
flask-jsonapi Documentation

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JSONAPI 1.0 server implementation for Flask.

Flask-jsonapi is a server implementation of [JSON API 1.0](#) specification for [Flask](#). It allows for rapid creation of CRUD JSON API endpoints. Those endpoints can be used by JSON API clients, eg. JavaScript frontend applications written in Ember.js, React, Angular.js etc.

A compatible Python client can be found in the following package: [jsonapi-request](#).

Flask-jsonapi depends on the following external libraries:

- [Flask](#) (micro web framework)
- [marshmallow-jsonapi](#) (serialization, deserialization, validation with JSON API format)
- [SQLAlchemy](#) (SQL ORM)

CHAPTER 1

Features

Flask-jsonapi implements the following parts of the JSON API specification:

- **fetching resources** [[specification](#)]
- **creating, updating and deleting resources** [[specification](#)]
- **inclusion of related resources** [[specification](#)]
- **filtering** - helps with adding filters to views (including helpers for SQLAlchemy), the format is compatible with [recommendations](#)
- **sorting** [[specification](#)]
- **pagination** [[specification](#)]
- **sparse fieldsets** [[specification](#)]
- **links** [[specification](#)] - resolved by marshmallow-jsonapi ([docs](#))
- **error objects** [[specification](#)]
- **resource-level permissions** - view-level decorators support in ViewSets
- **object-level permissions** - interfaces added in [[#43](#)]

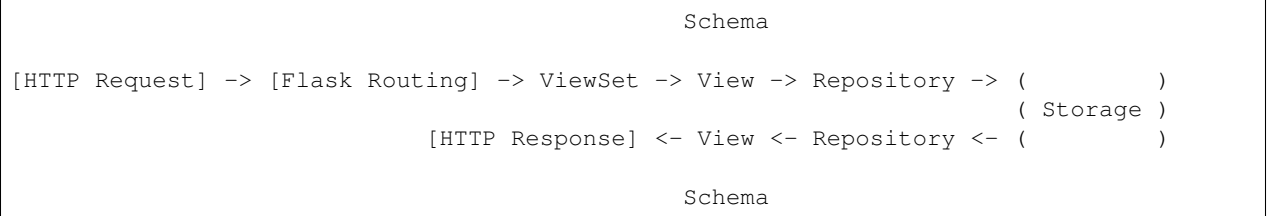
Not implemented yet:

- **fetching relationships** [[specification](#)] and **updating relationships** [[specification](#)] - [#27](#)

CHAPTER 2

Architecture

Flow through layers beginning with an HTTP Request and ending with an HTTP Response:



CHAPTER 3

Installation

To install (with SQLAlchemy support) run:

```
pip install Flask-jsonapi[sqlalchemy]
```

Simple example

Let's create a working example of a minimal Flask application. It will expose a single resource `Article` as a REST endpoint with fetch/create/update/delete operations. For persistence layer, it will use an in-memory SQLite database with SQLAlchemy for storage.

4.1 Configuration

```
import flask
import sqlalchemy
from sqlalchemy.orm import scoped_session
from sqlalchemy.orm import sessionmaker
from sqlalchemy.ext.declarative import declarative_base
from marshmallow_jsonapi import Schema, fields

import flask_jsonapi
from flask_jsonapi.resource_repositories import sqlalchemy_repositories

db_engine = sqlalchemy.create_engine('sqlite:///')
session = scoped_session(sessionmaker(bind=db_engine))
Base = declarative_base()
Base.query = session.query_property()

class Article(Base):
    __tablename__ = 'articles'
    id = sqlalchemy.Column(sqlalchemy.Integer, primary_key=True)
    title = sqlalchemy.Column(sqlalchemy.String)

Base.metadata.create_all(db_engine)

class ArticleRepository(sqlalchemy_repositories.SqlAlchemyModelRepository):
    model = Article
    instance_name = 'articles'
    session = session
```

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```

class ArticleSchema(Schema):
    id = fields.Int()
    title = fields.Str()

    class Meta:
        type_ = 'articles'
        strict = True

class ArticleRepositoryViewSet(flask_jsonapi.resource_repository_views.
↳ResourceRepositoryViewSet):
    schema = ArticleSchema
    repository = ArticleRepository()

app = flask.Flask(__name__)
api = flask_jsonapi.Api(app)
api.repository(ArticleRepositoryViewSet(), 'articles', '/articles/')
app.run(host='127.0.0.1', port=5000)

```

4.2 Usage

Create a new Article with title “First article”:

```

curl -H 'Content-Type: application/vnd.api+json' \
  -H 'Accept: application/vnd.api+json' \
  http://localhost:5000/articles/ \
  --data '{"data": {"attributes": {"title": "First article"}, "type": "articles"}}' \
↳\
  2>/dev/null | python -m json.tool

```

Result:

```

{
  "data": {
    "type": "articles",
    "id": 1,
    "attributes": {
      "title": "First article"
    }
  },
  "jsonapi": {
    "version": "1.0"
  }
}

```

Get the list of Articles:

```

curl -H 'Accept: application/vnd.api+json' \
  http://localhost:5000/articles/ \
  2>/dev/null | python -m json.tool

```

Result:

```
{
  "data": [
    {
      "type": "articles",
      "id": 1,
      "attributes": {
        "title": "First article"
      }
    }
  ],
  "jsonapi": {
    "version": "1.0"
  },
  "meta": {
    "count": 1
  }
}
```


5.1 Tutorial

5.2 ViewSets

5.3 Views

5.4 Repositories

5.5 Including relationships

Flask-jsonapi supports inclusion of related resources. [\[specification\]](#)

Note:

By default when `include` parameter is not provided, `marshmallow-jsonapi` doesn't serialize resource linkage. You can enable it by passing `include_resource_linkage=True` and the resource `type_` argument to the desired fields in schema. [\[documentation\]](#)

5.5.1 Usage

Inclusion of related resource in compound document in could be requested as shown below:

```
/articles/1?include=comments
```

Inclusion of resources related to other resources can be achieved using a dot-separated path:

```
/articles/1?include=comments.author
```

Multiple related resources can be requested in a comma-separated list:

```
/articles/1?include=author,comments.author
```

5.6 Sparse Fieldsets

Flask-jsonapi supports `fields[TYPE]` parameter to restrict the server to return a set of fields for a given resource type. [\[specification\]](#)

Note:

By default when `include` parameter is not provided, marshmallow-jsonapi doesn't serialize resource linkage. You can enable it by passing `include_resource_linkage=True` and the resource `type_` argument to the desired fields in schema. [\[documentation\]](#)

5.6.1 Usage

Basic example:

```
/articles?fields[articles]=title,body
```

This example demonstrates combination on both `include` and `fields` parameters.

```
/articles?include=author&fields[articles]=title,body&fields[people]=name
```

Note:

For `include` parameter there are specific *attributes* of the resources are provided, but for `fields` parameter there are *types* provided.

5.7 Filtering

Flask-jsonapi supports resource filtering. [\[specification\]](#)

Note:

All results of examples are `filters` parameter passed to `read_many` method of `ResourceList` or `get_list` method of `ResourceRepositoryViewSet`.

5.7.1 Simple Usage

Let's define a simple filter schema with one filter:

```
class ExampleFiltersSchema(filters_schema.FilterSchema):
    title = filters_schema.FilterField()
```

Now use it in `ResourceList` or `ResourceRepositoryViewSet`:

```
class ExampleListView(resources.ResourceList):
    schema = ExampleSchema()
    filter_schema = ExampleFiltersSchema()
```

Request:

```
/example-resource?filter[title]=something
```

Will result in:

```
{'title': 'something'}
```

5.7.2 List of filter values

To parse many values for single filter use `ListFilterField`:

```
class ExampleFiltersSchema(filters_schema.FilterSchema):
    title = filters_schema.ListFilterField()
```

Request:

```
/example-resource?filter[title]=something,other
```

Will result in:

```
{'title': ['something', 'other']}
```

5.7.3 Parsing filter values

By default filter values are parsed as strings. To change it, pass a desired subclass of `marshmallow.fields.Field` as `type_` argument to field constructor:

[reference]

```
class ExampleFiltersSchema(filters_schema.FilterSchema):
    title = filters_schema.FilterField(type_=fields.Float)
```

Request:

```
/example-resource?filter[score]=4.5
```

Will result in:

```
{'score': 4.5}
```

5.7.4 Overriding filter attribute

You can override the key with which the filter will be parsed with `attribute` parameter:

```
class ExampleFiltersSchema(filters_schema.FilterSchema):
    title = filters_schema.FilterField(attribute='renamed')
```

Request:

```
/example-resource?filter[title]=something
```

Will result in:

```
{'renamed': 'something'}
```

5.7.5 Using Operators

The base JSONAPI specification is agnostic about filtering strategies supported by a server, Flask-JsonApi added a support for operators.

Note:

List of supported operators is available [\[here\]](#)

Note:

Filters with operators can be automatically applied to query using `sqlalchemy_repositories.SqlAlchemyModelRepository`. This is achieved using `[sqlalchemy-django-query]`

Defining a set of allowed operators:

```
class ExampleFiltersSchema(filters_schema.FilterSchema):
    title = filters_schema.FilterField(operators=['eq', 'ne'])
```

Request:

```
/example-resource?filter[title][ne]=something
```

Will result in:

```
{'title__ne': 'something'}
```

Note:

You can also specify a default operator (when none are provided in query string) with `default_operator` parameter.

5.7.6 Marshmallow-Jsonapi Schema integration

Filters can be autogenerated using supplied schema.

Let's define a schema:

```
class ExampleSchema(marshmallow_jsonapi.Schema):
    id = fields.UUID(required=True)
    body = fields.Str()
    is_active = fields.Boolean()

    class Meta:
        type_ = 'example'
```

Let's define a filters schema that uses this schema:

```
class ExampleFiltersSchema(filters_schema.FilterSchema):
    class Meta:
        schema = ExampleSchema
        fields = ['id', 'body', 'is_active']
```

Now you can filter by the fields specified in `class Meta`:

Request:

```
/example-resource?filter[is-active]=True
```

Will result in:

```
{'is_active': True}
```

5.7.7 Relationship filtering

Relationships within resources can be also used in filtering.

Let's define two related filter schemas:

```
class FirstFiltersSchema(filters_schema.FilterSchema):
    attribute = filters_schema.FilterField()

class SecondFiltersSchema(filters_schema.FilterSchema):
    relationship = filters_schema.RelationshipFilterField(SecondFiltersSchema)
```

Request:

```
/second-resource?filter[relationship][attribute]=something
```

Will result in:

```
{'relationship__attribute': 'something'}
```

Relationship filters can be automatically applied to query using `sqlalchemy_repositories.SqlAlchemyModelRepository`. This is achieved using `sqlalchemy-django-query`

5.8 Sorting

Flask-jsonapi supports sorting by one or more criteria . [\[specification\]](#)

Note:

To enable sorting by a “sort field” other than resource attributes, you need to specify this field in the schema and implement sorting method in the repository.

5.8.1 Usage

```
/articles?sort=-created,title
```

5.9 Pagination

Flask-jsonapi supports page-based pagination. [\[specification\]](#)

By default list endpoint results are not paginated.

5.9.1 Usage

```
/users?page[size]={page_size}&page[number]={page_number}
```

5.10 Extensions

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