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# **afew Documentation**

*Release 0.1pre*

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*afew* is an initial tagging script for notmuch mail:

- <http://notmuchmail.org/>
- [http://notmuchmail.org/initial\\_tagging/](http://notmuchmail.org/initial_tagging/)

Its basic task is to provide automatic tagging each time new mail is registered with notmuch. In a classic setup, you might call it after *notmuch new* in an *offlineimap* post sync hook or in the notmuch *post-new* hook.

It can do basic thing such as adding tags based on email headers or maildir folders, handling killed threads and spam.

fyi: *afew* plays nicely with *alot*, a GUI for notmuch mail ;)

- <https://github.com/pazz/alot>

Contents:



The steps to get up and running are:

- install the afew package
- create the config files
- add a notmuch post-new hook that calls afew

## 1.1 Install

The following commands will get you going on Debian/Ubuntu systems:

```
$ sudo aptitude install notmuch python-notmuch dbacl
$ git clone git://github.com/teythoon/afew.git
$ cd afew
$ python setup.py install --prefix
```

Ensure that `~/local/bin` is in your path. One way is to add the following to your `~/bashrc`:

```
if [ -d ~/.local/bin ]; then
    PATH=$PATH:~/.local/bin
fi
```

See *Installation* for a more detailed guide.

## 1.2 Initial Config

Create the directories to hold the config files:

```
$ mkdir -p ~/.config/afew ~/.local/share/afew/categories
```

Make sure that `~/notmuch-config` reads:

```
[new]
tags=new
```

Put a list of filters into `~/config/afew/config`:

```
# This is the default filter chain
[SpamFilter]
[KillThreadsFilter]
[ListMailsFilter]
[ArchiveSentMailsFilter]
[InboxFilter]
```

And create a post-new hook for notmuch.

```
$ mkdir -p path/to/maildir/.notmuch/hooks
$ touch path/to/maildir/.notmuch/hooks/post-new
```

Then edit the `post-new` file to contain:

```
#!/bin/sh
$HOME/.local/bin/afew --tag --new
```

## 1.3 Next Steps

You can:

- add extra *Filters* for more custom filtering
- make use of the *Move Mode* to move your email between folders
- run `afew` against all your old mail by running `afew -tag -all`
- start *Extending `afew`* `afew`



## 2.1 Requirements

*afew* works with python 2.7, 3.1 and 3.2, and requires *notmuch* and its python bindings. On Debian/Ubuntu systems you can install these by doing:

```
$ sudo aptitude install notmuch python-notmuch python-dev python-setuptools
```

Note: if you are installing *notmuch* using Homebrew on macOS, make sure to run `$ brew install --with-python3 notmuch`, because the brew formula doesn't install python3 *notmuch* bindings by default.

## 2.2 Unprivileged Install

It is recommended to install *afew* itself inside a virtualenv as an unprivileged user, either via checking out the source code and installing via `setup.py`, or via `pip`.

```
# create and activate virtualenv
$ python -m venv --system-site-packages .venv
$ source .venv/bin/activate

# install via pip from PyPI:
$ pip install afew

# or install from source:
$ python setup.py install --prefix=~/.local
```

You might want to symlink `.venv/bin/afew` somewhere inside your path (`~/bin/` in this case):

```
$ ln -snr .venv/bin/afew ~/.bin/afew
```



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## Command Line Usage

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Ultimately `afew` is a command line tool. You have to specify an action, and whether to act on all messages, or only on new messages. The actions you can choose from are:

**tag** run the tag filters. See *Initial tagging*.

**watch** continuously monitor the mailbox for new files

**move-mails** move mail files between maildir folders

### 3.1 Initial tagging

Basic tagging stuff requires no configuration, just run

```
$ afew --tag --new
# or to tag *all* messages
$ afew --tag --all
```

To do this automatically you can add the following hook into your `~/.offlineimaprc`:

```
postsynhook = ionice -c 3 chrt --idle 0 /bin/sh -c "notmuch new && afew --tag --new"
```

There is a lot more to say about general filter *Configuration* and the different *Filters* provided by `afew`.

