

---

**arend**

**Jose-Maria Vazquez-Jimenez**

**Oct 02, 2022**



**CONTENTS:**

<b>1</b>	<b>Installation</b>	<b>3</b>
<b>2</b>	<b>Basic usage</b>	<b>5</b>
<b>3</b>	<b>Backends</b>	<b>7</b>
<b>4</b>	<b>Setting your backend with environment variables</b>	<b>9</b>
4.1	Installation . . . . .	9
4.2	Arend . . . . .	10
4.3	Settings . . . . .	11
4.4	Mongo Backend . . . . .	12
4.5	Redis Backend . . . . .	13
4.6	License . . . . .	15
4.7	Any help . . . . .	15
<b>5</b>	<b>Indices and tables</b>	<b>17</b>
	<b>Python Module Index</b>	<b>19</b>
	<b>Index</b>	<b>21</b>



A simple producer-consumer library for the Beanstalkd queue!



## INSTALLATION

Install it using *pip*:

```
pip install arend
```





## BASIC USAGE

Make sure you have the *arend* installed:

```
from arend import arend_task
from arend.backends.mongo import MongoSettings
from arend.brokers import BeanstalkdSettings
from arend.settings import ArendSettings
from arend.worker import consumer

settings = ArendSettings(
    beanstalkd=BeanstalkdSettings(host="beanstalkd", port=11300),
    backend=MongoSettings(
        mongo_connection="mongodb://user:pass@mongo:27017",
        mongo_db="db",
        mongo_collection="Tasks"
    ),
)

@arend_task(queue="my_queue", settings=settings)
def double(num: int):
    return 2 * num

double(2) # returns 4
task = double.apply_async(args=(4,)) # It is sent to the queue

consumer(queue="my_queue", settings=settings) # consume tasks from the queue

Task = settings.get_backend() # you can check your backend for the result
task = Task.get(uuid=task.uuid)
assert task.result == 4
```



## BACKENDS

The available backends to store logs are **Mongo** and **Redis**.



## SETTING YOUR BACKEND WITH ENVIRONMENT VARIABLES

You can set your backend by defining env vars. The *AREND\_\_* prefix indicates that it belongs to the Arend:

```
# Redis
AREND__REDIS_HOST='redis'
AREND__REDIS_DB='1'
AREND__REDIS_PASSWORD='pass'
...

# Mongo
AREND__MONGO_CONNECTION='mongodb://user:pass@mongo:27017'
AREND__MONGO_DB='db'
AREND__MONGO_COLLECTION='logs'
...
```

Now in your code:

```
from arend import arend_task
from arend.worker import consumer

@arend_task(queue="my_queue")
def double(num: int):
    return 2 * num

double.apply_async(args=(4,)) # It is sent to the queue

consumer(queue="my_queue")
```

### 4.1 Installation

Install arend:

```
pip install arend
```

### 4.1.1 Advanced: local setup for development (Ubuntu)

These instructions assume that `git`, `docker`, and `docker-compose` are installed on your host machine.

First, clone this repo and make some required directories.:

```
git clone https://github.com/pyprogrammerblog/arend.git
cd arend
```

Then build the docker image:

```
docker-compose run --rm app poetry install
```

Then install dependencies:

```
docker-compose run --rm app poetry install
```

Run the tests:

```
docker-compose run app poetry run pytest
```

Then run the app and access inside the docker with the env activated:

```
docker-compose run --rm app poetry shell
```

Finally you can down the services:

```
docker-compose down
```

### 4.1.2 Advanced: Jupyter Notebook

Hit the command:

```
docker-compose run --rm -p 8888:8888 app poetry shell
```

Then inside the docker:

```
jupyter notebook --ip 0.0.0.0 --no-browser --allow-root
```

## 4.2 Arend

`arend.arend_task(queue: Optional[str] = None, priority: int = 1, delay: Union[timedelta, int] = 0, max_retries: int = 3, retry_backoff_factor: int = 1, settings: Optional[ArendSettings] = None)`

Register functions as arend task

Usage:

```
>>> from arend import arend_task
>>> from arend.backends.mongo import MongoSettings
>>> from arend.brokers import BeanstalkdSettings
>>> from arend.settings import ArendSettings
>>> from arend.worker import consumer
```

(continues on next page)

