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# **dokomoforms Documentation**

***Release***

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## dokomoforms package

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### 1.1 Subpackages

#### 1.1.1 dokomoforms.handlers package

##### Subpackages

**dokomoforms.handlers.api package**

##### Subpackages

**dokomoforms.handlers.api.v0 package**

##### Submodules

**dokomoforms.handlers.api.v0.base module** The base class of the TornadoResource classes in the api module.

```
class dokomoforms.handlers.api.v0.base.BaseResource (*args, **kwargs)
```

Bases: `restless.tnd.TornadoResource`

Set up the basics for the model resource.

BaseResource does some basic configuration for the restless resources. - sets the base request handler class which is used by the resources - providing reference to the ORM session via request handler - inserting a serializer for dokomo Models - setting up authentication

```
build_response (data, status=200)
```

Finish the Tornado response.

This takes into account non-JSON content-types.

```
content_type
```

The format specified in the request.

```
current_user
```

The handler's `current_user`.

```
current_user_model
```

The handler's `current_user_model`.

**default\_sort\_column\_name**

The default ORDER BY column name for list responses.

**delete** (*model\_id*)

Set the deleted attribute to True. Does not destroy the instance.

**detail** (*model\_id*)

Return a single instance of a model.

**handle\_error** (*err*)

Generate a serialized error message.

If the error came from Tornado, pass it along as such. Otherwise, turn certain expected errors into 400 BAD REQUEST instead of 500 INTERNAL SERVER ERROR.

**is\_authenticated** (*admin\_only=True*)

Return whether the request has been authenticated.

**list** (*where=None*)

Return a list of instances of this model.

Given a model class, build up the ORM query based on query params and return the query result.

**objects\_key**

The key for list responses.

**query\_modifiers\_applied**

Whether there were any modifiers applied to the query.

**resource\_type**

The model class for the resource.

**serializer** = <dokomoforms.handlers.api.v0.serializer.ModelJSONSerializer object>

**session**

The handler's session.

**update** (*model\_id*)

Update a model.

**wrap\_list\_response** (*data*)

Wrap a list response in a dict.

Takes a list of data & wraps it in a dictionary (within the `objects` key). For security in JSON responses, it's better to wrap the list results in an object (due to the way the `Array` constructor can be attacked in Javascript). See <http://haacked.com/archive/2009/06/25/json-hijacking.aspx/> & similar for details. Overridable to allow for modifying the key names, adding data (or just insecurely return a plain old list if that's your thing). :param data: A list of data about to be serialized :type data: list :returns: A wrapping dict :rtype: dict

**dokomoforms.handlers.api.v0.nodes module** TornadoResource class for dokomoforms.models.node.Node subclasses.

**class** dokomoforms.handlers.api.v0.nodes.**NodeResource** (\*args, \*\*kwargs)

Bases: `dokomoforms.handlers.api.v0.base.BaseResource`

Restless resource for Nodes.

BaseResource sets the serializer, which uses the dokomo models' ModelJSONEncoder for json conversion.

**create** ()

Create a new node.



```

default_sort_column_name = 'last_update_time'

objects_key = 'nodes'

resource_type
    alias of Node

```

**dokomoforms.handlers.api.v0.photos module** TornadoResource class for dokomoforms.models.answer.Photo.

```

class dokomoforms.handlers.api.v0.photos.PhotoResource (*args, **kwargs)
    Bases: dokomoforms.handlers.api.v0.base.BaseResource

    Restless resource for Photos.

    create ()
        Create a Photo. Must match an existing PhotoAnswer.

    default_sort_column_name = 'created_on'

    is_authenticated ()
        Allow unauthenticated POSTs.

    objects_key = 'photos'

    resource_type
        alias of Photo

```

**dokomoforms.handlers.api.v0.serializer module** The restless Serializer for the models.

```

class dokomoforms.handlers.api.v0.serializer.ModelJSONSerializer
    Bases: restless.serializers.JSONSerializer

    Drop-in replacement for the restless-supplied JSONSerializer.

    Uses dokomo's ModelJSONEncoder in order to correctly serialize models to JSON.

    serialize (data)
        The low-level serialization.

        Underpins serialize, serialize_list & serialize_detail. Has no built-in smarts, simply
        dumps the JSON. :param data: The body for the response :type data: string :returns: A serialized version
        of the data :rtype: string

```

**dokomoforms.handlers.api.v0.submissions module** TornadoResource class for dokomoforms.models.submission.Submission.

```

class dokomoforms.handlers.api.v0.submissions.SubmissionResource (*args,
                                                                    **kwargs)
    Bases: dokomoforms.handlers.api.v0.base.BaseResource

    Restless resource for Submissions.

    BaseResource sets the serializer, which uses the dokomo models' ModelJSONEncoder for json conversion.

    create ()
        Create a new submission.

        Uses the current_user_model (i.e. logged-in user) as creator.

    default_sort_column_name = 'save_time'

    detail (submission_id)
        Allow CSV export of a single submission.

```

**is\_authenticated()**

Allow unauthenticated POSTs under the right circumstances.

**objects\_key = 'submissions'**

**resource\_type**

alias of Submission

**wrap\_list\_response(data)**

Allow CSV export of submission data.

This method adds CSV export functionality on top of the JSON list wrapping of BaseResource.wrap\_list\_response.

`dokomoforms.handlers.api.v0.submissions.get_submission_for_handler(tornado_handler, submission_id)`

Maybe a handler needs a submission from the API.

**dokomoforms.handlers.api.v0.surveys module** TornadoResource class for dokomoforms.models.survey.Survey.

**class dokomoforms.handlers.api.v0.surveys.SurveyResource(\*args, \*\*kwargs)**

Bases: `dokomoforms.handlers.api.v0.base.BaseResource`

Restless resource for Surveys.

BaseResource sets the serializer, which uses the dokomo models' ModelJSONEncoder for json conversion.

**\_\_init\_\_(\*args, \*\*kwargs)**

Make submit return 201.

**activity(survey\_id)**

Get activity for a single survey.

**activity\_all()**

Get activity for all surveys.

**create()**

Create a new survey.

Uses the current\_user\_model (i.e. logged-in user) as creator.

**default\_sort\_column\_name = 'created\_on'**

**detail(survey\_id)**

Return the given survey.

Public surveys don't require authentication. Enumerator-only surveys do required authentication, and the user must be one of the survey's enumerators or an administrator.

**http\_methods = {'list': {'DELETE': 'delete\_list', 'PUT': 'update\_list', 'GET': 'list', 'POST': 'create'}, 'list\_submissions': 'list\_submissions'}**

**is\_authenticated()**

GET detail is allowed unauthenticated.

**list\_submissions(survey\_id)**

List all submissions for a survey.

**objects\_key = 'surveys'**

**resource\_type**

alias of Survey

**stats** (*survey\_id*)  
Get stats for a survey.

**submit** (*survey\_id*)  
Submit to a survey.

`dokomoforms.handlers.api.v0.surveys.get_survey_for_handler` (*tornado\_handler*, *survey\_id*)

Maybe a handler needs a survey from the API.

**Module contents** Handlers for the API endpoints.

**class** `dokomoforms.handlers.api.v0.ModelJSONSerializer`

Bases: `restless.serializers.JSONSerializer`

Drop-in replacement for the restless-supplied JSONSerializer.

Uses dokomo's ModelJSONEncoder in order to correctly serialize models to JSON.

**serialize** (*data*)  
The low-level serialization.

Underpins `serialize`, `serialize_list` & `serialize_detail`. Has no built-in smarts, simply dumps the JSON. :param data: The body for the response :type data: string :returns: A serialized version of the data :rtype: string

**class** `dokomoforms.handlers.api.v0.BaseResource` (*\*args*, *\*\*kwargs*)

Bases: `restless.tnd.TornadoResource`

Set up the basics for the model resource.

BaseResource does some basic configuration for the restless resources. - sets the base request handler class which is used by the resources - providing reference to the ORM session via request handler - inserting a serializer for dokomo Models - setting up authentication

**build\_response** (*data*, *status=200*)  
Finish the Tornado response.

This takes into account non-JSON content-types.

**content\_type**  
The format specified in the request.

**current\_user**  
The handler's `current_user`.

**current\_user\_model**  
The handler's `current_user_model`.

**default\_sort\_column\_name**  
The default ORDER BY column name for list responses.

**delete** (*model\_id*)  
Set the deleted attribute to True. Does not destroy the instance.

**detail** (*model\_id*)  
Return a single instance of a model.

**handle\_error** (*err*)  
Generate a serialized error message.

If the error came from Tornado, pass it along as such. Otherwise, turn certain expected errors into 400 BAD REQUEST instead of 500 INTERNAL SERVER ERROR.

**is\_authenticated** (*admin\_only=True*)  
Return whether the request has been authenticated.

**list** (*where=None*)  
Return a list of instances of this model.

Given a model class, build up the ORM query based on query params and return the query result.

**objects\_key**  
The key for list responses.

**query\_modifiers\_applied**  
Whether there were any modifiers applied to the query.

**resource\_type**  
The model class for the resource.

**serializer** = <dokomoforms.handlers.api.v0.serializer.ModelJSONSerializer object>

**session**  
The handler's session.

**update** (*model\_id*)  
Update a model.

**wrap\_list\_response** (*data*)  
Wrap a list response in a dict.

Takes a list of data & wraps it in a dictionary (within the `objects` key). For security in JSON responses, it's better to wrap the list results in an `object` (due to the way the `Array` constructor can be attacked in Javascript). See <http://haacked.com/archive/2009/06/25/json-hijacking.aspx/> & similar for details. Overridable to allow for modifying the key names, adding data (or just insecurely return a plain old list if that's your thing). :param data: A list of data about to be serialized :type data: list :returns: A wrapping dict :rtype: dict

**class** dokomoforms.handlers.api.v0.**SurveyResource** (\*args, \*\*kwargs)  
Bases: `dokomoforms.handlers.api.v0.base.BaseResource`

Restless resource for Surveys.

BaseResource sets the serializer, which uses the dokomo models' ModelJSONEncoder for json conversion.

**\_\_init\_\_** (\*args, \*\*kwargs)  
Make submit return 201.

**activity** (*survey\_id*)  
Get activity for a single survey.

**activity\_all** ()  
Get activity for all surveys.

**create** ()  
Create a new survey.

Uses the `current_user_model` (i.e. logged-in user) as creator.

**default\_sort\_column\_name** = 'created\_on'

**detail** (*survey\_id*)  
Return the given survey.

Public surveys don't require authentication. Enumerator-only surveys do required authentication, and the user must be one of the survey's enumerators or an administrator.

