
django-dynamic-preferences Documentation

Release 1.7

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Nov 22, 2018

Contents

1	Features	3
1.1	Installation	3
1.2	Quickstart	5
1.3	Bind preferences to arbitrary models	11
1.4	Preference types	13
1.5	REST API	17
1.6	Preferences lifecycle	20
1.7	Upgrade	20
1.8	Contributing	23
1.9	Credits	25
1.10	Changelog	25
	Python Module Index	35

Dynamic-preferences is a Django app, BSD-licensed, designed to help you manage your project settings. While most of the time, a *settings.py* file is sufficient, there are some situations where you need something more flexible such as:

- per-user settings (or, generally speaking, per instance settings)
- settings change without server restart

For per-instance settings, you could actually store them in some kind of profile model. However, it means that every time you want to add a new setting, you need to add a new column to the profile DB table. Not very efficient.

Dynamic-preferences allow you to register settings (a.k.a. preferences) in a declarative way. Preferences values are serialized before storage in database, and automatically deserialized when you need them.

With dynamic-preferences, you can update settings on the fly, through django's admin or custom forms, without restarting your application.

The project is tested and work under Python 2.7 and 3.4, 3.5 and 3.6, with django >=1.8.

- Simple to setup
- Admin integration
- Forms integration
- Bundled with global and per-user preferences
- Can be extended to other models if need (e.g. per-site preferences)
- Integrates with django caching mechanisms to improve performance
- Django REST Framework integration

If you're still interested, head over [Installation](#).

Warning: There is a critical bug in version 1.2 that can result in dataloss. Please upgrade to 1.3 as soon as possible and do not use 1.2 in production. See [#81](#) for more details.

Contents:

1.1 Installation

Dynamic-preferences is available on [PyPI](#) and can be installed with:

```
pip install django-dynamic-preferences
```

1.1.1 Setup

Add this to your `settings.INSTALLED_APPS`:

```
INSTALLED_APPS = (
    # ...
    'django.contrib.auth',
    'dynamic_preferences',
    # comment the following line if you don't want to use user preferences
    'dynamic_preferences.users.apps.UserPreferencesConfig',
)
```

Then, create missing tables in your database:

```
python manage.py migrate dynamic_preferences
```

Add this to `settings.TEMPLATES` if you want to access preferences from templates:

```
TEMPLATES = [
    {
        # ...
        'OPTIONS': {
            'context_processors': [
                # ...
                'django.template.context_processors.request',
                'dynamic_preferences.processors.global_preferences',
            ],
        },
    },
]
```

1.1.2 Settings

Also, take some time to look at provided settings if you want to customize the package behaviour:

```
# available settings with their default values
DYNAMIC_PREFERENCES = {

    # a python attribute that will be added to model instances with preferences
    # override this if the default collide with one of your models attributes/fields
    'MANAGER_ATTRIBUTE': 'preferences',

    # The python module in which registered preferences will be searched within each_
    ↪ app
    'REGISTRY_MODULE': 'dynamic_preferences_registry',

    # Allow quick editing of preferences directly in admin list view
    # WARNING: enabling this feature can cause data corruption if multiple users
    # use the same list view at the same time, see https://code.djangoproject.com/
    ↪ ticket/11313
    'ADMIN_ENABLE_CHANGELIST_FORM': False,

    # Customize how you can access preferences from managers. The default is to
    # separate sections and keys with two underscores. This is probably not a_
    ↪ settings you'll
    # want to change, but it's here just in case
    'SECTION_KEY_SEPARATOR': '__',

    # Use this to disable caching of preference. This can be useful to debug things
    'ENABLE_CACHE': True,
```

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```
    # Use this to disable checking preferences names. This can be useful to debug_
↪things
    'VALIDATE_NAMES': True,
}
```

1.2 Quickstart

1.2.1 Glossary

Preference An object that deals with preference logic, such as serialization, deserialization, form display, default values, etc. After being defined, preferences can be tied via registries to one or many preference models, which will deal with database persistence.

PreferenceModel A model that store preferences values in database. A preference model may be tied to a particular model instance, which is the case for `UserPreferenceModel`, or concern the whole project, as `GlobalPreferenceModel`.

1.2.2 Create and register your own preferences

In this example, we assume you are building a blog. Some preferences will apply to your whole project, while others will belong to specific users.

First, create a `dynamic_preferences_registry.py` file within one of your project app. The app must be listed in `settings.INSTALLED_APPS`.

Let's declare a few preferences in this file:

```
# blog/dynamic_preferences_registry.py

from dynamic_preferences.types import BooleanPreference, StringPreference
from dynamic_preferences.preferences import Section
from dynamic_preferences.registries import global_preferences_registry
from dynamic_preferences.users.registries import user_preferences_registry

# we create some section objects to link related preferences together

general = Section('general')
discussion = Section('discussion')

# We start with a global preference
@global_preferences_registry.register
class SiteTitle(StringPreference):
    section = general
    name = 'title'
    default = 'My site'
    required = False

@global_preferences_registry.register
class MaintenanceMode(BooleanPreference):
    name = 'maintenance_mode'
    default = False
```

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```
# now we declare a per-user preference
@user_preferences_registry.register
class CommentNotificationsEnabled(BooleanPreference):
    """Do you want to be notified on comment publication ?"""
    section = discussion
    name = 'comment_notifications_enabled'
    default = True
```

The `section` attribute is a convenient way to keep your preferences in different... well... sections. While you can totally forget this attribute, it is used in various places like admin or forms to filter and separate preferences. You'll probably find it useful if you have many different preferences. The `name` attribute is a unique identifier for your preference. However, You can share the same name for various preferences if you use different sections.

Important: preferences names and sections names (if you use them) are persisted in database and should be considered as primary keys. If, for some reason, you want to update a preference or section name and keep already persisted preferences sync, you'll have to write a data migration.

1.2.3 Retrieve and update preferences

You can get and update preferences via a `Manager`, a dictionary-like object. The logic is almost exactly the same for global preferences and per-instance preferences.

```
from dynamic_preferences.registries import global_preferences_registry

# We instantiate a manager for our global preferences
global_preferences = global_preferences_registry.manager()

# now, we can use it to retrieve our preferences
# the lookup for a preference has the following form: <section>__<name>
assert global_preferences['general__title'] == 'My site'

# You can also access section-less preferences
assert global_preferences['maintenance_mode'] == False

# We can update our preferences values the same way
global_preferences['maintenance_mode'] = True
```

For per-instance preferences it's even easier. You can access each instance preferences via the `preferences` attribute.

```
from django.contrib.auth import get_user_model

user = get_user_model().objects.get(username='eliot')

assert user.preferences['discussion__comment_notifications_enabled'] == True

# Disable the notification system
user.preferences['discussion__comment_notifications_enabled'] = False
```

1.2.4 Under the hood

When you access a preference value (e.g. via `global_preferences['maintenance_mode']`), `dynamic-preferences` follows these steps:

1. It checks for the cached value (using classic django cache mechanisms)
2. If no cache key is found, it queries the database for the value
3. If the value does not exist in database, a new row is added with the default preference value, and the value is returned. The cache is updated to avoid another database query the next time you want to retrieve the value.

