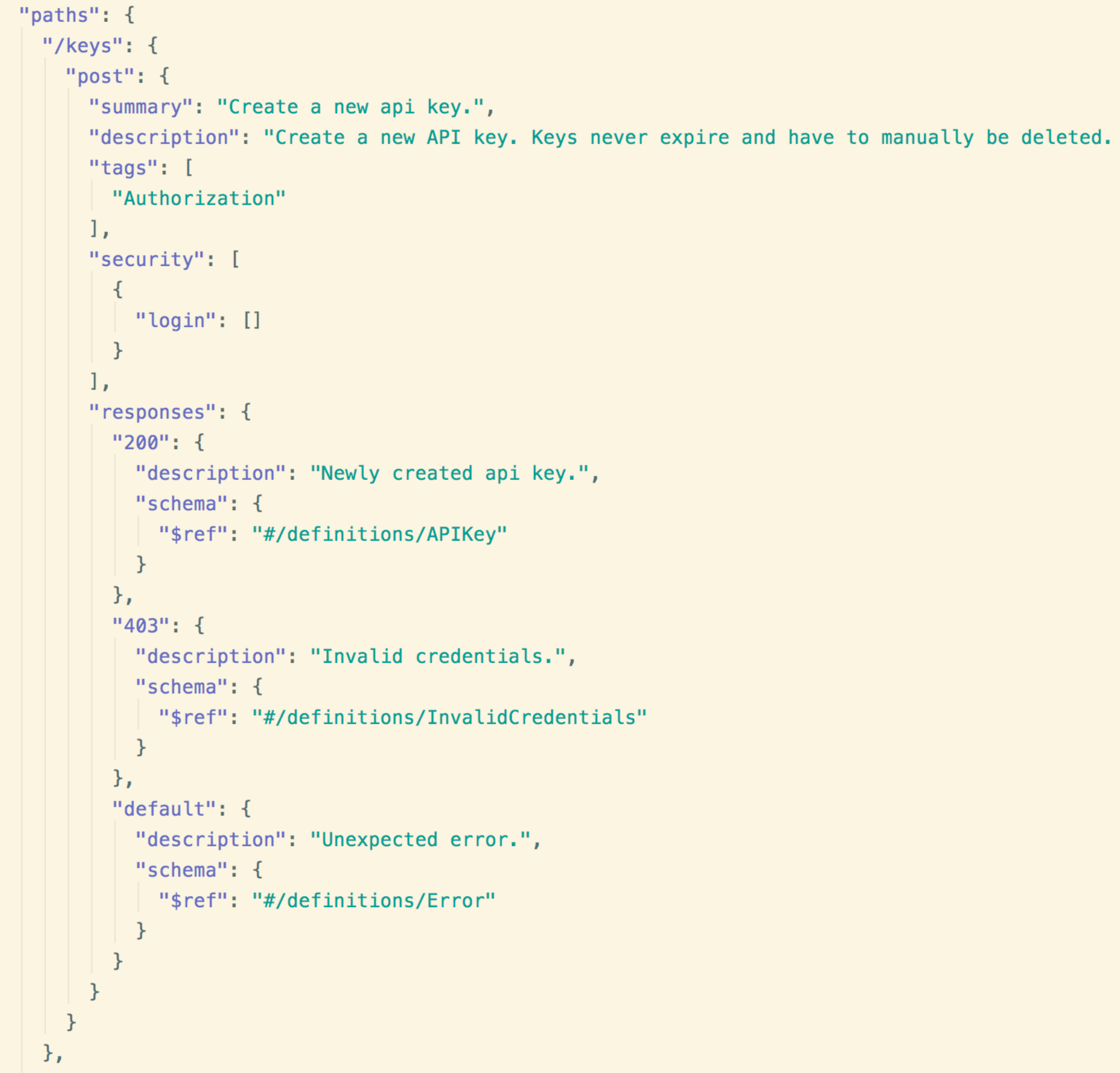
Documenting RESTful APIs with Swagger

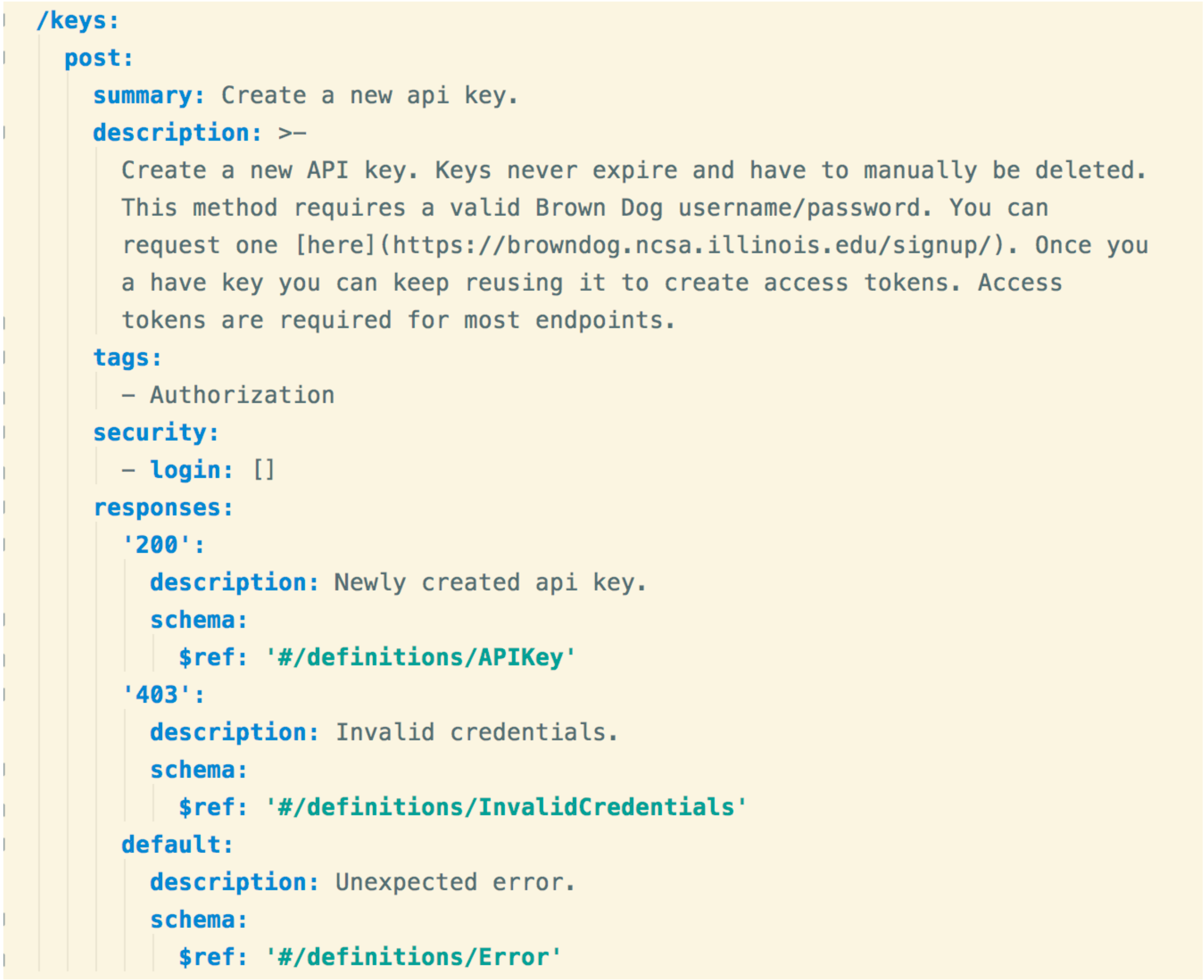
JSON



```
"paths": {
  "/keys": {
    "post": {
      "summary": "Create a new api key.",
      "description": "Create a new API key. Keys never expire and have to manually be deleted.
      "tags": [
        "Authorization"
      ],
      "security": [
        {
          "login": []
        }
      ],
      "responses": {
        "200": {
          "description": "Newly created api key.",
          "schema": {
            "$ref": "#/definitions/APIKey"
          }
        },
        "403": {
          "description": "Invalid credentials.",
          "schema": {
            "$ref": "#/definitions/InvalidCredentials"
          }
        },
        "default": {
          "description": "Unexpected error.",
          "schema": {
            "$ref": "#/definitions/Error"
          }
        }
      }
    }
  },
```

