

Package ‘flir’

June 28, 2025

Type Package

Title Find and Fix Lints in R Code

Version 0.5.0

Description Lints are code patterns that are not optimal because they are inefficient, forget corner cases, or are less readable. ‘flir’ provides a small set of functions to detect those lints and automatically fix them. It builds on ‘astgrep’, which itself uses the ‘Rust’ crate ‘ast-grep’ to parse and navigate R code.

Depends R (>= 4.2)

Imports astgrep (>= 0.1.0), cli, crayon, data.table, digest, fs, git2r, rprojroot, yaml

Suggests diffviewer, glue, knitr, patrick, rex, rlang, rmarkdown, rstudioapi, shiny, spelling, testthat (>= 3.0.0), tibble, usethis, utils, withr

License MIT + file LICENSE

Encoding UTF-8

RoxygenNote 7.3.2

URL <https://flir.etiennebacher.com>,
<https://github.com/etiennebacher/flir>

BugReports <https://github.com/etiennebacher/flir/issues>

Config/testthat/edition 3

VignetteBuilder knitr

Config/testthat/parallel true

Language en-US

NeedsCompilation no

Author Etienne Bacher [aut, cre, cph]

Maintainer Etienne Bacher <etienne.bacher@protonmail.com>

Repository CRAN

Date/Publication 2025-06-28 17:10:02 UTC

Contents

add_new_rule	3
any_duplicated_linter	3
any_is_na_linter	4
class_equals_linter	4
condition_message_linter	4
double_assignment_linter	5
duplicate_argument_linter	5
empty_assignment_linter	5
equals_na_linter	6
equal_assignment_linter	6
expect_comparison_linter	6
expect_identical_linter	7
expect_length_linter	7
expect_named_linter	7
expect_not_linter	8
expect_null_linter	8
expect_true_false_linter	8
expect_type_linter	9
export_new_rule	9
fix	10
for_loop_index_linter	12
function_return_linter	13
implicit_assignment_linter	13
is_numeric_linter	14
lengths_linter	14
length_levels_linter	14
length_test_linter	15
library_call_linter	15
lint	15
list_comparison_linter	18
list_linters	18
literal_coercion_linter	19
matrix_apply_linter	19
missing_argument_linter	19
nested_ifelse_linter	20
numeric_leading_zero_linter	20
outer_negation_linter	20
package_hooks_linter	21
paste_linter	21
redundant_equals_linter	21
redundant_ifelse_linter	22
rep_len_linter	22
right_assignment_linter	22
sample_int_linter	23
seq_linter	23
setup_fir	23

<i>add_new_rule</i>	3
---------------------	---

setup_flir_gha	24
sort_linter	25
stopifnot_all_linter	25
todo_comment_linter	25
T_and_F_symbol_linter	26
undesirable_function_linter	26
undesirable_operator_linter	26
unnecessary_nesting_linter	27
which_grep_linter	27

Index	28
--------------	----

add_new_rule	<i>Create a custom rule for internal use</i>
---------------------	--

Description

This function creates a YAML file with the placeholder text to define a new rule. The file is stored in `flir/rules/custom`. You need to create the `flir` folder with `setup_flir()` if it doesn't exist. If you want to create a rule that users of your package will be able to access, use `export_new_rule()` instead.

Usage

```
add_new_rule(name, path)
```

Arguments

<code>name</code>	Name(s) of the rule. Cannot contain white space.
<code>path</code>	Path to package or project root. If NULL (default), uses ".".

Value

Create new file(s) but doesn't return anything

any_duplicated_linter	<i>Require usage of anyDuplicated(x) > 0 over any(duplicated(x))</i>
------------------------------	---

Description

See https://lintr.r-lib.org/reference/any_duplicated_linter.html.

Usage

```
any_duplicated_linter
```

Value

The name of the linter

any_is_na_linter	<i>Require usage of anyNA(x) over any(is.na(x))</i>
------------------	---

Description

See https://lintr.r-lib.org/reference/any_is_na_linter.html.

Usage

```
any_is_na_linter
```

Value

The name of the linter

class_equals_linter	<i>Block comparison of class with ==</i>
---------------------	--

Description

See https://lintr.r-lib.org/reference/class_equals_linter.html.

