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# **django-permissions-auditor**

## **Documentation**

*Release 1.0.0*

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**Dec 04, 2019**



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Admin site for auditing and managing permissions for views in your Django app.

Django administration

WELCOME, ADMIN VIEW SITE / CHANGE PASSWORD / LOG OUT

Home · Permissions Auditor · Site Views

Views By Module

django.contrib.staticfiles.views				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
serve	/staticV<path>		🔴	

test_app.views				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
home_page	/		🟢	
LoginPage	/accounts/login/		🔴	
LogoutPage	/accounts/logout/		🔴	

test_app.views.cbv_based				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
UserIndex	/cbv/users/	auth.view_user	🟢	PermissionRequiredMixin - Docstrings on 'has_permission()' are displayed in the admin.
SuperUserIndex	/cbv/super_users/		🔴	UserPassesTestMixin - The user must be a superuser to access.
PermissionsIndex	/cbv/permissions/	auth.view_user auth.change_user	🟢	

test_app.views.function_based				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
user_index	/func/users/	auth.view_user	🟢	
superuser_index	/func/super_users/		🟢	Superuser required
permissions_index	/func/permissions/		🟢	Staff member required

FILTER

Group By

Module

Permission

No Grouping

Navigate

django.contrib.staticfiles.views

test\_app.views

test\_app.views.cbv\_based

test\_app.views.function\_based



# CHAPTER 1

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## Features

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- Automatically parse views registered in Django's URL system
- Out of the box support for Django's authentication system
- Easily extensible for custom permission schemes





Requirements:

- Django >=2.1
- Python 3.5, 3.6, 3.7

To install:

```
pip install django-permissions-auditor
```

Add *permissions\_auditor* to your `INSTALLED_APPS` in your project's `settings.py` file:

```
INSTALLED_APPS = [  
    ...  
    'permissions_auditor',  
    ...  
]
```

## 2.1 Contribute

- Issue Tracker: <https://github.com/AACEngineering/django-permissions-auditor/issues>
- Source Code: <https://github.com/AACEngineering/django-permissions-auditor>

## 2.2 License

The project is licensed under the MIT license.

## 2.2.1 Overview

In large Django applications that require complex access control, it can be difficult for site administrators to effectively assign and manage permissions for users and groups.

I often found that I needed to reference my site's source code in order to remember what permission was required for what view - something end-users and managers shouldn't need to do.

Django-permissions-auditor attempts to solve this problem by automatically parsing out permissions so that administrators can easily manage their site.

## 2.2.2 Installation

Requirements:

- Django >=2.1
- Python 3.5, 3.6, 3.7

To install:

```
pip install django-permissions-auditor
```

Add `permissions_auditor` to your `INSTALLED_APPS` in your project's `settings.py` file:

```
INSTALLED_APPS = [  
    ...  
    'permissions_auditor',  
    ...  
]
```

## 2.2.3 Settings

### PERMISSIONS\_AUDITOR\_PROCESSORS

This setting is used to configure the processors used to parse views for their permissions. You can add custom processors, or remove the default ones similar to Django's middleware system.

For details on each processor, see *Included Processors*.

Default:

```
PERMISSIONS_AUDITOR_PROCESSORS = [  
    'permissions_auditor.processors.auth_mixins.PermissionRequiredMixinProcessor',  
    'permissions_auditor.processors.auth_mixins.LoginRequiredMixinProcessor',  
    'permissions_auditor.processors.auth_mixins.UserPassesTestMixinProcessor',  
    'permissions_auditor.processors.auth_decorators.  
↪PermissionRequiredDecoratorProcessor',  
    'permissions_auditor.processors.auth_decorators.LoginRequiredDecoratorProcessor',  
    'permissions_auditor.processors.auth_decorators.  
↪StaffMemberRequiredDecoratorProcessor',  
    'permissions_auditor.processors.auth_decorators.  
↪SuperUserRequiredDecoratorProcessor',  
    'permissions_auditor.processors.auth_decorators.UserPassesTestDecoratorProcessor',  
]
```

## PERMISSIONS\_AUDITOR\_BLACKLIST

Exclude views from parsing that match the blacklist values.

