
AnyBlok / Dramatiq Documentation

Release 1.0.1

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Jan 10, 2018

Contents:

1	Front Matter	3
1.1	Project Homepage	3
1.2	Project Status	3
1.3	Installation	3
1.4	Unit Test	4
1.5	Dependencies	4
1.6	Contributing (hackers needed!)	4
1.7	Author	4
1.8	Contributors	4
1.9	Bugs	4
2	MEMENTO	5
2.1	How to use dramatiq and which context	5
2.2	Add middleware on dramatiq	5
3	Code	7
3.1	Actor	7
3.2	Broker	10
3.3	Dramatiq middleware	10
3.4	Scripts	11
4	Bloks	13
4.1	Blok dramatiq	13
4.2	Blok dramatiq task	17
5	CHANGELOG	23
5.1	1.0.1 (2018-01-10)	23
5.2	1.0.0 (2017-12-23)	23
6	Mozilla Public License Version 2.0	27
6.1	1. Definitions	27
6.2	2. License Grants and Conditions	29
6.3	3. Responsibilities	30
6.4	4. Inability to Comply Due to Statute or Regulation	31
6.5	5. Termination	31
6.6	6. Disclaimer of Warranty	31
6.7	7. Limitation of Liability	32

6.8	8. Litigation	32
6.9	9. Miscellaneous	32
6.10	10. Versions of the License	32
6.11	Exhibit A - Source Code Form License Notice	33
6.12	Exhibit B - “Incompatible With Secondary Licenses” Notice	33
7	Indices and tables	35
	Python Module Index	37

Contents

- *Front Matter*
 - *Project Homepage*
 - *Project Status*
 - *Installation*
 - *Unit Test*
 - *Dependencies*
 - *Contributing (hackers needed!)*
 - *Author*
 - *Contributors*
 - *Bugs*

Information about the AnyBlok / Dramatiq project.

1.1 Project Homepage

AnyBlok is hosted on [github](https://github.com/AnyBlok/anyblok_dramatiq) - the main project page is at https://github.com/AnyBlok/anyblok_dramatiq. Source code is tracked here using [GIT](#).

Releases and project status are available on Pypi at http://pypi.python.org/pypi/anyblok_dramatiq.

The most recent published version of this documentation should be at <http://doc.anyblok-dramatiq.anyblok.org>.

1.2 Project Status

AnyBlok with Dramatiq is currently in beta status and is expected to be fairly stable. Users should take care to report bugs and missing features on an as-needed basis. It should be expected that the development version may be required for proper implementation of recently repaired issues in between releases;

1.3 Installation

Install released versions of AnyBlok from the Python package index with [pip](#) or a similar tool:

```
pip install anyblok_dramatiq
```

Installation via source distribution is via the `setup.py` script:

```
python setup.py install
```

Installation will add the `anyblok` commands to the environment.

1.4 Unit Test

Run the test with `nose`:

```
pip install nose
nosetests anyblok_dramatiq/tests
```

1.5 Dependencies

AnyBlok / Dramatiq works with **Python 3.6** and later. The install process will ensure that [AnyBlok](#), [dramatiq](#) are installed, in addition to other dependencies. The latest version of them is strongly recommended.

1.6 Contributing (hackers needed!)

Anyblok / Dramatiq is at a very early stage, feel free to fork, talk with core dev, and spread the word!

1.7 Author

Jean-Sébastien Suzanne

1.8 Contributors

[Anybox](#) team:

- Jean-Sébastien Suzanne

[Sensee](#) team:

- Franck Bret

1.9 Bugs

Bugs and feature enhancements to AnyBlok should be reported on the [Issue tracker](#).

Contents

- *MEMENTO*
 - *How to use dramatiq and which context*
 - *Add middleware on dramatiq*

2.1 How to use dramatiq and which context

The goal of dramatiq is to process some task on another system process. If your tasks will be done on the same process, you read the wrong solution. But if your tasks can be executed in another process, and it takes time to process them, you are welcome.

The first thing to know is you will need to run the application:

- `anyblok_dramatiq`: to process the task.
- Another anyblok script to execute the main process, `anyblok_pyramid` if you have a web service.

Make attention that they both use the same broker, else they should not be communicate each other.

Warning: the `blok dramatiq` must be installed

To execute your task by dramatiq, you have to define **actor** or **actor_send** on your AnyBlok Model. Read the doc of the doc of `dramatiq` blok to know how declare it.

