
lesana

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lesana is a python3 library to organize collections of various kinds. It is designed to have a data storage / serialization format that is friendly to git and other VCSs, but decent performances.

To reach this aim it uses `yaml` as its serialization format, which is easy to store in a VCS, share between people and synchronize between different computers, but it also keeps an index of this data in a local `xapian` database in order to allow for fast searches.

lesana supports collections of any kind, as long as their entries can be described with a mostly flat dictionary of fields of the types described in the documentation file `field_types`.

Some example collection schemas are provided, but one big strenght of lesana is the ability to customize your collection with custom fields by simply writing a personalized `settings.yaml`.

INSTALLATION

The source code for lesana can be downloaded from the git repository at <https://git.sr.ht/~valhalla/lesana>; releases are made on [pypi](#).

lesana expects to run on a POSIX-like system and requires the following dependencies:

- python3
- xapian
- ruamel.yaml
- jinja2
- dateutil
- [GitPython](#) optional, to add git support.

Under debian (and derivatives), the packages to install are:

```
apt install python3-jinja2 python3-ruamel.yaml python3-xapian \  
python3-dateutil python3-git
```

lesana can be run in place from the git checkout / extracted tarball; to use `setup.py` you will also need `setuptools` (e.g. from the `python3-setuptools` package under debian and derivatives).

LICENSE

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DOCUMENTATION

The documentation for the latest development version of lesana can be browsed online at <https://lesana.trueelena.org>; PDF and epub versions are also available¹.

The author can be contacted via email: webmaster AT trueelena DOT org.

3.1 User Documentation

Documentation that is useful for everybody.

3.1.1 Getting Started (Command Line)

lesana can be used from the command line through the `lesana` command; for more details run `lesana help`.

Many commands will try to open some file in an editor: they will attempt to use, in this order, `$EDITOR`, `sensible-editor` or as a fallback `vi`, which should be installed on any POSIX-like system.

To start a new collection, create a directory and run `lesana init` into it:

```
mkdir $DIRECTORY
cd $DIRECTORY
lesana init
```

It will create the basic file structure of a lesana collection, including a `settings.yaml` skeleton and it will initialize a git repository (use `--no-git` to skip this part and ignore all further git commands).

It will then open `settings.yaml` in an editor: fill in your list of fields and all other data, save and exit. You are now ready to commit the configuration for your new collection:

```
git commit -m 'Collection settings'
```

An empty collection is not very interesting: let us start adding new entries:

```
lesana new
```

It will again open an editor on a skeleton of entry where you can fill in the values. When you close the editor it will print the entry id, that you can use e.g. to edit again the same entry:

```
lesana edit $ENTRY_ID
```

After you've added a few entries, you can now search for some word that you entered in one of the indexed fields:

¹ Everything is also available via onion, at <http://aublvconhsl6cvcf3dbibffzih2un5bicp3s3b5qmkskof26p3pssqd.onion/>

```
lesana search some words
```

this will also print the entry ids of matching items, so that you can open them with `lesana edit`.

If you're using git, entries will be autoadded to the staging area, but you need to commit them, so that you can choose how often you do so.

Search results are limited by default to 12 matches; to get all results for your query you can use the option `--all`. This is especially useful when passing the results to a template:

```
lesana search --template templates/my_report.html --all \  
  some search terms \  
> some_search_terms-report.html
```

will generate an html file based on the jinja2 template `templates/my_report.html` with all the entries found for those search terms.

3.1.2 The settings file

The file `settings.yaml` defines the properties of a collection.

It is a yaml file with a dict of properties and their values.

name: the human readable name of the collection.

lang: the language of the collection; valid values are listed in the [xapian stemmer](#) documentation and are usually either the English name or the two letter ISO639 code of a language.

entry_label: a jinja2 template used to show an entry in the interface; beside the entry fields two useful variables are `eid` for the full entry ID and `short_id` for the short version.

default_sort: a list of field names (possibly prefixed by + or -) that are used by default to sort results of searches in the collection. The fields must be marked as sortable in their definition, see below.

fields: The list of fields used by the collection, as described below.