Default:

```
PERMISSIONS_AUDITOR_BLACKLIST = {
    'namespaces': [
        'admin',
    ],
    'view_names': [],
    'modules': [],
}
```

**namespaces** URL namespaces that will be blacklisted. By default, all views in the `admin` namespace are blacklisted.

**view\_names** Fully qualified view paths to be blacklisted. Example: `test_app.views.home_page`.

**modules** Modules to be blacklisted. Example: `test_app.views.function_based`.

## PERMISSIONS\_AUDITOR\_ADMIN

Enable or disable the Django admin page provided by the app. If `TRUE`, the admin site will be enabled. Useful if you want to create a custom management page instead of using the Django admin.

Default: `TRUE`

## PERMISSIONS\_AUDITOR\_ADMIN\_OVERRIDE\_GROUPS

Override the default django groups admin with the permissions auditor version. Has no effect if `PERMISSIONS_AUDITOR_ADMIN` is set to `False`.

Default: `True`

## PERMISSIONS\_AUDITOR\_ROOT\_URLCONF

The root Django URL configuration to use when fetching views.

Default: The `ROOT_URLCONF` value in your Django project's `settings.py` file.

## PERMISSIONS\_AUDITOR\_CACHE\_KEY

The cache key prefix to use when caching processed views results.

Default: `'permissions_auditor_views'`

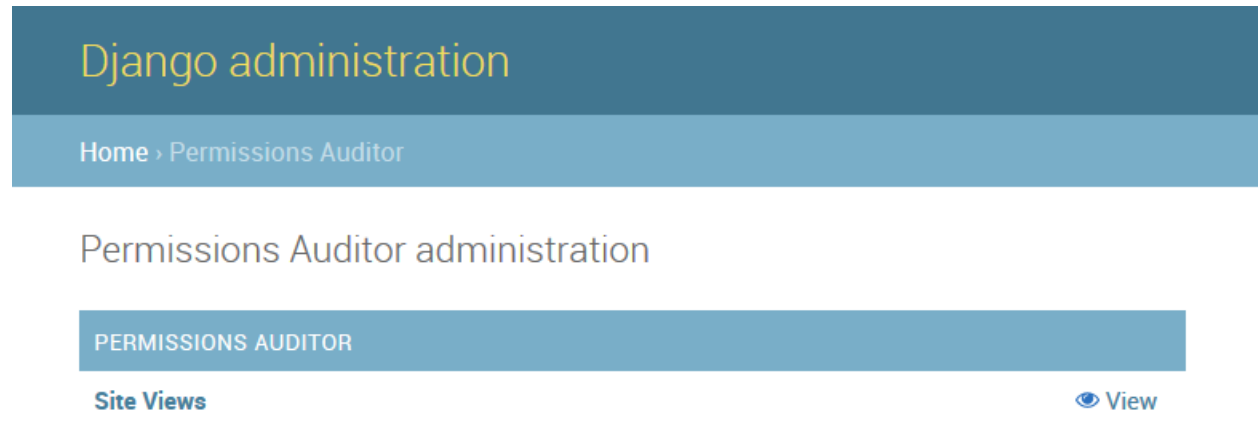
## PERMISSIONS\_AUDITOR\_CACHE\_TIMEOUT

The timeout to use when caching processed views results.

Default: `900`

## 2.2.4 Admin Site

Once installed, you should see a *Permissions Auditor* category in your Django admin panel.



