most the given number actual commits that are being merged. See <https://git-scm.com/docs/git-merge#git-merge---loglntgt>

Browse repository window

Show revision details next to the revision list

Enable to move the commit details panel from the tab pages at the bottom of the window to the top right corner.



Console emulator

Show the Console tab

Show the Console tab in the *Browse Repository* window.

Console settings

Console style

Choose one of the predefined ConEmu schemes. See <http://conemu.github.io/en/SettingsColors.html>.

Shell to run

Choose one of the predefined terminals.

Font size

Console font size.

Diff Viewer

Remember the 'Ignore whitespaces' preference

Remember in the GitExtensions settings the latest chosen value of the 'Ignore whitespaces' preference. Use the remembered value the next time GitExtensions is opened.

Remember the 'Show nonprinting characters' preference

Remember in the GitExtensions settings the latest chosen value of the 'Show nonprinting characters' preference. Use the remembered value the next time GitExtensions is opened.

Remember the 'Show entire file' preference

Remember in the GitExtensions settings the latest chosen value of the 'Show entire file' preference. Use the remembered value the next time GitExtensions is opened.

Remember the 'Number of context lines' preference

Remember in the GitExtensions settings the latest chosen value of the 'Number of context lines' preference. Use the remembered value the next time GitExtensions is opened.

Omit uninteresting changes from combined diff

Includes git -cc switch when generating a diff. See <https://git-scm.com/docs/git-diff-tree#git-diff-tree---cc>

Open Submodule Diff in separate window

If enabled then double clicking on a submodule in the Diff file list opens a new instance of GitExtensions with the submodule as the selectect repository. If disabled, the File history window is opened for the double clicked submodule.

Show file differences for all parents in browse dialog

Enable this option to see diff against each of the revision parents, combined diff including.

Plugins

Plugins provide extra functionality for Git Extensions.

Auto compile SubModules

This plugin proposes (confirmation required) that you automatically build submodules after they are updated via the GitExtensions Update submodules command.

Enabled

Enter true to enable the plugin, or false to disable.

Path to msbuild.exe

Enter the path to the msbuild.exe executable.

msbuild.exe arguments

Enter any arguments to msbuild.

Periodic background fetch

This plugin keeps your remote tracking branches up-to-date automatically by fetching periodically.

Arguments of git command to run

Enter the git command and its arguments into the edit box. The default command is `fetch --all`, which will fetch all branches from all remotes. You can modify the command if you would prefer, for example, to fetch only a specific remote, e.g. `fetch upstream`.

Fetch every (seconds)

Enter the number of seconds to wait between each fetch. Enter 0 to disable this plugin.

Refresh view after fetch

If checked, the commit log and branch labels will be refreshed after the fetch. If you are browsing the commit log and comparing revisions you may wish to disable the refresh to avoid unexpected changes to the commit log.

Fetch all submodules

If checked, also perform `git fetch -all` recursively on all configured submodules as part of the periodic background fetch.

Create local tracking branches

This plugin will create local tracking branches for all branches on a remote repository. The remote repository is specified when the plugin is run.

Delete obsolete branches

This plugin allows you to delete obsolete branches i.e. those branches that are fully merged to another branch. It will display a list of obsolete branches for review before deletion.

Delete obsolete branches older than (days)

Select branches created greater than the specified number of days ago.

Branch where all branches should be merged

The name of the branch where a branch must have been merged into to be considered obsolete.

Find large files

Finds large files in the repository and allows you to delete them.

Find large files bigger than (Mb)

Specify what size is considered a 'large' file.

Gerrit Code Review

The Gerrit plugin provides integration with Gerrit for GitExtensions. This plugin has been based on the `git-review` tool.

For more information see: <https://www.gerritcodereview.com/>

GitFlow

The GitFlow plugin provides high-level repository operations for Vincent Driessen's branching model

For more information see: <https://github.com/nvie/gitflow>

Github

This plugin will create an OAuth token so that some common GitHub actions can be integrated with Git Extensions.

For more information see: <https://github.com/>

OAuth Token

The token generated and retrieved from GitHub.

Impact Graph

This plugin shows in a graphical format the number of commits and counts of changed lines in the repository performed by each person who has committed a change.

Statistics

This plugin provides various statistics (and a pie chart) about the current Git repository. For example, number of commits by author, lines of code per language.

Code files

Specifies extensions of files that are considered code files.

Directories to ignore (EndsWith)

Ignore these directories when calculating statistics.

Ignore submodules

Ignore submodules when calculating statistics (true/false).

Gource

Gource is a software version control visualization tool.

For more information see: <http://gource.io/>

Path to "gource"

Enter the path to the gource software.

Arguments

Enter any arguments to gource.

Proxy Switcher

This plugin can set/unset the value for the http.proxy git config file key as per the settings entered here.

Username

The user name needed to access the proxy.

Password

The password attached to the username.

HttpProxy

Proxy Server URL.

HttpProxyPort

Proxy Server port number.

Release Notes Generator

This plugin will generate ‘release notes’. This involves summarising all commits between the specified from and to commit expressions when the plugin is started. This output can be copied to the clipboard in various formats.

Create Bitbucket Pull Request

If your repository is hosted on Atlassian Bitbucket Server then this plugin will enable you to create a pull request for Bitbucket from Git Extensions

For more information see: <https://www.atlassian.com/software/bitbucket/server>

Bitbucket Username

The username required to access Bitbucket.

Bitbucket Password

The password required to access Bitbucket.

Specify the base URL to Bitbucket

The URL from which you will access Bitbucket.

Disable SSL verification

Check this option if you do not require SSL verification to access Bitbucket Server.

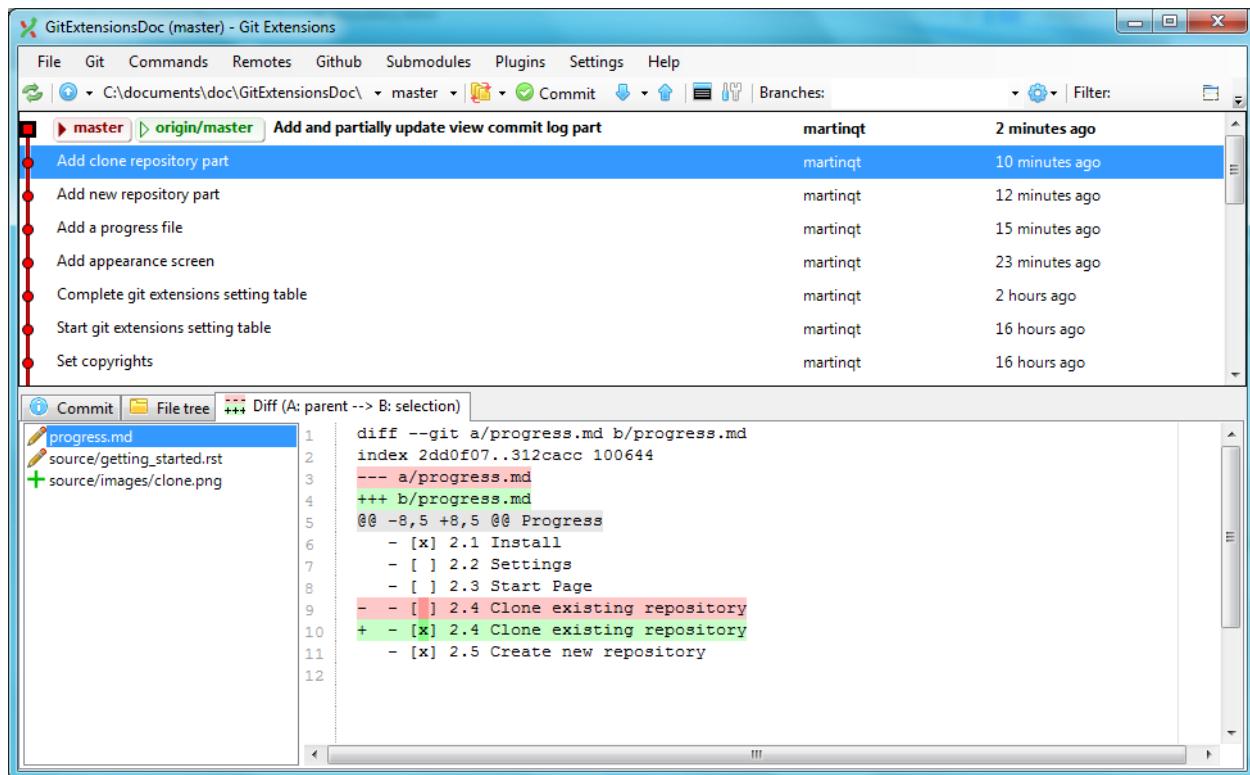
CHAPTER 4

Browse Repository

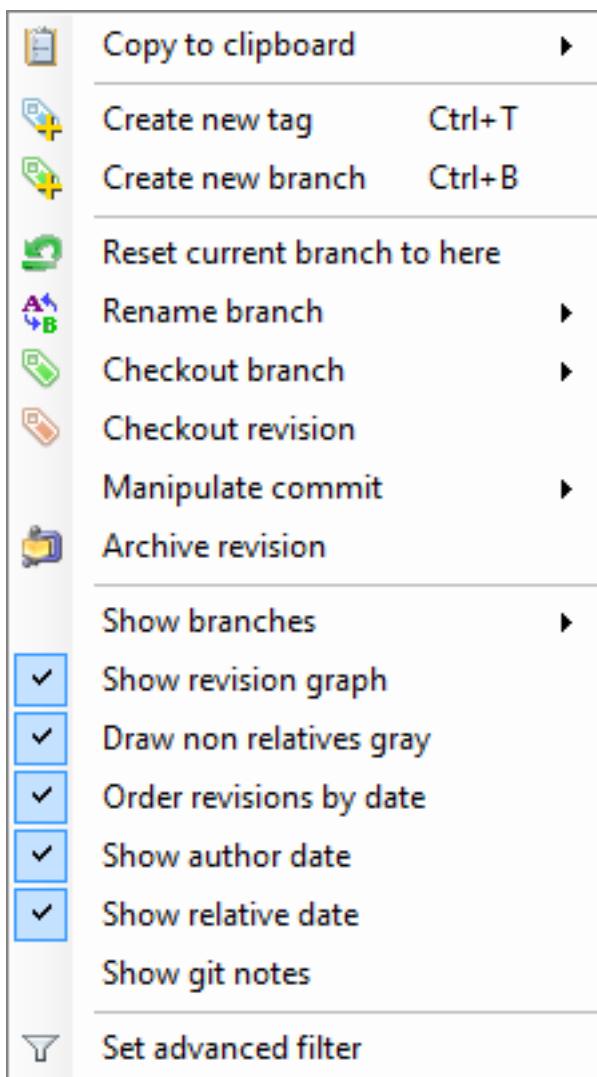
You can browse a repository by starting Git Extensions and select the repository to open. The main window contains the commit log. You could also open the ‘Browse’ window from the shell extensions and from the Visual Studio IDE.

View commit log

The full commit history can be browsed. There is a graph that shows branches and merges. You can show the difference between any two revisions by selecting them using ctrl-click.



In the context menu of the commit log you can enable or disable the revision graph. You can also choose to only show the current branch instead of showing all branches. The other options will be discussed later.



Search or filter the commit history

You can find text in the commit messages or jump to a specific commit in the current commit history shown in Git Extensions. You can also filter the commit history so that fewer commits are shown.

Quick search in history

You can find a commit in the commit history that is shown in Git Extensions by searching for text in the commit message, branch label or tag. This is a quick search function. Simply click into the commit history to give that pane focus and start typing. Git Extensions will show your search term in the top left corner and will immediately jump to the next commit with matching text. You can search for the next or previous commit with matching text using Alt-Down Arrow or Alt-Up Arrow.

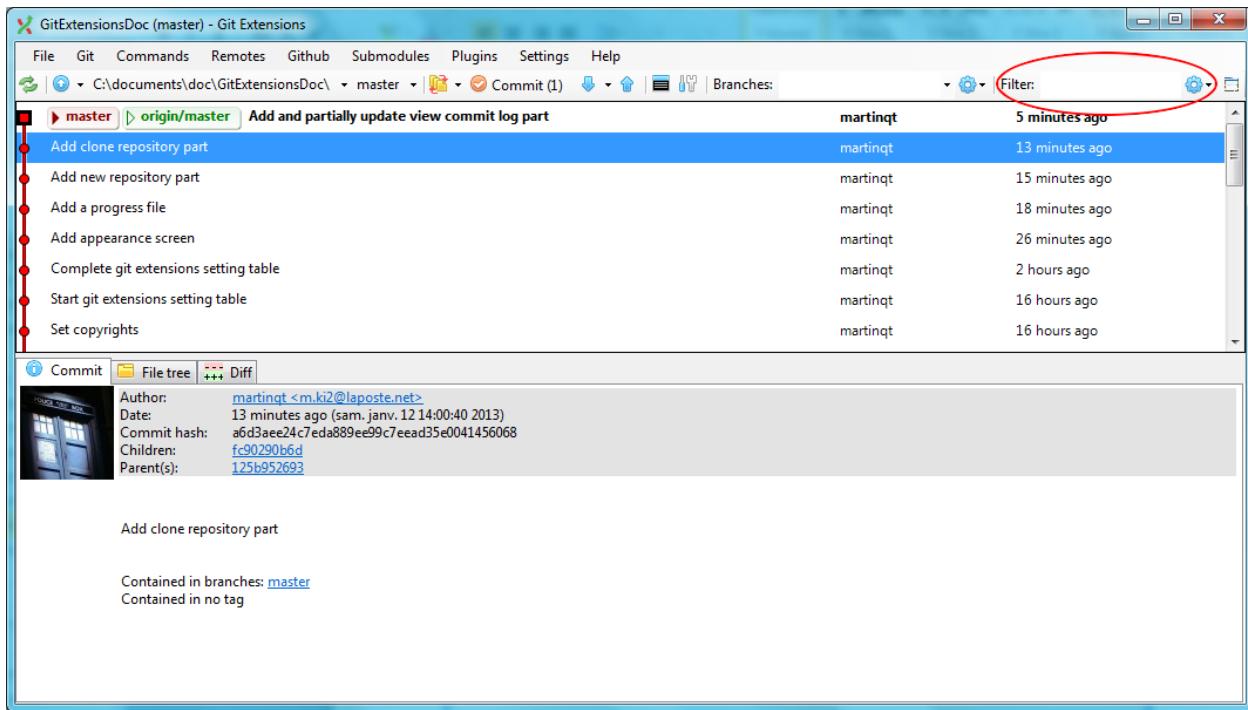
In Settings, Git Extensions you can change the timeout for typing the text for the quick search.

Go to a specific commit

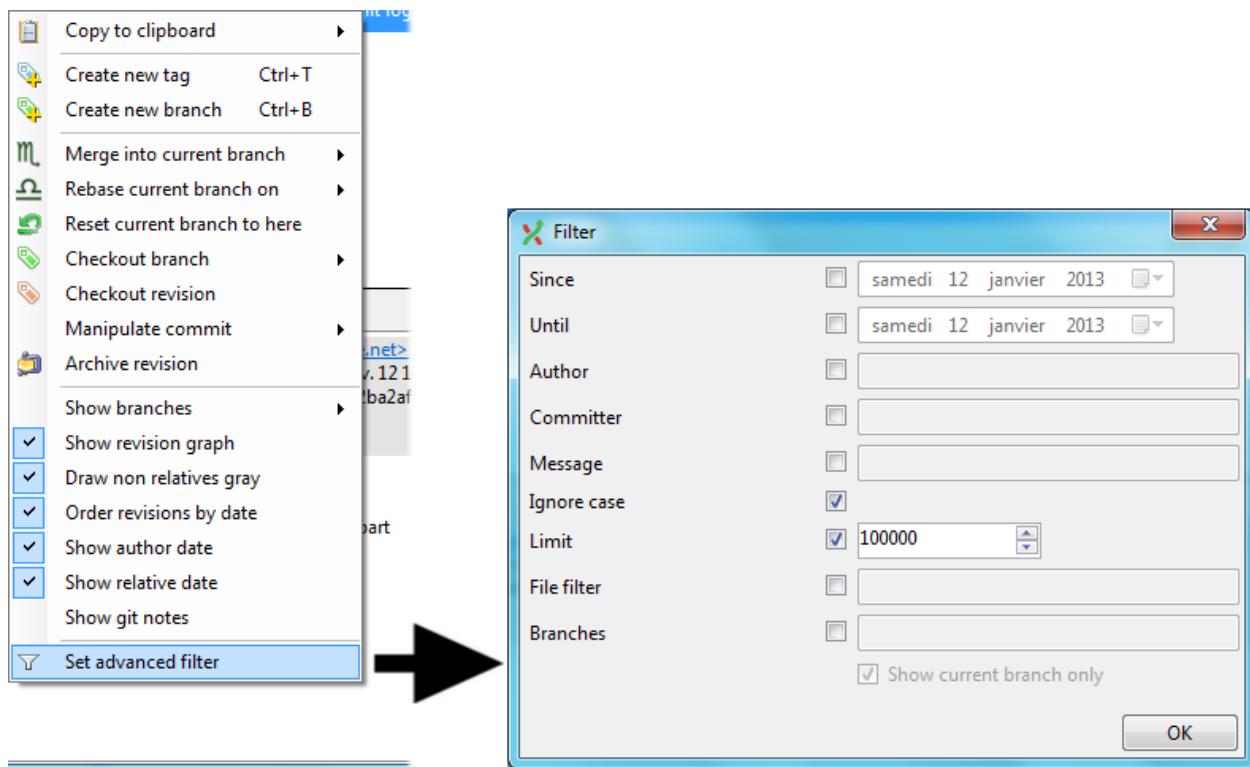
You can jump to a particular commit in the commit history if you know the SHA, tag or branch. In fact you can use any expression valid for git-rev-parse. Select Navigate, Go to commit or press Ctrl+Shift+G to open the Go to commit window. Enter an SHA or other term to be passed to git-rev-parse into the box at the top and click Go, or select a branch or tag from one of the two combo boxes below.

Filter history

The history can be filtered using regular expressions and basic filter terms. Filtering will reduce the number of commits that are shown in the Git Extensions commit history. The quick filter in the toolbar filters by the commit message, the author and/or the committer.

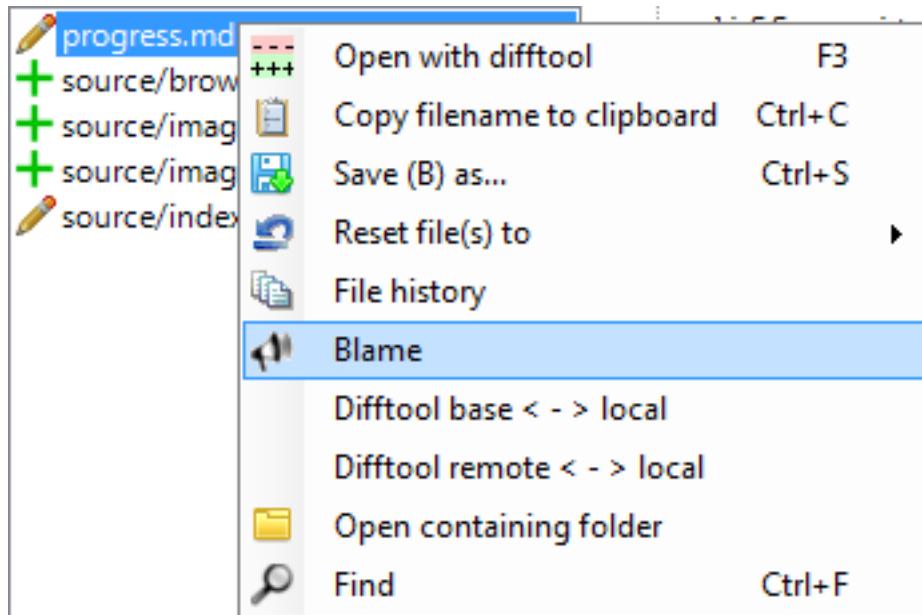


In the context menu of the commit log you can open the advanced filter dialog. The advanced filter dialog allows you to filter for more specific commits. To remove the filter either remove the filter in the toolbar and press enter or remove the filter in the advanced filter dialog.



Singe file history

To display the single file history, right click on a file name in the File tree or in the Diff tab and select File history.



The single file history viewer shows all revisions of a single file. You can view the content of the file in after each commit in the View tab.

The screenshot shows the 'File History' window for the file 'source/getting_started.rst'. The window title is 'File History - source/getting_started.rst'. The top bar displays 'Branches: 67f5c510e65e0df2ab24e...' and includes 'Filter:' and 'Commit' dropdowns. Below the branches, a list of commits is shown:

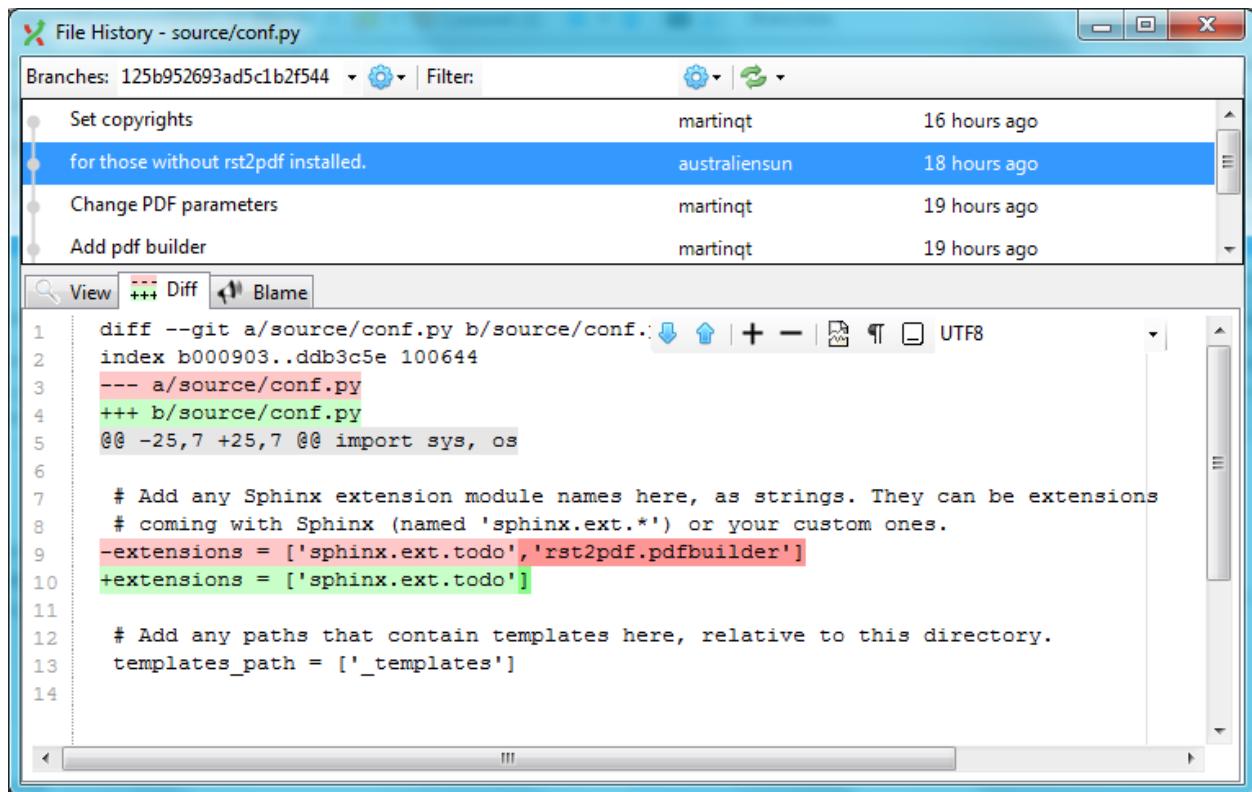
Commit	Author	Date
Add appearance screen	martinqt	0 hours ago
Complete git extensions setting table	martinqt	2 hours ago
Start git extensions setting table	martinqt	16 hours ago
Start porting settings	martinqt	16 hours ago

Below the commit list is a tab bar with 'View', 'Diff' (which is selected), and 'Blame'. The main area displays the content of the file 'getting_started.rst' with line numbers 1 through 15. The content is as follows:

```
1 Getting Started
2 =====
3
4 .. index::
5     single: Getting Started; Installation
6
7 Installation
8 -----
9
10 There is a single click installer that installs MSysGit, kdif3 and Git Extensions. Th
11 if 32bit and/or 64bit versions should be installed.
12 The installer can be found `here <http://code.google.com/p/gitextensions/>`_.
13
14 .. figure:: /images/install/install11.png
15
```

You can view the difference report from the commit in the Diff tab.

Note: Added lines are marked with a +, removed lines are marked with a -.



Blame

There is a blame function in the file history browser. It shows the last person editing a single line.

The screenshot shows the 'File History' window for the file 'source/conf.py'. The window has a toolbar at the top with buttons for View, Diff, and Blame (which is selected). Below the toolbar is a list of commits:

Commit Message	Author	Date
for those without rst2pdf installed.	australiensun	1 day ago
Change PDF parameters	martingt	1 day ago
Add pdf builder	martingt	1 day ago
Change theme	martingt	1 day ago
Initial commit	martingt	1 day ago

Below the commits, there is a detailed view of the first commit:

Author: australiensun <australien@sun>
Date: 1 day ago (ven. janv. 11 20:27:35 2013)
Commit hash: 7725fd36c1133b94baa63665772b7752c7fcf44e
Parent(s): 1a6af0d619

for those without rst2pdf installed.

australiensun - 11/01/
martingt - 11/01/2013

22: # If your documentation needs a minimal Sphinx version, state it here.
#needs_sphinx = '1.0'
23:
24:
25:
26: # Add any Sphinx extension module names here, as strings. They can be extensions
coming with Sphinx (named 'sphinx.ext.*') or your custom ones.
27: extensions = ['sphinx.ext.todo']
28:
29: # Add any paths that contain templates here, relative to this directory.
templates_path = ['_templates']
30:
31:
32: # The suffix of source filenames.
source_suffix = '.rst'
33:
34: !!!