**http\_methods** = {'list': {'DELETE': 'delete\_list', 'PUT': 'update\_list', 'GET': 'list', 'POST': 'create'}, 'list\_submission': {'POST': 'list\_submission\_create'}}

**is\_authenticated()**  
GET detail is allowed unauthenticated.

**list\_submissions** (*survey\_id*)  
List all submissions for a survey.

**objects\_key** = 'surveys'

**resource\_type**  
alias of Survey

**stats** (*survey\_id*)  
Get stats for a survey.

**submit** (*survey\_id*)  
Submit to a survey.

`dokomoforms.handlers.api.v0.get_survey_for_handler` (*tornado\_handler*, *survey\_id*)  
Maybe a handler needs a survey from the API.

**class** `dokomoforms.handlers.api.v0.SubmissionResource` (*\*args*, *\*\*kwargs*)  
Bases: `dokomoforms.handlers.api.v0.base.BaseResource`

Restless resource for Submissions.

BaseResource sets the serializer, which uses the dokomo models' ModelJSONEncoder for json conversion.

**create** ()  
Create a new submission.  
Uses the `current_user_model` (i.e. logged-in user) as creator.

**default\_sort\_column\_name** = 'save\_time'

**detail** (*submission\_id*)  
Allow CSV export of a single submission.

**is\_authenticated** ()  
Allow unauthenticated POSTs under the right circumstances.

**objects\_key** = 'submissions'

**resource\_type**  
alias of Submission

**wrap\_list\_response** (*data*)  
Allow CSV export of submission data.

This method adds CSV export functionality on top of the JSON list wrapping of `BaseResource.wrap_list_response`.

`dokomoforms.handlers.api.v0.get_submission_for_handler` (*tornado\_handler*, *submission\_id*)  
Maybe a handler needs a submission from the API.

**class** `dokomoforms.handlers.api.v0.UserResource` (*\*args*, *\*\*kwargs*)  
Bases: `dokomoforms.handlers.api.v0.base.BaseResource`

Restless resource for Users.

**create** ()  
Create a new user.

**default\_sort\_column\_name** = 'name'

**objects\_key** = 'users'

**resource\_type**

alias of User

**update** (*user\_id*)

Update a user.

**class** dokomoforms.handlers.api.v0.**NodeResource** (*\*args, \*\*kwargs*)

Bases: *dokomoforms.handlers.api.v0.base.BaseResource*

Restless resource for Nodes.

BaseResource sets the serializer, which uses the dokomo models' ModelJSONEncoder for json conversion.

**create** ()

Create a new node.

**default\_sort\_column\_name** = 'last\_update\_time'

**objects\_key** = 'nodes'

**resource\_type**

alias of Node

**class** dokomoforms.handlers.api.v0.**PhotoResource** (*\*args, \*\*kwargs*)

Bases: *dokomoforms.handlers.api.v0.base.BaseResource*

Restless resource for Photos.

**create** ()

Create a Photo. Must match an existing PhotoAnswer.

**default\_sort\_column\_name** = 'created\_on'

**is\_authenticated** ()

Allow unauthenticated POSTs.

**objects\_key** = 'photos'

**resource\_type**

alias of Photo

## **dokomoforms.handlers.user package**

### **Submodules**

**dokomoforms.handlers.user.admin module** Admin view handlers.

**class** dokomoforms.handlers.user.admin.**AdminHomepageHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

The endpoint for the main Administrator interface.

**get** ()

GET the admin interface.

**class** dokomoforms.handlers.user.admin.**ViewSubmissionHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

The endpoint for viewing a submission.

**get** (*submission\_id: str*)  
GET the visualization page.

**class** dokomoforms.handlers.user.admin.**ViewSurveyDataHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

The endpoint for getting a single survey's data page.

**get** (*survey\_id: str*)  
GET the data page.

**class** dokomoforms.handlers.user.admin.**ViewSurveyHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

The endpoint for getting a single survey's admin page.

**get** (*survey\_id: str*)  
GET the admin page for a survey.

**class** dokomoforms.handlers.user.admin.**ViewUserAdminHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

The endpoint for getting the user administration admin page.

**get** ()  
GET the user admin page.

**dokomoforms.handlers.user.enumerate module** Survey view handler.

**class** dokomoforms.handlers.user.enumerate.**Enumerate** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

View and submit to a survey.

**get** (*survey\_id*)  
GET the main survey view.

Render survey page for given survey id, embed JSON into to template so browser can cache survey in HTML.

Raises tornado http error.

@survey\_id: Requested survey id.

**class** dokomoforms.handlers.user.enumerate.**EnumerateHomepageHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

The endpoint for the main Enumerator interface.

**get** ()  
GET the enumerate interface.

**class** dokomoforms.handlers.user.enumerate.**EnumerateTitle** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

View and submit to a survey identified by title.

**get** (*title*)

GET the main survey view.

Render survey page for given survey title, embed JSON into to template so browser can cache survey in HTML.

Checks for Survey.url\_slug

Raises tornado http error.

**Module contents** The handlers for view pages.

## Submodules

### dokomoforms.handlers.auth module

Authentication handlers.

**class** dokomoforms.handlers.auth.**CheckLoginStatus** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

An endpoint for the application to check login status.

**post** ()

2xx good, 5xx bad.

**class** dokomoforms.handlers.auth.**GenerateToken** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

GET your token here. GETting twice resets the token.

**get** ()

Set a new token for the logged in user and return the token.

**class** dokomoforms.handlers.auth.**Login** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

POST here to verify the assertion generated by Mozilla Persona.

**post** ()

POST to Mozilla's verifier service.

Accepts: { "assertion": <assertion> }

Then, POSTS to <https://verifier.login.persona.org/verify> to verify that the assertion is valid. If so, attempts to log the user in by e-mail.

Responds with: 200 OK { "email": <e-mail address> }

**Raises** **tornado.web.HTTPError** – 400 Bad Request if the assertion is not verified 422

Unprocessable Entity if the e-mail address is not associated with a user account.

**class** dokomoforms.handlers.auth.**Logout** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

POST here to log out.

**post** ()

Delete the "user" cookie.

Note that this can't be done in JavaScript because the user cookie is httponly.



## dokomoforms.handlers.debug module

Pages pertaining to debug-specific functionality.

**class** dokomoforms.handlers.debug.**DebugLoginHandler** (*application, request, \*\*kwargs*)  
Bases: *dokomoforms.handlers.util.BaseHandler*

Use this page to log in as any existing user.

**get** (*email='test@test\_email.com', created=False*)  
Log in by supplying an e-mail address.

**class** dokomoforms.handlers.debug.**DebugLogoutHandler** (*application, request, \*\*kwargs*)  
Bases: *dokomoforms.handlers.util.BaseHandler*

Log out by visiting this page.

**get** ()  
Clear the 'user' cookie.

**class** dokomoforms.handlers.debug.**DebugPersonaHandler** (*application, request, \*\*kwargs*)  
Bases: *dokomoforms.handlers.util.BaseHandler*

For testing purposes there's no need to hit the real URL.

**check\_xsrf\_cookie** ()  
No need for this...

**post** ()  
The test user has logged in.

**class** dokomoforms.handlers.debug.**DebugRevisitHandler** (*application, request, \*\*kwargs*)  
Bases: *dokomoforms.handlers.util.BaseHandler*

For testing purposes there's no need to hit Revisit proper.

**check\_xsrf\_cookie** ()  
Debug endpoint.

**get** ()  
Get dummy facilities.

**post** ()  
Add a facility.

**class** dokomoforms.handlers.debug.**DebugToggleRevisitHandler** (*application, request, \*\*kwargs*)  
Bases: *dokomoforms.handlers.util.BaseHandler*

For turning the fake Revisit endpoint off and on.

**get** ()  
Toggle the 'online' state of the GET endpoint.

**class** dokomoforms.handlers.debug.**DebugToggleRevisitSlowModeHandler** (*application, request, \*\*kwargs*)  
Bases: *dokomoforms.handlers.util.BaseHandler*

For toggling slow mode.

**get** ()  
Toggle the 'slow' state of the GET endpoint.

```
class dokomoforms.handlers.debug.DebugUserCreationHandler (application, request,  
                                                         **kwargs)  
    Bases: dokomoforms.handlers.util.BaseHandler  
    Use this page to create a user.  
    get (email='test@test_email.com')  
        Log in for any user (creating one if necessary).  
dokomoforms.handlers.debug.revisit_debug()
```

## **dokomoforms.handlers.root module**

Administrative handlers.

```
class dokomoforms.handlers.root.Index (application, request, **kwargs)  
    Bases: dokomoforms.handlers.util.BaseHandler  
    The root URL.  
    get (msg='')  
        GET /.  
  
class dokomoforms.handlers.root.NotFound (application, request, **kwargs)  
    Bases: dokomoforms.handlers.util.BaseHandler  
    This is the “default” handler according to Tornado.  
    prepare ()  
        Raise a 404 for any URL without an explicitly defined handler.  
        Raises tornado.web.HTTPError – 404 Not Found  
    write_error (*args, **kwargs)  
        Serve the custom 404 page.
```

## **dokomoforms.handlers.util module**

Useful reusable functions for handlers, plus the BaseHandler.

```
class dokomoforms.handlers.util.BaseAPIHandler (application, request, **kwargs)  
    Bases: dokomoforms.handlers.util.BaseHandler  
    The Tornado handler class for API resource classes.  
    api_root_path  
        The API URL up to the version number.  
    api_version  
        The API version.  
    check_xsrf_cookie ()  
        Do not check XSRF for an API request (usually).  
  
class dokomoforms.handlers.util.BaseHandler (application, request, **kwargs)  
    Bases: tornado.web.RequestHandler  
    The base class for handlers.  
    Makes the database session and current user available.  
    current_user_model  
        Return the current logged in User, or None.
```

**get** (\*args, \*\*kwargs)

404 unless this method is overridden.

The presence of this GET method means that endpoints which only accept POST are hidden from browsers.

**Raises** `tornado.web.HTTPError` – 404 Not Found

**get\_current\_user** () → str

Make current\_user accessible.

You probably shouldn't override this method. It makes `{{ current_user }}` accessible to templates and `self.current_user` accessible to handlers.

**Returns** a string containing the user name.

**get\_template\_namespace** ()

Template functions.

TODO: Find a way to get rid of this. @jmwohl

**num\_surveys\_for\_menu** = 20

**prepare** ()

Default behavior before any HTTP method.

By default, just sets up the XSRF token.

**session**

The SQLAlchemy session for interacting with the models.

**Returns** the SQLAlchemy session

**set\_default\_headers** ()

Add some security-flavored headers.

<https://news.ycombinator.com/item?id=10143082>

**user\_default\_language**

Return the logged-in User's default language, or None.

**user\_survey\_language** (survey)

Return the logged-in User's selected language for the given survey, or None if they do not have one.

**write\_error** (status\_code, \*\*kwargs)

Deal with 404 errors.

`dokomoforms.handlers.util.auth_redirect` (self)

The URL redirect logic extracted from `tornado.web.authenticated`.

`dokomoforms.handlers.util.authenticated_admin` (method)

A copy of `tornado.web.authenticated` for Administrator access.

## Module contents

All the Tornado RequestHandlers used in Dokomo Forms.