Therefore, in the worst-case scenario, accessing a single preference value can trigger up to two database queries. Most of the time, however, `dynamic-preferences` will only hit the cache.

When you set a preference value (e.g. via `global_preferences['maintenance_mode'] = True`), `dynamic-preferences` follows these steps:

1. The corresponding row is queried from the database (1 query)
2. The new value is set and persisted in db (1 query)
3. The cache is updated.

Updating a preference value will always trigger two database queries.

1.2.5 Misc methods for retrieving preferences

A few other methods are available on managers to retrieve preferences:

- `manager.all()`: returns a *dict* containing all preferences identifiers and values
- `manager.by_name()`: returns a *dict* containing all preferences identifiers and values. The preference section name (if any) is removed from the identifier
- `manager.get_by_name(name)`: returns a single preference value using only the preference name

1.2.6 Additional validation

In some situations, you'll want to enforce custom rules for your preferences values, and raise validation errors when those rules are not matched.

You can implement that behaviour by declaring a `validate` method on your preference class, as follows:

```
from django.forms import ValidationError

# We start with a global preference
@global_preferences_registry.register
class MeaningOfLife(IntegerPreference):
    name = 'meaning_of_life'
    default = 42

    def validate(self, value):
        # ensure the meaning of life is always 42
        if value != 42:
            raise ValidationError('42 only')
```

Internally, the `validate` method is passed as a `validator` to the underlying form field.

1.2.7 About serialization

When you get or set preferences values, you interact with Python values. On the database/cache side, values are serialized before storage.

Dynamic preferences handle this for you, using each preference type (`BooleanPreference`, `StringPreference`, `IntPreference`, etc.). It's totally possible to create your own preferences types and serializers, have a look at `types.py` and `serializers.py` to get started.

1.2.8 Admin integration

Dynamic-preferences integrates with `django.contrib.admin` out of the box. You can therefore use the admin interface to edit preferences values, which is particularly convenient for global preferences.

1.2.9 Forms

Form builder

A form builder is provided if you want to create and update preferences in custom views.

```
from dynamic_preferences.forms import global_preference_form_builder

# get a form for all global preferences
form_class = global_preference_form_builder()

# get a form for global preferences of the 'general' section
form_class = global_preference_form_builder(section='general')

# get a form for a specific set of preferences
# You can use the lookup notation (section_name) as follow
form_class = global_preference_form_builder(preferences=['general__title'])

# or pass explicitly the section and names as an iterable of tuples
form_class = global_preference_form_builder(preferences=[('general', 'title'), (
    ↪ 'another_section', 'another_name')])
```

Getting a form for a specific instance preferences works similarly, except that you need to provide the user instance:

```
from dynamic_preferences.forms import user_preference_form_builder

form_class = user_preference_form_builder(instance=request.user)
form_class = user_preference_form_builder(instance=request.user, section='discussion')
```

Form fields

In various places, a dynamic form field will be created from preferences. Consider the following example:

```
class MyPreference(StringPreference):
    default = 'my text'
```

In the admin area and using the form builder, the generated form field would look like this:

```
from django import forms

field = forms.CharField(initial='my text')
```

You can customize the behaviour and instantiation of the underlying form field using the following attributes and methods on any preference class:

class `dynamic_preferences.types.BasePreferenceType` (*registry=None*)

Used as a base for all other preference classes. You should subclass this one if you want to implement your own preference.

field_class = None

A form field that will be used to display and edit the preference use a class, not an instance.

Example

```
from django import forms

class MyPreferenceType(BasePreferenceType):
    field_class = forms.CharField
```

field_kwargs = {}

Additional kwargs to be passed to the form field.

Example

```
class MyPreference(StringPreference):

    field_kwargs = {
        'required': False,
        'initial': 'Hello there'
    }
```

get_field_kwargs()

Return a dict of arguments to use as parameters for the field class instantiation.

This will use `field_kwargs` as a starter, and use sensible defaults for a few attributes:

- `instance.verbose_name` for the field label
- `instance.help_text` for the field help text
- `instance.widget` for the field widget
- `instance.required` defined if the value is required or not
- `instance.initial` defined if the initial value

validate (*value*)

Used to implement custom cleaning logic for use in forms and serializers. The method will be passed as a validator to the preference form field.

Example

```
def validate(self, value):
    if value == '42':
        raise ValidationError('Wrong value!')
```

1.2.10 Preferences attributes

You can customize a lot of preferences behaviour some class attributes / methods.

For example, if you want to customize the `verbose_name` of a preference you can simply do:

```
class MyPreference (StringPreference):
    verbose_name = "This is my preference"
```

But if you need more customization, you can do:

```
import datetime

class MyPreference (StringPreference):

    def get_verbose_name(self):
        return "Verbose name instantiated on {}".format(datetime.datetime.now())
```

Both methods are perfectly valid. You can override the following attributes:

- `field_class`: the field class used to edit the preference value
- `field_kwargs`: kwargs that are passed to the field class upon instantiation. Ensure to call `super()` since some default are provided.
- `verbose_name`: used in admin and as a label for the field
- `help_text`: used in admin and in the field
- `default`: the default value for the preference, that will also be used as initial data for the form field
- `widget`: the widget used for the form field
- `required`: used to define if the value is required

1.2.11 Accessing global preferences within a template

Dynamic-preferences provide a context processors (remember to add them to your settings, as described in “Installation”) that will pass global preferences values to your templates:

```
# myapp/templates/mytemplate.html

<title>{{ global_preferences.general__title }}</title>

{% if request.user.preferences.discussion__comment_notifications_enabled %}
    You will receive an email each time a comment is published
{% else %}
    <a href='/subscribe'>Subscribe to comments notifications</a>
{% endif %}
```

1.2.12 Bundled views and urls

Example views and urls are bundled for global and per-user preferences updating. Include this in your URLconf:

```
urlpatterns = [
    # your project urls here
    url(r'^preferences/', include('dynamic_preferences.urls')),
]
```

Then, in your code:

```
from django.urls import reverse

# URL to a page that display a form to edit all global preferences
url = reverse("dynamic_preferences.global")

# URL to a page that display a form to edit global preferences of the general section
url = reverse("dynamic_preferences.global.section", kwargs={'section': 'general'})

# URL to a page that display a form to edit all preferences of the user making the_
↳request
url = reverse("dynamic_preferences.user")

# URL to a page that display a form to edit preferences listed under section
↳'discussion' of the user making the request
url = reverse("dynamic_preferences.user.section", kwargs={'section': 'discussion'})
```

1.3 Bind preferences to arbitrary models

By default, dynamic-preferences come with two kinds of preferences:

- Global preferences, which are not tied to any particular model instance
- User preferences, which apply to a specific user

While this can be enough, your project may require additional preferences. For example, you may want to bind preferences to a specific `Site` instance. Don't panic, dynamic-preferences got you covered.