Usage

```
class_equals_linter
```

Value

The name of the linter

condition_message_linter	<i>Block usage of paste() and paste0() with messaging functions using ...</i>
--------------------------	---

Description

See https://lintr.r-lib.org/reference/condition_message_linter.html.

Usage

```
condition_message_linter
```

Value

The name of the linter

double_assignment_linter
 double_assignment

Description

double_assignment

Usage

double_assignment_linter

Value

The name of the linter

duplicate_argument_linter
 Duplicate argument linter

Description

See https://lintr.r-lib.org/reference/duplicate_argument_linter.html.

Usage

duplicate_argument_linter

Value

The name of the linter

empty_assignment_linter
 empty_assignment

Description

empty_assignment

Usage

empty_assignment_linter

Value

The name of the linter

equals_na_linter	<i>Equality check with NA linter</i>
------------------	--------------------------------------

Description

See https://lintr.r-lib.org/reference>equals_na_linter.

Usage

```
equals_na_linter
```

Value

The name of the linter

equal_assignment_linter	<i>equal_assignment</i>
-------------------------	-------------------------

Description

```
equal_assignment
```

Usage

```
equal_assignment_linter
```

Value

The name of the linter

expect_comparison_linter	<i>Require usage of expect_gt(x, y) over expect_true(x > y) (and similar)</i>
--------------------------	--

Description

See https://lintr.r-lib.org/reference/expect_comparison_linter.

Usage

```
expect_comparison_linter
```

Value

The name of the linter

expect_identical_linter

Require usage of expect_identical(x, y) where appropriate

Description

See https://lintr.r-lib.org/reference/expect_identical_linter.html.

Usage

```
expect_identical_linter
```

Value

The name of the linter

expect_length_linter	<i>Require usage of</i>	expect_length(x, n)	<i>over</i>
	expect_equal(length(x), n)		

Description

See https://lintr.r-lib.org/reference/expect_length_linter.html.

Usage

```
expect_length_linter
```

Value

The name of the linter

expect_named_linter	<i>Require usage of</i>	expect_named(x, n)	<i>over</i>
	expect_equal(names(x), n)		

Description

See https://lintr.r-lib.org/reference/expect_named_linter.html.

Usage

```
expect_named_linter
```

Value

The name of the linter

`expect_not_linter` *Require usage of expect_false(x) over expect_true(!x)*

Description

See https://lintr.r-lib.org/reference/expect_not_linter.html.

Usage

```
expect_not_linter
```

Value

The name of the linter

`expect_null_linter` *Require usage of expect_null for checking NULL*

Description

See https://lintr.r-lib.org/reference/expect_null_linter.html.

Usage

```
expect_null_linter
```

Value

The name of the linter

`expect_true_false_linter`
 Require usage of expect_true(x) over expect_equal(x, TRUE)

Description

See https://lintr.r-lib.org/reference/expect_true_false_linter.html.

Usage

```
expect_true_false_linter
```

Value

The name of the linter

expect_type_linter	<i>Require usage of expect_type(x, type) over expect_equal(typeof(x), type)</i>
--------------------	---

Description

See https://lintr.r-lib.org/reference/expect_type_linter.html.

Usage

```
expect_type_linter
```

Value

The name of the linter

export_new_rule	<i>Create a custom rule for external use</i>
-----------------	--

Description

This function creates a YAML file with the placeholder text to define a new rule. The file is stored in `inst/flir/rules` and will be available to users of your package if they use `flir`.

To create a new rule that you can use in the current project only, use `add_new_rule()` instead.

Usage

```
export_new_rule(name, path)
```

Arguments

name	Name(s) of the rule. Cannot contain white space.
path	Path to package or project root. If NULL (default), uses ".".

Value

Create new file(s) but doesn't return anything

`fix`*Automatically replace lints*

Description

`fix()`, `fix_package()`, and `fix_dir()` all replace lints in files. The only difference is in the input they take:

- `fix()` takes path to files or directories
- `fix_dir()` takes a path to one directory
- `fix_package()` takes a path to the root of a package and looks at the following list of folders: R, tests, inst, vignettes, data-raw, demo, exec.

`fix_text()` takes some text input. Its main interest is to be able to quickly experiment with some lints and fixes.