#### 3.1.1 Simulation

Adding `-dry-run` to any `-tag` or `-sync-tags` action prevents modification of the notmuch db. Add some `-vv` goodness to see some action.

## 3.2 Move Mode

To invoke `afew` in move mode, provide the `-move-mails` option on the command line. Move mode will respect `-dry-run`, so throw in `-verbose` and watch what effects a real run would have.

In move mode, `afew` will check all mails (or only recent ones) in the configured maildir folders, deciding whether they should be moved to another folder.

The decision is based on rules defined in your config file. A rule is bound to a source folder and specifies a target folder into which a mail will be moved that is matched by an associated query.

This way you will be able to transfer your sorting principles roughly to the classic folder based maildir structure understood by your traditional mail server. Tag your mails with `notmuch`, call `afew -move-mails` in an `offlineimap` `presynchook` and enjoy a clean inbox in your webinterface/GUI-client at work.

For information on how to configure rules for move mode, what you can do with it and what you can't, please refer to *Move Mode*.

## 3.3 Commandline help

The full set of options is:

```
$ few --help
Usage: few [options] [--] [query]

Options:
  -h, --help            show this help message and exit

Actions:
  Please specify exactly one action.

  -t, --tag             run the tag filters
  -w, --watch           continuously monitor the mailbox for new files
  -m, --move-mails     move mail files between maildir folders

Query modifiers:
  Please specify either --all or --new or a query string.

  -a, --all            operate on all messages
  -n, --new            operate on all new messages

General options:
  -C NOTMUCH_CONFIG, --notmuch-config=NOTMUCH_CONFIG
                        path to the notmuch configuration file [default:
                        $NOTMUCH_CONFIG or ~/.notmuch-config]
  -e ENABLE_FILTERS, --enable-filters=ENABLE_FILTERS
                        filter classes to use, separated by ',' [default:
                        filters specified in few's config]
  -d, --dry-run        don't change the db [default: False]
  -R REFERENCE_SET_SIZE, --reference-set-size=REFERENCE_SET_SIZE
                        size of the reference set [default: 1000]
  -T DAYS, --reference-set-timeframe=DAYS
                        do not use mails older than DAYS days [default: 30]
  -v, --verbose        be more verbose, can be given multiple times
```

## 4.1 Configuration File

Customization of tag filters takes place in `afew`'s config file in `~/.config/afew/config`.

## 4.2 NotMuch Config

`afew` tries to adapt to the `new` tag that `notmuch` sets on new email, but has mostly been developed and used against the `new` tag. To use that, make sure that `~/.notmuch-config` contains:

```
[new]
tags=new
```

## 4.3 Filter Configuration

You can modify filters, and define your own versions of the base Filter that allow you to tag messages in a similar way to the `notmuch tag` command, using the config file. The default config file is:

```
[SpamFilter]
[KillThreadsFilter]
[ListMailsFilter]
[ArchiveSentMailsFilter]
[InboxFilter]
```

See the [Filters](#) page for the details of those filters and the custom arguments they accept.

You can add filters based on the base filter as well. These can be customised by specifying settings beneath them. The standard settings, which apply to all filters, are:

**message** text that will be displayed while running this filter if the verbosity is high enough.

**query** the query to use against the messages, specified in standard notmuch format. Note that you don't need to specify the **new** tag - *afew* will add that when run with the `-new` flag.

**tags** the tags to add or remove for messages that match the query. Tags to add are preceded by a `+` and tags to remove are preceded by a `-`. Multiple tags are separated by semicolons.

