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# **django-role-permissions Documentation**

*Release 0.1*

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### 1.1 Installation

Install from PyPI with pip:

```
pip install django-role-permissions
```

### 1.2 Configuration

Add rolepermissions to you `INSTALLED_APPS`

```
INSTALLED_APPS = (  
    ...  
    'rolepermissions',  
    ...  
)
```





## CHAPTER 2

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### Quick Start

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Create a `roles.py` file in the same folder as your `settings.py` and two roles:

```
from rolepermissions.roles import AbstractUserRole

class Doctor(AbstractUserRole):
    available_permissions = {
        'create_medical_record': True,
    }

class Nurse(AbstractUserRole):
    available_permissions = {
        'edit_patient_file': True,
    }
```

Add a reference to your roles module to your settings:

```
ROLEPERMISSIONS_MODULE = 'myapplication.roles'
```

When you create a new user, set its role using:

```
>>> from rolepermissions.roles import assign_role
>>> user = User.objects.get(id=1)
>>> assign_role(user, 'doctor')
```

and check its permissions using

```
>>> from rolepermissions.checkers import has_permission
>>>
>>> has_permission(user, 'create_medical_record')
True
>>> has_permission(user, 'edit_patient_file')
False
```

You can also change users permissions:

```
>>> from rolepermissions.permissions import grant_permission, revoke_permission
>>>
>>> revoke_permission(user, 'create_medical_record')
>>> grant_permission(user, 'edit_patient_file')
>>>
>>> has_permission(user, 'create_medical_record')
False
>>> has_permission(user, 'edit_patient_file')
True
```

### 3.1 Roles File

Create a `roles.py` file anywhere inside your django project and reference it in the project settings file.

`my_project/roles.py`

```
from rolepermissions.roles import AbstractUserRole

class Doctor(AbstractUserRole):
    available_permissions = {
        'create_medical_record': True,
    }

class Nurse(AbstractUserRole):
    available_permissions = {
        'edit_patient_file': True,
    }
```

`settings.py`

```
ROLEPERMISSIONS_MODULE = 'my_project.roles'
```

Each class that imports `AbstractUserRole` is a role on the project and has a snake case string representation. For example:

```
from rolepermissions.roles import AbstractUserRole

class SystemAdmin(AbstractUserRole):
    available_permissions = {
        'drop_tables': True,
    }
```

will have the string representation: `system_admin`.

## 3.2 Available Role Permissions

The field `available_permissions` lists what permissions the role can be granted. The boolean referenced on the `available_permissions` dictionary is the default value to the referred permission.

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## Object permission checkers

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### 4.1 permissions.py file

You can add a `permissions.py` file to each app. This file should contain registered object permission checker functions.

`my_app/permissions.py`

```
from rolepermissions.permissions import register_object_checker
from my_project.roles import SystemAdmin

@register_object_checker()
def access_clinic(role, user, clinic):
    if role == SystemAdmin:
        return True

    if user.clinic == clinic:
        return True

    return False
```

when requested the object permission checker will receive the role of the user, the user and the object being verified and should return `True` if the permission is granted.

### 4.2 Checking object permission

Use the `has_object_permission` method to check for object permissions.



## 5.1 Shortcuts

**get\_user\_roles** (*user*)

Returns the user's roles.

```
from rolepermissions.roles import get_user_roles

role = get_user_roles(user)
```

**assign\_role** (*user*, *role*)

Assigns a role to the user. Role parameter can be passed as string or role class object.

```
from rolepermissions.roles import assign_role

assign_role(user, 'doctor')
```

**remove\_role** (*user*, *role*)

Removes a role from a user. Role parameter can be passed as string or role class object.

```
from rolepermissions.roles import remove_role

remove_role(user, 'doctor')
```

**WARNING:** Any permissions that were explicitly granted to the user that are also defined to be granted by this role will be revoked when this role is revoked.

Example:

```
>>> class Doctor(AbstractUserRole):
...     available_permissions = {
...         "operate": False,
```

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```
...     }
>>>
>>> class Surgeon(AbstractUserRole):
...     available_permissions = {
...         "operate": True,
...     }
>>>
>>> grant_permission(user, "operate")
>>> remove_role(user, Surgeon)
>>>
>>> has_permission(user, "operate")
False
```

In the example, the user no longer has the "operate" permission, even though it was set explicitly before the Surgeon role was removed.

#### **clear\_roles** (*user*)

Clear all of a user's roles.