Usage

```
fix(
  path,
  linters = NULL,
  exclude_path = NULL,
  exclude_linters = NULL,
  force = FALSE,
  verbose = TRUE,
  rerun = TRUE,
  interactive = FALSE
)

fix_dir(
  path,
  linters = NULL,
  exclude_path = NULL,
  exclude_linters = NULL,
  force = FALSE,
  verbose = TRUE,
  rerun = TRUE,
  interactive = FALSE
)

fix_package(
  path,
  linters = NULL,
  exclude_path = NULL,
  exclude_linters = NULL,
  force = FALSE,
  verbose = TRUE,
```

```

    rerun = TRUE,
    interactive = FALSE
  )

fix_text(text, linters = NULL, exclude_linters = NULL, rerun = TRUE)

```

Arguments

path	A valid path to a file or a directory. Relative paths are accepted. Contrarily to <code>lint()</code> and its variants, this must be specified.
linters	A character vector with the names of the rules to apply. See the entire list of rules with <code>list_linters()</code> . If you have set up the <code>flir</code> folder with <code>setup_flir()</code> , you can also list the linters to use in the <code>keep</code> field of <code>flir/config.yml</code> . See setup_flir() for more information.
exclude_path	One or several paths that will be ignored from the path selection.
exclude_linters	One or several linters that will not be checked. Values can be the names of linters (such as "any_is_na") or its associated function, such as <code>any_is_na_linter()</code> (this is mostly for compatibility with <code>lintr</code>). If you have set up the <code>flir</code> folder with <code>setup_flir()</code> , you can also list the linters to exclude in the <code>exclude</code> field of <code>flir/config.yml</code> . See setup_flir() for more information.
force	Force the application of fixes on the files. This is used only in the case where Git is not detected, several files will be modified, and the code is run in a non-interactive setting.
verbose	Show messages.
rerun	Run the function several times until there are no more fixes to apply. This is useful in the case of nested lints. If <code>FALSE</code> , the function runs only once, potentially ignoring nested fixes.
interactive	Opens a Shiny app that shows a visual diff of each modified file. This is particularly useful when you want to review the potential fixes before accepting them. Setting this to <code>TRUE</code> will disable the check on whether Git is used.
text	Text to analyze (and to fix if necessary).

Value

A list with as many elements as there are files to fix (in `fix_text()`, the text is written to a temporary file).

Each element of the list contains the fixed text, where all fixes available have been applied.

Ignoring lines

`flir` supports ignoring single lines of code with `# flir-ignore`. For example, this will not warn:

```
# flir-ignore
any(duplicated(x))
```

However, this will warn for the second `any(duplicated())`:

```
# flir-ignore
any(duplicated(x))
any(duplicated(y))
```

To ignore more than one line of code, use `# flir-ignore-start` and `# flir-ignore-end`:

```
# flir-ignore-start
any(duplicated(x))
any(duplicated(y))
# flir-ignore-end
```

Examples

```
# `fix_text()` is convenient to explore with a small example
fix_text("any(duplicated(rnorm(5)))")

fix_text("any(duplicated(rnorm(5)))
any(is.na(x))
")

# Setup for the example with `fix()`
destfile <- tempfile()
cat(
x = c(1, 2, 3)
any(duplicated(x), na.rm = TRUE)

any(duplicated(x))

if (any(is.na(x))) {
  TRUE
}

any(
  duplicated(x)
)", file = destfile)

fix(destfile)
cat(paste(readLines(destfile), collapse = "\n"))
```

`for_loop_index_linter` *Block usage of for loops directly overwriting the indexing variable*

Description

See https://lintr.r-lib.org/reference/for_loop_index_linter.html.

Usage

`for_loop_index_linter`

Value

The name of the linter

`function_return_linter`

Lint common mistakes/style issues cropping up from return statements

Description

See https://lintr.r-lib.org/reference/function_return_linter.html.

Usage`function_return_linter`**Value**

The name of the linter

`implicit_assignment_linter`

implicit_assignment

Description`implicit_assignment`**Usage**`implicit_assignment_linter`**Value**

The name of the linter

is_numeric_linter	<i>Redirect</i>	is.numeric(x) is.integer(x)	to	just	use
		is.numeric(x)			

Description

See https://lintr.r-lib.org/reference/is_numeric_linter.html.

Usage

```
is_numeric_linter
```

Value

The name of the linter

lengths_linter	<i>Require usage of lengths() where possible</i>
----------------	--

Description

See https://lintr.r-lib.org/reference/lengths_linter.html.

