

Build Automation for Ciao

REFERENCE MANUAL

The Ciao Documentation Series

<https://ciao-lang.org/>

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1 Summary

`ciao_builder` is a build automation (https://en.wikipedia.org/wiki/Build_automation) system for managing Ciao libraries and programs. `ciao_builder` works on structured collections of code, dubbed as bundles.

2 Introduction

The Ciao builder manages collections of source code, implementing the automatic configuration, build, (un)installation, packing, and cleaning of collections of Ciao modules. It offers a simplified interface with other Ciao (compiler, documentation generator, etc.) and external tools (e.g., installation of third-party software for library bindings).

This tool also offers all the necessary machinery to bootstrap the Ciao system from a reduced set of dependencies.

See the Ciao reference manual for a description of bundles, workspaces, and the basic usage of the builder tool.

3 The standalone command-line builder

Author(s): Jose F. Morales, The Ciao Development Team.

`ciao_builder` is the Ciao standalone command-line builder. `ciao_builder` can be used to manage Ciao source code organized as bundles.

This command is available to the user in two forms: wrapped around the `ciao-boot.sh` (or `ciao-boot.bat` in Windows) scripts (see [\[Bootstrapping the build system\]](#), page [\(undefined\)](#)), or as part of the general `ciao` command-line tool.

3.1 Introduction to the build process

This picture shows a detailed view all the elements of the build and installation process of a bundle or collection of bundles.

```
Phase 0-
  Bootstrapping the build system
Phase 1-
  SOURCE ---(configure)--> CONFIG
Phase 2- (needs CONFIG)
  SOURCE ---(build)--> BUILD --(install)--> INSTALLED
```

Above, arrows specify actions and nodes are collections of files:

SOURCE Source code

CONFIG Configuration of the source

BUILD Binaries, compiled libraries, and generated documentation (.pdf, .html, etc.)

INSTALLED

Copies of BUILD that exclude temporary files (mostly caches for separate and incremental compilation).

The source distribution only contains SOURCE elements. The actions `build` and `install` create the BUILD and INSTALLED elements.

NOTE: Bootstrapping is a transparent process and its details are not needed to understand and use the build system. See [\[Bootstrapping the build system\]](#), page [\(undefined\)](#) for more details on *phase 0*.

NOTE: Out-of-tree builds (where all the intermediate compiler output, including `.po/.itf` files are stored in the `build/cache` directory) are enabled by default for bundles. This can be disabled setting the environment variable `CIAOCCACHE=0`. Note that bootstrapping the system with `CIAOCCACHE=0` is not recommended, as it will merge `.po/.itf` files of (potentially) incompatible compiler iterations.

3.2 Configuration and build

Configuration and build can be reverted with *clean* commands. The meaning of `clean` and `distclean` is based on their standard meaning (see the `Makefile` example at http://www.gnu.org/software/make/manual/html_node/Complex-Makefile.html), except for `realclean` that cleans both the system and the bootstrap (equivalent to `distclean` and `boot-clean`).

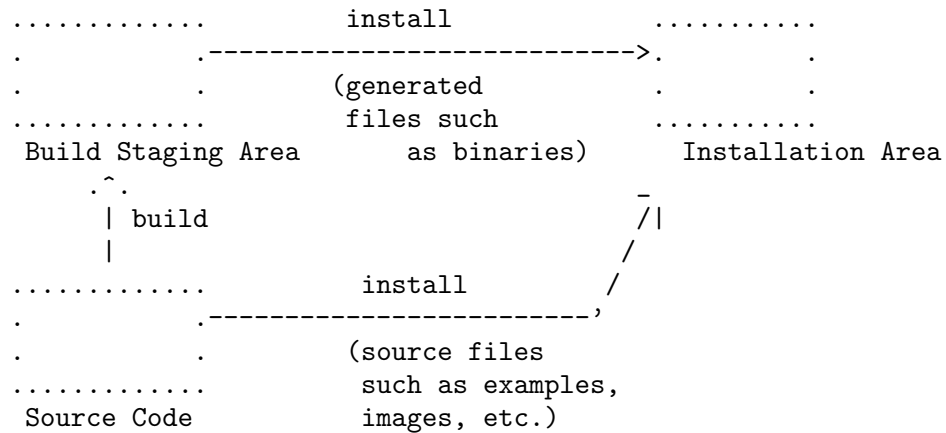
The following table summarizes the actions that *undo* each build or install operation:

```
('undo' reverts the effect of each marked 'action')
,-----+-----+-----,
actions \ undo | clean | distclean | realclean |
```

boot-build			x	
configure		x	x	
build	x	x	x	

3.3 Installation

Different installation areas are supported. For personal installations, the installation area can overlap with the build staging area, such that no extra space is necessary.



The `install` command is undone with the `uninstall` command.

3.4 Bootstrapping the build system

The `ciao-boot.sh` (or `ciao-boot.bat` in Windows) command automatically bootstraps and invokes the Ciao build system. The process is described below.

Bootstrapping is the process that compiles the Ciao compiler and builder in an environment where no existing Ciao binary exists. We follow the same *phase 1* and *phase 2* steps above but the whole process is driven by a very simplified version written in (portable) shell-script code (since there is no running Ciao) and using the *ciaoc bootstrap compiler*.

The *ciaoc* bootstrap compiler comes in a pre-compiled bytecode form. This bytecode, together with the engine parts written in C, can be executed in most systems with a C compiler.

Once this bootstrap compiler is available, the system compiles the bootstrap `ciao_builder`, which drives the rest of the build and installation process.

This step is transparent to the user and separated in a different build directory (`build-boot/`). However, there are options to force the recompilation and cleaning of that part (see `ciao-boot.sh` help for more information).

4 Ciao command-line parser

Author(s): Jose F. Morales, The Ciao Development Team.

Parser of builder commands (based on a generic command line parser).

4.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(ciaocl_parser)).`
- **Exports:**
 - *Predicates:*
`parse_cmd/3, norm_underscores/2.`

4.2 Documentation on exports

parse_cmd/3:

No further documentation available for this predicate.

PREDICATE

norm_underscores/2:

No further documentation available for this predicate.

PREDICATE

4.3 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*
`lists, hiordlib.`
- *Packages:*
`prelude, initial, condcomp, assertions, assertions/assertions_basic, isomodes, regtypes, dcg.`

5 Ciao command-line Help

Author(s): The Ciao Development Team, Jose F. Morales.

Formatted help for the `ciao` and `ciao-boot.sh` (`ciao-boot.bat`) command line tool

5.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(ciaocl_help)).`
- **Exports:**
 - *Predicates:*
`show_help/2, show_help_cmd/2.`

5.2 Documentation on exports

`show_help/2:`

PREDICATE

Usage: `show_help(Level, Prof)`

Show help for the command line interface. `Level` specifies the detail level and `Prof` the command line profile (useful when the same command may act in different ways).