Field definitions

name: a name for the field (computer readable: keeping it lowercase alphabetic ascii is probably safer).

type: the type of the field: valid fields are listed in [lesana.types module](#) (see the `name` property for each field)

index: whether this field should be indexed: valid values are `free` for fields that should be available in the free text search and `field` for fields that should only be available by specifying the field name in the search.

sortable: boolean; whether this field is sortable. Sortable fields enable sorting the results and search by ranges, but having too many sortable fields make the search more resource intensive.

help: a description for the field; this is e.g. added to new entries as a comment.

default: the default value to use when creating an entry.

prefix: the optional term prefix used inside xapian: if you don't know what this means you should avoid using this, otherwise see [Term Prefixes](#) on the xapian documentation for details.

Some field types may add other custom properties.

list properties

list: the type of the entries in the list; note that neither lists of non uniform values nor lists of lists are supported (if you need those you can use the `yaml` generic type, or write your own derivative with an additional type).

integer properties

auto: automatic manipulation of the field contents.

The value of `increment` will autoincrement the value at every update.

The reference command-line client will run this update before editing an entry, allowing further changes from the user; a command line user can then decide to abort this change through the usual git commands.

Other clients may decide to use a different workflow.

increment: the amount by which an `auto: increment` field is incremented (negative values are of course allowed). Default is 1.

date and datetime properties

auto: automatic manipulation of the field contents.

The following values are supported.

creation autofill the field at creation time with the current UTC time (`datetime`) or local zone day (`date`).

update autofill the field when it is updated with the current UTC time (`datetime`) or local zone day (`date`).

The reference command line client will run this update before editing an entry, allowing further changes from the user; a command line user can then decide to abort this change through the usual git commands.

Other clients may decide to use a different workflow.

3.1.3 Search syntax

Searches in lesana use the human readable query string format defined by xapian.

The simplest search is just a list of terms: e.g. searching for `thing object` will find entries where either `thing` or `object` is present in one of the fields with `free` indexing.

It is also possible to specify that a term must be in one specific field: the syntax for this is the name of the field followed by `:` and the term, e.g. `name:object` will search for entries with the term `object` in the `name` field.

Search queries can of course include the usual logical operators AND, OR and NOT.

More modifiers are available; see the [Query Parser](#) documentation from xapian for details.

3.1.4 Moving Data between Collections

Entries can be exported from a lesana collection to another using the `lesana export` command and a jinja2 template.

The template should generate a yaml file that is a valid lesana entry for the destination collection and it can use the fields of the starting collection as variables. The variable `entry` is also available and gives complete access to the entry of the original collection, so fields with names that aren't valid jinja templates can be accessed as `entry.data[<field-name>]`.

E.g. to convert between a collection with fields `name`, `short-desc`, `desc` to a collection with fields `name`, `description` one could use the following template:

```
name: {{ name }}
description: |
  {{ entry.data.[short-desc] }}

  {{ desc | indent(width=4, first=False) }}
```

From the origin collection you can then run the command:

```
lesana export <path/to/destination/collection> <path/to/template>
```

to export all entries.

You can also export just a subset of entries by adding a xapian query with the parameter `--query`; you can test the search using:

```
lesana search --all <some search terms>
```

and then actually run the export with:

```
lesana search --query '<some search terms>' <destination><template>
```

note that in this second command the spaces in the search query have to be protected from the shell.

3.1.5 lesana derivatives

Front-ends

Collector

Collector is a Gtk3 app to manage collection inventories through yaml files, which also works on GNU/Linux mobile devices.

linkopedia

linkopedia is a read-only web interface to Lesana collections.

3.2 Developer Documentation

Documentation that is useful for developers who are using lesana as a library.

3.2.1 Promises

Semantic versioning

This project uses [semver](#).

Collection format stability

Future versions of lesana will be able to read collections written by older versions.