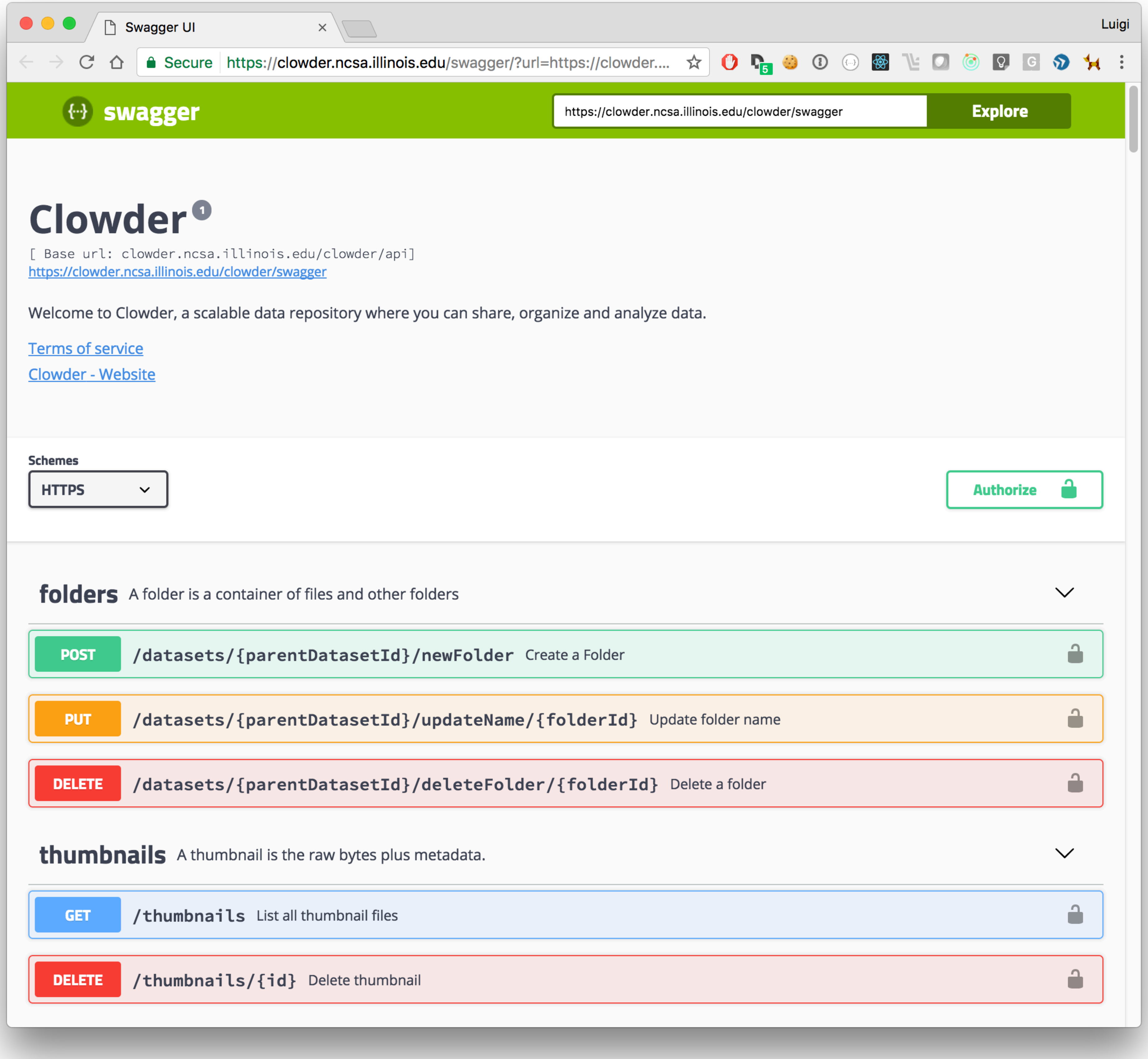
OPEN API Specification **https://www.openapis.org/**

YAML



```yaml
/keys:
  post:
    summary: Create a new api key.
    description: >-
      Create a new API key. Keys never expire and have to manually be deleted.
      This method requires a valid Brown Dog username/password. You can
      request one [here](https://browndog.ncsa.illinois.edu/signup/). Once you
      a have key you can keep reusing it to create access tokens. Access
      tokens are required for most endpoints.
    tags:
      - Authorization
    security:
      - login: []
    responses:
      '200':
        description: Newly created api key.
        schema:
          $ref: '#/definitions/APIKey'
      '403':
        description: Invalid credentials.
        schema:
          $ref: '#/definitions/InvalidCredentials'
      default:
        description: Unexpected error.
        schema:
          $ref: '#/definitions/Error'
```

Interactive Documentation



Swagger UI
Luigi
Secure
https://clowder.ncsa.illinois.edu/swagger/?url=https://clowder....
swagger
https://clowder.ncsa.illinois.edu/clowder/swagger
Explore

Clowder

[Base url: clowder.ncsa.illinois.edu/clowder/api]
https://clowder.ncsa.illinois.edu/clowder/swagger

Welcome to Clowder, a scalable data repository where you can share, organize and analyze data.