- *Call and exit should be compatible with:*

<code>ciaocl_help:help_level(Level)</code>	<code>(ciaocl_help:help_level/1)</code>
<code>Prof</code> is an atom.	<code>(basic_props:atm/1)</code>

- *The following properties should hold at call time:*

<code>Level</code> is currently a term which is not a free variable. <code>Prof</code> is currently a term which is not a free variable.	<code>(term_typing:nonvar/1)</code> <code>(term_typing:nonvar/1)</code>
---	--

`show_help_cmd/2:`

PREDICATE

Usage: `show_help_cmd(Cmd, Prof)`

Show detailed help on the specified command `Cmd` (shows help of the command group)

5.3 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*

`datafacts_rt`, `aggregates`, `lists`, `stream_utils`, `system`.

- *Packages:*

`prelude`, `initial`, `condcomp`, `assertions`, `assertions/assertions_basic`, `isomodes`, `regtypes`, `dcg`, `fsyntax`, `datafacts`.

6 Manifest compiler

Author(s): Jose F. Morales.

This module implements predicates to load, consult, and compile `Manifest.pl` files. A Manifest file allows the specification of a bundle:

- dependencies to other bundles
- configuration flags (see `bundle_configure`)
- primitive targets (see `grade_bin`, `grade_docs`, etc.)
- nested definitions for bundle parts
- custom definitions for build commands (see `builder_cmds`)

NOTE: Configuration flags and nested definitions must be defined in a `<bundle>.hooks.pl` module.

Use `make_bundlereg/4` for processing of `Manifest.pl` files into bundle registry entries. Bundle registries are written using `fastrw` so that the support code to load them is minimal. They include cheaper runtime meta-information (like dependencies, versions, path aliases, etc.).

For registered bundles, you can use `ensure_load_manifest/1` and `manifest_call/2` for loading and consulting a bundle specification.

NOTE: Users should never call custom build command definitions directly with `manifest_call/2`. Use `builder_cmds` instead.

6.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(manifest_compiler)).`
- **Exports:**
 - *Predicates:*
`is_bundledir/1, locate_manifest_file/2, lookup_bundle_root/2, ensure_load_manifest/1, manifest_call/2, manifest_current_predicate/2, split_target/3, compose_target/3, target_is_bundle/1, make_bundlereg/4, bundle_info/1, get_bundle_readme/2, bundle_manual_base/2, main_file_relpath/2, main_file_path/3.`
 - *Multifiles:*
`m_bundlehook_decl/3, m_bundlehook_do/3, m_third_party_name/1, m_third_party_version/2, m_third_party_source_url/2, m_third_party_source_md5/2, m_third_party_patch/2, m_third_party_build_system/2, m_third_party_option1/2, m_third_party_option2/3, m_third_party_custom_configure/2, m_third_party_custom_build/2, m_third_party_custom_install/2, m_bundle_config_call/2, m_bundle_config_entry/3, m_bundle_foreign_config_tool/3, m_bundle_foreign_dep/4.`

6.2 Documentation on exports

is_bundledir/1: Usage: <code>is_bundledir(BundleDir)</code> BundleDir is the directory for a bundle (i.e., contains a Manifest.pl file)	PREDICATE
locate_manifest_file/2: Usage: <code>locate_manifest_file(BundleDir,ManifestFile)</code> Given BundleDir a bundle directory, ManifestFile is unified with the name of the manifest file	PREDICATE
lookup_bundle_root/2: Usage: <code>lookup_bundle_root(File,BundleDir)</code> Detect the bundle root dir for the given File (a directory or normal file)	PREDICATE
ensure_load_manifest/1: Usage: <code>ensure_load_manifest(Target)</code> Ensure that the manifest for Target is loaded (including Manifest sentences and .hooks.pl modules). The bundle must have been scanned before, so that its source directory is known.	PREDICATE
manifest_call/2: Usage: <code>manifest_call(Target,Head)</code> Call Target:Head, a predicate defined in a Manifest (fact, predicate in hooks, or nested predicate)	PREDICATE
manifest_current_predicate/2: Usage: <code>manifest_current_predicate(Target,Head)</code> Head is declared in Target	PREDICATE
split_target/3: No further documentation available for this predicate.	PREDICATE
compose_target/3: No further documentation available for this predicate.	PREDICATE
target_is_bundle/1: No further documentation available for this predicate.	PREDICATE

make_bundlereg/4: PREDICATE
 Usage: `make_bundlereg(Bundle,BundleDir,FinalBundleDir,RegFile)`
 Generate a bundlereg `RegFile` for bundle `Bundle` at `BundleDir`, where the final bundle directory is `FinalBundleDir`.

bundle_info/1: PREDICATE
 Usage: `bundle_info(Bundle)`
 Show info of `Bundle`

get_bundle_readme/2: PREDICATE
 No further documentation available for this predicate.

bundle_manual_base/2: PREDICATE
 No further documentation available for this predicate.

main_file_relpath/2: PREDICATE
 No further documentation available for this predicate.

main_file_path/3: PREDICATE
 No further documentation available for this predicate.

6.3 Documentation on multifiles

m_bundlehook_decl/3: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_bundlehook_do/3: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_name/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_version/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_source_url/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_source_md5/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_patch/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_build_system/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_option1/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_option2/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_configure/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_build/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_install/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_config_call/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_config_entry/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_foreign_config_tool/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_foreign_dep/4: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

6.4 Documentation on imports

This module has the following direct dependencies:

– *Application modules:*

`bundlehooks_holder`, `builder_aux`, `bundle_fetch`.

– *System library modules:*

`datafacts_rt`, `messages`, `pathnames`, `system`, `port_reify`, `bundle_paths`, `read`, `aggregates`, `system_extra`, `version_strings`, `lists`, `terms`, `fastw`, `stream_utils`, `bundle_info`, `format`.

– *Packages:*

`prelude`, `initial`, `condcomp`, `fsyntax`, `hiord`, `assertions`, `assertions/assertions_basic`, `regtypes`, `isomodes`, `datafacts`.

7 bundlehooks_holder (library)

7.1 Usage and interface

- **Library usage:**
:- use_module(ciaobl(bundlehooks_holder)).
- **Exports:**
 - *Predicates:*
do_use_module/1, do_unload/1.

7.2 Documentation on exports

do_use_module/1:

PREDICATE

No further documentation available for this predicate.

do_unload/1:

PREDICATE

No further documentation available for this predicate.

7.3 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*
compiler.
- *Packages:*
prelude, initial, condcomp, dynmod_holder.

8 Builder commands

Author(s): Jose F. Morales.

This module contains a high-level interface to the builder (`builder_run/2`) and other predicates to interact to the build process from `.hooks.pl` files (`builder_cmd/2`, etc.).

8.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobl(bld(builder_cmds))).`
- **Exports:**
 - *Predicates:*
`builder_run/2`, `builder_cmd_nobndl/1`, `list_bundles/0`, `builder_cleanup/0`,
`builder_cmd_on_set/2`, `builder_cmd/2`, `root_target/1`, `target_is_workspace/1`,
`bundle_share_workspace/2`.
 - *Multifiles:*
`cmd.comment/2`, `cmd.grade/2`, `cmd.only_global_instype/1`, `cmd.needs_update_builder/1`,
`cmd.needs_rescan/1`, `cmd.needs_config/1`, `cmd.allow_unknown_targets/1`, `cmd.no_manifest_load/1`, `cmd.recursive/2`, `cmd.do_before.decl/1`,
`cmd.do_before/2`, `cmd.do.decl/1`, `cmd.do/2`, `cmd.do_after.decl/1`, `cmd.do_after/2`,
`grade.cmd/3`, `grade.requires/3`, `grade.prim_do/4`, `grade.prim_kind/2`,
`gen_pbundle_hook/3`.