Older versions in the same mayor release will also be able to work concurrently on the same repository.

If in the future a change of formats will be required, conversions scripts will be written in a way that will make them as stable as possible, and will have enough test data to keep them maintained for the time being.

Disposable cache

Contrary to the yaml files, the xapian cache is considered disposable: from time to time there may be a need to delete the cache and reindex everything, either because of an upgrade or to perform repository maintenance.

Of course, effort will be made to reduce the need for this so that it only happens sporadically, but it will probably never completely disappear.

3.3 Contributor Documentation

Documentation that is useful for contributors of lesana.

3.3.1 Release procedure

- Check that the version number in setup.py and in docs/source/conf.py is correct.
- Check that the changelog is up to date.
- Generate the distribution files:

```
$ python3 setup.py sdist bdist_wheel
```

- Upload

```
$ twine upload -s dist/*
```

- Tag the uploaded version:

```
$ git tag -s v$VERSION
$ git push
$ git push --tags
```

for the tag content use something like:

```
Version $VERSION
* contents
* of the relevant
* changelog
```

3.4 Man Pages

3.4.1 lesana-edit

SYNOPSIS

lesana edit [-help] [-collection <collection>] [-no-git] <entry>

DESCRIPTION

Lesana edit will open an existing entry (specified by id or partial id) in an editor, so that it can be changed.

If the collection is configured to use git, after the editor has been closed, it will add the file to the git staging area, unless `--no-git` is given.

OPTIONS

- h, --help** Prints an help message and exits.
- collection COLLECTION, -c COLLECTION** The collection to work on. Default is `.`
- no-git** Don't add the new entry to git.

3.4.2 lesana-export

SYNOPSIS

lesana export [-h] [-collection COLLECTION] [-query QUERY] destination template

DESCRIPTION

Lesana export converts entries from one lesana collection to another, using a jinja2 template.

OPTIONS

- h, --help** Prints an help message and exits.
- collection COLLECTION, -c COLLECTION** The collection to work on. Default is `.`
- query QUERY, -q QUERY** Xapian query to search in the collection

3.4.3 lesana-index

SYNOPSIS

lesana index [-help] [-collection COLLECTION] [files [files ...]]

DESCRIPTION

Lesana index adds some entries to the xapian cache, listed by filename (by default all of the files found in the items directory).

OPTIONS

- h, --help** Prints an help message and exits.
- collection COLLECTION, -c COLLECTION** The collection to work on. Default is .
- reset** Delete the existing xapian cache before indexing.

3.4.4 lesana-init

SYNOPSIS

```
lesana init [-help] [-collection <collection>] [-no-git]
```

DESCRIPTION

lesana init initializes a new lesana collection.

It will create the directory (if it does not exist) and, unless `--no-git` is specified it will initialize it as a git repository and create a `.gitignore` file with some relevant contents.

It will then create a skeleton `settings.yaml` file and open it in an editor to start configuring the collection.

When leaving the editor, again unless `--no-git` is used, it will add this file to the git staging area, but not commit it.

OPTIONS

- help, -h** Prints an help message and exits.
- collection COLLECTION, -c COLLECTION** The directory where the collection will be initialized. Default is .
- no-git** Do not use git in the current collection.

3.4.5 lesana-new

SYNOPSIS

```
lesana new [-help] [-collection <collection>] [-no-git]
```

DESCRIPTION

Lesana new creates a new lesana entry.

It will create an empty entry and open an editor so that it can be filled.

If the collection is configured to use git, after the editor has been closed, it will add the file to the git staging area, unless `--no-git` is given.

OPTIONS

- h, --help** Prints an help message and exits.
- collection COLLECTION, -c COLLECTION** The collection to work on. Default is .
- no-git** Don't add the new entry to git.

3.4.6 lesana-rm

SYNOPSIS

lesana rm [-h] [--collection COLLECTION] entries [entries ...]

DESCRIPTION

Lesana rm removes an entry from the collection, removing both the file and the cached entry.