Double clicking on a code line shows the full commit introducing the change.

CHAPTER 5

Commit

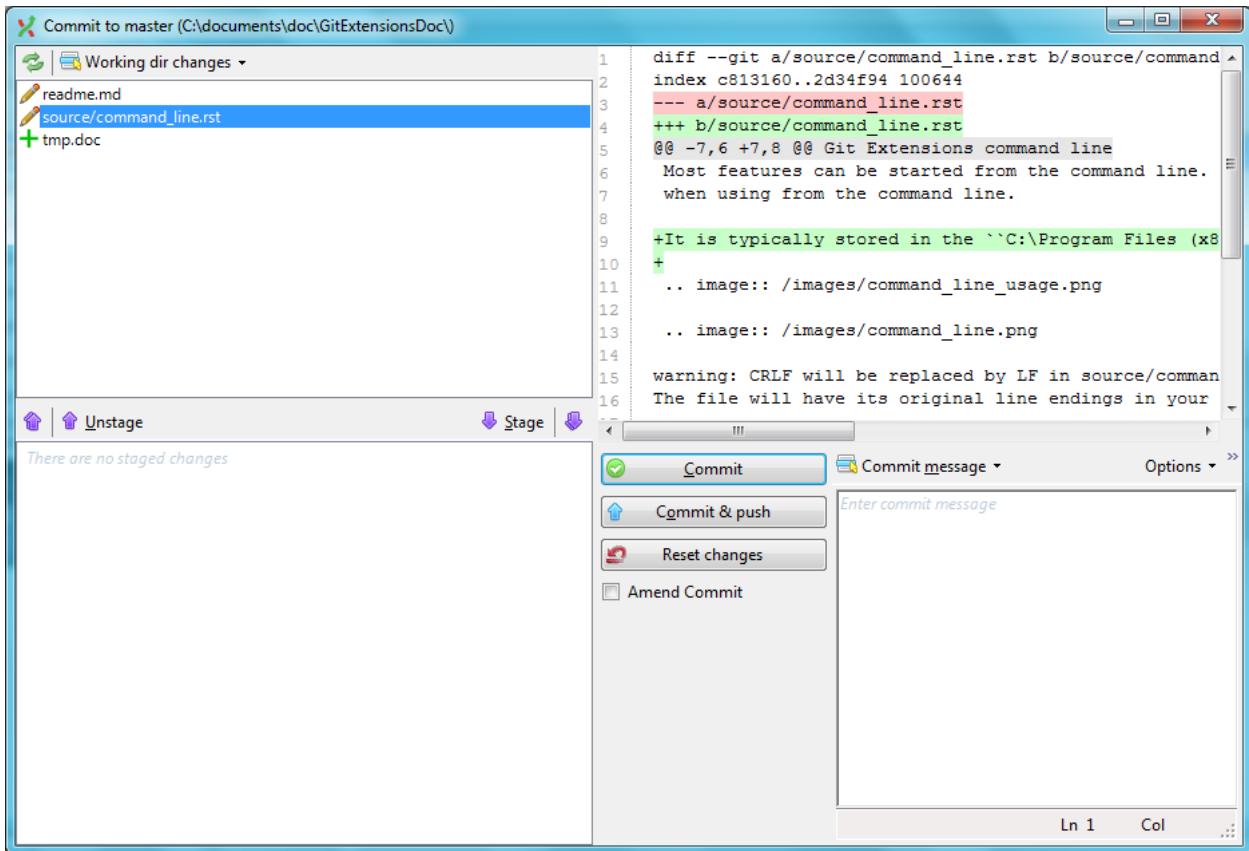
A commit is a set of changes with some extra information. Every commit contains the following information:

- Changes
- Committer name and email
- Commit date
- Commit message
- Cryptographically strong SHA1 hash

Each commit creates a new revision of the source. Revisions are not tracked per file; each change creates a new revision of the complete source. Unlike most traditional source control management systems, revisions are not named using a revision number. Each revision is named using a SHA1, a 41 long characters cryptographically strong hash.

Commit changes

Changes can be committed to the local repository. Unlike most other source control management systems you do not need to checkout files before you start editing. You can just start editing files, and review all the changes you made in the commit dialog later. When you open the commit dialog, all changes are listed in the top-left.

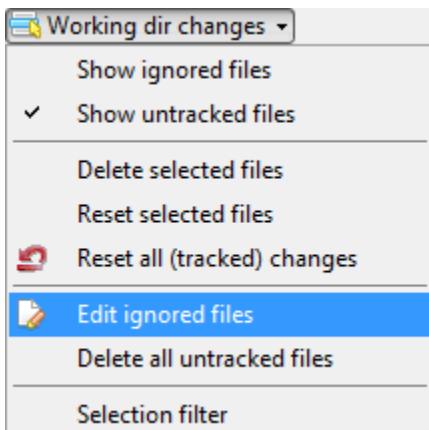


There are three kinds of changes:

Un-tracked	This file is not yet tracked by Git. This is probably a new file, or a file that has not been committed to Git before.
Modified	This file is modified since the last commit.
Deleted	This file has been deleted.

When you rename or move a file Git will notice that this file has been moved, but currently Git Extensions does not show this in the commit dialog.

During your initial commit there are probably lots of files you do not want to be tracked. You can ignore these files by not staging them, but they will show every time. You can instead add them to the `.gitignore` file of your repository. Files that are in the `.gitignore` file will not show up in the commit dialog again. You can open the `.gitignore` editor from the menu Working dir changes by selecting Edit ignored files.



Making a commit is a two step procedure:

- Staging the changes to be committed, which saves a snapshot of the changes into the Git “index”.
- Committing those staged changes, which records the staged changes and other information into the repository.

You do not have to commit immediately after staging changes. You can close the commit dialog, make further changes to the files in the working dir, then re-open the commit dialog to stage further changes and commit. Changes that you have staged previously will still be staged when you re-open the dialog.

Staging changes

The changes that you have made to your working directory are not automatically included in a commit. You must choose which of the changed files, or individual changes from within those files, will be included in the commit by “staging” the changes in Git Extensions. Staging changes in Git Extensions is the same as using `git add` on the Git command line.

You can stage the changes you want to commit by selecting the files in the top-left or “Unstaged changes” pane and pressing the **Stage** button or pressing the [S] key. The file entries will move to the lower left or “Staged changes” pane. You need to stage deleted files because you stage the change and not the file. If you have staged changes from a file and you wish to exclude those changes from the commit, select the entry in the staged changes pane and press the **Unstage** button or press the [U] key.

If the file that is selected in either the unstaged or staged changes pane is text format, Git Extensions will show a Git “diff” view in the right side pane of the window.

Staging selected lines

You do not have to commit all of the changes in a text format file in one commit. You can select and stage individual lines from within a file such that only the chosen lines will be included in your next commit; the remaining changes in the file will appear as unstaged changes for the next commit.

In the diff view on the right, select the line or lines that you want to stage then right-click and choose **Stage selected line(s)** or press the [S] key. The file will now appear in both the staged changes and unstaged changes panes on the left since now there are both staged and unstaged changes in the same file. The change that was selected will disappear from the diff view on the right because the diff view is showing only the unstaged changes.

To see the line changes that have been staged select the entry for the file in the staged changes pane. To unstage selected changed lines from a file, select that file in the staged changes pane, then select the line or lines in the diff view, right -click, and choose **Unstage selected line(s)** or press the [U] key.

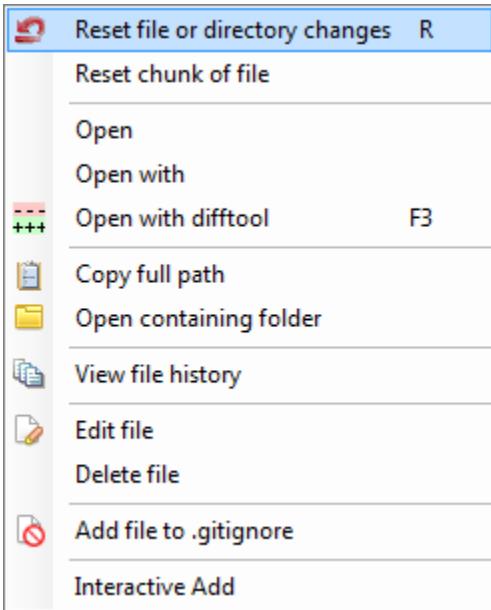
Note: If you select an entire line including the end-of-line character then staging or unstaging that line will include both the selected line and the next line. To select a single line to stage or unstage you may simply click onto the line without selecting any particular characters.

Note: Staging and unstaging individual lines from a file does not change the file itself. It is simply choosing which changes from within that file will be included in the next commit.

Undoing or resetting changes

You can undo or reset changes to files from the commit dialog. You can only do this from the top-left or “Unstaged changes” pane. If you have already staged the changes then you must first unstage them as described above. To

reset the changes in a file, select the file in the unstaged changes pane, right-click and choose Reset file or directory changes or press the [R] key.

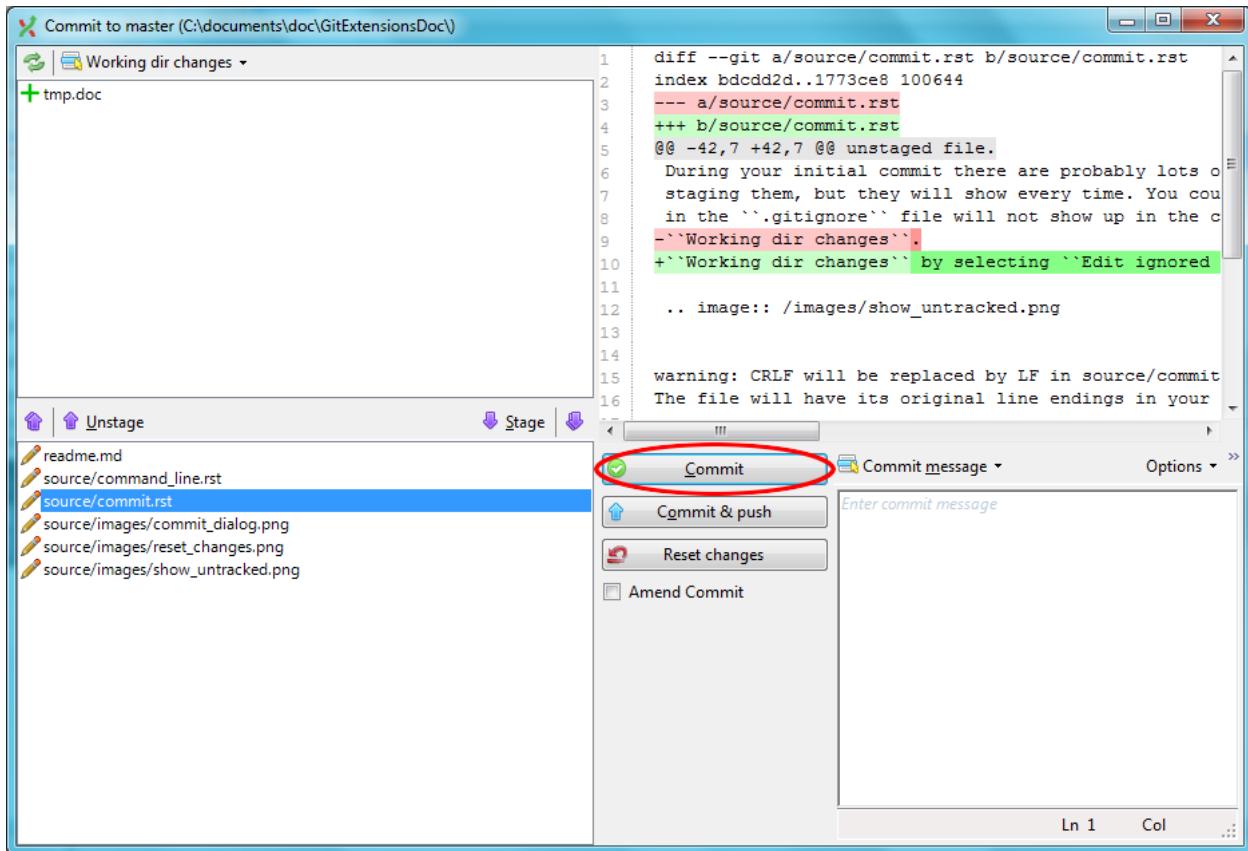


You can reset individual changed lines in a similar way to staging and unstaging individual lines, which are described above. To reset an individual line, select the line or lines in the diff view on the right then right-click and choose Reset selected lines or press the [R] key.

Warning: Resetting changes modifies the file, discarding either all of the changes or the changes on the selected lines.

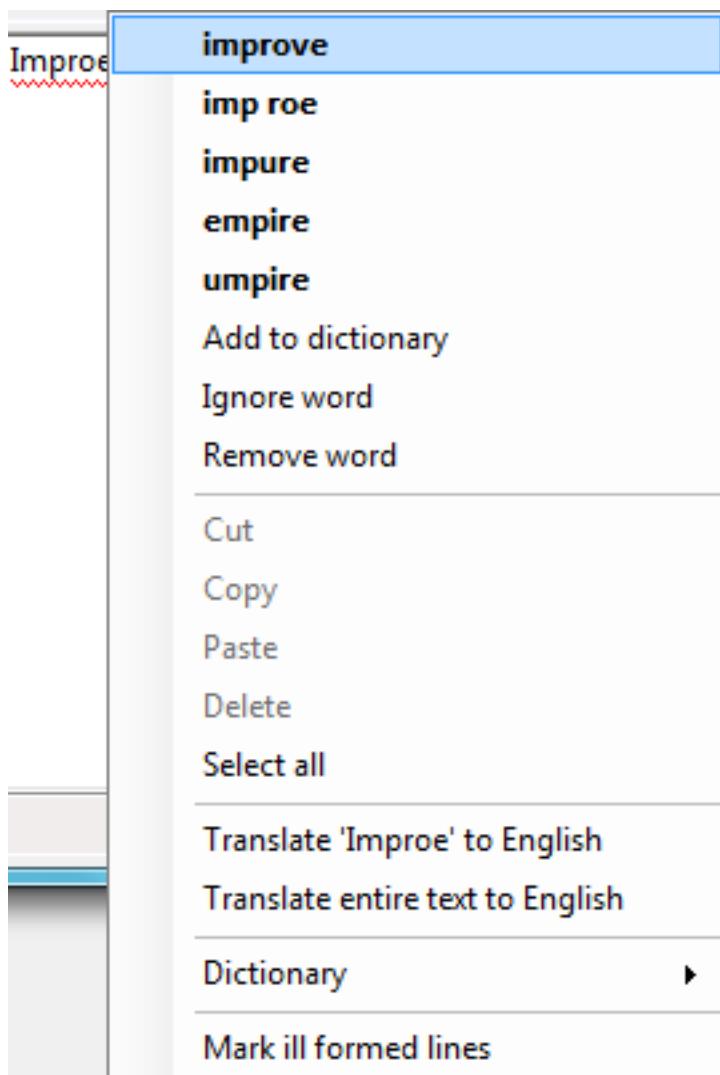
Making the commit

When all the changes you want to commit are staged, enter a commit message into the lower-right pane and press the commit button.

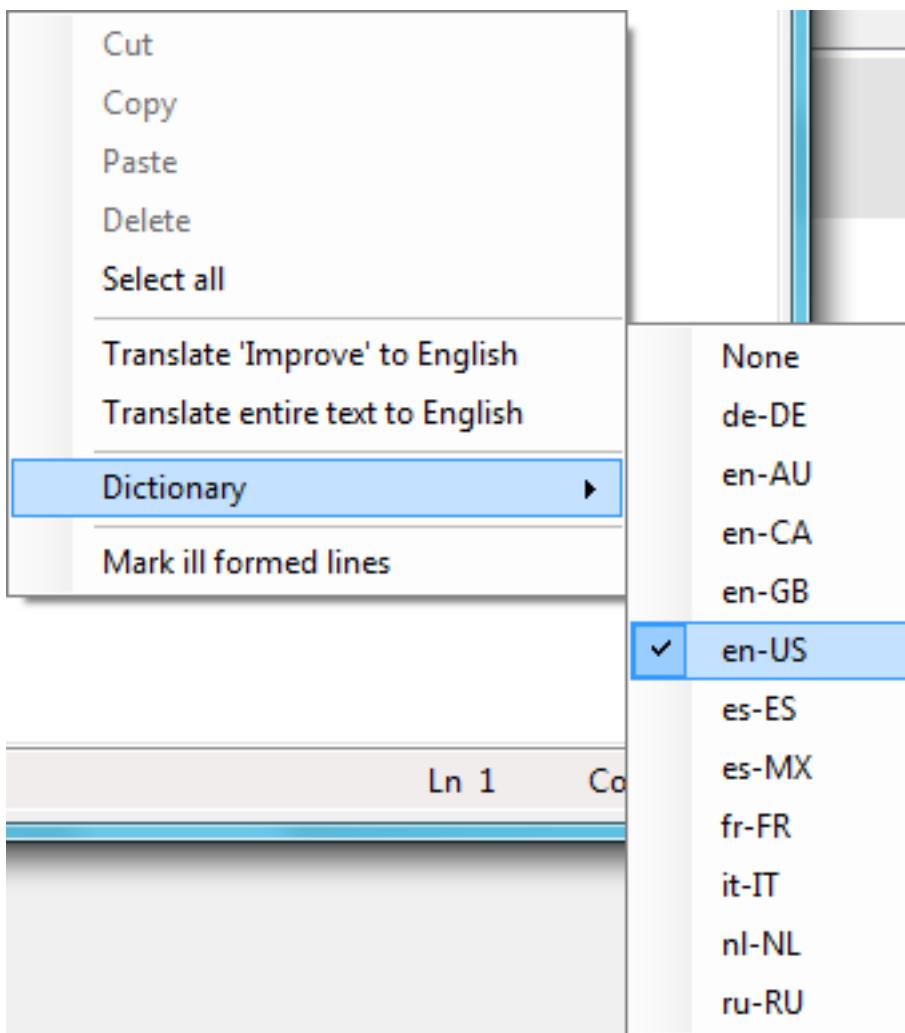


It is also possible to add changes to your last commit by checking the `Amend Commit` checkbox. This can be very useful when you forgot some changes. This function rewrites history; it deletes the last commit and commits it again including the added changes. Make sure you only use `Amend Commit` when the commit is not yet published to a remote repository.

There is a built-in spelling checker that checks the commit message. Incorrectly spelled words are underlined with a wavy red line. Right-click on the misspelled word to choose the correct spelling or choose one of the other options.

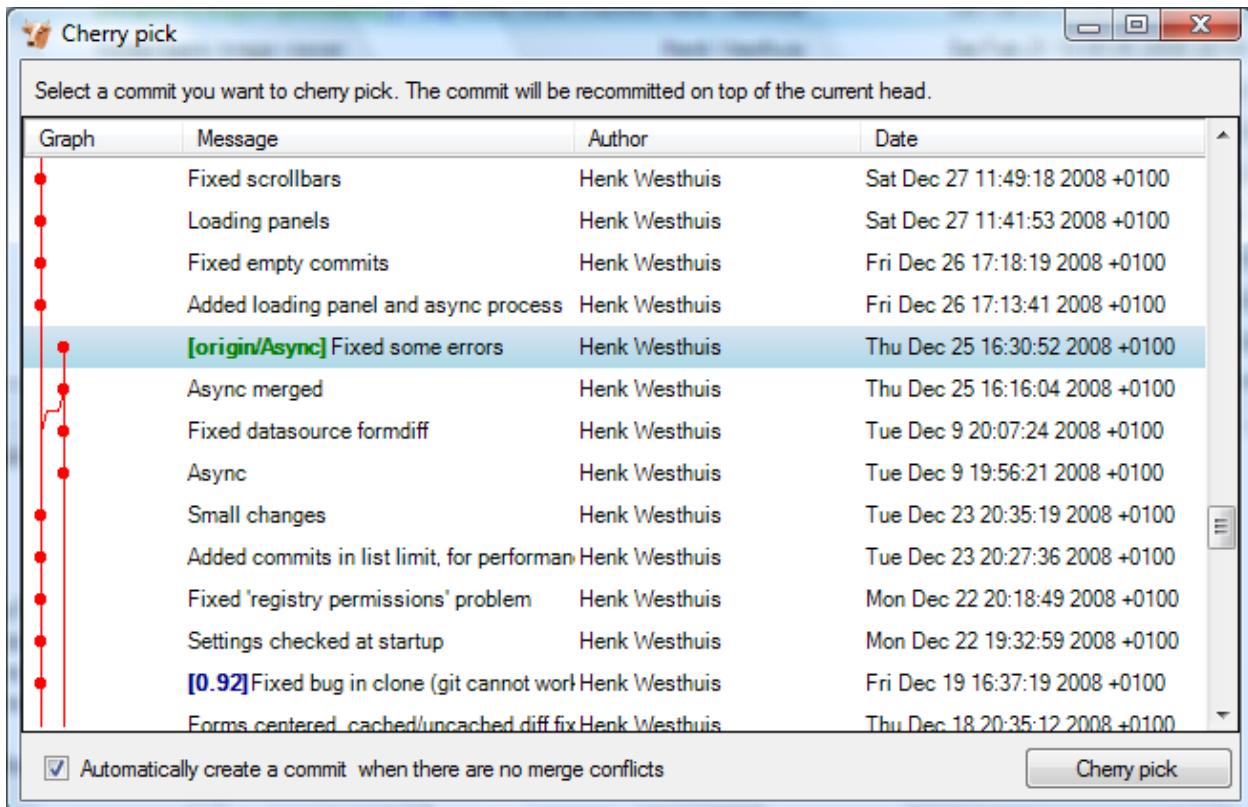


Git Extensions installs a number of dictionaries by default. You can choose another language in the context menu of the spelling checker or in the settings dialog. To add a new spelling dictionary add the dictionary file to the Dictionaries folder inside the Git Extensions installation folder.



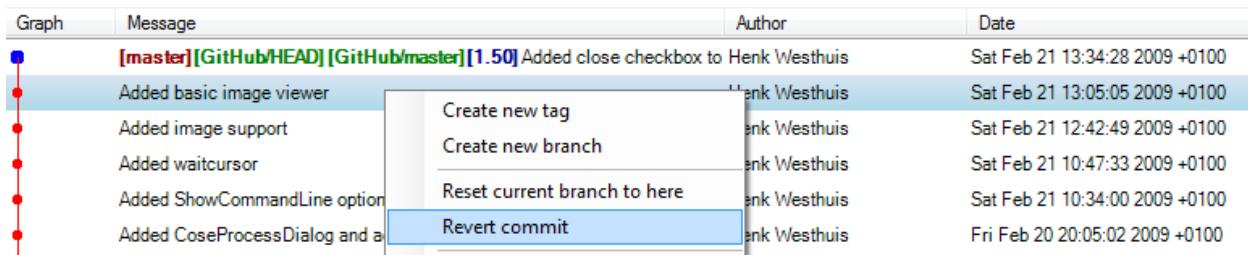
Cherry pick commit

A commit can be recommitted by using the cherry pick function. This can be very useful when you want to make the same change on multiple branches.



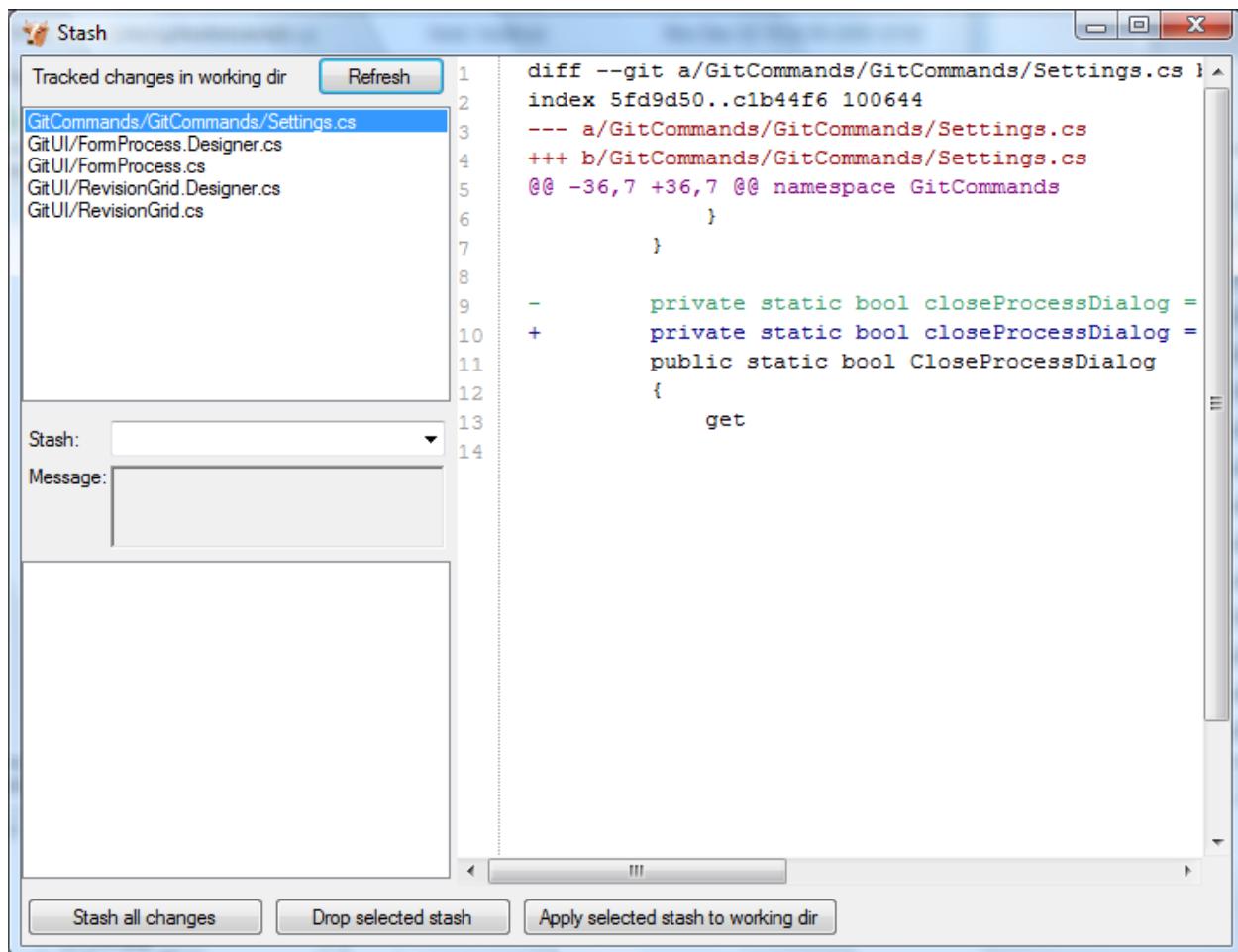
Revert commit

A commit cannot be deleted once it is published. If you need to undo the changes made in a commit, you need to create a new commit that undoes the changes. This is called a revert commit.