```
from rolepermissions.roles import clear_roles

clear_roles(user)
```

#### **available\_perm\_status** (*user*)

Returns a dictionary containing all permissions available across all the specified user's roles. Note that if a permission is granted in one role, it overrides any permissions set to `False` in other roles. Permissions are the keys of the dictionary, and values are `True` or `False` indicating if the permission is granted or not.

```
from rolepermissions.permissions import available_perm_status

permissions = available_perm_status(user)

if permissions['create_medical_record']:
    print('user can create medical record')
```

#### **grant\_permission** (*user*, *permission\_name*)

Grants a permission to a user. Will raise a `RolePermissionScopeException` for a permission that is not listed in the user's roles' `available_permissions`.

```
from rolepermissions.permissions import grant_permission

grant_permission(user, 'create_medical_record')
```

#### **revoke\_permission** (*user*, *permission\_name*)

Revokes a permission from a user. Will raise a `RolePermissionScopeException` for a permission that is not listed in the user's roles' `available_permissions`.

```
from rolepermissions.permissions import revoke_permission

revoke_permission(user, 'create_medical_record')
```



## 5.2 Permission and role verification

The following functions will always return True for users with superuser status.

**has\_role** (*user, roles*)

Receives a user and a role and returns True if user has the specified role. Roles can be passed as object, snake cased string representation or inside a list.

```
from rolepermissions.checkers import has_role
from my_project.roles import Doctor

if has_role(user, [Doctor, 'nurse']):
    print 'User is a Doctor or a nurse'
```

**has\_permission** (*user, permission*)

Receives a user and a permission and returns True is the user has ths specified permission.

```
from rolepermissions.checkers import has_permission
from my_project.roles import Doctor
from records.models import MedicalRecord

if has_permission(user, 'create_medical_record'):
    medical_record = MedicalRecord(...)
    medical_record.save()
```

**has\_object\_permission** (*checker\_name, user, obj*)

Receives a string referencing the object permission checker, a user and the object to be verified.

```
from rolepermissions.checkers import has_object_permission
from clinics.models import Clinic

clinic = Clinic.objects.get(id=1)

if has_object_permission('access_clinic', user, clinic):
    print 'access granted'
```

## 5.3 Template tags

To load template tags use:

```
{% load permission_tags %}
```

**\*filter\* has\_role**

Receives a camel case representation of a role or more than one separated by coma.

```
{% load permission_tags %}
{% if user|has_role:'doctor,nurse' %}
    the user is a doctor or a nurse
{% endif %}
```

**\*filter\* can**

Role permission filter.

```
{% load permission_tags %}
{% if user|can:'create_medical_record' %}
    <a href="/create_record">create record</a>
{% endif %}
```

### **\*tag\* can**

If no user is passed to the tag, the logged user will be used in the verification.

```
{% load permission_tags %}

{% can "access_clinic" clinic user=user as can_access_clinic %}
{% if can_access_clinic %}
    <a href="/clinic/1/">Clinic</a>
{% endif %}
```

## 6.1 Decorators

Decorators require that the current logged user attend some permission grant. They are meant to be used on function based views.

### **has\_role\_decorator** (*role*)

Accepts the same arguments as `has_role` function and raises `PermissionDenied` in case it returns `False`. You can pass an optional key word argument `redirect_to_login` to overhide the `ROLEPERMISSIONS_REDIRECT_TO_LOGIN` setting. You can also pass an optional key word argument `redirect_url` to specify the view to return in case of permission denied. `redirect_url` takes precedence over `redirect_to_login` and `ROLEPERMISSIONS_REDIRECT_TO_LOGIN`.

```
from rolepermissions.decorators import has_role_decorator

@has_role_decorator('doctor')
def my_view(request, *args, **kwargs):
    ...
```

### **has\_permission\_decorator** (*permission\_name*)

Accepts the same arguments as `has_permission` function and raises `PermissionDenied` in case it returns `False`. You can pass an optional key word argument `redirect_to_login` to overhide the `ROLEPERMISSIONS_REDIRECT_TO_LOGIN` setting. You can also pass an optional key word argument `redirect_url` to specify the view to return in case of permission denied. `redirect_url` takes precedence over `redirect_to_login` and `ROLEPERMISSIONS_REDIRECT_TO_LOGIN`.

```
from rolepermissions.decorators import has_permission_decorator

@has_permission_decorator('create_medical_record')
def my_view(request, *args, **kwargs):
    ...
```

## 6.2 Mixins

Mixins require that the current logged user attend some permission grant. They are meant to be used on class based views.

### **class HasRoleMixin(object)**

Add `HasRoleMixin` mixin to the desired CBV (class based view) and use the `allowed_roles` attribute to set the roles that can access the view. `allowed_roles` attribute will be passed to `has_role` function, and `PermissionDenied` will be raised in case it returns `False`. You can set an optional `redirect_to_login` attribute to override the `ROLEPERMISSIONS_REDIRECT_TO_LOGIN` setting. Just like `has_role_decorator` set an optional `redirect_url` to specify the view to return incase of permission denied. `redirect_url` overrides `redirect_to_login` and `ROLEPERMISSIONS_REDIRECT_TO_LOGIN`.