8.2 Documentation on exports

builder_run/2:	PREDICATE
No further documentation available for this predicate.	
builder_cmd_nobndl/1:	PREDICATE
No further documentation available for this predicate.	
list_bundles/0:	PREDICATE
Usage: List all registered bundles	
builder_cleanup/0:	PREDICATE
Usage: Cleanup the builder state	
builder_cmd_on_set/2:	PREDICATE
No further documentation available for this predicate.	

builder_cmd/2: PREDICATE
 Usage: `builder_cmd(Cmd,Target)`
 Perform command `Cmd` on target `Target`

root_target/1: PREDICATE
 Usage:
 Target for the whole CIAOROOT workspace.

target_is_workspace/1: PREDICATE
 No further documentation available for this predicate.

bundle_share_workspace/2: PREDICATE
 No further documentation available for this predicate.

8.3 Documentation on multifiles

cmd.comment/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.grade/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.only_global_instype/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_update_builder/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_rescan/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_config/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.allow_unknown_targets/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.no_manifest_load/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.recursive/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_before.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_before/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_after.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_after/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.cmd/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.requires/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.prim_do/4: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.prim_kind/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

gen_pbundle_hook/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

8.4 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*

`builder_targets`, `bundle_fetch`, `builder_flags`, `bundle_configure`, `ciaoc_aux`, `messages_aux`, `install_aux`, `manifest_compiler`, `grade_holder`, `grade_bin`, `grade_docs`, `grade_analyze`, `config_common`, `interactive_aux`, `builder_aux`, `third_party_install`, `pbundle_generator`, `pbundle_gen_win32`, `pbundle_gen_rpm`, `pbundle_gen_mac`, `pbundle_gen_src`, `pbundle_gen_bin`, `bundle_hash`, `lpdoc_aux`.

- *System library modules:*

`datafacts_rt`, `format`, `sort`, `aggregates`, `lists`, `pathnames`, `bundle_paths`.

- *Packages:*

`prelude`, `initial`, `condcomp`, `fsyntax`, `hiord`, `assertions`, `assertions/assertions_basic`, `regtypes`, `isomodes`, `datafacts`.

9 Binary grade

Author(s): Jose F. Morales.

This module contains command definitions for the `bin` grade, which builds/clean/install/uninstall binaries from sources.

9.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(grade_bin)).`

9.2 Documentation on multifiles

cmd.comment/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.grade/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.only_global_instype/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_update_builder/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_rescan/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_config/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.allow_unknown_targets/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.no_manifest_load/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.recurse/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_before.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_before/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_after.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_after/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.cmd/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.requires/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.prim_do/4: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.prim_kind/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

9.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*

`builder_cmds`, `manifest_compiler`, `builder_aux`, `ciaoc_aux`, `install_aux`, `messages_aux`, `car_maker`.

- *System library modules:*

`bundle_paths`, `pathnames`, `lists`.

- *Packages:*

`prelude`, `initial`, `condcomp`, `fsyntax`, `hiord`, `assertions`, `assertions/assertions_basic`, `regtypes`, `isomodes`.

10 Docs grade

Author(s): Jose F. Morales.

This module contains command definitions for the `docs` grade, which builds/clean/install/uninstall documentation from sources.

10.1 Usage and interface

- **Library usage:**
`:- use_module(ciaoblgrade_docs).`

10.2 Documentation on multifiles

cmd.comment/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.grade/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.only_global_instype/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_update_builder/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_rescan/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.needs_config/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.allow_unknown_targets/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.no_manifest_load/1: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

cmd.recursive/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_before.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_before/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_after.decl/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

cmd.do_after/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.cmd/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.requires/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.prim_do/4: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

grade.prim_kind/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

10.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
builder_cmds, manifest_compiler, builder_aux, config_common, lpdoc_aux, install_aux, messages_aux.
- *System library modules:*
terms, bundle_info.
- *Packages:*
prelude, initial, condcomp, fsyntax, hiord, assertions, assertions/assertions_basic, regtypes, isomodes.

11 Targets for builder

Author(s): Jose F. Morales.

This module defines predicates to map between input targets (which can be paths to bundles, bundle names, or paths to workspaces) and resolved target names (absolute paths to workspace or symbolic bundle names)

11.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(builder_targets)).`
- **Exports:**
 - *Predicates:*
`rescan_targets/1, resolve_targets/3.`

11.2 Documentation on exports

rescan_targets/1:

PREDICATE

Usage: `rescan_targets(Targets)`

(Re)scan bundles at the workspaces where targets are located

- *Call and exit should be compatible with:*

`Targets` is a list of `atms`.

(`basic_props:list/2`)

- *The following properties should hold at call time:*

`Targets` is currently a term which is not a free variable.

(`term_typing:nonvar/1`)

resolve_targets/3:

PREDICATE

Usage: `resolve_targets(Targets0, OnUnknown, Targets)`

Resolve targets (which may be paths). This assumes that `rescan_targets/1` has been called

- *Call and exit should be compatible with:*

`Targets0` is a list of `atms`.

(`basic_props:list/2`)

`OnUnknown` is any term.

(`basic_props:term/1`)

`Targets` is a list of `targets`.

(`basic_props:list/2`)

- *The following properties should hold at call time:*

`Targets0` is currently a term which is not a free variable.

(`term_typing:nonvar/1`)

`Targets` is a free variable.

(`term_typing:var/1`)

11.3 Documentation on imports

This module has the following direct dependencies:

– *Application modules:*

`bundle_scan`, `builder_aux`, `manifest_compiler`, `bundle_fetch`.

– *System library modules:*

`datafacts_rt`, `hiordlib`, `system`.

– *Packages:*

`prelude`, `initial`, `condcomp`, `fsyntax`, `hiord`, `assertions`, `assertions/assertions_basic`, `regtypes`, `isomodes`, `datafacts`.

12 Installation of third-party components

Author(s): Remy Haemmerle, Jose F. Morales.

This module implements automatic fetch and build and installation of third-party components, without interfering with the system installed software.

It works similarly to package managers like GNU stow (<https://www.gnu.org/software/stow/>), Homebrew (<http://brew.sh/>), or GNU Guix (<https://www.gnu.org/software/guix/manual/guix.html>), where each package is installed separately in its own directory and symbolic links are created to common `bin/`, `lib/`, etc. directories.