In order to achieve this, you'll need to follow this process:

1. Create a preference model with a `ForeignKey` to `Site`
2. Create a registry to store available preferences for sites

The following guide assumes you want to bind preferences to the `django.contrib.sites.Site` model.

1.3.1 Create a preference model

You'll need to subclass `PerInstancePreferenceModel` model, and add a `ForeignKey` field pointing to the target model:

```
# yourapp/models.py
from django.contrib.sites.models import Site
from dynamic_preferences.models import PerInstancePreferenceModel

class SitePreferenceModel(PerInstancePreferenceModel):

    # note: you *have* to use the `instance` field
    instance = models.ForeignKey(Site)

    class Meta:
        # Specifying the app_label here is mandatory for backward
        # compatibility reasons, see #96
        app_label = 'yourapp'
```

Now, you can create a migration for your newly created model with `python manage.py makemigrations`, apply it with `python manage.py migrate`.

1.3.2 Create a registry to collect your model preferences

Now, you have to create a registry to collect preferences belonging to the `Site` model:

```
# yourapp/registries.py
from dynamic_preferences.registries import PerInstancePreferenceRegistry

class SitePreferenceRegistry(PerInstancePreferenceRegistry):
    pass

site_preferences_registry = SitePreferenceRegistry()
```

Then, you simply have to connect your `SitePreferenceModel` to your registry. You should do that in an `apps.py` file, as follows:

```
# yourapp/apps.py
from django.apps import AppConfig
from django.conf import settings

from dynamic_preferences.registries import preference_models
from .registries import site_preferences_registry

class YourAppConfig(AppConfig):
    name = 'your_app'

    def ready(self):
        SitePreferenceModel = self.get_model('SitePreferenceModel')

        preference_models.register(SitePreferenceModel, site_preferences_registry)
```

Here, we use django's built-in `AppConfig`, which is a convenient place to put this kind of logic.

To ensure this config is actually used by django, you'll also have to edit your app `__init__.py`:

```
# yourapp/__init__.py
default_app_config = 'yourapp.apps>YourAppConfig'
```

Warning: Ensure your app is listed **before** `dynamic_preferences` in `settings.INSTALLED_APPS`, otherwise, preferences will be collected before your registry is actually registered, and it will end up empty.

1.3.3 Start creating preferences

After this setup, you're good to go, and can start registering your preferences for the `Site` model in the same way you would do with the `User` model. You'll simply need to use your registry instead of the `user_preferences_registry`:

```
# yourapp/dynamic_preferences_registry.py
from dynamic_preferences.types import BooleanPreference, StringPreference
from dynamic_preferences.preferences import Section
from yourapp.registries import site_preferences_registry
```

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```

access = Section('access')

@site_preferences_registry.register
class IsPublic(BooleanPreference):
    section = access
    name = 'is_public'
    default = False

```

Preferences will be available on your Site instances using the `preferences` attribute, as described in [quickstart](#):

```

# somewhere in a view
from django.contrib.sites.models import Site

my_site = Site.objects.first()
if my_site.preferences['access__is_public']:
    print('This site is public')

```

1.4 Preference types

You'll find here the final, concrete classes of preferences you can use in your own project.

class `dynamic_preferences.types.BasePreferenceType` (*registry=None*)

Used as a base for all other preference classes. You should subclass this one if you want to implement your own preference.

api_repr (*value*)

Used only to represent a preference value using Rest Framework

field

Returns an instance of a form field for this preference, with the correct configuration (widget, initial value, validators...)

field_class = None

A form field that will be used to display and edit the preference use a class, not an instance.

Example

```

from django import forms

class MyPreferenceType(BasePreferenceType):
    field_class = forms.CharField

```

field_kwargs = {}

Additional kwargs to be passed to the form field.

Example

```

class MyPreference(StringPreference):

    field_kwargs = {
        'required': False,
        'initial': 'Hello there'
    }

```

get_api_additional_data()

Additional data to serialize for use on front-end side, for example

get_api_field_data()

Field data to serialize for use on front-end side, for example will include choices available for a choice field

get_field_kwargs()

Return a dict of arguments to use as parameters for the field class instantiation.

This will use `field_kwargs` as a starter, and use sensible defaults for a few attributes:

- `instance.verbose_name` for the field label
- `instance.help_text` for the field help text
- `instance.widget` for the field widget
- `instance.required` defined if the value is required or not
- `instance.initial` defined if the initial value

get_initial()

Returns initial data for form field from `field_attribute['initial']` or default

serializer = None

A serializer class (see `dynamic_preferences.serializers`)

validate(value)

Used to implement custom cleaning logic for use in forms and serializers. The method will be passed as a validator to the preference form field.

Example

```
def validate(self, value):
    if value == '42':
        raise ValidationError('Wrong value!')
```

class `dynamic_preferences.types.BooleanPreference` (*registry=None*)

A preference type that stores a boolean.

class `dynamic_preferences.types.ChoicePreference` (*registry=None*)

A preference type that stores a string among a list of choices.

choices = ()

Expects the same values as for `django forms.ChoiceField`.

Example

```
class MyChoicePreference(ChoicePreference):
    choices = [
        ('c', 'Carrot'),
        ('t', 'Tomato'),
    ]
```

get_api_additional_data()

Additional data to serialize for use on front-end side, for example

get_field_kwargs()

Return a dict of arguments to use as parameters for the field class instantiation.

This will use `field_kwargs` as a starter, and use sensible defaults for a few attributes:

- `instance.verbose_name` for the field label
- `instance.help_text` for the field help text
- `instance.widget` for the field widget
- `instance.required` defined if the value is required or not
- `instance.initial` defined if the initial value

validate (*value*)

Used to implement custom cleaning logic for use in forms and serializers. The method will be passed as a validator to the preference form field.

Example

