

# Scalaris Python API

## API Documentation

March 2, 2016

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# 1 Module *scalaris*

## 1.1 Functions

**str\_to\_list**(*value*)

Converts a string to a list of integers. If the expected value of a read operation is a list, the returned value could be (mistakenly) a string if it is a list of integers.

## 1.2 Variables

Name	Description
DEFAULT_URL	default URL and port to a scalaris node <b>Value:</b> 'http://localhost:8000'
DEFAULT_PATH	path to the json rpc page <b>Value:</b> '/jsonrpc.yaws'
--package--	<b>Value:</b> None

## 1.3 Class *JSONConnection*

object └─ **scalaris.JSONConnection**

Abstracts connections to scalaris using JSON

### 1.3.1 Methods

**\_\_init\_\_**(*self*, *url*='http://localhost:8000', *timeout*=None)

Creates a JSON connection to the given URL using the given TCP timeout

Overrides: object.\_\_init\_\_

**callp**(*self*, *path*, *function*, *params*, *retry\_if\_bad\_status*=True)

**call**(*self*, *function*, *params*, *path*='/jsonrpc.yaws', *retry\_if\_bad\_status*=True)

Calls the given function with the given parameters via the JSON interface of scalaris.

**encode\_value**(*value*)

Encodes the value to the form required by the scalaris JSON API

**decode\_value**(*value*)

Decodes the value from the scalaris JSON API form to a native type

**check\_fail\_abort**(*result*)

Processes the result of some Scalaris operation and raises a TimeoutError if found.

**process\_result\_read**(*result*)

Processes the result of a read operation. Returns the read value on success. Raises the appropriate exception if the operation failed.

**process\_result\_write**(*result*)

Processes the result of a write operation. Raises the appropriate exception if the operation failed.

**process\_result\_commit**(*result*)

Processes the result of a commit operation. Raises the appropriate exception if the operation failed.

**process\_result\_add\_del\_on\_list**(*result*)

Processes the result of a add\_del\_on\_list operation. Raises the appropriate exception if the operation failed.

**process\_result\_add\_on\_nr**(*result*)

Processes the result of a add\_on\_nr operation. Raises the appropriate exception if the operation failed.

**process\_result\_test\_and\_set**(*result*)

Processes the result of a test\_and\_set operation. Raises the appropriate exception if the operation failed.

**process\_result\_delete**(*result*)

Processes the result of a delete operation. Returns the tuple (<success ('True' | 'timeout')>, <number of deleted items>, <detailed results>) on success. Raises the appropriate exception if the operation failed.

**create\_delete\_result**(*result*)

Creates a new DeleteResult from the given result list.

**process\_result\_req\_list\_t**(*result*)

Processes the result of a req\_list operation of the Transaction class. Returns the tuple (<tlog>, <result>) on success. Raises the appropriate exception if the operation failed.

**process\_result\_req\_list\_tso**(*result*)

Processes the result of a req\_list operation of the TransactionSingleOp class. Returns <result> on success. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_get\_version(*result*)**

Processes the result of a `api.vm/get.version` operation. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_get\_info(*result*)**

Processes the result of a `api.vm/get.info` operation. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_get\_number\_of\_nodes(*result*)**

Processes the result of a `api.vm/number_of_nodes` operation. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_get\_nodes(*result*)**

Processes the result of a `api.vm/get.nodes` operation. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_add\_nodes(*result*)**

Processes the result of a `api.vm/add.nodes` operation. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_delete\_node(*result*)**

Processes the result of a `api.vm/shutdown_node` and `api.vm/kill_node` operations. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_delete\_nodes(*result*)**

Processes the result of a `api.vm/shutdown_nodes` and `api.vm/kill_nodes` operations. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_delete\_nodes\_by\_name(*result*)**

Processes the result of a `api.vm/shutdown_nodes_by_name` and `api.vm/kill_nodes_by_name` operations. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_delete\_vm(*result*)**

Processes the result of a `api.vm/shutdown_vm` and `api.vm/kill_vm` operations. Raises the appropriate exception if the operation failed.

**process\_result\_vm\_get\_other\_vms(*result*)**

Processes the result of a `api.vm/get.other_vms` operation. Raises the appropriate exception if the operation failed.

**process\_result\_autoscale\_check\_config(*result*)**

<code>process_result_autoscale_pull_scale_req(result)</code>
--------------------------------------------------------------

<code>process_result_autoscale_lock_scale_req(result)</code>
--------------------------------------------------------------

<code>process_result_autoscale_unlock_scale_req(result)</code>
----------------------------------------------------------------

<code>process_result_nop(result)</code>
-----------------------------------------

Processes the result of a nop operation. Raises the appropriate exception if the operation failed.
----------------------------------------------------------------------------------------------------

<code>new_req_list_t(other=None)</code>
-----------------------------------------

Returns a new ReqList object allowing multiple parallel requests for the Transaction class.
---------------------------------------------------------------------------------------------

<code>new_req_list_tso(other=None)</code>
-------------------------------------------

Returns a new ReqList object allowing multiple parallel requests for the TransactionSingleOp class.
-----------------------------------------------------------------------------------------------------

<code>close(self)</code>
--------------------------

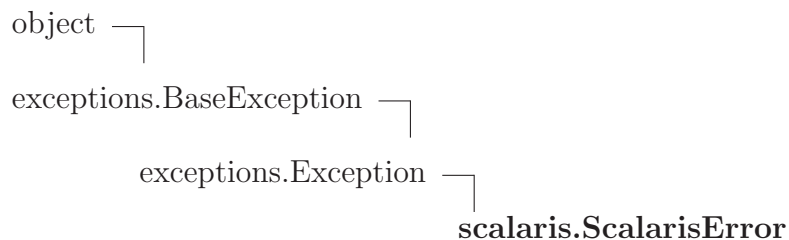
### *Inherited from object*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 1.3.2 Properties

Name	Description
<i>Inherited from object</i>	
<code>__class__</code>	

## 1.4 Class `ScalarisError`



**Known Subclasses:** `scalaris.AbortError`, `scalaris.ConfigError`, `scalaris.ConnectionError`, `scalaris.KeyChangedError`, `scalaris.LockError`, `scalaris.NodeNotFoundError`, `scalaris.NotAListError`,

`scalaris.NotANumberError`, `scalaris.NotFoundError`, `scalaris.TimeoutError`, `scalaris.UnknownError`  
 Base class for errors in the `scalaris` package.

#### 1.4.1 Methods

*Inherited from `exceptions.Exception`*

`__init__()`, `__new__()`

*Inherited from `exceptions.BaseException`*

`__delattr__()`, `__getattr__()`, `__getitem__()`, `__getslice__()`, `__reduce__()`, `__repr__()`,  
`__setattr__()`, `__setstate__()`, `__str__()`, `__unicode__()`

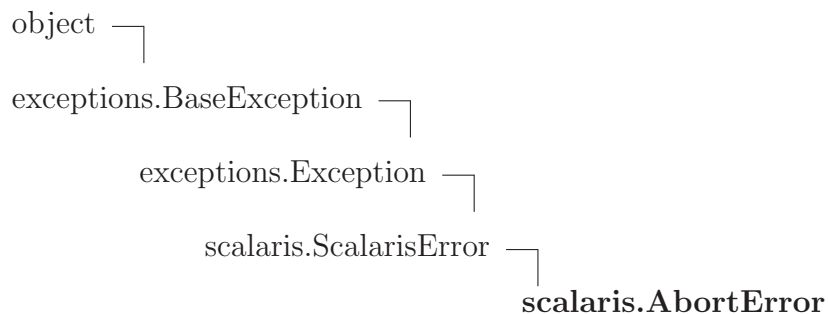
*Inherited from `object`*

`__format__()`, `__hash__()`, `__reduce_ex__()`, `__sizeof__()`, `__subclasshook__()`

#### 1.4.2 Properties

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
<code>args</code> , <code>message</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

### 1.5 Class `AbortError`



Exception that is thrown if a the commit of a write operation on a `scalaris` ring fails.

**1.5.1 Methods**

```
__init__(self, raw_result, failed_keys)
```

`x.__init__(...)` initializes `x`; see `x.__class__.__doc__` for signature

Overrides: `object.__init__` extit(inherited documentation)

```
__str__(self)
```

`str(x)`

Overrides: `object.__str__` extit(inherited documentation)

***Inherited from exceptions.Exception***

```
__new__()
```

***Inherited from exceptions.BaseException***

```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),  
__setattr__(), __setstate__(), __unicode__()
```

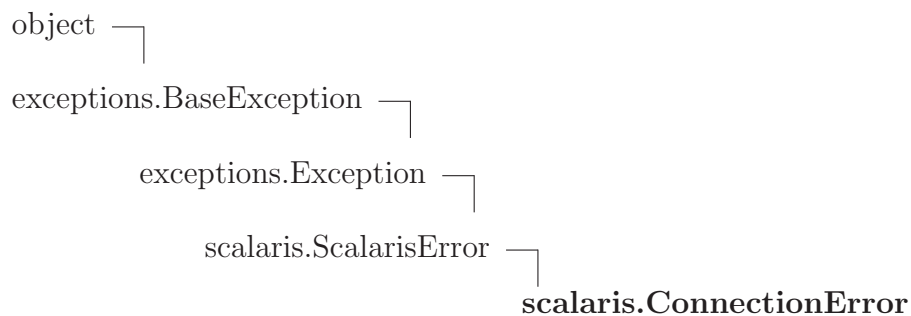
***Inherited from object***

```
__format__(), __hash__(), __reduce_ex__(), __sizeof__(), __subclasshook__()
```

**1.5.2 Properties**

Name	Description
<i>Inherited from exceptions.BaseException</i>	
<code>args</code> , <code>message</code>	
<i>Inherited from object</i>	
<code>__class__</code>	

## 1.6 Class `ConnectionError`



Exception that is thrown if an operation on a scalaris ring fails because a connection does not exist or has been disconnected.