2.2 Add middleware on dramatiq

dramatiq allow to add middleware to improve the process, **anyblok_dramatiq** add one middleware for historize the messages and their status.

You can add in your project an existing **dramatiq** middleware or your own. [read more](#) to know existing middleware or how create your own.

anyblok_dramatiq add this own console script to run the workers, you need add the middleware in the entrypoint `anyblok_dramatiq.middleware`:

```
setup(  
    ...  
    entry_points={  
        'anyblok_dramatiq.middleware': [  
            'mymiddleware=module.path:ClassName',  
        ],  
    },  
    ...  
)
```

Contents

- *Code*
 - *Actor*
 - *Broker*
 - *Dramatiq middleware*
 - *Scripts*

3.1 Actor

exception anyblok_dramatiq.actor.**AnyBlokActorException**

Bases: ValueError

A ValueError exception for anyblok_dramatiq

with_traceback()

Exception.with_traceback(tb) – set self.__traceback__ to tb and return self.

class anyblok_dramatiq.actor.**AnyBlokActor** (*fn, *, broker, actor_name, queue_name, priority, options*)

Bases: dramatiq.actor.Actor

Overload the dramatiq.actor.Actor class

the goal is to allow the decorator actor_send, this decorator use directly the method send

send (*args, **kwargs)

Send to the broker

anyblok_dramatiq.actor.**declare_actor_for** (*method, **kwargs*)

Method to add anyblok_dramatiq.actor.actor decorator on the class method

Parameters

- **method** – classmethod pointer
- ****kwargs** – decorator kwargs

anyblok_dramatiq.actor.**declare_actor_send_for** (*method, **kwargs*)

Method to add anyblok_dramatiq.actor.actor_send decorator on the class method

Parameters

- **method** – classmethod pointer
- ****kwargs** – decorator kwargs

`anyblok_dramatiq.actor.actor(queue_name='default', priority=0, **options)`

Decorator to get an Actor

Parameters

- **queue_name** – name of the queue
- **priority** – priority of the actor
- ****options** – options for actor

`anyblok_dramatiq.actor.actor_send(queue_name='default', priority=0, **options)`

Decorator to get an AnyBlokActor

Parameters

- **queue_name** – name of the queue
- **priority** – priority of the actor
- ****options** – options for actor

`anyblok_dramatiq.actor.call_directly_the_actor_send()`

Context manager to call directly without use dramatiq

class `anyblok_dramatiq.actor.ActorPlugin(registry)`

Bases: `anyblok.model.plugins.ModelPluginBase`

`anyblok.model.plugin` to allow the build of the `anyblok_dramatiq.actor`

after_model_construction (*base, namespace, transformation_properties*)

Do some action with the constructed Model

Parameters

- **base** – the Model class
- **namespace** – the namespace of the model
- **transformation_properties** – the properties of the model

initialisation_transformation_properties (*properties, transformation_properties*)

Initialise the transform properties

Parameters

- **properties** – the properties declared in the model
- **new_type_properties** – param to add in a new base if need

insert_in_bases (*new_base, namespace, properties, transformation_properties*)

Insert in a base the overload

Parameters

- **new_base** – the base to be put on front of all bases
- **namespace** – the namespace of the model
- **properties** – the properties declared in the model
- **transformation_properties** – the properties of the model

transform_base_attribute (*attr, method, namespace, base, transformation_properties, new_type_properties*)

transform the attribute for the final Model

Parameters

- **attr** – attribute name
- **method** – method pointer of the attribute
- **namespace** – the namespace of the model
- **base** – One of the base of the model
- **transformation_properties** – the properties of the model
- **new_type_properties** – param to add in a new base if need

class anyblok_dramatiq.actor.**ActorSendPlugin** (*registry*)

Bases: anyblok.model.plugins.ModelPluginBase

anyblok.model.plugin to allow the build of the anyblok_dramatiq.actor_send

after_model_construction (*base, namespace, transformation_properties*)

Do some action with the constructed Model

Parameters

- **base** – the Model class
- **namespace** – the namespace of the model
- **transformation_properties** – the properties of the model

initialisation_transformation_properties (*properties, transformation_properties*)

Initialise the transform properties

Parameters

- **properties** – the properties declared in the model
- **new_type_properties** – param to add in a new base if need

insert_in_bases (*new_base, namespace, properties, transformation_properties*)