**tags\_blacklist** if the message has one of these tags, don't add *tags* to it. Tags are separated by semicolons.

So to add the **deer** tag to any message to or from *antelope@deer.com* you could do:

```
[Filter.1]
query = 'antelope@deer.com'
tags = +deer
message = Wild animals ahoy
```

You can also (in combination with the `InboxFilter`) have email skip the Inbox by removing the `new` tag before you get to the `InboxFilter`:

```
[Filter.2]
query = from'pointyheaded@boss.com'
tags = -new;+boss
message = Message from above
```

## 4.4 Full Sample Config

Showing some sample configs is the easiest way to understand. The *notmuch* [initial tagging page](#) shows a sample config:

```
# immediately archive all messages from "me"
notmuch tag -new -- tag:new and from:me@example.com

# delete all messages from a spammer:
notmuch tag +deleted -- tag:new and from:spam@spam.com

# tag all message from notmuch mailing list
notmuch tag +notmuch -- tag:new and to:notmuch@notmuchmail.org

# finally, retag all "new" messages "inbox" and "unread"
notmuch tag +inbox +unread -new -- tag:new
```

The (roughly) equivalent set up in *afew* would be:

```
[ArchiveSentMailsFilter]

[Filter.1]
message = Delete all messages from spammer
query = from:spam@spam.com
tags = +deleted;-new

[Filter.2]
message = Tag all messages from the notmuch mailing list
query = to:notmuch@notmuchmail.org
tags = +notmuch

[InboxFilter]
```

Not that the queries do not generally include `tag:new` because this is implied when *afew* is run with the `-new` flag.

The differences between them is that

- the ArchiveSentMailsFilter will add the **sent** tag, as well as archiving the email. And it will not archive email that has been sent to one of your own addresses.
- the InboxFilter does not add the **unread** tag. But most mail clients will manage the unread status directly in maildir.

## 4.5 More Filter Examples

Here are a few more example filters from github dotfiles:

```
[Filter.1]
query = 'sicsa-students@sicsa.ac.uk'
tags = +sicsa
message = sicsa

[Filter.2]
query = 'from:foosoc.ed@gmail.com OR from:GT Silber OR from:lizzie.brough@eusa.ed.ac.
↳uk'
tags = +soc;+foo
message = foosoc

[Filter.3]
query = 'folder:gmail/G+'
tags = +G+
message = gmail spam

# skip inbox
[Filter.6]
query = 'to:notmuch@notmuchmail.org AND (subject:emacs OR subject:elisp OR "(defun"
↳OR "(setq" OR PATCH)'
tags = -new
message = notmuch emacs stuff
```





The default filter set (if you don't specify anything in the config) is:

```
[SpamFilter]
[KillThreadsFilter]
[ListMailsFilter]
[ArchiveSentMailsFilter]
[InboxFilter]
```

The standard filter *Configuration* can be applied to these filters as well. Though note that most of the filters below set their own value for message, query and/or tags, and some ignore some of the standard settings.

## 5.1 SpamFilter

The settings you can use are:

- spam\_tag = <tag>
- Add <tag> to all mails recognized as spam.
- The default is 'spam'.
- You may use it to tag your spam as 'junk', 'scum' or whatever suits your mood. Note that only a single tag is supported here.

Email will be considered spam if the header *X-Spam-Flag* is present.

## 5.2 KillThreadsFilter

If the new message has been added to a thread that has already been tagged **killed** then add the **killed** tag to this message. This allows for ignoring all replies to a particular thread.

## 5.3 ListMailsFilter

This filter looks for the *List-Id* header, and if it finds it, adds a tag **lists** and a tag named **lists/<list-id>**.

## 5.4 SentMailsFilter

The settings you can use are:

- `sent_tag = <tag>`
- Add `<tag>` to all mails sent from one of your configured mail addresses.
- The default is to add no tag, so you need to specify something.
- You may e.g. use it to tag all mails sent by you as 'sent'. This may make special sense in conjunction with a mail client that is able to not only search for threads but individual mails as well.

More accurately, it looks for emails that are from one of your addresses *and not* to any of your addresses.

