Skip to main content
Back to top
`Ctrl`+`K`
[![conda 25.1.2.dev29 documentation -
Home](///_static/conda_logo_full.svg)](///index.html)
* [Conda](https://docs.conda.io/projects/conda/) * [Conda-build](https://docs.conda.io/projects/conda-build) * [Miniconda](https://docs.anaconda.com/free/miniconda/) * conda.org
* [GitHub](https://github.com/conda/conda "GitHub")
* [![Element](///_static/element_logo.svg)](http://bit.ly/conda-chat-room "Element") * [Discourse](https://conda.discourse.group/ "Discourse")
* [Conda](https://docs.conda.io/projects/conda/)
* [Conda-build](https://docs.conda.io/projects/conda-build)
* [Miniconda](https://docs.anaconda.com/free/miniconda/)
* conda.org
* [GitHub](https://github.com/conda/conda "GitHub") * [![Element](///_static/element_logo.svg)](http://bit.ly/conda-chat-room "Element") * [Discourse](https://conda.discourse.group/ "Discourse")

* [User guide](///user-guide/index.html)
* [Getting started with conda](///user-guide/getting-started.html)
* [Installing conda](///user-guide/install/index.html)
* [Installing on Windows](///user-guide/install/windows.html)
* [Installing on macOS](///user-guide/install/macos.html)
* [Installing on Linux](///user-guide/install/linux.html)
* [RPM and Debian Repositories for Miniconda](///user-guide/install/rpm-debian.html)
* [Tasks](///user-guide/tasks/index.html)
* [Managing conda](///user-guide/tasks/manage-conda.html)
* [Managing environments](///user-guide/tasks/manage-environments.html)
* [Managing channels](///user-guide/tasks/manage-channels.html)
* [Managing packages](///user-guide/tasks/manage-pkgs.html)
* [Managing Python](///user-guide/tasks/manage-python.html)
* [Managing virtual packages](///user-guide/tasks/manage-virtual.html)
* [Creating custom channels](///user-guide/tasks/create-custom-channels.html)
* [Creating projects](///user-guide/tasks/creating-projects.html)
* [Viewing command-line help](///user-guide/tasks/view-command-line-help.html)
* [Configuration](///user-guide/configuration/index.html)
* [Using the .condarc conda configuration
file](///user-guide/configuration/use-condarc.html)
* [Settings](///user-guide/configuration/settings.html)
* [Administering a multi-user conda
installation](///user-guide/configuration/admin-multi-user-install.html)
* [Mirroring channels](///user-guide/configuration/mirroring.html)