### 1.6.1 Methods

```
__init__(self, raw_result, response=None, error=None)
```

`x.__init__(...)` initializes `x`; see `x.__class__.__doc__` for signature

Overrides: `object.__init__` extit(inherited documentation)

```
__str__(self)
```

`str(x)`

Overrides: `object.__str__` extit(inherited documentation)

*Inherited from `exceptions.Exception`*

```
__new__()
```

*Inherited from `exceptions.BaseException`*

```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),  
__setattr__(), __setstate__(), __unicode__()
```

*Inherited from `object`*

```
__format__(), __hash__(), __reduce_ex__(), __sizeof__(), __subclasshook__()
```

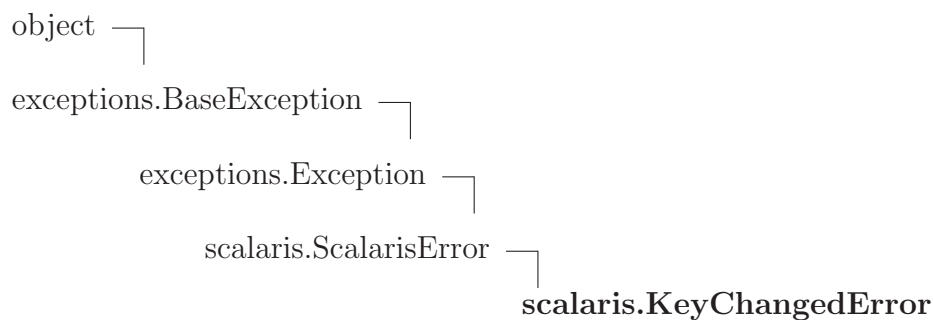
### 1.6.2 Properties

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	

*continued on next page*

Name	Description
args, message	
<i>Inherited from object</i>	
__class__	

## 1.7 Class `KeyChangedError`



Exception that is thrown if a `test_and_set` operation on a scalaris ring fails because the old value did not match the expected value.

### 1.7.1 Methods

```
__init__(self, raw_result, old_value)

x.__init__(...) initializes x; see x.__class__.__doc__ for signature
Overrides: object.__init__ extit(inherited documentation)
```

```
__str__(self)

str(x)
Overrides: object.__str__ extit(inherited documentation)
```

*Inherited from `exceptions.Exception`*

```
__new__()
```

*Inherited from `exceptions.BaseException`*

```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),
__setattr__(), __setstate__(), __unicode__()
```

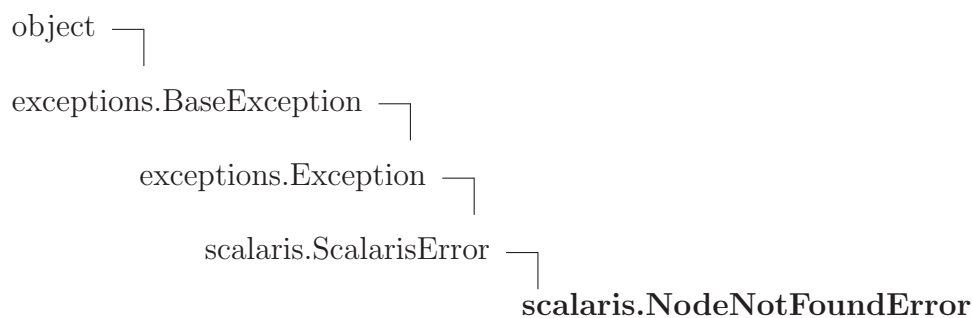
*Inherited from `object`*

```
__format__(), __hash__(), __reduce_ex__(), __sizeof__(), __subclasshook__()
```

### 1.7.2 Properties

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
<code>args</code> , <code>message</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

## 1.8 Class `NodeNotFoundError`



Exception that is thrown if a delete operation on a scalaris ring fails because no scalaris node was found.

### 1.8.1 Methods

```
__init__(self, raw_result)
```

`x.__init__(...)` initializes `x`; see `x.__class__.__doc__` for signature  
 Overrides: `object.__init__` `__init__`(inherited documentation)

```
__str__(self)
```

`str(x)`  
 Overrides: `object.__str__` `__str__`(inherited documentation)

*Inherited from `exceptions.Exception`*

```
__new__()
```

*Inherited from `exceptions.BaseException`*

```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),  

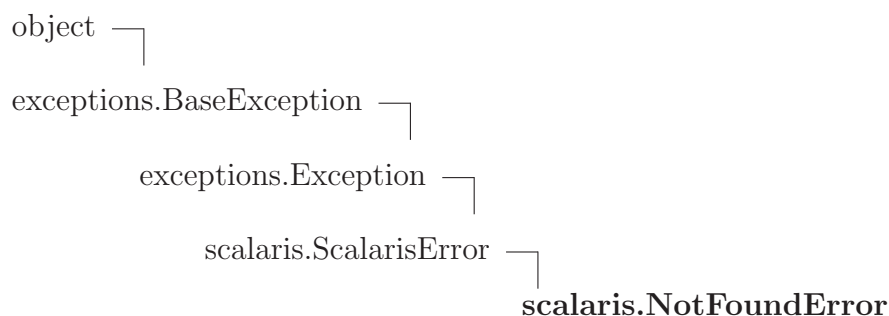
__setattr__(), __setstate__(), __unicode__()
```

***Inherited from object***

`__format__()`, `__hash__()`, `__reduce_ex__()`, `__sizeof__()`, `__subclasshook__()`

**1.8.2 Properties**

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
<code>args</code> , <code>message</code>	
<i>Inherited from object</i>	
<code>__class__</code>	

**1.9 Class `NotFoundError`**

Exception that is thrown if a read operation on a scalaris ring fails because the key did not exist before.

**1.9.1 Methods**

<b><code>__init__(self, raw_result)</code></b> <code>x.__init__(...)</code> initializes <code>x</code> ; see <code>x.__class__.__doc__</code> for signature Overrides: <code>object.__init__</code> <code>exitit</code> (inherited documentation)
<b><code>__str__(self)</code></b> <code>str(x)</code> Overrides: <code>object.__str__</code> <code>exitit</code> (inherited documentation)

***Inherited from `exceptions.Exception`***

`__new__()`

***Inherited from `exceptions.BaseException`***

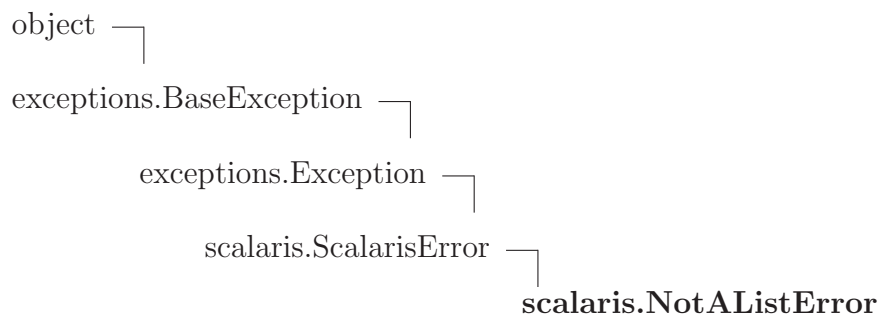
`__delattr__()`, `__getattr__()`, `__getitem__()`, `__getslice__()`, `__reduce__()`, `__repr__()`,  
`__setattr__()`, `__setstate__()`, `__unicode__()`

***Inherited from `object`***

`__format__()`, `__hash__()`, `__reduce_ex__()`, `__sizeof__()`, `__subclasshook__()`

**1.9.2 Properties**

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
<code>args</code> , <code>message</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

**1.10 Class `NotAListError`**

Exception that is thrown if a `add_del_on_list` operation on a `scalaris` ring fails because the participating values are not lists.

**1.10.1 Methods**

<b><code>__init__(self, raw_result)</code></b>
<code>x.__init__(...)</code> initializes <code>x</code> ; see <code>x.__class__.__doc__</code> for signature
Overrides: <code>object.__init__</code> <code>exitit</code> (inherited documentation)

```
__str__(self)

str(x)

Overrides: object.__str__ extit(inherited documentation)
```

***Inherited from `exceptions.Exception`***

```
__new__()
```

***Inherited from `exceptions.BaseException`***

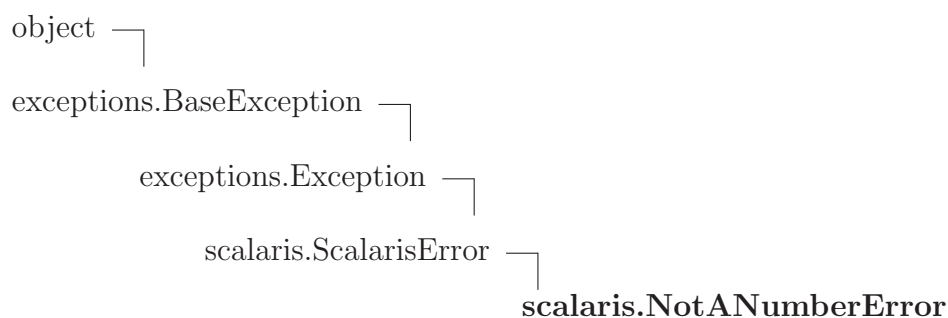
```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),
__setattr__(), __setstate__(), __unicode__()
```

***Inherited from `object`***

```
__format__(), __hash__(), __reduce_ex__(), __sizeof__(), __subclasshook__()
```

**1.10.2 Properties**

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
<code>args</code> , <code>message</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

**1.11 Class `NotANumberError`**

Exception that is thrown if a `add_del_on_list` operation on a `scalaris` ring fails because the participating values are not numbers.

**1.11.1 Methods**

```
__init__(self, raw_result)
```

*x.\_\_init\_\_*(...) initializes *x*; see *x.\_\_class\_\_.\_\_doc\_\_* for signature

Overrides: *object.\_\_init\_\_* extit(inherited documentation)

```
__str__(self)
```

*str*(*x*)

Overrides: *object.\_\_str\_\_* extit(inherited documentation)

***Inherited from exceptions.Exception***

```
__new__()
```

***Inherited from exceptions.BaseException***

```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),  
__setattr__(), __setstate__(), __unicode__()
```

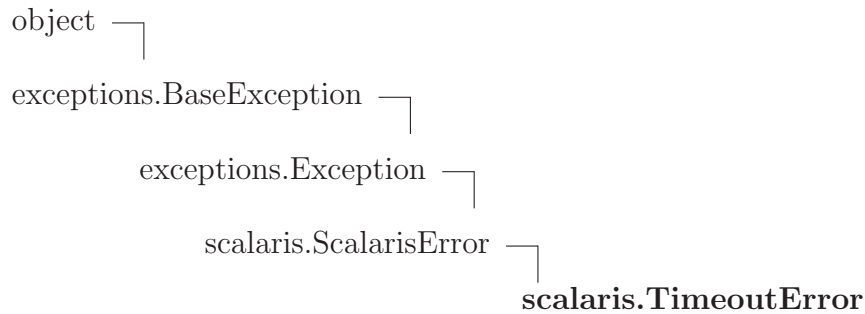
***Inherited from object***

```
__format__(), __hash__(), __reduce_ex__(), __sizeof__(), __subclasshook__()
```

**1.11.2 Properties**

Name	Description
<i>Inherited from exceptions.BaseException</i>	
<i>args</i> , <i>message</i>	
<i>Inherited from object</i>	
<i>__class__</i>	

## 1.12 Class `TimeoutError`



Exception that is thrown if a read or write operation on a scalaris ring fails due to a timeout.