```
from django.views.generic import TemplateView
from rolepermissions.mixins import HasRoleMixin

class MyView(HasRoleMixin, TemplateView):
    allowed_roles = 'doctor'
    ...
```

### **class HasPermissionsMixin(object)**

Add `HasPermissionsMixin` mixin to the desired CBV (class based view) and use the `required_permission` attribute to set the roles that can access the view. `required_permission` attribute will be passed to `has_permission` function, and `PermissionDenied` will be raised in case it returns `False`. You can set an optional `redirect_to_login` attribute to override the `ROLEPERMISSIONS_REDIRECT_TO_LOGIN` setting.

```
from django.views.generic import TemplateView
from rolepermissions.mixins import HasPermissionsMixin

class MyView(HasPermissionsMixin, TemplateView):
    required_permission = 'create_medical_record'
    ...
```

Use Django User Admin Site to manage roles and permissions interactively.

## 7.1 Permission Names

Permissions defined in `roles.py` are given ‘human-friendly’ names.

All such permissions are assigned to the `auth | user Content Type`.

Permission names are a Title Case version of the `snake_case` or `camelCase` permission codename, so...

- `create_medical_record` is named `auth | user | Create Medical Record`
- `enterSurgery` is named `auth | user | Enter Surgery`

## 7.2 RolePermissions User Admin

Assign / remove roles when editing Users in the Django User Admin Site.

### **RolePermissionsUserAdmin()**

Custom `django.contrib.auth.admin.UserAdmin` that essentially adds the following logic. To be used with standard `django User` model:

- `remove_role(user, group)` is called for each Group, removed via the Admin, that represents a role.
- `assign_role(user, group)` is called for each Group, added via the Admin, that represents a role.

Opt-in with setting: `ROLEPERMISSIONS_REGISTER_ADMIN = True`

### **RolePermissionsUserAdminMixin()**

Mixin the functionality of `RolePermissionsUserAdmin` to your own custom `UserAdmin` class. To be used with custom `User` model:

```
class MyCustomUserAdmin(RolePermissionsUserAdminMixin, django.contrib.auth.admin.  
↳UserAdmin):  
    ...
```

**Warning:** `remove_role` removes every permission associated with a removed `Group`, regardless of how those permissions were originally assigned. See [remove\\_role\(\)](#)

## 7.3 Management Commands

```
django-admin sync_roles
```

Ensures that `django.contrib.auth.models.Group` and `Permission` objects exist for each role defined in `roles.py`

This makes the roles and permissions defined in code immediately accessible via the Django User Admin

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**Note:** `sync_roles` never deletes a `Group` or `Permission`.

If you remove a role or permission from `roles.py`, the corresponding `Group` / `Permission` continues to exist until it is manually removed.

```
django-admin sync_roles --reset_user_permissions
```

Additionally, update every User's permissions to ensure they include all those defined by their current roles.

**Warning:** `--reset_user_permissions` is primarily intended for development, not production!

Changing which permissions are associated with a role in `roles.py` does NOT change any User's actual permissions! `--reset_user_permissions` simply clears each User's roles and then re-assign them. This guarantees that Users will have all permissions defined by their role(s) in `roles.py`, but in no way does this imply that any permissions previously granted to the User have been revoked!

## 8.1 Redirect to the login page

Instead of getting a Forbidden (403) error when the user has no permission, you can make the request be redirected to the login page. Add the following variable to your django `settings.py`:

`settings.py`

```
ROLEPERMISSIONS_REDIRECT_TO_LOGIN = True
```

## 8.2 Register User Admin

Replaces the default `django.contrib.auth.admin.UserAdmin` with *RolePermissionsUserAdmin* so you can manage roles interactively via the Django User Admin Site.

Add the following variable to your django `settings.py`:

`settings.py`

```
ROLEPERMISSIONS_REGISTER_ADMIN = True
```

## 8.3 Disable superuser superpowers

By default Django superusers have all roles and permissions. You can disable this behavior and make them respect their roles and permissions.

Superusers still can add any role or permission to them through Django Admin.

`settings.py`

```
ROLEPERMISSIONS_SUPERUSER_SUPERPOWERS = False
```



## CHAPTER 9

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