**class** `dokomoforms.handlers.Index` (application, request, \*\*kwargs)

Bases: `dokomoforms.handlers.util.BaseHandler`

The root URL.

**get** (msg='')

GET /.

**class** dokomoforms.handlers.**NotFound**(*application, request, \*\*kwargs*)  
Bases: *dokomoforms.handlers.util.BaseHandler*

This is the “default” handler according to Tornado.

**prepare**()

    Raise a 404 for any URL without an explicitly defined handler.

**Raises** **tornado.web.HTTPError** – 404 Not Found

**write\_error**(*\*args, \*\*kwargs*)

    Serve the custom 404 page.

**class** dokomoforms.handlers.**Login**(*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

POST here to verify the assertion generated by Mozilla Persona.

**post**()

    POST to Mozilla’s verifier service.

    Accepts: { “assertion”: <assertion> }

    Then, POSTS to <https://verifier.login.persona.org/verify> to verify that the assertion is valid. If so, attempts to log the user in by e-mail.

    Responds with: 200 OK { “email”: <e-mail address> }

**Raises** **tornado.web.HTTPError** – 400 Bad Request if the assertion is not verified 422

        Unprocessable Entity if the e-mail address is not associated with a user account.

**class** dokomoforms.handlers.**Logout**(*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

POST here to log out.

**post**()

    Delete the “user” cookie.

    Note that this can’t be done in JavaScript because the user cookie is httponly.

**class** dokomoforms.handlers.**GenerateToken**(*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

GET your token here. GETting twice resets the token.

**get**()

    Set a new token for the logged in user and return the token.

**class** dokomoforms.handlers.**AdminHomepageHandler**(*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

The endpoint for the main Administrator interface.

**get**()

    GET the admin interface.

**class** dokomoforms.handlers.**CheckLoginStatus**(*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

An endpoint for the application to check login status.

**post**()

    2xx good, 5xx bad.

---

```

class dokomoforms.handlers.ViewSurveyHandler(application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler

    The endpoint for getting a single survey's admin page.

    get (survey_id: str)
        GET the admin page for a survey.

class dokomoforms.handlers.ViewSurveyDataHandler(application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler

    The endpoint for getting a single survey's data page.

    get (survey_id: str)
        GET the data page.

class dokomoforms.handlers.ViewUserAdminHandler(application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler

    The endpoint for getting the user administration admin page.

    get ()
        GET the user admin page.

class dokomoforms.handlers.ViewSubmissionHandler(application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler

    The endpoint for viewing a submission.

    get (submission_id: str)
        GET the visualization page.

class dokomoforms.handlers.EnumerateHomepageHandler(application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler

    The endpoint for the main Enumerator interface.

    get ()
        GET the enumerate interface.

class dokomoforms.handlers.Enumerate(application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler

    View and submit to a survey.

    get (survey_id)
        GET the main survey view.

        Render survey page for given survey id, embed JSON into to template so browser can cache survey in
        HTML.

        Raises tornado http error.

        @survey_id: Requested survey id.

class dokomoforms.handlers.EnumerateTitle(application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler

    View and submit to a survey identified by title.

    get (title)
        GET the main survey view.

        Render survey page for given survey title, embed JSON into to template so browser can cache survey in
        HTML.

```

Checks for Survey.url\_slug

Raises tornado http error.

**class** dokomoforms.handlers.**DebugUserCreationHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

Use this page to create a user.

**get** (*email='test@test\_email.com'*)

Log in for any user (creating one if necessary).

**class** dokomoforms.handlers.**DebugLoginHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

Use this page to log in as any existing user.

**get** (*email='test@test\_email.com', created=False*)

Log in by supplying an e-mail address.

**class** dokomoforms.handlers.**DebugLogoutHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

Log out by visiting this page.

**get** ()

Clear the 'user' cookie.

**class** dokomoforms.handlers.**DebugPersonaHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

For testing purposes there's no need to hit the real URL.

**check\_xsrf\_cookie** ()

No need for this...

**post** ()

The test user has logged in.

**class** dokomoforms.handlers.**DebugRevisitHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

For testing purposes there's no need to hit Revisit proper.

**check\_xsrf\_cookie** ()

Debug endpoint.

**get** ()

Get dummy facilities.

**post** ()

Add a facility.

**class** dokomoforms.handlers.**DebugToggleRevisitHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

For turning the fake Revisit endpoint off and on.

**get** ()

Toggle the 'online' state of the GET endpoint.

**class** dokomoforms.handlers.**DebugToggleRevisitSlowModeHandler** (*application, request, \*\*kwargs*)

Bases: *dokomoforms.handlers.util.BaseHandler*

For toggling slow mode.

```
get ()
    Toggle the 'slow' state of the GET endpoint.
```

```
class dokomoforms.handlers.DemoUserCreationHandler (application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler
```

Use this page to log in as the demo user.

```
get ()
    Create the demo account (if necessary) and log in.
```

```
class dokomoforms.handlers.DemoLogoutHandler (application, request, **kwargs)
    Bases: dokomoforms.handlers.util.BaseHandler
```

Log out by visiting this page.

```
get ()
    Clear the 'user' cookie.
```

## 1.1.2 dokomoforms.models package

### Submodules

#### dokomoforms.models.answer module

Answer models.

```
class dokomoforms.models.answer.Answer (**kwargs)
    Bases: dokomoforms.models.util.Base
```

An Answer is a response to a SurveyNode.

An Answer can be one of an answer, an “other” response or a “don’t know” response. Answer.response abstracts over these 3 possibilities.

```
__init__ (**kwargs)
    A simple constructor that allows initialization from kwargs.
```

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance’s class are allowed. These could be, for example, any mapped columns or relationships.

```
allow_dont_know
```

```
allow_multiple
```

```
allow_other
```

```
answer
```

The answer. Could be the same as `main_answer` in simple cases.

This property is the most useful representation available of the answer. In the simplest case it is just a synonym for `main_answer`. It could otherwise be a dictionary or another model.

```
answer_metadata
```

```
answer_number
```

```
answer_type
```

```
deleted
```

**dont\_know**

A text field containing “don’t know” responses.

**id**

**last\_update\_time**

**main\_answer**

The representative part of a provided answer.

The `main_answer` is the only answer for simple types (integer, text, etc.) and for other types is the part of the answer that is most important. In practice, the `main_answer` is special only in that all Answer models have it, which is necessary for certain constraints and for the response property.

**other**

A text field containing “other” responses.

**question\_id**

**question\_title**

**repeatable**

**response** = `OrderedDict([('type_constraint', <sqlalchemy.orm.attributes.InstrumentedAttribute object at 0x7f93c4ac90`

**save\_time**

**submission\_id**

**survey\_containing\_id**

**survey\_id**

**survey\_node**

**survey\_node\_containing\_survey\_id**

**survey\_node\_id**

**type\_constraint**

**class** `dokomoforms.models.answer.DateAnswer` (*\*\*kwargs*)

Bases: `dokomoforms.models.answer._AnswerMixin`, *`dokomoforms.models.answer.Answer`*

A DATE answer.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance’s class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_dont\_know**

**allow\_multiple**

**allow\_other**

**answer**

**answer\_metadata**

**answer\_number**

**answer\_type**

**deleted**



```

dont_know
id
last_update_time
main_answer
other
question_id
question_title
repeatable
save_time
submission_id
survey_containing_id
survey_id
survey_node
survey_node_containing_survey_id
survey_node_id
the_allow_dont_know
the_allow_other
type_constraint

```

```
class dokomoforms.models.answer.DecimalAnswer(**kwargs)
```

Bases: dokomoforms.models.answer.\_AnswerMixin, *dokomoforms.models.answer.Answer*

A NUMERIC answer.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```

allow_dont_know
allow_multiple
allow_other
answer
answer_metadata
answer_number
answer_type
deleted
dont_know
id
last_update_time

```

`main_answer`  
`other`  
`question_id`  
`question_title`  
`repeatable`  
`save_time`  
`submission_id`  
`survey_containing_id`  
`survey_id`  
`survey_node`  
`survey_node_containing_survey_id`  
`survey_node_id`  
`the_allow_dont_know`  
`the_allow_other`  
`type_constraint`

**class** dokomoforms.models.answer.**FacilityAnswer** (\*\*kwargs)

Bases: dokomoforms.models.answer.\_AnswerMixin, *dokomoforms.models.answer.Answer*

A facility answer (a la Revisit).

FacilityAnswer.answer is a dictionary with 4 keys: facility\_location, facility\_id, facility\_name, facility\_sector

facility\_location accepts input in the form {

    'lng': <longitude>, 'lat': <latitude>

} and outputs a GeoJSON.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_dont_know`

`allow_multiple`

`allow_other`

`answer = OrderedDict([('facility_location', <sqlalchemy.orm.attributes.InstrumentedAttribute object at 0x7f93c4a53728`

`answer_metadata`

`answer_number`

`answer_type`

`deleted`

`dont_know`

`facility_id`

```

facility_name
facility_sector
geo_json
id
last_update_time
main_answer
other
question_id
question_title
repeatable
save_time
submission_id
survey_containing_id
survey_id
survey_node
survey_node_containing_survey_id
survey_node_id
the_allow_dont_know
the_allow_other
type_constraint

```

```
class dokomoforms.models.answer.IntegerAnswer(**kwargs)
```

Bases: dokomoforms.models.answer.\_AnswerMixin, [dokomoforms.models.answer.Answer](#)

An INTEGER answer (signed 4 byte).

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```
allow_dont_know
```

```
allow_multiple
```

```
allow_other
```

```
answer
```

```
answer_metadata
```

```
answer_number
```

```
answer_type
```

```
deleted
```

```
dont_know
```

`id`  
`last_update_time`  
`main_answer`  
`other`  
`question_id`  
`question_title`  
`repeatable`  
`save_time`  
`submission_id`  
`survey_containing_id`  
`survey_id`  
`survey_node`  
`survey_node_containing_survey_id`  
`survey_node_id`  
`the_allow_dont_know`  
`the_allow_other`  
`type_constraint`

**class** `dokomoforms.models.answer.LocationAnswer` (*\*\*kwargs*)

Bases: `dokomoforms.models.answer._AnswerMixin`, *`dokomoforms.models.answer.Answer`*

A GEOMETRY('POINT', 4326) answer.