OPTIONS

- h, --help** Prints an help message and exits.
- collection COLLECTION, -c COLLECTION** The collection to work on. Default is .

3.4.7 lesana

SYNOPSIS

lesana [-help] <command>

DESCRIPTION

lesana is a tool to organize collections of various kinds. It is designed to have a data storage / serialization format that is friendly to git and other VCSs, but decent performances.

To reach this aim it uses [yaml](#) as its serialization format, which is easy to store in a VCS, share between people and synchronize between different computers, but it also keeps an index of this data in a local [xapian](#) database in order to allow for fast searches.

lesana supports collections of any kind, as long as their entries can be described with a mostly flat dictionary of fields of the types described in the documentation file `field_types`.

Some example collection schemas are provided, but one big strength of lesana is the ability to customize your collection with custom fields either by simply writing a personalized `settings.yaml`.

OPTIONS

- h, --help** Prints an help message and exits.

COMMANDS

- new(1)** Creates a new entry.
- edit(1)** Edits an existing entry.
- show(1)** Shows an existing entry.
- index(1)** Index some entries in the xapian cache.
- search(1)** Searches for entries in the xapian cache.
- export(1)** Exports entries from one lesana collection to another
- init(1)** Initialize a new lesana collection
- rm(1)** Removes an entry.

TEXT EDITOR

Many lesana subcommands will try to open files in a text editor chosen as follows:

- first, the value of \$EDITOR is tried
- then the command `sensible-editor`, as available under e.g. Debian and its derivatives
- lastly, it will try to fallback to `vi`, which should be available under any posix system.

3.4.8 lesana-search

SYNOPSIS

```
lesana search [-help] [--collection COLLECTION] [--template TEMPLATE] [--offset OFFSET] [--pagesize PAGESIZE] [--all] [--sort FIELD1 [--sort FIELD2 ...]] query [query ...]
```

DESCRIPTION

Lesana search allows one to make searches in the collection and render the results.

The section *Search syntax* in the full documentation describes the query syntax in more detail; it is available online at <https://lesana.trueelena.org/user/search.html> or it may be installed on your system (e.g. in Debian and derivatives it will be at `/usr/share/doc/lesana/html/user/search.html`).

By default entries are printed according to the `entry_label` from the `settings.yaml` file, but they can be rendered according to a jinja2 template.

OPTIONS

- h, --help** Prints an help message and exits.
- collection COLLECTION, -c COLLECTION** The collection to work on. Default is `.`
- template TEMPLATE, -t TEMPLATE** Template to use when displaying results
- offset OFFSET** `.`
- pagesize PAGESIZE** `.`
- all** Return all available results

--sort Sort the results by a sortable field.
This option can be added multiple times; prefix the name of the field with `-` to reverse the results (e.g. `--sort='-date'`).

3.4.9 lesana-show

SYNOPSIS

```
lesana show [-help] [-collection COLLECTION] [-template TEMPLATE] <entry>
```

DESCRIPTION

`lesana show` will print an entry (specified by id or partial id) to stdout.
A template can be specified with `--template <template>` to pretty print entries.

OPTIONS

-h, --help Prints an help message and exits.
--collection COLLECTION, -c COLLECTION The collection to work on. Default is `.`
--template TEMPLATE, -t TEMPLATE Use the specified template to display results.

TEMPLATES

The templates used by `lesana show` are jinja2 templates.

The entry fields are available as variables, and the full entry is available as the variable `entry` and can be used to give access to fields with names that aren't valid jinja2 variables e.g. as `entry.data[<field-name>]`.

3.5 lesana reference

3.5.1 lesana package

Subpackages

lesana.data package

Submodules

lesana.collection module

```
class lesana.collection.Collection (directory=None, itemdir='items')  
    Bases: object  
  
    PARSER_FLAGS = 23  
  
    entries_from_short_eid (seid)  
  
    entry_from_eid (eid)
```

get_all_documents ()

Yield all documents in the collection.