The supported build systems are:

`gnu_build_system`

See <http://www.gnu.org/prep/standards/standards.html#Configuration>

12.1 Specification of third-party components

TODO: Document this feature

12.2 Usage and interface

- **Library usage:**

```
:- use_module(ciaobld(third_party_install)).
```
- **Exports:**
 - *Predicates:*

```
third_party_path/2, clean/1, download/1, decompress_and_patch/2, checksum/1,
configure/1, build/1, installed/1, install/1, activated/1, activate/1,
deactivate/1, uninstall/1, auto_install/2.
```
 - *Multifiles:*

```
m_bundlehook_decl/3, m_bundlehook_do/3, m_third_party_name/1, m_third_
party_version/2, m_third_party_source_url/2, m_third_party_source_md5/2,
m_third_party_patch/2, m_third_party_build_system/2, m_third_party_option1/2, m_third_party_option2/3,
m_third_party_custom_configure/2, m_third_party_custom_build/2, m_third_
party_custom_install/2, m_bundle_config_call/2, m_bundle_config_entry/3,
m_bundle_foreign_config_tool/3, m_bundle_foreign_dep/4.
```

12.3 Documentation on exports

third_party_path/2:

PREDICATE

No further documentation available for this predicate.

clean/1:

PREDICATE

No further documentation available for this predicate.

download/1: No further documentation available for this predicate.	PREDICATE
decompress_and_patch/2: No further documentation available for this predicate.	PREDICATE
checksum/1: No further documentation available for this predicate.	PREDICATE
configure/1: No further documentation available for this predicate.	PREDICATE
build/1: No further documentation available for this predicate.	PREDICATE
installed/1: No further documentation available for this predicate.	PREDICATE
install/1: No further documentation available for this predicate.	PREDICATE
activated/1: No further documentation available for this predicate.	PREDICATE
activate/1: No further documentation available for this predicate.	PREDICATE
deactivate/1: No further documentation available for this predicate.	PREDICATE
uninstall/1: No further documentation available for this predicate.	PREDICATE
auto_install/2: No further documentation available for this predicate.	PREDICATE

12.4 Documentation on multifiles

m_bundlehook_decl/3: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_bundlehook_do/3: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_name/1: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_version/2: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_source_url/2: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_source_md5/2: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_patch/2: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_build_system/2: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_option1/2: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_option2/3: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_configure/2: PREDICATE

No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_build/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_install/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_config_call/2: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_config_entry/3: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_foreign_config_tool/3: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_foreign_dep/4: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

12.5 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*
 aggregates, terms, lists, bundle_paths, http_get, md5sum, pathnames, process,
 system.
- *Packages:*
 prelude, initial, condcomp, assertions, assertions/assertions_basic.

13 Installation of custom third-party components

Author(s): The Ciao Development Team.

This module implements installation of third-party components using custom installers (e.g., manual, npm, etc.)

13.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(third_party_custom)).`
- **Exports:**
 - *Predicates:*
`third_party_custom_install/1, third_party_custom_path/2.`
 - *Multifiles:*
`m_bundle_foreign_dep/4.`

13.2 Documentation on exports

third_party_custom_install/1: PREDICATE
 No further documentation available for this predicate.

third_party_custom_path/2: PREDICATE
 No further documentation available for this predicate.

13.3 Documentation on multifiles

m_bundle_foreign_dep/4: PREDICATE
 No further documentation available for this predicate. The predicate is *multifile*.

13.4 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
`messages_aux, third_party_install.`
- *System library modules:*
`aggregates, format, pathnames, system_extra, system, process, port_reify.`
- *Packages:*
`prelude, initial, condcomp, assertions, assertions/assertions_basic, basicmodes, fsyntax, hiord.`

14 Build code using the Ciao compiler

Author(s): Jose F. Morales, The Ciao Development Team.

This is a wrapper around `ciaoc` (and other Ciao tools) that extends the functionality of the Ciao compiler:

- Invoke the compiler as a external processes
- Batch compilation of collection of modules
- Emulator generation and compilation

14.1 Usage and interface

- **Library usage:**

```
:- use_module(ciaobld(ciaoc_aux)).
```

- **Exports:**

- *Predicates:*

```
invoke_boot_ciaoc/2, invoke_ciaoc/1, invoke_ciaosh_batch/1, invoke_ciaosh_batch/2,
promote_bootstrap/1, build_eng_exec_header/1, clean_eng_exec_header/1,
create_windows_bat/6, cmd_build/1, cmd_build_copy/4, cmd_build_link/4,
build_libs/2, runtests_dir/2, runtests_dir/3, exists_and_compilable/1,
clean_tree/1, cachedir_prefix/2, clean_mods/1.
```

14.2 Documentation on exports

invoke_boot_ciaoc/2:

PREDICATE

No further documentation available for this predicate.

invoke_ciaoc/1:

PREDICATE

No further documentation available for this predicate.

invoke_ciaosh_batch/1:

PREDICATE

No further documentation available for this predicate.

invoke_ciaosh_batch/2:

PREDICATE

No further documentation available for this predicate.

promote_bootstrap/1:

PREDICATE

Usage: `promote_bootstrap(Eng)`

Promote the current `ciaoc` and products of `emugen` as the next bootstrap compiler (`ciaoc.sta` and `absmach` code)

build_eng_exec_header/1: No further documentation available for this predicate.	PREDICATE
clean_eng_exec_header/1: No further documentation available for this predicate.	PREDICATE
create_windows_bat/6: No further documentation available for this predicate.	PREDICATE
cmd_build/1: No further documentation available for this predicate.	PREDICATE
cmd_build_copy/4: No further documentation available for this predicate.	PREDICATE
cmd_build_link/4: No further documentation available for this predicate.	PREDICATE
build_libs/2: No further documentation available for this predicate.	PREDICATE
runtests_dir/2: No further documentation available for this predicate.	PREDICATE
runtests_dir/3: No further documentation available for this predicate.	PREDICATE
exists_and_compilable/1: No further documentation available for this predicate.	PREDICATE
clean_tree/1: No further documentation available for this predicate.	PREDICATE
cachedir_prefix/2: No further documentation available for this predicate.	PREDICATE
clean_mods/1: No further documentation available for this predicate.	PREDICATE

14.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*

`messages_aux`, `builder_aux`, `config_common`, `cpx_process`, `bundle_configure`, `eng_defs`, `install_aux`.

- *System library modules:*

`lists`, `aggregates`, `system_extra`, `pathnames`, `bundle_paths`, `messages`, `system`, `terms`, `stream_utils`, `source_tree`, `sort`, `bundle_flags`, `process`, `sh_process`.

- *Packages:*

`prelude`, `initial`, `condcomp`, `assertions`, `assertions/assertions_basic`, `fsyntax`, `hiord`, `dgc`.

15 Build documentation using LPdoc

Author(s): Jose F. Morales, The Ciao Development Team.

This is a wrapper around `lpdoc` to build the documentation of a bundle. It uses `lpdoc` as an external process so that no hard dependencies are introduced.