### 1.12.1 Methods

```
__init__(self, raw_result)

x.__init__(...) initializes x; see x.__class__.__doc__ for signature
Overrides: object.__init__ extit(inherited documentation)
```

```
__str__(self)

str(x)
Overrides: object.__str__ extit(inherited documentation)
```

*Inherited from `exceptions.Exception`*

```
__new__()
```

*Inherited from `exceptions.BaseException`*

```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),
__setattr__(), __setstate__(), __unicode__()
```

*Inherited from `object`*

```
__format__(), __hash__(), __reduce_ex__(), __sizeof__(), __subclasshook__()
```

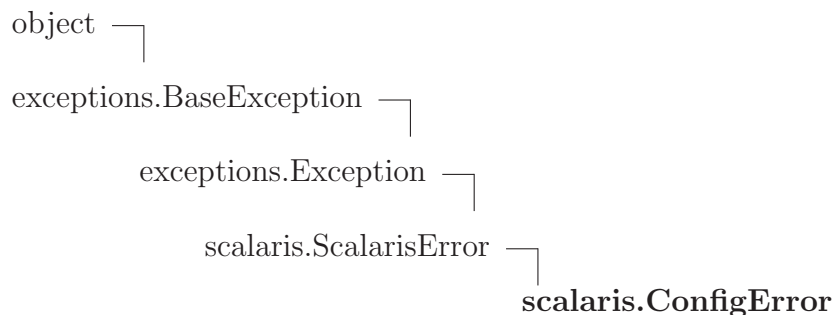
### 1.12.2 Properties

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
args, message	

*continued on next page*

Name	Description
<i>Inherited from object</i>	
__class__	

### 1.13 Class ConfigError



Exception that is thrown if a autoscale operation fails, because it was not configured correctly.

#### 1.13.1 Methods

```
__init__(self, raw_result)
x.__init__(...) initializes x; see x.__class__.__doc__ for signature
Overrides: object.__init__ extit(inherited documentation)
```

```
__str__(self)
str(x)
Overrides: object.__str__ extit(inherited documentation)
```

*Inherited from exceptions.Exception*

```
__new__()
```

*Inherited from exceptions.BaseException*

```
__delattr__(), __getattr__(), __getitem__(), __getslice__(), __reduce__(), __repr__(),
__setattr__(), __setstate__(), __unicode__()
```

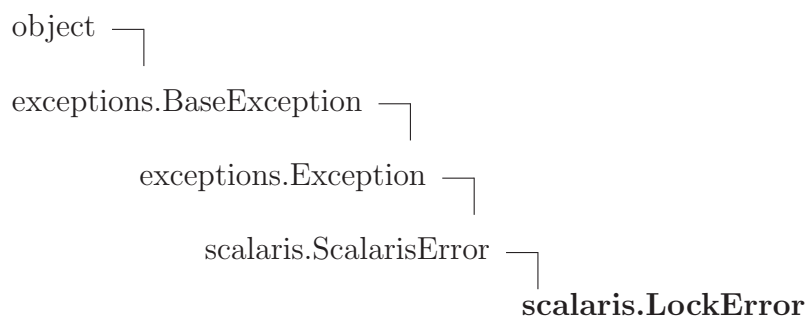
*Inherited from object*

```
__format__(), __hash__(), __reduce_ex__(), __sizeof__(), __subclasshook__()
```

### 1.13.2 Properties

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
<code>args</code> , <code>message</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

## 1.14 Class `LockError`



Exception that is thrown if a autoscale lock/unlock operation fails, because of a wrong lock state, i.e. lock when is already locked or unlock when not locked.

### 1.14.1 Methods

**`__init__(self, raw_result)`**  
`x.__init__(...)` initializes `x`; see `x.__class__.__doc__` for signature  
 Overrides: `object.__init__` `exitit`(inherited documentation)

**`__str__(self)`**  
`str(x)`  
 Overrides: `object.__str__` `exitit`(inherited documentation)

*Inherited from `exceptions.Exception`*

`__new__()`

*Inherited from `exceptions.BaseException`*

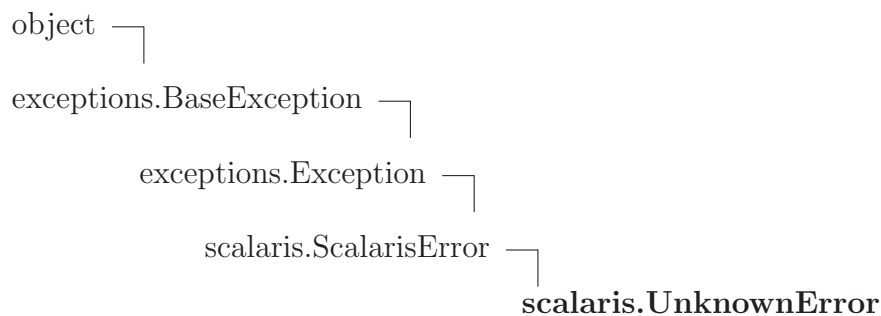
`__delattr__()`, `__getattr__()`, `__getitem__()`, `__getslice__()`, `__reduce__()`, `__repr__()`,  
`__setattr__()`, `__setstate__()`, `__unicode__()`

***Inherited from object***

`__format__()`, `__hash__()`, `__reduce_ex__()`, `__sizeof__()`, `__subclasshook__()`

**1.14.2 Properties**

Name	Description
<i>Inherited from <code>exceptions.BaseException</code></i>	
<code>args</code> , <code>message</code>	
<i>Inherited from object</i>	
<code>__class__</code>	

**1.15 Class `UnknownError`**

Generic exception that is thrown during operations on a scalaris ring, e.g. if an unknown result has been returned.

**1.15.1 Methods**

<b><code>__init__(self, raw_result)</code></b> <code>x.__init__(...)</code> initializes <code>x</code> ; see <code>x.__class__.__doc__</code> for signature Overrides: <code>object.__init__</code> <code>__init__</code> (inherited documentation)
<b><code>__str__(self)</code></b> <code>str(x)</code> Overrides: <code>object.__str__</code> <code>__str__</code> (inherited documentation)

***Inherited from `exceptions.Exception`***

`__new__()`

***Inherited from exceptions.BaseException***

`__delattr__()`, `__getattr__()`, `__getitem__()`, `__getslice__()`, `__reduce__()`, `__repr__()`,  
`__setattr__()`, `__setstate__()`, `__unicode__()`

***Inherited from object***

`__format__()`, `__hash__()`, `__reduce_ex__()`, `__sizeof__()`, `__subclasshook__()`

**1.15.2 Properties**

Name	Description
<i>Inherited from exceptions.BaseException</i>	
args, message	
<i>Inherited from object</i>	
__class__	

**1.16 Class DeleteResult**

object —  
**scalaris.DeleteResult**

Stores the result of a delete operation.

**1.16.1 Methods**

<b>__init__</b> ( <i>self, ok, locks_set, undefined</i> )
x.__init__(...) initializes x; see x.__class__.__doc__ for signature
Overrides: object.__init__ extit(inherited documentation)

***Inherited from object***

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`,  
`__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

**1.16.2 Properties**

Name	Description
<i>Inherited from object</i>	
__class__	

## 1.17 Class *ConnectionPool*

object —  
**scalaris.ConnectionPool**

Implements a simple (thread-safe) connection pool for *Scalaris* connections.

### 1.17.1 Methods

**\_\_init\_\_**(*self*, *max\_connections*)

Create a new connection pool with the given maximum number of connections.  
 Overrides: *object.\_\_init\_\_*

**get\_connection**(*self*, *timeout=None*)

Tries to get a valid connection from the pool waiting at most the given timeout. If timeout is an integer, it will be interpreted as a number of milliseconds. Alternatively, timeout can be given as a *datetime.timedelta*. Creates a new connection if necessary and the maximum number of connections has not been hit yet. If the timeout is hit and no connection is available, `None` is returned.

**release\_connection**(*self*, *connection*)

Puts the given connection back into the pool.

**close\_all**(*self*)

Close all connections to *scalaris*.

### *Inherited from object*

*\_\_delattr\_\_*(), *\_\_format\_\_*(), *\_\_getattr\_\_*(), *\_\_hash\_\_*(), *\_\_new\_\_*(), *\_\_reduce\_\_*(), *\_\_reduce\_ex\_\_*(), *\_\_repr\_\_*(), *\_\_setattr\_\_*(), *\_\_sizeof\_\_*(), *\_\_str\_\_*(), *\_\_subclasshook\_\_*()

### 1.17.2 Properties

Name	Description
<i>Inherited from object</i>	
<i>__class__</i>	

## 1.18 Class TransactionSingleOp

object └─ scalaris.TransactionSingleOp

Single write or read operations on scalaris.

### 1.18.1 Methods

**\_\_init\_\_**(*self*, *conn*=None)

Create a new object using the given connection

Overrides: object.\_\_init\_\_

**new\_req\_list**(*self*, *other*=None)

Returns a new ReqList object allowing multiple parallel requests.

**req\_list**(*self*, *reqlist*)

Issues multiple parallel requests to scalaris; each will be committed. NOTE: The execution order of multiple requests on the same key is undefined! Request lists can be created using new\_req\_list(). The returned list has the following form: [{*'status'*: *'ok'*} or {*'status'*: *'ok'*, *'value'*: xxx} or {*'status'*: *'fail'*, *'reason'*: *'timeout'* or *'abort'* or *'not\_found'*}}]. Elements of this list can be processed with process\_result\_read() and process\_result\_write().

**process\_result\_read**(*self*, *result*)

Processes a result element from the list returned by req\_list() which originated from a read operation. Returns the read value on success. Raises the appropriate exceptions if a failure occurred during the operation. Beware: lists of (small) integers may be (falsely) returned as a string - use str\_to\_list() to convert such strings.

**process\_result\_write**(*self*, *result*)

Processes a result element from the list returned by req\_list() which originated from a write operation. Raises the appropriate exceptions if a failure occurred during the operation.

**process\_result\_add\_del\_on\_list**(*self, result*)

Processes a result element from the list returned by req\_list() which originated from a add\_del\_on\_list operation. Raises the appropriate exceptions if a failure occurred during the operation.

**process\_result\_add\_on\_nr**(*self, result*)

Processes a result element from the list returned by req\_list() which originated from a add\_on\_nr operation. Raises the appropriate exceptions if a failure occurred during the operation.

**process\_result\_test\_and\_set**(*self, result*)

Processes a result element from the list returned by req\_list() which originated from a test\_and\_set operation. Raises the appropriate exceptions if a failure occurred during the operation.

**read**(*self, key*)

Read the value at key. Beware: lists of (small) integers may be (falsely) returned as a string - use str\_to\_list() to convert such strings.

**write**(*self, key, value*)

Write the value to key.

**add\_del\_on\_list**(*self, key, to\_add, to\_remove*)

Changes the list stored at the given key, i.e. first adds all items in to\_add then removes all items in to\_remove. Both, to\_add and to\_remove, must be lists. Assumes an empty list if no value exists at key.