* [Disabling SSL verification](../../../user-guide/configuration/disable-ssl-verification.html)

```
* [Using non-standard certificates](../../../user-guide/configuration/non-standard-certs.html)
                         [Using
                                   Custom
                                               Locations
                                                            for
                                                                  Environment
                                                                                  and
                                                                                         Package
Cache](../../../user-guide/configuration/custom-env-and-pkg-locations.html)
   * [Improving interoperability with pip](../../../user-guide/configuration/pip-interoperability.html)
   * [Using the free channel](../../../user-guide/configuration/free-channel.html)
  * [Concepts](../../../user-guide/concepts/index.html) ___
   * [Commands](../../../user-guide/concepts/conda-commands.html)
   * [Packages](../../../user-quide/concepts/packages.html)
   * [Package specification](../../../user-guide/concepts/pkg-specs.html)
   * [Package search and install specifications](../../../user-guide/concepts/pkg-search.html)
   * [Channels](../../../user-guide/concepts/channels.html)
   * [Environments](../../../user-guide/concepts/environments.html)
   * [Installing with conda](../../../user-guide/concepts/installing-with-conda.html)
   * [Performance](../../../user-guide/concepts/conda-performance.html)
   * [Conda for data scientists](../../../user-guide/concepts/data-science.html)
   * [Plugins](../../../user-guide/concepts/conda-plugins.html)
  * [Troubleshooting](../../../user-guide/troubleshooting.html)
  * [Cheatsheet](../../../user-guide/cheatsheet.html)
 * [Configuration](../../../configuration.html)
 * [Commands](../../../commands/index.html)
  * [`conda clean`](../../../commands/clean.html)
  * [`conda compare`](../../../commands/compare.html)
  * [`conda config`](../../../commands/config.html)
  * [`conda create`](../../../commands/create.html)
  * [`conda doctor`](../../../commands/doctor.html)
  * [`conda env`](../../../commands/env/index.html)
   * [` conda env config`](../../../commands/env/config/index.html) ___
```

```
* [` conda env config vars`](../../../commands/env/config/vars/index.html) ___
    * [` conda env config vars list`](../../../commands/env/config/vars/list.html)
    * [`conda env config vars set`](../../../commands/env/config/vars/set.html)
    * [`conda env config vars unset`](../../../commands/env/config/vars/unset.html)
  * [`conda env create`](../../../commands/env/create.html)
  * [`conda env export`](../../../commands/env/export.html)
  * [`conda env list`](../../../commands/env/list.html)
  * [`conda env remove`](../../../commands/env/remove.html)
  * [`conda env update`](../../../commands/env/update.html)
* [`conda info`](../../../commands/info.html)
* [`conda init`](../../../commands/init.html)
* [`conda install`](../../../commands/install.html)
 * [`conda list`](../../../commands/list.html)
* [`conda notices`](../../../commands/notices.html)
 * [`conda package`](../../../commands/package.html)
 * [`conda remove`](../../../commands/remove.html)
 * [`conda rename`](../../../commands/rename.html)
* [`conda run`](../../../commands/run.html)
* [`conda search`](../../../commands/search.html)
 * [`conda update`](../../../commands/update.html)
* [Release notes](../../../release-notes.html)
* [Glossary](../../../glossary.html)
* [Developer guide](../../../index.html) ___
 * [Architecture](../../../architecture.html)
 * [Contributing to conda](../../../contributing.html)
 * [Development Environment](../../../development-environment.html)
 * [Deep dives](../../../deep-dives/index.html) ___
```

```
* [` conda install`](../../../deep-dives/install.html)
 * [`conda init` and `conda activate`](../../../deep-dives/activation.html)
 * [`conda config` and context](../../../deep-dives/context.html)
 * [Solvers](../../../deep-dives/solvers.html)
 * [Logging](../../../deep-dives/logging.html)
* [Writing Tests](../../../writing-tests/index.html) ___
 * [Integration Tests](../../.writing-tests/integration-tests.html)
* [Deprecations](../../../deprecations.html)
* [Releasing](../../../releasing.html)
* [Plugins](../../../plugins/index.html)
 * [Auth Handlers](../../plugins/auth_handlers.html)
 * [Health Checks](../../../plugins/health_checks.html)
 * [Request Headers](../../../plugins/request_headers.html)
 * [Post-commands](../../../plugins/post_commands.html)
 * [Pre-commands](../../../plugins/pre commands.html)
 * [Reporter Backends](../../../plugins/reporter_backends.html)
 * [Settings](../../../plugins/settings.html)
 * [Solvers](../../../plugins/solvers.html)
 * [Subcommands](../../../plugins/subcommands.html)
 * [Virtual Packages](../../../plugins/virtual packages.html)
* [Specifications](../../../specs/index.html) ___
 * [Technical specification: solver state](../../../specs/solver-state.html)
* [API](../../../api.html)
 * [` conda`](../../index.html) ___
  * [` __main__`](../../__main__/index.html)
  * [` vendor`](../../ vendor/index.html)
   * [`frozendict`](../../_vendor/frozendict/index.html)
```

```
* [`_version`](../../_version/index.html)
* [`activate`](../../activate/index.html)
* [`api`](../../api/index.html)
* [`auxlib`](../../auxlib/index.html)
 * [` collection`](../../auxlib/collection/index.html)
 * [`compat`](../../auxlib/compat/index.html)
 * [`decorators`](../../auxlib/decorators/index.html)
 * [`entity`](../../auxlib/entity/index.html)
 * [`exceptions`](../../auxlib/exceptions/index.html)
 * [`ish`](../../auxlib/ish/index.html)
 * [`logz`](../../auxlib/logz/index.html)
 * [`type_coercion`](../../auxlib/type_coercion/index.html)
* [`base`](../../base/index.html) ___
 * [`constants`](../../base/constants/index.html)
 * [`context`](../../base/context/index.html)
* [`cli`](../../cli/index.html) ___
 * [`actions`](../../cli/actions/index.html)
 * [`common`](../../cli/common/index.html)
 * [`conda_argparse`](../../cli/conda_argparse/index.html)
 * [`find_commands`](../../cli/find_commands/index.html)
 * [`helpers`](../../cli/helpers/index.html)
 * [`install`](../../cli/install/index.html)
 * [`main`](../../cli/main/index.html)
 * [`main_clean`](../../cli/main_clean/index.html)
 * [`main_commands`](../../cli/main_commands/index.html)
 * [`main compare`](../../cli/main compare/index.html)
```