Terms of service
Clowder - Website

Schemes: HTTPS

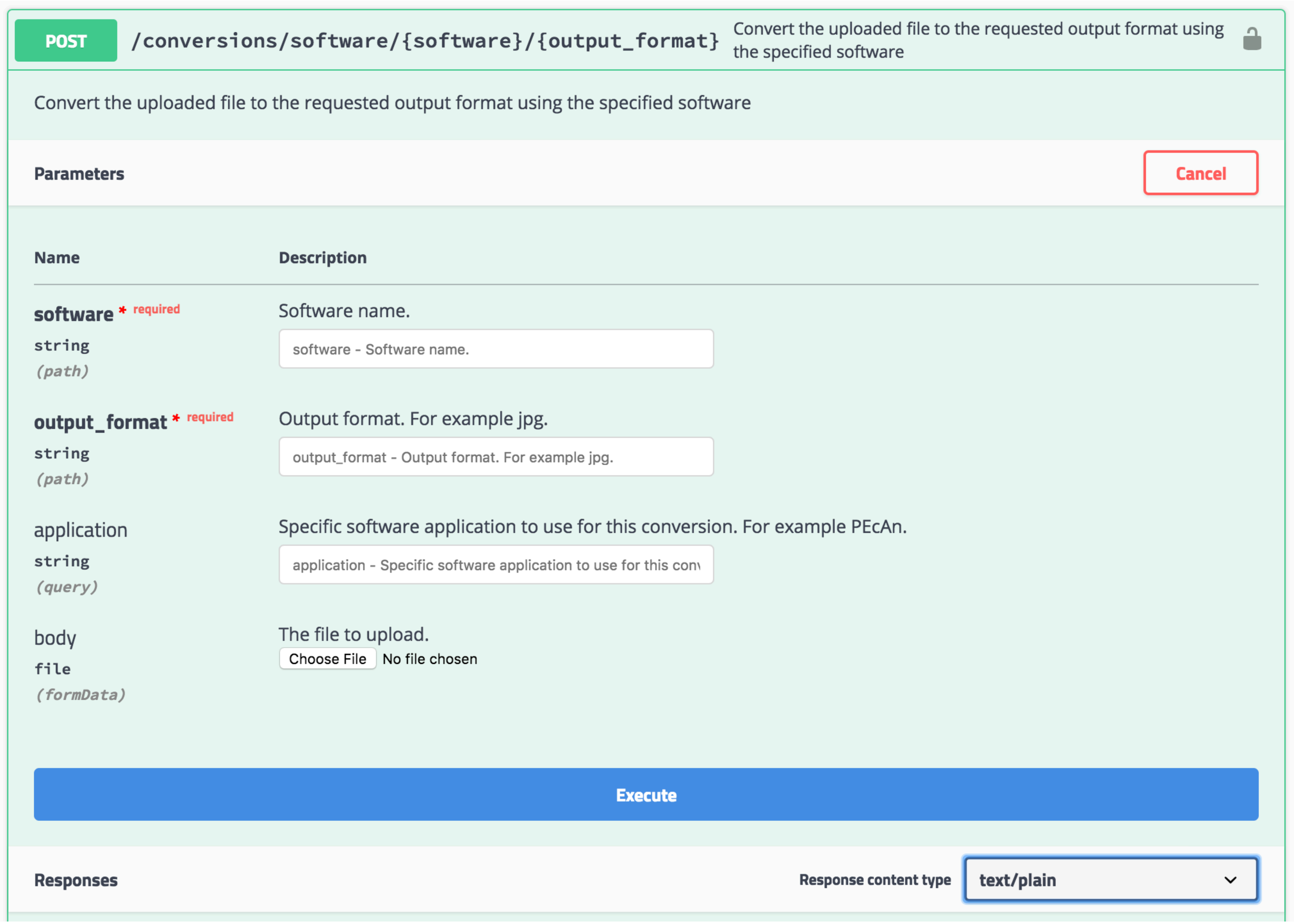
folders A folder is a container of files and other folders

- POST `/datasets/{parentDatasetId}/newFolder` Create a Folder
- PUT `/datasets/{parentDatasetId}/updateName/{folderId}` Update folder name
- DELETE `/datasets/{parentDatasetId}/deleteFolder/{folderId}` Delete a folder

thumbnails A thumbnail is the raw bytes plus metadata.