Usage

```
lengths_linter
```

Value

The name of the linter

length_levels_linter	<i>Require usage of nlevels over length(levels().))</i>
----------------------	---

Description

See https://lintr.r-lib.org/reference/length_levels_linter.html.

Usage

```
length_levels_linter
```

Value

The name of the linter

length_test_linter	<i>Check for a common mistake where length is applied in the wrong place</i>
--------------------	--

Description

See https://lintr.r-lib.org/reference/length_test_linter.html.

Usage

```
length_test_linter
```

Value

The name of the linter

library_call_linter	<i>Library call linter</i>
---------------------	----------------------------

Description

See https://lintr.r-lib.org/reference/library_call_linter.html.

Usage

```
library_call_linter
```

Value

The name of the linter

lint	<i>List all lints in a file or a directory</i>
------	--

Description

lint(), lint_text(), lint_package(), and lint_dir() all produce a data.frame containing the lints, their location, and potential fixes. The only difference is in the input they take:

- lint() takes path to files or directories
- lint_text() takes some text input
- lint_dir() takes a path to one directory
- lint_package() takes a path to the root of a package and looks at the following list of folders: R, tests, inst, vignettes, data-raw, demo, exec.

Usage

```

lint(
  path = ".",
  linters = NULL,
  exclude_path = NULL,
  exclude_linters = NULL,
  open = TRUE,
  use_cache = TRUE,
  verbose = TRUE
)

lint_dir(
  path = ".",
  linters = NULL,
  open = TRUE,
  exclude_path = NULL,
  exclude_linters = NULL,
  use_cache = TRUE,
  verbose = TRUE
)

lint_package(
  path = ".",
  linters = NULL,
  open = TRUE,
  exclude_path = NULL,
  exclude_linters = NULL,
  use_cache = TRUE,
  verbose = TRUE
)

lint_text(text, linters = NULL, exclude_linters = NULL)

```

Arguments

<code>path</code>	A valid path to a file or a directory. Relative paths are accepted. If <code>NULL</code> (default), uses <code>".".</code> .
<code>linters</code>	A character vector with the names of the rules to apply. See the entire list of rules with <code>list_linters()</code> . If you have set up the <code>flir</code> folder with <code>setup_flir()</code> , you can also list the linters to use in the <code>keep</code> field of <code>flir/config.yml</code> . See setup_flir() for more information.
<code>exclude_path</code>	One or several paths that will be ignored from the path selection.
<code>exclude_linters</code>	One or several linters that will not be checked. Values can be the names of linters (such as <code>"any_is_na"</code>) or its associated function, such as <code>any_is_na_linter()</code> (this is mostly for compatibility with <code>lintr</code>). If you have set up the <code>flir</code> folder with <code>setup_flir()</code> , you can also list the linters to exclude in the <code>exclude</code> field of <code>flir/config.yml</code> . See setup_flir() for more information.

open	If TRUE (default) and if this is used in the RStudio IDE, lints will be shown with markers.
use_cache	Do not re-parse files that haven't changed since the last time this function ran.
verbose	Show messages.
text	Text to analyze.

Value

A dataframe where each row is a lint. The columns show the text, its location (both the position in the text and the file in which it was found) and the severity.

Ignoring lines

flir supports ignoring single lines of code with `# flir-ignore`. For example, this will not warn:

```
# flir-ignore
any(duplicated(x))
```

However, this will warn for the second `any(duplicated())`:

```
# flir-ignore
any(duplicated(x))
any(duplicated(y))
```

To ignore more than one line of code, use `# flir-ignore-start` and `# flir-ignore-end`:

```
# flir-ignore-start
any(duplicated(x))
any(duplicated(y))
# flir-ignore-end
```

Examples

```
# `lint_text()` is convenient to explore with a small example
lint_text("any(duplicated(rnorm(5)))")

lint_text("any(duplicated(rnorm(5)))
any(is.na(x))
")

# Setup for the example with `lint()`
destfile <- tempfile()
cat("
x = c(1, 2, 3)
any(duplicated(x), na.rm = TRUE)

any(duplicated(x))

if (any(is.na(x))) {
```

```

    TRUE
}

any(
  duplicated(x)
)", file = destfile)

lint(destfile)

```

list_comparison_linter

Block usage of comparison operators with known-list() functions like lapply

Description

See https://lintr.r-lib.org/reference/list_comparison_linter.html.