**Note:** All staff members will be able to access the site views index.

### Site Views

The screenshot shows the 'Site Views' index in the Django admin. The header includes 'Django administration' and a user welcome message. The breadcrumb trail is 'Home > Permissions Auditor > Site Views'. The section is titled 'Views By Module'. There are four tables listing views, each with columns for NAME, URL, PERMISSION REQUIRED, LOGIN REQUIRED, and ADDITIONAL INFO. A sidebar on the right contains a 'FILTER' section with 'Group By' options (Module, Permission, No Grouping) and a 'Navigate' section with links to different view categories.

django.contrib.staticfiles.views				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
serve	/static/<path>		❌	

test_app.views				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
home_page	/		✅	
LoginPage	/accounts/login/		❌	
LogoutPage	/accounts/logout/		❌	

test_app.views.cbv_based				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
UserIndex	/cbv/users/	auth.view_user	✅	PermissionRequiredMixin - Docstrings on 'has_permission()' are displayed in the admin.
SuperUserIndex	/cbv/super_users/		❓	UserPassesTestMixin - The user must be a superuser to access.
PermissionsIndex	/cbv/permissions/	auth.view_user auth.change_user	✅	

test_app.views.function_based				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
user_index	/func/users/	auth.view_user	✅	
superuser_index	/func/super_users/		✅	Superuser required
permissions_index	/func/permissions/		✅	Staff member required

Your registered site views should display with the permissions required and any additional information in the table.

---

**Note:** If you see unexpected results, or missing permissions, ensure your *Included Processors* are correctly configured. You may need to create a custom processor if you have a view that does not use the built-in Django auth mixins / decorators.

---

When you click on a permission, you will be taken to a page which will allow you to manage what users and groups have that permission.

### Permissions Management Page

Detected permissions will be automatically hyperlinked to a configuration page where you can modify what groups and users have the permission.

## Django administration

WELCOME, ADMIN. [VIEW SITE](#) / [CHANGE PASSWORD](#) / [LOG OUT](#)

[Home](#) > [Permissions Auditor](#) > [auth.view\\_user](#)

auth.view\_user

Views with this Permission				
NAME	URL	PERMISSION REQUIRED	LOGIN REQUIRED	ADDITIONAL INFO
UserIndex	/cbv/users/	auth.view_user	✓	PermissionRequiredMixin - Docstrings on 'has_permission()' are displayed in the admin.
PermissionsIndex	/cbv/permissions/	auth.view_user auth.change_user	✓	
user_index	/func/users/	auth.view_user	✓	

**Permission Info**

**Name:**

**Content type:**

**Codename:**

**Objects with this Permission**

**Users:**

Available User ?

Filter

jbrown

Chosen User ?

admin  
jsmith

[Choose all](#) [Remove all](#)

**Groups:**

Available Group ?

Filter

Chosen Group ?

Employees

[Choose all](#) [Remove all](#)

[Save and continue editing](#)

[SAVE](#)

**Note:** In order to modify permissions on this page, the user must have the `auth.change_user` and `auth.change_group` permissions.

## Groups Management Page

The default Django groups page does not let you quickly see what permissions are assigned to groups without viewing each group individually.

Django administration

WELCOME, ADMIN. VIEW SITE / CHANGE PASSWORD / LOG OUT

Home - Authentication and Authorization - Groups

Select group to change ADD GROUP +

Q  Search

Action:  Go 0 of 3 selected

NAME	PERMISSIONS	ACTIVE USERS
<input type="checkbox"/> Contractors	auth.add_group auth.add_user auth.view_user	jeff
<input type="checkbox"/> Employees	auth.change_user auth.view_user	jsmith jbrown
<input type="checkbox"/> Empty		

3 groups

Django-permissions-auditor overrides the default groups admin list to show the assigned permissions and active users. This behavior can be disabled via the `PERMISSIONS_AUDITOR_ADMIN_OVERRIDE_GROUPS` setting.

## 2.2.5 Management Commands

### check\_view\_permissions

**synopsis** Checks that all detected view permissions exist in the database.

Uses permissions found on your project's views and compares the with the permissions that exist within the database. Useful for catching typos when specifying permissions.