- GET `/thumbnails` List all thumbnail files
- DELETE `/thumbnails/{id}` Delete thumbnail

Interactive Documentation: Parameters



/conversions/software/{software}/{output_format}

Convert the uploaded file to the requested output format using the specified software

Convert the uploaded file to the requested output format using the specified software

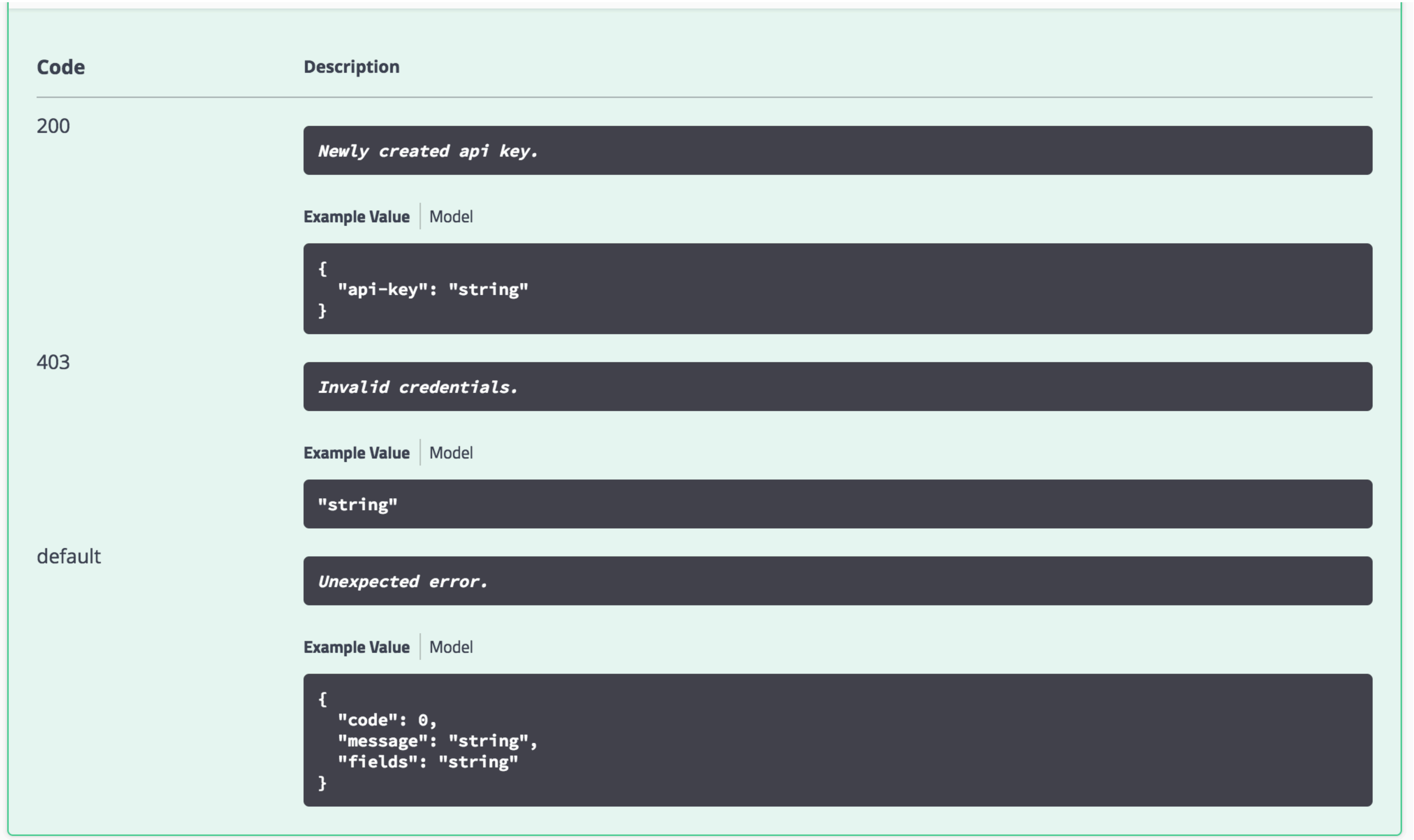
Parameters

Name	Description
software * required string *(path)*	Software name. software - Software name.
output_format * required string *(path)*	Output format. For example jpg. output_format - Output format. For example jpg.
application string *(query)*	Specific software application to use for this conversion. For example PEcAn. application - Specific software application to use for this conv
body file *(formData)*	The file to upload. Choose File No file chosen

Responses

Response content type: text/plain

Interactive Documentation: Define Possible Responses



Code **Description**

200

Newly created api key.