* [`main_config`](../../cli/main_config/index.html)

```
* [`main_create`](../../cli/main_create/index.html)
 * [`main_env`](../../cli/main_env/index.html)
 * [`main_env_config`](../../cli/main_env_config/index.html)
 * [`main env create`](../../cli/main env create/index.html)
 * [`main_env_export`](../../cli/main_env_export/index.html)
 * [`main_env_list`](../../cli/main_env_list/index.html)
 * [`main_env_remove`](../../cli/main_env_remove/index.html)
 * [`main env update`](../../cli/main env update/index.html)
 * [`main env vars`](../../cli/main env vars/index.html)
 * [`main export`](../../cli/main export/index.html)
 * [`main info`](../../cli/main info/index.html)
 * [`main_init`](../../cli/main_init/index.html)
 * [`main_install`](../../cli/main_install/index.html)
 * [`main list`](../../cli/main list/index.html)
 * [`main_mock_activate`](../../cli/main_mock_activate/index.html)
 * [`main_mock_deactivate`](../../cli/main_mock_deactivate/index.html)
 * [`main_notices`](../../cli/main_notices/index.html)
 * [`main_package`](../../cli/main_package/index.html)
 * [`main pip`](../../cli/main pip/index.html)
 * [`main remove`](../../cli/main remove/index.html)
 * [`main_rename`](../../cli/main_rename/index.html)
 * [`main_run`](../../cli/main_run/index.html)
 * [`main_search`](../../cli/main_search/index.html)
 * [`main_update`](../../cli/main_update/index.html)
 * [`python_api`](../../cli/python_api/index.html)
* [`common`](../index.html)
```

* `_logic`

```
* [`_os`](../_os/index.html) ___
  * [` linux`](../_os/linux/index.html)
  * [`osx`](../_os/osx/index.html)
  * [`unix`](../_os/unix/index.html)
  * [`windows`](../_os/windows/index.html)
 * [`compat`](../compat/index.html)
 * [`configuration`](../configuration/index.html)
 * [`constants`](../constants/index.html)
 * [`disk`](../disk/index.html)
 * [`io`](../io/index.html)
 * [`iterators`](../iterators/index.html)
 * [`logic`](../logic/index.html)
 * [`path`](../path/index.html) ___
  * [`_cygpath`](../path/_cygpath/index.html)
  * [`directories`](../path/directories/index.html)
  * [`python`](../path/python/index.html)
  * [`windows`](../path/windows/index.html)
 * [`pkg_formats`](../pkg_formats/index.html) ___
  * [`python`](../pkg_formats/python/index.html)
 * [`serialize`](../serialize/index.html)
 * [`signals`](../signals/index.html)
 * [`toposort`](../toposort/index.html)
 * [`url`](../url/index.html)
* [`core`](../../core/index.html) ___
 * [` envs_manager`](../../core/envs_manager/index.html)
 * [`index`](../../core/index/index.html)
```

* [`initialize`](../../core/initialize/index.html)

```
* [`link`](../../core/link/index.html)
 * [`package_cache_data`](../../core/package_cache_data/index.html)
 * [`path_actions`](../../core/path_actions/index.html)
 * [`portability`](../../core/portability/index.html)
 * [`prefix_data`](../../core/prefix_data/index.html)
 * [`solve`](../../core/solve/index.html)
 * [`subdir_data`](../../core/subdir_data/index.html)
* [`deprecations`](../../deprecations/index.html)
* [`env`](../../env/index.html)
 * [` env`](../../env/env/index.html)
 * [`installers`](../../env/installers/index.html) ___
  * [`base`](../../env/installers/base/index.html)
  * [`conda`](../../env/installers/conda/index.html)
  * [`pip`](../../env/installers/pip/index.html)
 * [`pip_util`](../../env/pip_util/index.html)
 * [`specs`](../../env/specs/index.html) ___
  * [`binstar`](../../env/specs/binstar/index.html)
  * [`requirements`](../../env/specs/requirements/index.html)
  * ['yaml_file'](../../env/specs/yaml_file/index.html)
* [`exception_handler`](../../exception_handler/index.html)
* [`exceptions`](../../exceptions/index.html)
* [`exports`](../../exports/index.html)
* [`gateways`](../../gateways/index.html) ___
 * [` anaconda_client`](../../gateways/anaconda_client/index.html)
 * [`connection`](../../gateways/connection/index.html) ___
  * [` adapters`](../../gateways/connection/adapters/index.html) ___
   * [`ftp`](../../gateways/connection/adapters/ftp/index.html)
```