Insert in a base the overload

Parameters

- **new_base** – the base to be put on front of all bases
- **namespace** – the namespace of the model
- **properties** – the properties declared in the model
- **transformation_properties** – the properties of the model

transform_base_attribute (*attr, method, namespace, base, transformation_properties,*
new_type_properties)

transform the attribute for the final Model

Parameters

- **attr** – attribute name
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- **base** – One of the base of the model
- **transformation_properties** – the properties of the model
- **new_type_properties** – param to add in a new base if need

3.2 Broker

`anyblok_dramatiq.broker.prepare_broker (withmiddleware=True)`

Configure the broker for send and workers

3.3 Dramatiq middleware

class `anyblok_dramatiq.middleware.DramatiqMessageMiddleware`

Bases: `dramatiq.middleware.middleware.Middleware`

Middleware for dramatiq, the goal is to detect if the the call was done by anyblok tools with the `Model.Dramatiq.Message`. This model stock the status of the message and the history of the status's change

after_process_message (*broker, message, *, result=None, exception=None*)

Called after process message

If the message is in the `Model.Dramatiq.Message` then the status will be change to **done** or **failed**.

Note: the status is failed if an exception is passed or a rollback is need

Before the end, the session is expired to release the Session pool thread

Parameters

- **broker** – the broker used
- **message** – the message send in the broker
- **result** – return by the process
- **exception** – any `Exception` raised by the process

after_skip_message (*broker, message*)

Called after skip message

If the message is in the `Model.Dramatiq.Message` then the status will be change to **skip**

Before the end, the session is expired to release the Session pool thread

Parameters

- **broker** – the broker used
- **message** – the message send in the broker

after_worker_shutdown (**args, **kwargs*)

Called before worker shutdown

Close the AnyBlok registry

before_consumer_thread_shutdown (**args, **kwargs*)

Called before consumer thread shutdown

remove the session instance to clean the Session pool

before_enqueue (*broker, message, delay*)

Called when a message is delayed or enqueued

If the message is in the `Model.Dramatiq.Message` then the status will be change to **delayed** or **enqueued**

Parameters

- **broker** – the broker used
- **message** – the message send in the broker
- **delay** – delay in milliseconds

before_process_message (*broker, message*)

Called before process message

Invalid the cache, this is mean that if a cache have to be invalidated then it will be invalidated else nothing is done

If the message is in the `Model.Dramatiq.Message` then the status will be change to **running**

Parameters

- **broker** – the broker used
- **message** – the message send in the broker

before_worker_thread_shutdown (**args, **kwargs*)

Called before worker thread shutdown

remove the session instance to clean the Session pool

3.4 Scripts

`anyblok_dramatiq.scripts.worker_process` (*worker_id, logging_fd*)

consume worker to process messages and execute the actor

`anyblok_dramatiq.scripts.dramatiq` (*application, configuration_groups, **kwargs*)

Run dramatiq workers process to consume en execute actors

Parameters

- **application** – name of the application
- **configuration_groups** – list configuration groupe to load
- ****kwargs** – ArgumentParser named arguments

Contents

- *Bloks*
 - *Blok dramatiq*
 - * *Memento*
 - *actor*
 - *actor_send*
 - * *API doc*
 - *Message*
 - *Blok dramatiq task*
 - * *Memento*

```
· Model.Dramatiq.Task  
· Model.Dramatiq.Job  
* API doc  
· Task  
· Job
```


4.1 Blok dramatiq

class anyblok_dramatiq.bloks.dramatiq.DramatiqBlok(*registry*)

Bases: anyblok.blok.Blok

Dramatiq's Blok class definition

author = 'jssuzanne'

conditional_by = []

conflicting_by = []

classmethod declare_actors(*registry*)

Actor declaration

```
from anyblok_dramatiq import (
    declare_actor_for,
    declare_actor_send_for,
)
declare_actor_for(Model.methode_name)
# or
declare_actor_send_for(Model.methode_name)
```

classmethod import_declaration_module()

Python module to import in the given order at start-up

load()

Load all the actor defined in all the installed bloks

name = 'dramatiq'

optional_by = []

classmethod reload_declaration_module(*reload*)

Python module to import while reloading server (ie when adding Blok at runtime)

```
required = ['anyblok-core']
required_by = ['dramatiq-task']
version = '1.0.1'
```

4.1.1 Memento

An **actor** method is a classmethod who are executed by the dramatiq worker. AnyBlok define two different actor decorator:

- `actor`: Works exactly as the `dramatiq.actor` decorator
- `actor_send`: This actor call the `send` broker method by default

The actor decorator from anyblok must decorate only an AnyBlok Model, Mixin or Core