Example Value | Model

```
{
  "api-key": "string"
}
```

403

Invalid credentials.

Example Value | Model

```
"string"
```

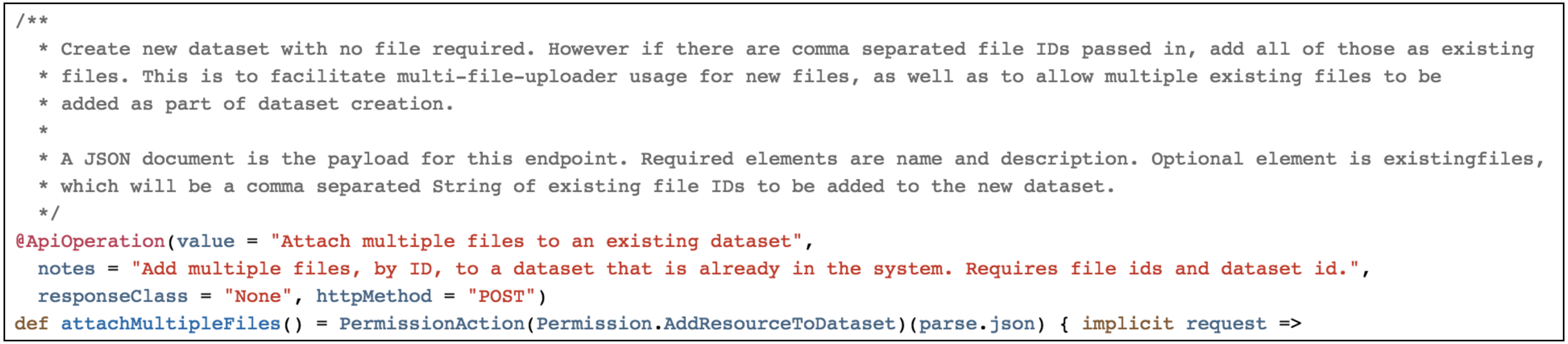
default

Unexpected error.

Example Value | Model

```
{
  "code": 0,
  "message": "string",
  "fields": "string"
}
```

Define Docs with the Code (Java Annotations)