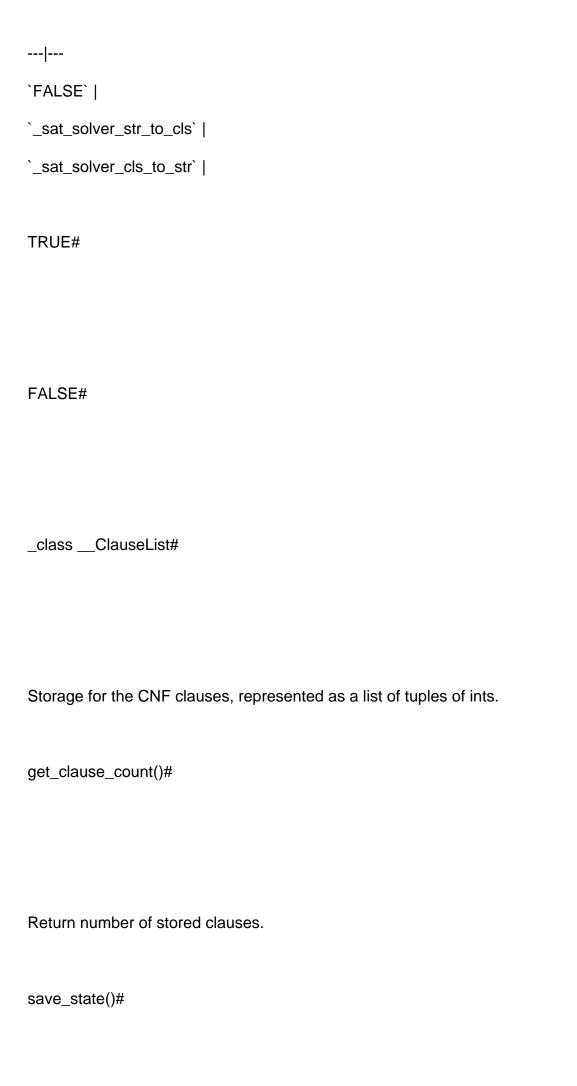
```
* [`http`](../../gateways/connection/adapters/http/index.html)
    * [`localfs`](../../gateways/connection/adapters/localfs/index.html)
    * [`s3`](../../gateways/connection/adapters/s3/index.html)
  * [`download`](../../gateways/connection/download/index.html)
  * [`session`](../../gateways/connection/session/index.html)
 * [`disk`](../../gateways/disk/index.html) ___
  * [` create`](../../gateways/disk/create/index.html)
  * [`delete`](../../gateways/disk/delete/index.html)
  * [`link`](../../gateways/disk/link/index.html)
  * [`lock`](../../gateways/disk/lock/index.html)
  * [`permissions`](../../gateways/disk/permissions/index.html)
  * [`read`](../../gateways/disk/read/index.html)
  * [`test`](../../gateways/disk/test/index.html)
  * [`update`](../../gateways/disk/update/index.html)
 * [`logging`](../../gateways/logging/index.html)
 * [`repodata`](../../gateways/repodata/index.html) ___
  * [` jlap`](../../gateways/repodata/jlap/index.html) ___
   * [`core`](../../gateways/repodata/jlap/core/index.html)
   * [`fetch`](../../gateways/repodata/jlap/fetch/index.html)
   * [`interface`](../../gateways/repodata/jlap/interface/index.html)
  * [`lock`](../../gateways/repodata/lock/index.html)
 * [`subprocess`](../../gateways/subprocess/index.html)
* [`history`](../../history/index.html)
* [`instructions`](../../instructions/index.html)
* [`misc`](../../misc/index.html)
* [`models`](../../models/index.html)
 * [` channel`](../../models/channel/index.html)
```