Accepts input in the form {

    'lng': <longitude>, 'lat': <latitude>

}

The output is a GeoJSON.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_dont_know`

`allow_multiple`

`allow_other`

`answer`

`answer_metadata`

`answer_number`

`answer_type`

`deleted`

```

dont_know
geo_json
id
last_update_time
main_answer
other
question_id
question_title
repeatable
save_time
submission_id
survey_containing_id
survey_id
survey_node
survey_node_containing_survey_id
survey_node_id
the_allow_dont_know
the_allow_other
type_constraint

```

```

class dokomoforms.models.answer.MultipleChoiceAnswer (**kwargs)
    Bases: dokomoforms.models.answer._AnswerMixin, dokomoforms.models.answer.Answer

```

A Choice answer.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```

allow_dont_know
allow_multiple
allow_other
answer
answer_metadata
answer_number
answer_type
choice
deleted
dont_know

```

`id`  
`last_update_time`  
`main_answer`  
`other`  
`question_id`  
`question_title`  
`repeatable`  
`save_time`  
`submission_id`  
`survey_containing_id`  
`survey_id`  
`survey_node`  
`survey_node_containing_survey_id`  
`survey_node_id`  
`the_allow_dont_know`  
`the_allow_other`  
`the_question_id`  
`the_submission_id`  
`the_survey_node_id`  
`type_constraint`

**class** `dokomoforms.models.answer.Photo(**kwargs)`

Bases: `dokomoforms.models.util.Base`

A BYTEA holding an image.

`__init__` (`**kwargs`)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`created_on`

`deleted`

`id`

`image`

`mime_type`

**class** `dokomoforms.models.answer.PhotoAnswer(**kwargs)`

Bases: `dokomoforms.models.answer._AnswerMixin`, `dokomoforms.models.answer.Answer`

A photo answer (the id of a Photo).

---

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```
actual_photo_id
```

```
allow_dont_know
```

```
allow_multiple
```

```
allow_other
```

```
answer
```

```
answer_metadata
```

```
answer_number
```

```
answer_type
```

```
deleted
```

```
dont_know
```

```
id
```

```
last_update_time
```

```
main_answer
```

```
other
```

```
photo
```

```
question_id
```

```
question_title
```

```
repeatable
```

```
save_time
```

```
submission_id
```

```
survey_containing_id
```

```
survey_id
```

```
survey_node
```

```
survey_node_containing_survey_id
```

```
survey_node_id
```

```
the_allow_dont_know
```

```
the_allow_other
```

```
type_constraint
```

```
class dokomoforms.models.answer.TextAnswer (**kwargs)
```

Bases: `dokomoforms.models.answer._AnswerMixin`, `dokomoforms.models.answer.Answer`

A TEXT answer.

`__init__` (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_dont_know`

`allow_multiple`

`allow_other`

`answer`

`answer_metadata`

`answer_number`

`answer_type`

`deleted`

`dont_know`

`id`

`last_update_time`

`main_answer`

`other`

`question_id`

`question_title`

`repeatable`

`save_time`

`submission_id`

`survey_containing_id`

`survey_id`

`survey_node`

`survey_node_containing_survey_id`

`survey_node_id`

`the_allow_dont_know`

`the_allow_other`

`type_constraint`

**class** `dokomoforms.models.answer.TimeAnswer` (\*\*kwargs)

Bases: `dokomoforms.models.answer._AnswerMixin`, `dokomoforms.models.answer.Answer`

A TIME WITH TIME ZONE answer.

`__init__` (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.



Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```
allow_dont_know
allow_multiple
allow_other
answer
answer_metadata
answer_number
answer_type
deleted
dont_know
id
last_update_time
main_answer
other
question_id
question_title
repeatable
save_time
submission_id
survey_containing_id
survey_id
survey_node
survey_node_containing_survey_id
survey_node_id
the_allow_dont_know
the_allow_other
type_constraint
```

```
class dokomoforms.models.answer.TimestampAnswer(**kwargs)
```

Bases: dokomoforms.models.answer.\_AnswerMixin, *dokomoforms.models.answer.Answer*

A TIMESTAMP WITH TIME ZONE answer.

```
__init__(**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```
allow_dont_know
```

`allow_multiple`  
`allow_other`  
`answer`  
`answer_metadata`  
`answer_number`  
`answer_type`  
`deleted`  
`dont_know`  
`id`  
`last_update_time`  
`main_answer`  
`other`  
`question_id`  
`question_title`  
`repeatable`  
`save_time`  
`submission_id`  
`survey_containing_id`  
`survey_id`  
`survey_node`  
`survey_node_containing_survey_id`  
`survey_node_id`  
`the_allow_dont_know`  
`the_allow_other`  
`type_constraint`

`dokomoforms.models.answer.add_new_photo_to_session(session, *, id, **kwargs)`

Create a new Photo and update the referenced PhotoAnswer.

`dokomoforms.models.answer.construct_answer(*, type_constraint: str, **kwargs) → dokomoforms.models.answer.Answer`

Return a subclass of `dokomoforms.models.answer.Answer`.

The subclass is determined by the `type_constraint` parameter. This utility function makes it easy to create an instance of an Answer subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

#### Parameters

- **`type_constraint`** – the type of the answer. Must be one of the keys of `dokomoforms.models.answer.ANSWER_TYPES`
- **`kwargs`** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Answer subtypes

**Raies** dokomoforms.exc.NotAnAnswerTypeError

## dokomoforms.models.column\_properties module

Extra properties for models.

These could not be defined inline with the models do to import issues. See [http://docs.sqlalchemy.org/en/rel\\_1\\_0/orm/mapped\\_sql\\_expr.html#using-column-property](http://docs.sqlalchemy.org/en/rel_1_0/orm/mapped_sql_expr.html#using-column-property)

`dokomoforms.models.column_properties.answer_avg` (*survey\_node:* *dokomoforms.models.survey.AnswerableSurveyNode*)

Get the average of the answers.

`dokomoforms.models.column_properties.answer_max` (*survey\_node:* *dokomoforms.models.survey.AnswerableSurveyNode*)

Get the maximum answer.

`dokomoforms.models.column_properties.answer_min` (*survey\_node:* *dokomoforms.models.survey.AnswerableSurveyNode*)

Get the minimum answer.

`dokomoforms.models.column_properties.answer_mode` (*survey\_node:* *dokomoforms.models.survey.AnswerableSurveyNode*)

Get the mode of the answers.

`dokomoforms.models.column_properties.answer_stddev_pop` (*survey\_node:* *dokomoforms.models.survey.AnswerableSurveyNode*)

Get the population standard deviation of the answers.

`dokomoforms.models.column_properties.answer_stddev_samp` (*survey\_node:* *dokomoforms.models.survey.AnswerableSurveyNode*)

Get the sample standard deviation of the answers.

`dokomoforms.models.column_properties.answer_sum` (*survey\_node:* *dokomoforms.models.survey.AnswerableSurveyNode*)

Get the sum of the answers.

`dokomoforms.models.column_properties.generate_question_stats` (*survey*)

Get answer statistics for the nodes in a survey.

## dokomoforms.models.node module

A Node is either a note or a question and is independent of a Survey.

**class** `dokomoforms.models.node.Choice` (*\*\*kwargs*)

Bases: `dokomoforms.models.util.Base`

A choice for a MultipleChoiceQuestion.

Models a choice for a `dokomoforms.models.survey.MultipleChoiceQuestion`.

`__init__` (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**choice\_number**

**choice\_text**

**deleted**  
**id**  
**last\_update\_time**  
**question\_id**  
**question\_languages**

```
class dokomoforms.models.node.DateQuestion (**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
```

A date question.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_multiple**  
**allow\_other**  
**deleted**  
**hint**  
**id**  
**languages**  
**last\_update\_time**  
**logic**  
**the\_languages**  
**the\_type\_constraint**  
**title**  
**type\_constraint**

```
class dokomoforms.models.node.DecimalQuestion (**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
```

A decimal question.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_multiple**  
**allow\_other**  
**deleted**  
**hint**  
**id**

```

    languages
    last_update_time
    logic
    the_languages
    the_type_constraint
    title
    type_constraint
class dokomoforms.models.node.FacilityQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
    A facility question.

    __init__ (**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    allow_multiple
    allow_other
    deleted
    hint
    id
    languages
    last_update_time
    logic
    the_languages
    the_type_constraint
    title
    type_constraint
class dokomoforms.models.node.IntegerQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
    A integer question.

    __init__ (**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    allow_multiple
    allow_other
    deleted

```

`hint`  
`id`  
`languages`  
`last_update_time`  
`logic`  
`the_languages`  
`the_type_constraint`  
`title`  
`type_constraint`

```
class dokomoforms.models.node.LocationQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
```

A location question.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`  
`allow_other`  
`deleted`  
`hint`  
`id`  
`languages`  
`last_update_time`  
`logic`  
`the_languages`  
`the_type_constraint`  
`title`  
`type_constraint`

```
class dokomoforms.models.node.MultipleChoiceQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
```

A multiple\_choice question.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`

```

allow_other
choices
deleted
hint
id
languages
last_update_time
logic
node_languages
the_languages
the_type_constraint
title
type_constraint

```

```
class dokomoforms.models.node.Node(**kwargs)
```

Bases: [dokomoforms.models.util.Base](#)

A node is a Note or Question independent of any Survey.

A node is its own entity. A node can be a `dokomoforms.models.survey.Note` or a `dokomoforms.models.survey.Question`.

**You can use this class for querying, e.g.** `session.query(Node).filter_by(title='Some Title')`

To create the specific kind of Node you want, use `dokomoforms.models.survey.node.construct_node`.

```
__init__(**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```

deleted
hint
id
languages
last_update_time
logic
title
type_constraint

```

```
class dokomoforms.models.node.Note(**kwargs)
```

Bases: [dokomoforms.models.node.Node](#)

Notes provide information interspersed with survey questions.

`__init__` (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`deleted`

`hint`

`id`

`languages`

`last_update_time`

`logic`

`the_type_constraint`

`title`

`type_constraint`

**class** dokomoforms.models.node.**PhotoQuestion** (\*\*kwargs)

Bases: dokomoforms.models.node.\_QuestionMixin, *dokomoforms.models.node.Question*

A photo question.

`__init__` (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`

`allow_other`

`deleted`

`hint`

`id`

`languages`

`last_update_time`

`logic`

`the_languages`

`the_type_constraint`

`title`

`type_constraint`

**class** dokomoforms.models.node.**Question** (\*\*kwargs)

Bases: *dokomoforms.models.node.Node*

A Question has a response type associated with it.



A Question has a type constraint associated with it (integer, date, text...). Only a dokomoforms.models.survey.MultipleChoiceQuestion has a list of dokomoforms.models.survey.Choice instances.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_multiple**

**allow\_other**

**deleted**

**hint**

**id**

**languages**

**last\_update\_time**

**logic**

**the\_languages**

**the\_type\_constraint**

**title**

**type\_constraint**

**class** dokomoforms.models.node.**TextQuestion** (\*\*kwargs)

Bases: dokomoforms.models.node.\_QuestionMixin, *dokomoforms.models.node.Question*

A text question.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_multiple**

**allow\_other**

**deleted**

**hint**

**id**

**languages**

**last\_update\_time**

**logic**

**the\_languages**

**the\_type\_constraint**

**title**

**type\_constraint**

```
class dokomoforms.models.node.TimeQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
    A time (with time zone) question.