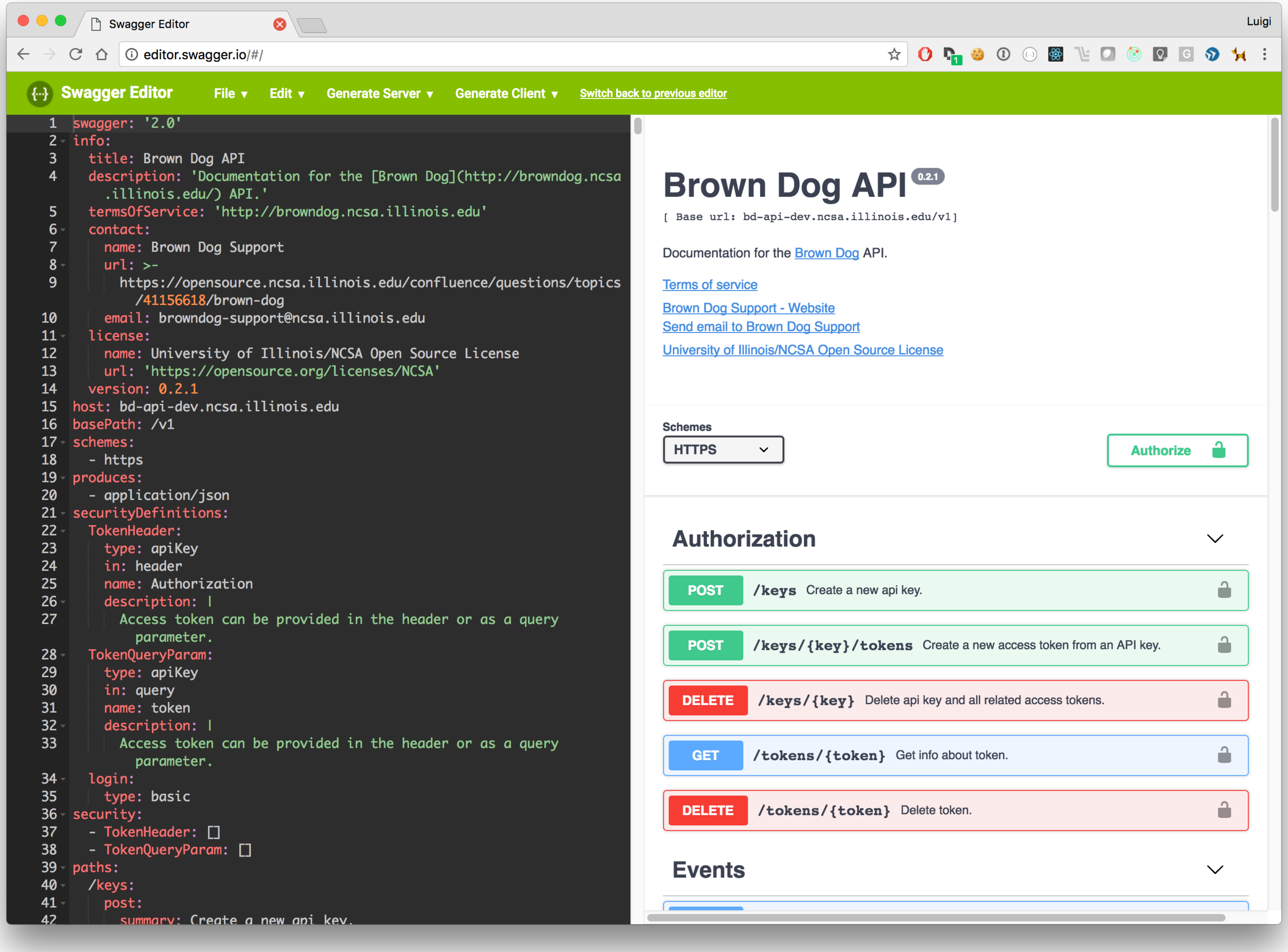


```
/**
  * Create new dataset with no file required. However if there are comma separated file IDs passed in, add all of those as existing
  * files. This is to facilitate multi-file-uploader usage for new files, as well as to allow multiple existing files to be
  * added as part of dataset creation.
  *
  * A JSON document is the payload for this endpoint. Required elements are name and description. Optional element is existingfiles,
  * which will be a comma separated String of existing file IDs to be added to the new dataset.
  */
@ApiOperation(value = "Attach multiple files to an existing dataset",
  notes = "Add multiple files, by ID, to a dataset that is already in the system. Requires file ids and dataset id.",
  responseClass = "None", httpMethod = "POST")
def attachMultipleFiles() = PermissionAction(Permission.AddResourceToDataset)(parse.json) { implicit request =>
```

- **Can take a lot of space and be redundant**
- **Libraries not always available for every framework**
- **Need to recompile**

We now manually maintain static files in Brown Dog API Gateway and Clowder

Swagger Editor



```yaml
swagger: '2.0'
info:
  title: Brown Dog API
  description: 'Documentation for the [Brown Dog](http://browndog.ncsa.illinois.edu/) API.'
  termsOfService: 'http://browndog.ncsa.illinois.edu'
  contact:
    name: Brown Dog Support
    url: >-
      https://opensource.ncsa.illinois.edu/confluence/questions/topics/41156618/brown-dog
    email: browndog-support@ncsa.illinois.edu
  license:
    name: University of Illinois/NCSA Open Source License
    url: 'https://opensource.org/licenses/NCSA'
  version: 0.2.1
host: bd-api-dev.ncsa.illinois.edu
basePath: /v1
schemes:
  - https
produces:
  - application/json
securityDefinitions:
  TokenHeader:
    type: apiKey
    in: header
    name: Authorization
    description: |
      Access token can be provided in the header or as a query parameter.
  TokenQueryParam:
    type: apiKey
    in: query
    name: token
    description: |
      Access token can be provided in the header or as a query parameter.
  login:
    type: basic
security:
  - TokenHeader: []
  - TokenQueryParam: []
paths:
  /keys:
    post:
      summary: Create a new api key.
```

Brown Dog API 0.2.1

[Base url: bd-api-dev.ncsa.illinois.edu/v1]

Documentation for the Brown Dog API.

Terms of service

Brown Dog Support - Website

Send email to Brown Dog Support

University of Illinois/NCSA Open Source License

Schemes

HTTPS

Authorize

Authorization

POST /keys Create a new api key.

POST /keys/{key}/tokens Create a new access token from an API key.

DELETE /keys/{key} Delete api key and all related access tokens.