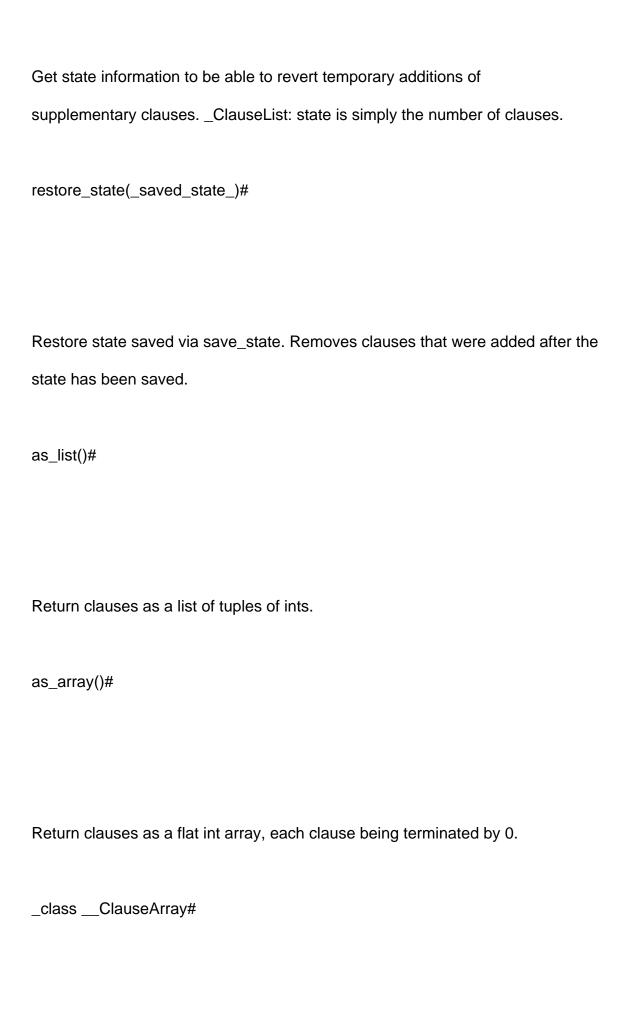
```
* [`dist`](../../models/dist/index.html)
 * [`enums`](../../models/enums/index.html)
 * [`leased_path_entry`](../../models/leased_path_entry/index.html)
 * [`match_spec`](../../models/match_spec/index.html)
 * [`package_info`](../../models/package_info/index.html)
 * [`prefix_graph`](../../models/prefix_graph/index.html)
 * [`records`](../../models/records/index.html)
 * [`version`](../../models/version/index.html)
* [`notices`](../../notices/index.html)
 * [` cache`](../../notices/cache/index.html)
 * [`core`](../../notices/core/index.html)
 * [`fetch`](../../notices/fetch/index.html)
 * [`types`](../../notices/types/index.html)
 * [`views`](../../notices/views/index.html)
* [`plan`](../../plan/index.html)
* [`plugins`](../../plugins/index.html) ___
 * [`hookspec'](../../plugins/hookspec/index.html)
 * [`manager`](../../plugins/manager/index.html)
 * [`post_solves`](../../plugins/post_solves/index.html) ___
  * [` signature_verification`](../../plugins/post_solves/signature_verification/index.html)
 * [`reporter_backends`](../../plugins/reporter_backends/index.html) ___
  * [` console`](../../plugins/reporter_backends/console/index.html)
  * [`json`](../../plugins/reporter_backends/json/index.html)
 * [`solvers`](../../plugins/solvers/index.html)
 * [`subcommands`](../../plugins/subcommands/index.html) ___
  * [` doctor`](../../plugins/subcommands/doctor/index.html) ___
   * [` health_checks`](../../plugins/subcommands/doctor/health_checks/index.html)
```

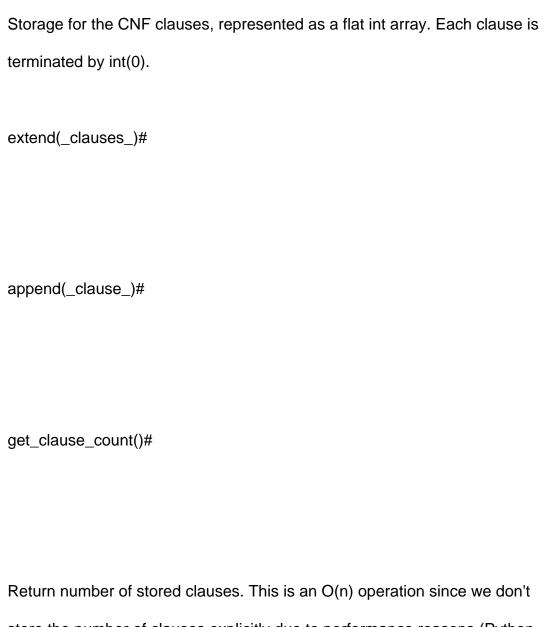
```
* [`types`](../../plugins/types/index.html)
  * [`virtual_packages`](../../plugins/virtual_packages/index.html) ___
   * [`archspec`](../../plugins/virtual_packages/archspec/index.html)
   * [`conda`](../../plugins/virtual_packages/conda/index.html)
   * [`cuda`](../../plugins/virtual_packages/cuda/index.html)
   * [`freebsd`](../../plugins/virtual_packages/freebsd/index.html)
   * [`linux`](../../plugins/virtual_packages/linux/index.html)
   * [`osx`](../../plugins/virtual_packages/osx/index.html)
   * [`windows`](../../plugins/virtual_packages/windows/index.html)
 * [`reporters`](../../reporters/index.html)
 * [`resolve`](../../resolve/index.html)
 * [`testing`](../../testing/index.html) ___
  * [` cases`](../../testing/cases/index.html)
  * [`fixtures`](../../testing/fixtures/index.html)
  * [`gateways`](../../testing/gateways/index.html) ___
   * [` fixtures`](../../testing/gateways/fixtures/index.html)
  * [`helpers`](../../testing/helpers/index.html)
  * [`integration`](../../testing/integration/index.html)
  * [`notices`](../../testing/notices/index.html) ___
   * [` fixtures`](../../testing/notices/fixtures/index.html)
   * [`helpers`](../../testing/notices/helpers/index.html)
  * [`solver_helpers`](../../testing/solver_helpers/index.html)
 * [`trust`](../../trust/index.html) ___
  * [` constants`](../../trust/constants/index.html)
  * [`signature_verification`](../../trust/signature_verification/index.html)
 * [`utils`](../../utils/index.html)
* [`conda_env`](../../conda_env/index.html) ___
```

```
* [`installers`](../../conda_env/installers/index.html)
 * [ ___](../../../index.html)
 * [Developer guide](../../../index.html)
 * [` common`](../index.html)
# `_logic`#
## Classes#
`ClauseList` | Storage for the CNF clauses, represented as a list of tuples of ints.
---|---
`_ClauseArray` | Storage for the CNF clauses, represented as a flat int array.
`_SatSolver` | Simple wrapper to call a SAT solver given a _ClauseList/_ClauseArray instance.
`_PycoSatSolver` | Simple wrapper to call a SAT solver given a _ClauseList/_ClauseArray instance.
`_PyCryptoSatSolver` | Simple wrapper to call a SAT solver given a _ClauseList/_ClauseArray
instance.
`_PySatSolver` | Simple wrapper to call a SAT solver given a _ClauseList/_ClauseArray instance.
`Clauses` |
## Attributes#
`TRUE`|
```