**add\_on\_nr**(*self, key, to\_add*)

Changes the number stored at the given key, i.e. adds some value. Assumes 0 if no value exists at key.

**test\_and\_set**(*self, key, old\_value, new\_value*)

Atomic test and set, i.e. if the old value at key is old\_value, then write new\_value.

**nop**(*self, value*)

No operation (may be used for measuring the JSON overhead).

**close\_connection(*self*)**

Close the connection to scalaris (it will automatically be re-opened on the next request).

***Inherited from object***

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

**1.18.2 Properties**

Name	Description
<i>Inherited from object</i>	
<code>__class__</code>	

**1.19 Class Transaction**

object └─ **scalaris.Transaction**

Write or read operations on scalaris inside a transaction.

**1.19.1 Methods****`__init__(self, conn=None)`**

Create a new object using the given connection

Overrides: `object.__init__`

**`new_req_list(self, other=None)`**

Returns a new ReqList object allowing multiple parallel requests.

**`req_list(self, reqlist)`**

Issues multiple parallel requests to scalaris. Request lists can be created using `new_req_list()`. The returned list has the following form: `[{'status': 'ok'}]` or `[{'status': 'ok', 'value': xxx}]` or `[{'status': 'fail', 'reason': 'timeout' or 'abort' or 'not_found'}]`. Elements of this list can be processed with `process_result_read()` and `process_result_write()`. A commit (at the end of the request list) will be automatically checked for its success.

**process\_result\_read**(*self*, *result*)

Processes a result element from the list returned by req\_list() which originated from a read operation. Returns the read value on success. Raises the appropriate exceptions if a failure occurred during the operation. Beware: lists of (small) integers may be (falsely) returned as a string - use str\_to\_list() to convert such strings.

**process\_result\_write**(*self*, *result*)

Processes a result element from the list returned by req\_list() which originated from a write operation. Raises the appropriate exceptions if a failure occurred during the operation.

**process\_result\_add\_del\_on\_list**(*self*, *result*)

Processes a result element from the list returned by req\_list() which originated from a add\_del\_on\_list operation. Raises the appropriate exceptions if a failure occurred during the operation.

**process\_result\_add\_on\_nr**(*self*, *result*)

Processes a result element from the list returned by req\_list() which originated from a add\_on\_nr operation. Raises the appropriate exceptions if a failure occurred during the operation.

**process\_result\_test\_and\_set**(*self*, *result*)

Processes a result element from the list returned by req\_list() which originated from a test\_and\_set operation. Raises the appropriate exceptions if a failure occurred during the operation.

**commit**(*self*)

Issues a commit operation to scalaris validating the previously created operations inside the transaction.

**abort**(*self*)

Aborts all previously created operations inside the transaction.

**read**(*self*, *key*)

Issues a read operation to scalaris, adds it to the current transaction and returns the result. Beware: lists of (small) integers may be (falsely) returned as a string - use str\_to\_list() to convert such strings.

**write**(*self*, *key*, *value*)

Issues a write operation to scalaris and adds it to the current transaction.

**add\_del\_on\_list**(*self*, *key*, *to\_add*, *to\_remove*)

Issues a add\_del\_on\_list operation to scalaris and adds it to the current transaction. Changes the list stored at the given key, i.e. first adds all items in to\_add then removes all items in to\_remove. Both, to\_add and to\_remove, must be lists. Assumes an empty list if no value exists at key.

**add\_on\_nr**(*self*, *key*, *to\_add*)

Issues a add\_on\_nr operation to scalaris and adds it to the current transaction. Changes the number stored at the given key, i.e. adds some value. Assumes 0 if no value exists at key.

**test\_and\_set**(*self*, *key*, *old\_value*, *new\_value*)

Issues a test\_and\_set operation to scalaris and adds it to the current transaction. Atomic test and set, i.e. if the old value at key is old\_value, then write new\_value.

**nop**(*self*, *value*)

No operation (may be used for measuring the JSON overhead).

**close\_connection**(*self*)

Close the connection to scalaris (it will automatically be re-opened on the next request).

### *Inherited from object*

`__delattr__()`, `__format__()`, `__getattribute__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

#### 1.19.2 Properties

Name	Description
<i>Inherited from object</i>	
<code>__class__</code>	

## 1.20 Class *ReplicatedDHT*

object —  
**scalaris.ReplicatedDHT**

Non-transactional operations on the replicated DHT of *scalaris*

### 1.20.1 Methods

**\_\_init\_\_**(*self*, *conn*=None)

Create a new object using the given connection.

Overrides: object.\_\_init\_\_

**delete**(*self*, *key*, *timeout*=2000)

Tries to delete the value at the given key.

WARNING: This function can lead to inconsistent data (e.g. deleted items can re-appear). Also when re-creating an item the version before the delete can re-appear.

**get\_last\_delete\_result**(*self*)

Returns the result of the last call to delete().

NOTE: This function traverses the result list returned by *scalaris* and therefore takes some time to process. It is advised to store the returned result object once generated.

**nop**(*self*, *value*)

No operation (may be used for measuring the JSON overhead).

**close\_connection**(*self*)

Close the connection to *scalaris* (it will automatically be re-opened on the next request).

### *Inherited from object*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`,  
`__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 1.20.2 Properties

Name	Description
<i>Inherited from object</i>	
<code>__class__</code>	

## 1.21 Class *RoutingTable*



API for using routing tables

### 1.21.1 Methods

<b><code>__init__(self, conn=None)</code></b>
Create a new object using the given connection. Overrides: <code>object.__init__</code>
<b><code>get_replication_factor(self)</code></b>

*Inherited from object*

`__delattr__()`, `__format__()`, `__getattribute__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`,  
`__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 1.21.2 Properties

Name	Description
<i>Inherited from object</i>	
<code>__class__</code>	

## 1.22 Class *ScalarisVM*



Provides methods to interact with a specific *Scalaris* (Erlang) VM.

## 1.22.1 Methods

**`__init__(self, conn=None)`**

Create a new object using the given connection.

Overrides: `object.__init__`

**`getVersion(self)`**

Gets the version of the Scalaris VM of the current connection.

**`getInfo(self)`**

Gets some information about the VM and Scalaris.

**`getNumberOfNodes(self)`**

Gets the number of nodes in the Scalaris VM of the current connection.

**`getNodes(self)`**

Gets the names of the nodes in the Scalaris VM of the current connection.

**`addNodes(self, number)`**

Adds Scalaris nodes to the Scalaris VM of the current connection.

**`shutdownNode(self, name)`**

Shuts down the given node (graceful leave) in the Scalaris VM of the current connection.

**`killNode(self, name)`**

Kills the given node in the Scalaris VM of the current connection.

**`shutdownNodes(self, number)`**

Shuts down the given number of nodes (graceful leave) in the Scalaris VM of the current connection.

**`killNodes(self, number)`**

Kills the given number of nodes in the Scalaris VM of the current connection.

**`shutdownNodesByName(self, names)`**

Shuts down the given nodes (graceful leave) in the Scalaris VM of the current connection.

<b>killNodesByName</b> ( <i>self</i> , <i>names</i> )
-------------------------------------------------------

Kills the given nodes in the Scalaris VM of the current connection.
---------------------------------------------------------------------

<b>getOtherVMs</b> ( <i>self</i> , <i>maxVMs</i> )
----------------------------------------------------

Retrieves additional nodes from the Scalaris VM of the current connection for use as URLs in JSONConnection.
--------------------------------------------------------------------------------------------------------------

<b>shutdownVM</b> ( <i>self</i> )
-----------------------------------

Tells the Scalaris VM of the current connection to shut down gracefully.
--------------------------------------------------------------------------

<b>killVM</b> ( <i>self</i> )
-------------------------------

Kills the Scalaris VM of the current connection.
--------------------------------------------------

<b>nop</b> ( <i>self</i> , <i>value</i> )
-------------------------------------------

No operation (may be used for measuring the JSON overhead).
-------------------------------------------------------------

<b>close_connection</b> ( <i>self</i> )
-----------------------------------------

Close the connection to scalaris (it will automatically be re-opened on the next request).
--------------------------------------------------------------------------------------------

### *Inherited from object*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`,  
`__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

#### 1.22.2 Properties

Name	Description
<i>Inherited from object</i>	
<code>__class__</code>	

### 1.23 Class Autoscale

object —  
**scalaris.Autoscale**

Provides methods to interact with autoscale API.

### 1.23.1 Methods

**`__init__(self, conn=None)`**

`x.__init__(...)` initializes `x`; see `x.__class__.__doc__` for signature

Overrides: `object.__init__` extit(inherited documentation)

**`process_result_check_config(self, result)`**

**`process_result_pull_scale_req(self, result)`**

**`process_result_lock_scale_req(self, result)`**

**`process_result_unlock_scale_req(self, result)`**

**`check_config(self)`**

**`pull_scale_req(self)`**

**`lock_scale_req(self)`**

**`unlock_scale_req(self)`**

**`close_connection(self)`**

Close the connection to scalaris (it will automatically be re-opened on the next request).

#### *Inherited from object*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__repr__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 1.23.2 Properties

Name	Description
<i>Inherited from object</i>	
<code>__class__</code>	

### 1.23.3 Class Variables

Name	Description
api	Create a new object using the given connection. <b>Value:</b> <code> '/api/autoscale.yaws'</code>

## 2 Module *scalaris\_bench*

### 2.1 Functions

**minibench**(*operations*, *threads\_per\_node*, *benchmarks*)

Default minimal benchmark.

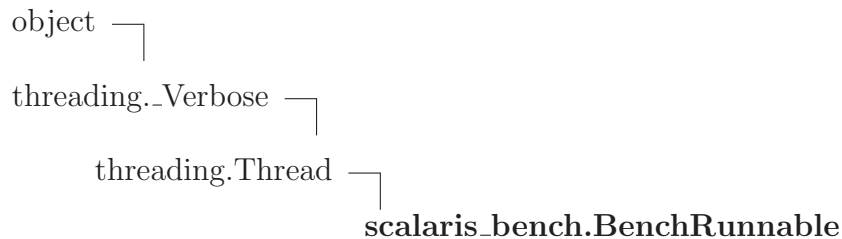
Tests some strategies for writing key/value pairs to scalaris: 1) writing binary objects (random data, size = `_BENCH_DATA_SIZE`) 2) writing string objects (random data, size = `_BENCH_DATA_SIZE`) each with the given number of consecutive operations and parallel threads per Scalaris node, \* first using a new `Transaction` or `TransactionSingleOp` for each test, \* then using a new `Transaction` or `TransactionSingleOp` but re-using a single connection, \* and finally re-using a single `Transaction` or `TransactionSingleOp` object.