    __init__(**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    allow_multiple
    allow_other
    deleted
    hint
    id
    languages
    last_update_time
    logic
    the_languages
    the_type_constraint
    title
    type_constraint
```

```
class dokomoforms.models.node.TimestampQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
    A timestamp (with time zone) question.

    __init__(**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    allow_multiple
    allow_other
    deleted
    hint
    id
    languages
    last_update_time
    logic
    the_languages
```

**the\_type\_constraint****title****type\_constraint**

`dokomoforms.models.node.construct_node(*, type_constraint: str, **kwargs) → dokomoforms.models.node.Node`

Return a subclass of `dokomoforms.models.node.Node`.

The subclass is determined by the `type_constraint` parameter. This utility function makes it easy to create an instance of a `Node` or `Question` subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

#### Parameters

- **type\_constraint** – the type constraint of the node. Must be one of the keys of `dokomoforms.models.survey.NODE_TYPES`
- **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the `Node` subtypes

**Raises** `dokomoforms.exc.NoSuchNodeTypeError`

### **dokomoforms.models.submission module**

Submission models.

**class** `dokomoforms.models.submission.EnumeratorOnlySubmission(**kwargs)`

Bases: `dokomoforms.models.submission.Submission`

An `EnumeratorOnlySubmission` must have an enumerator.

Use an `EnumeratorOnlySubmission` for an `EnumeratorOnlySurvey`.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from `kwargs`.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**answers****deleted****enumerator****enumerator\_user\_id****id****last\_update\_time****save\_time****start\_time****submission\_time****submission\_type****submitter\_email****submitter\_name**

**survey\_containing\_id**  
**survey\_default\_language**  
**survey\_id**  
**survey\_title**  
**survey\_type**  
**the\_survey\_id**

**class** dokomoforms.models.submission.**PublicSubmission** (\*\*kwargs)

Bases: *dokomoforms.models.submission.Submission*

A PublicSubmission might have an enumerator.

Use a PublicSubmission for a Survey.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**answers**  
**deleted**  
**enumerator**  
**enumerator\_user\_id**  
**id**  
**last\_update\_time**  
**save\_time**  
**start\_time**  
**submission\_time**  
**submission\_type**  
**submitter\_email**  
**submitter\_name**  
**survey\_containing\_id**  
**survey\_default\_language**  
**survey\_id**  
**survey\_title**  
**survey\_type**

**class** dokomoforms.models.submission.**Submission** (\*\*kwargs)

Bases: *dokomoforms.models.util.Base*

A Submission references a Survey and has a list of Answers.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```

answers
deleted
id
last_update_time
save_time
start_time
submission_time
submission_type
submitter_email
submitter_name
survey_containing_id
survey_default_language
survey_id
survey_title
survey_type

```

```

dokomoforms.models.submission.construct_submission(*, submission_type: str,
                                                    **kwargs) → dokomo-
                                                    forms.models.submission.Submission

```

Return a subclass of dokomoforms.models.submission.Submission.

The subclass is determined by the `submission_type` parameter. This utility function makes it easy to create an instance of a Submission subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

#### Parameters

- **submission\_type** – the type of submission. Must be either ‘public\_submission’ or ‘enumerator\_only\_submission’
- **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Node subtypes

**Raises** dokomoforms.exc.NoSuchSubmissionTypeError

```

dokomoforms.models.submission.most_recent_submissions(session, user_id, limit=None)

```

Get an administrator's surveys' most recent submissions.

## dokomoforms.models.survey module

Survey models.

```

class dokomoforms.models.survey.AnswerableSurveyNode(**kwargs)

```

Bases: `dokomoforms.models.survey.SurveyNode`

Contains a Node which is answerable (e.g, a Question).

`__init__` (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_dont_know`

`allow_multiple`

`allow_other`

`answer_count`

`answers`

`containing_survey_id`

`deleted`

`id`

`last_update_time`

`logic`

`node`

`node_id`

`node_languages`

`node_number`

`non_null_repeatable`

`required`

`root_survey_id`

`root_survey_languages`

`sub_survey_id`

`sub_survey_repeatable`

`sub_surveys`

`survey_node_answerable`

`the_containing_survey_id`

`the_node`

`the_node_id`

`the_node_languages`

`the_root_survey_languages`

`the_sub_survey_repeatable`

`the_type_constraint`

`type_constraint`

**class** dokomoforms.models.survey.**Bucket** (\*\*kwargs)

Bases: *dokomoforms.models.util.Base*

A Bucket determines how to arrive at a SubSurvey.

A Bucket can be a range or a Choice.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**bucket**

The bucket is a range or Choice.

Buckets for a given SubSurvey cannot overlap.

**bucket\_type**

**deleted**

**id**

**last\_update\_time**

**sub\_survey\_id**

**sub\_survey\_parent\_node\_id**

**sub\_survey\_parent\_survey\_node\_id**

**sub\_survey\_parent\_type\_constraint**

**class** dokomoforms.models.survey.**DateBucket** (\*\*kwargs)

Bases: dokomoforms.models.survey.\_RangeBucketMixin, *dokomoforms.models.survey.Bucket*

DATERANGE bucket.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**bucket**

**bucket\_type**

**deleted**

**id**

**last\_update\_time**

**sub\_survey\_id**

**sub\_survey\_parent\_node\_id**

**sub\_survey\_parent\_survey\_node\_id**

**sub\_survey\_parent\_type\_constraint**

**the\_survey\_node\_id**

```
class dokomoforms.models.survey.DecimalBucket (**kwargs)
    Bases: dokomoforms.models.survey._RangeBucketMixin, dokomoforms.models.survey.Bucket
    NUMRANGE bucket.

    __init__ (**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    bucket
    bucket_type
    deleted
    id
    last_update_time
    sub_survey_id
    sub_survey_parent_node_id
    sub_survey_parent_survey_node_id
    sub_survey_parent_type_constraint
    the_survey_node_id

class dokomoforms.models.survey.EnumeratorOnlySurvey (**kwargs)
    Bases: dokomoforms.models.survey.Survey
    Only enumerators (designated Users) can submit to this.

    __init__ (**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    administrators
    containing_id
    created_on
    creator_id
    default_language
    deleted
    earliest_submission_time
    enumerators
    id
    languages
    last_update_time
    latest_submission_time
```



**nodes**  
**num\_submissions**  
**submissions**  
**survey\_metadata**  
**survey\_type**  
**title**  
**url\_slug**  
**version**

**class** dokomoforms.models.survey.**IntegerBucket** (\*\*kwargs)  
 Bases: dokomoforms.models.survey.\_RangeBucketMixin, *dokomoforms.models.survey.Bucket*  
 INT4RANGE bucket.

**\_\_init\_\_** (\*\*kwargs)  
 A simple constructor that allows initialization from kwargs.  
 Sets attributes on the constructed instance using the names and values in kwargs.  
 Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**bucket**  
**bucket\_type**  
**deleted**  
**id**  
**last\_update\_time**  
**sub\_survey\_id**  
**sub\_survey\_parent\_node\_id**  
**sub\_survey\_parent\_survey\_node\_id**  
**sub\_survey\_parent\_type\_constraint**  
**the\_survey\_node\_id**

**class** dokomoforms.models.survey.**MultipleChoiceBucket** (\*\*kwargs)  
 Bases: *dokomoforms.models.survey.Bucket*

Choice id bucket.

**\_\_init\_\_** (\*\*kwargs)  
 A simple constructor that allows initialization from kwargs.  
 Sets attributes on the constructed instance using the names and values in kwargs.  
 Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**bucket**  
**bucket\_type**  
**choice\_id**  
**deleted**

```
id
last_update_time
parent_node_id
parent_survey_node_id
sub_survey_id
sub_survey_parent_node_id
sub_survey_parent_survey_node_id
sub_survey_parent_type_constraint
the_sub_survey_id
```

```
class dokomoforms.models.survey.NonAnswerableSurveyNode (**kwargs)
```

Bases: *dokomoforms.models.survey.SurveyNode*

Contains a Node which is not answerable (e.g., a Note).

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```
containing_survey_id
deleted
id
last_update_time
logic
node
node_id
node_languages
node_number
non_null_repeatable
root_survey_id
root_survey_languages
sub_survey_id
sub_survey_repeatable
survey_node_answerable
the_node
the_node_id
the_type_constraint
type_constraint
```

---

```
class dokomoforms.models.survey.SubSurvey (**kwargs)
```

```
    Bases: dokomoforms.models.util.Base
```

A SubSurvey behaves like a Survey but belongs to a SurveyNode.

The way to arrive at a certain SubSurvey is encoded in its buckets.

```
    __init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```
    buckets
```

```
    containing_survey_id
```

```
    deleted
```

```
    id
```

```
    nodes
```

```
    parent_allow_multiple
```

```
    parent_node_id
```

```
    parent_survey_node_id
```

```
    parent_type_constraint
```

```
    repeatable
```

```
    root_survey_languages
```

```
    sub_survey_number
```

```
class dokomoforms.models.survey.Survey (**kwargs)
```

```
    Bases: dokomoforms.models.util.Base
```

A Survey has a list of SurveyNodes.

Use an EnumeratorOnlySurvey to restrict submissions to enumerators.

```
    __init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```
    administrators
```

```
    containing_id
```

```
    created_on
```

```
    creator_id
```

```
    default_language
```

```
    deleted
```

```
    earliest_submission_time
```

```
    id
```

languages  
last\_update\_time  
latest\_submission\_time  
nodes  
num\_submissions  
submissions  
survey\_metadata  
survey\_type  
title  
url\_slug  
version