* [`cli`](../../conda_env/cli/index.html)







Return number of stored clauses. This is an O(n) operation since we don't store the number of clauses explicitly due to performance reasons (Python interpreter overhead in self.append).

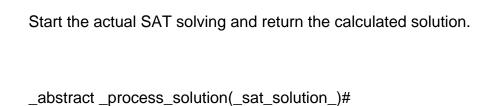
save_state()#

Get state information to be able to revert temporary additions of supplementary clauses. _ClauseArray: state is the length of the int array, NOT number of clauses.



```
as_list()#
save_state()#
restore_state(_saved_state_)#
run(_m_ , _** kwargs_)#
_abstract _setup(_m_ , _** kwargs_)#
Create a solver instance, add the clauses to it, and return it.
```

_abstract _invoke(_solver_)#



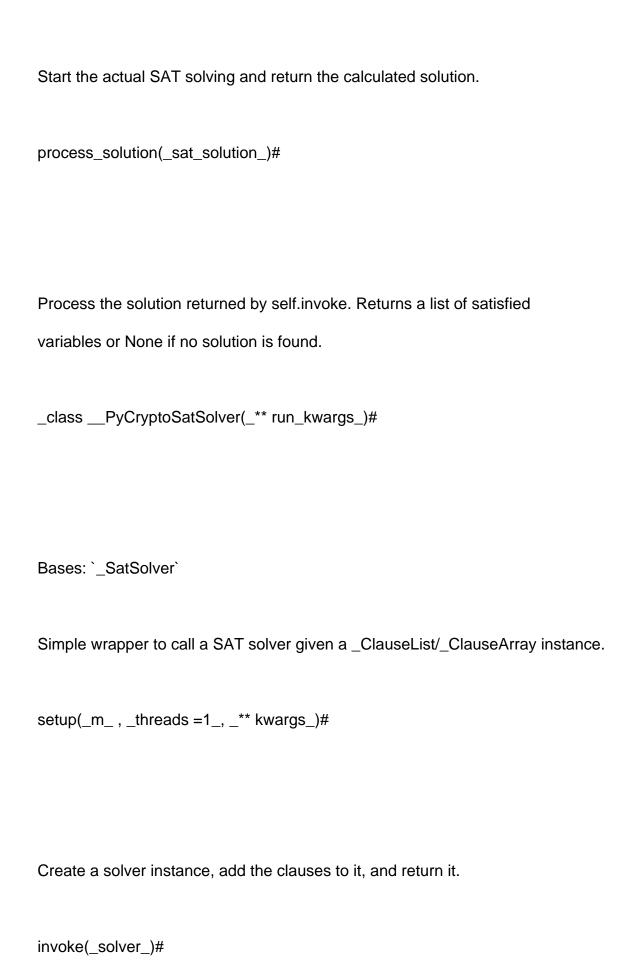
Process the solution returned by self.invoke. Returns a list of satisfied variables or None if no solution is found.