### Example Usage

```
$ python manage.py check_view_permissions
```

## 2.2.6 Example Views

The following are example views are detected out of the box. For more examples, see `permissions_auditor/tests/fixtures/views.py`.

### Simple Permission Required Page

Listing 1: views.py

```
from django.contrib.auth.mixins import PermissionRequiredMixin
from django.views.generic import TemplateView

class ExampleView(PermissionRequiredMixin, TemplateView):
    template_name = 'example.html'
    permission_required = 'auth.view_user'

    ...
```

Listing 2: urls.py

```
from django.urls import path
from views import ExampleView

urlpatterns = [
    path('/', ExampleView.as_view(), name='example'),
]
```

Result:

Name	URL	Permission Required	Login Required	Additional Info
ExampleView	/	auth.view_user	True	

## Custom Permission Required Page

In this example, we only want users with the first name ‘bob’ to be able to access the page.

Listing 3: views.py

```
from django.contrib.auth.mixins import PermissionRequiredMixin
from django.views.generic import TemplateView

class BobView(PermissionRequiredMixin, TemplateView):
    template_name = 'example.html'

    def has_permission(self):
        """
        Only users with the first name Bob can access.
        """
        return self.request.user.first_name == 'Bob'

    ...
```

Listing 4: urls.py

```
from django.urls import path
from views import BobView

urlpatterns = [
    path('/bob/', BobView.as_view(), name='bob'),
]
```

Result:



Name	URL	Permission required	Re-	Login required	Re-	Additional Info
Example-View	/bob/			True		Only users with the first name Bob can access.

**Hint:** The *PermissionRequiredMixinProcessor* will display the docstring on the `has_permission()` function in the additional info column.

## Simple Login Required View

Listing 5: views.py

```
from django.contrib.auth.decorators import login_required

@login_required
def my_view(request):
    ...
```

Listing 6: urls.py

```
from django.urls import path
from views import my_view

urlpatterns = [
    path('/', my_view, name='example'),
]
```

Result:

Name	URL	Permission Required	Login Required	Additional Info
my_view	/		True	

## 2.2.7 Included Processors

Processors are what do the work of parsing the permissions out of a view.

### Django Auth Decorator Processors

#### PermissionRequiredDecoratorProcessor

```
class permissions_auditor.processors.auth_decorators.PermissionRequiredDecoratorProcessor
    Process @permission_required() decorator.
```

#### LoginRequiredDecoratorProcessor

```
class permissions_auditor.processors.auth_decorators.LoginRequiredDecoratorProcessor
    Process @login_required decorator.
```

### StaffMemberRequiredDecoratorProcessor

```
class permissions_auditor.processors.auth_decorators.StaffMemberRequiredDecoratorProcessor
    Process Django admin's @staff_member_required decorator.
```

### ActiveUserRequiredDecoratorProcessor

```
class permissions_auditor.processors.auth_decorators.ActiveUserRequiredDecoratorProcessor
    Process @user_passes_test(lambda u: u.is_active) decorator.
```

### AnonymousUserRequiredDecoratorProcessor

```
class permissions_auditor.processors.auth_decorators.AnonymousUserRequiredDecoratorProcessor
    Process @user_passes_test(lambda u: u.is_anonymous) decorator.
```

### SuperUserRequiredDecoratorProcessor

```
class permissions_auditor.processors.auth_decorators.SuperUserRequiredDecoratorProcessor
    Process @user_passes_test(lambda u: u.is_superuser) decorator.
```

### UserPassesTestDecoratorProcessor

```
class permissions_auditor.processors.auth_decorators.UserPassesTestDecoratorProcessor
    Process @user_passes_test() decorator.
```

---

**Note:** the @user\_passes\_test decorator does not automatically check that the User is not anonymous. This means they don't necessarily need to be authenticated for the check to pass, so this processor returns None (unknown) for the login\_required attribute.