Stash changes

If there are local changes that you do not want to commit yet and not want to throw away either, you can temporarily stash them. This is useful when working on a feature and you need to start working on something else for a few hours. You can stash changes away and then reapply them to your working dir again later. Stashes are typically used for very short periods.



You can create multiple stashes if needed. Stashes are shown in the commit log with the text [stash].

Graph	Message	Author
	[stash] WIP on Refactor: 0b5a66d... Added image support	Henk Westhuis
	index on Refactor: 0b5a66d... Added image support	Henk Westhuis
	[Refactor] Added image support	Henk Westhuis
	Added waitcursor	Henk Westhuis

The stash is especially useful when pulling remote changes into a dirty working directory. If you want a more permanent stash, you should create a branch.

CHAPTER 6

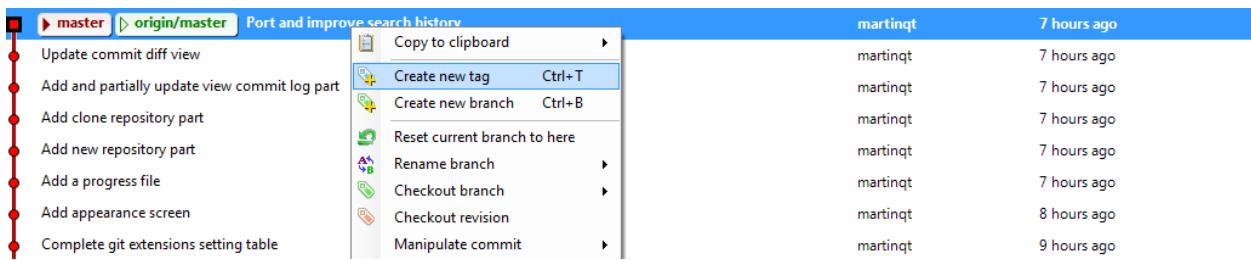
Tag

Tags are used to mark a specific version. Usually a tag will not be moved anymore. The image below shows the commit log of Git Extensions with two tags indicating version [1.08] and [1.06].

Graph	Message	Author	Date
•	Fixed open working dir with spaces from VS and shell extensions and added plugin to setup	Henk Westhuis	Thu Jan 8 19:04:51 2009 +0100
•	[1.08] Minor changes for version 1.08	Henk Westhuis	Tue Jan 6 19:27:35 2009 +0100
•	Added archive function	Henk Westhuis	Tue Jan 6 19:22:50 2009 +0100
•	Fixed using " (quote) in commit message	Henk Westhuis	Tue Jan 6 18:51:50 2009 +0100
•	Fixed commits per user and added "show files to add"	Henk Westhuis	Tue Jan 6 18:48:57 2009 +0100
•	Fixed directory select clone form	Henk Westhuis	Tue Jan 6 18:27:10 2009 +0100
•	Added progress dialog to stash	Henk Westhuis	Mon Jan 5 19:58:12 2009 +0100
•	Fixed formatpatch dialog	Henk Westhuis	Mon Jan 5 19:46:37 2009 +0100
•	Added setting to locate git.cmd	Henk Westhuis	Mon Jan 5 19:25:43 2009 +0100
•	Added dll's to make it easier for others to compile	Henk Westhuis	Mon Jan 5 19:25:15 2009 +0100
•	[PATCH] Quote path when calling regedit.	Henk Westhuis	Mon Jan 5 17:52:52 2009 +0100
•	[1.06] Fixed reset hard and fixed checkout dialog	Henk Westhuis	Sun Jan 4 16:16:16 2009 +0100
•	Deleted mailmap... it was just there to test	Henk Westhuis	Sun Jan 4 15:36:24 2009 +0100

Create tag

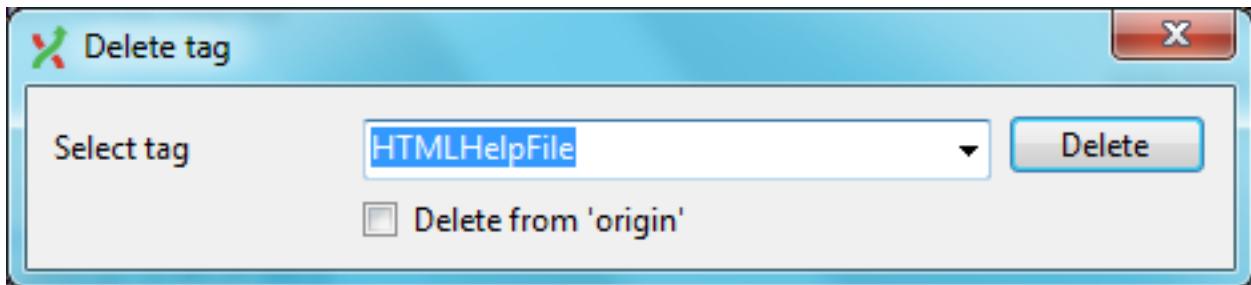
In Git Extensions you can tag a revision by choosing `Create new tag` in the commit log context menu. A dialog will prompt for the name of the tag. You can also choose `Create tag` from the Commands menu, which will show a dialog to choose the revision and enter the tag name.



Once a tag is created, it cannot be moved again. You need to delete the tag and create it again to move it.

Delete tag

For some operation it is very useful to create tags for temporary usage. Git uses SHA1 hashes to name each commit. When you want to merge with an unnamed branch it is good practise to tag the unnamed branch, merge with the tag and then delete the tag again.

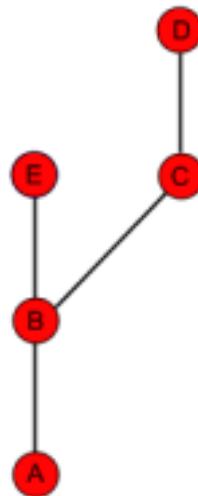


Re-Tag?

Read about "What should you do when you tag a wrong commit and you would want to re-tag?" here: https://www.kernel.org/pub/software/scm/git/docs/git-tag.html#_on_re_tagging

CHAPTER 7

Branches



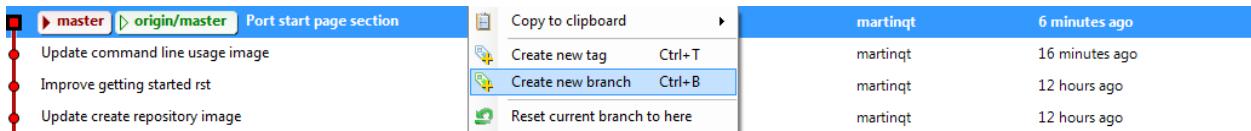
Branches are used to commit changes separate from other commits. It is very common to create a new branch when you start working on a feature to keep the work done on that feature separate from other work. When the feature is complete the branch can be merged or rebased as you choose such that the commits for the feature either remain as a parallel branch or appear as a continuous single line of development as if the branch had never existed in the first place. The image on the right illustrates a branch created on top of commit B.

You can see the name of your current branch in a combo box in the toolbar. You can switch to another branch by choosing from the combo box list. In the commit log the current branch has an arrow head to the left of its name. If you are not currently on a branch because you have checked out a specific commit but not any particular branch then Git Extensions will show (no branch) in place of a branch name in the toolbar. This is called “Detached HEAD mode”. In Git you can refer to your current branch or commit by the special reference HEAD in place of the branch name or commit reference.

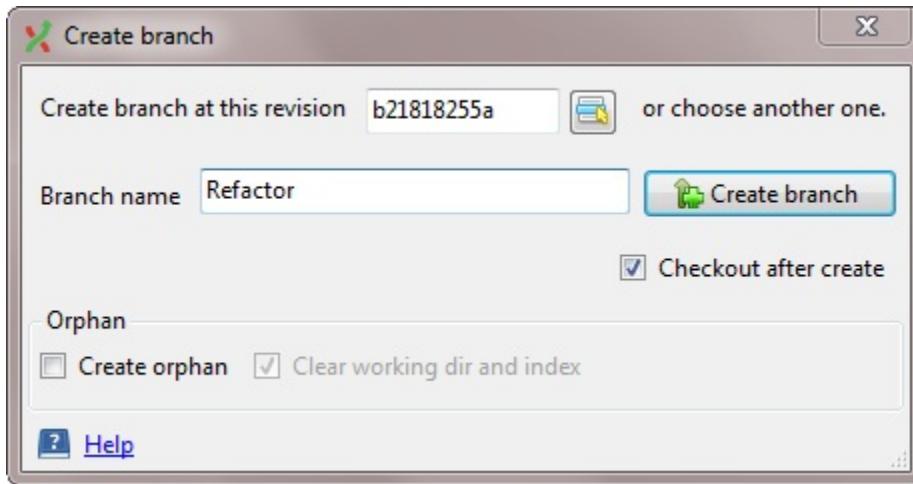


Create branch

In Git Extensions there are multiple ways to create a new branch. In the image below I create a new branch from the context menu in the commit log. This will create a new branch on the revision that is selected.



I will create a new branch called Refactor. In this branch I can do whatever I want without affecting others. The default in Git Extensions is to check out a new branch after it is created. If you want to create a new branch but remain on your current branch, uncheck the **Checkout after create** checkbox in the Create branch dialog.



When the branch is created you will see the new branch Refactor in the commit log. If you chose to checkout this branch the next commit will be committed to the new branch.



Creating branches in Git requires only 41 bytes of space in the repository. Creating a new branch is very easy and fast. The complete work flow of Git is optimized for branching and merging.

Orphan branches

In special cases it is helpful to have orphan branches (see for example <https://www.google.com/search?q=why+use+orphan+branches+in+git>). Check the “Create orphan” checkbox to create an orphan branch (`--orphan` option in git).

The newly created branch will have no parent commits.

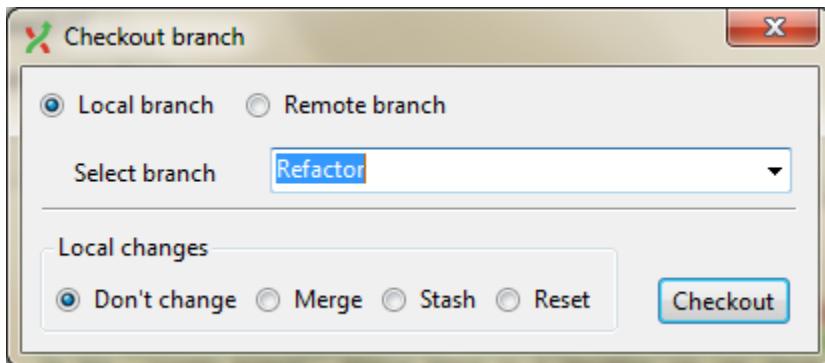
The option “Clear working dir and index” (`git rm -rf`) is active by default. So the working dir and index will be cleared. If you uncheck the last option then the working dir and index will not be touched.

Checkout branch

You can switch from the current branch to another branch using the `checkout` command. Checking out a branch sets the current branch and updates all of the source files in the working directory. Uncommitted changes in the working

directory can be overwritten so it is best practice to make sure your working directory is clean by either committing or stashing any current changes before checking out a branch. If you do not clean your working directory then, in the Checkout branch dialog, you can choose between four options for your local uncommitted changes:

Don't change	Local changes will be retained if there are not conflicting changes from the branch you are checking out.
Merge	Performs a three-way merge between your current branch, your local changes and the branch you are checking out.
Stash	Your local changes are stashed and the new branch is checked out. You can retrieve your changes on the new branch with stash-pop.
Reset	Your local changes are discarded and the new branch is checked out. Use caution with this option as Git has no record of uncommitted changes so they cannot be retrieved.



Merge branches

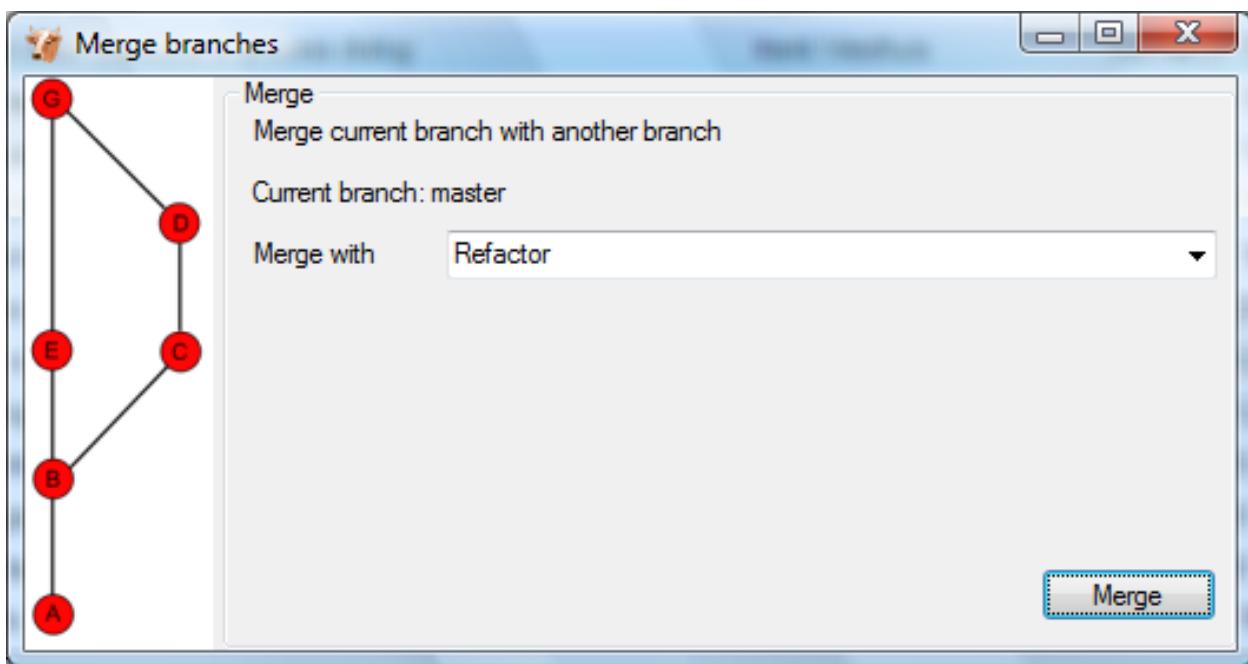
In the image below there are two branches, [Refactor] and [master]. We can merge the commits from the master branch into the Refactor branch. If we do this, the Refactor branch will be up to date with the master branch, but not the other way around. As long as we are working on the Refactor branch we cannot touch the master branch itself. We can merge the sources of master into our branch, but cannot make any change to the master branch.

Graph	Message	Author	Date
■	[Refactor] Namespace renamed to GitExtensions.*	Henk Westhuis	Sun Feb 22 12:28:12 2009 +0100
●	Sources moved to subdir	Henk Westhuis	Sun Feb 22 12:27:54 2009 +0100
●	Removed unused projects	Henk Westhuis	Sun Feb 22 12:27:40 2009 +0100
●	[master] Added close checkbox to process dialog	Henk Westhuis	Sat Feb 21 13:34:28 2009 +0100
●	Added basic image viewer	Henk Westhuis	Sat Feb 21 13:05:05 2009 +0100
●	Added image support	Henk Westhuis	Sat Feb 21 12:42:49 2009 +0100
●	Added waitcursor	Henk Westhuis	Sat Feb 21 10:47:33 2009 +0100
●	Added ShowCommandLine option and added doubleclick to commit dialog	Henk Westhuis	Sat Feb 21 10:34:00 2009 +0100
●	Added CloseProcessDialog and added ShowRevisionGraph options	Henk Westhuis	Fri Feb 20 20:05:02 2009 +0100
●	Fixed crash on some repos	Henk Westhuis	Thu Feb 19 21:38:07 2009 +0100
●	Added changelog	Henk Westhuis	Thu Feb 19 20:01:54 2009 +0100

To merge the Refactor branch into the master branch, we first need to switch to the master branch.

Graph	Message	Author	Date
•	[Refactor] Namespace renamed to GitExtensions.*	Henk	Sun Feb 22 12:28:12 2009 +0100
•	Sources moved to subdir	Henk	Sun Feb 22 12:27:54 2009 +0100
•	Removed unused projects	Henk	Sun Feb 22 12:27:40 2009 +0100
■	[master] Added close checkbox to process dialog	Henk Westhuis	Sat Feb 21 13:34:28 2009 +0100
•	Added basic image viewer	Henk Westhuis	Sat Feb 21 13:05:05 2009 +0100
•	Added image support	Henk Westhuis	Sat Feb 21 12:42:49 2009 +0100
•	Added waitcursor	Henk Westhuis	Sat Feb 21 10:47:33 2009 +0100
•	Added ShowCommandLine option and added doubleclick to commit dialog	Henk Westhuis	Sat Feb 21 10:34:00 2009 +0100
•	Added CloseProcessDialog and added ShowRevisionGraph options	Henk Westhuis	Fri Feb 20 20:05:02 2009 +0100
•	Fixed crash on some repos	Henk Westhuis	Thu Feb 19 21:38:07 2009 +0100
•	Added changelog	Henk Westhuis	Thu Feb 19 20:01:54 2009 +0100

Once we are on the master branch we can choose merge by choosing Merge branches from the Commands menu. In the merge dialog you can verify which branch you are working on. Select the branch to merge with then click the Merge button.



After the merge the commit log will show the new commit containing the merge. Notice that the Refactor branch is not changed by this merge. If you want to continue working on the Refactor branch you can merge the Refactor branch with master. You can instead delete the Refactor branch if it is not used anymore.

Graph	Message	Author	Date
■	[master] Merge branch 'Refactor'	Henk Westhuis	Sun Feb 22 12:44:15 2009 +0100
•	[Refactor] Namespace renamed to GitExtensions.*	Henk Westhuis	Sun Feb 22 12:28:12 2009 +0100
•	Sources moved to subdir	Henk Westhuis	Sun Feb 22 12:27:54 2009 +0100
•	Removed unused projects	Henk Westhuis	Sun Feb 22 12:27:40 2009 +0100
•	Added close checkbox to process dialog	Henk Westhuis	Sat Feb 21 13:34:28 2009 +0100

Note: When you need to merge with an unnamed branch you can use a tag to give it a temporary name.

Rebase branch

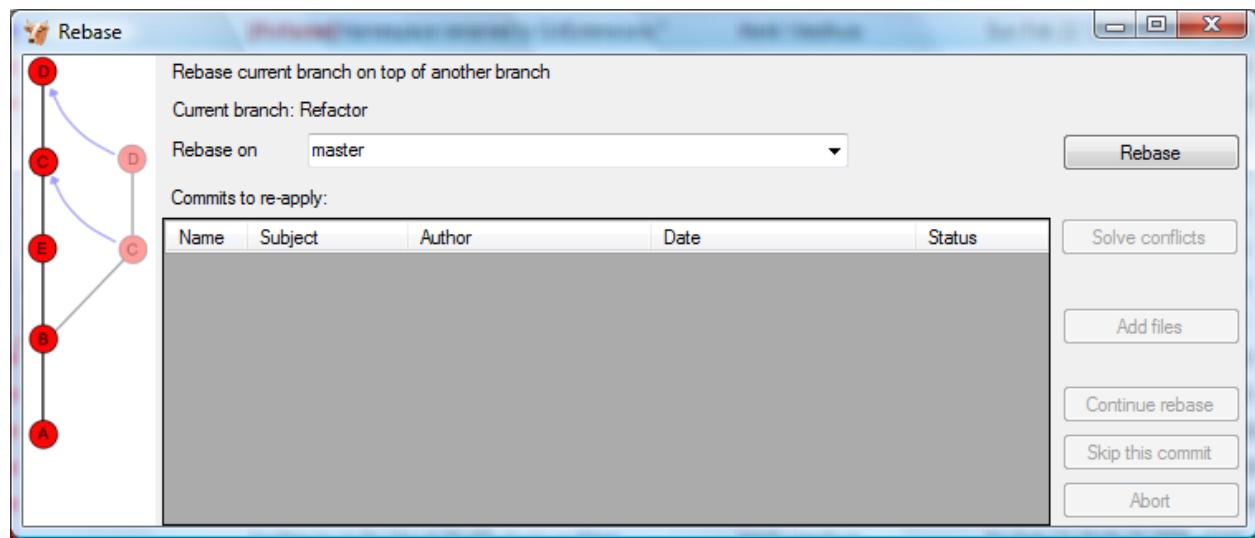
The rebase command is the most complex command in Git. The rebase command is very similar to the merge command. Both rebase and merge are used to get a branch up-to-date. The main difference is that rebase can be used to keep the history linear contrary to merges.

Graph	Message	Author	Date
■	[Refactor] Namespace renamed to GitExtensions.*	Henk Westhuis	Sun Feb 22 12:28:12 2009 +0100
●	Sources moved to subdir	Henk Westhuis	Sun Feb 22 12:27:54 2009 +0100
●	Removed unused projects	Henk Westhuis	Sun Feb 22 12:27:40 2009 +0100
■	[master] Added close checkbox to process dialog	Henk Westhuis	Sat Feb 21 13:34:28 2009 +0100
●	Added basic image viewer	Henk Westhuis	Sat Feb 21 13:05:05 2009 +0100
●	Added image support	Henk Westhuis	Sat Feb 21 12:42:49 2009 +0100
●	Added waitcursor	Henk Westhuis	Sat Feb 21 10:47:33 2009 +0100
●	Added ShowCommandLine option and added doubleclick to commit dialog	Henk Westhuis	Sat Feb 21 10:34:00 2009 +0100
●	Added CloseProcessDialog and added ShowRevisionGraph options	Henk Westhuis	Fri Feb 20 20:05:02 2009 +0100
●	Fixed crash on some repos	Henk Westhuis	Thu Feb 19 21:38:07 2009 +0100
●	Added changelog	Henk Westhuis	Thu Feb 19 20:01:54 2009 +0100

A rebase of Refactor on top of master will perform the following actions:

- All commits specific to the Refactor branch will be stashed in a temporary location
- The branch Refactor will be removed
- The branch Refactor will be recreated on the master branch
- All commits will be recommitted in the new Refactor branch

During a rebase merge conflicts can occur. You need to solve the merge conflicts for each commit that is rebased. The rebase function in Git Extensions will guide you through all steps needed for a successful rebase.



The image below shows the commit log after the rebase. Notice that the history is changed and it seems like the commits on the Refactor branch are created after the commits on the master branch.

Graph	Message	Author	Date
■	[Refactor] Namespace renamed to GitExtensions.*	Henk Westhuis	Sun Feb 22 13:21:26 2009 +0100
●	Sources moved to subdir	Henk Westhuis	Sun Feb 22 12:27:54 2009 +0100
●	Removed unused projects	Henk Westhuis	Sun Feb 22 12:27:40 2009 +0100
●	[master] Added close checkbox to process dialog	Henk Westhuis	Sat Feb 21 13:34:28 2009 +0100
●	Added basic image viewer	Henk Westhuis	Sat Feb 21 13:05:05 2009 +0100
●	Added image support	Henk Westhuis	Sat Feb 21 12:42:49 2009 +0100
●	Added waitcursor	Henk Westhuis	Sat Feb 21 10:47:33 2009 +0100
●	Added ShowCommandLine option and added doubleclick to commit dialog	Henk Westhuis	Sat Feb 21 10:34:00 2009 +0100
●	Added CoseProcessDialog and added ShowRevisionGraph options	Henk Westhuis	Fri Feb 20 20:05:02 2009 +0100
●	Fixed crash on some repos	Henk Westhuis	Thu Feb 19 21:38:07 2009 +0100
●	Added changelog	Henk Westhuis	Thu Feb 19 20:01:54 2009 +0100

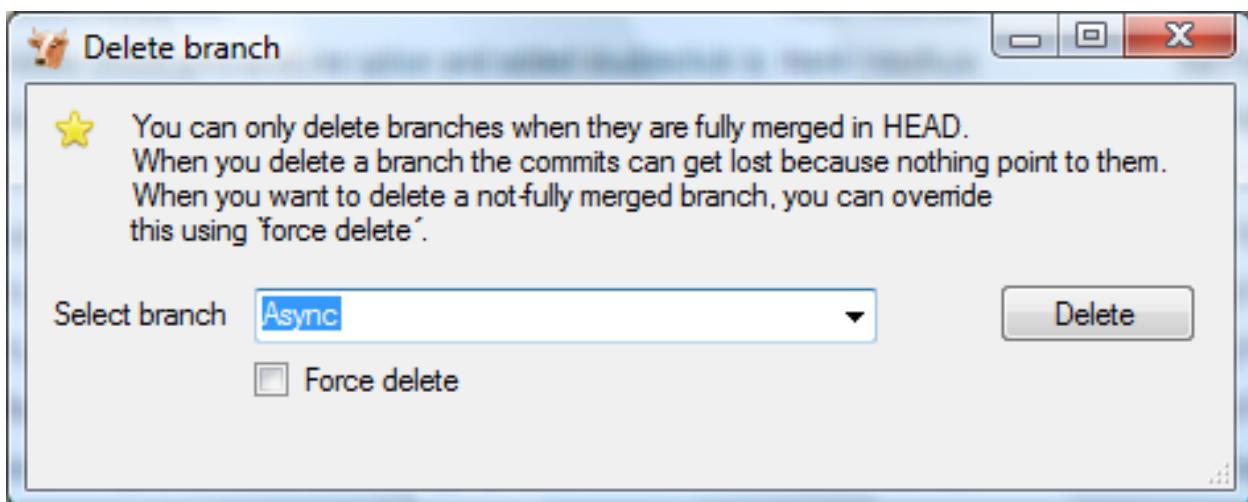
Warning: Because this function rewrites history you should only use this on branches that are not published to other repositories yet. When you rebase a branch that is already pushed it will be harder to pull or push to that remote. If you want to get a branch up-to-date that is already published you should merge.