Note that the results can't be sorted, even if the collection has a `default_sort`; if you need sorted values you need to use a regular search with a query of '*'

get_all_search_results ()

get_search_results (*offset=0, pagesize=12*)

get_template (*template_fname, searchpath='.'*)

git_add_files (*files=[]*)

indexed_fields

classmethod init (*directory=None, git_enabled=True, edit_file=None, settings={}*)

Initialize a lesana repository

`directory` defaults to `.` if `git_enabled` is `True`, git support is enabled and if possible a git repository is initialized. `edit_file` is a synchronous function that runs on a filename (possibly opening the file in an editor) and should manage its own errors.

remove_entries (*eids*)

remove_file (*fname*)

save_entries (*entries=[]*)

start_search (*querystring, sort_by=None*)

Prepare a search for `querystring`.

update_cache (*fnames=None, reset=False*)

Update the xapian db with the data in files.

`fnames` is a list of *basenames* of files in `self.itemdir`.

If no files have been passed, add everything.

if `reset` the existing xapian db is deleted before indexing

Return the number of files that have been added to the cache.

update_field (*query, field, value*)

class `lesana.collection.Entry` (*collection, data={}, fname=None*)

Bases: `object`

auto ()

Update all fields of this entry, as required by the field settings.

This is called by the reference client before an edit, so that the user can make further changes.

Note that the stored file is not changed: if you need it you need to save the entry yourself.

empty_data ()

get_data ()

idterm

render (*template, searchpath='.'*)

short_id

validate ()

yaml_data

exception `lesana.collection.TemplatingError`

Bases: `Exception`

Raised when there are errors rendering a jinja template

lesana.command module

class `lesana.command.Command` (*collection_class*=<class 'lesana.collection.Collection'>, *entry_class*=<class 'lesana.collection.Entry'>)

Bases: `object`

class `lesana.command.Edit` (*collection_class*=<class 'lesana.collection.Collection'>, *entry_class*=<class 'lesana.collection.Entry'>)

Bases: `lesana.command.Command`

Edit a lesana entry

arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)'})]

main ()

class `lesana.command.Export` (*collection_class*=<class 'lesana.collection.Collection'>, *entry_class*=<class 'lesana.collection.Entry'>)

Bases: `lesana.command.Command`

Export entries to a different collection

arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)'})]

main ()

class `lesana.command.Index` (*collection_class*=<class 'lesana.collection.Collection'>, *entry_class*=<class 'lesana.collection.Entry'>)

Bases: `lesana.command.Command`

Index entries in a lesana collection

arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)'})]

main ()

class `lesana.command.Init` (*collection_class*=<class 'lesana.collection.Collection'>, *entry_class*=<class 'lesana.collection.Entry'>)

Bases: `lesana.command.Command`

Initialize a lesana collection

arguments = [(['--collection', '-c'], {'help': 'The directory to work on (default .)'})]

main ()

class `lesana.command.MainCommand`

Bases: `object`

commands = ()

main ()

class `lesana.command.New` (*collection_class*=<class 'lesana.collection.Collection'>, *entry_class*=<class 'lesana.collection.Entry'>)

Bases: `lesana.command.Command`

Create a new entry

arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)'})]

```

    main()
class lesana.command.Remove(collection_class=<class 'lesana.collection.Collection'>,    en-
                             try_class=<class 'lesana.collection.Entry'>)
    Bases: lesana.command.Command
    Remove an entry from a collection
    arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)
    main()
class lesana.command.Search(collection_class=<class 'lesana.collection.Collection'>,    en-
                              try_class=<class 'lesana.collection.Entry'>)
    Bases: lesana.command.Command
    Search for entries
    arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)
    main()
class lesana.command.Show(collection_class=<class 'lesana.collection.Collection'>,    en-
                            try_class=<class 'lesana.collection.Entry'>)
    Bases: lesana.command.Command
    Show a lesana entry
    arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)
    main()
class lesana.command.Update(collection_class=<class 'lesana.collection.Collection'>,    en-
                              try_class=<class 'lesana.collection.Entry'>)
    Bases: lesana.command.Command
    Update a field in multiple entries
    arguments = [(['--collection', '-c'], {'help': 'The collection to work on (default .)
    main()
lesana.command.edit_file_in_external_editor(filepath)

```

lesana.types module

Type checkers for lesana fields.