`actor`

The more basic actor:

```
from anyblok_dramatiq import actor

@register(Model)
class MyModel:

    ...

    @actor()
    def actor_method(cls, *args, **kwargs)
        # do something
        ...
```

This use case is simple, you may:

- Call directly the `actor_method` and execute it:

```
registry.MyModel.actor_method(, *a, **kw)
```

- Use the dramatiq functionality without `Model.Dramatiq.Message`:

```
message = registry.MyModel.actor_method.send(*a, **kw)
registry.Dramatiq.send2broker(message)
```

- Use the dramatiq functionality with `Model.Dramatiq.Message` to get status and history:

```
registry.Dramatiq.create_message(registry.MyModel.actor_method, *a, **kw)
```

Note: In this case the message will be send to dramatiq worker by the `postcommit_hook` of AnyBlok

`actor_send`

The more basic actor:

```

from anyblok_dramatiq import actor_send

@register(Model)
class MyModel:

    ...

    @actor_send()
    def actor_method(cls, *args, **kwargs)
        # do something
        ...

```

By default this decorator allow one case, use the dramatiq fonctionnality with `Model.Dramatiq.Message`:

```
registry.MyModel.actor_method(*a, **kw)
```

The inheritance of AnyBlok allow to overwrite all classmethod to transform them by an actor easily.

In the case where you want execute directly the actor you have to use the context manager `call_directly_the_actor_send`:

```

from anyblok_dramatiq import call_directly_the_actor_send

with call_directly_the_actor_send():
    registry.MyModel.actor_method(*a, **kw)

```

4.1.2 API doc

Message

class anyblok_dramatiq.bloks.dramatiq.message.Dramatiq
Bases: `object`

No SQL Model, use to get tools for dramatiq messaging

Declaration type Model

Tablename dramatiq

Registry name Model.Dramatiq

Inherit model or mixin

classmethod `create_message` (*actor*, **args*, ***kwargs*)

Prepare a message and add an entry in the Message Model :param actor: an Actor instance :param delay: use for postcommit hook send2broker :param **args*: args of the actor :param ***kwargs*: kwargs of the actor :rtype: dramatiq message instance

classmethod `send2broker` (**messages*, *delay=None*, *run_at=None*)

Send all the messages with the delay

Parameters

- ****messages*** – message instance list
- ***delay*** – delay before send
- ***run_at*** – datetime when the process must be executed

```
class anyblok_dramatiq.bloks.dramatiq.message.Message
```

```
    Bases: anyblok.mixin.DramatiqMessageStatus
```

Message model for dramatiq

Declaration type Model

Tablename dramatiq_message

Registry name Model.Dramatiq.Message

Inherit model or mixin

- <class 'anyblok.mixin.DramatiqMessageStatus'>

field name	Description
updated_at	<ul style="list-style-type: none">• Label - None• Field type - <class 'anyblok.column.DateTime'>• is auto updated - False• Context:
id	<ul style="list-style-type: none">• Label - None• Field type - <class 'anyblok.column.UUID'>• DB column name - None• default - <class 'anyblok.column.NoDefaultValue'>• nullable - False• primary_key - True• foreign_key - None• is crypted - False• Context:
message	<ul style="list-style-type: none">• Label - None• Field type - <class 'anyblok.column.Json'>• DB column name - None• default - <class 'anyblok.column.NoDefaultValue'>• nullable - False• foreign_key - None• is crypted - False• Context:

```
classmethod get_instance_of (message)
```

Called by the middleware to get the model instance of the message

```
classmethod insert (*args, **kwargs)
```

Over write the insert to add the first history line

```
update_status (status, error=None)
```

Called by the middleware to change the status and history

4.2 Blok dramatiq task

```
class anyblok_dramatiq.bloks.task.DramatiqTaskBlok(registry)
    Bases: anyblok.blok.Blok

    Dramatiq's task definition

    author = 'jssuzanne'

    conditional_by = []

    conflicting_by = []

    classmethod import_declaration_module()
        Python module to import in the given order at start-up

    name = 'dramatiq-task'

    optional_by = []

    classmethod reload_declaration_module(reload)
        Python module to import while reloading server (ie when adding Blok at runtime)

    required = ['anyblok-core', 'dramatiq']

    required_by = []

    version = '1.0.1'
```

4.2.1 Memento

The tasks is based on dramatiq, The instance of the model:

- Task: define what the task have to do
- Job: historize the execution of an instance of Task with specific data