15.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(lpdoc_aux)).`
- **Exports:**
 - *Predicates:*
`invoke_lpdoc/1, build_docs_readme/3, build_docs_readme_html/3, build_doc/2, show_doc/3, bld_manual_path/4, inst_manual_path/4, act_manual_path/4.`

15.2 Documentation on exports

invoke_lpdoc/1:	PREDICATE
No further documentation available for this predicate.	
build_docs_readme/3:	PREDICATE
No further documentation available for this predicate.	
build_docs_readme_html/3:	PREDICATE
No further documentation available for this predicate.	
build_doc/2:	PREDICATE
No further documentation available for this predicate.	
show_doc/3:	PREDICATE
No further documentation available for this predicate.	
bld_manual_path/4:	PREDICATE
No further documentation available for this predicate.	
inst_manual_path/4:	PREDICATE
No further documentation available for this predicate.	
act_manual_path/4:	PREDICATE
No further documentation available for this predicate.	

15.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
config_common, cpx_process, builder_aux, install_aux.
- *System library modules:*
system, source_tree, pathnames, bundle_paths.
- *Packages:*
prelude, initial, condcomp, fsyntax, hiord, assertions, assertions/assertions_
basic, regtypes, isomodes.

16 .car file maker

Author(s): Jose F. Morales, The Ciao Development Team.

This module implements a minimalistic build system for the engine, which includes an incremental build system for C code, some of them automatically generated from **emugen**. The output can be both native executables, dynamic, and/or static libraries.

See `eng_defs` and `build_car.sh` for more details.

16.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobl(bld(car_maker))).`
- **Exports:**
 - *Predicates:*
`eng_build/1, eng_clean/1, bundle_flags_sh_file/1, sysconf_os/1, sysconf_arch/3.`

16.2 Documentation on exports

eng_build/1:	PREDICATE
No further documentation available for this predicate.	
eng_clean/1:	PREDICATE
No further documentation available for this predicate.	
bundle_flags_sh_file/1:	PREDICATE
No further documentation available for this predicate.	
sysconf_os/1:	PREDICATE
No further documentation available for this predicate.	
sysconf_arch/3:	PREDICATE
No further documentation available for this predicate.	

16.3 Documentation on imports

This module has the following direct dependencies:

– *Application modules:*

`messages_aux`, `ciaoc_aux`, `eng_defs`, `bundle_hash`, `builder_aux`.

– *System library modules:*

`lists`, `terms`, `system`, `system_extra`, `pathnames`, `bundle_paths`, `sh_process`, `bundle_info`, `version_strings`.

– *Packages:*

`prelude`, `initial`, `condcomp`, `assertions`, `assertions/assertions_basic`, `fsyntax`, `hiord`, `dcg`.

17 Engine maker: defs and paths

Author(s): Jose F. Morales, The Ciao Development Team.

This module defines engine specifications for builds. Engines are defined using the `emugen` package. Engine build specifications contains parameters that affects the compiled engine:

Engine options:

- `cross(OS,Arch)`: force cross compilation to selected platform
- `boot`: the boot engine
- `addpath(Spec)`: additional (symbolic) source path for locating C and header files (handy for custom engines)
- `h_alias(Alias)`: subdirectory for headers (i.e., name used to include header for this engine `#include <ciaio/...>`)

17.1 Engine build directory layout

Sections at the engine build directory layout:

```

hdir: C headers
cdir: C source files
cfgdir: sysdep config files
objdir: sysdep compiled object files
engdir: root directory for engine build
exec: engine as an executable
lib_so: engine as a C shared library
lib_a: engine as a C static library
(for engine activation)
objdir_anyarch: compiled object files root
exec_anyarch: engine as an executable -- link to active architecture

```

NOTE: This hierarchy is assumed by other tools and code like `build_car.sh`. Please be careful if introducing any change.

Example: directory hierarchy at `build/eng/ciaoengine/`:

```

cfg
cfg/DARWINx86_64
cfg/DARWINx86_64/config_mk
cfg/DARWINx86_64/config_sh
cfg/DARWINx86_64/meta_sh
include
include/ciao
include/ciao/*.h
include/*.h
objs
objs/ciaoengine
objs/ciaoengine.DARWINx86_64
objs/DARWINx86_64
objs/DARWINx86_64/*.o
objs/DARWINx86_64/*.P
src
src/*.c

```

17.2 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(eng_defs)).`
- **Exports:**
 - *Predicates:*
`eng_cfg/2, eng_mainspec/2, eng_opts/2, eng_bundle/2, eng_mainmod/2, eng_mainbase/2, eng_srcdirs/2, emugen_code_dir/3, eng_h_alias/2, eng_path/3, inst_eng_path/3, active_bld_eng_path/3, active_inst_eng_path/3, active_eng_name/3, bld_cmake_path/3.`

17.3 Documentation on exports

eng_cfg/2: No further documentation available for this predicate.	PREDICATE
eng_mainspec/2: No further documentation available for this predicate.	PREDICATE
eng_opts/2: No further documentation available for this predicate.	PREDICATE
eng_bundle/2: No further documentation available for this predicate.	PREDICATE
eng_mainmod/2: No further documentation available for this predicate.	PREDICATE
eng_mainbase/2: No further documentation available for this predicate.	PREDICATE
eng_srcdirs/2: No further documentation available for this predicate.	PREDICATE
emugen_code_dir/3: No further documentation available for this predicate.	PREDICATE

eng_h_alias/2: No further documentation available for this predicate.	PREDICATE
eng_path/3: No further documentation available for this predicate.	PREDICATE
inst_eng_path/3: No further documentation available for this predicate.	PREDICATE
active_bld_eng_path/3: No further documentation available for this predicate.	PREDICATE
active_inst_eng_path/3: No further documentation available for this predicate.	PREDICATE
active_eng_name/3: No further documentation available for this predicate.	PREDICATE
bld_cmake_path/3: No further documentation available for this predicate.	PREDICATE

17.4 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
config_common, install_aux.
- *System library modules:*
lists, aggregates, terms, pathnames, bundle_paths, bundle_flags.
- *Packages:*
prelude, initial, condcomp, assertions, assertions/assertions_basic, fsyntax.

18 Auxiliary Predicates for Builder

Author(s): The Ciao Development Team.

18.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(builder_aux)).`
- **Exports:**
 - *Predicates:*
`dir_to_bundle/2, lookup_workspace/3, invoke_gmake/2, invoke_ant/2, ensure_`
`builddir/2,                builddir_clean/2,                wr_template/4,`
`generate_version_auto/2, generate_config_auto/2, print_clauses_to_file/2,`
`update_file_from_clauses/3, update_file_from_string/3, add_rpath/3, third_`
`party_aux/3, update_stat_config_sh/2, remove_dir_nofail/1.`

18.2 Documentation on exports

dir_to_bundle/2:	PREDICATE
No further documentation available for this predicate.	
lookup_workspace/3:	PREDICATE
No further documentation available for this predicate.	
invoke_gmake/2:	PREDICATE
No further documentation available for this predicate.	
invoke_ant/2:	PREDICATE
No further documentation available for this predicate.	
ensure_builddir/2:	PREDICATE
No further documentation available for this predicate.	
builddir_clean/2:	PREDICATE
No further documentation available for this predicate.	
wr_template/4:	PREDICATE
No further documentation available for this predicate.	

generate_version_auto/2: No further documentation available for this predicate.	PREDICATE
generate_config_auto/2: No further documentation available for this predicate.	PREDICATE
print_clauses_to_file/2: No further documentation available for this predicate.	PREDICATE
update_file_from_clauses/3: No further documentation available for this predicate.	PREDICATE
update_file_from_string/3: No further documentation available for this predicate.	PREDICATE
add_rpath/3: No further documentation available for this predicate.	PREDICATE
third_party_aux/3: No further documentation available for this predicate.	PREDICATE
update_stat_config_sh/2: No further documentation available for this predicate.	PREDICATE
remove_dir_nofail/1: No further documentation available for this predicate.	PREDICATE

18.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
messages_aux, config_common, third_party_install, eng_defs.
- *System library modules:*
pathnames, bundle_flags, bundle_paths, messages, logged_process, source_tree, system_extra, text_template, bundle_info, terms, format, system, aggregates, write, hiordlib, stream_utils, lists, process, llists.
- *Packages:*
prelude, initial, condcomp, assertions, assertions/assertions_basic, fsyntax, hiord.