**run\_from\_cmd**(*argv*)

### 2.2 Variables

Name	Description
<code>DEFAULT_URLS</code>	<b>Value:</b> ['http://localhost:8000']
<code>__package__</code>	<b>Value:</b> None

### 2.3 Class *BenchRunnable*



**Known Subclasses:** `scalaris_bench.BenchRunnable2`, `scalaris_bench.TransAppendToListBench`, `scalaris_bench.TransBench1`, `scalaris_bench.TransBench3`, `scalaris_bench.TransIncrementBench`, `scalaris_bench.TransReadXWriteXBench`, `scalaris_bench.TransSingleOpBench1`, `scalaris_bench.TransSingleOpBench2`

Abstract base class of a test run that is to be run in a thread.

### 2.3.1 Methods

**`__init__(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.__init__`

**`pre_init(self, j=None)`**

Will be called before the benchmark starts with all possible variations of "j" in the `operation()` call. "j" with None is the overall initialisation run at first.

**`init(self)`**

Will be called at the start of the benchmark.

**`cleanup(self)`**

Will be called before the end of the benchmark.

**`operation(self, j)`**

The operation to execute during the benchmark.

**`run(self)`**

Overrides: `threading.Thread.run`

**`getSpeed(self)`**

**`shouldStop(self)`**

#### *Inherited from `threading.Thread`*

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

#### *Inherited from `object`*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

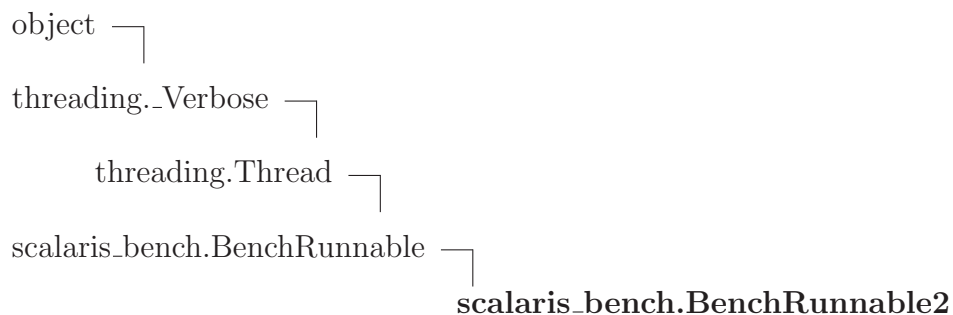
### 2.3.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	

*continued on next page*

Name	Description
daemon, ident, name	
<i>Inherited from object</i>	
__class__	

## 2.4 Class **BenchRunnable2**



**Known Subclasses:** *scalaris\_bench.TransBench2*, *scalaris\_bench.TransSingleOpBench2*

### 2.4.1 Methods

<b>__init__</b> ( <i>self</i> , <i>key</i> , <i>value</i> , <i>operations</i> )
Create a new runnable. Overrides: <i>object.__init__</i>
<b>init</b> ( <i>self</i> )
Will be called at the start of the benchmark. Overrides: <i>scalaris_bench.BenchRunnable.init</i>
<b>cleanup</b> ( <i>self</i> )
Will be called before the end of the benchmark. Overrides: <i>scalaris_bench.BenchRunnable.cleanup</i>

*Inherited from scalaris\_bench.BenchRunnable(Section 2.3)*

*getSpeed()*, *operation()*, *pre\_init()*, *run()*, *shouldStop()*

*Inherited from threading.Thread*

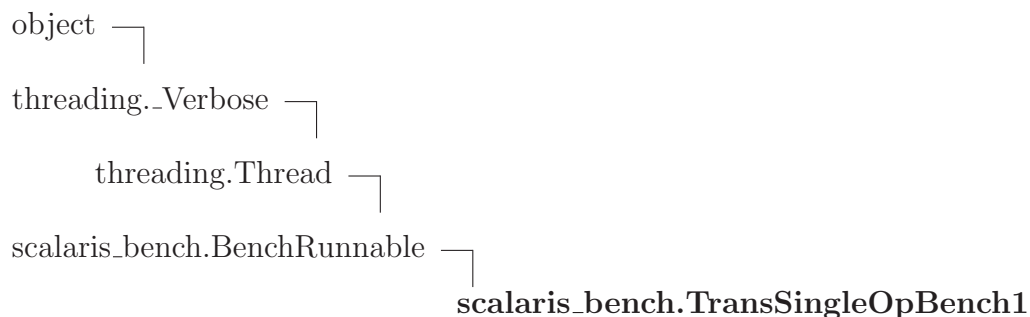
*\_\_repr\_\_()*, *getName()*, *isAlive()*, *isDaemon()*, *is\_alive()*, *join()*, *setDaemon()*, *setName()*, *start()*

***Inherited from object***

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`,  
`__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

**2.4.2 Properties**

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

**2.5 Class TransSingleOpBench1**

Performs a benchmark writing objects using a new TransactionSingleOp object for each test.

**2.5.1 Methods**

<b>__init__</b> ( <i>self, key, value, operations</i> ) Create a new runnable. Overrides: object.__init__ extit(inherited documentation)
<b>operation</b> ( <i>self, j</i> ) The operation to execute during the benchmark. Overrides: scalaris_bench.BenchRunnable.operation extit(inherited documentation)

***Inherited from scalaris\_bench.BenchRunnable(Section 2.3)***

cleanup(), getSpeed(), init(), pre\_init(), run(), shouldStop()

### ***Inherited from threading.Thread***

\_\_repr\_\_(), getName(), isAlive(), isDaemon(), is\_alive(), join(), setDaemon(), setName(), start()

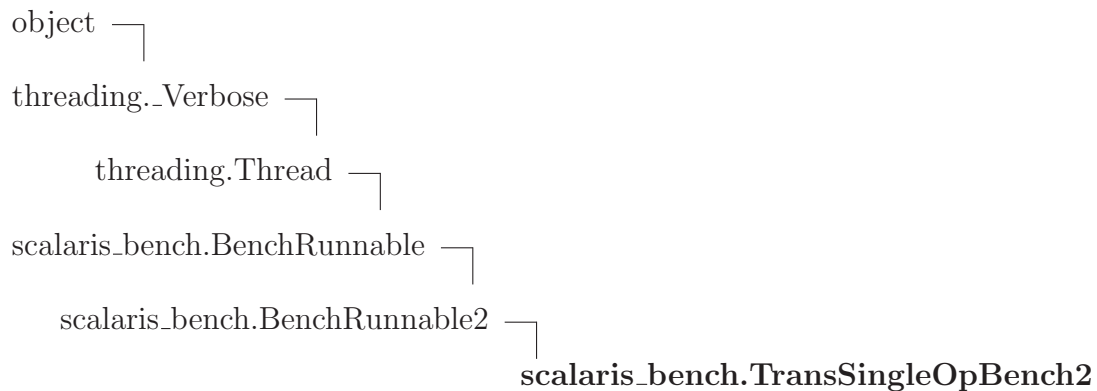
### ***Inherited from object***

\_\_delattr\_\_(), \_\_format\_\_(), \_\_getattr\_\_(), \_\_hash\_\_(), \_\_new\_\_(), \_\_reduce\_\_(), \_\_reduce\_ex\_\_(), \_\_setattr\_\_(), \_\_sizeof\_\_(), \_\_str\_\_(), \_\_subclasshook\_\_()

## **2.5.2 Properties**

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## **2.6 Class TransSingleOpBench2**



Performs a benchmark writing objects using a new TransactionSingleOp but re-using a single connection for each test.

### 2.6.1 Methods

**`__init__(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.__init__` `exitit`(inherited documentation)

**`operation(self, j)`**

The operation to execute during the benchmark.

Overrides: `scalaris_bench.BenchRunnable.operation` `exitit`(inherited documentation)

***Inherited from `scalaris_bench.BenchRunnable2`(Section 2.4)***

`cleanup()`, `init()`

***Inherited from `scalaris_bench.BenchRunnable`(Section 2.3)***

`getSpeed()`, `pre_init()`, `run()`, `shouldStop()`

***Inherited from `threading.Thread`***

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

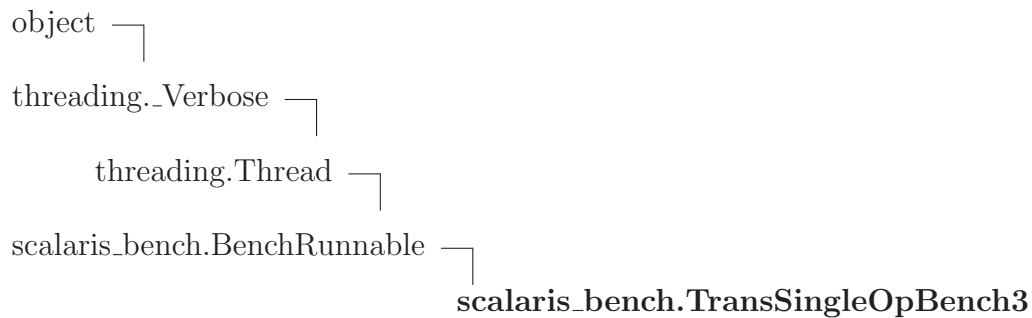
***Inherited from `object`***

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 2.6.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	
<code>daemon</code> , <code>ident</code> , <code>name</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

## 2.7 Class TransSingleOpBench3



Performs a benchmark writing objects using a single TransactionSingleOp object for all tests.

### 2.7.1 Methods

**\_\_init\_\_**(*self*, *key*, *value*, *operations*)

Create a new runnable.

Overrides: object.\_\_init\_\_ extit(inherited documentation)

**init**(*self*)

Will be called at the start of the benchmark.

Overrides: scalaris\_bench.BenchRunnable.init extit(inherited documentation)

**cleanup**(*self*)

Will be called before the end of the benchmark.

Overrides: scalaris\_bench.BenchRunnable.cleanup extit(inherited documentation)

**operation**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: scalaris\_bench.BenchRunnable.operation extit(inherited documentation)

*Inherited from scalaris\_bench.BenchRunnable(Section 2.3)*

getSpeed(), pre\_init(), run(), shouldStop()

*Inherited from threading.Thread*

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

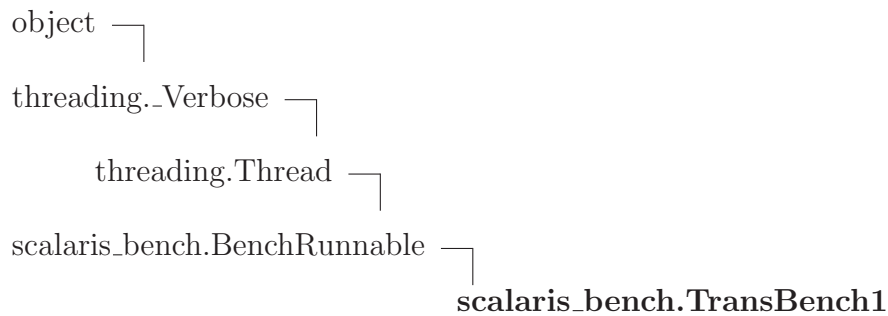
### *Inherited from object*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

## 2.7.2 Properties

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## 2.8 Class TransBench1



Performs a benchmark writing objects using a new Transaction for each test.