- `to_transforms = <transformation rules>`
- Transform *To/Cc/Bcc* e-mail addresses to tags according to the specified rules. `<transformation rules>` is a space separated list consisting of 'user\_part@domain\_part:tags' style pairs. The colon separates the e-mail address to be transformed from tags it is to be transformed into. ':tags' is optional and if empty, 'user\_part' is used as tag. 'tags' can be a single tag or semi-colon separated list of tags.
- It can be used for example to easily tag posts sent to mailing lists which at this stage don't have *List-Id* field.

## 5.5 ArchiveSentMailsFilter

It extends *SentMailsFilter* with the following feature:

- Emails filtered by this filter have the **new** tag removed, so will not have the **inbox** tag added by the *InboxFilter*.

## 5.6 InboxFilter

This removes the **new** tag, and adds the **inbox** tag, to any message that isn't killed or spam. (The new tags are set in your notmuch config, and default to just **new**.)

## 5.7 HeaderMatchingFilter

This filter adds tags to a message if the named header matches the regular expression given. The tags can be set, or based on the match. The settings you can use are:

- `header = <header_name>`
- `pattern = <regex_pattern>`
- `tags = <tag_list>`

If you surround a tag with `{}` then it will be replaced with the named match.

Some examples are:

```
[HeaderMatchingFilter.1]
header = X-Spam-Flag
pattern = YES
tags = +spam

[HeaderMatchingFilter.2]
header = List-Id
pattern = <(P<list_id>.*>
tags = +lists;+{list_id}

[HeaderMatchingFilter.3]
header = X-Redmine-Project
pattern = (P<project>.*>
tags = +redmine;+{project}
```

SpamFilter and ListMailsFilter are implemented using HeaderMatchingFilter, and are only slightly more complicated than the above examples.

## 5.8 FolderNameFilter

For each email, it looks at all folders it is in, and uses the path and filename as a tag, for the email. So if you have a procmail or sieve set up that puts emails in folders for you, this might be useful.

- `folder_explicit_list = <folder list>`
- Tag mails with tag in `<folder list>` only. `<folder list>` is a space separated list, not enclosed in quotes or any other way.
- Empty list means all folders (of course blacklist still applies).
- The default is empty list.
- You may use it e.g. to set tags only for specific folders like ‘Sent’.
- `folder_blacklist = <folder list>`
- Never tag mails with tag in `<folder list>`. `<folder list>` is a space separated list, not enclosed in quotes or any other way.
- The default is to blacklist no folders.
- You may use it e.g. to avoid mails being tagged as ‘INBOX’ when there is the more standard ‘inbox’ tag.
- `folder_transforms = <transformation rules>`
- Transform folder names according to the specified rules before tagging mails. `<transformation rules>` is a space separated list consisting of ‘folder:tag’ style pairs. The colon separates the name of the folder to be transformed from the tag it is to be transformed into.
- The default is to transform to folder names.
- You may use the rules e.g. to transform the name of your ‘Junk’ folder into your ‘spam’ tag or fix capitalization of your draft and sent folder:

```
folder_transforms = Junk:spam Drafts:draft Sent:sent
```

- `folder_lowercases = true`
  - Use lowercase tags for all folder names
- `maildir_separator = <sep>`

- Use <sep> to split your maildir hierarchy into individual tags.
- The default is to split on ‘.’
- If your maildir hierarchy is represented in the filesystem as collapsed dirs, <sep> is used to split it again before applying tags. If your maildir looks like this:

```
[...]
/path/to/maildir/devel.afew/[cur|new|tmp]/...
/path/to/maildir/devel.alot/[cur|new|tmp]/...
/path/to/maildir/devel.notmuch/[cur|new|tmp]/...
[...]
```

the mails in your afew folder will be tagged with ‘devel’ and ‘afew’.