Usage

```
list_comparison_linter
```

Value

The name of the linter

list_linters

Get the list of linters in flir

Description

Get the list of linters in flir

Usage

```
list_linters(path)
```

Arguments

path	A valid path to a file or a directory. Relative paths are accepted. If NULL (default), uses ".".
------	--

Value

A character vector

Examples

```
list_linters(".")
```

literal_coercion_linter

Require usage of correctly-typed literals over literal coercions

Description

See https://lintr.r-lib.org/reference/literal_coercion_linter.html.

Usage

```
literal_coercion_linter
```

Value

The name of the linter

matrix_apply_linter

Require usage of colSums(x) or rowSums(x) over apply(x, ., sum)

Description

See https://lintr.r-lib.org/reference/matrix_apply_linter.html.

Usage

```
matrix_apply_linter
```

Value

The name of the linter

missing_argument_linter

Missing argument linter

Description

See https://lintr.r-lib.org/reference/missing_argument_linter.html.

Usage

```
missing_argument_linter
```

Value

The name of the linter

nested_ifelse_linter *Block usage of nested ifelse() calls*

Description

See https://lintr.r-lib.org/reference/nested_ifelse_linter.html.

Usage

nested_ifelse_linter

Value

The name of the linter

numeric_leading_zero_linter

Require usage of a leading zero in all fractional numerics

Description

See https://lintr.r-lib.org/reference/numeric_leading_zero_linter.html.

Usage

numeric_leading_zero_linter

Value

The name of the linter

outer_negation_linter *Require usage of !any(x) over all(!x), !all(x) over any(!x)*

Description

See https://lintr.r-lib.org/reference/outer_negation_linter.html.

Usage

outer_negation_linter

Value

The name of the linter

package_hooks_linter *Package hooks linter*

Description

See https://lintr.r-lib.org/reference/package_hooks_linter.

Usage

package_hooks_linter

Value

The name of the linter

paste_linter *Raise lints for several common poor usages of paste()*

Description

See https://lintr.r-lib.org/reference/paste_linter.

Usage

paste_linter

Value

The name of the linter

redundant_equals_linter
Block usage of ==, != on logical vectors

Description

See https://lintr.r-lib.org/reference/redundant_equals_linter.

Usage

redundant_equals_linter

Value

The name of the linter

redundant_ifelse_linter

Prevent ifelse() from being used to produce TRUE/FALSE or 1/0

Description

See https://lintr.r-lib.org/reference/redundant_ifelse_linter.html.

Usage

`redundant_ifelse_linter`

Value

The name of the linter

rep_len_linter

Require usage of rep_len(x, n) over rep(x, length.out = n)

Description

See https://lintr.r-lib.org/reference/rep_len_linter.html.

Usage

`rep_len_linter`

Value

The name of the linter

right_assignment_linter

right_assignment

Description

`right_assignment`

Usage

`right_assignment_linter`

Value

The name of the linter

sample_int_linter	<i>Require usage of sample.int(n, m, ...) over sample(1:n, m, ...)</i>
-------------------	--

Description

See https://lintr.r-lib.org/reference/sample_int_linter.html.

Usage

```
sample_int_linter
```

Value

The name of the linter

seq_linter	<i>Sequence linter</i>
------------	------------------------

Description

See https://lintr.r-lib.org/reference/seq_linter.html.

Usage

```
seq_linter
```

Value

The name of the linter

setup_flir	<i>Setup flir</i>
------------	-------------------

Description

This creates a `flir` folder that has multiple purposes. It contains:

- the file `config.yml` where you can define rules to keep or exclude, as well as rules defined in other packages. More on this below;
- the file `cache_file_state.rds`, which is used when `lint_*`() or `fix_*`() have `cache = TRUE`;
- an optional folder `rules/custom` where you can store your own rules.

This folder must live at the root of the project and cannot be renamed.

Usage

```
setup_flir(path)
```

Arguments

`path` Path to package or project root. If NULL (default), uses “.”.

Details

The file `flir/config.yml` can contain three fields: `keep`, `exclude`, and `from-package`.

`keep` and `exclude` are used to define the rules to keep or to exclude when running `lint_*`() or `fix_*`().