---

## Django Auth Mixin Processors

### PermissionRequiredMixinProcessor

```
class permissions_auditor.processors.auth_mixins.PermissionRequiredMixinProcessor
    Processes views that directly inherit from django.contrib.auth.mixins.
    PermissionRequiredMixin.
```

---

**Hint:** If the has\_permission() function is overridden, any docstrings on that function will be displayed in the additional info column.

---

### LoginRequiredMixinProcessor

```
class permissions_auditor.processors.auth_mixins.LoginRequiredMixinProcessor
    Processes views that directly inherit from django.contrib.auth.mixins.LoginRequiredMixin.
```

## UserPassesTestMixinProcessor

**class** `permissions_auditor.processors.auth_mixins.UserPassesTestMixinProcessor`  
Processes views that directly inherit from `django.contrib.auth.mixins.UserPassesTestMixin`.

---

**Hint:** If the function returned by `get_test_func()` is overridden, any docstrings on that function will be displayed in the additional info column.

---



---

**Note:** `UserPassesTestMixinProcessor` does not automatically check that the User is not anonymous. This means they don't necessarily need to be authenticated for the check to pass, so this processor returns `None` (unknown) for the `login_required` attribute.

---

## 2.2.8 Custom Processors

### Base Processors

All processors inherit from `BaseProcessor`.

**class** `permissions_auditor.processors.base.BaseProcessor`

**can\_process** (*view*)

Can this processor process the provided view?

**Parameters** *view* (*function or class*) – the view being processed.

**Returns** whether this processor can process the view. Default: `False`

**Return type** `boolean`

**get\_docstring** (*view*)

Returns any additional information that should be displayed when showing permission information.

**Parameters** *view* (*function or class*) – the view being processed.

**Returns** the string to display in the additional info column. Default: `None`

**Return type** `str or None`

**get\_login\_required** (*view*)

Returns if a user needs to be logged in to access the view.

**Parameters** *view* (*function or class*) – the view being processed.

**Returns** whether a user must be logged in to access this view. Default: `False`

**Return type** `boolean or None` (if unknown)

**get\_permission\_required** (*view*)

Returns permissions required on the provided view. Must return an iterable.

**Parameters** *view* (*function or class*) – the view being processed.

**Returns** the permissions required to access the view. Default: `[]`

**Return type** `list(str)`

Other useful base classes:

**class** permissions\_auditor.processors.base.BaseFuncViewProcessor

Base class for processing function based views.

**class** permissions\_auditor.processors.base.BaseCBVProcessor

Base class for processing class based views.

**class** permissions\_auditor.processors.base.BaseDecoratorProcessor

Base class with utilities for unwrapping decorators.

**class** permissions\_auditor.processors.base.BaseFilteredMixinProcessor

Base class for parsing mixins on class based views. Set `class_filter` to filter the class names the processor applies to. ONLY checks top level base classes.

**Variables** `class_filter` – initial value: None

**get\_class\_filter()**

Override this method to override the `class_names` attribute. Must return an iterable.

**Returns** a list of strings containing the full paths of mixins to detect.

**Raises** `ImproperlyConfigured` – if the `class_filter` attribute is None.

## Parsing Mixins

Creating a custom processor for mixins on class based views is fairly straight forward.

In this example, we have a mixin `BobRequiredMixin` and a view that uses it, `BobsPage`. The mixin should only allow users with the first name Bob to access the page.

Listing 7: example\_project/views.py

```
from django.core.exceptions import PermissionDenied
from django.views.generic import TemplateView

class BobRequiredMixin:
    def dispatch(self, request, *args, **kwargs):
        if self.request.user.first_name != 'Bob':
            raise PermissionDenied("You are not Bob")
        return super().dispatch(request, *args, **kwargs)

class BobsPage(BobRequiredMixin, TemplateView):
    ...
```

Let's define our processor in `processors.py`.