```
class dokomoforms.models.survey.SurveyNode(**kwargs)
    Bases: dokomoforms.models.util.Base
```

A SurveyNode contains a Node and adds survey-specific metadata.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

containing\_survey\_id  
deleted  
id  
last\_update\_time  
logic  
node  
    The Node instance.  
node\_id  
node\_languages  
node\_number  
non\_null\_repeatable  
root\_survey\_id  
root\_survey\_languages  
sub\_survey\_id  
sub\_survey\_repeatable  
survey\_node\_answerable  
the\_node  
type\_constraint

**class** dokomoforms.models.survey.**TimestampBucket** (\*\*kwargs)  
 Bases: dokomoforms.models.survey.\_RangeBucketMixin, *dokomoforms.models.survey.Bucket*  
 TSTZRANGE bucket.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**bucket**

**bucket\_type**

**deleted**

**id**

**last\_update\_time**

**sub\_survey\_id**

**sub\_survey\_parent\_node\_id**

**sub\_survey\_parent\_survey\_node\_id**

**sub\_survey\_parent\_type\_constraint**

**the\_survey\_node\_id**

dokomoforms.models.survey.**administrator\_filter** (user\_id)

Filter a query by administrator id.

dokomoforms.models.survey.**construct\_bucket** (\*, bucket\_type: str, \*\*kwargs) → dokomoforms.models.survey.Bucket

Return a subclass of dokomoforms.models.survey.Bucket.

The subclass is determined by the bucket\_type parameter. This utility function makes it easy to create an instance of a Bucket subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

#### Parameters

- **bucket\_type** – the type of the bucket. Must be one of the keys of dokomoforms.models.survey.BUCKET\_TYPES
- **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Bucket subtypes

**Raises** dokomoforms.exc.NoSuchBucketTypeError

dokomoforms.models.survey.**construct\_survey** (\*, survey\_type: str, \*\*kwargs)

Construct either a public or enumerator\_only Survey.

dokomoforms.models.survey.**construct\_survey\_node** (\*\*kwargs) → dokomoforms.models.survey.SurveyNode

Return a subclass of dokomoforms.models.survey.SurveyNode.

The subclass is determined by the type\_constraint parameter. This utility function makes it easy to create an instance of a SurveyNode subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

**Parameters** **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Node subtypes

`dokomoforms.models.survey.most_recent_surveys(session, user_id, limit=None)`

Get an administrator's most recent surveys.

`dokomoforms.models.survey.skipped_required(survey, answers) → str`

Return the id of a skipped AnswerableSurveyNode, or None.

## **dokomoforms.models.user module**

User models.

**class** `dokomoforms.models.user.Administrator(**kwargs)`

Bases: `dokomoforms.models.user.User`

A User who can create Surveys and add Users.

Regular users can answer surveys, but only Administrator instances can create surveys.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**deleted**

**emails**

**id**

**last\_update\_time**

**name**

**preferences**

**role**

**surveys**

**token**

**token\_expiration**

**class** `dokomoforms.models.user.Email(**kwargs)`

Bases: `dokomoforms.models.util.Base`

Models an e-mail address.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**address**

**deleted**

**id**

```

    last_update_time
    user_id
class dokomoforms.models.user.User(**kwargs)
    Bases: dokomoforms.models.util.Base
    Models a user. A user has at least one e-mail address.
    __init__(**kwargs)
        A simple constructor that allows initialization from kwargs.
        Sets attributes on the constructed instance using the names and values in kwargs.
        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.
    deleted
    emails
    id
    last_update_time
    name
    preferences
    role
dokomoforms.models.user.construct_user(*, role: str, **kwargs)
    Construct either an enumerator or an administrator.

```

## dokomoforms.models.util module

Useful reusable functions for models.

Models should inherit from dokomoforms.models.util.Base, and should almost certainly make use of the dokomoforms.models.util.pk and dokomoforms.models.util.last\_update\_time

The SQLAlchemy documentation suggests setting those columns in the base class or using class mixins, but it makes it less explicit which columns exist when looking at the models' definitions.

```

class dokomoforms.models.util.Base(**kwargs)
    Bases: abc.Base
    The base class for all Dokomo Forms models.
    deleted = Column(None, Boolean(), table=None, nullable=False, server_default=DefaultClause('false', for_update=False)
class dokomoforms.models.util.ModelJSONEncoder(skipkeys=False, ensure_ascii=True,
    check_circular=True, allow_nan=True,
    sort_keys=False, indent=None, separators=None, default=None)
    Bases: json.encoder.JSONEncoder
    This JSONEncoder handles the models in dokomoforms.models.
    To use it manually, call:
    json.dumps(model, cls=dokomoforms.models.util.ModelJSONEncoder, **kwargs)

```

**default** (*obj*)

Handle special types for json.dumps.

If obj is a model from dokomoforms.models, return a dictionary representation.

If obj is a datetime.date or datetime.time, return an ISO 8601 representation string.

If obj is a psycopg2 Range, return its string representation.

Otherwise, throw a TypeError.

See <https://docs.python.org/3/library/json.html#json.JSONEncoder.default>

dokomoforms.models.util.**column\_search** (*query*, \*, *model\_cls*, *column\_name*, *search\_term*, *language=None*, *regex=False*) → 'query'

Modify a query to search a column's values (JSONB or TEXT).

TODO: document this

**Parameters**

- **query** – a
- **model\_cls** – aa
- **column** – b
- **search\_term** – c
- **language** – d
- **regex** – r

**Returns** The modified query.

dokomoforms.models.util.**create\_engine** (*pool\_size: int=None*, *max\_overflow: int=None*, *echo: bool=None*) → sqlalchemy.engine.base.Engine

Get a connection to the database.

Return a sqlalchemy.engine.Engine configured with the options set in dokomoforms.options.options

**Returns** a SQLAlchemy engine

dokomoforms.models.util.**fk** (*column\_name: str*) → sqlalchemy.sql.schema.Column

A foreign key with ONUPDATE CASCADE and ONDELETE CASCADE.

Return a foreign key of type UUID for use in models.

The relationship CASCADEs on UPDATE and DELETE.

**Parameters** **column\_name** – the name of the referenced column

**Returns** a SQLAlchemy Column for a UUID primary key.

dokomoforms.models.util.**get\_fields\_subset** (*model: dokomoforms.models.util.Base*, *fields: list*) → collections.OrderedDict

Return the given fields for the model's dictionary representation.

dokomoforms.models.util.**get\_model** (*session*, *model\_cls*, *model\_id*, *exception=None*)

Throw an error if session.query.get(model\_id) returns None.

dokomoforms.models.util.**json\_column** (*column\_name: str*, \*, *default=None*) → sqlalchemy.sql.schema.Column

A JSONB column.

Return a column of type JSONB for use in models. Use this for entries like

<language>: <text>



**Parameters**

- **column\_name** – the name of the column
- **default** – the column default (default value None, meaning no column default)

**Returns** a SQLAlchemy Column for a non-null JSONB type.

`dokomoforms.models.util.jsonify(obj, *, raise_exception=False) → object`

Convert the given object to something JSON can handle.

`dokomoforms.models.util.languages_column(column_name) → sqlalchemy.sql.schema.Column`

A TEXT[] column of length > 0.

Return an ARRAY(TEXT, as\_tuple=True) column.

**Parameters** **column\_name** – the name of the column

**Returns** a SQLAlchemy Column for a non-null ARRAY(TEXT, as\_tuple=True) type.

`dokomoforms.models.util.languages_constraint(column_name, languages_column_name) → sqlalchemy.sql.schema.Constraint`

CHECK CONSTRAINT for a translatable column.

Checks that all of the languages in the languages column exist as keys in the translatable column.

**Parameters**

- **column\_name** – the name of the translatable column
- **languages\_column\_name** – the name of the TEXT[] column containing the languages.

**Returns** a SQLAlchemy Constraint to ensure that all the required translations are available.

`dokomoforms.models.util.last_update_time() → sqlalchemy.sql.schema.Column`

A timestamp column set to CURRENT\_TIMESTAMP on update.

Return a column containing the time that a record was last updated.

**Returns** a SQLAlchemy Column for a datetime with time zone auto-updating column

`dokomoforms.models.util.pk(*foreign_key_column_names: str) → sqlalchemy.sql.schema.Column`

A UUID primary key.

Return a standard primary key of type UUID for use in models. If the any foreign\_key\_column\_names are supplied, the primary key will reference the given columns.

**Parameters** **foreign\_key\_column\_names** – column names of the referenced foreign keys (should be 'table\_name.column\_name')

**Returns** a SQLAlchemy Column for a UUID primary key.

**Module contents**

All the models used in Dokomo Forms.

**class** `dokomoforms.models.Base(**kwargs)`  
Bases: `abc.Base`

The base class for all Dokomo Forms models.

**deleted** = `Column(None, Boolean(), table=None, nullable=False, server_default=DefaultClause('false', for_update=False))`

`dokomoforms.models.create_engine` (*pool\_size: int=None, max\_overflow: int=None, echo: bool=None*) → `sqlalchemy.engine.base.Engine`

Get a connection to the database.

Return a `sqlalchemy.engine.Engine` configured with the options set in `dokomoforms.options.options`

**Returns** a `SQLAlchemy` engine

`dokomoforms.models.jsonify` (*obj, \*, raise\_exception=False*) → `object`

Convert the given object to something JSON can handle.

`dokomoforms.models.get_model` (*session, model\_cls, model\_id, exception=None*)

Throw an error if `session.query.get(model_id)` returns `None`.

**class** `dokomoforms.models.ModelJSONEncoder` (*skipkeys=False, ensure\_ascii=True, check\_circular=True, allow\_nan=True, sort\_keys=False, indent=None, separators=None, default=None*)

Bases: `json.encoder.JSONEncoder`

This `JSONEncoder` handles the models in `dokomoforms.models`.

To use it manually, call:

```
json.dumps( model, cls=dokomoforms.models.util.ModelJSONEncoder, **kwargs
)
```

**default** (*obj*)

Handle special types for `json.dumps`.

If `obj` is a model from `dokomoforms.models`, return a dictionary representation.

If `obj` is a `datetime.date` or `datetime.time`, return an ISO 8601 representation string.

If `obj` is a `psycopg2 Range`, return its string representation.

Otherwise, throw a `TypeError`.

See <https://docs.python.org/3/library/json.html#json.JSONEncoder.default>

**class** `dokomoforms.models.User` (*\*\*kwargs*)

Bases: `dokomoforms.models.util.Base`

Models a user. A user has at least one e-mail address.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from `kwargs`.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**deleted**

**emails**

**id**

**last\_update\_time**

**name**

**preferences**

**role**

```
class dokomoforms.models.Administrator (**kwargs)
```

Bases: *dokomoforms.models.user.User*

A User who can create Surveys and add Users.

Regular users can answer surveys, but only Administrator instances can create surveys.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**deleted**

**emails**

**id**

**last\_update\_time**

**name**

**preferences**

**role**

**surveys**

**token**

**token\_expiration**

```
class dokomoforms.models.Email (**kwargs)
```

Bases: *dokomoforms.models.util.Base*

Models an e-mail address.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**address**

**deleted**

**id**

**last\_update\_time**

**user\_id**

```
dokomoforms.models.construct_user (*, role: str, **kwargs)
```

Construct either an enumerator or an administrator.