Delete branch

Since it is common to create many branches, it is often necessary to delete branches. Most commonly you will need to delete branches on which work has finished and their contents are merged into master or your main branch. You can also delete unmerged branches when they are not needed anymore and you do not want to keep the work done in that branch.

When you delete a branch that is not yet merged, all of the commits that are in only the deleted branch will be lost. When you delete a branch that is already merged with another branch, the merged commits will not be lost because they are also part of another branch.

You can delete a branch using **Delete branch** from the Commands menu. If you want to delete a branch that is not merged into your current branch (HEAD in Git), you need to check the **Force delete** checkbox.



CHAPTER 8

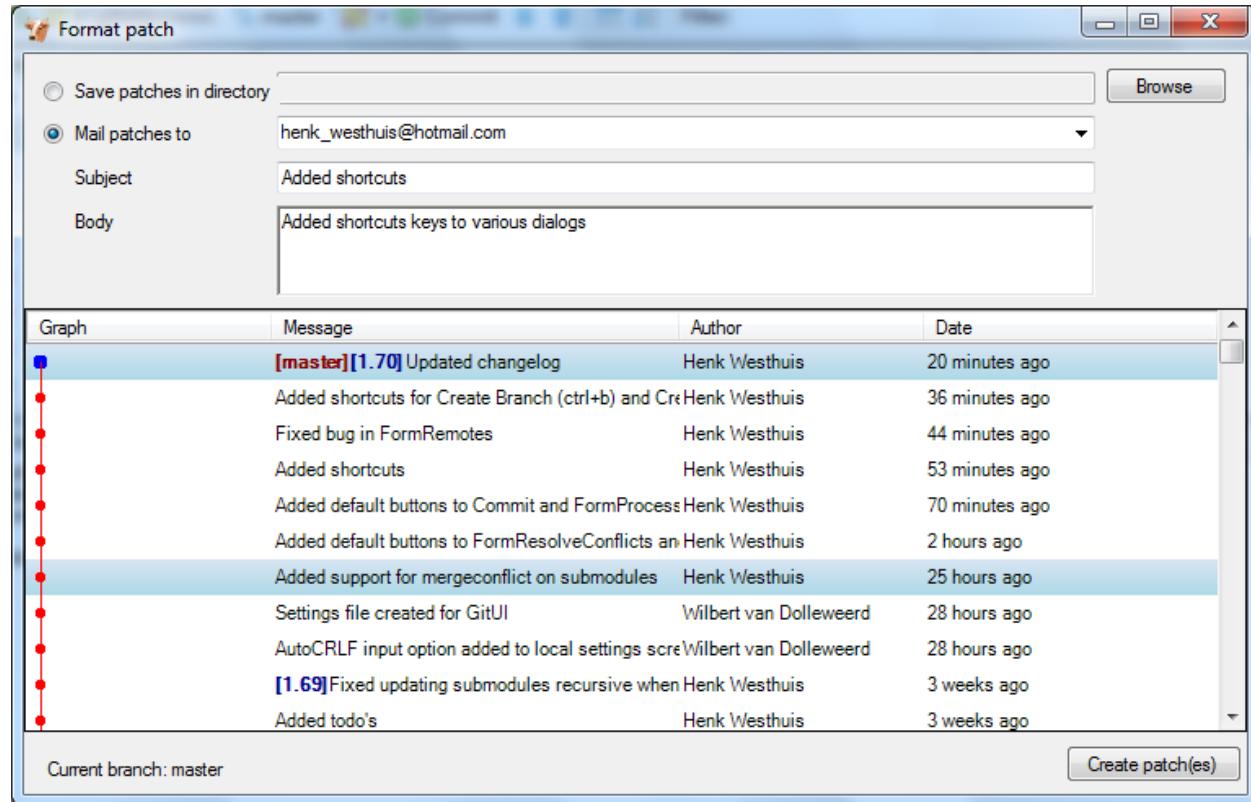
Patches

Every commit contains a change-set, a commit date, the committer name, the commit message and a cryptograph SHA1 hash. Local commits can be published by pushing it to a remote repository. To be able to push you need to have sufficient rights and you need to have access to the remote repository. When you cannot push directly you can create patches. Patches can be e-mailed to someone with access to the repository. Each patch contains an entire commit including the commit message and the SHA1.

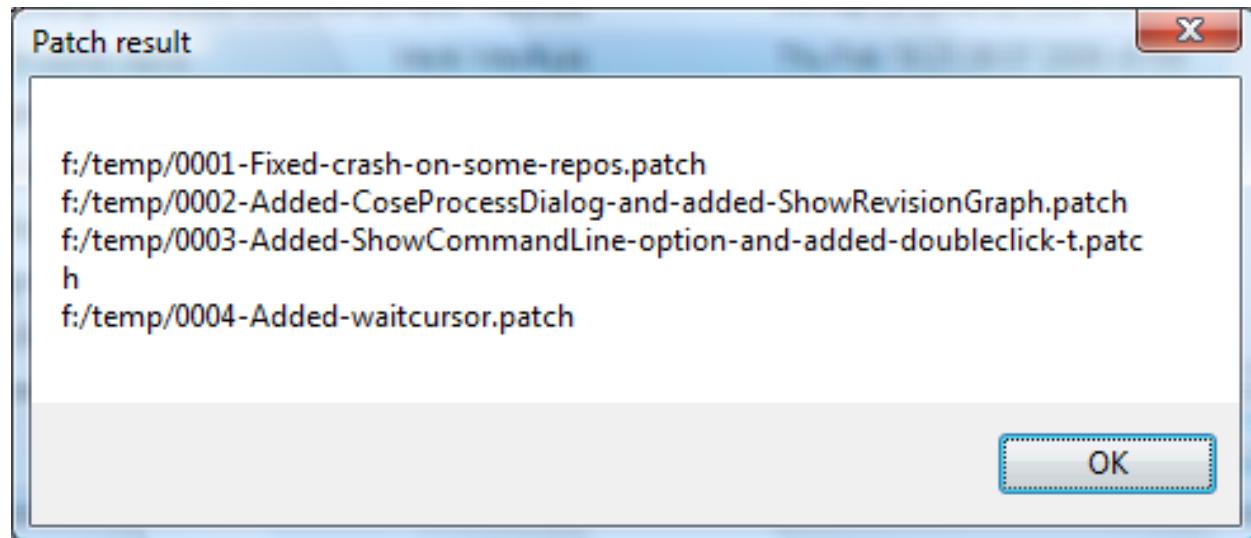
```
1 From 58c02ec4701c94c671a41e1e5d50c582e859851f Mon Sep 17 00:00:00 2001
2 From: Russell King <rmk@dyn-67.arm.linux.org.uk>
3 Date: Sun, 17 Apr 2005 15:40:46 +0100
4 Subject: [PATCH 000213/123824] [PATCH] ARM: h3600_irda_set_speed arguments
5
6 h3600_irda_set_speed() had the wrong type for the "speed" argument.
7 Fix this.
8
9 Signed-off-by: Russell King <rmk@arm.linux.org.uk>
10 ---
11 arch/arm/mach-sa1100/h3600.c |    2 ++
12 1 files changed, 1 insertions(+), 1 deletions(-)
13
14 diff --git a/arch/arm/mach-sa1100/h3600.c b/arch/arm/mach-sa1100/h3600.c
15 index 9788d3a..84c8654 100644
16 --- a/arch/arm/mach-sa1100/h3600.c
17 +++ b/arch/arm/mach-sa1100/h3600.c
18 @@ -130,7 +130,7 @@ static int h3600_irda_set_power(struct device *dev, unsigned int state)
19     return 0;
20 }
21
22 -static void h3600_irda_set_speed(struct device *dev, int speed)
23 +static void h3600_irda_set_speed(struct device *dev, unsigned int speed)
24 {
25     if (speed < 4000000) {
26         clr_h3600_egpio(IPAQ_EGPIO_IR_FSEL);
27     }
28 1.6.1.9.g97c34
```

Create patch

Format a single patch or patch series using the format patch dialog. You need to select the newest commit first and then select the oldest commit using ctrl-click. You can also select an interrupted patch series, but this is not recommended because the files will not be numbered.

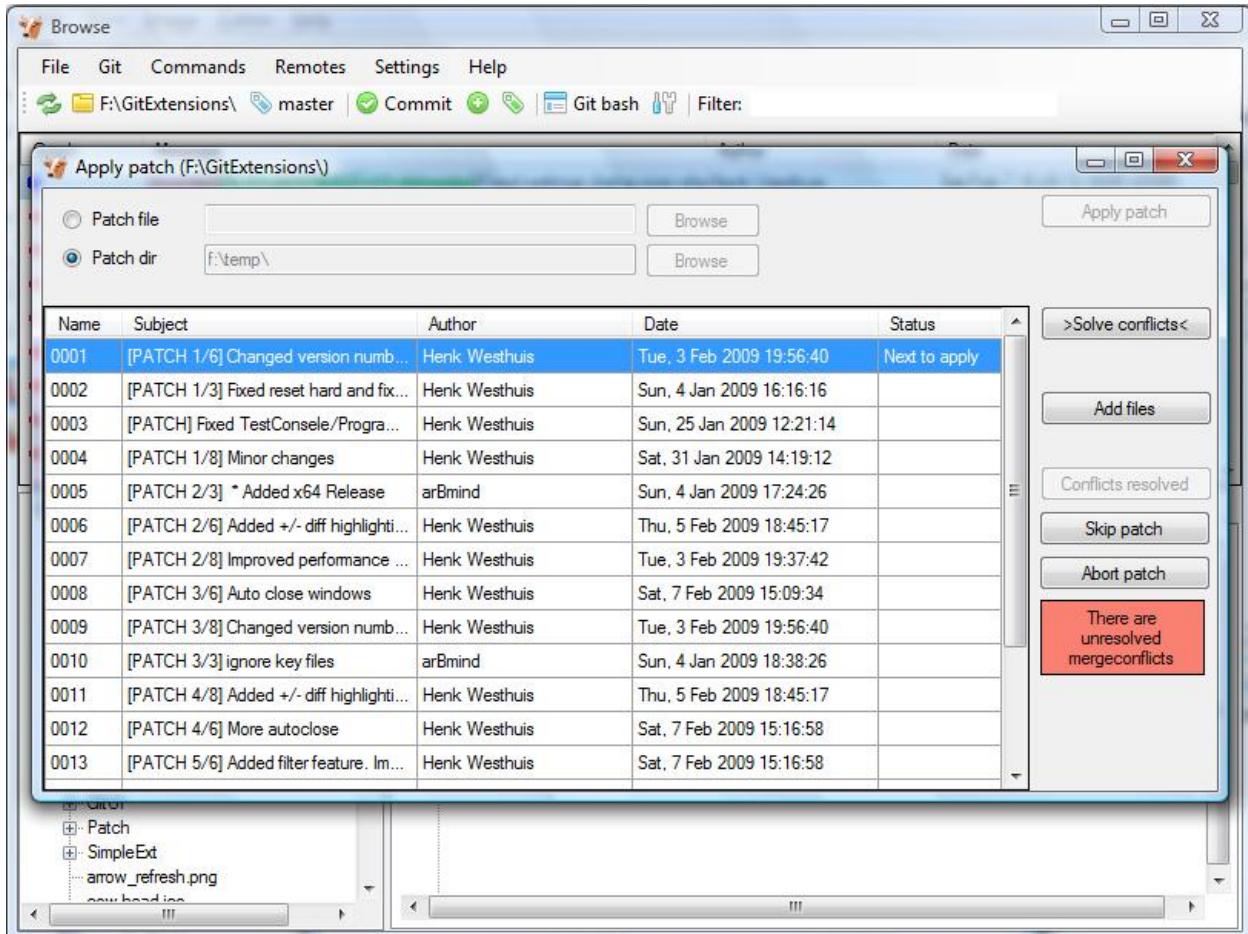


When the patches are created successfully the following dialog will appear.



Apply patches

It is possible to apply a single patch file or all patches in a directory. When there are merge conflicts applying the patch you need to resolve them before you can continue. Git Extensions will help you applying all patches by marking the next recommended step.



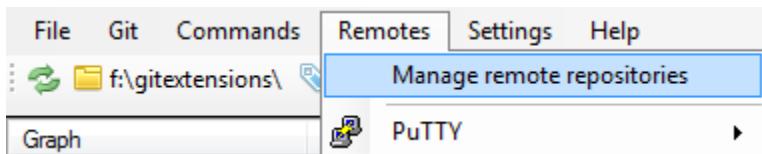
CHAPTER 9

Remote feature

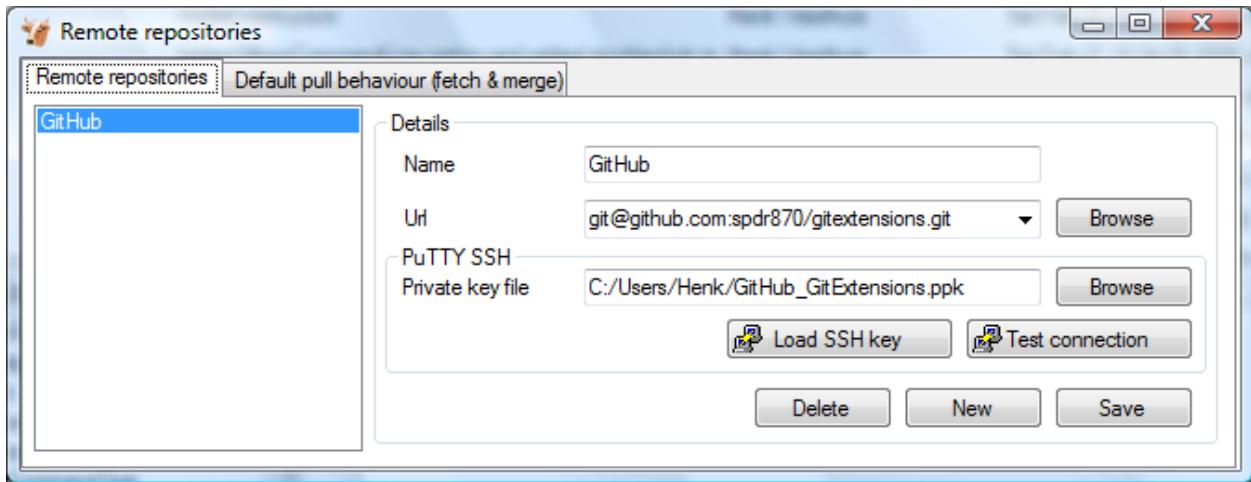
Git is a distributed source control management system. This means that all changes you make are local. When you commit changes, you only commit them to your local repository. To publish your local changes you need to push. In order to get changes committed by others, you need to pull.

Manage remote repositories

You can manage the remote repositories in the Remotes menu.

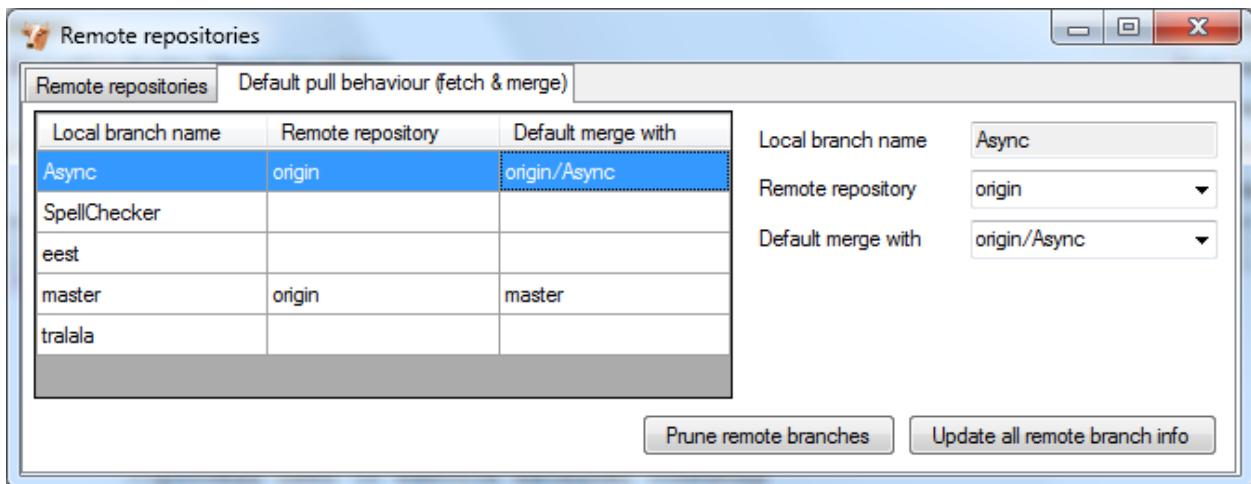


When you cloned your repository from a public repository, this remote is already configured. You can rename each remote for easy recognition. The default name after cloning a remote is `origin`. If you use PuTTY as SSH client you can also enter the private key file for each remote. Git Extensions will load the key when needed. How to create a private key file is described in the next paragraph.



In the Default pull behaviour tab you can configure the branches that need to be pulled and merged by default. If you configure this correctly you will not need to choose a branch when you pull or push. There are two buttons on this dialog:

Prune remote branches	Throw away remote branches that do not exist on the remote anymore.
Update all remote branch info	Fetch all remote branch information.



After cloning a repository you do not need to configure all remote branches manually. Instead you can checkout the remote branch and choose to create a local tracking branch.

Create SSH key

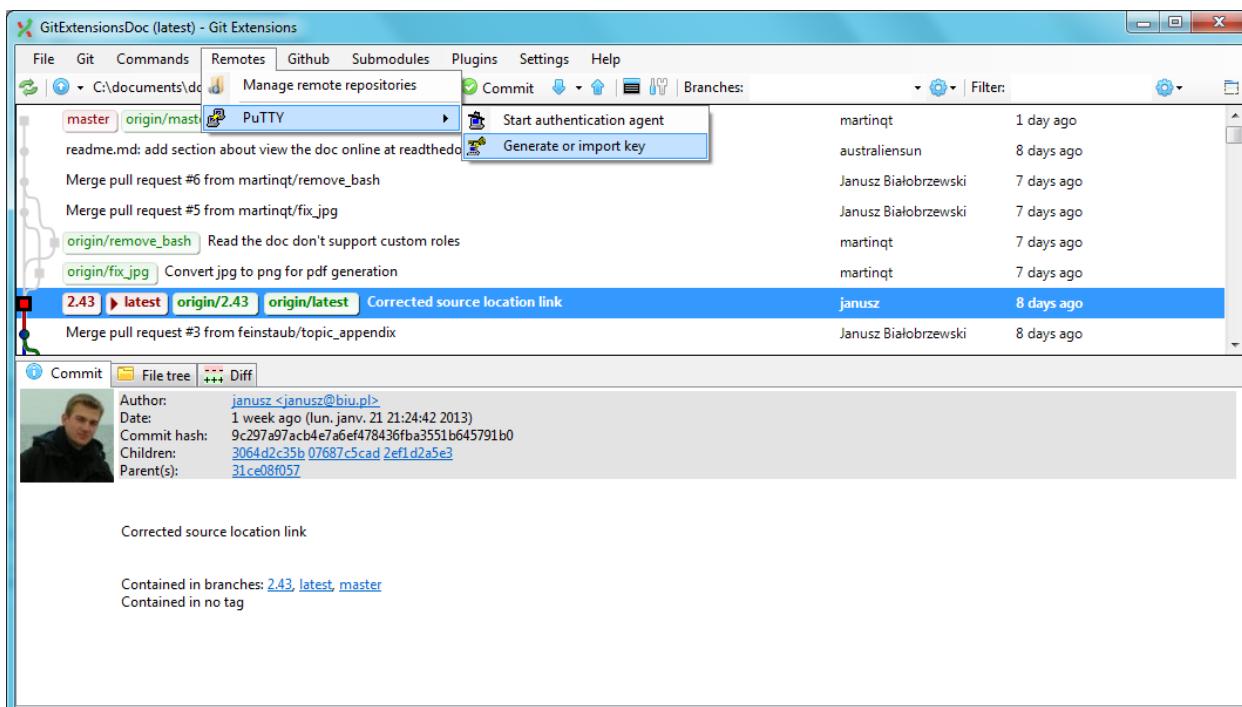
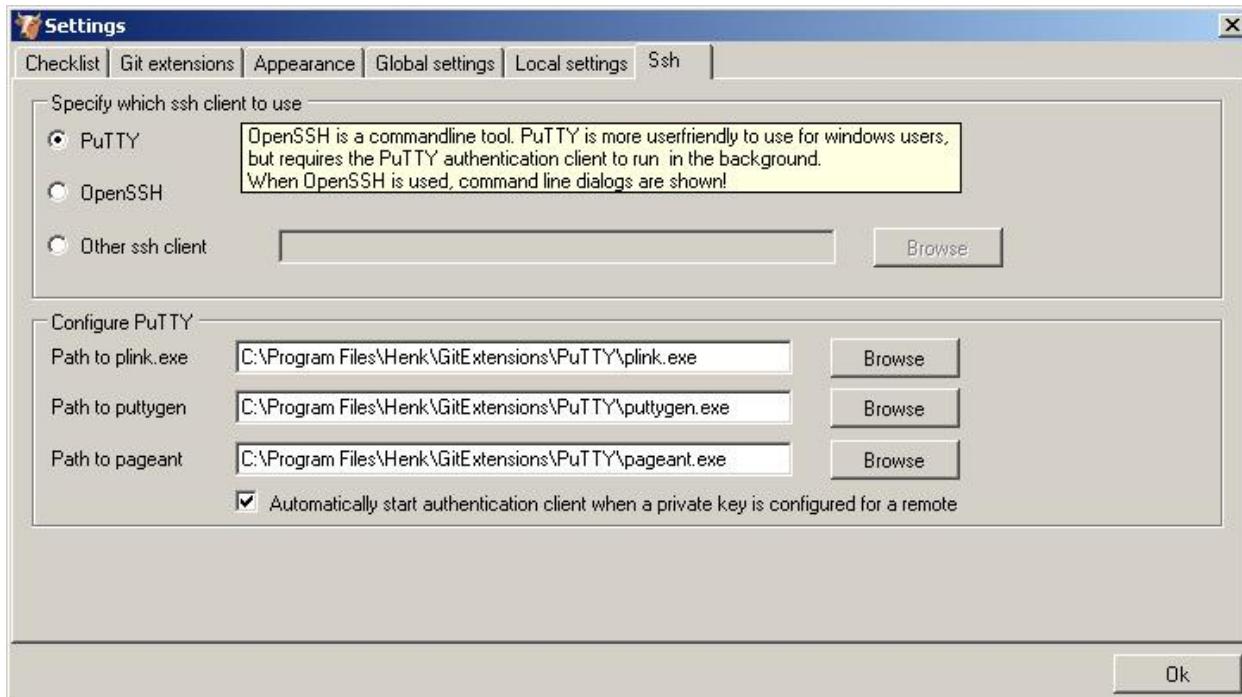
Git uses SSH for accessing private repositories. SSH uses a public/private key pair for authentication. This means you need to generate a private key and a public key. The private key is stored on your computer locally and the public key can be given to anyone. SSH will encrypt whatever you send using your secret private key. The receiver will then use the public key you send to decrypt the data.

This encryption will not protect the data itself but it protects the authenticity. Because the private key is only available to the sender, the receiver can be sure about the origin of the data. In practise the key pair is only used for the authentication process. The data itself will be encrypted using a key that is exchanged during this initial phase.

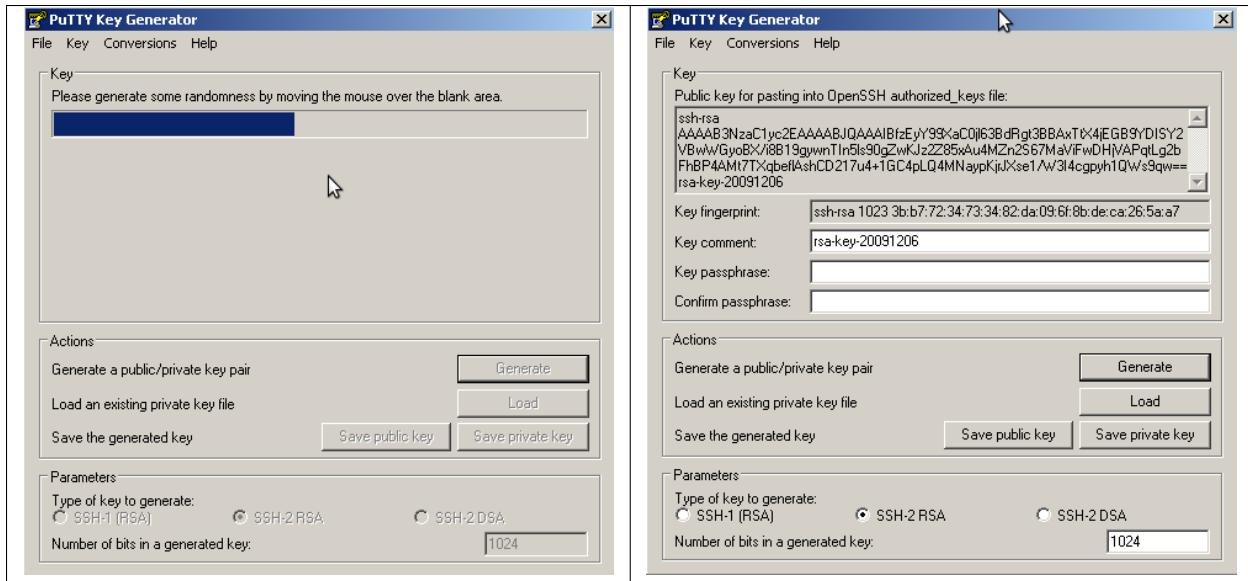
PuTTY and github

PuTTY is SSH client that for Windows that is a bit more user friendly than OpenSSH. Unfortunately PuTTY does not work with all servers. In this paragraph I will show how to generate a key for github using putty.