### 2.8.1 Methods

**`__init__(self, key, value, operations)`**  
 Create a new runnable.  
 Overrides: `object.__init__` `exitit`(inherited documentation)

**operation**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: scalaris\_bench.BenchRunnable.operation extit(inherited documentation)

**Inherited from scalaris\_bench.BenchRunnable(Section 2.3)**

cleanup(), getSpeed(), init(), pre\_init(), run(), shouldStop()

**Inherited from threading.Thread**

\_\_repr\_\_(), getName(), isAlive(), isDaemon(), is\_alive(), join(), setDaemon(), setName(), start()

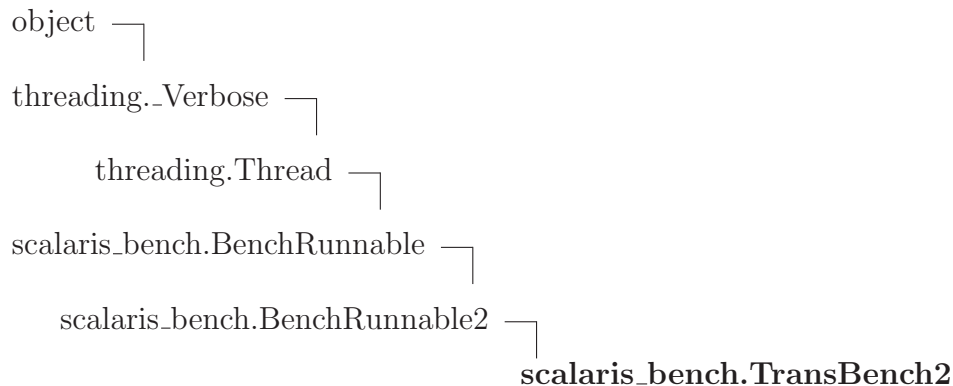
**Inherited from object**

\_\_delattr\_\_(), \_\_format\_\_(), \_\_getattr\_\_(), \_\_hash\_\_(), \_\_new\_\_(), \_\_reduce\_\_(), \_\_reduce\_ex\_\_(), \_\_setattr\_\_(), \_\_sizeof\_\_(), \_\_str\_\_(), \_\_subclasshook\_\_()

### 2.8.2 Properties

Name	Description
<i>Inherited from threading.Thread</i>	
daemon, ident, name	
<i>Inherited from object</i>	
__class__	

## 2.9 Class TransBench2



Performs a benchmark writing objects using a new Transaction but re-using a single connection for each test.

### 2.9.1 Methods

**`__init__`**(*self*, *key*, *value*, *operations*)

Create a new runnable.

Overrides: `object.__init__` `exitit`(inherited documentation)

**`operation`**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: `scalaris_bench.BenchRunnable.operation` `exitit`(inherited documentation)

*Inherited from `scalaris_bench.BenchRunnable2`(Section 2.4)*

`cleanup()`, `init()`

*Inherited from `scalaris_bench.BenchRunnable`(Section 2.3)*

`getSpeed()`, `pre_init()`, `run()`, `shouldStop()`

*Inherited from `threading.Thread`*

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

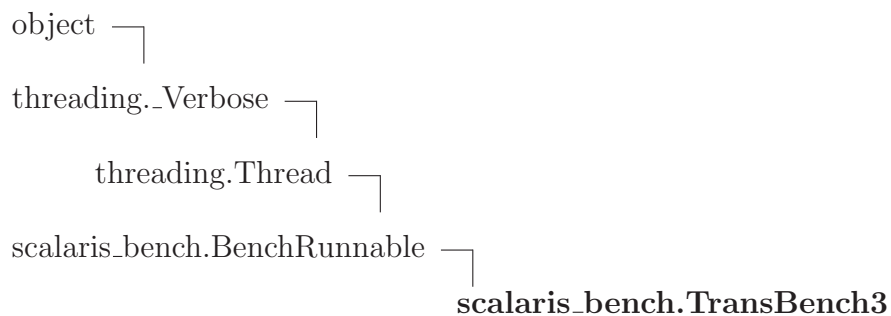
*Inherited from `object`*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 2.9.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	
<code>daemon</code> , <code>ident</code> , <code>name</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

## 2.10 Class TransBench3



Performs a benchmark writing objects using a single Transaction object for all tests.

### 2.10.1 Methods

**\_\_init\_\_**(*self*, *key*, *value*, *operations*)

Create a new runnable.

Overrides: object.\_\_init\_\_ extit(inherited documentation)

**init**(*self*)

Will be called at the start of the benchmark.

Overrides: scalaris\_bench.BenchRunnable.init extit(inherited documentation)

**cleanup**(*self*)

Will be called before the end of the benchmark.

Overrides: scalaris\_bench.BenchRunnable.cleanup extit(inherited documentation)

**operation**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: scalaris\_bench.BenchRunnable.operation extit(inherited documentation)

*Inherited from scalaris\_bench.BenchRunnable(Section 2.3)*

getSpeed(), pre\_init(), run(), shouldStop()

*Inherited from threading.Thread*

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

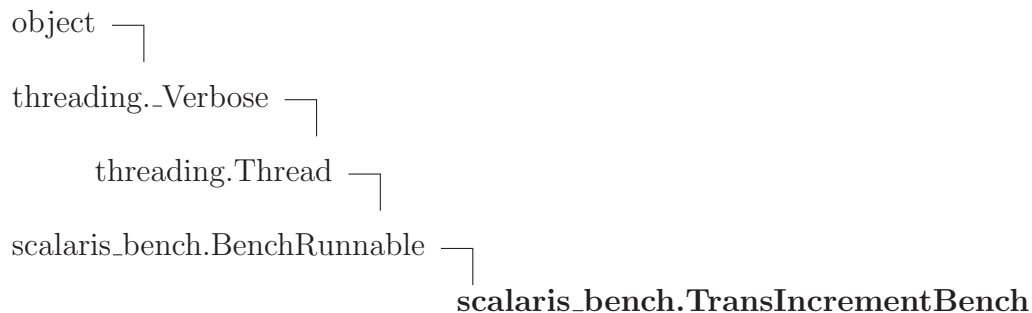
### *Inherited from object*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

#### 2.10.2 Properties

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## 2.11 Class TransIncrementBench



**Known Subclasses:** `scalaris_bench.TransIncrementBench1`, `scalaris_bench.TransIncrementBench2`, `scalaris_bench.TransIncrementBench3`

Performs a benchmark writing integer numbers on a single key and increasing them. Provides convenience methods for the full increment benchmark implementations.

#### 2.11.1 Methods

**\_\_init\_\_**(*self*, *key*, *value*, *operations*)  
 Create a new runnable.  
 Overrides: `object.__init__` `exitit`(inherited documentation)

```
pre_init(self, j=None)
```

Will be called before the benchmark starts with all possible variations of "j" in the operation() call. "j" with None is the overall initialisation run at first.

Overrides: *scalaris\_bench.BenchRunnable.pre\_init* *exitit*(inherited documentation)

```
operation2(self, tx, j)
```

*Inherited from scalaris\_bench.BenchRunnable(Section 2.3)*

*cleanup()*, *getSpeed()*, *init()*, *operation()*, *run()*, *shouldStop()*

*Inherited from threading.Thread*

*\_\_repr\_\_()*, *getName()*, *isAlive()*, *isDaemon()*, *is\_alive()*, *join()*, *setDaemon()*, *setName()*, *start()*

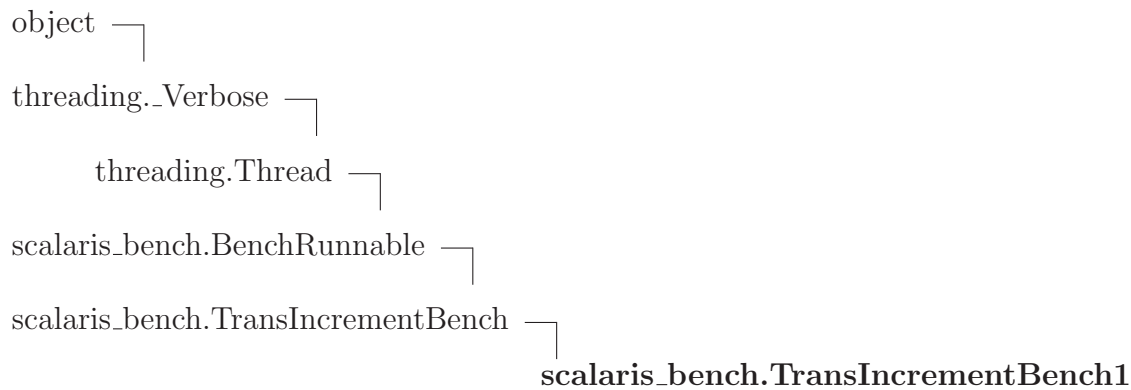
*Inherited from object*

*\_\_delattr\_\_()*, *\_\_format\_\_()*, *\_\_getattr\_\_()*, *\_\_hash\_\_()*, *\_\_new\_\_()*, *\_\_reduce\_\_()*, *\_\_reduce\_ex\_\_()*, *\_\_setattr\_\_()*, *\_\_sizeof\_\_()*, *\_\_str\_\_()*, *\_\_subclasshook\_\_()*

### 2.11.2 Properties

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## 2.12 Class **TransIncrementBench1**



Performs a benchmark writing integer numbers on a single key and increasing them using a new Transaction for each test.

### 2.12.1 Methods

**`--init--(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.__init__` `exitit`(inherited documentation)

**`operation(self, j)`**

The operation to execute during the benchmark.