```
class dokomoforms.models.Node (**kwargs)
```

Bases: *dokomoforms.models.util.Base*

A node is a Note or Question independent of any Survey.

A node is its own entity. A node can be a *dokomoforms.models.survey.Note* or a *dokomoforms.models.survey.Question*.

**You can use this class for querying, e.g.** `session.query(Node).filter_by(title='Some Title')`

To create the specific kind of Node you want, use `dokomoforms.models.survey.node.construct_node`.

`__init__` (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`deleted`

`hint`

`id`

`languages`

`last_update_time`

`logic`

`title`

`type_constraint`

**class** `dokomoforms.models.Question` (*\*\*kwargs*)

Bases: `dokomoforms.models.node.Node`

A Question has a response type associated with it.

A Question has a type constraint associated with it (integer, date, text...). Only a `dokomoforms.models.survey.MultipleChoiceQuestion` has a list of `dokomoforms.models.survey.Choice` instances.

`__init__` (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`

`allow_other`

`deleted`

`hint`

`id`

`languages`

`last_update_time`

`logic`

`the_languages`

`the_type_constraint`

`title`

`type_constraint`

`dokomoforms.models.construct_node(*, type_constraint: str, **kwargs) → dokomoforms.models.node.Node`

Return a subclass of `dokomoforms.models.node.Node`.

The subclass is determined by the `type_constraint` parameter. This utility function makes it easy to create an instance of a `Node` or `Question` subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

#### Parameters

- **type\_constraint** – the type constraint of the node. Must be one of the keys of `dokomoforms.models.survey.NODE_TYPES`
- **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the `Node` subtypes

**Raises** `dokomoforms.exc.NoSuchNodeTypeError`

**class** `dokomoforms.models.Note(**kwargs)`

Bases: `dokomoforms.models.node.Node`

Notes provide information interspersed with survey questions.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from `kwargs`.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**deleted**

**hint**

**id**

**languages**

**last\_update\_time**

**logic**

**the\_type\_constraint**

**title**

**type\_constraint**

**class** `dokomoforms.models.TextQuestion(**kwargs)`

Bases: `dokomoforms.models.node._QuestionMixin`, `dokomoforms.models.node.Question`

A text question.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from `kwargs`.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_multiple**

**allow\_other**

**deleted**

`hint`  
`id`  
`languages`  
`last_update_time`  
`logic`  
`the_languages`  
`the_type_constraint`  
`title`  
`type_constraint`

```
class dokomoforms.models.PhotoQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
```

A photo question.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`  
`allow_other`  
`deleted`  
`hint`  
`id`  
`languages`  
`last_update_time`  
`logic`  
`the_languages`  
`the_type_constraint`  
`title`  
`type_constraint`

```
class dokomoforms.models.IntegerQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
```

A integer question.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`

```

allow_other
deleted
hint
id
languages
last_update_time
logic
the_languages
the_type_constraint
title
type_constraint

```

```

class dokomoforms.models.DecimalQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question

```

A decimal question.

```

__init__(**kwargs)

```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```

allow_multiple
allow_other
deleted
hint
id
languages
last_update_time
logic
the_languages
the_type_constraint
title
type_constraint

```

```

class dokomoforms.models.DateQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question

```

A date question.

```

__init__(**kwargs)

```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_multiple**  
**allow\_other**  
**deleted**  
**hint**  
**id**  
**languages**  
**last\_update\_time**  
**logic**  
**the\_languages**  
**the\_type\_constraint**  
**title**  
**type\_constraint**

**class** dokomoforms.models.**TimeQuestion** (\*\*kwargs)

Bases: dokomoforms.models.node.\_QuestionMixin, *dokomoforms.models.node.Question*

A time (with time zone) question.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_multiple**  
**allow\_other**  
**deleted**  
**hint**  
**id**  
**languages**  
**last\_update\_time**  
**logic**  
**the\_languages**  
**the\_type\_constraint**  
**title**  
**type\_constraint**

**class** dokomoforms.models.**TimestampQuestion** (\*\*kwargs)

Bases: dokomoforms.models.node.\_QuestionMixin, *dokomoforms.models.node.Question*

A timestamp (with time zone) question.



`__init__` (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`

`allow_other`

`deleted`

`hint`

`id`

`languages`

`last_update_time`

`logic`

`the_languages`

`the_type_constraint`

`title`

`type_constraint`

`class dokomoforms.models.LocationQuestion` (\*\*kwargs)

Bases: `dokomoforms.models.node._QuestionMixin`, `dokomoforms.models.node.Question`

A location question.

`__init__` (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_multiple`

`allow_other`

`deleted`

`hint`

`id`

`languages`

`last_update_time`

`logic`

`the_languages`

`the_type_constraint`

`title`

`type_constraint`

```
class dokomoforms.models.FacilityQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
    A facility question.

    __init__(**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    allow_multiple
    allow_other
    deleted
    hint
    id
    languages
    last_update_time
    logic
    the_languages
    the_type_constraint
    title
    type_constraint

class dokomoforms.models.MultipleChoiceQuestion(**kwargs)
    Bases: dokomoforms.models.node._QuestionMixin, dokomoforms.models.node.Question
    A multiple_choice question.

    __init__(**kwargs)
        A simple constructor that allows initialization from kwargs.

        Sets attributes on the constructed instance using the names and values in kwargs.

        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.

    allow_multiple
    allow_other
    choices
    deleted
    hint
    id
    languages
    last_update_time
    logic
    node_languages
```

```

the_languages
the_type_constraint
title
type_constraint
class dokomoforms.models.Choice (**kwargs)
    Bases: dokomoforms.models.util.Base
    A choice for a MultipleChoiceQuestion.
    Models a choice for a dokomoforms.models.survey.MultipleChoiceQuestion.
    __init__ (**kwargs)
        A simple constructor that allows initialization from kwargs.
        Sets attributes on the constructed instance using the names and values in kwargs.
        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.
    choice_number
    choice_text
    deleted
    id
    last_update_time
    question_id
    question_languages
class dokomoforms.models.Survey (**kwargs)
    Bases: dokomoforms.models.util.Base
    A Survey has a list of SurveyNodes.
    Use an EnumeratorOnlySurvey to restrict submissions to enumerators.
    __init__ (**kwargs)
        A simple constructor that allows initialization from kwargs.
        Sets attributes on the constructed instance using the names and values in kwargs.
        Only keys that are present as attributes of the instance's class are allowed. These could be, for example,
        any mapped columns or relationships.
    administrators
    containing_id
    created_on
    creator_id
    default_language
    deleted
    earliest_submission_time
    id
    languages

```

`last_update_time`  
`latest_submission_time`  
`nodes`  
`num_submissions`  
`submissions`  
`survey_metadata`  
`survey_type`  
`title`  
`url_slug`  
`version`

**class** `dokomoforms.models.EnumeratorOnlySurvey` (*\*\*kwargs*)

Bases: `dokomoforms.models.survey.Survey`

Only enumerators (designated Users) can submit to this.

`__init__` (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`administrators`  
`containing_id`  
`created_on`  
`creator_id`  
`default_language`  
`deleted`  
`earliest_submission_time`  
`enumerators`  
`id`  
`languages`  
`last_update_time`  
`latest_submission_time`  
`nodes`  
`num_submissions`  
`submissions`  
`survey_metadata`  
`survey_type`  
`title`  
`url_slug`

**version**

```
class dokomoforms.models.SubSurvey (**kwargs)
```

Bases: *dokomoforms.models.util.Base*

A SubSurvey behaves like a Survey but belongs to a SurveyNode.

The way to arrive at a certain SubSurvey is encoded in its buckets.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**buckets**

**containing\_survey\_id**

**deleted**

**id**

**nodes**

**parent\_allow\_multiple**

**parent\_node\_id**

**parent\_survey\_node\_id**

**parent\_type\_constraint**

**repeatable**

**root\_survey\_languages**

**sub\_survey\_number**

```
class dokomoforms.models.SurveyNode (**kwargs)
```

Bases: *dokomoforms.models.util.Base*

A SurveyNode contains a Node and adds survey-specific metadata.

```
__init__ (**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**containing\_survey\_id**

**deleted**

**id**

**last\_update\_time**

**logic**

**node**

The Node instance.

**node\_id**

`node_languages`  
`node_number`  
`non_null_repeatable`  
`root_survey_id`  
`root_survey_languages`  
`sub_survey_id`  
`sub_survey_repeatable`  
`survey_node_answerable`  
`the_node`  
`type_constraint`

`dokomoforms.models.construct_survey(*, survey_type: str, **kwargs)`

Construct either a public or enumerator\_only Survey.

**class** `dokomoforms.models.NonAnswerableSurveyNode(**kwargs)`

Bases: `dokomoforms.models.survey.SurveyNode`

Contains a Node which is not answerable (e.g., a Note).

`__init__(**kwargs)`

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`containing_survey_id`  
`deleted`  
`id`  
`last_update_time`  
`logic`  
`node`  
`node_id`  
`node_languages`  
`node_number`  
`non_null_repeatable`  
`root_survey_id`  
`root_survey_languages`  
`sub_survey_id`  
`sub_survey_repeatable`  
`survey_node_answerable`  
`the_node`  
`the_node_id`

`the_type_constraint``type_constraint``class dokomoforms.models.AnswerableSurveyNode (**kwargs)`Bases: `dokomoforms.models.survey.SurveyNode`

Contains a Node which is answerable (e.g, a Question).

`__init__ (**kwargs)`

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

`allow_dont_know``allow_multiple``allow_other``answer_count``answers``containing_survey_id``deleted``id``last_update_time``logic``node``node_id``node_languages``node_number``non_null_repeatable``required``root_survey_id``root_survey_languages``sub_survey_id``sub_survey_repeatable``sub_surveys``survey_node_answerable``the_containing_survey_id``the_node``the_node_id``the_node_languages``the_root_survey_languages`

**the\_sub\_survey\_repeatable**

**the\_type\_constraint**

**type\_constraint**

`dokomoforms.models.construct_survey_node(**kwargs)` → `dokomoforms.models.survey.SurveyNode`

Return a subclass of `dokomoforms.models.survey.SurveyNode`.

The subclass is determined by the `type_constraint` parameter. This utility function makes it easy to create an instance of a `SurveyNode` subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

**Parameters** `kwargs` – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Node subtypes

`dokomoforms.models.construct_bucket(*, bucket_type: str, **kwargs)` → `dokomoforms.models.survey.Bucket`

Return a subclass of `dokomoforms.models.survey.Bucket`.

The subclass is determined by the `bucket_type` parameter. This utility function makes it easy to create an instance of a `Bucket` subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

**Parameters**

- **bucket\_type** – the type of the bucket. Must be one of the keys of `dokomoforms.models.survey.BUCKET_TYPES`
- **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Bucket subtypes

**Raises** `dokomoforms.exc.NoSuchBucketTypeError`

`dokomoforms.models.skipped_required(survey, answers)` → `str`

Return the id of a skipped `AnswerableSurveyNode`, or `None`.

`dokomoforms.models.administrator_filter(user_id)`

Filter a query by administrator id.

`dokomoforms.models.most_recent_surveys(session, user_id, limit=None)`

Get an administrator's most recent surveys.

**class** `dokomoforms.models.Submission(**kwargs)`

Bases: `dokomoforms.models.util.Base`

A `Submission` references a `Survey` and has a list of `Answers`.

**\_\_init\_\_**(`**kwargs`)

A simple constructor that allows initialization from `kwargs`.

Sets attributes on the constructed instance using the names and values in `kwargs`.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**answers**

**deleted**

**id**

**last\_update\_time**



```

save_time
start_time
submission_time
submission_type
submitter_email
submitter_name
survey_containing_id
survey_default_language
survey_id
survey_title
survey_type

```

```
class dokomoforms.models.EnumeratorOnlySubmission(**kwargs)
```

Bases: *dokomoforms.models.submission.Submission*

An EnumeratorOnlySubmission must have an enumerator.

Use an EnumeratorOnlySubmission for an EnumeratorOnlySurvey.