Warning: this part of the code is still in flux and it may change significantly in a future release.

```

class lesana.types.LesanaBoolean(field, types, value_index=None)
    Bases: lesana.types.LesanaType
    A boolean value
    empty()
    load(data)
    name = 'boolean'
class lesana.types.LesanaDate(field, types, value_index=None)
    Bases: lesana.types.LesanaType
    A date

```

auto (*value*)

Return an updated value.

If the field settings `auto` is `update` return the current date, otherwise the old value.

empty ()

load (*data*)

name = 'date'

class `lesana.types.LesanaDatetime` (*field, types, value_index=None*)

Bases: `lesana.type.LesanaType`

A datetime

auto (*value*)

Return an updated value.

If the field settings `auto` is `update` return the current datetime, otherwise the old value.

empty ()

load (*data*)

name = 'datetime'

class `lesana.types.LesanaDecimal` (*field, types, value_index=None*)

Bases: `lesana.type.LesanaType`

A floating point number

empty ()

load (*data*)

name = 'decimal'

class `lesana.types.LesanaFile` (*field, types, value_index=None*)

Bases: `lesana.type.LesanaString`

A path to a local file.

Relative paths are assumed to be relative to the base lesana directory (i.e. where `.lesana` lives)

name = 'file'

class `lesana.types.LesanaFloat` (*field, types, value_index=None*)

Bases: `lesana.type.LesanaType`

A floating point number

empty ()

load (*data*)

name = 'float'

class `lesana.types.LesanaInt` (*field, types, value_index=None*)

Bases: `lesana.type.LesanaType`

An integer number

auto (*value*)

Return an updated value.

If the field settings `auto` is `increment` return the value incremented by the value of the field setting `increment` (default 1).


```

    empty ()
    load (data)
    name = 'integer'
class lesana.types.LesanaList (field, types, value_index=None)
    Bases: lesana.types.LesanaType
    A list of other values
    empty ()
    index (doc, indexer, value)
        Index a value for this field type.
        Override this for types that need any kind of special treatment to be indexed.
        See LesanaList for an idea on how to do so.
    load (data)
    name = 'list'
class lesana.types.LesanaString (field, types, value_index=None)
    Bases: lesana.types.LesanaType
    A string of unicode text
    empty ()
    load (data)
    name = 'string'
class lesana.types.LesanaText (field, types, value_index=None)
    Bases: lesana.types.LesanaString
    A longer block of unicode text
    name = 'text'
class lesana.types.LesanaTimestamp (field, types, value_index=None)
    Bases: lesana.types.LesanaType
    A unix timestamp, assumed to be UTC
    empty ()
    load (data)
    name = 'timestamp'
class lesana.types.LesanaType (field, types, value_index=None)
    Bases: object
    Base class for lesana field types.
    auto (value)
        Return an updated value, as appropriate for the field.
        Default is to return the value itself, but types can use their configuration to e.g. increment a numerical
        value or return the current date(time).
    empty ()

```

index (*doc, indexer, value*)

Index a value for this field type.

Override this for types that need any kind of special treatment to be indexed.

See `LesanaList` for an idea on how to do so.

load (*data*)

class `lesana.types.LesanaURL` (*field, types, value_index=None*)

Bases: `lesana.types.LesanaString`

An URL

name = 'url'

exception `lesana.types.LesanaValueError`

Bases: `ValueError`

Raised in case of validation errors.

class `lesana.types.LesanaYAML` (*field, types, value_index=None*)

Bases: `lesana.type.LesanaType`

Free YAML contents (no structure is enforced)

empty ()

load (*data*)

name = 'yaml'

3.6 Indices and tables

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