Overrides: `scalaris_bench.BenchRunnable.operation` `exitit`(inherited documentation)

***Inherited from `scalaris_bench.TransIncrementBench`(Section 2.11)***

`operation2()`, `pre_init()`

***Inherited from `scalaris_bench.BenchRunnable`(Section 2.3)***

`cleanup()`, `getSpeed()`, `init()`, `run()`, `shouldStop()`

***Inherited from `threading.Thread`***

`--repr--()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

***Inherited from `object`***

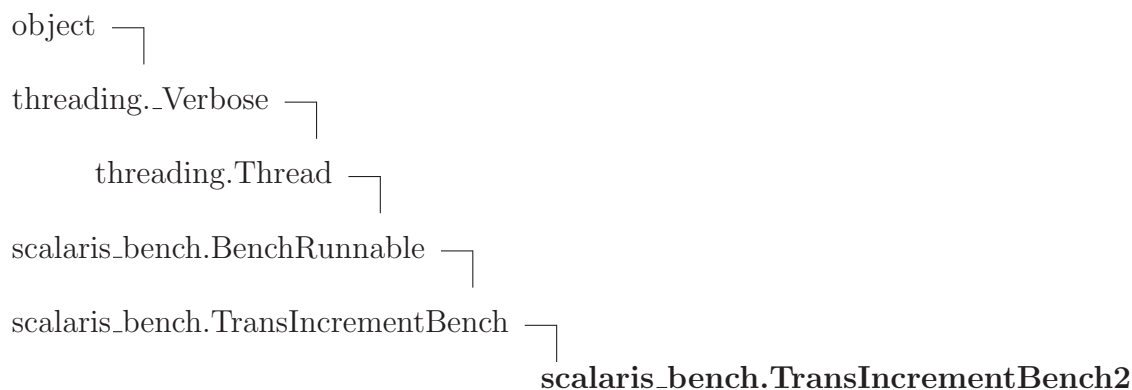
`--delattr--()`, `--format--()`, `--getattrattribute--()`, `--hash--()`, `--new--()`, `--reduce--()`, `--reduce-ex--()`,

`__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 2.12.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	
<code>daemon</code> , <code>ident</code> , <code>name</code>	
<i>Inherited from object</i>	
<code>__class__</code>	

## 2.13 Class TransIncrementBench2



Performs a benchmark writing integer numbers on a single key and increasing them using a new Transaction but re-using a single connection for each test.

### 2.13.1 Methods

**`__init__(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.__init__` extit(inherited documentation)

**`init(self)`**

Will be called at the start of the benchmark.

Overrides: `scalaris_bench.BenchRunnable.init` extit(inherited documentation)

**cleanup**(*self*)

Will be called before the end of the benchmark.

Overrides: *scalaris\_bench.BenchRunnable.cleanup* *exitit*(inherited documentation)

**operation**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: *scalaris\_bench.BenchRunnable.operation* *exitit*(inherited documentation)

***Inherited from scalaris\_bench.TransIncrementBench(Section 2.11)***

*operation2*(), *pre\_init*()

***Inherited from scalaris\_bench.BenchRunnable(Section 2.3)***

*getSpeed*(), *run*(), *shouldStop*()

***Inherited from threading.Thread***

*\_\_repr\_\_*(), *getName*(), *isAlive*(), *isDaemon*(), *is\_alive*(), *join*(), *setDaemon*(), *setName*(), *start*()

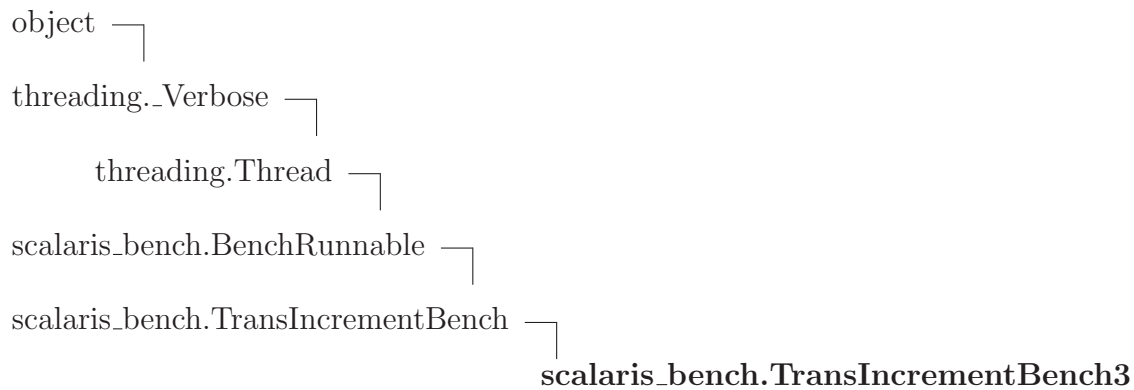
***Inherited from object***

*\_\_delattr\_\_*(), *\_\_format\_\_*(), *\_\_getattr\_\_*(), *\_\_hash\_\_*(), *\_\_new\_\_*(), *\_\_reduce\_\_*(), *\_\_reduce\_ex\_\_*(), *\_\_setattr\_\_*(), *\_\_sizeof\_\_*(), *\_\_str\_\_*(), *\_\_subclasshook\_\_*()

**2.13.2 Properties**

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## 2.14 Class **TransIncrementBench3**



Performs a benchmark writing objects using a single Transaction object for all tests.

### 2.14.1 Methods

**`__init__(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.__init__` `exitit`(inherited documentation)

**`init(self)`**

Will be called at the start of the benchmark.

Overrides: `scalaris_bench.BenchRunnable.init` `exitit`(inherited documentation)

**`cleanup(self)`**

Will be called before the end of the benchmark.

Overrides: `scalaris_bench.BenchRunnable.cleanup` `exitit`(inherited documentation)

**`operation(self, j)`**

The operation to execute during the benchmark.

Overrides: `scalaris_bench.BenchRunnable.operation` `exitit`(inherited documentation)

*Inherited from `scalaris_bench.TransIncrementBench`(Section 2.11)*

`operation2()`, `pre_init()`

***Inherited from scalaris\_bench.BenchRunnable(Section 2.3)***

getSpeed(), run(), shouldStop()

***Inherited from threading.Thread***

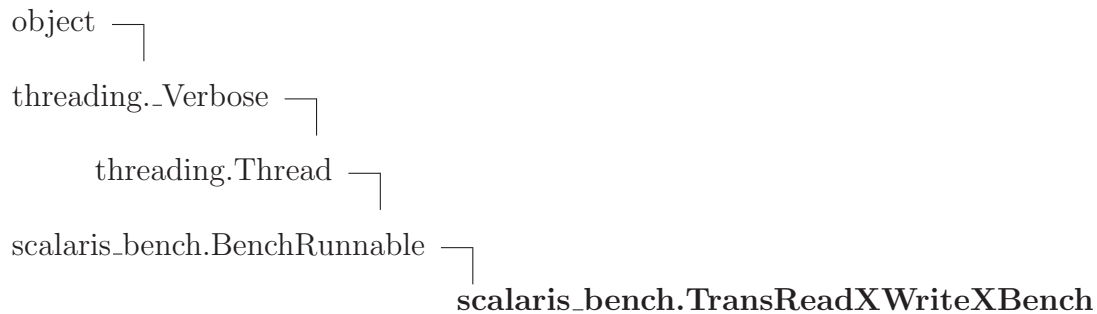
\_\_repr\_\_(), getName(), isAlive(), isDaemon(), is\_alive(), join(), setDaemon(), setName(), start()

***Inherited from object***

\_\_delattr\_\_(), \_\_format\_\_(), \_\_getattr\_\_(), \_\_hash\_\_(), \_\_new\_\_(), \_\_reduce\_\_(), \_\_reduce\_ex\_\_(), \_\_setattr\_\_(), \_\_sizeof\_\_(), \_\_str\_\_(), \_\_subclasshook\_\_()

**2.14.2 Properties**

Name	Description
<i>Inherited from threading.Thread</i>	
daemon, ident, name	
<i>Inherited from object</i>	
__class__	

**2.15 Class TransReadXWriteXBench**

**Known Subclasses:** scalaris\_bench.TransRead5Write5Bench1, scalaris\_bench.TransRead5Write5Bench2, scalaris\_bench.TransRead5Write5Bench3

Performs a benchmark reading X values and overwriting them afterwards inside a transaction. Provides convenience methods for the full read-x, write-x benchmark implementations.

### 2.15.1 Methods

**`__init__(self, key, value, nr_keys, operations)`**

Create a new runnable.

Overrides: `object.__init__` `exitit`(inherited documentation)

**`pre_init(self, j=None)`**

Will be called before the benchmark starts with all possible variations of "j" in the `operation()` call. "j" with None is the overall initialisation run at first.

Overrides: `scalaris_bench.BenchRunnable.pre_init` `exitit`(inherited documentation)

**`operation2(self, tx, j)`**

*Inherited from `scalaris_bench.BenchRunnable`(Section 2.3)*

`cleanup()`, `getSpeed()`, `init()`, `operation()`, `run()`, `shouldStop()`

*Inherited from `threading.Thread`*

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

*Inherited from `object`*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 2.15.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	
<code>daemon</code> , <code>ident</code> , <code>name</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

## 2.16 Class **TransRead5Write5Bench1**



Performs a benchmark reading 5 values and overwriting them afterwards inside a transaction using a new Transaction for each test.

### 2.16.1 Methods

**`--init--(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.--init--` `exitit`(inherited documentation)

**`operation(self, j)`**

The operation to execute during the benchmark.

Overrides: `scalaris_bench.BenchRunnable.operation` `exitit`(inherited documentation)

***Inherited from `scalaris_bench.TransReadXWriteXBench`(Section 2.15)***

`operation2()`, `pre_init()`

***Inherited from `scalaris_bench.BenchRunnable`(Section 2.3)***

`cleanup()`, `getSpeed()`, `init()`, `run()`, `shouldStop()`

***Inherited from `threading.Thread`***

`--repr--()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

***Inherited from `object`***

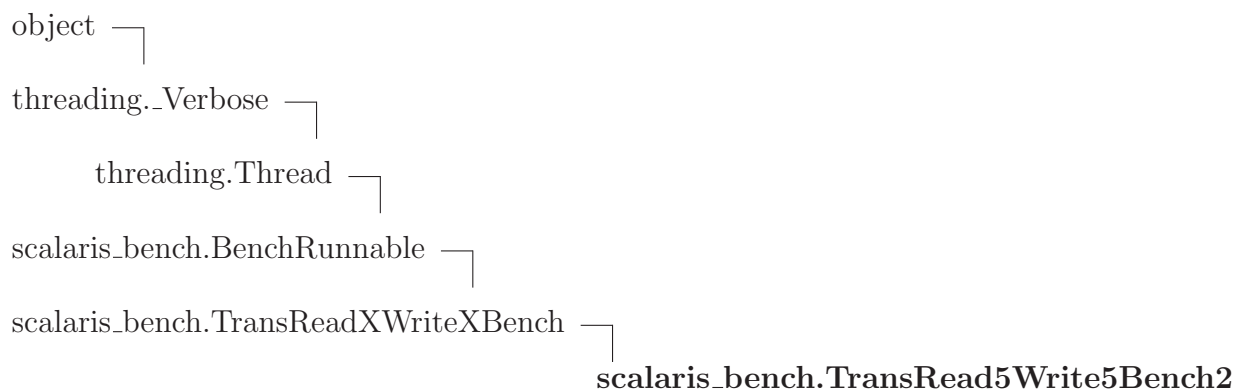
`--delattr--()`, `--format--()`, `--getattrattribute--()`, `--hash--()`, `--new--()`, `--reduce--()`, `--reduce-ex--()`,

`__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 2.16.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	
<code>daemon</code> , <code>ident</code> , <code>name</code>	
<i>Inherited from object</i>	
<code>__class__</code>	

## 2.17 Class *TransRead5Write5Bench2*



Performs a benchmark reading 5 values and overwriting them afterwards inside a transaction using a new Transaction but re-using a single connection for each test.