```
__init__(**kwargs)
```

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

```

answers
deleted
enumerator
enumerator_user_id
id
last_update_time
save_time
start_time
submission_time
submission_type
submitter_email
submitter_name
survey_containing_id
survey_default_language
survey_id
survey_title
survey_type

```

**the\_survey\_id**

**class** dokomoforms.models.**PublicSubmission** (\*\*kwargs)  
Bases: *dokomoforms.models.submission.Submission*

A PublicSubmission might have an enumerator.

Use a PublicSubmission for a Survey.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**answers**

**deleted**

**enumerator**

**enumerator\_user\_id**

**id**

**last\_update\_time**

**save\_time**

**start\_time**

**submission\_time**

**submission\_type**

**submitter\_email**

**submitter\_name**

**survey\_containing\_id**

**survey\_default\_language**

**survey\_id**

**survey\_title**

**survey\_type**

dokomoforms.models.**construct\_submission**(\*, *submission\_type: str*, \*\*kwargs) → dokomo-  
forms.models.submission.Submission

Return a subclass of dokomoforms.models.submission.Submission.

The subclass is determined by the *submission\_type* parameter. This utility function makes it easy to create an instance of a Submission subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

#### Parameters

- **submission\_type** – the type of submission. Must be either ‘public\_submission’ or ‘enumerator\_only\_submission’
- **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Node subtypes

**Raises** dokomoforms.exc.NoSuchSubmissionTypeError

`dokomoforms.models.most_recent_submissions` (*session, user\_id, limit=None*)

Get an administrator's surveys' most recent submissions.

**class** `dokomoforms.models.Answer` (*\*\*kwargs*)

Bases: `dokomoforms.models.util.Base`

An Answer is a response to a SurveyNode.

An Answer can be one of an answer, an “other” response or a “don’t know” response. Answer.response abstracts over these 3 possibilities.

**\_\_init\_\_** (*\*\*kwargs*)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in *kwargs*.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**allow\_dont\_know**

**allow\_multiple**

**allow\_other**

**answer**

The answer. Could be the same as *main\_answer* in simple cases.

This property is the most useful representation available of the answer. In the simplest case it is just a synonym for *main\_answer*. It could otherwise be a dictionary or another model.

**answer\_metadata**

**answer\_number**

**answer\_type**

**deleted**

**dont\_know**

A text field containing “don’t know” responses.

**id**

**last\_update\_time**

**main\_answer**

The representative part of a provided answer.

The *main\_answer* is the only answer for simple types (integer, text, etc.) and for other types is the part of the answer that is most important. In practice, the *main\_answer* is special only in that all Answer models have it, which is necessary for certain constraints and for the response property.

**other**

A text field containing “other” responses.

**question\_id**

**question\_title**

**repeatable**

**response** = `OrderedDict([('type_constraint', <sqlalchemy.orm.attributes.InstrumentedAttribute object at 0x7f93c4ac90`

**save\_time**

**submission\_id**

**survey\_containing\_id**  
**survey\_id**  
**survey\_node**  
**survey\_node\_containing\_survey\_id**  
**survey\_node\_id**  
**type\_constraint**

**class** dokomoforms.models.**Photo** (\*\*kwargs)  
Bases: *dokomoforms.models.util.Base*

A BYTEA holding an image.

**\_\_init\_\_** (\*\*kwargs)

A simple constructor that allows initialization from kwargs.

Sets attributes on the constructed instance using the names and values in kwargs.

Only keys that are present as attributes of the instance's class are allowed. These could be, for example, any mapped columns or relationships.

**created\_on**

**deleted**

**id**

**image**

**mime\_type**

dokomoforms.models.**construct\_answer** (\*, type\_constraint: str, \*\*kwargs) → dokomo-  
forms.models.answer.Answer

Return a subclass of dokomoforms.models.answer.Answer.

The subclass is determined by the type\_constraint parameter. This utility function makes it easy to create an instance of an Answer subclass based on external input.

See <http://stackoverflow.com/q/30518484/1475412>

#### Parameters

- **type\_constraint** – the type of the answer. Must be one of the keys of dokomoforms.models.answer.ANSWER\_TYPES
- **kwargs** – the keyword arguments to pass to the constructor

**Returns** an instance of one of the Answer subtypes

**Raises** dokomoforms.exc.NotAnAnswerTypeError

dokomoforms.models.**add\_new\_photo\_to\_session** (session, \*, id, \*\*kwargs)

Create a new Photo and update the referenced PhotoAnswer.

dokomoforms.models.**answer\_min** (survey\_node: dokomoforms.models.survey.AnswerableSurveyNode)

Get the minimum answer.

dokomoforms.models.**answer\_max** (survey\_node: dokomoforms.models.survey.AnswerableSurveyNode)

Get the maximum answer.

dokomoforms.models.**answer\_sum** (survey\_node: dokomoforms.models.survey.AnswerableSurveyNode)

Get the sum of the answers.

`dokomoforms.models.answer_avg` (*survey\_node: dokomoforms.models.survey.AnswerableSurveyNode*)

Get the average of the answers.

`dokomoforms.models.answer_mode` (*survey\_node: dokomoforms.models.survey.AnswerableSurveyNode*)

Get the mode of the answers.

`dokomoforms.models.answer_stddev_pop` (*survey\_node: dokomoforms.models.survey.AnswerableSurveyNode*)

Get the population standard deviation of the answers.

`dokomoforms.models.answer_stddev_samp` (*survey\_node: dokomoforms.models.survey.AnswerableSurveyNode*)

Get the sample standard deviation of the answers.

`dokomoforms.models.generate_question_stats` (*survey*)

Get answer statistics for the nodes in a survey.

## 1.2 Submodules

### 1.3 dokomoforms.exc module

The base exception class is *DokomoError*.

**exception** `dokomoforms.exc.DokomoError`

Bases: `Exception`

The base class for all exceptions used in Dokomo Forms.

**exception** `dokomoforms.exc.InvalidTypeForOperation`

Bases: *dokomoforms.exc.DokomoError*

Invalid type for the selected aggregation function.

For instance, you can't find the maximum of a text answer.

**exception** `dokomoforms.exc.NoSuchBucketTypeError`

Bases: *dokomoforms.exc.DokomoError*

Invalid `type_constraint` for `construct_bucket`.

Raised when `dokomoforms.models.survey.construct_bucket` is called with an invalid `type_constraint`.

The valid `type_constraints` are the keys of `dokomoforms.models.survey.BUCKET_TYPES`.

**exception** `dokomoforms.exc.NoSuchNodeTypeError`

Bases: *dokomoforms.exc.DokomoError*

Invalid `type_constraint` for `construct_node`.

Raised when `dokomoforms.models.node.construct_node` is called with an invalid `type_constraint`.

The valid `type_constraints` are the keys of `dokomoforms.models.node.NODE_TYPES`.

**exception** `dokomoforms.exc.NoSuchSubmissionTypeError`

Bases: *dokomoforms.exc.DokomoError*

Invalid `submission_type` for `construct_submission`.

Raised when `dokomoforms.models.submission.construct_submission` is called with an invalid `submission_type`.

The valid types are 'unauthenticated' and 'enumerator\_only\_submission'

**exception** `dokomoforms.exc.NotAResponseTypeError`

Bases: `dokomoforms.exc.DokomoError`

Invalid response\_type Answer.response.setter.

Raised when trying to set the response field on an Answer with an invalid response\_type.

The valid response\_types are 'answer', 'other', and 'dont\_know'.

**exception** `dokomoforms.exc.NotAnAnswerTypeError`

Bases: `dokomoforms.exc.DokomoError`

Invalid type\_constraint for construct\_answer.

Raised when dokomoforms.models.node.construct\_answer is called with an invalid type\_constraint.

The valid type\_constraints are the keys of dokomoforms.models.answer.ANSWER\_TYPES.

**exception** `dokomoforms.exc.NotJSONifiableError`

Bases: `dokomoforms.exc.DokomoError`

The jsonify function encountered a strange object.

**exception** `dokomoforms.exc.PhotoIdDoesNotExistError`

Bases: `dokomoforms.exc.DokomoError`

The submitted photo ID does not exist in the database.

**exception** `dokomoforms.exc.RequiredQuestionSkipped`

Bases: `dokomoforms.exc.DokomoError`

A submission has no answer for a required question.

**exception** `dokomoforms.exc.SurveyAccessForbidden`

Bases: `dokomoforms.exc.DokomoError`

The logged-in user does not have access to the survey.

**exception** `dokomoforms.exc.UserRequiresEmailError`

Bases: `dokomoforms.exc.DokomoError`

A user must have at least one e-mail address.

## 1.4 dokomoforms.options module

All the application options are defined here.

If you need to inject options at runtime (for testing, etc...):

```
from dokomoforms.options import parse_options
parse_options(name1=value1, name2=value2, ...)
```

## 1.5 Module contents

Top level module for Dokomo Forms.

All of the application code for Dokomoforms (outside of the webapp.py script) lives in this module.

---

## webapp module

---

Main Dokomo Forms entry point.

Execute this script to start the Tornado server and WSGI container. It will ensure that the proper tables and extensions exist in the specified schema of the PostgreSQL database.

The application looks for gettext translation files like locale/{locale}/LC\_MESSAGES/dokomoforms.mo

```
class webapp.Application (session=None, options=<tornado.options.OptionParser object>)
    Bases: tornado.web.Application
```

The tornado.web.Application for Dokomo Forms.

```
__init__ (session=None, options=<tornado.options.OptionParser object>)
    Set up the application with handlers and a db connection.
```

Defines the URLs (with associated handlers) and settings for the application, drops the database schema (if the user selected that option), then prepares the database and creates a session.

```
webapp.api_url (path, *args, **kwargs)
    Prepend the API path to API URLs.
```

```
webapp.ensure_that_user_wants_to_drop_schema ()
    Check that user asked to drop the schema intentionally.
```

Interrogates the user to make sure that the schema specified by options.schema should be dropped. If the user decides against it, exits the application.

```
webapp.get_cookie_secret () → bytes
    Return the secret from the cookie_secret file.
```

The cookie secret is in the file <project\_directory>/cookie\_secret. If the file doesn't exist, the script will exit with code 1 and tell the user how to generate it.

**Returns** the cookie secret as bytes

```
webapp.main (msg=None)
    Start the Tornado web server.
```

```
webapp.modify_text (text: str, modifier: str) → str
    Modify text for printing to the command line.
```

**Parameters**

- **text** – the string to modify
- **modifier** – the escape sequence that marks the modifier

**Returns** the modified string

`webapp.setup_file_loggers` (*log\_level: str*)

Handles application, Tornado, and SQLAlchemy logging configuration.

`webapp.start_http_server` (*http\_server, port*)

Start the server, with the option to kill anything using the port.



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