If instead your hierarchy is split by a more conventional ‘/’ or any other divider

```
[...]
/path/to/maildir/devel/afew/[cur|new|tmp]/...
/path/to/maildir/devel/alot/[cur|new|tmp]/...
/path/to/maildir/devel/notmuch/[cur|new|tmp]/...
[...]
```

you need to configure that divider to have your mails properly tagged:

```
maildir_separator = /
```

## 5.9 Customizing filters

To customize these filters, there are basically two different possibilities:

Let’s say you like the SpamFilter, but it is way too polite

1. Create an filter object and customize it

```
[SpamFilter.0] # note the index
message = meh
```

The index is required if you want to create a new SpamFilter *in addition to* the default one. If you need just one customized SpamFilter, you can drop the index and customize the default instance.

2. Create a new type...

```
[ShitFilter(SpamFilter)]
message = I hatez teh spam!
```

and create an object or two

```
[ShitFilter.0]
[ShitFilter.1]
message = Me hatez it too.
```

You can provide your own filter implementations too. You have to register your filters via entry points. See the `afew setup.py` for examples on how to register your filters. To add your filters, you just need to install your package in the context of the `afew` application.

## 6.1 Configuration Section

Here is a full sample configuration for move mode:

```
[MailMover]
folders = INBOX Junk
rename = False
max_age = 15

# rules
INBOX = 'tag:spam':Junk 'NOT tag:inbox':Archive
Junk = 'NOT tag:spam AND tag:inbox':INBOX 'NOT tag:spam':Archive
```

Below we explain what each bit of this means.

## 6.2 Rules

First you need to specify which folders should be checked for mails that are to be moved (as a whitespace separated list). Folder names containing whitespace need to be quoted:

```
folders = INBOX Junk "Sent Mail"
```

Then you have to specify rules that define move actions of the form

```
<src> = ['<qry>':<dst>]+
```

Every mail in the `<src>` folder that matches a `<qry>` will be moved into the `<dst>` folder associated with that query. A message that matches multiple queries will be copied to multiple destinations.

You can bind as many rules to a maildir folder as you deem necessary. Just add them as elements of a (whitespace separated) list.

Please note, though, that you need to specify at least one rule for every folder given by the *folders* option and at least one folder to check in order to use the move mode.

```
INBOX = 'tag:spam':Junk
```

will bind one rule to the maildir folder *INBOX* that states that all mails in said folder that carry (potentially among others) the tag **spam** are to be moved into the folder *Junk*.

With *<qry>* being an arbitrary notmuch query, you have the power to construct arbitrarily flexible rules. You can check for the absence of tags and look out for combinations of attributes:

```
Junk = 'NOT tag:spam AND tag:inbox':INBOX 'NOT tag:spam':Archive
```

The above rules will move all mails in *Junk* that don't have the **spam** tag but do have an **inbox** tag into the directory *INBOX*. All other mails not tagged with **spam** will be moved into *Archive*.

## 6.3 Max Age

You can limit the age of mails you want to move by setting the *max\_age* option in the configuration section. By providing

```
max_age = 15
```

afew will only check mails at most 15 days old.

## 6.4 Rename

Set this option if you are using the *mbsync* IMAP syncing tool. *mbsync* adds a unique identifier to files' names when it syncs them. If the *rename* option is not set, moving files can cause UID conflicts and prevent *mbsync* from syncing with error messages such as "Maildir error: duplicate UID 1234" or "UID 567 is beyond highest assigned UID 89".

When the option is set, *afew* will rename files while moving them, removing the UID but preserving other *mbsync* information. This allows *mbsync* to assign a new UID to the file and avoid UID conflicts.

If you are using *offlineimap*, you can safely ignore this option.

```
rename = True
```

## 6.5 Limitations

(1) Rules don't manipulate tags.

```
INBOX = 'NOT tag:inbox':Archive  
Junk = 'NOT tag:spam':INBOX
```

The above combination of rules might prove tricky, since you might expect de-spammed mails to end up in *INBOX*. But since the *Junk* rule will *not* add an **inbox** tag, the next run in move mode might very well move the matching mails into *Archive*.