Model.Dramatiq.Task

This model is not directly useable, you have to use polymosphic model:

- Model.Dramatiq.Task.CallMethod: call a classmethod on a model, defined by the task
- Model.Dramatiq.Task.StepByStep: call each sub task one by one on function of the order
- Model.Dramatiq.Task.Parallel: call all sub tasks on one shot

Model.Dramatiq.Job

The job is the execution of the task with dramatiq, The job historize also action done and action to do. To create a job, you must get a task create the job with the method `do_the_job`:

```
task = registry.Dramatiq.Task.query().first()
task.do_the_job(with_args=tuple(), with_kwargs=dict(), run_at=a_datetime)
# this job will not be traited now and by the process but by another process
```

Note: In the case where the task will be an `StepByStep` or `Parallel` task, then the task create one or more job, one for the job and one for sub jobs

4.2.2 API doc

Task

class anyblok_dramatiq.bloks.task.task.**Task**

Bases: `object`

Main Task, define the main table

Declaration type Model

Tablename dramatiq_task

Registry name Model.Dramatiq.Task

Inherit model or mixin

field name	Description
task_type	<ul style="list-style-type: none"> • Label - None • Field type - <class 'any-blok.column.Selection'> • DB column name - None • default - <class 'any-blok.column.NoDefaultValue'> • nullable - False • size - 64 • foreign_key - None • is crypted - False • Context: • selections - get_task_type
create_at	<ul style="list-style-type: none"> • Label - None • Field type - <class 'any-blok.column.DateTime'> • is auto updated - False • Context: • nullable - False
id	<ul style="list-style-type: none"> • Label - None • Field type - <class 'any-blok.column.Integer'> • DB column name - None • is crypted - False • default - <class 'any-blok.column.NoDefaultValue'> • primary_key - True • foreign_key - None • autoincrement - True • Context:
order	<ul style="list-style-type: none"> • Label - None • Field type - <class 'any-blok.column.Integer'> • DB column name - None • default - 100 • nullable - False • foreign_key - None • is crypted - False • Context:
main_task	<ul style="list-style-type: none"> • Label - None • Field type - <class 'any-blok.relationship.Many2One'> • model - Model.Dramatiq.Task • backref - sub_tasks • _remote_columns - None • Context:
4.2. Blok dramatiq task	<ul style="list-style-type: none"> • unique - False • _column_names - None • info: • remote_name - sub_tasks

classmethod `define_mapper_args()`

Polymorphism configuration

do_the_job (*main_job=None, run_at=None, with_args=None, with_kwargs=None*)

Create a job for this tash and add send it to dramatiq

Parameters

- **main_job** – parent job if exist
- **run_at** – datetime to execute the job
- **with_args** – tuple of the argument to pass at the job
- **with_kwargs** – dict of the argument to pass at the job

classmethod `get_task_type()`

List the task type possible

run (*job*)

Execute the task for one job

Parameters *job* – job executed

run_next (*job*)

next action to execute when a sub job finish this task for one job

Parameters *job* – job executed

Job

class `anyblok_dramatiq.bloks.task.job.Job`

Bases: `object`

The job is an execution of an instance of task

Declaration type `Model`

Tablename `dramatiq_job`

Registry name `Model.Dramatiq.Job`

Inherit model or mixin

field name	Description
status	<ul style="list-style-type: none"> • Label - None • Field type - <code><class 'any-blok.column.Selection'></code> • DB column name - None • default - new • nullable - False • size - 64 • foreign_key - None • is crypted - False • Context: • selections: • ('new', 'New') • ('waiting', 'Waiting') • ('running', 'Running') • ('failed', 'Failed') • ('done', 'Done')
create_at	<ul style="list-style-type: none"> • Label - None • Field type - <code><class 'any-blok.column.DateTime'></code> • is auto updated - False • Context: • nullable - False
error	<ul style="list-style-type: none"> • Label - None • Field type - <code><class 'any-blok.column.Text'></code> • DB column name - None • default - <code><class 'any-blok.column.NoDefaultValue'></code> • foreign_key - None • is crypted - False • Context:
run_at	<ul style="list-style-type: none"> • Label - None • Field type - <code><class 'any-blok.column.DateTime'></code> • is auto updated - False • Context:
main_job	<ul style="list-style-type: none"> • Label - None • Field type - <code><class 'any-blok.relationship.Many2One'></code> • model - <code>Model.Dramatiq.Job</code> • backref - sub_jobs • _remote_columns - None • Context: • unique - False • _column_names - None • info: • remote_name - sub_jobs • remote_model - <code>Model.Dramatiq.Job</code>
4.2. Blok dramatiq task	21

call_main_job()