Listing 8: example\_project/processors.py

```
from permissions_auditor.processors.base import BaseFilteredMixinProcessor

class BobRequiredMixinProcessor(BaseFilteredMixinProcessor):
    class_filter = 'example_project.views.BobRequiredMixin'

    def get_login_required(self, view):
        return True

    def get_docstring(self, view):
        return "The user's first name must be Bob to view."
```

To register our processor, we need to add it to `PERMISSIONS_AUDITOR_PROCESSORS` in our project settings.

Listing 9: settings.py

```
PERMISSIONS_AUDITOR_PROCESSORS = [
    ...
    'example_project.processors.BobRequiredProcessor',
]
```

When BobsPage is registered to a URL, we should see this in the admin panel:

Name	URL	Permission Required	Login Required	Additional Info
BobsPage	/		True	The user's first name must be Bob to view.

Perhaps we want to make our mixin configurable so we can detect different names depending on the view. We also have multiple people with the same first name, so we also want to check for a permission: `example.view_pages`.

```
class FirstNameRequiredMixin:
    required_first_name = ''

    def dispatch(self, request, *args, **kwargs):
        if not (self.request.user.has_perm('example_app.view_userpages')
            and self.request.user.first_name == self.required_first_name):
            raise PermissionDenied()
        return super().dispatch(request, *args, **kwargs)

class GeorgesPage(FirstNameRequiredMixin, TemplateView):
    required_first_name = 'George'

    ...
```

We'll modify `class_filter` and `get_docstring()` from our old processor, and override `get_permission_required()`.

```
from permissions_auditor.processors.base import BaseFilteredMixinProcessor

class FirstNameRequiredMixinProcessor(BaseFilteredMixinProcessor):
    class_filter = 'example_project.views.FirstNameRequiredMixin'

    def get_permission_required(self, view):
        return ['example.view_pages']

    def get_login_required(self, view):
        return True

    def get_docstring(self, view):
        return "The user's first name must be {} to view.".format(view.first_name_
↪required)
```

Once we register our view to a URL and register the processor, our admin table should look like this:

Name	URL	Permission quired	Re-	Login quired	Re-	Additional Info
Georges- Page	/	example.view_pages		True		The user's first name must be George to view.

## Additional Examples

See the `permissions_auditor/processors/` folder in the source code for more examples.

## 2.2.9 Changelog

### v1.0.0 (Release 12/4/2019)

- Decorator processors improvements.

Added support for nested decorators:

```
@staff_member_required
@permission_required('auth.view_user')
def my_view(request):
    ...
```

Added support for decorators within `@method_decorator` on class based views:

```
class MyView(View):
    @method_decorator(staff_member_required)
    @method_decorator(permission_required('auth.view_user'))
    def dispatch(self, request, *args, **kwargs):
        ...
```

- Refactored test suite to be much cleaner.

### v0.5.1 (Released 9/23/2019)

- Added error message when multiple permissions are found for a single permission string in the django admin.

### v0.5.0 (Released 2/12/2019)

- The django Groups admin list is now overridden instead of adding a custom one (this can be configured via `PERMISSIONS_AUDITOR_ADMIN_OVERRIDE_GROUPS` setting.)
- Added `check_view_permissions` management command.

### v0.4.3 (Released 1/28/2019)

- Prevented the app from creating migrations

### v0.4.2 (Released 1/23/2019)

- Fixed permission check for groups listing (uses the default Django `'auth.change_group'`, `'auth.view_group'`)
- Fixed N+1 query in groups listing

### v0.4.1 (Released 1/22/2019)

- Hotfix for auth migrations issue

#### **v0.4.0 (Release Removed)**

- Added groups listing to admin site

#### **v0.3.3 (Released 1/9/2019)**

- Marked docstrings as safe in admin templates
- No longer suppress inner exceptions when parsing processors
- Fixed Django admin module permissions check

#### **v0.3.2 (Released 1/9/2019)**

- Fixed various cache issues
- Only show active users in the admin permission configuration page

#### **v0.3.1 (Released 1/8/2019)**

- Initial stable release





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