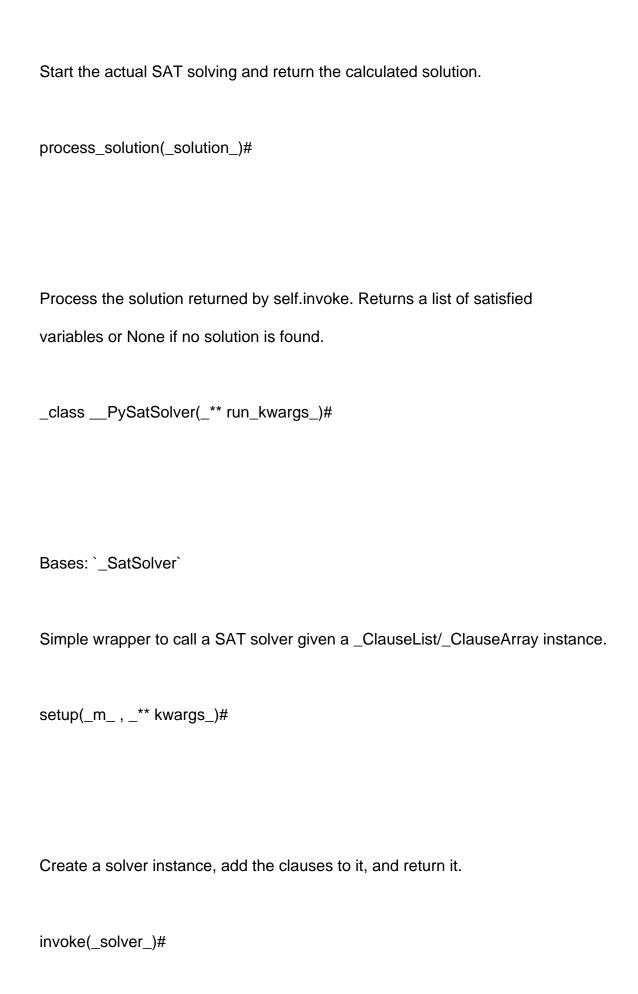
```
_class __PycoSatSolver(_** run_kwargs_)#
```

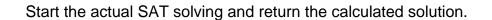
Bases: `_SatSolver`

Simple wrapper to call a SAT solver given a _ClauseList/_ClauseArray instance.

Create a solver instance, add the clauses to it, and return it.







process_solution(_sat_solution_)#

Process the solution returned by self.invoke. Returns a list of satisfied variables or None if no solution is found.