19 Installation

Author(s): The Ciao Development Team.

This module implements basic operations for installing and uninstalling the contents of a bundle (source and binaries).

The installation copy files from the build area to the installation area (`inst_ciao_root`) and (optionally and if needed) creates activation symbolic links from standard installation directories (e.g., `/usr/local/bin`).

It supports staged installations to temporary locations (see `rootprefix/1`).

19.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(install_aux)).`
- **Exports:**
 - *Predicates:*
`perms/1, instype/1, inst_ciao_root/1, inst_bundle_path/3, inst_buildddir_path/2, inst_cmd_path/4, inst_cmd_path/4, final_ciao_root/1, final_cmd_path/4, final_bundle_path/3, final_buildddir_path/3, active_bindir/1, active_docdir/2, active_cmd_path/3, install_bin_dirs/1, uninstall_bin_dirs/1, install_bundlereg/1, uninstall_bundlereg/1, install_cachedir/1, uninstall_cachedir/1, rootprefix/1, instdir_install/1, instdir_uninstall/1, eng_active_bld/1, install_doc/3, uninstall_doc/3.`

19.2 Documentation on exports

perms/1:	PREDICATE
No further documentation available for this predicate.	
instype/1:	PREDICATE
No further documentation available for this predicate.	
inst_ciao_root/1:	PREDICATE
No further documentation available for this predicate.	
inst_bundle_path/3:	PREDICATE
No further documentation available for this predicate.	
inst_buildddir_path/2:	PREDICATE
No further documentation available for this predicate.	

inst_cmd_path/4: No further documentation available for this predicate.	PREDICATE
inst_cmd_path/4: No further documentation available for this predicate.	PREDICATE
final_ciao_root/1: No further documentation available for this predicate.	PREDICATE
final_cmd_path/4: No further documentation available for this predicate.	PREDICATE
final_bundle_path/3: No further documentation available for this predicate.	PREDICATE
final_builddir_path/3: No further documentation available for this predicate.	PREDICATE
active_bindir/1: No further documentation available for this predicate.	PREDICATE
active_docdir/2: No further documentation available for this predicate.	PREDICATE
active_cmd_path/3: No further documentation available for this predicate.	PREDICATE
install_bin_dirs/1: No further documentation available for this predicate.	PREDICATE
uninstall_bin_dirs/1: No further documentation available for this predicate.	PREDICATE
install_bundlereg/1: No further documentation available for this predicate.	PREDICATE

uninstall_bundlereg/1:	PREDICATE
No further documentation available for this predicate.	
install_cachedir/1:	PREDICATE
No further documentation available for this predicate.	
uninstall_cachedir/1:	PREDICATE
No further documentation available for this predicate.	
rootprefix/1:	PREDICATE
Usage: <code>rootprefix(DestDir)</code>	
DestDir is the prefix that is prepended to each (un)install target (useful for packaged bundle creation)	
instdir_install/1:	PREDICATE
No further documentation available for this predicate.	
instdir_uninstall/1:	PREDICATE
No further documentation available for this predicate.	
eng_active_bld/1:	PREDICATE
No further documentation available for this predicate.	
install_doc/3:	PREDICATE
No further documentation available for this predicate.	
uninstall_doc/3:	PREDICATE
No further documentation available for this predicate.	

19.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
`builder_aux`, `config_common`, `manifest_compiler`, `ciaoc_aux`, `builder_flags`, `eng_defs`, `lpdoc_aux`, `info_installer`.
- *System library modules:*
`pathnames`, `bundle_paths`, `messages`, `source_tree`, `system_extra`, `system`, `bundle_flags`, `streams`.
- *Packages:*
`prelude`, `initial`, `condcomp`, `assertions`, `assertions/assertions_basic`, `fsyntax`, `hiord`.

20 Basic support for CMake

Author(s): Jose F. Morales.

This module provides some very basic functionality to interface with the CMake (<https://cmake.org>) build automation system from the Ciao

20.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(cmake_aux)).`
- **Exports:**
 - *Predicates:*
`b_cmake/4.`

20.2 Documentation on exports

b_cmake/4:

PREDICATE

No further documentation available for this predicate.

20.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
`eng_defs.`
- *System library modules:*
`process, bundle_paths, system_extra.`
- *Packages:*
`prelude, initial, condcomp, assertions, assertions/assertions_basic, fsyntax, hiord, dcg.`

21 Installation of info files

Author(s): The Ciao Development Team.

This module defines predicates to update (register and unregister) the `dir` Info directory files.

21.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(info_installer)).`
- **Exports:**
 - *Predicates:*
`dirfile_install_info/2, dirfile_uninstall_info/2.`

21.2 Documentation on exports

dirfile_install_info/2: PREDICATE
Usage: `dirfile_install_info(InfoFile,TargetDir)`
 Includes `InfoFile` in the `dir` file at `TargetDir`. If no `dir` file exist, a default one is created.

dirfile_uninstall_info/2: PREDICATE
Usage: `dirfile_uninstall_info(InfoFile,TargetDir)`
 Removes `InfoFile` from the `dir` file at `TargetDir`.

21.3 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*
`pathnames, process, system.`
- *Packages:*
`prelude, initial, condcomp, assertions, assertions/assertions_basic, regtypes, fsyntax.`

22 Register/unregister code in scripts (for bash, csh, emacs, etc.)

Author(s): Jose F. Morales, The Ciao Development Team.

22.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(register_in_script)).`
- **Exports:**
 - *Predicates:*
`register_in_script/3, unregister_from_script/2.`

22.2 Documentation on exports

register_in_script/3:

PREDICATE

Usage: `register_in_script(File,CommentMark,Code)`

Inserts `Code` in the script file `File`. `Code` is surrounded by special comments (starting with `CommentMark`), that allow identifying the inserted code later. If the `File` contained some inserted code, it is replaced.

unregister_from_script/2:

PREDICATE

No further documentation available for this predicate.

22.3 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*
`system, system_extra, stream_utils, lists.`
- *Packages:*
`prelude, initial, condcomp, assertions, assertions/assertions_basic, regtypes, dcg, fsyntax, basicmodes.`

23 Bundle hashing

Author(s): Jose F. Morales, The Ciao Development Team.