(continued from previous page)

```

>>>
>>> settings = ArendSettings(
>>>     beanstalkd=BeanstalkdSettings(host="beanstalkd", port=11300),
>>>     backend=MongoSettings(
>>>         mongo_connection="mongodb://user:pass@mongo:27017",
>>>         mongo_db="db",
>>>         mongo_collection="Tasks"
>>>     ),
>>> )
>>>
>>> @arend_task(queue="my_queue", settings=settings)
>>> def double(num: int):
>>>     return 2 * num
>>>
>>> double(2) # returns 4
>>> task = double.apply_async(args=(4,)) # It is sent to the queue
>>>
>>> consumer(queue="my_queue", settings=settings) # consume tasks
>>>
>>> Task = settings.get_backend() # you can check your result backend
>>> task = Task.get(uuid=task.uuid)
>>> assert task.result == 4

```

By defining the backend in the environment variables:

```

>>> from arend import arend_task
>>> from arend.worker import consumer
>>>
>>>
>>> @arend_task(queue="my_queue")
>>> def double(num: int):
>>>     return 2 * num
>>>
>>> double.apply_async(args=(4,)) # It is sent to the queue
>>>
>>> consumer(queue="my_queue") # consume tasks from the queue

```

## 4.3 Settings

**class** arend.settings.ArendSettings(\*, beanstalkd: BeanstalkdSettings, backend: Union[MongoSettings, RedisSettings], task\_max\_retries: int = 3, task\_retry\_backoff\_factor: int = 1, task\_priority: int = 1, task\_delay: int = 0)

Defines settings for the Arend

Usage:

```

>>> from arend import arend_task
>>> from arend.backends.mongo import MongoSettings
>>> from arend.brokers import BeanstalkdSettings
>>> from arend.settings import ArendSettings

```

(continues on next page)

(continued from previous page)

```

>>> from arend.worker import consumer
>>>
>>> settings = ArendSettings(
>>>     beanstalkd=BeanstalkdSettings(host="beanstalkd", port=11300),
>>>     backend=MongoSettings(
>>>         mongo_connection="mongodb://user:pass@mongo:27017",
>>>         mongo_db="db",
>>>         mongo_collection="Tasks"
>>>     ),
>>>     task_max_retries = 3
>>>     task_retry_backoff_factor = 1
>>>     task_priority = 0
>>>     task_delay = 1
>>> )

```

**get\_backend()** → Type[Union[*MongoTask*, *RedisTask*]]

Return a Task Backend with configuration already set

**class** arend.settings.**BeanstalkdSettings**(\**host: str, port: int*)

Defines settings for the Beanstalkd Queue

## 4.4 Mongo Backend

**class** arend.backends.mongo.**MongoSettings**(\**mongo\_connection: str, mongo\_db: str, mongo\_collection: str*)

Mongo Settings. Defines settings for Mongo Backend

**get\_backend()** → Type[*MongoTask*]

Returns a *MongoTask* class with settings already set

**class** arend.backends.mongo.**MongoTask**(\**uuid: UUID = None, name: str, description: str = None, location: str = 'tasks', status: str = 'SCHEDULED', result: str = None, detail: Optional[str] = None, start\_time: Optional[datetime] = None, end\_time: Optional[datetime] = None, args: tuple = None, kwargs: dict = None, queue: str, delay: int = 0, priority: int = 1, count\_retries: int = 0, max\_retries: int = 3, retry\_backoff\_factor: int = 1, created: datetime = None, updated: datetime = None*)

*MongoTask* class. Defines the Task Model for Mongo Backend

Usage:

```

>>> from arend.backends.mongo import MongoSettings
>>>
>>> settings = MongoSettings(
>>>     mongo_connection="mongodb://user:pass@mongo:27017",
>>>     mongo_db="db",
>>>     mongo_collection="Tasks"
>>> )
>>> MongoTask = MongoSettings.get_backend() # type: Type[MongoTask]
>>> task = MongoTask(name="My task", ...)
>>> task.save()

```

(continues on next page)



(continued from previous page)

```

>>>
>>> assert task.dict() == {"name": "My task", ...}
>>> assert task.json() == '{"name": "My task", ...}'
>>>
>>> task = MongoTask.get(uuid=UUID("<your-uuid>"))
>>> assert task.description == "A cool task"
>>>
>>> assert task.delete() == 1
>>> assert task.delete() == 0

```

**delete()** → int

Deletes object in DataBase

Usage:

```

>>> assert task.delete() == 1 # count deleted 1
>>> assert task.delete() == 0 # count deleted 0

```

**classmethod get**(*uuid: UUID*) → Optional[*MongoTask*]

Get object from DataBase

Usage:

```

>>> task = MongoTask.get(uuid=UUID("<your-uuid>"))
>>> assert task.uuid == UUID("<your-uuid>")

```

**save()** → *MongoTask*

Updates/Creates object in DataBase

Usage:

```

>>> task = MongoTask(name="My Task")
>>> task.save()
>>> task.description = "A new description"
>>> task.save()