First make sure GitExtensions is configured to use PuTTY and all paths are correct.



can choose Generate or import key to start the key generator.



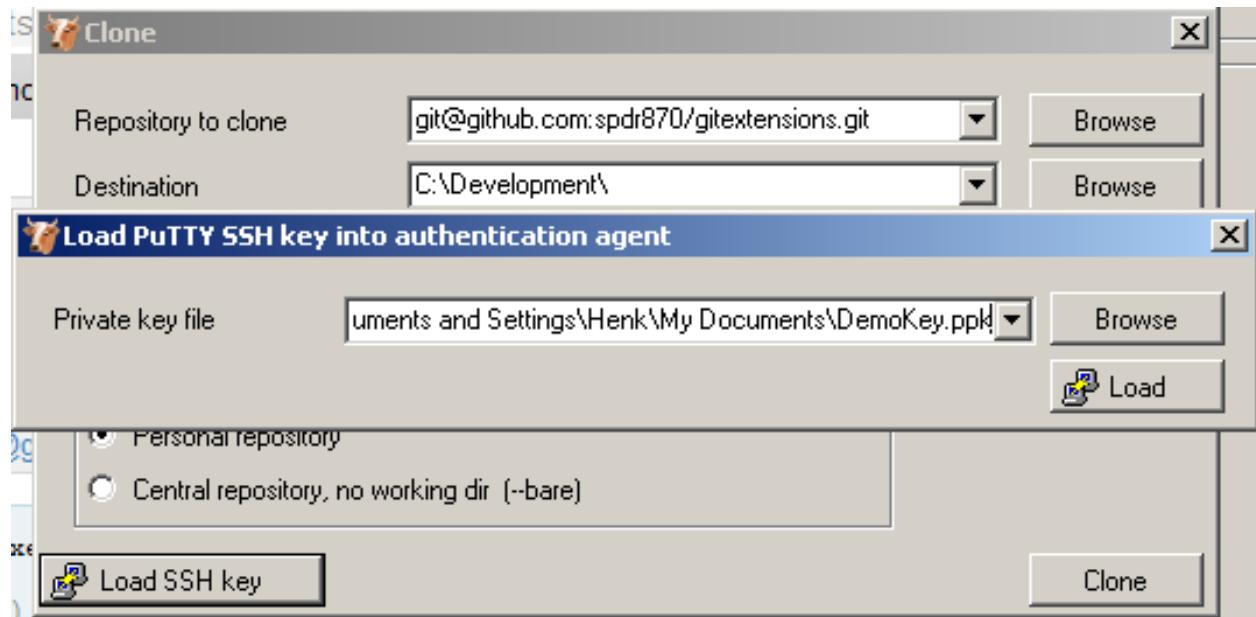
PuTTY will ask you to move the mouse around to generate a more random key. When the key is generated you can save the public and the private key in a file. You can choose to protect the private key with a password but this is not necessary.

Now you have a key pair you need to give github the public key. This can be done in Account Settings in the tab SSH Public Keys. You can add multiple keys here, but you only need one key for all repositories.

After telling github what public key to use to decrypt, you need to tell GitExtensions what private key to use to encrypt.

9.2. Create SSH key

In the clone dialog there is a `Load SSH key` button to load the private key into the PuTTY authentication agent. This can also be done manually by starting the PuTTY authentication agent and choose `add key` in the context menu in the system tray.

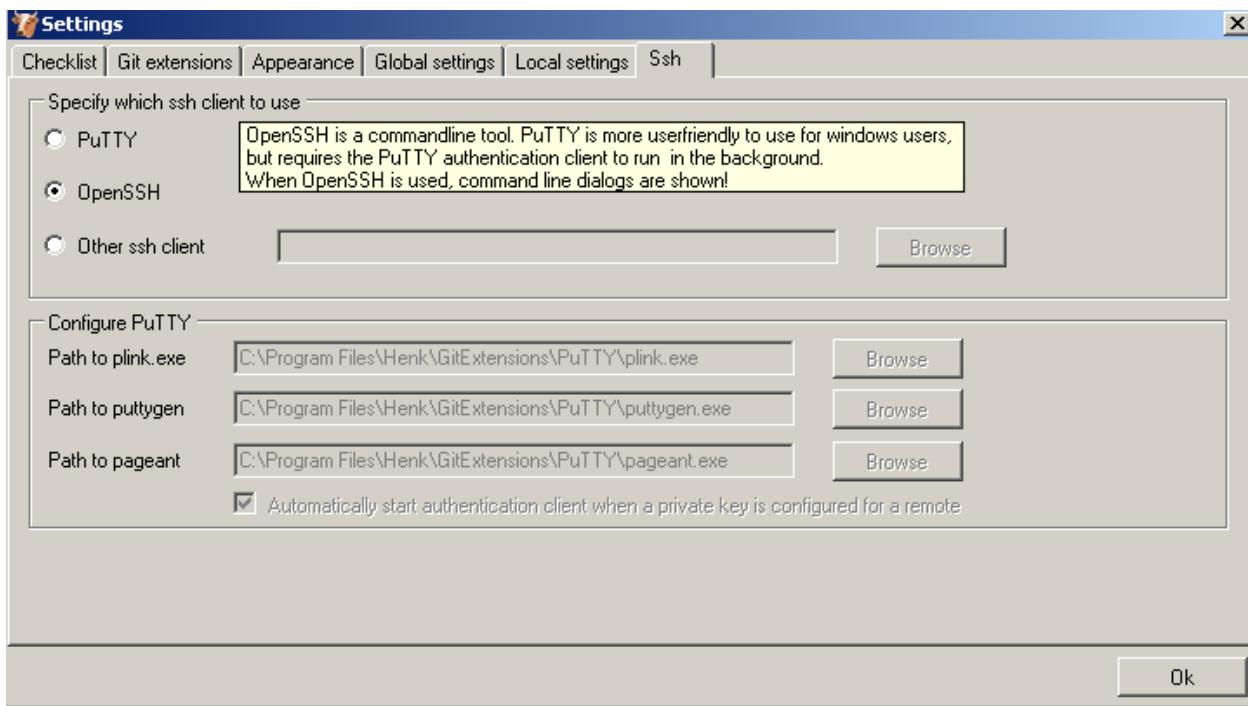


GitExtensions can load the private keys automatically for you when communicating with a remote. You need to configure the private key for the remote.

This is done in the `Manage remote repositories` dialog.

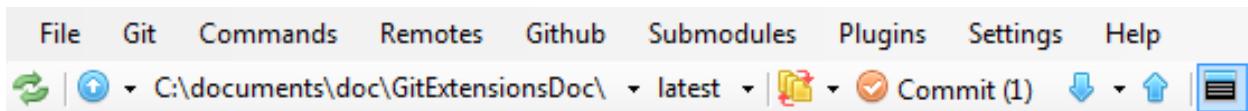
OpenSSH and github

When you choose to use OpenSSH you need to configure GitExtensions as shown in the screenshot below.

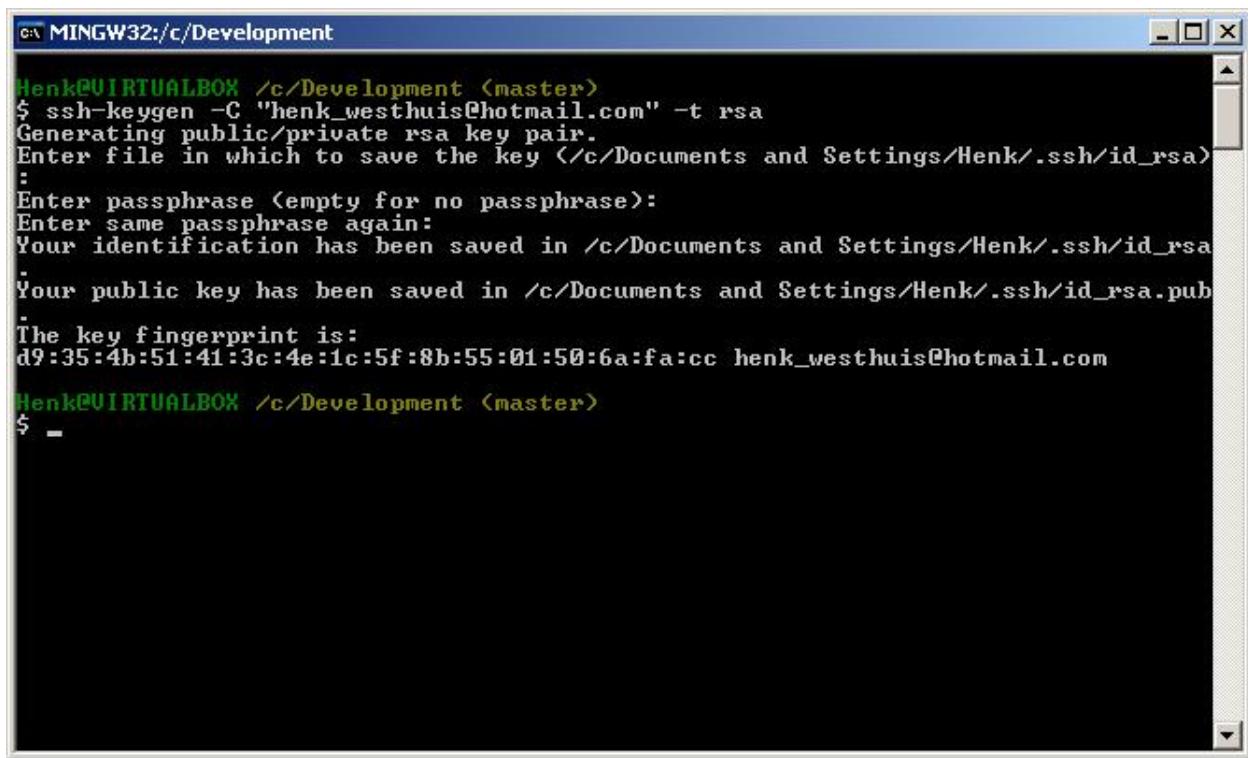


OpenSSH is the best SSH client there is but it lacks Windows support. Therefore it is slightly more complex to use. Another drawback is that GitExtensions cannot control OpenSSH and needs to show the command line dialogs when OpenSSH might be used. GitExtensions will show the command line window for every command that might require a SSH connection. For this reason PuTTY is the preferred SSH client in GitExtensions.

To generate a key pair in OpenSSH you need to go to the command line. I recommend to use the git bash because the path to OpenSSH is already set.

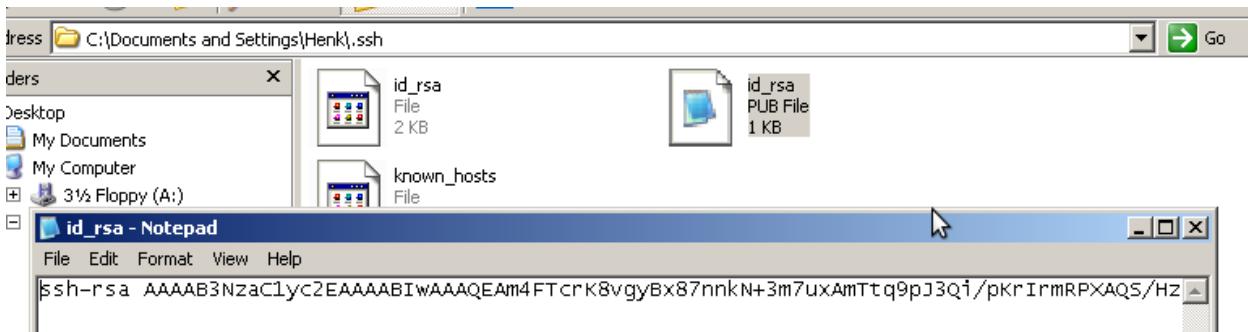


Type the following command: `ssh-keygen -C "your@email.com" -t rsa` Use the same email address as the email address used in git. You will be asked where if you want to protect the private key with a password. This is not necessary. By default the public and private keys are stored in `c:\Documents and Settings\[User]\.ssh\` or `c:\Users\[user]\.ssh\`.



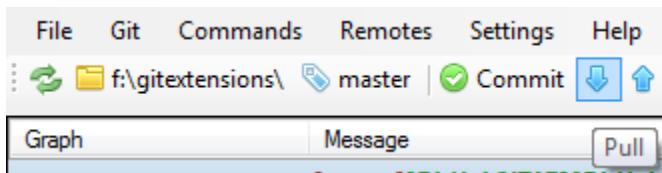
```
Henk@VIRTUALBOX /c/Development (master)
$ ssh-keygen -C "henk_westhuis@hotmail.com" -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key </c/Documents and Settings/Henk/.ssh/id_rsa>:
:
Enter passphrase <empty for no passphrase>:
Enter same passphrase again:
Your identification has been saved in /c/Documents and Settings/Henk/.ssh/id_rsa
Your public key has been saved in /c/Documents and Settings/Henk/.ssh/id_rsa.pub
The key fingerprint is:
d9:35:4b:51:41:3c:4e:1c:5f:8b:55:01:50:6a:fa:cc henk_westhuis@hotmail.com
Henk@VIRTUALBOX /c/Development (master)
$ -
```

You do not need to tell GitExtensions about the private key because OpenSSH will load it for you. Now open the public key using notepad and copy the key to github. This can be done in Account Settings in the tab SSH Public Keys on [GitHub](#).



Pull changes

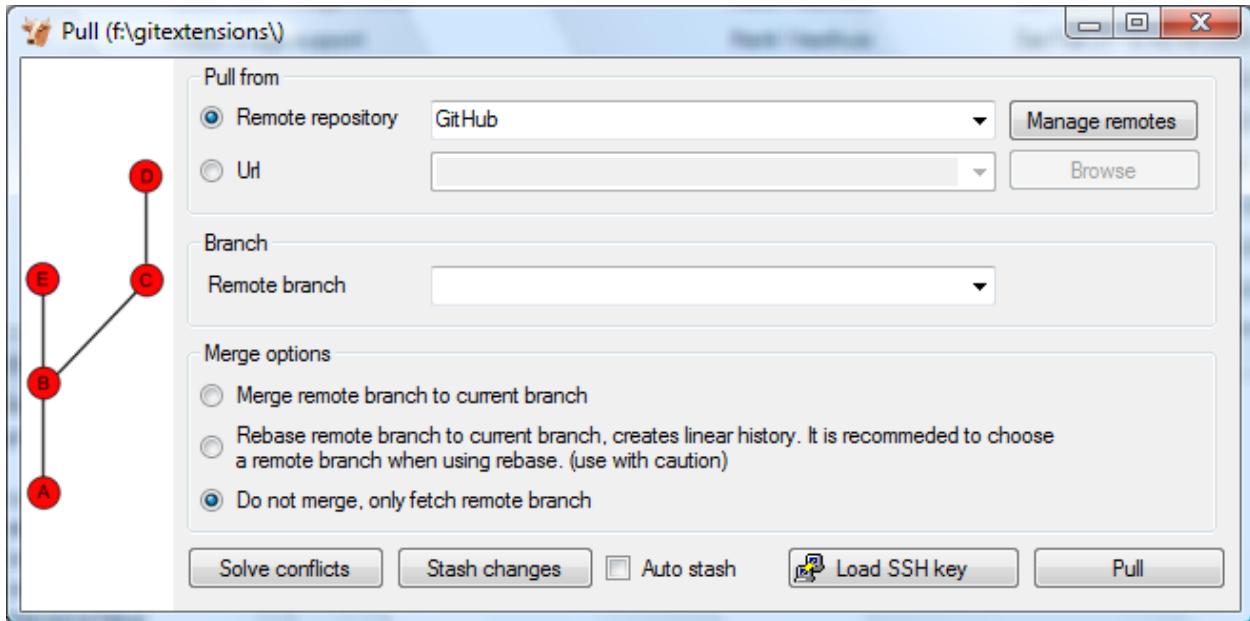
You can get remote changes using the pull function. Before you can pull remote changes you need to make sure there are no uncommitted changes in your local repository. If you have uncommitted changes you should commit them or stash them during the pull. You can read about how to use the stash in the Stash chapter.



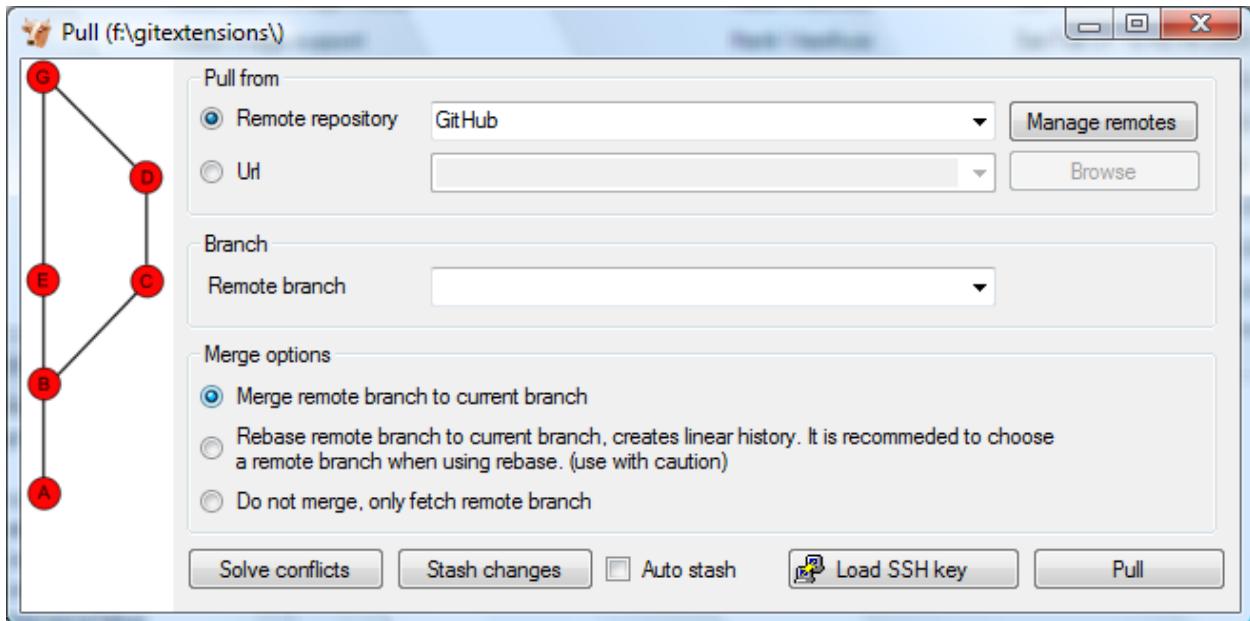
In order to get your personal repository up-to-date, you need to fetch changes from a remote repository. You can do

this using the **Pull** dialog. When the dialog starts the default remote for the current branch is set. You can choose another remote or enter a custom url if you like. When the remote branches configured correctly, you do not need to choose a remote branch.

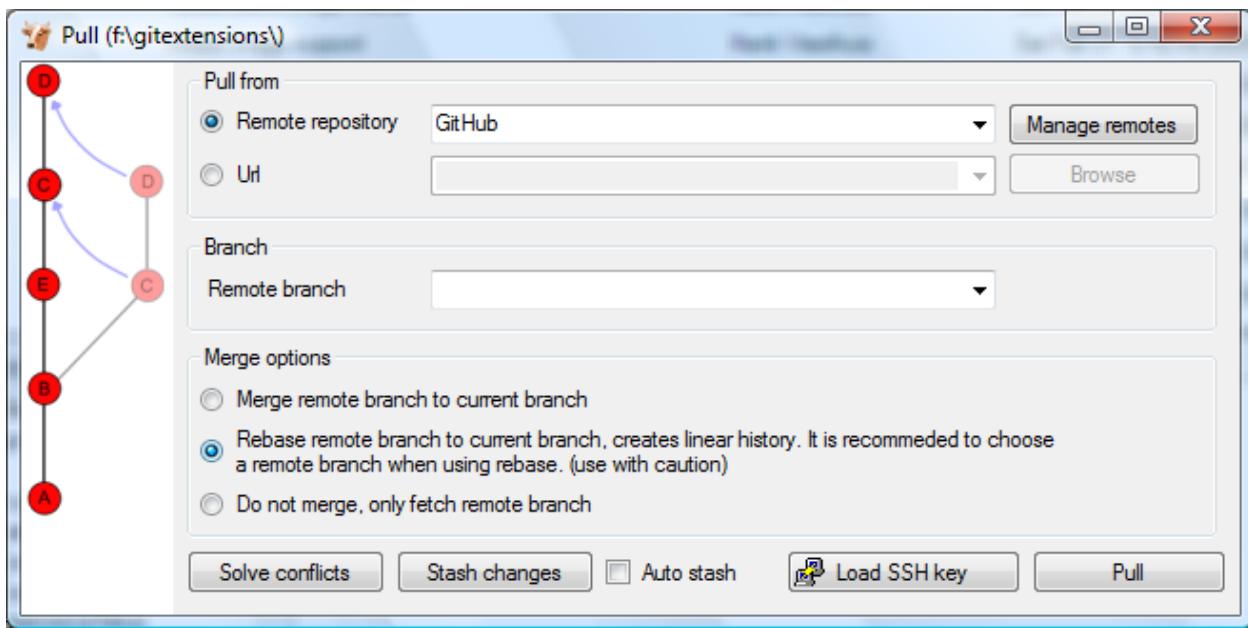
If you just fetch the commits from the remote repository and you already committed some changes to your local repository, the commits will be in a different branch. In the pull dialog this is illustrated in the image on the left. This can be useful when you want to review the changes before you want to merge them with your own changes.



When you choose to merge the remote branch after fetching the changes a branch will be created, and will be merged into your commit. Doing this creates a lot of branches and merges, making the history harder to read.



Instead of merging the fetched commits with your local commits, you can also choose to rebase your commits on top of the fetched commits. This is illustrated on the left in the image below. A rebase will first undo your local commits (c and d), then fetch the remote commits (e) and finally recommit your local commits. When there is a merge conflict during the rebase, the rebase dialog will show.

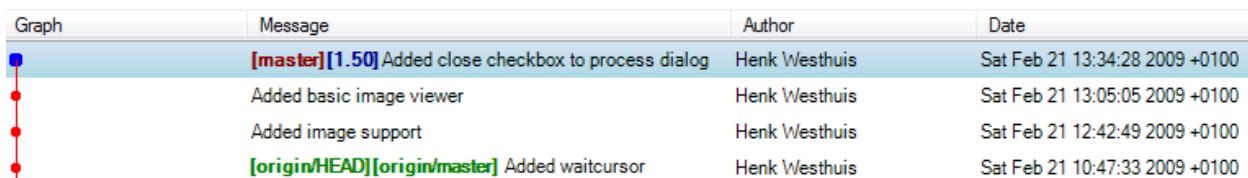


Next to the pull button there are some buttons that can be useful:

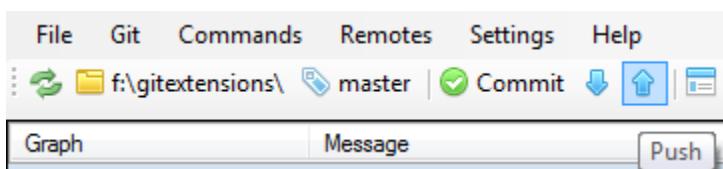
Solve conflicts	When there are merge conflicts, you can solve them by pressing this button.
Stash changes	When the working dir contains uncommitted changes, you need to stash them before pulling.
Auto stash	Check this checkbox if you want to stash before pulling. The stash will be reapplied after pulling.
Load SSH key	This button is only available when you use PuTTY as SSH client. You can press this button to load the key configured for the remote. If no key is set, a dialog will prompt for the key.