Then again, if you remove the **spam** tag and do not set an **inbox** tag, how would you come to expect the mail would end up in your *INBOX* folder after moving it? ;)

(2) There is no 1:1 mapping between folders and tags. And that's a feature. If you tag a mail with two tags and there is a rule for each of them, both rules will apply. Your mail will be copied into two destination folders, then removed from its original location.





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## Extending *afew*

---

You can put python files in `~/config/afew/` and they will be imported by *afew*. If you use that python file to define a *Filter* class and use the *register\_filter* decorator then you can refer to it in your filter configuration.

So an example small filter you could add might be:

```
from afew.filters.BaseFilter import Filter
from afew.FilterRegistry import register_filter

PROJECT_MAPPING = {
    'fabric': 'deployment',
    'oldname': 'new-name',
}

@register_filter
class RedmineFilter(Filter):
    message = 'Create tag based on redmine project'
    query = 'NOT tag:redmine'

    def handle_message(self, message):
        project = message.get_header('X-Redmine-Project')
        if project in PROJECT_MAPPING:
            project = PROJECT_MAPPING[project]
        self.add_tags(message, 'redmine', project)
```

We have defined the *message* and *query* class variables that are used by the parent class *Filter*. The *message* is printed when running with verbose flags. The *query* is used to select messages to run against - here we ensure we don't bother looking at messages we've already looked at.

The *handle\_message()* method is the key one to implement. This will be called for each message that matches the query. The argument is a *notmuch message object* and the key methods used by the *afew* filters are *get\_header()*, *get\_filename()* and *get\_thread()*.

Of the methods inherited from the *Filter* class the key ones are *add\_tags()* and *remove\_tags()*, but read about the *Implementation* or just read the source code to get your own ideas.

Once you've defined your filter, you can add it to your config like any other filter:

```
[RedmineFilter]
```

## 8.1 Database Manager

The design of the database manager was inspired by alots database manager `alot.db.DBManager`.

**class** `afew.Database.Database`

Convenience wrapper around *notmuch*.

**add\_message** (*path*, *sync\_maildir\_flags=False*, *new\_mail\_handler=None*)

Adds the given message to the notmuch index.

**Parameters**

- **path** (*str*) – path to the message
- **sync\_maildir\_flags** (*bool*) – if *True* notmuch converts the standard maildir flags to tags
- **new\_mail\_handler** (a function that is called with a `notmuch.Message` object as its only argument) – callback for new messages

**Raises** `notmuch.NotmuchError` if adding the message fails

**Returns** a `notmuch.Message` object

**close** ()

Closes the notmuch database if it has been opened.

**do\_query** (*query*)

Executes a notmuch query.

**Parameters** **query** (*str*) – the query to execute

**Returns** the query result

**Return type** `notmuch.Query`

**get\_messages** (*query*, *full\_thread=False*)

Get all messages mathing the given query.

#### Parameters

- **query** (*str*) – the query to execute using `Database.do_query()`
- **full\_thread** (*bool*) – return all messages from matching threads

**Returns** an iterator over `notmuch.Message` objects

#### **remove\_message** (*path*)

Remove the given message from the notmuch index.

**Parameters** **path** (*str*) – path to the message

#### **walk\_replies** (*message*)

Returns all replies to the given message.

**Parameters** **message** (`notmuch.Message`) – the message to start from

**Returns** an iterator over `notmuch.Message` objects

#### **walk\_thread** (*thread*)

Returns all messages in the given thread.

**Parameters** **message** (`notmuch.Thread`) – the thread you are interested in

**Returns** an iterator over `notmuch.Message` objects

## 8.2 Filter

```
class afew.filters.BaseFilter.Filter (database, **kwargs)
```

#### **flush\_changes** ()

(Re)Initializes the data structures that hold the enqueued changes to the notmuch database.

## 8.3 Configuration management

## 8.4 Miscellaneous utility functions

```
afew.utils.filter_compat (*args)
```

Compatibility wrapper for filter builtin.

The semantic of the filter builtin has been changed in python3.x. This is a temporary workaround to support both python versions in one code base.

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