```

**class** arend.backends.mongo.**MongoTasks**(\**, tasks: List[MongoTask] = None, count: int = 0*)

Defines the MongoTasks collection

## 4.5 Redis Backend

**class** arend.backends.redis.**RedisSettings**(\**, redis\_host: str, redis\_port: int = 6379, redis\_db: int = 1, redis\_password: str, redis\_extras: Dict = None*)

Defines settings for Redis Backend

**get\_backend()** → Type[*RedisTask*]

Returns a RedisTask class with settings already set

```
class arend.backends.redis.RedisTask(*, uuid: UUID = None, name: str, description: str = None, location:
    str = 'tasks', status: str = 'SCHEDULED', result: str = None, detail:
    Optional[str] = None, start_time: Optional[datetime] = None,
    end_time: Optional[datetime] = None, args: tuple = None, kwargs:
    dict = None, queue: str, delay: int = 0, priority: int = 1,
    count_retries: int = 0, max_retries: int = 3, retry_backoff_factor:
    int = 1, created: datetime = None, updated: datetime = None)
```

RedisLog class. Defines the Log for Redis Backend

Usage:

```
>>> from arend.backends.redis import RedisSettings
>>>
>>> settings = RedisSettings(
>>>     redis_host="redis",
>>>     redis_port=6379,
>>>     redis_db="logs",
>>>     redis_password="pass"
>>> )
>>> RedisTask = RedisSettings.get_backend() # type: Type[RedisLog]
>>> task = RedisTask(name="My task", description="A cool task")
>>> task.save()
>>>
>>> assert task.dict() == {"name": "My task", ...}
>>> assert task.json() == '{"name": "My task", ...}'
>>>
>>> task = RedisTask.get(uuid=UUID("<your-uuid>"))
>>> assert task.description == "A cool task"
>>>
>>> assert task.delete() == 1
```

**delete()** → int

Deletes object in DataBase

Usage:

```
>>> assert task.delete() == 1 # count deleted 1
>>> assert task.delete() == 0 # count deleted 0
```

**classmethod get(uuid: UUID)** → Optional[RedisTask]

Get object from DataBase

Usage:

```
>>> log = RedisTask.get(uuid=UUID("<your-uuid>"))
>>> assert log.uuid == UUID("<your-uuid>")
```

**save()** → RedisTask

Updates/Creates object in DataBase

Usage:

```
>>> task = RedisTask(name="My Task")
>>> task.save()
>>> task.description = "A new description"
>>> task.save()
```

```
class arend.backends.redis.RedisTasks(*, tasks: List[RedisTask] = None, count: int = 0)
```

Defines the RedisTasks collection

## 4.6 License

The MIT License (MIT)

Copyright (c) 2022, JM Vazquez-Jimenez

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON INFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES, OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

## 4.7 Any help

Everyone is encouraged to file bug reports, feature requests, and pull requests through [GitHub](#).



## INDICES AND TABLES

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



## PYTHON MODULE INDEX

### a

`arend`, [10](#)

`arend.backends.mongo`, [12](#)

`arend.backends.redis`, [13](#)

`arend.settings`, [11](#)





## INDEX

### A

`arend`  
    module, 10  
`arend.backends.mongo`  
    module, 12  
`arend.backends.redis`  
    module, 13  
`arend.settings`  
    module, 11  
`arend_task()` (in module `arend`), 10  
`ArendSettings` (class in `arend.settings`), 11

### B

`BeanstalkdSettings` (class in `arend.settings`), 12

### D

`delete()` (`arend.backends.mongo.MongoTask` method), 13  
`delete()` (`arend.backends.redis.RedisTask` method), 14

### G

`get()` (`arend.backends.mongo.MongoTask` class method), 13  
`get()` (`arend.backends.redis.RedisTask` class method), 14  
`get_backend()` (`arend.backends.mongo.MongoSettings` method), 12  
`get_backend()` (`arend.backends.redis.RedisSettings` method), 13  
`get_backend()` (`arend.settings.ArendSettings` method), 12

### M

`module`  
    `arend`, 10  
    `arend.backends.mongo`, 12  
    `arend.backends.redis`, 13  
    `arend.settings`, 11  
`MongoSettings` (class in `arend.backends.mongo`), 12  
`MongoTask` (class in `arend.backends.mongo`), 12  
`MongoTasks` (class in `arend.backends.mongo`), 13

### R

`RedisSettings` (class in `arend.backends.redis`), 13  
`RedisTask` (class in `arend.backends.redis`), 13  
`RedisTasks` (class in `arend.backends.redis`), 14

### S

`save()` (`arend.backends.mongo.MongoTask` method), 13  
`save()` (`arend.backends.redis.RedisTask` method), 14