This module defines the operations to map the whole bundle source code to shorter identifiers (which can be precise like cryptohashes for DVCS or coarse like release date, etc.).

Note: Some functions (like Git commit number) simply ignore uncommitted changes in the source tree.

23.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(bundle_hash)).`
- **Exports:**
 - *Predicates:*
`bundle_gen_commit_info/1, bundle_commit_info/3.`

23.2 Documentation on exports

bundle_gen_commit_info/1: PREDICATE
Usage:
 Extract and save the commit information metadata

bundle_commit_info/3: PREDICATE
 No further documentation available for this predicate.

23.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
`builder_flags.`
- *System library modules:*
`native_props, datafacts_rt, stream_utils, system, system_extra, terms, pathnames,
 bundle_paths, bundle_info, vcs_svn, version_strings, vcs_git.`
- *Packages:*
`prelude, initial, condcomp, assertions, assertions/assertions_basic, basicmodes,
 nativeprops, fsyntax, hiord, regtypes, datafacts.`

24 C header detection

24.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(detcheader)).`
- **Exports:**
 - *Predicates:*
`detect_c_headers/1.`

24.2 Documentation on exports

detect_c_headers/1:

PREDICATE

Usage:

Succeeds if all the c header files in the argument are valid.

- *The following properties should hold at call time:*

Arg1 is a list of filenames.

(basic_props:list/2)

24.3 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*

lists, stream_utils, foreign_compilation, system, system_extra, process, port_reify, c_itf_props.

- *Packages:*

prelude, initial, condcomp, assertions, assertions/assertions_basic, modes, dcg.

25 Messages for the build process

25.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(messages_aux)).`
- **Exports:**
 - *Predicates:*
`cmd_message/3, dmc_message/3, normal_message/2, verbose_message/2.`

25.2 Documentation on exports

cmd_message/3:	PREDICATE
No further documentation available for this predicate.	
dmc_message/3:	PREDICATE
No further documentation available for this predicate.	
normal_message/2:	PREDICATE
No further documentation available for this predicate.	
verbose_message/2:	PREDICATE
No further documentation available for this predicate.	

25.3 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*
`config_common.`
- *System library modules:*
`format, lists.`
- *Packages:*
`prelude, initial, condcomp, assertions, assertions/assertions_basic, regtypes, hiord.`

26 Auxiliary code for user interaction

Author(s): The Ciao Development Team.

26.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(interactive_aux)).`
- **Exports:**
 - *Predicates:*
`ask_option_value/6, ask_yesno/1.`

26.2 Documentation on exports

ask_option_value/6: PREDICATE
Usage: ask_option_value(Description, Name, ValidValues, DefaultValue, PreviousValue, Value)
 Ask (interactively) for a value for variable **Name**. Repeat until the user provides one of the **ValidValues**, or chose **PreviousValue** if none was provided.

- *Call and exit should be compatible with:*
 - Description** is a string (a list of character codes). (basic_props:string/1)
 - Name** is an atom. (basic_props:atm/1)
 - ValidValues** is a list of terms. (basic_props:list/2)
 - DefaultValue** is any term. (basic_props:term/1)
 - PreviousValue** is any term. (basic_props:term/1)
 - Value** is any term. (basic_props:term/1)
- *The following properties should hold at call time:*
 - Description** is currently a term which is not a free variable. (term_typing:nonvar/1)
 - Name** is currently a term which is not a free variable. (term_typing:nonvar/1)
 - ValidValues** is currently a term which is not a free variable. (term_typing:nonvar/1)
 - DefaultValue** is currently a term which is not a free variable. (term_typing:nonvar/1)
 - PreviousValue** is currently a term which is not a free variable. (term_typing:nonvar/1)
 - Value** is a free variable. (term_typing:var/1)

ask_yesno/1: PREDICATE
 No further documentation available for this predicate.

26.3 Documentation on imports

This module has the following direct dependencies:

- *System library modules:*

`lists`, `stream_utils`.

- *Packages:*

`prelude`, `initial`, `condcomp`, `assertions`, `assertions/assertions_basic`, `basicmodes`,
`dcg`, `fsyntax`, `hiord`.

27 Bundle configuration

Author(s): The Ciao Development Team.

This module computes the values of bundle configuration flags (`bundle_flags`) based on configuration parameters the configuration rules (`Manifest/*.hooks.pl` files).

TODO: Write documentation for the syntax and semantics of configuration rules.

The configuration process may invoke external configuration tools if required.

27.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(bundle_configure)).`
- **Exports:**
 - *Predicates:*
`check_builder_update/0, bundle_has_config/1, bundleset_configure/2, config_set_flag/2, config_get_flag/2, config_list_flags/1, config_describe_flag/1, set_prolog_flags_from_bundle_flags/1.`
 - *Multifiles:*
`m_bundlehook_decl/3, m_bundlehook_do/3, m_third_party_name/1, m_third_party_version/2, m_third_party_source_url/2, m_third_party_source_md5/2, m_third_party_patch/2, m_third_party_build_system/2, m_third_party_option1/2, m_third_party_option2/3, m_third_party_custom_configure/2, m_third_party_custom_build/2, m_third_party_custom_install/2, m_bundle_config_call/2, m_bundle_config_entry/3, m_bundle_foreign_config_tool/3, m_bundle_foreign_dep/4.`

27.2 Documentation on exports

check_builder_update/0: PREDICATE

Usage:

Detect if the running builder needs an update.

bundle_has_config/1: PREDICATE

No further documentation available for this predicate.

bundleset_configure/2: PREDICATE

Usage: `bundleset_configure(BundleSet,Flags)`

Configure the bundles specified in `BundleSet` using their configuration rules and the input provided by `Flags` and/or user interaction (if `interactive_config` flag is specified).

config_set_flag/2: PREDICATE
No further documentation available for this predicate.

config_get_flag/2: PREDICATE
No further documentation available for this predicate.

config_list_flags/1: PREDICATE
No further documentation available for this predicate.

config_describe_flag/1: PREDICATE
No further documentation available for this predicate.

set_prolog_flags_from_bundle_flags/1: PREDICATE
No further documentation available for this predicate.

27.3 Documentation on multifiles

m_bundlehook_decl/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundlehook_do/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_name/1: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_version/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_source_url/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_source_md5/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_patch/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_build_system/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_option1/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_option2/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_configure/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_build/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_third_party_custom_install/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_config_call/2: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_config_entry/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_foreign_config_tool/3: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

m_bundle_foreign_dep/4: PREDICATE
No further documentation available for this predicate. The predicate is *multifile*.

27.4 Documentation on imports

This module has the following direct dependencies:

– *Application modules:*

`builder_flags`, `interactive_aux`, `car_maker`, `manifest_compiler`.

– *System library modules:*

`datafacts_rt`, `lists`, `process`, `messages`, `port_reify`, `bundle_flags`, `version_strings`, `system_extra`, `bundle_paths`, `system`, `stream_utils`, `aggregates`, `hiordlib`, `bundle_info`.

– *Packages:*

`prelude`, `initial`, `condcomp`, `assertions`, `assertions/assertions_basic`, `basicmodes`, `fsyntax`, `hiord`, `datafacts`.