Call the main job if exist to do the next action of the main job

lock()

lock the job to be sure that only one thread execute the run_next

classmethod run (*job_uuid=None*)

dramatiq actor to execute a specific task

actor_send event call with positionnal argument { 'queue_name': 'default', 'priority': 0 }

Contents

- *CHANGELOG*
 - *1.0.1 (2018-01-10)*
 - *1.0.0 (2017-12-23)*

5.1 1.0.1 (2018-01-10)

- [FIX] put the configuration `dramatiq-broker` on the default application

5.2 1.0.0 (2017-12-23)

- [IMP] `dramatiq` console script to execute workers process
- [IMP] `actor` and `actor_send` decorator to define `dramatiq` actor
- [IMP] `dramatiq` middleware to modify `Model.Dramatiq.Message` status
- [IMP] `dramatiq` blok to historize the message and status
- [IMP] `dramatiq-task` to add a back task with `dramatiq`

Contents

- *Mozilla Public License Version 2.0*
 - *1. Definitions*
 - * *1.1. “Contributor”*
 - * *1.2. “Contributor Version”*
 - * *1.3. “Contribution”*
 - * *1.4. “Covered Software”*
 - * *1.5. “Incompatible With Secondary Licenses”*
 - * *1.6. “Executable Form”*

- * 1.7. *“Larger Work”*
 - * 1.8. *“License”*
 - * 1.9. *“Licensable”*
 - * 1.10. *“Modifications”*
 - * 1.11. *“Patent Claims” of a Contributor*
 - * 1.12. *“Secondary License”*
 - * 1.13. *“Source Code Form”*
 - * 1.14. *“You” (or “Your”)*
- 2. *License Grants and Conditions*
 - * 2.1. *Grants*
 - * 2.2. *Effective Date*
 - * 2.3. *Limitations on Grant Scope*
 - * 2.4. *Subsequent Licenses*
 - * 2.5. *Representation*
 - * 2.6. *Fair Use*
 - * 2.7. *Conditions*
- 3. *Responsibilities*
 - * 3.1. *Distribution of Source Form*
 - * 3.2. *Distribution of Executable Form*
 - * 3.3. *Distribution of a Larger Work*
 - * 3.4. *Notices*
 - * 3.5. *Application of Additional Terms*
- 4. *Inability to Comply Due to Statute or Regulation*
- 5. *Termination*
 - * 5.1.
 - * 5.2.
 - * 5.3.
- 6. *Disclaimer of Warranty*
- 7. *Limitation of Liability*
- 8. *Litigation*
- 9. *Miscellaneous*
- 10. *Versions of the License*
 - * 10.1. *New Versions*
 - * 10.2. *Effect of New Versions*
 - * 10.3. *Modified Versions*

** 10.4. Distributing Source Code Form that is Incompatible With Secondary Licenses*

- Exhibit A - Source Code Form License Notice*
- Exhibit B - “Incompatible With Secondary Licenses” Notice*

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CHAPTER 7

Indices and tables

- `genindex`
- `modindex`
- `search`

a

- `anyblok_dramatiq.actor`, [7](#)
- `anyblok_dramatiq.bloks.dramatiq`, [13](#)
- `anyblok_dramatiq.bloks.dramatiq.message`,
[15](#)
- `anyblok_dramatiq.bloks.task`, [17](#)
- `anyblok_dramatiq.bloks.task.job`, [20](#)
- `anyblok_dramatiq.bloks.task.task`, [18](#)
- `anyblok_dramatiq.broker`, [10](#)
- `anyblok_dramatiq.middleware`, [10](#)
- `anyblok_dramatiq.scripts`, [11](#)

A

`anyblok_dramatiq.actor` (module), [7](#)
`anyblok_dramatiq.bloks.dramatiq` (module), [13](#)
`anyblok_dramatiq.bloks.dramatiq.message` (module), [15](#)
`anyblok_dramatiq.bloks.task` (module), [17](#)
`anyblok_dramatiq.bloks.task.job` (module), [20](#)
`anyblok_dramatiq.bloks.task.task` (module), [18](#)
`anyblok_dramatiq.broker` (module), [10](#)
`anyblok_dramatiq.middleware` (module), [10](#)
`anyblok_dramatiq.scripts` (module), [11](#)