Push changes

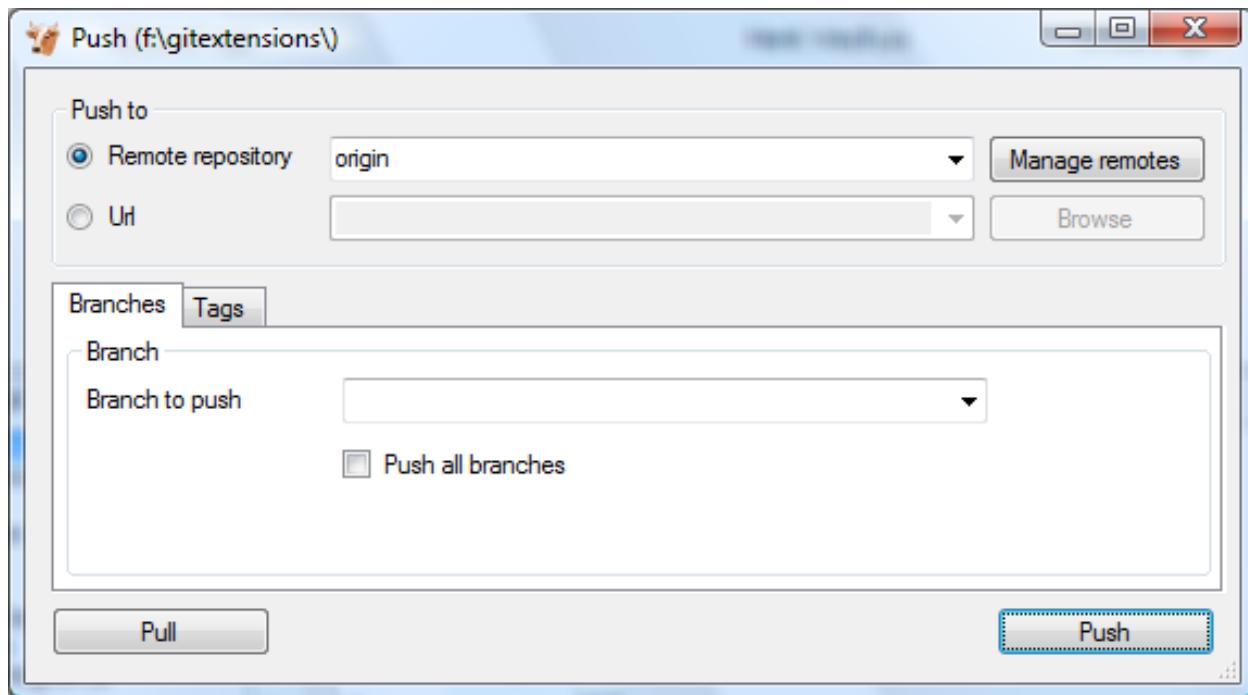
In the browse window you can check if there are local commits that are not pushed to a remote repository yet. In the image below the green labels mark the position of the master branch on the remote repository. The red label marks the position of the master branch on the local repository. The local repository is ahead three commits.



To push the changes press Push in the toolbar.



The push dialog allows you to choose the remote repository to push to. The remote repository is set to the remote of the current branch. You can choose another remote or choose a url to push to. You can also specify a branch to push.



Tags are not pushed to the remote repository. If you want to push a tag you need to open the Tags tab in the dialog. You can choose to push a single tag or all tags. No commits will be pushed when the Tags tab is selected, only tags.

You can not merge your changes in the remote repository. Merging must be done locally. This means that you cannot push your changes before the commits are merged locally. In practice you need to pull before you can push most of the times.

CHAPTER 10

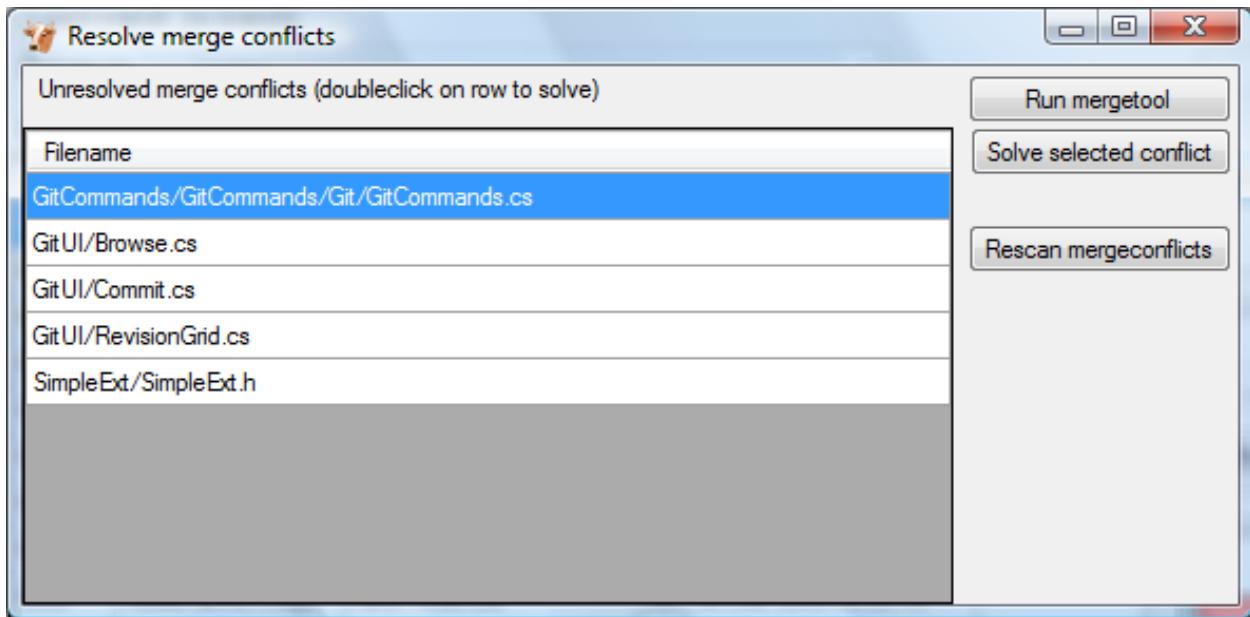
Merge Conflicts

When merging branches or commits you can get merge conflicts. Git will try to resolve these, but some conflicts need to be resolved manually. Git Extensions will show warnings when there is a merge conflict.



Handle merge conflicts

To solve merge conflicts just click on a warning or open the merge conflict dialog from the menu. A dialog will prompt showing all conflicts. You can solve a conflict by double-click on a filename.



There are three kinds of conflicts:

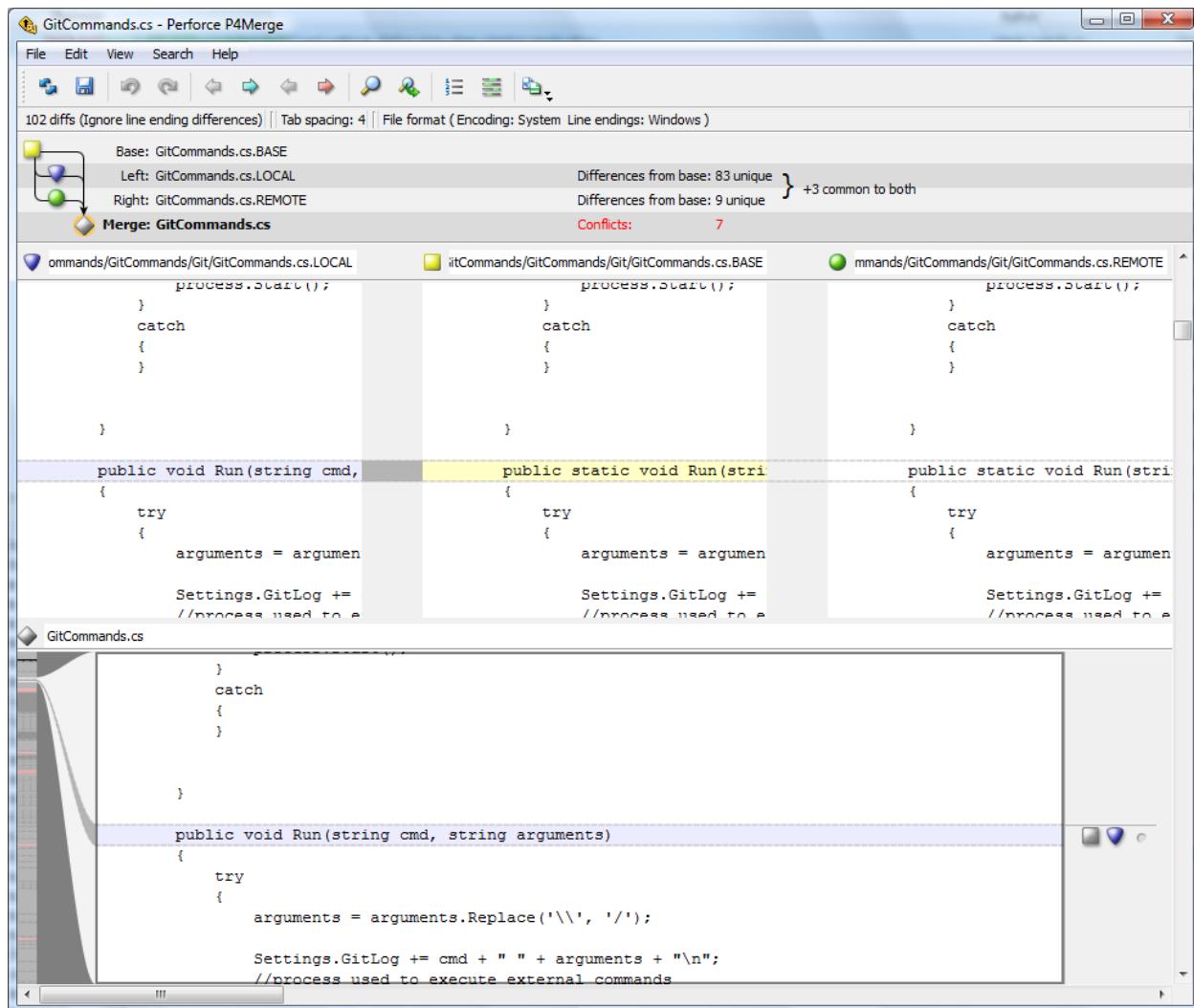
File deleted and changed	Use modified or deleted file?
File deleted and created	Use created or deleted file?
File changed both locally and remotely	Start merge tool.

If the file is deleted in one commit and changed in another commit, a dialog will ask to keep the modified file or delete the file. When there is a conflicting change the merge tool will be started. You can configure the tool you want to use for merge conflicts. The image below shows Perforce P4Merge a free to use merge tool. Git Extensions is packaged with KDiff3, an open source merge tool.

In the merge tool you will see four versions of the same file:

Base	The latest version of the file that exist in both repositories
Local	The latest local version of the file
Remote	The latest remote version of the file
Merged	The result of the merge

Caution: When you are in the middle of a merge the file named local represents your file. When you are in the middle of a rebase the file named remote represents your file. This can be confusing, so double check if you are in doubt.



CHAPTER 11

Modify Git history

There are 2 different cases, and consequently 2 ways to do it with git when we want to modify the history:

- Modify the last commit of the current branch with doing an amend
- Modify an older commit with doing an `interactive rebase`

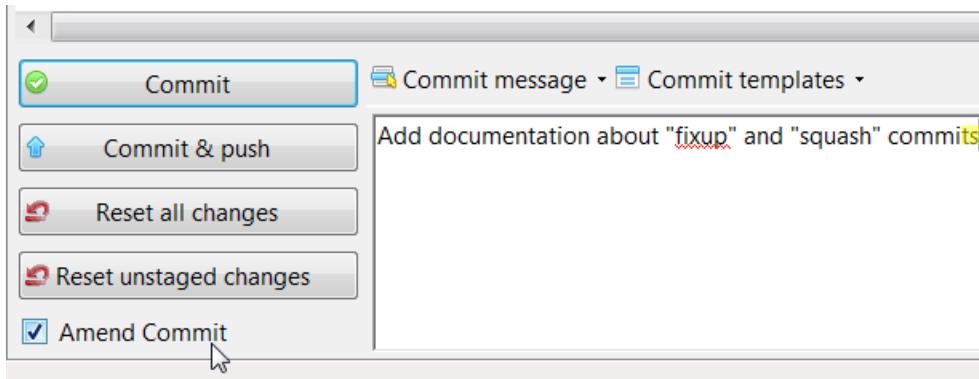
Note: There are 2 things to understand when working with the history with git:

- As git only creates immutable commits (sealed by the sha1), “modifying” a commit is in fact creating a new more or less similar commit.
- Consequently, the entire history of children following the changed commit will be different.

So, except if the history has not been already pushed, or if you have good reasons, it is a bad practice to change the history because you will mess the history of other developers.

Modify the last commit

The easiest way to modify the history is to modify the last commit made by doing what is called an amend. To do that, open the commit windows and check the option “Amend commit”. If the commit message text area was empty, it is now filled with the message of the last commit. You could now just update the commit message and commit or also add some more changes in the staging area to add them to the commit.



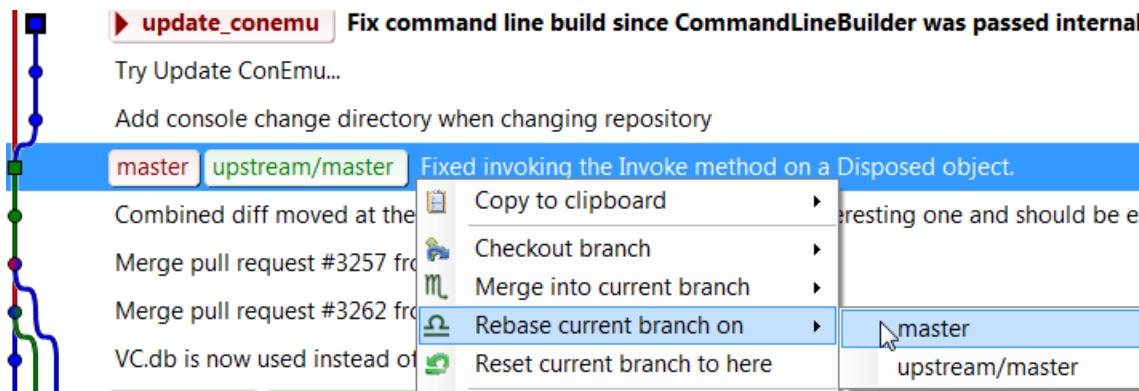
Modify an older commit

To modify an older commit than the last one of the current branch, we must use the `interactive rebase`.

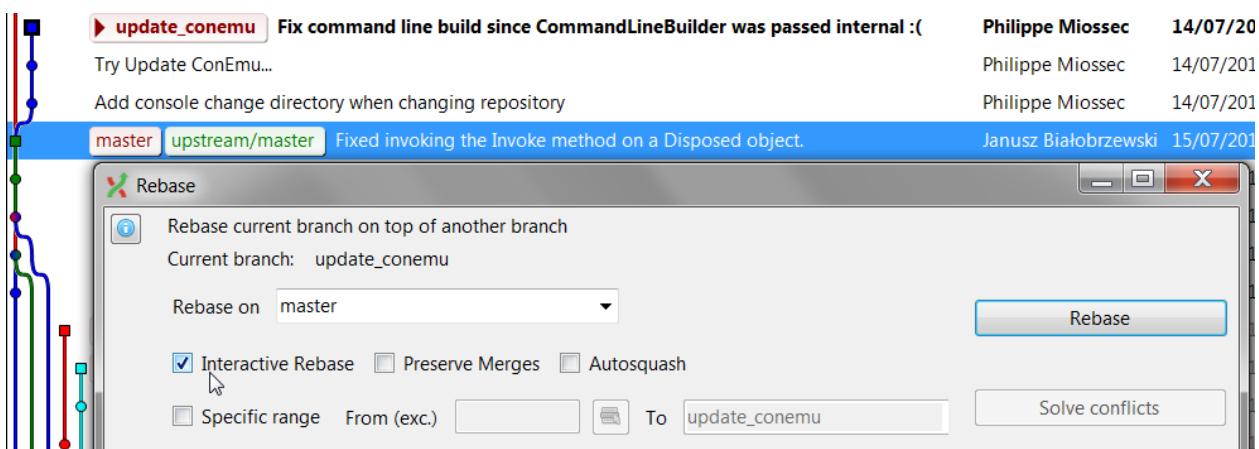
Doing an interactive rebase

First, you should create a commit containing the changes you want to add to a previous commit (or know an existing commit that contains this changes).

Then use the *rebase* feature in interactive mode on a base commit older than the one that you want to modify.



Check the option *interactive* and click on *Rebase* to launch the process.



You will be prompted by a text editor displaying all the commits that will be rebased

You could have a look to this documentation: <https://git-scm.com/book/en/v2/Git-Tools-Rewriting-History> to better understand all the possibilities offered.

The options offered are :

- reorder the lines to reorder the commits,
- delete a line to throw away a commit and the changes introduced by the commit,
- write *r* or *reword* in front of a commit to rewrite the commit message,
- write *f* or *fixup* in front of a commit to meld the commit with the previous commit and with keeping the commit message of the first commit,
- write *s* or *squash* in front of a commit to meld the commit with the previous commit and with rewriting the commit message.

Often, we will use interactive rebase to move the line and squash or fixup commits to modify the history.

Once we did the changes, save and close the editor to let git do the rebase.

Using autosquash rebase feature

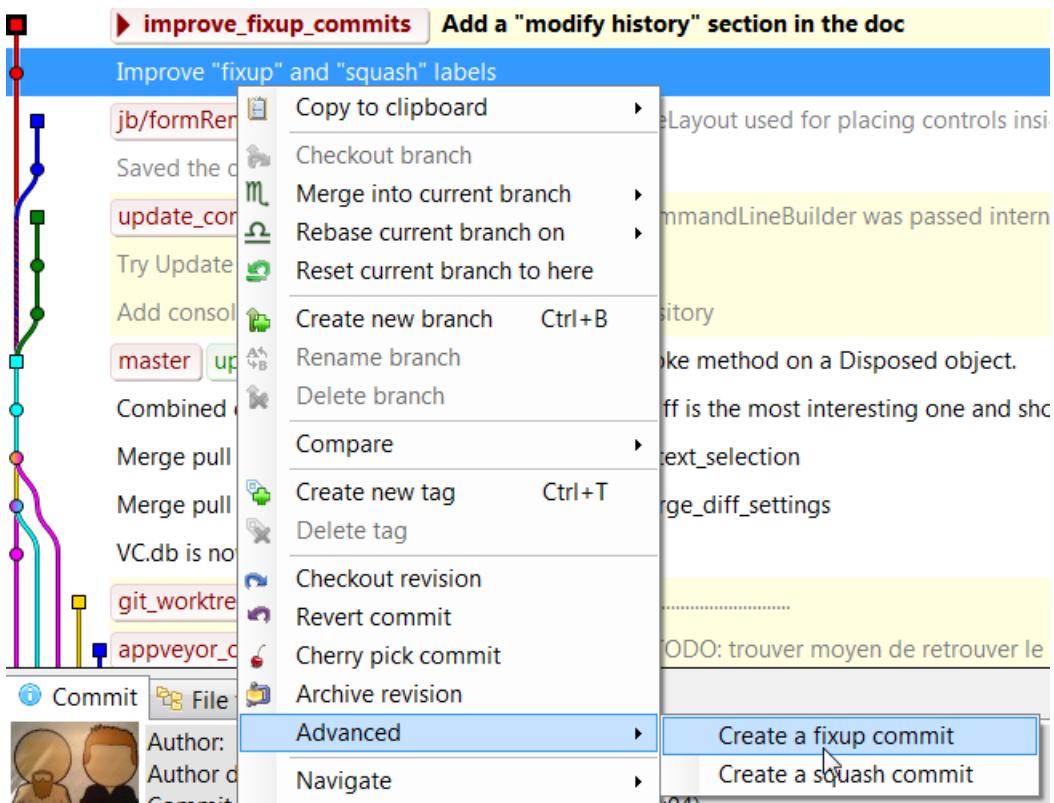
There is an option to facilitate the use of the interactive rebase when you know, at the moment of doing a commit that the changes introduced by this commit should have been made in an older commit (the case of a *fixup* or *squash*).

In this case, you should create a commit containing the changes you want to add to a previous commit and use the *Advanced* menu to:

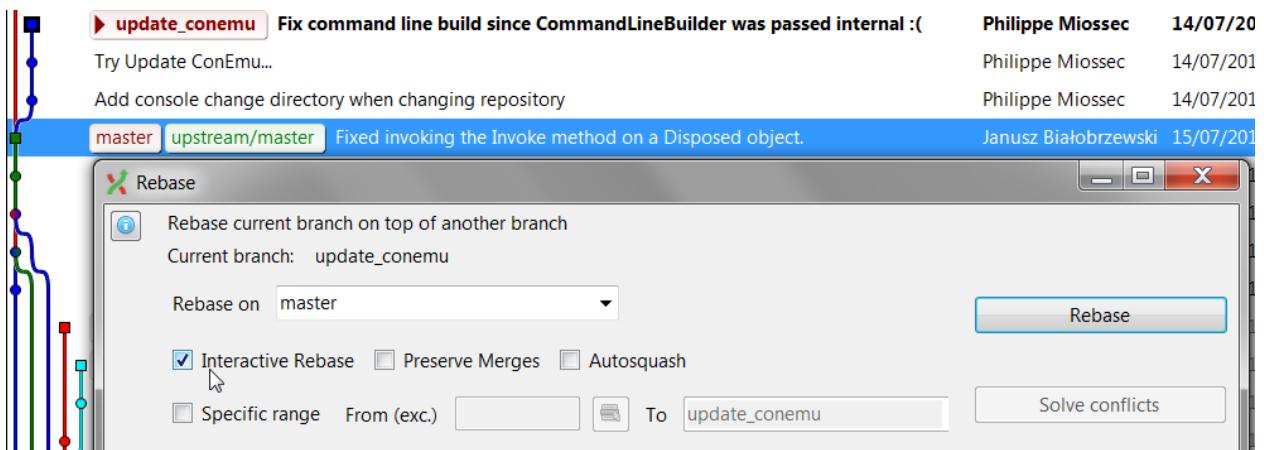
- create a *fixup* commit
- create a *squash* commit

Right click on the commit in the history, you know that you want to “modify”.

And choose the suitable option...

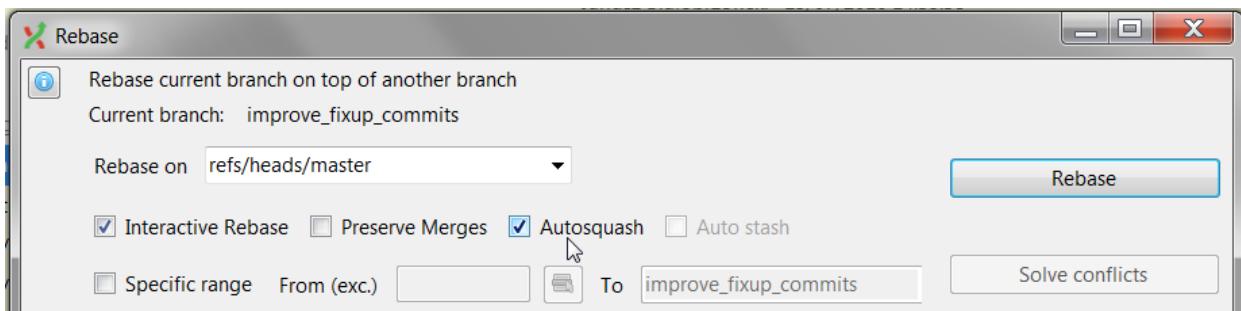


GitExtensions will open the commit window with an already filled commit message containing the needed information to find the commit to “modify”.



Do not change the commit message and commit all the changes needed.

Then process to the interactive rebase, like describe in the previous paragraph but with enabling the option *Autosquash*.



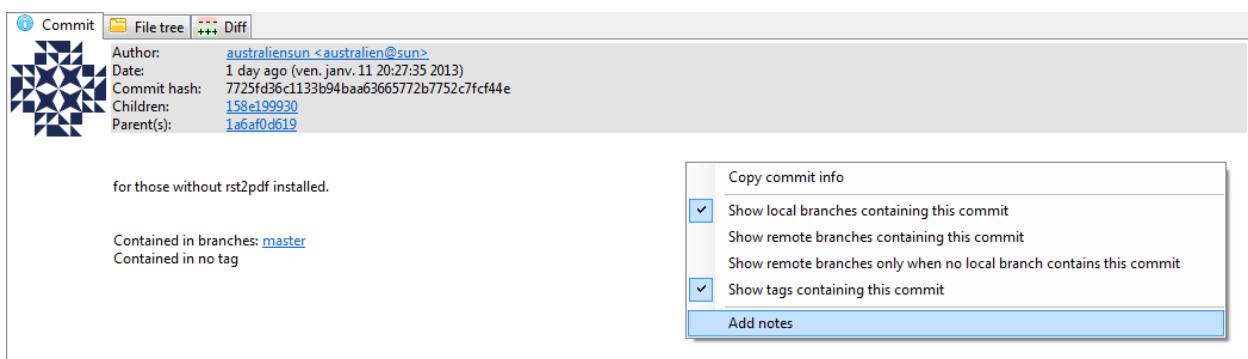
Launch the rebase by clicking on *Rebase*.

The interactive rebase will process the same way but with a major difference! When enabling the *Autosquash* option, git will automatically reorder the commits lines and write the good actions in front of the commits when it will open the text editor. You normally have just to close the editor (except if you want to do additional changes). And let git do the rebase.