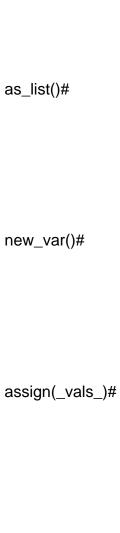
_sat_solver_str_to_cls#

_sat_solver_cls_to_str#

_class _Clauses(_m =0_, _sat_solver_str

=_sat_solver_cls_to_str[_PycoSatSolver]_)#

get_clause_count()#



Not(_x_ , _polarity =None_, _add_new_clauses =False_)#

And(_f_ , _g_ , _polarity_ , _add_new_clauses =False_)#

Or(_f_ , _g_ , _polarity_ , _add_new_clauses =False_)#

Xor(_f_ , _g_ , _polarity_ , _add_new_clauses =False_)#

ITE(_c_ , _t_ , _f_ , _polarity_ , _add_new_clauses =False_)#

All(_iter_ , _polarity =None_)#

Any(_iter_ , _polarity_)#

AtMostOne_NSQ(_vals_ , _polarity_)#

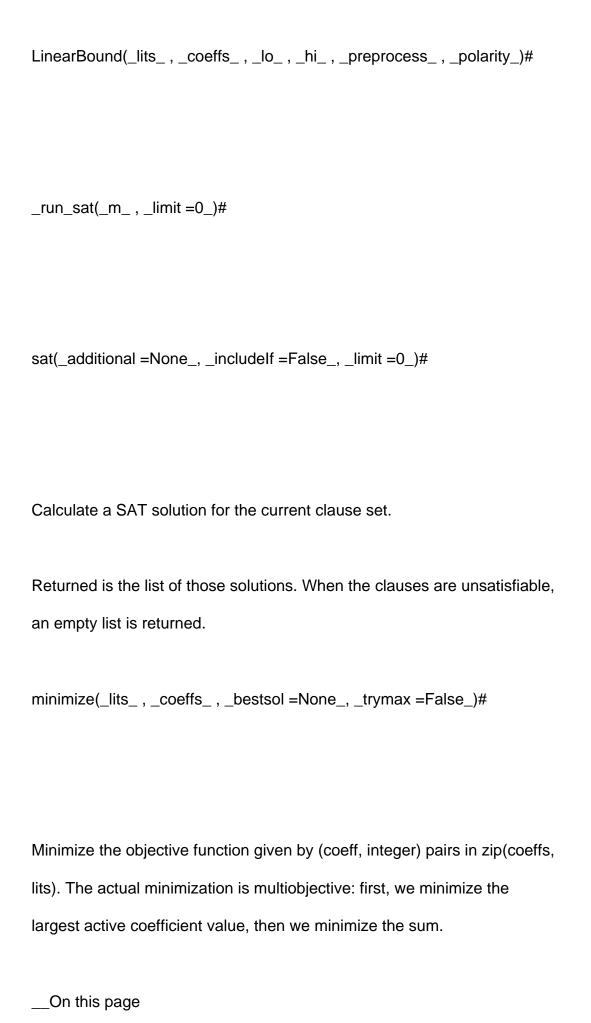
AtMostOne_BDD(_vals_ , _polarity =None_)#

ExactlyOne_NSQ(_vals_ , _polarity_)#

ExactlyOne_BDD(_vals_ , _polarity_)#

LB_Preprocess(_lits_ , _coeffs_)#

BDD(_lits_ , _coeffs_ , _nterms_ , _lo_ , _hi_ , _polarity_)#



* Classes * Attributes * `TRUE` * `FALSE` * `_ClauseList` * `_ClauseList.get_clause_count()` * `_ClauseList.save_state()` * `_ClauseList.restore_state()` * `_ClauseList.as_list()` * `_ClauseList.as_array()` * `_ClauseArray` * `_ClauseArray.extend()` * `_ClauseArray.append()` * `_ClauseArray.get_clause_count()` * `_ClauseArray.save_state()` * `_ClauseArray.restore_state()` * `_ClauseArray.as_list()` * `_ClauseArray.as_array()` * ` SatSolver` * `_SatSolver.get_clause_count()` * `_SatSolver.as_list()` * `_SatSolver.save_state()` * `_SatSolver.restore_state()` * `_SatSolver.run()` * `_SatSolver.setup()` * `_SatSolver.invoke()` * `_SatSolver.process_solution()`

```
* `_PycoSatSolver`
 * `_PycoSatSolver.setup()`
 * `_PycoSatSolver.invoke()`
 * `_PycoSatSolver.process_solution()`
* `_PyCryptoSatSolver`
 * `_PyCryptoSatSolver.setup()`
 * `_PyCryptoSatSolver.invoke()`
 * `_PyCryptoSatSolver.process_solution()`
* `_PySatSolver`
 * `_PySatSolver.setup()`
 * `_PySatSolver.invoke()`
 * `_PySatSolver.process_solution()`
* `_sat_solver_str_to_cls`
* `_sat_solver_cls_to_str`
* `Clauses`
 * `Clauses.get_clause_count()`
 * `Clauses.as_list()`
 * `Clauses.new_var()`
 * `Clauses.assign()`
 * `Clauses.Combine()`
 * `Clauses.Eval()`
 * `Clauses.Prevent()`
 * `Clauses.Require()`
 * `Clauses.Not()`
 * `Clauses.And()`
 * `Clauses.Or()`
 * `Clauses.Xor()`
```

```
* `Clauses.ITE()`
   * `Clauses.All()`
   * `Clauses.Any()`
   * `Clauses.AtMostOne NSQ()`
   * `Clauses.AtMostOne_BDD()`
   * `Clauses.ExactlyOne_NSQ()`
   * `Clauses.ExactlyOne_BDD()`
   * `Clauses.LB_Preprocess()`
   * `Clauses.BDD()`
   * `Clauses.LinearBound()`
   * `Clauses._run_sat()`
   * `Clauses.sat()`
   * `Clauses.minimize()`
[ __Edit on GitHub](https://github.com/conda/conda/edit/main/docs/source/dev-
guide/api/conda/common/_logic/index.rst)
[__Show Source](../../../_sources/dev-
guide/api/conda/common/_logic/index.rst.txt)
© Copyright 2017, Anaconda, Inc.
Created using [Sphinx](https://www.sphinx-doc.org/) 7.4.7.
[ Analytics Dashboard __](https://docs-conda-io.goatcounter.com "Analytics
Dashboard")
```

Built with the [PyData Sphinx Theme](https://pydata-sphinx-

theme.readthedocs.io/en/stable/index.html) 0.15.4.