```
def validate(self, value):
    if value == '42':
        raise ValidationError('Wrong value!')
```

class `dynamic_preferences.types.DatePreference` (*registry=None*)

A preference type that stores a date.

api_repr (*value*)

Used only to represent a preference value using Rest Framework

class `dynamic_preferences.types.DateTimePreference` (*registry=None*)

A preference type that stores a datetime.

api_repr (*value*)

Used only to represent a preference value using Rest Framework

class `dynamic_preferences.types.DecimalPreference` (*registry=None*)

A preference type that stores a decimal.`Decimal`.

class `dynamic_preferences.types.DurationPreference` (*registry=None*)

A preference type that stores a timedelta.

api_repr (*value*)

Used only to represent a preference value using Rest Framework

class `dynamic_preferences.types.FilePreference` (*registry=None*)

A preference type that stores a reference to a model.

Example

```
from django.core.files.uploadedfile import SimpleUploadedFile

@registry.register
class Logo(FilePreference):
    section = Section('blog')
    name = 'logo'

logo = SimpleUploadedFile(
    "logo.png", b"file_content", content_type="image/png")
manager['blog__logo'] = logo

# accessing the value will return a FieldFile object, just as
# django.db.models.FileField
assert manager['blog__logo'].read() == b'file_content'

manager['blog__logo'].delete()
```

api_repr (*value*)

Used only to represent a preference value using Rest Framework

get_field_kwargs ()

Return a dict of arguments to use as parameters for the field class instantiation.

This will use `field_kwargs` as a starter, and use sensible defaults for a few attributes:

- `instance.verbose_name` for the field label
- `instance.help_text` for the field help text
- `instance.widget` for the field widget
- `instance.required` defined if the value is required or not
- `instance.initial` defined if the initial value

get_file_storage ()

Override this method if you want to use a custom storage

serializer

The serializer need additional data about the related preference to upload file to correct directory

serializer_class

alias of `dynamic_preferences.serializers.FileSerializer`

class `dynamic_preferences.types.FloatPreference` (*registry=None*)

A preference type that stores a float.

`dynamic_preferences.types.IntPreference`

alias of `dynamic_preferences.types.IntegerPreference`

class `dynamic_preferences.types.IntegerPreference` (*registry=None*)

A preference type that stores an integer.

class `dynamic_preferences.types.LongStringPreference` (*registry=None*)

A preference type that stores a string, but with a textarea widget.

class `dynamic_preferences.types.ModelChoicePreference` (**args, **kwargs*)

A preference type that stores a reference to a model instance.

Example

```
from myapp.blog.models import BlogEntry

@registry.register
class FeaturedEntry (ModelChoicePreference) :
    section = Section('blog')
    name = 'featured_entry'
    queryset = BlogEntry.objects.filter(status='published')

blog_entry = BlogEntry.objects.get(pk=12)
manager['blog__featured_entry'] = blog_entry

# accessing the value will return the model instance
assert manager['blog__featured_entry'].pk == 12
```

Note: You should provide either the *queryset* or *model* attribute

api_repr (*value*)

Used only to represent a preference value using Rest Framework

field_class

alias of `django.forms.models.ModelChoiceField`

get_field_kwargs()

Return a dict of arguments to use as parameters for the field class instantiation.

This will use `field_kwargs` as a starter, and use sensible defaults for a few attributes:

- `instance.verbose_name` for the field label
- `instance.help_text` for the field help text
- `instance.widget` for the field widget
- `instance.required` defined if the value is required or not
- `instance.initial` defined if the initial value

model = None

Which model class to link the preference to. You can skip this if you define the `queryset` attribute.

queryset = None

A queryset to filter available model instances.

class `dynamic_preferences.types.ModelMultipleChoicePreference(*args, **kwargs)`

A preference type that stores a reference list to the model instances.

Example

```

from myapp.blog.models import BlogEntry

@registry.register
class FeaturedEntries(ModelMultipleChoicePreference):
    section = Section('blog')
    name = 'featured_entries'
    queryset = BlogEntry.objects.all()

blog_entries = BlogEntry.objects.filter(status='published')
manager['blog__featured_entries'] = blog_entries

# accessing the value will return the model queryset
assert manager['blog__featured_entries'] == blog_entries

```

Note: You should provide either the `queryset` or `model` attribute

field_class

alias of `django.forms.models.ModelMultipleChoiceField`

class `dynamic_preferences.types.StringPreference(registry=None)`

A preference type that stores a string.

`dynamic_preferences.types.create_deletion_handler(preference)`

Will generate a dynamic handler to purge related preference on instance deletion

1.5 REST API

Dynamic preferences provides an optionnal integration with Django REST Framework:

- Serializers you can use for global and user preferences (or to extend for your own preferences)

- Viewsets you can use for global and user preferences (or to extend for your own preferences)

1.5.1 Getting started

The easiest way to offer API endpoints to manage preferences in your project is to use bundled viewsets in your `urs.py`:

```
from django.conf.urls import include, url
from rest_framework import routers

from dynamic_preferences.api.viewsets import GlobalPreferencesViewSet
from dynamic_preferences.users.viewsets import UserPreferencesViewSet

router = routers.SimpleRouter()
router.register(r'global', GlobalPreferencesViewSet, base_name='global')

# Uncomment this one if you use user preferences
# router.register(r'user', UserPreferencesViewSet, base_name='user')

api_patterns = [
    url(r'^preferences/', include(router.urls, namespace='preferences'))
]

urlpatterns = [
    # your other urls here
    url(r'^api/', include(api_patterns, namespace='api'))
]
```

1.5.2 Endpoints

For each preference viewset, the following endpoints are available:

Example reverse and urls are given according to the previous snippet. You'll have to adapt them to your own URL namespaces and structure.

List

- Methods: GET
- Returns a list of preferences
- Reverse example: `reverse('api:preferences:global-list')`
- URL examples:
 - List all preferences
`/api/preferences/global/`
 - List all preferences under blog section
`/api/preferences/global/?section=blog`

Detail

- Methods: GET, PATCH
- Get or update a single preference
- Reverse example: `reverse('api:preferences:global-detail', kwargs={'pk': 'section__name'})`
- URL example: `/api/preferences/global/section__name`

If you call this endpoint via PATCH HTTP method, you can update the preference value. The following payload is expected:

```
{
  value: 'new_value'
}
```

Note: When updating the preference value, the underlying serializers will call the preference field validators, and the preference `validate` method, if any is available.

Bulk

- Methods: POST
- Update multiple preferences at once
- Reverse example: `reverse('api:preferences:global-bulk')`
- URL example: `/api/preferences/global/bulk`

If you call this endpoint via POST HTTP method, you can update the the value of multiple preferences at once. Example payload:

```
{
  section1__name1: 'new_value',
  section2__name2: false,
}
```

This will update the preferences whose identifiers match `section1__name1` and `section2__name2` with the corresponding values.

Note: Validation will be called for each preferences, ans save will only occur if no error happens.

A note about permissions

- `GlobalPreferencesViewSet` will check the user has the `dynamic_preferences.change_globalpreferencemodel` permission
- `UserPreferencesViewSet` will check the user is logged in and only allow him to edit his own preferences.

1.6 Preferences lifecycle

1.6.1 Update

To do, help welcome :)

1.6.2 Deletion

If you remove preferences from your registry, corresponding data rows won't be deleted automatically.

In order to keep a clean database and delete obsolete rows, you can use the `checkpreferences` management command. This command will check all preferences in database, ensure they match a registered preference class and delete rows that do not match any registered preference.

Warning: Run this command carefully, since it can lead to data loss.

1.7 Upgrade

1.7.1 1.0

In order to fix #33 and to make the whole package lighter and more modular for the 1.0 release, user preferences were moved to a dedicated app.

If you were using user preferences before and want to use them after the package, upgrade will require a few changes to your existing code, as described below.

If you only use the package for the global preferences, no change should be required on your side, apart from running the migrations.

Add the app to your `INSTALLED_APPS`

In `settings.py`:

```
INSTALLED_APPS = [  
    # ...  
    'dynamic_preferences',  
    'dynamic_preferences.users.apps.UserPreferencesConfig', # <---- add this line  
]
```

Replace old imports

Some functions and classes were moved to the dedicated `dynamic_preferences.users` app.

The following imports will crash:

```
from dynamic_preferences.registry import user_preferences_registry  
from dynamic_preferences.forms import (  
    UserSinglePreferenceForm,  
    user_preference_form_builder,
```

(continues on next page)

(continued from previous page)

```
UserPreferenceForm,  
)  
from dynamic_preferences.views import UserPreferenceFormView  
from dynamic_preferences.models import UserPreferenceModel
```

You should use the following imports instead:

```
from dynamic_preferences.users.registry import user_preferences_registry  
from dynamic_preferences.users.forms import (  
    UserSinglePreferenceForm,  
    user_preference_form_builder,  
    UserPreferenceForm,  
)  
from dynamic_preferences.users.views import UserPreferenceFormView  
from dynamic_preferences.users.models import UserPreferenceModel
```

Note: It is mandatory to update the path for `user_preferences_registry`. Other paths are part of the public API but their use is optional and varies depending of how you usage of the package.

Run the migrations

User preferences were stored on the `UserPreferenceModel` model class.

The migrations only rename the old table to match the fact that the modle was moved in another app. Otherwise, nothing should be deleted or altered at all, and you can inspect the two related migrations to see what we're doing:

- `dynamic_preferences.0004_move_user_model`
- `dynamic_preferences.users.0001_initial`

Anyway, please perform a backup before any database migration.

Once you're ready, just run:

```
python manage.py migrate dynamic_preferences_users
```

Note: If your own code was using `ForeignKey` fields pointing to `UserPreferenceModel`, it is likely your code will break with this migration, because your foreign keys will point to the old database table.

Such foreign keys were not officially supported or recommended though, and should not be needed in the uses cases `dynamic_preferences` was designed for. However, if you're in this situation, please file an issue on the issue tracker to see what we can do.

Remove useless setting

In previous versions, to partially adress #33, a `ENABLE_USER_PREFERENCES` setting was added to enable / disable the admin endpoints for user preferences. Since you can now opt into user preferences via `INSTALLED_APPS`, this setting is now obsolete and can be safely removed from your settings file.

1.7.2 0.8

Warning: there is a backward incompatible change in this release.

To address #45 and #46, an import statement was removed from `__init__.py`. Because of that, every file containing the following:

```
from dynamic_preferences import user_preferences_registry, global_preferences_registry
```

Will raise an `ImportError`.

To fix this, you need to replace by this:

```
#                               .registries was added
from dynamic_preferences.registries import user_preferences_registry, global_
↳preferences_registry
```

1.7.3 0.6

Sections are now plain python objects (see #19). When you use sections in your code, instead of the old notation:

```
from dynamic_preferences.types import BooleanPreference

class MyPref(BooleanPreference):
    section = 'misc'
    name = 'my_pref'
    default = False
```

You should do:

```
from dynamic_preferences.types import BooleanPreference, Section

misc = Section('misc')

class MyPref(BooleanPreference):
    section = misc
    name = 'my_pref'
    default = False
```

Note that the old notation is only deprecated and will continue to work for some time.

1.7.4 0.5

The 0.5 release implies a migration from `TextField` to `CharField` for `name` and `section` fields.

This migration is handled by the package for global and per-user preferences. However, if you created your own preference model, you'll have to generate the migration yourself.

You can do it via `python manage.py makemigrations <your_app>`

After that, just run a `python manage.py syncdb` and you'll be done.

1.8 Contributing

Important: We are using git-flow workflow here, so please submit your pull requests against develop branch (and not master).

Contributions are welcome, and they are greatly appreciated! Every little bit helps, and credit will always be given.

You can contribute in many ways:

1.8.1 Types of Contributions

Report Bugs

Report bugs at <https://github.com/EliotBerriot/django-dynamic-preferences/issues>.

If you are reporting a bug, please include:

- Your operating system name and version.
- Any details about your local setup that might be helpful in troubleshooting.
- Detailed steps to reproduce the bug.
- Include whole stacktraces and error reports when necessary, directly in your issue body. Do not use external services such as pastebin.

1.8.2 Contributing

Fix Bugs

Look through the GitHub issues for bugs. Anything tagged with “bug” is open to whoever wants to implement it.

Implement Features

Look through the GitHub issues for features. Anything tagged with “feature” is open to whoever wants to implement it.

Write Documentation

django-dynamic-preferences could always use more documentation, whether as part of the official django-dynamic-preferences docs, in docstrings, or even on the web in blog posts, articles, and such.

Submit Feedback

The best way to send feedback is to file an issue at <https://github.com/EliotBerriot/django-dynamic-preferences/issues>.

If you are proposing a feature:

- Explain in detail how it would work.
- Keep the scope as narrow as possible, to make it easier to implement.
- Remember that this is a volunteer-driven project, and that contributions are welcome :)

1.8.3 Get Started!

Ready to contribute? Here's how to set up *django-dynamic-preferences* for local development.

1. Fork the *django-dynamic-preferences* repo on GitHub.
2. Clone your fork locally:

```
$ git clone git@github.com:your_name_here/django-dynamic-preferences.git
```

3. Install your local copy into a virtualenv. Assuming you have *virtualenvwrapper* installed, this is how you set up your fork for local development:

```
$ mkvirtualenv django-dynamic-preferences
$ cd django-dynamic-preferences/
$ python setup.py develop
```

4. Create a branch for local development:

```
$ git checkout -b name-of-your-bugfix-or-feature
```

Now you can make your changes locally.

5. When you're done making changes, check that your changes pass *flake8* and the tests, including testing other Python versions with *tox*:

```
$ flake8 dynamic_preferences tests
$ python setup.py test
$ tox
```

To get *flake8* and *tox*, just *pip* install them into your virtualenv.

6. Commit your changes and push your branch to GitHub:

```
$ git add .
$ git commit -m "Your detailed description of your changes."
$ git push origin name-of-your-bugfix-or-feature
```

7. Submit a pull request through the GitHub website.

1.8.4 Pull Request Guidelines

Before you submit a pull request, check that it meets these guidelines:

1. The pull request should include tests.
2. If the pull request adds functionality, the docs should be updated. Put your new functionality into a function with a docstring, and add the feature to the list in *README.rst*.
3. The pull request should work for Python, 2.7, and 3.4. Check https://travis-ci.org/EliotBerriot/django-dynamic-preferences/pull_requests and make sure that the tests pass for all supported Python versions.
4. The pull request must target the *develop* branch, since the project relies on [git-flow branching model](#)

1.8.5 Tips

To run a subset of tests:

```
$ python -m unittest tests.test_dynamic_preferences
```

1.9 Credits

1.9.1 Development Lead

- Eliot Berriot <contact@eliotberriot.com>

1.9.2 Contributors

- Ryan Anguiano, via `prefs-n-perms` package
- [[@willseward](https://github.com/willseward)](https://github.com/willseward)
- [[@haroon-sheikh](https://github.com/haroon-sheikh)](https://github.com/haroon-sheikh)
- [[@yurtaev](https://github.com/yurtaev)](https://github.com/yurtaev)
- [[@pomerama](https://github.com/pomerama)](https://github.com/pomerama)
- [[@philipbelesky](https://github.com/philipbelesky)](https://github.com/philipbelesky)
- [[@what-digital](https://github.com/what-digital)](https://github.com/what-digital)
- [[@czlee](https://github.com/czlee)](https://github.com/czlee)
- [[@ricard33](https://github.com/ricard33)](https://github.com/ricard33)
- [[@JetUni](https://github.com/JetUni)](https://github.com/JetUni)
- [[@pip182](https://github.com/pip182)](https://github.com/pip182)
- [[@JanMalte](https://github.com/JanMalte)](https://github.com/JanMalte)
- [[@macolo](https://github.com/macolo)](https://github.com/macolo)
- [[@fabrixxm](https://github.com/fabrixxm)](https://github.com/fabrixxm)
- [[@swalladge](https://github.com/swalladge)](https://github.com/swalladge)
- [[@rvignesh89](https://github.com/rvignesh89)](https://github.com/rvignesh89)
- [[@okolimar](https://github.com/okolimar)](https://github.com/okolimar)

1.10 Changelog

1.10.1 1.7 (2018-11-19)

- Fix string format arguments in `get_by_name` error (#157)
- Fix `UserPreferenceRegistry` and its `'section_url_namespace'` attribute (#152)
- Handle `'required'` attribute for all inherited `BasePreferenceType` class (#153)
- add section filter in query string for DRF list endpoint (#154)
- Fix `ModelChoicePreference` when using with model attribute and not queryset (#151)
- Update outdated `context_processors` documentation (#149)

- Update README.rst (#147)
- Fixed ModelMultipleSerializer.to_python() (#146)
- Added ModelMultipleChoicePreference

Contributors:

- @eriktelepovsky
- @monkeywithacupcake
- @ptrstn
- @jordiromera
- @calvin620707
- @czlee
- @ElManaa

1.10.2 1.6 (2018-06-17)

- Fixed #141 and #141: migrations issues (see below)
- Dropped support for django < 1.11
- Dropped support for Python 3.4
- Better namespaces for urls

Better namespaces for urls

Historically, the package included multiple urls. To ensure compatibility with django 2 and better namespacing, you should update any references to those urls as described below:

Old url	New url
dynamic_preferences.global	dynamic_preferences:global
dynamic_preferences.global.section	dynamic_preferences:global.section
dynamic_preferences.user	dynamic_preferences:user
dynamic_preferences.user.section	dynamic_preferences:user.section

Migration cleanup

This version includes a proper fix for migration issues. Full background is available at <https://github.com/EliotBerriot/django-dynamic-preferences/pull/142>, but here is the gist of it:

1. Early versions of dynamic_preferences included the user and global preferences models in the same app
2. The community requested a way to disable user preferences. The only way to do that was to move the user preference model in a dedicated app (dynamic_preferences_user)
3. A migration was written to handle that transparently, but this was not actually possible to have something that worked for both existing and new installations
4. Thus, we ended up with issues such as #140 or #141, inconsistent db state, tables lying around in the database, etc.

I'd like to apologize to everyone impacted. By trying to make 3. completely transparent to everyone and avoid a manual migration step for new installations, I actually made things worse.

This release should fix all that: any remains of the user app was removed from the main app migrations. For any new user, it will be like nothing happened.

For existing installations with user preferences disabled, there is nothing to do, apart from deleting the *dynamic_preferences_users_userpreference* table in your database.

For existing installations with user preferences enabled, there is nothing to do. You should have `'dynamic_preferences.users.apps.UserPreferencesConfig'` in your installed apps. If `python manage.py migrate` fails with `django.db.utils.ProgrammingError: relation "dynamic_preferences_users_userpreference" already exists`, this probably means you are upgrading for a really old release. In such event, simply skip the initial migration for the `dynamic_preferences_user` app by running `python manage.py migrate dynamic_preferences_users 0001 --fake`.

Many thanks to all people who helped clearing this mess, especially @czlee.

1.10.3 1.5.1 (06-03-2018)

This is a minor bugfix release:

- Get proper PreferenceModelsRegistry when preference is proxy model (#137)
- Add missing *format()* to IntegerSerializer exception text (#138)
- Add some attributes to PerInstancePreferenceAdmin (#135)

Contributors:

- @czlee
- @danie1k

1.10.4 1.5 (16-12-2017)

From now on, django-dynamic-preferences should fully support Django 2.0. This release should be fully backward-compatible with previous versions of the module.

You will still have to upgrade your own code to work with Django 2, like adding `on_delete` option to your ForeignKey fields.

- removed typo in API code that could cause a crash (#127)
- added `on_delete=models.CASCADE` to migrations for Django 2.0 compatibility (#129 and #131)
- Duration, date and datetime serialization issue in rest framework (#115)

Contributors:

- @rvignesh89
- @zamai

1.10.5 1.4.2 (06-11-2017)

- Fix #121: reverted Section import missing from `dynamic_preferences.types`

Contributors:

- @okolimar
- @swalladge

1.10.6 1.4.1 (03-11-2017)

- Section verbose name and filter in django admin (#114)
- Fixed wrong import in Quickstart documentation (#113)
- Fix #111: use path as returned by storage save method (#112)

Contributors:

- @okolimar
- @swalladge

1.10.7 1.4 (15-10-2017)

- Fix #8: we now have date, datetime and duration preferences
- Fix #108: Dropped tests and guaranteed compatibility with django 1.8 and 1.9, though
- Fix #103: bugged filtering of user preferences via REST API
- Fix #78: removed `create_default_per_instance_preferences`. This is *not* considered a backward-incompatible change as this method did nothing at all and was not documented

Contributors:

- @rvignesh89
- @haroon-sheikh

1.10.8 1.3.3 (25-09-2017)

- Fix #97 where the API serializer could crash during preference update because of incomplete parsing

Contributors:

- @rvignesh89

1.10.9 1.3.2 (11-09-2017)

- Should fix Python 3.3 complaints in CI, also add tests on Python 3.6 (#94)
- Fixed #75: Fix checkpreferences command that was not deleting obsolete preferences anymore (#93)
- Retrieve existing preferences in bulk (#92)
- Cache values when queried in all() (#91)

Contributors:

- @czlee

1.10.10 1.3.1 (30-07-2017)

- Fix #84: serialization error for preferences with None value (@swalladge)
- More documentation about preferences form fields

1.10.11 1.3 (03-07-2017)

This release fix a critical bug in 1.2 that can result in data loss.

Please upgrade to 1.3 as soon as possible and never use 1.2 in production. See #81 for more details.

1.10.12 1.2 (06-07-2017)

Warning: There is a critical bug in this that can result in dataloss. Please upgrade to 1.3 as soon as possible and never use 1.2 in production. See #81 for more details.

- important performance improvements (less database and cache queries)
- A brand new [REST API](#) based on Django REST Framework, to interact with preferences (this is an optionnal, opt-in feature)
- A new [FilePreference](#) [original work by @macolo]

1.10.13 1.1.1 (11-05-2017)

Bugfix release to restore disabled user preferences admin (#77).

1.10.14 1.1 (06-03-2017)

- Fixed #49 and #71 by passing full section objects in templates (and not just the section identifiers). This means it's easier to write template that use sections, for example if you want have `i18n` in your project and want to display the translated section's name. URL reversing for sections is also more reliable in templates. If you subclassed *PreferenceRegistry* to implement your own preference class and use the built-in templates, you need to add a `section_url_namespace` attribute to your registry class to benefit from the new URL reversing.

1.10.15 [Major release] 1.0 (21-02-2017)

Dynamic-preferences was release more than two years ago, and since then, more than 20 feature and bugfixe releases have been published. But even after two years the project was still advertised as in Alpha-state on PyPi, and the tags used for the releases, were implicitly saying that the project was not production-ready.

Today, we're changing that by releasing the first major version of dynamic-preferences, the 1.0 release. We will stick to semantic versioning and keep backward compatibility until the next major version.

Dynamic-preferences is already used in various production applications. The implemented features are stable, working, and address many of the uses cases the project was designed for:

- painless and efficient global configuration for your project
- painless and efficient per-user (or any other model) settings

- ease-of-use, both for end-user (via the admin interface) and developers (settings are easy to create and to manage)
- more than decent performance, thanks to caching