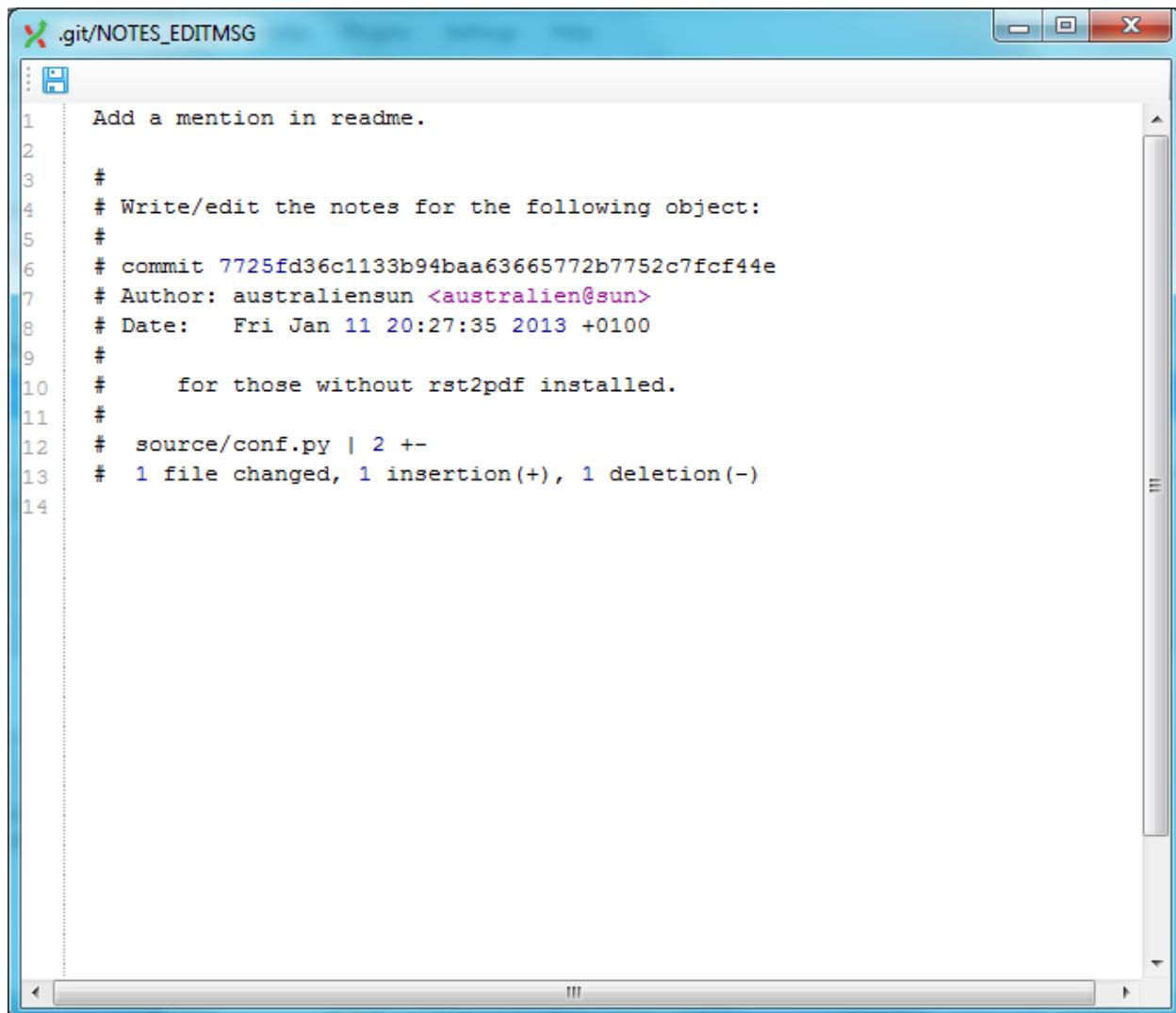
CHAPTER 12

Notes

Notes can be added to a commit. Notes will be stored separately and will not be pushed. To add a new note choose add notes in the context menu of the commit information box.



The editor that has been configured in the settings dialog will be used to enter or edit the notes. The Git Extensions editor is advised.



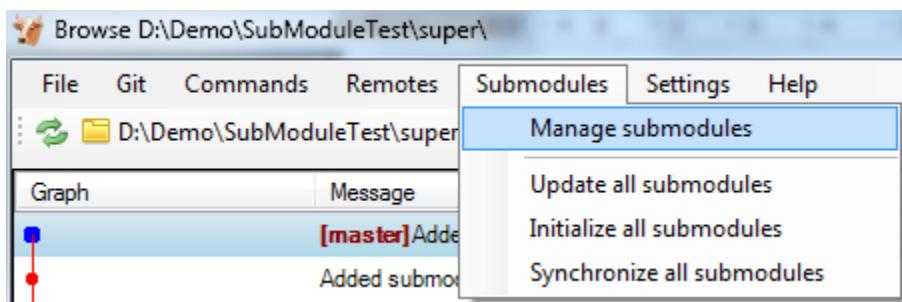
The screenshot shows a Windows application window titled ".git/NOTES_EDITMSG". The window contains a code editor with the following content:

```
1 Add a mention in readme.
2
3 #
4 # Write/edit the notes for the following object:
5 #
6 # commit 7725fd36c1133b94baa63665772b7752c7fcf44e
7 # Author: australiensun <australien@sun>
8 # Date:   Fri Jan 11 20:27:35 2013 +0100
9 #
10 #       for those without rst2pdf installed.
11 #
12 # source/conf.py | 2 ++
13 # 1 file changed, 1 insertion(+), 1 deletion(-)
14
```

CHAPTER 13

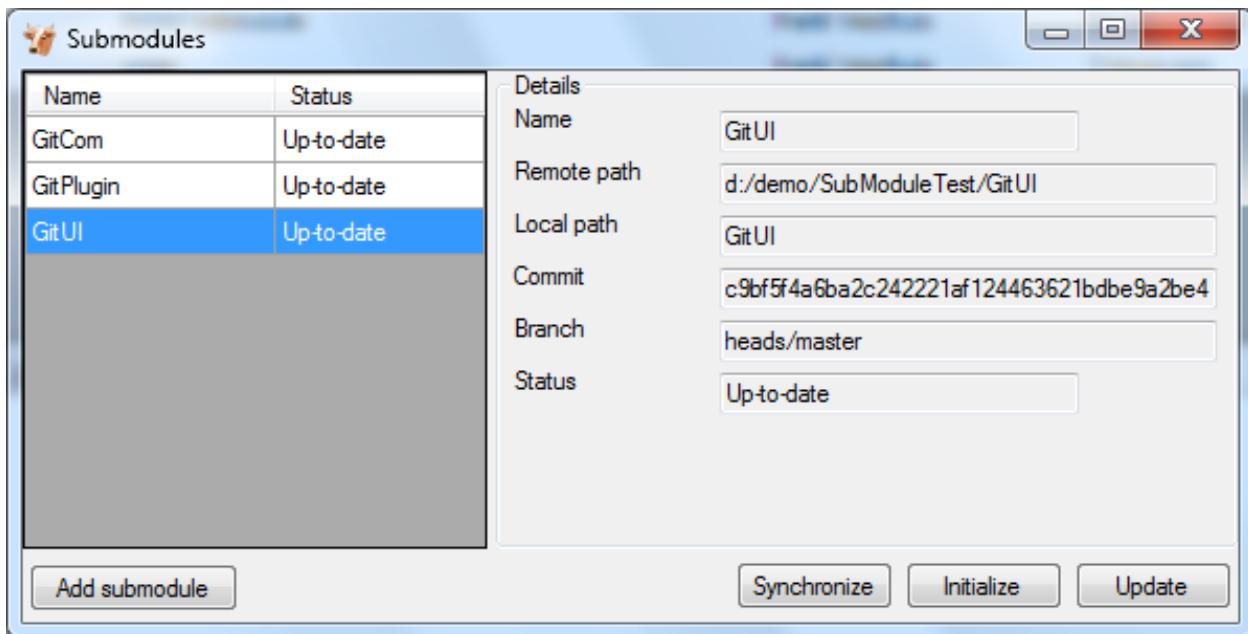
Submodules

Large projects can be split into smaller parts using submodules. A submodule contains the name, url and revision of another repository. To create a submodule in an existing git repository you need to add a link to another repository containing the files of the submodule.



Manage submodules

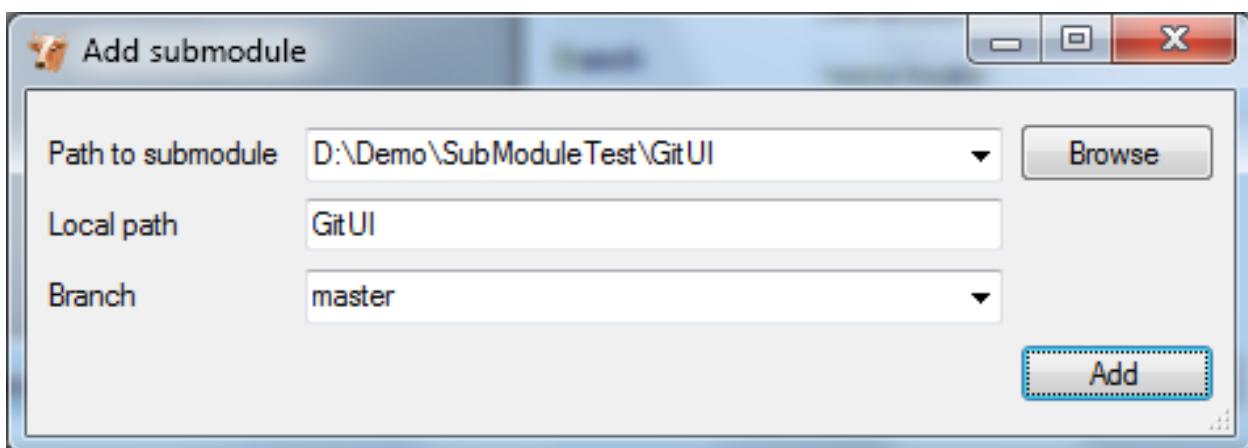
The current state of the submodules can be viewed with the Manage submodules function. All submodules are shown in the list on the left.



Add submodule	Add a new submodule to the repository
Synchronize	Synchronizes the remote URL configuration setting to the value specified in .gitmodules for the selected submodule.
Initialize	Initialize the selected submodules, i.e. register each submodule name and url found in .gitmodules into .git/config. The submodule will also be updated.
Update	Update the registered submodules, i.e. clone missing submodules and checkout the commit specified in the index of the containing repository.

Add submodule

To add a new submodule choose Add submodule in the Manage submodules dialog.



Path to submodule	Path to the remote repository to use as submodule.
Local path	Local path to this submodule, relative to the root of the current repository.
Branch	Branch to track.

Remove submodule

It is currently not possible to remove a submodule using the Git Extensions user interface. To remove a submodule you need to manually:

- Delete the relevant line from the `.gitmodules` file.
- Delete the relevant section from `.git/config`.
- Run `git rm --cached path_to_submodule` (no trailing slash).
- Commit and delete the now untracked submodule files.

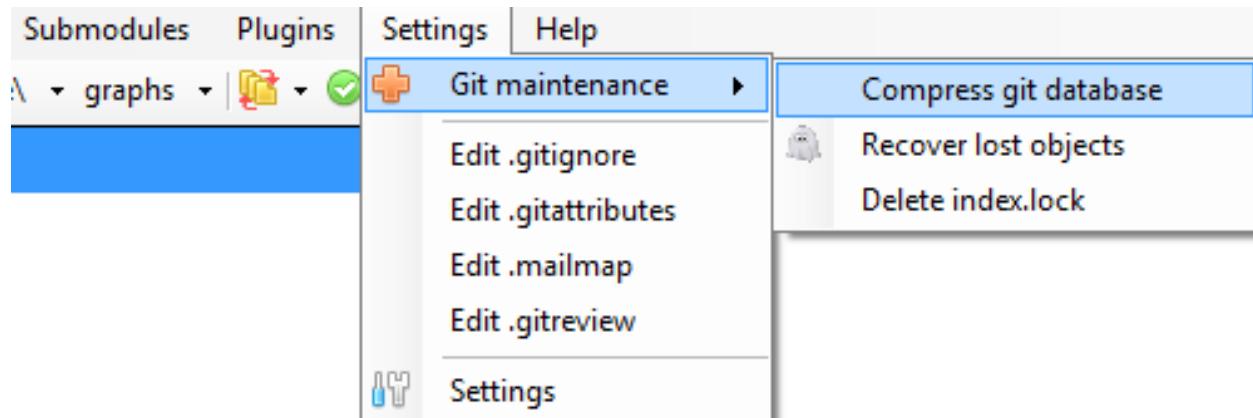
CHAPTER 14

Maintenance

In this chapter some of the functions to maintain a repository are discussed.

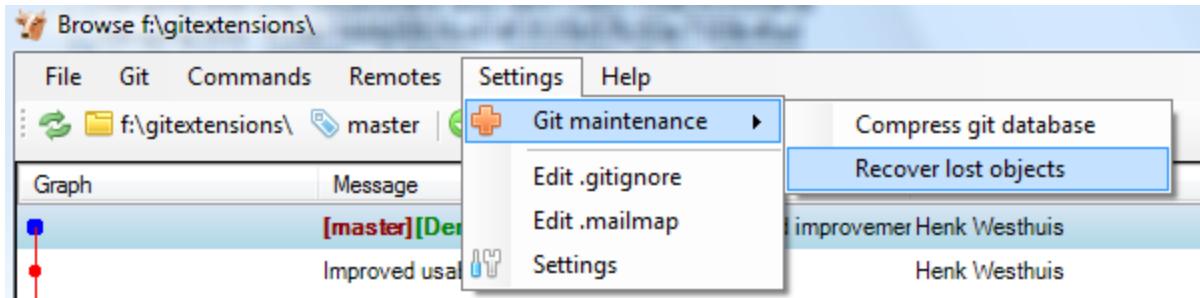
Compress Git database

Git will create a lot of files. You can run the `Compress git database` to pack all small files building up a repository into one big file. Git will also garbage collect all unused objects that are older than 15 days. When a database is fragmented into many small files compressing the database can increase performance.

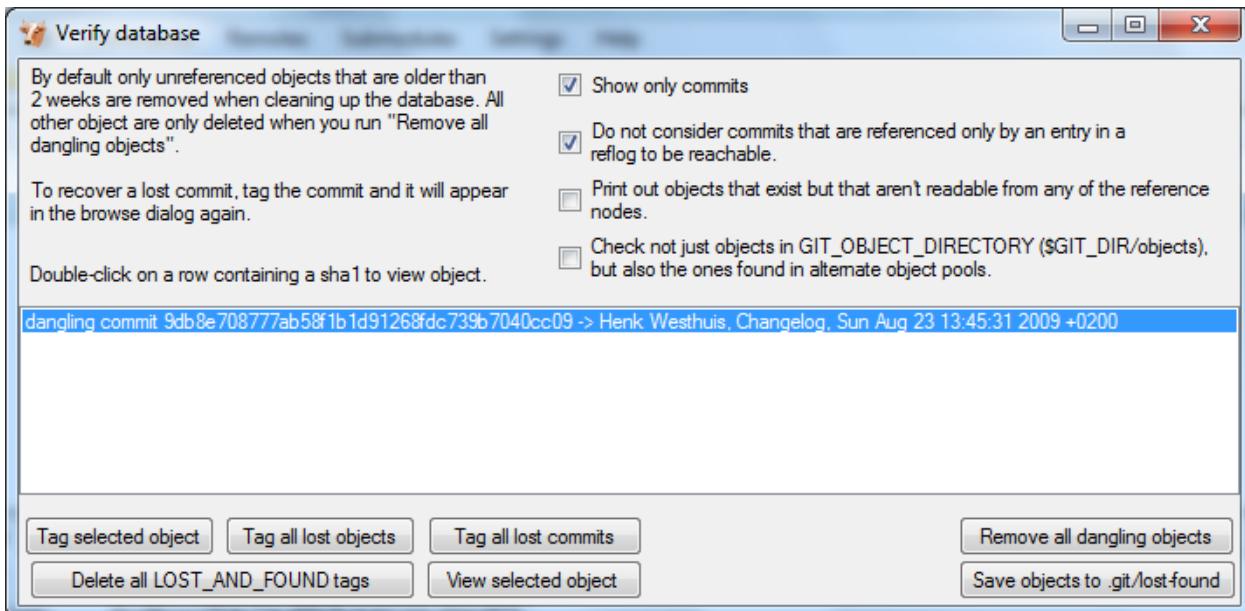


Recover lost objects

If you accidentally deleted a commit you can try to recover it using the `Recover lost objects` function. A dialog will show you all dangling objects and will allow you to review and recover them.

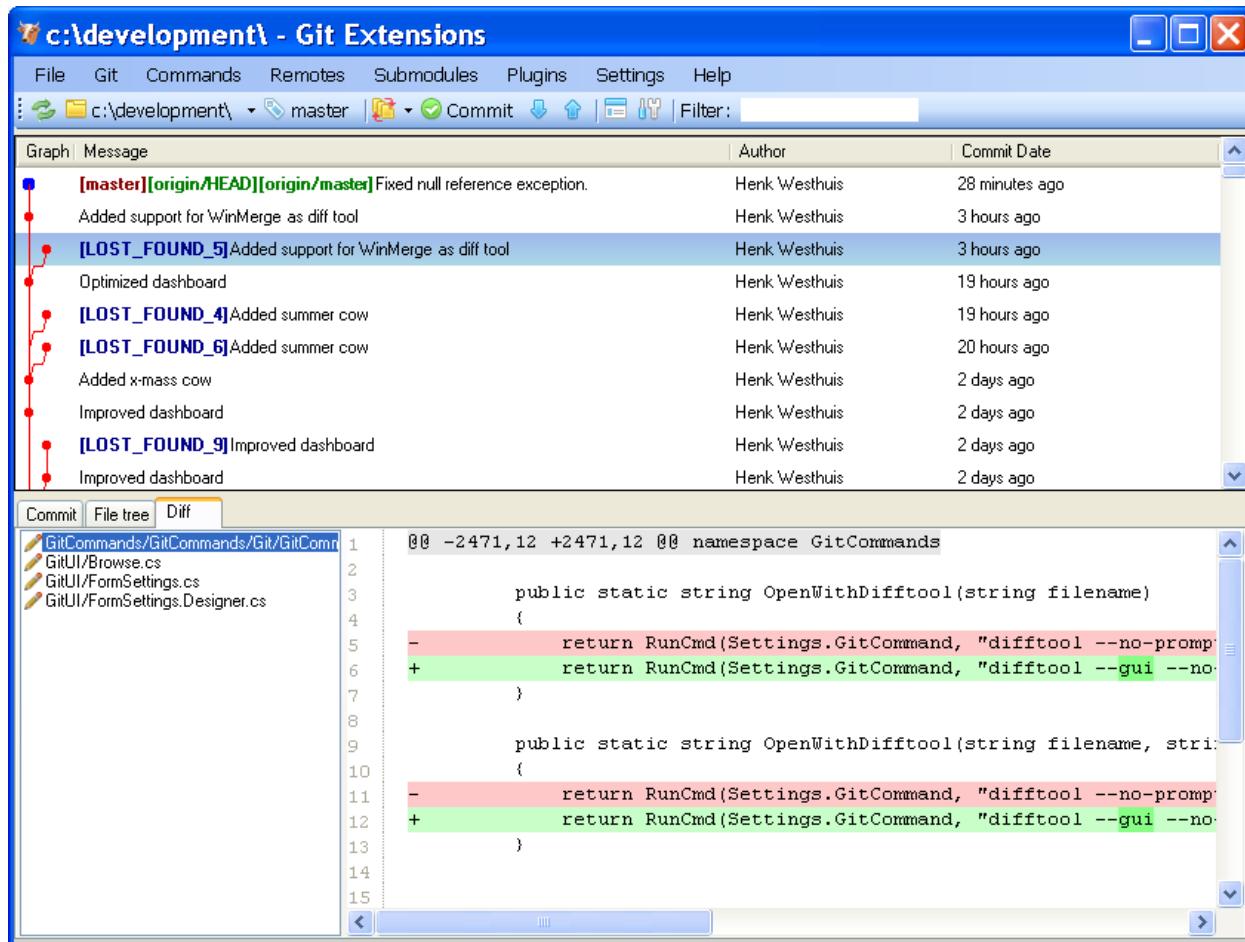


Normally Git will not delete files right away when you remove something from your repository. The reason for this is that you can restore deleted items if you need to. Git will delete removed items when they are older than 15 days and you run Compress git database.



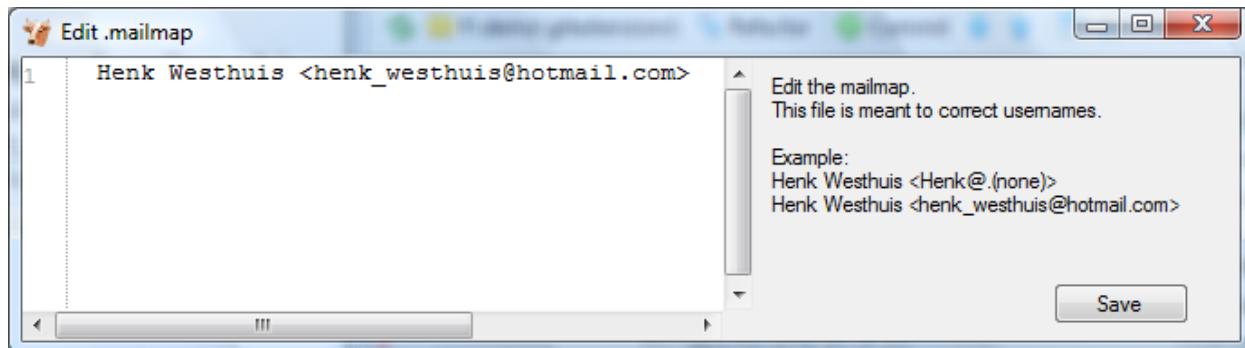
There are several functions to help you find the lost items. By default Git Extensions will only show commits. To show all items, just uncheck the Show only commits option. The other options can be checked/unchecked to get more/less results. Double-click on an item to view the content. When you located the item you want to recover you can tag it using the Tag selected object button.

Git Extensions also is able to tag all lost objects. Doing this will make all lost objects visible again making it very easy to locate the commit(s) you would like to recover. After recovering a commit using the Tag all lost commits button, you can remove all tags using the Delete all LOST_AND_FOUND tags button.



Fix user names

When someone accidentally committed using a wrong username this can be fixed using the `Edit .mailmap` function. Git will use the username for an email address when it is set in the `.mailmap` file.



Fix user name using commit email:

Proper Name <commit@email.xx>

Fix email address using commit email:

```
<proper@email.xx> <commit@email.xx>
```

Fix email address and name using commit email:

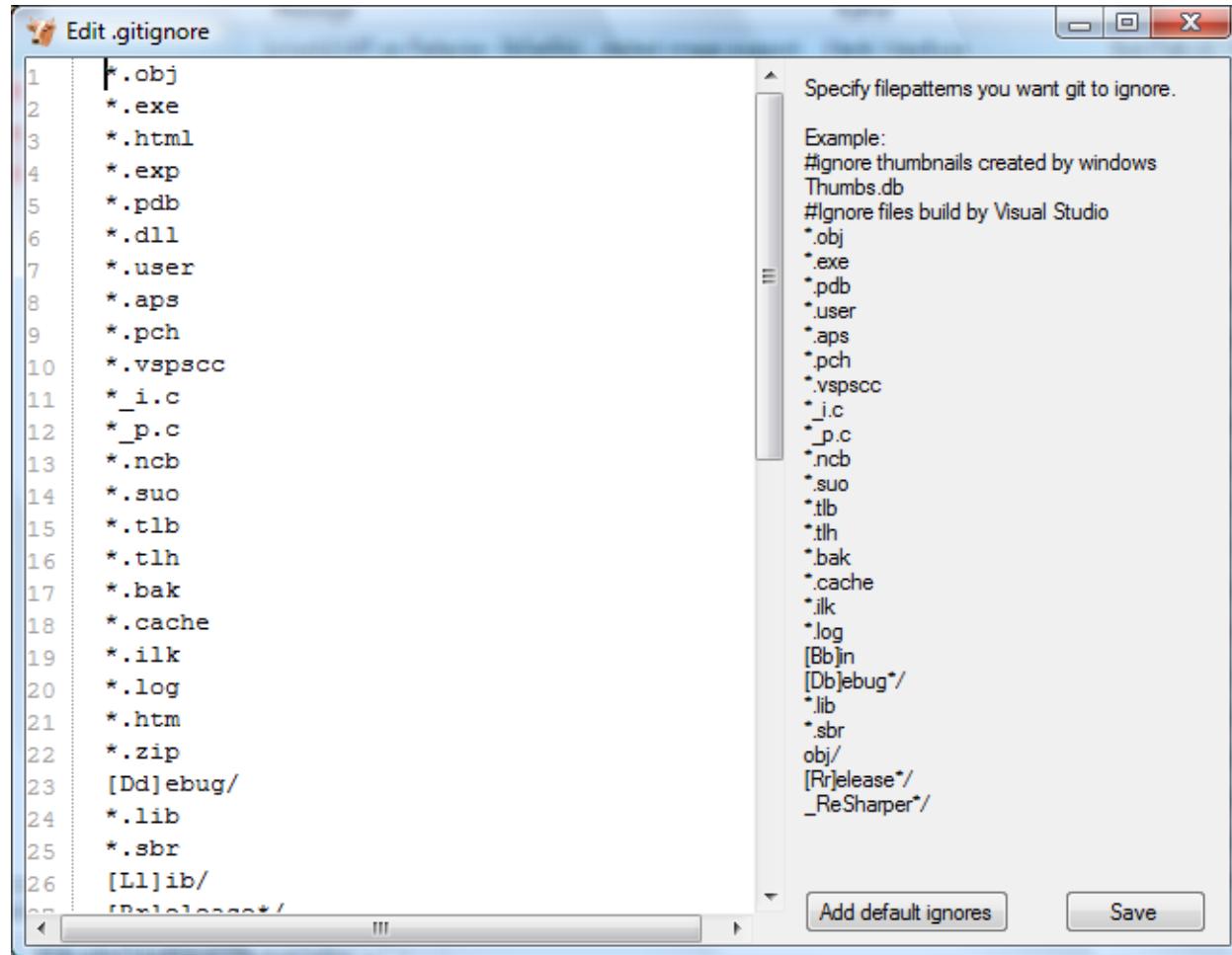
```
Proper Name <proper@email.xx> <commit@email.xx>
```

Fix email address and name using commit name and email:

```
Proper Name <proper@email.xx> Commit Name <commit@email.xx>
```

Ignore files

Git will track all files that are in the working directory. Normally you do not want to exclude all files that are created by the compiler. You can add files that should be ignored to the `.gitignore` file. You can use wildcards and regular expressions. All entries are case sensitive. The button `Add default ignores` will add files that should be ignored when using Visual Studio.