28 Bundle fetch

Author(s): Jose F. Morales.

This module implements support for fetching bundles and their dependencies from remote locations (e.g., the network).

The predicate `bundle_fetch/2` fetches a bundle and its dependencies, as follows:

- if the bundle is in a non-top workspace, stops fetching (and do not try to fetch dependencies)
- if the bundle is missing, retrieve and store it at the *top workspace* (see `CIAOPATH` environment)
- if the bundle is in the top workspace, skips fetching
- try fetch bundle dependencies

A fetched bundle is automatically marked to distinguish them from *user* bundles, which are manually written by the user. It is possible to fetch a user bundle, e.g., to retrieve all their dependencies.

Fetched bundles can be removed with `bundle_rm/1`. Removing a *user* bundle is not allowed with `bundle_rm/1` (it must be done manually).

The location and fetch protocol is automatically recognized based on *bundle aliases*. See `bundle_src_origin/2` for translation from bundle aliases to recognized origins (e.g., `ciao-lang.org/foo` downloads and uncompress a `git` archive).

28.1 Usage and interface

- **Library usage:**
`:- use_module(ciaobld(bundle_fetch)).`
- **Exports:**
 - *Predicates:*
`add_bundle_origin/2, get_bundle_origin/2, bundle_fetch_cleanup/0, check_bundle_alias/3, bundle_fetch/2, bundle_rm/1.`

28.2 Documentation on exports

- | | |
|--|------------------|
| <p>add_bundle_origin/2:</p> <p>Usage: <code>add_bundle_origin(Bundle, Origin)</code></p> <p>Select the origin for the given bundle name</p> | <p>PREDICATE</p> |
| <p>get_bundle_origin/2:</p> <p>Usage: <code>get_bundle_origin(Bundle, Origin)</code></p> <p>Obtain the origin for a bundle (for fetching). Use the default origin if unknown (<code>default_origin/2</code>).</p> | <p>PREDICATE</p> |
| <p>bundle_fetch_cleanup/0:</p> <p>Usage:</p> <p>Cleanup the bundle fetch state</p> | <p>PREDICATE</p> |

check_bundle_alias/3: PREDICATE

Usage: `check_bundle_alias(BundleAlias,Origin,Bundle)`

Given a URL-like `BundleAlias`, obtain its `Origin` term for fetch and the bundle name `Name`. Throws an exception if malformed and fails silently if it is not a URL-like alias.

- *The following properties should hold at call time:*

`BundleAlias` is currently a term which is not a free variable. (term_

typing:nonvar/1)

`Origin` is a free variable. (term_typing:var/1)

`Bundle` is a free variable. (term_typing:var/1)

bundle_fetch/2: PREDICATE

Usage: `bundle_fetch(Bundle,Fetches)`

Fetch `Bundle` and all its dependencies. `Fetches` is the list of newly fetched bundles.

- *The following properties should hold at call time:*

`Bundle` is currently a term which is not a free variable. (term_typing:nonvar/1)

`Fetches` is a free variable. (term_typing:var/1)

bundle_rm/1: PREDICATE

No further documentation available for this predicate.

28.3 Documentation on internals

default_origin/2: PREDICATE

Usage: `default_origin(Bundle,Origin)`

Default origin when none is specified:

```
default_origin(Bundle,Origin) :-
    path_concat('github.com/ciao-lang',Bundle,Path),
    Origin=github(Path,master).
```

28.4 Documentation on imports

This module has the following direct dependencies:

- *Application modules:*

`bundle_scan`, `messages_aux`, `manifest_compiler`.

- *System library modules:*

`datafacts_rt`, `lists`, `terms`, `pathnames`, `process`, `http_get`, `system`, `system_extra`, `source_tree`, `bundle_info`, `aggregates`.

- *Packages:*

`prelude`, `initial`, `condcomp`, `dcg`, `fsyntax`, `hiord`, `assertions`, `assertions/assertions_basic`, `regtypes`, `isomodes`, `datafacts`.

29 Publish from a mono-repository

Author(s): Jose F. Morales.

This tool allows publishing pristine views of an *annotated* git mono-repository. An annotated git repository contains `NODISTRIBUTE` empty files that mark directories that must not be visible in a pristine copy.

This tool is tailored for the `ciao-devel` mono-repository but it could be easily generalized for other repositories.

29.1 Usage

Use `ciao publish list` to list publishable bundles from the Ciao devel repository (either the main `ciao` or some bundles at `bndls/`). E.g.:

```
$ ciao publish list
```

Publishing code is performed by the `commit` and `push` operations. Use the `help` option to view other possible commands.

Example for publishing the bundle at the current directory (when run at the Ciao root directory the special `ciao` bundle is selected, which contains `core` and `builder`):

```
$ ciao publish pull
$ ciao publish commit
<< (please review commits) >>
$ ciao publish push
```

A command may be followed by a target bundle name to specify a different bundle. Example for publishing `ciao_emacs`:

```
$ ciao publish pull ciao_emacs
$ ciao publish commit ciao_emacs
<< (please review commits) >>
$ ciao publish push ciao_emacs
```

The first time that `commit` is performed, it will require a first commit number. This is not needed for `squash`.

You can use the `--all` option to perform a command on all publishable bundles (see `--help` for more info), or use shell scripts.

Examples on all bundles:

```
<< Consult the status of all publishable bundles >>
$ ciao publish status --all

<< Pull all public repositories (previous to publishing) >>
$ ciao publish pull --all

<< Commit all publishable changes >>
$ ciao publish commit --all

<< Push to the public repository >>
$ ciao publish push --all
```

- The source is fetched from the repository (not from the checkout).
- Clones of publishing repos are kept at `$HOME/REPOS-ciao-publish` (with some metadata to speedup detection of unpublished commits).

29.2 Additional files for publishing

Other directories:

```
ci-scripts/      Scripts for CI
ci-status/       Scripts for checking the status of CI
etc/ciao-download-stats.sh
                  Download statistics
```

29.3 Contribution from public repositories

Assume that Bob maintains the private Ciao repository and Alice wants to contribute to it. This is the typical workflow for contributing to the project preserving authorship:

- Alice: clone public Git repository (github.com/ciao-lang/ciao)
- Alice: make some changes and commit them
- Alice: format patches using `git format-patch` (never push them!)


```
$ git format-patch HEAD^n # where n is the number of commits not in master
```
- Alice: send the `????-*.patch` files via email to Bob
- Bob: apply back the changes in the private repository with


```
$ git am < 0001-*.patch
$ git am < 0002-*.patch
$ ...
```
- Bob: check with `git log` that the code is pushed correctly
- Bob: do `ciao publish pull`, `ciao publish commit`, and `ciao publish push`
- Alice: do `git pull` and `git rebase -i`. The first command will create a merge commit. The second command will break. After some `git rebase --continue` it will end. If everything is fine there will be no unpushed changes to master and all new commits will be authored as Alice.

29.4 Merging github pull requests

You can follow the same steps as in the previous section, just obtaining the patches from this custom URL <https://github.com/ciao-lang/ciao/pull/NUMBER.patch>.

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