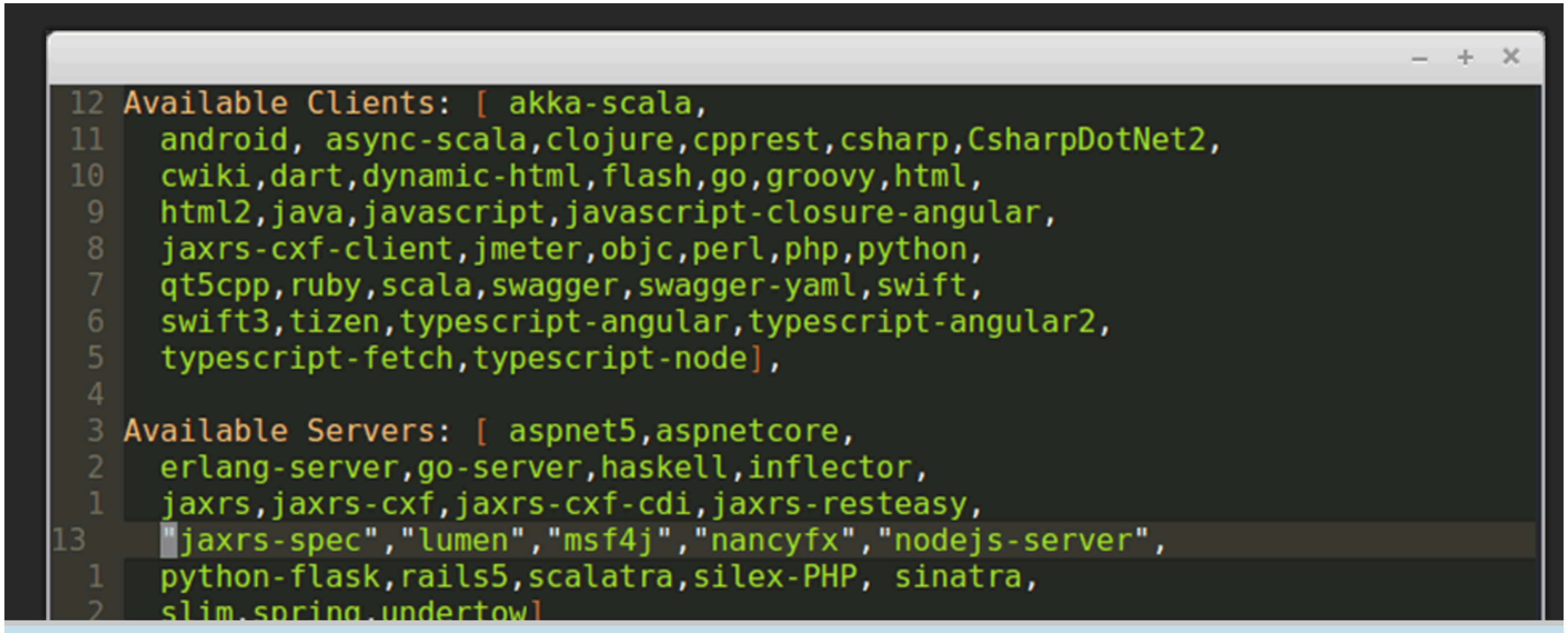
GET /tokens/{token} Get info about token.

DELETE /tokens/{token} Delete token.

Events

Interactive feedback and autocompletion!

Swagger Code Generation



```
Available Clients: [ akka-scala,
  android, async-scala,clojure,cpprest,csharp,CsharpDotNet2,
  cwiki,dart,dynamic-html,flash,go,groovy,html,
  html2,java,javascript,javascript-closure-angular,
  jaxrs-cxf-client,jmeter,objc,perl,php,python,
  qt5cpp,ruby,scala,swagger,swagger-yaml,swift,
  swift3,tizen,typescript-angular,typescript-angular2,
  typescript-fetch,typescript-node],

Available Servers: [ aspnet5,aspnetcore,
  erlang-server,go-server,haskell,inflector,
  jaxrs,jaxrs-cxf,jaxrs-cxf-cdi,jaxrs-resteasy,
  "jaxrs-spec","lumen","msf4j","nancyfx","nodejs-server",
  python-flask,rails5,scalatra,silex-PHP, sinatra,
  slim,spring,undertow]
```

```
swagger-codegen generate -i https://bd-api.ncsa.illinois.edu/v1/swagger.json -l csharp
```

Why?

- Focusing on the definitions help refine the design
- Starting with technology leads us to focus on the underlying libraries
- Endpoints should be independent of implementation
- Standard encourage us to worry about important things that don't always make the cut
    - Like response JSON schema, content types, etc.
- Tooling is especially helpful to client developers

Demo?

http://editor.swagger.io/#/