A short overview of the syntax:

#	Lines started with # are handled as comments
!	Lines started with ! are exclude patterns
[Dd]	Characters inside [. .] means that 1 of the characters must match
*	Wildcard
/	A leading slash matches the beginning of the pathname; for example, /* . c matches cat-file.c but not mozilla-sha1/sha1.c
/	If the pattern ends with a slash, it is removed for the purpose of the following description, but it would only find a match with a directory. In other words, foo/ will match a directory foo and paths underneath it, but will not match a regular file or a symbolic link foo (this is consistent with the way how pathspec works in general in git).

For more [detailed information](#).

CHAPTER 15

Translations

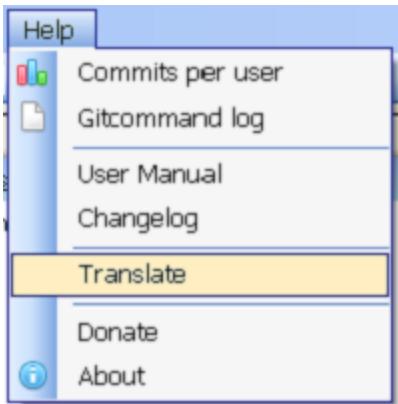
Change language

In the settings dialog a translation can be chosen. The translation files are located in a directory located in the Git Extensions installation directory. The files are readable xml files.



Translate Git Extensions

The application has a built-in translation tool to help create and edit translations. To open the translation tool choose Translate in the Help menu.



The functions of the translation tool are described in the image below. To contribute any translations you can either e-mail a patch or send a pull request using github.

Create new translation Use drop down to open an existing translation Translation progress

Save translation as Language code of the current translation

Translate

All	Category	Name	Property	NeutralValue	TranslatedValue
FormTagSmall	Gravatar	refreshToolStripM...	Text	Refresh image	Ververs plaatje
FindAndReplaceForm	Gravatar	registerAtGravata...	Text	Register at gravatar.com	Registreer bij gravatar.com
FormVerify	Gravatar	clearImagecache...	Text	Clear image cache	Leeg plaatjes cache
FormSubmodules	Gravatar	imageSizeToolStrip...	Text	Image size	Formaat plaatje
FormResetCurrentBranch	FormTagSmall	\$this	Text	Create tag	Maak label
FormStatus	FormTagSmall	label1	Text	Tag name	Label naam
FormIgnore	FormTagSmall	Ok	Text	Create tag	Maak label
FormDiffSmall	FormTagSmall	annotate	Text	Create annotated tag	Maak geannoteerd label
FormCommitCount	FormTagSmall	label2	Text	Message	Bericht
FormBrowse	FormTagSmall	noTagMassage	Text	Please enter a tag messa...	Voer een label bericht in
MergePatch	FormTagSmall	noRevisionSelect...	Text	Select 1 revision to creat...	Selecteer eerst een revisie
FormRevertCommitSmall					
FormRevert					
FormRemotes					
FormInit					
ViewPatch					
FormDashboardCategoryTi					
FormChangeLog1					
FormBranchSmall					
FormAddSubmodule					
FormAddFiles					
FormTag					
FormFormatPath					
FormEdit					
FormCheckout					
FormCherryPickCommitSm					
FormFixHome					
GitLogForm					
FormPull					
FormMergeBranch					
FormFileHistory					

Category to translate Use google translate to translate current text Use google translate to translate all empty translations (using language code)

Google translate Google all empty

CHAPTER 16

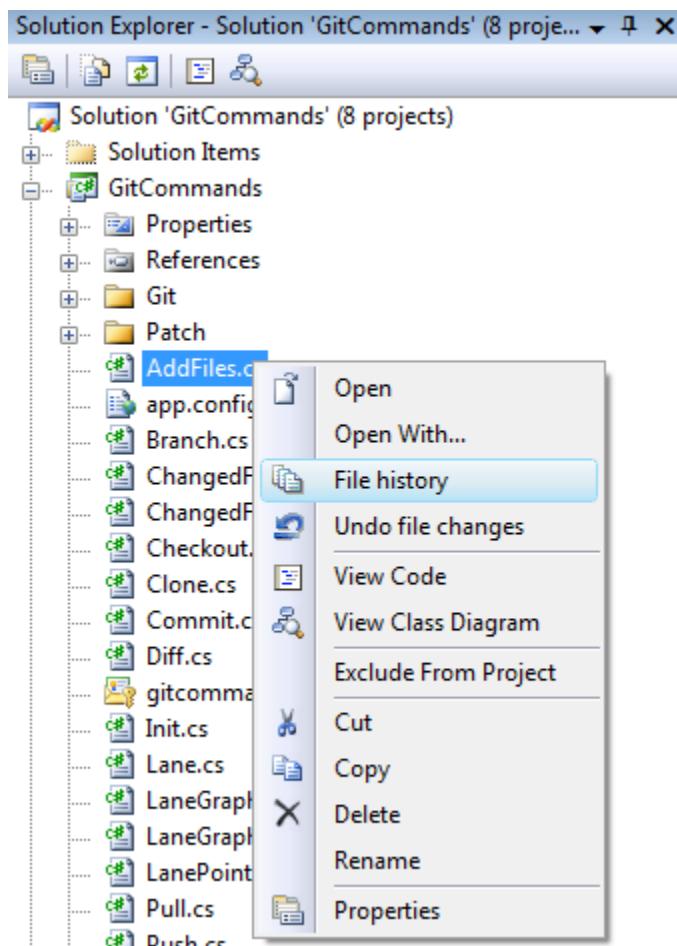
Integration

During installation you can choose to install the Visual Studio plug-in and shell extensions.

Visual Studio

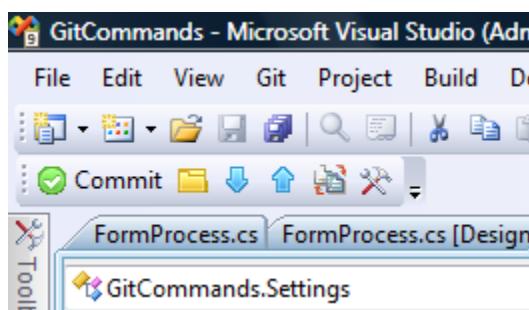
There are two options in the context menu on files:

- View the file history by choosing the ‘File history’ option.
- Reset the file changes to the last committed revision.

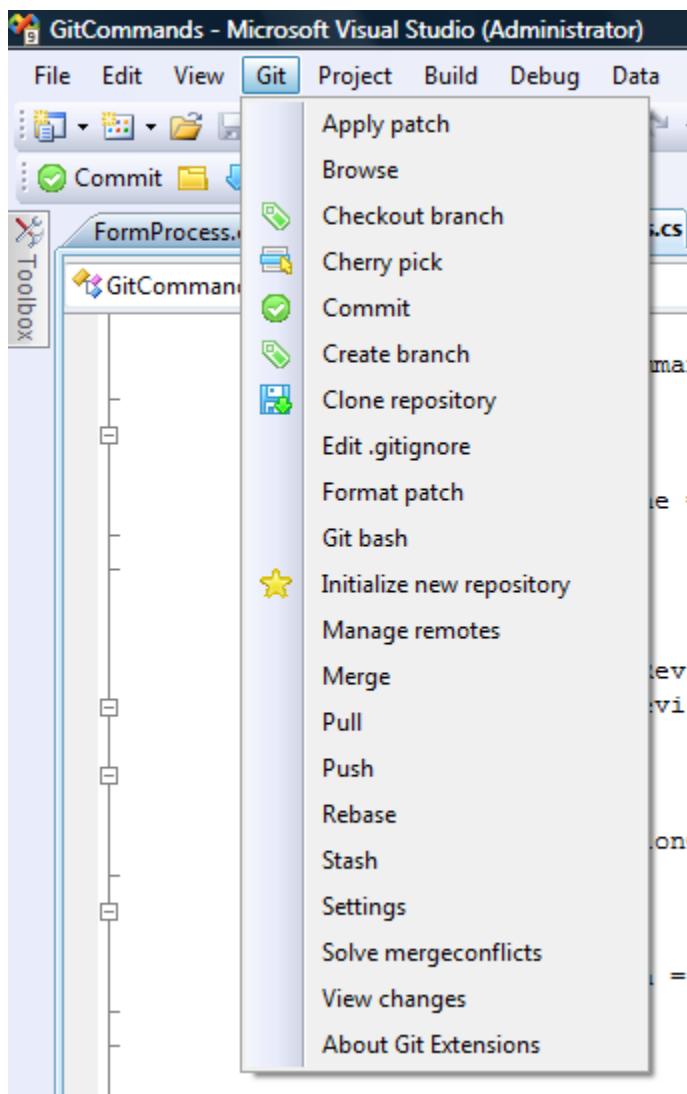


A Git Extensions toolbar allows you to perform the most common actions.

	Commit (branch)
	Browse
	Pull
	Push
	Stash changes
	Settings

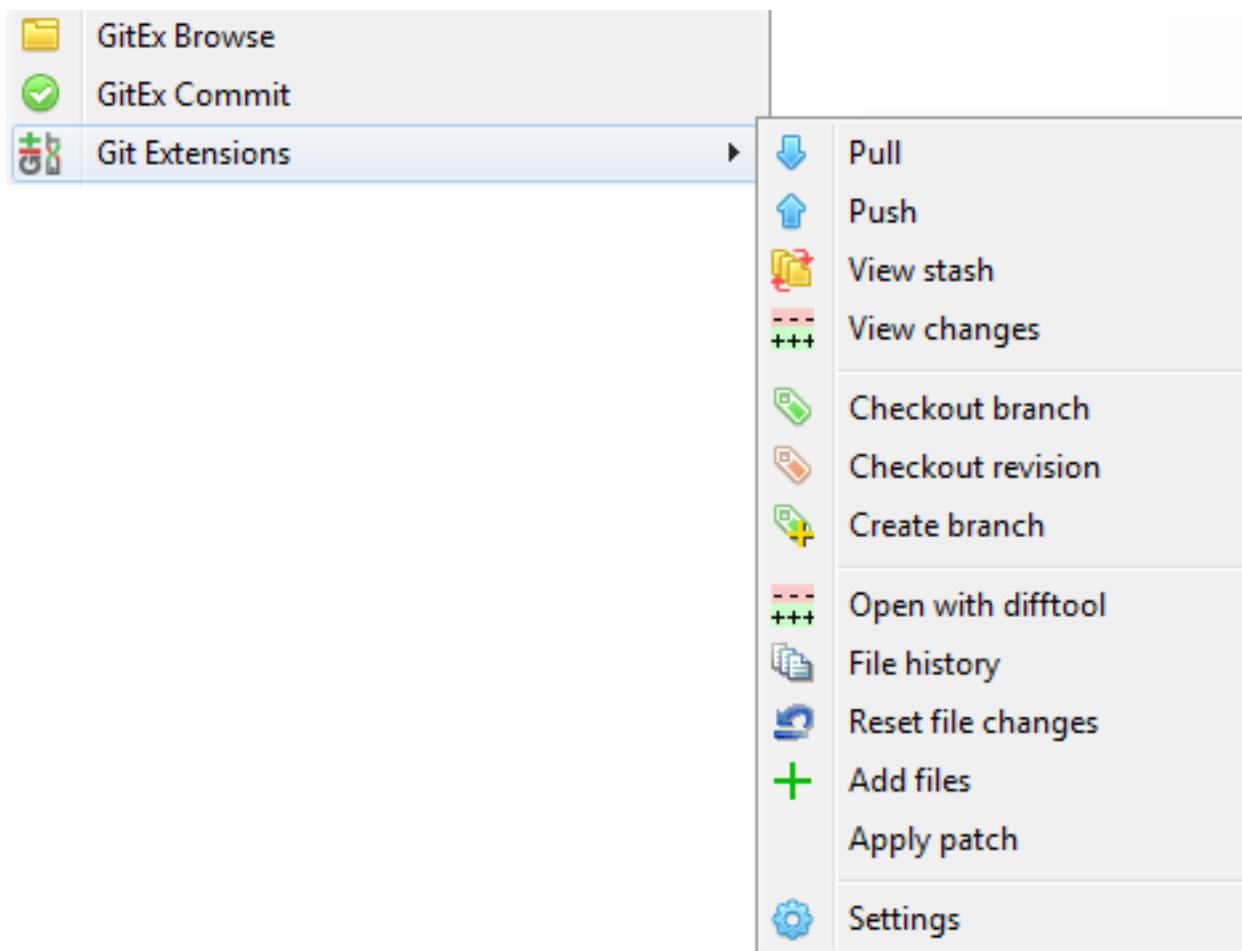


Almost all function can be started from the Git menu in Visual Studio.

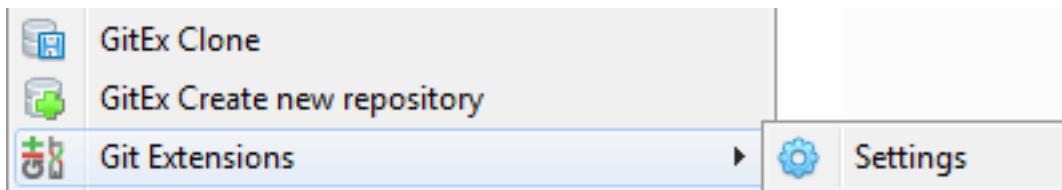


Windows Explorer

The common commands can be started from Windows Explorer using the shell extensions. This option is only available when Shell Extensions are installed.



You can even create or clone a repository in any non git folder.

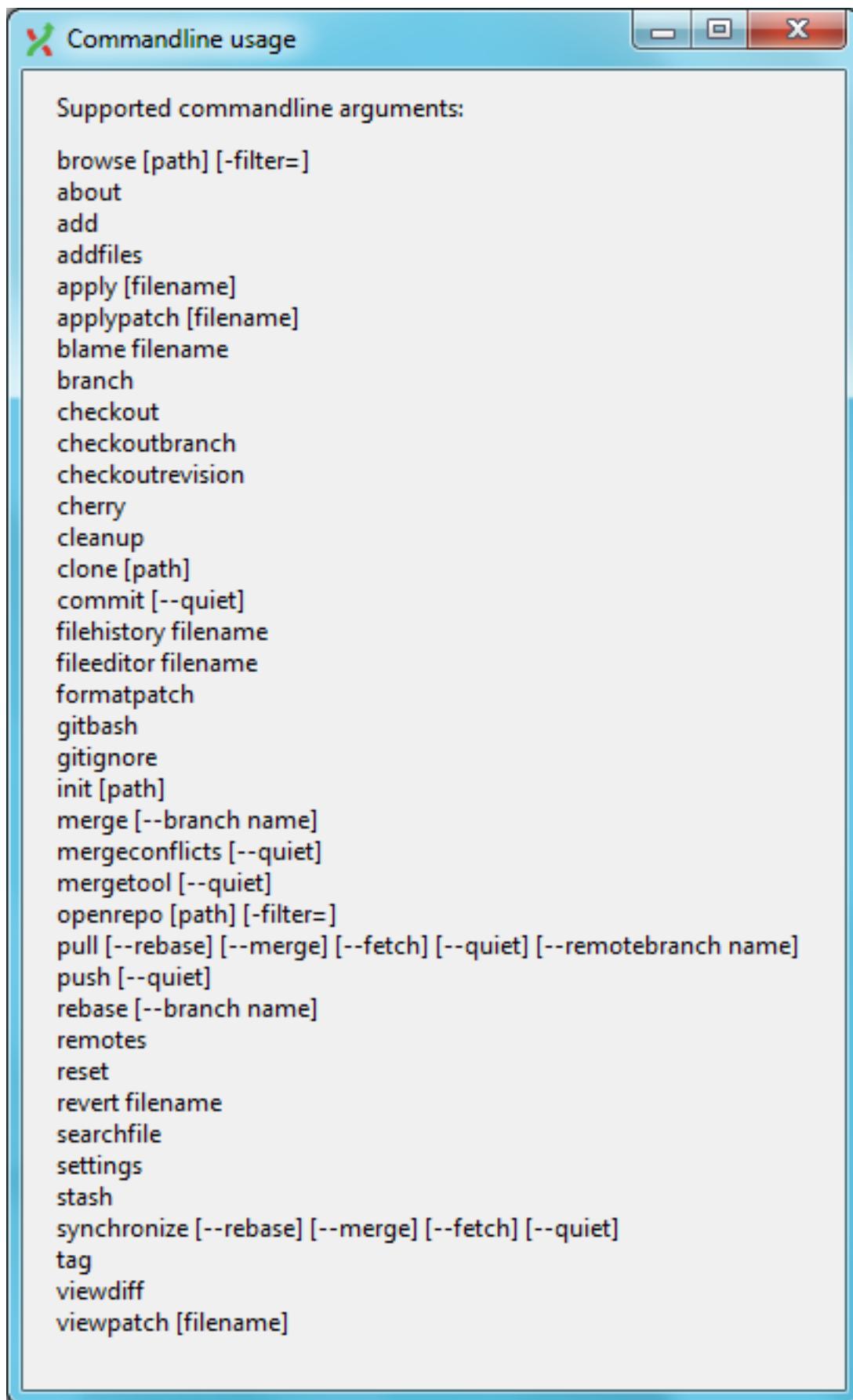


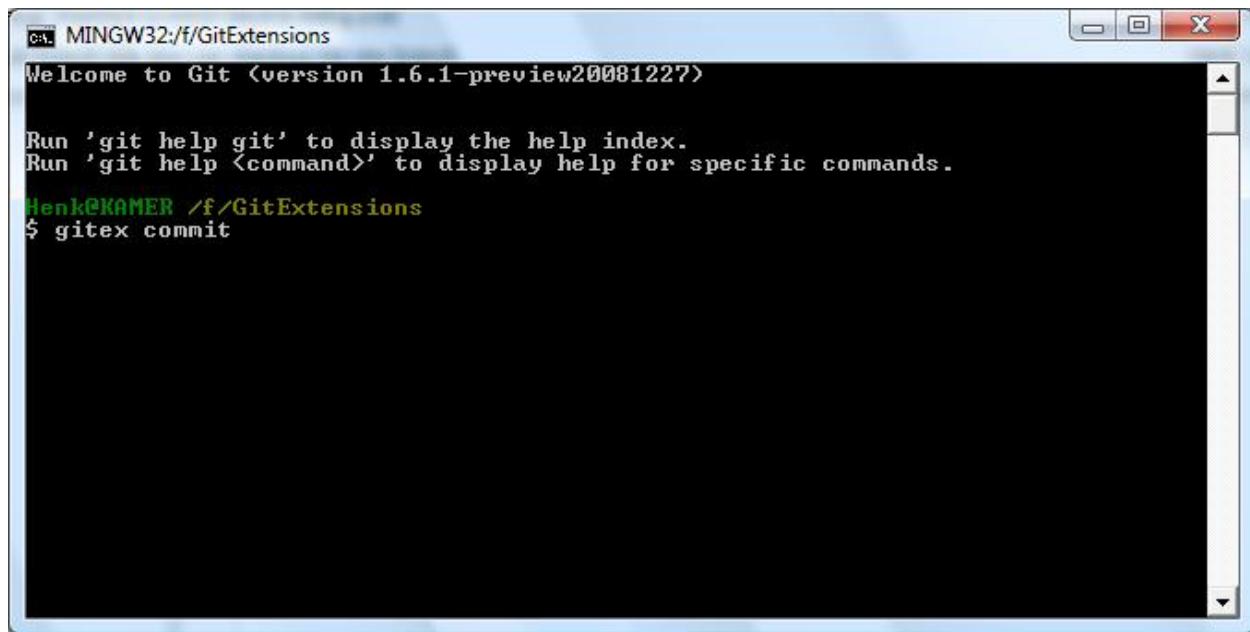
CHAPTER 17

Command line

Git Extensions command line

Most features can be started from the command line. It is recommended to add `gitex.cmd` to the path when using from the command line. It is typically stored in the `C:\Program Files (x86)\GitExtensions` folder.





A screenshot of a Windows-style terminal window titled "MINGW32:f/GitExtensions". The window contains the following text:

```
Welcome to Git <version 1.6.1-preview20081227>
Run 'git help git' to display the help index.
Run 'git help <command>' to display help for specific commands.
Henk@KAMER /f/GitExtensions
$ gitex commit
```


CHAPTER 18

Appendix

Git Cheat Sheet

Action	Command
Create new repository	<code>\$ git init</code>
Create shared repository	<code>\$ git init --bare --shared=all</code>
Clone repository	<code>\$ git clone c:/demo1 c:/demo2</code>
Checkout branch	<code>\$ git checkout <name></code>
Create branch	<code>\$ git branch <name></code>
Delete branch	<code>\$ git branch -d <name></code>
Merge branch (from the branch to merge into):	<code>\$ git merge PDC</code>
Solve conflicts (add –tool=kdiff3 if no mergetool is specified)	<code>\$ git mergetool \$ git commit</code>
Create tag	<code>\$ git tag <name></code>
Add files/changes (. for all files)	<code>\$ git add .</code>
Commit added files/changes (–amend to amend to last commit)	<code>\$ git commit -m "Enter commit message"</code>
Discard changes	<code>\$ git reset --hard</code>
Create patch (-M = detect renames –C = detect copies)	<code>\$ git format-patch -M -C origin</code>
Apply patch without merging	<code>\$ git apply c:/patch/01-emp.patch</code>
Merge patch	<code>\$ git am --3way --signoff c:/patch/01-emp.patch</code>
Solve conflicts (add –tool=kdiff3 if no mergetool is specified)	<code>\$ git mergetool \$ git am --3way --resolved</code>
Stash changes	<code>\$ git stash</code>
Apply stashed changes	<code>\$ git stash apply</code>
Pull changes (add –rebase to rebase instead of merge)	<code>\$ git pull c:/demo1 master</code>
Solve conflicts (add –tool=kdiff3 if no mergetool is specified)	<code>\$ git mergetool \$ git commit</code>
18.1 Git Cheat Sheet	
Push changes (in branch \$ git push c:/demo1 master master:<new>)	<code>\$ git push c:/demo1 master:<new></code>
Blame	<code>\$ git blame -M -w <filename></code>
Help	<code>\$ git <command> -help</code>

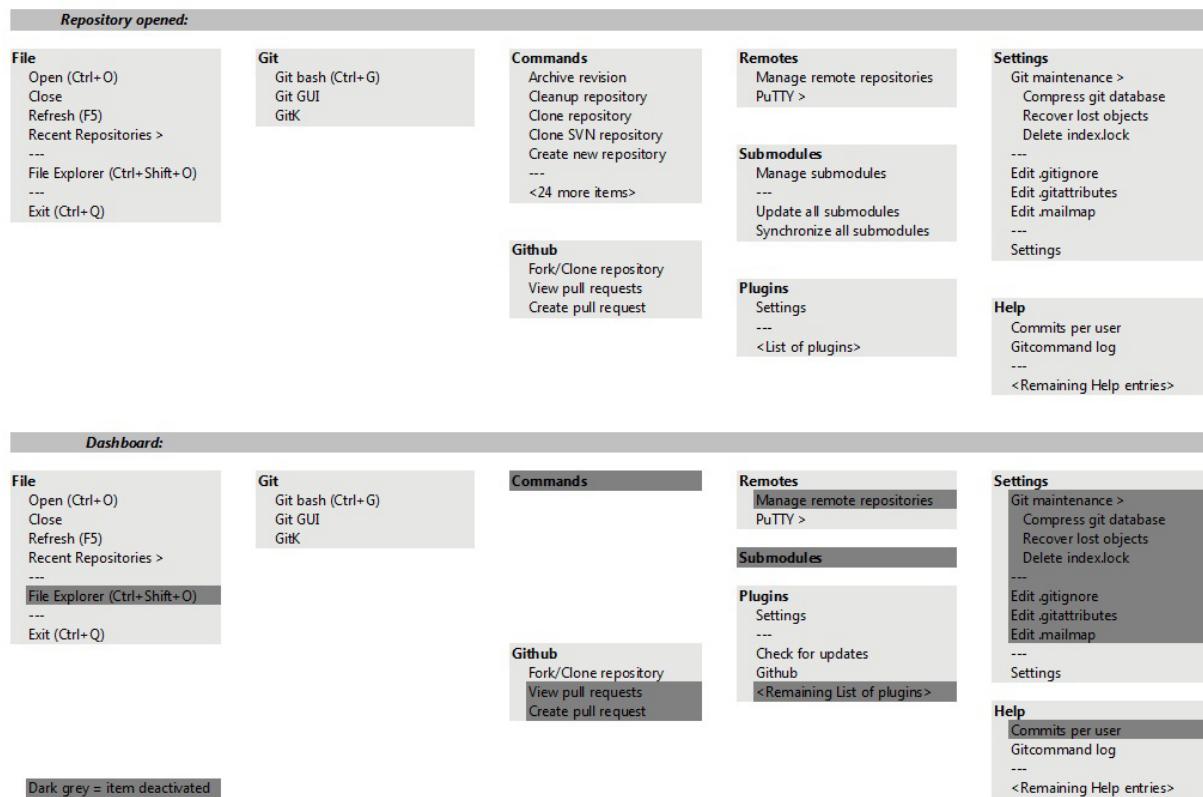
Here are some default names used by Git.

Default names	
master	default branch
origin	default upstream repository
HEAD	current branch
HEAD^	parent of HEAD
HEAD~4	the great-great grandparent of HEAD

Menu map

The following image shows GitExtensions' menu structure at one glance:

GitExt Menu structure v2.43



CHAPTER 19

Plugins

List of the available plugins

- Auto Compile Submodules
- Background Fetch
- Create Local Tracking Branches
- Delete Unused Branches
- Find Large Files
- Gerrit Code Review
- GitFlow
- GitUIPluginInterfaces
- Github
- Gource
- Proxy Switcher
- Release Notes Generator
- Statistics

GitFlow

This plugin permit to manage your _branching model: <http://nvie.com/posts/a-successful-git-branching-model/> with _GitFlow: <https://github.com/nvie/gitflow> in GitExtension

You should have GitFlow installed to use this plugin.

The GitFlow plugin permit to : - init gitflow in your git repository - create your feature, hotfix, release or support branch - manage (pull, publish or finish) your existing gitflow branches