It is possible for other packages to create their own list of rules, for instance to detect or replace deprecated functions. In `from-package`, you can list package names where `flir` should look for additional rules. By default, if you list package `foobar`, then all rules defined in the package `foobar` will be used. To ignore some of those rules, you can list `from-foobar-<rulename>` in the `exclude` field.

See the vignette [Sharing rules across packages](#) for more information.

Value

Imports files necessary for `flir` to work but doesn't return any value in R.

`setup_flir_gha`

Create a Github Actions workflow for flir

Description

Create a Github Actions workflow for `flir`

Usage

```
setup_flir_gha(path, overwrite = FALSE)
```

Arguments

`path` Path to package or project root. If NULL (default), uses “.”.

`overwrite` Whether to overwrite `.github/workflows/flir.yaml` if it already exists.

Value

Creates `.github/workflows/flir.yaml` but doesn't return any value.

sort_linter

Check for common mistakes around sorting vectors

Description

See https://lintr.r-lib.org/reference/sort_linter.html.

Usage

```
sort_linter
```

Value

The name of the linter

stopifnot_all_linter

Block usage of all() within stopifnot()

Description

See https://lintr.r-lib.org/reference/stopifnot_all_linter.html.

Usage

```
stopifnot_all_linter
```

Value

The name of the linter

todo_comment_linter

TODO comment linter

Description

See https://lintr.r-lib.org/reference/todo_comment_linter.html.

Usage

```
todo_comment_linter
```

Value

The name of the linter

T_and_F_symbol_linter *T and F symbol linter*

Description

See https://lintr.r-lib.org/reference/T_and_F_symbol_linter.html.

Usage

`T_and_F_symbol_linter`

Value

The name of the linter

undesirable_function_linter
Undesirable function linter

Description

See https://lintr.r-lib.org/reference/undesirable_function_linter.html.

Usage

`undesirable_function_linter`

Value

The name of the linter

undesirable_operator_linter
Undesirable operator linter

Description

See https://lintr.r-lib.org/reference/undesirable_operator_linter.html.

Usage

`undesirable_operator_linter`

Value

The name of the linter

unnecessary_nesting_linter

Block instances of unnecessary nesting

Description

See https://lintr.r-lib.org/reference/unnecessary_nesting_linter.html.

Usage

```
unnecessary_nesting_linter
```

Value

The name of the linter

which_grepl_linter

Require usage of grep over which(grepl(.))

Description

See https://lintr.r-lib.org/reference/which_grepl_linter.html.

Usage

```
which_grepl_linter
```

Value

The name of the linter

Index

add_new_rule, 3
any_duplicated_linter, 3
any_is_na_linter, 4

class_equals_linter, 4
condition_message_linter, 4

double_assignment_linter, 5
duplicate_argument_linter, 5

empty_assignment_linter, 5
equal_assignment_linter, 6
equals_na_linter, 6
expect_comparison_linter, 6
expect_identical_linter, 7
expect_length_linter, 7
expect_named_linter, 7
expect_not_linter, 8
expect_null_linter, 8
expect_true_false_linter, 8
expect_type_linter, 9
export_new_rule, 9

fix, 10
fix_dir(fix), 10
fix_package(fix), 10
fix_text(fix), 10
for_loop_index_linter, 12
function_return_linter, 13

implicit_assignment_linter, 13
is_numeric_linter, 14

length_levels_linter, 14
length_test_linter, 15
lengths_linter, 14
library_call_linter, 15
lint, 15
lint_dir(lint), 15
lint_package(lint), 15
lint_text(lint), 15

list_comparison_linter, 18
list_linters, 18
literal_coercion_linter, 19

matrix_apply_linter, 19
missing_argument_linter, 19

nested_ifelse_linter, 20
numeric_leading_zero_linter, 20

outer_negation_linter, 20

package_hooks_linter, 21
paste_linter, 21

redundant_equals_linter, 21
redundant_ifelse_linter, 22
rep_len_linter, 22
right_assignment_linter, 22

sample_int_linter, 23
seq_linter, 23
setup_flir, 23
setup_flir(), 11, 16
setup_flir_gha, 24
sort_linter, 25
stopifnot_all_linter, 25

T_and_F_symbol_linter, 26
todo_comment_linter, 25

undesirable_function_linter, 26
undesirable_operator_linter, 26
unnecessary_nesting_linter, 27

which_grep_linter, 27