By making a major release, we want to show that the project is trustworthy and, in the end, to attract new users and develop the community around it. Development will go on as before, with an increased focus on stability and backward compatibility.

Because of the major version switch, some dirt was removed from the code, and manual intervention is required for the upgrade. Please have a look for the detailed instructions: <https://django-dynamic-preferences.readthedocs.io/en/latest/upgrade.html>

Thanks to all the people who contributed over the years by reporting bugs, asking for new features, working on the documentation or on implementing solutions!

1.10.16 0.8.4 (10-01-2017)

This version is an emergency release to restore backward compatibility that was broken in 0.8.3, as described in issue #67. Please upgrade as soon as possible if you use 0.8.3.

Special thanks to [czlee](<https://github.com/czlee>) for reporting this!

1.10.17 0.8.3 (06-01-2017) (DO NOT USE: BACKWARD INCOMPATIBLE)

This release introduced by mistake a backward incompatible change (commit 723f2e). Please upgrade to 0.8.4 or higher to restore backward compatibility with earlier versions

This is a small bugfix release. Happy new year everyone!

- Now fetch model default value using the `get_default` method
- Fixed #50: now use real apps path for autodiscovering, should fix some strange error when using AppConfig and explicit AppConfig path in INSTALLED_APPS
- Fix #63: Added initial doc to explain how to bind preferences to arbitrary models (#65)
- Added test to ensure form submission works when no section filter is applied, see #53
- Example project now works with latest django versions
- Added missing `max_length` on example model
- Fixed a few typos in example project

1.10.18 0.8.2 (23-08-2016)

- Added django 1.10 compatibility [ricard33]
- Fixed tests for django 1.7
- Fix issue #57: PreferenceManager.get() returns value [ricard33]
- Fixed missing comma in boolean serializer [czlee]
- Added some documentations and example [JetUni]

1.10.19 0.8.1 (25-02-2016)

- Fixed still inconsistent preference order in form builder (#44) [czlee]

1.10.20 0.8 (23-02-2016)

Warning: there is a backward incompatible change in this release. To address #45 and #46, an import statement was removed from `__init__.py`. Please refer to the documentation for upgrade instructions: <http://django-dynamic-preferences.readthedocs.org/en/stable/upgrade.html>

1.10.21 0.7.2 (23-02-2016)

- Fix #45: importerror on pip install, and removed useless import
- Replaced built-in registries by `persisting_theory`, this will maintain a consistent order for preferences, see #44

1.10.22 0.7.1 (12-02-2016)

- Removed useless sections and fixed typos/structure in documentation, fix #39
- Added setting to disable user preferences admin, see #33
- Added setting to disable preference caching, fix #7
- Added validation against sections and preferences names, fix #28, it could raise backward incompatible behaviour, since invalid names will stop execution by default

1.10.23 0.7 (12-01-2016)

- Added `by_name` and `get_by_name` methods on manager to retrieve preferences without using sections, fix #34
- Added float preference, fix #31 [philipbelesky]
- Made name, section read-only in django admin, fix #36 [what-digital]
- Fixed typos in documentation [philipbelesky]

1.10.24 0.6.6 (23-12-2015)

- Fixed #23 (again bis repetita): Fixed second migration to create section and name columns with correct length

1.10.25 0.6.5 (23-12-2015)

- Fixed #23 (again): Fixed initial migration to create section and name columns with correct length

1.10.26 0.6.4 (23-12-2015)

- Fixed #23: Added migration for shorter names and sections

1.10.27 0.6.3 (09-12-2015)

- Fixed #27: AttributeError: 'unicode' object has no attribute 'name' in preference `__repr__` [pomerama]

1.10.28 0.6.2 (24-11-2015)

- Added support for django 1.9, [yurtaev]
- Better travis CI conf (which run tests against two version of Python and three versions of django up to 1.9), fix #22 [yurtaev]

1.10.29 0.6.1 (6-11-2015)

- Added decimal field and serializer

1.10.30 0.6 (24-10-2015)

- Fixed #10 : added model choice preference
- Fixed #19 : Sections are now plain python objects, the string notation is now deprecated

1.10.31 0.5.4 (06-09-2015)

- Merged PR #16 that fix a typo in the code

1.10.32 0.5.3 (24-08-2015)

- Added switch for list_editable in admin and warning in documentation, fix #14
- Now use Textarea for LongStringPreference, fix #15

1.10.33 0.5.2 (22-07-2015)

- Fixed models not loaded error

1.10.34 0.5.1 (17-07-2015)

- Fixed pip install (#3), thanks @willseward
- It's now easier to override preference form field attributes on a preference (please refer to [Preferences attributes](#) for more information)
- Cleaner serializer api

1.10.35 0.5 (12-07-2015)

This release may involves some specific upgrade steps, please refer to the `Upgrade` section of the documentation.

1.10.36 0.5 (12-07-2015)

This release may involves some specific upgrade steps, please refer to the `Upgrade` section of the documentation.

- Migration to CharField for section and name fields. This fix MySQL compatibility issue #2
- Updated example project to the 0.4 API

1.10.37 0.4.2 (05-07-2015)

- Minor changes to README / docs

1.10.38 0.4.1 (05-07-2015)

- The cookiecutter part was not fully merged

1.10.39 0.4 (05-07-2015)

- Implemented cache to avoid database queries when possible, which should result in huge performance improvements
- Whole API cleanup, we now use dict-like objects to get preferences values, which simplifies the code a lot (Thanks to Ryan Anguiano)
- Migrated the whole app to cookiecutter-djangopackage layout
- Docs update to reflect the new API

1.10.40 0.3.1 (10-06-2015)

- Improved test setup
- More precise data in setup.py classifiers

1.10.41 0.2.4 (14-10-2014)

- Added Python 3.4 compatibility

1.10.42 0.2.3 (22-08-2014)

- Added LongStringPreference

1.10.43 0.2.2 (21-08-2014)

- Removed view that added global and user preferences to context. They are now replaced by template context processors

1.10.44 0.2.1 (09-07-2014)

- Switched from GPLv3 to BSD license

d

`dynamic_preferences.types`, 13

A

api_repr() (dynamic_preferences.types.BasePreferenceType method), 13
 api_repr() (dynamic_preferences.types.DatePreference method), 15
 api_repr() (dynamic_preferences.types.DateTimePreference method), 15
 api_repr() (dynamic_preferences.types.DurationPreference method), 15
 api_repr() (dynamic_preferences.types.FilePreference method), 15
 api_repr() (dynamic_preferences.types.ModelChoicePreference method), 16

B

BasePreferenceType (class in dynamic_preferences.types), 13
 BooleanPreference (class in dynamic_preferences.types), 14

C

ChoicePreference (class in dynamic_preferences.types), 14
 choices (dynamic_preferences.types.ChoicePreference attribute), 14
 create_deletion_handler() (in module dynamic_preferences.types), 17

D

DatePreference (class in dynamic_preferences.types), 15
 DateTimePreference (class in dynamic_preferences.types), 15
 DecimalPreference (class in dynamic_preferences.types), 15
 DurationPreference (class in dynamic_preferences.types), 15
 dynamic_preferences.types (module), 13

F

field (dynamic_preferences.types.BasePreferenceType attribute), 13
 field_class (dynamic_preferences.types.BasePreferenceType attribute), 13
 field_class (dynamic_preferences.types.ModelChoicePreference attribute), 17
 field_class (dynamic_preferences.types.ModelMultipleChoicePreference attribute), 17
 field_kwargs (dynamic_preferences.types.BasePreferenceType attribute), 13
 FilePreference (class in dynamic_preferences.types), 15
 FloatPreference (class in dynamic_preferences.types), 16

G

get_api_additional_data() (dynamic_preferences.types.BasePreferenceType method), 13
 get_api_additional_data() (dynamic_preferences.types.ChoicePreference method), 14
 get_api_field_data() (dynamic_preferences.types.BasePreferenceType method), 14
 get_field_kwargs() (dynamic_preferences.types.BasePreferenceType method), 14
 get_field_kwargs() (dynamic_preferences.types.ChoicePreference method), 14
 get_field_kwargs() (dynamic_preferences.types.FilePreference method), 16
 get_field_kwargs() (dynamic_preferences.types.ModelChoicePreference method), 17
 get_file_storage() (dynamic_preferences.types.FilePreference method), 16
 get_initial() (dynamic_preferences.types.BasePreferenceType method), 16

method), 14

I

IntegerPreference (class in `dynamic_preferences.types`), 16

IntPreference (in module `dynamic_preferences.types`), 16

L

LongStringPreference (class in `dynamic_preferences.types`), 16

M

model (`dynamic_preferences.types.ModelChoicePreference` attribute), 17

ModelChoicePreference (class in `dynamic_preferences.types`), 16

ModelMultipleChoicePreference (class in `dynamic_preferences.types`), 17

P

Preference, 5

PreferenceModel, 5

Q

queryset (`dynamic_preferences.types.ModelChoicePreference` attribute), 17

S

serializer (`dynamic_preferences.types.BasePreferenceType` attribute), 14

serializer (`dynamic_preferences.types.FilePreference` attribute), 16

serializer_class (`dynamic_preferences.types.FilePreference` attribute), 16

StringPreference (class in `dynamic_preferences.types`), 17

V

validate() (`dynamic_preferences.types.BasePreferenceType` method), 14

validate() (`dynamic_preferences.types.ChoicePreference` method), 15