### 2.17.1 Methods

**`__init__`**(*self*, *key*, *value*, *operations*)

Create a new runnable.

Overrides: `object.__init__` extit(inherited documentation)

**`init`**(*self*)

Will be called at the start of the benchmark.

Overrides: `scalaris_bench.BenchRunnable.init` extit(inherited documentation)

**cleanup**(*self*)

Will be called before the end of the benchmark.

Overrides: *scalaris\_bench.BenchRunnable.cleanup* *exitit*(inherited documentation)**operation**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: *scalaris\_bench.BenchRunnable.operation* *exitit*(inherited documentation)***Inherited from scalaris\_bench.TransReadXWriteXBench(Section 2.15)****operation2*(), *pre\_init*()***Inherited from scalaris\_bench.BenchRunnable(Section 2.3)****getSpeed*(), *run*(), *shouldStop*()***Inherited from threading.Thread****\_\_repr\_\_*(), *getName*(), *isAlive*(), *isDaemon*(), *is\_alive*(), *join*(), *setDaemon*(), *setName*(), *start*()***Inherited from object****\_\_delattr\_\_*(), *\_\_format\_\_*(), *\_\_getattr\_\_*(), *\_\_hash\_\_*(), *\_\_new\_\_*(), *\_\_reduce\_\_*(), *\_\_reduce\_ex\_\_*(), *\_\_setattr\_\_*(), *\_\_sizeof\_\_*(), *\_\_str\_\_*(), *\_\_subclasshook\_\_*()**2.17.2 Properties**

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## 2.18 Class *TransRead5Write5Bench3*



Performs a benchmark reading 5 values and overwriting them afterwards inside a transaction using a single Transaction object for all tests.

### 2.18.1 Methods

**\_\_init\_\_**(*self*, *key*, *value*, *operations*)

Create a new runnable.

Overrides: object.\_\_init\_\_ extit(inherited documentation)

**init**(*self*)

Will be called at the start of the benchmark.

Overrides: scalaris\_bench.BenchRunnable.init extit(inherited documentation)

**cleanup**(*self*)

Will be called before the end of the benchmark.

Overrides: scalaris\_bench.BenchRunnable.cleanup extit(inherited documentation)

**operation**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: scalaris\_bench.BenchRunnable.operation extit(inherited documentation)

*Inherited from scalaris\_bench.TransReadXWriteXBench(Section 2.15)*

operation2(), pre\_init()

**Inherited from scalaris\_bench.BenchRunnable(Section 2.3)**

getSpeed(), run(), shouldStop()

**Inherited from threading.Thread**

\_\_repr\_\_(), getName(), isAlive(), isDaemon(), is\_alive(), join(), setDaemon(), setName(), start()

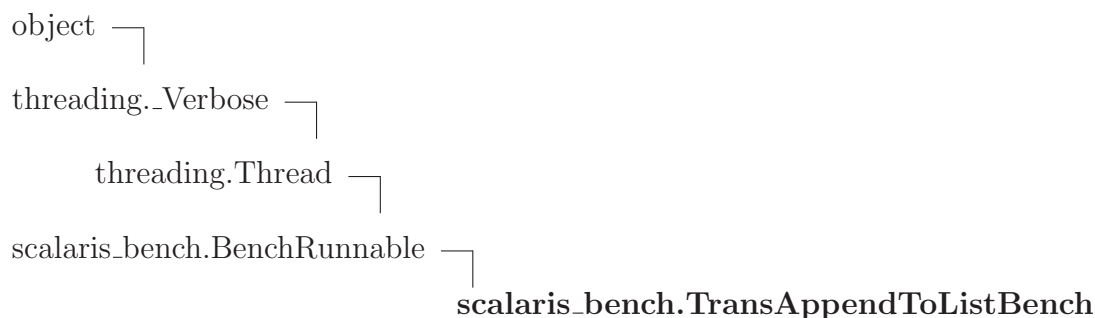
**Inherited from object**

\_\_delattr\_\_(), \_\_format\_\_(), \_\_getattr\_\_(), \_\_hash\_\_(), \_\_new\_\_(), \_\_reduce\_\_(), \_\_reduce\_ex\_\_(), \_\_setattr\_\_(), \_\_sizeof\_\_(), \_\_str\_\_(), \_\_subclasshook\_\_()

### 2.18.2 Properties

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## 2.19 Class TransAppendToListBench



**Known Subclasses:** scalaris\_bench.TransAppendToListBench1, scalaris\_bench.TransAppendToListBench2, scalaris\_bench.TransAppendToListBench3

Performs a benchmark adding values to a list inside a transaction. Provides convenience methods for the full append-to-list benchmark implementations.

### 2.19.1 Methods

**`__init__(self, key, value, nr_keys, operations)`**

Create a new runnable.

Overrides: `object.__init__` `exitit`(inherited documentation)

**`pre_init(self, j=None)`**

Will be called before the benchmark starts with all possible variations of "j" in the `operation()` call. "j" with None is the overall initialisation run at first.

Overrides: `scalaris_bench.BenchRunnable.pre_init` `exitit`(inherited documentation)

**`operation2(self, tx, j)`**

*Inherited from `scalaris_bench.BenchRunnable`(Section 2.3)*

`cleanup()`, `getSpeed()`, `init()`, `operation()`, `run()`, `shouldStop()`

*Inherited from `threading.Thread`*

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

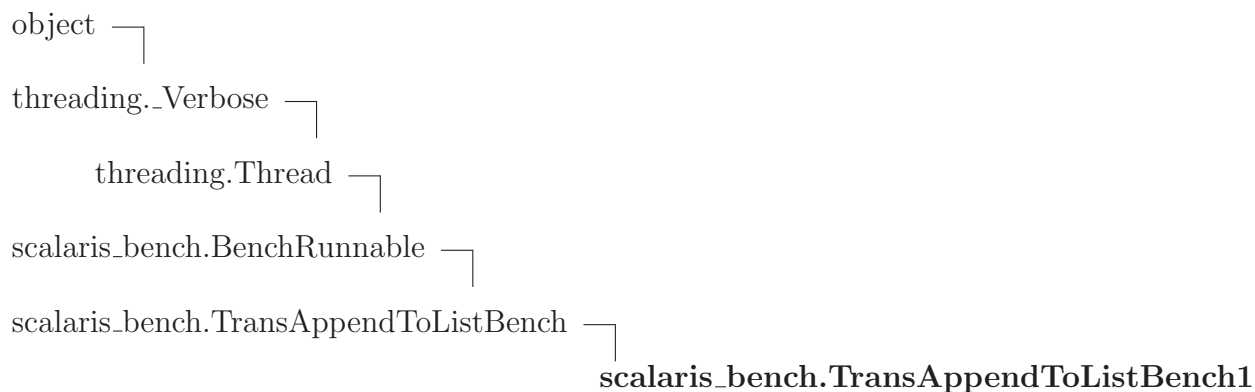
*Inherited from `object`*

`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`, `__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 2.19.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	
<code>daemon</code> , <code>ident</code> , <code>name</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

## 2.20 Class TransAppendToListBench1



Performs a benchmark adding values to a list inside a transaction using a new Transaction for each test.

### 2.20.1 Methods

**`__init__(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.__init__` extit(inherited documentation)

**`operation(self, j)`**

The operation to execute during the benchmark.

Overrides: `scalaris_bench.BenchRunnable.operation` extit(inherited documentation)

*Inherited from `scalaris_bench.TransAppendToListBench`(Section 2.19)*

`operation2()`, `pre_init()`

*Inherited from `scalaris_bench.BenchRunnable`(Section 2.3)*

`cleanup()`, `getSpeed()`, `init()`, `run()`, `shouldStop()`

*Inherited from `threading.Thread`*

`__repr__()`, `getName()`, `isAlive()`, `isDaemon()`, `is_alive()`, `join()`, `setDaemon()`, `setName()`, `start()`

*Inherited from `object`*

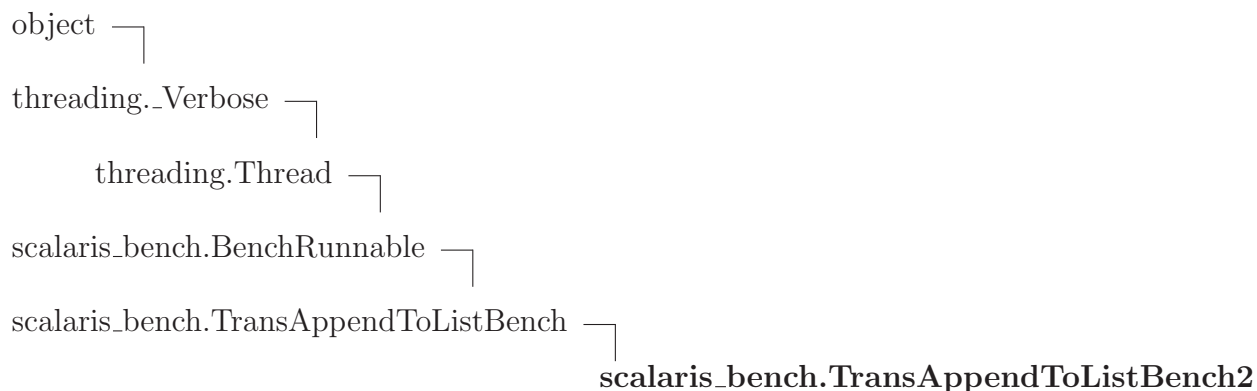
`__delattr__()`, `__format__()`, `__getattr__()`, `__hash__()`, `__new__()`, `__reduce__()`, `__reduce_ex__()`,

`__setattr__()`, `__sizeof__()`, `__str__()`, `__subclasshook__()`

### 2.20.2 Properties

Name	Description
<i>Inherited from <code>threading.Thread</code></i>	
<code>daemon</code> , <code>ident</code> , <code>name</code>	
<i>Inherited from <code>object</code></i>	
<code>__class__</code>	

## 2.21 Class TransAppendToListBench2



Performs a benchmark adding values to a list inside a transaction using a new Transaction but re-using a single connection for each test.

### 2.21.1 Methods

**`__init__`**(*self*, *key*, *value*, *operations*)

Create a new runnable.

Overrides: `object.__init__` `exitit`(inherited documentation)

**`init`**(*self*)

Will be called at the start of the benchmark.

Overrides: `sclaris_bench.BenchRunnable.init` `exitit`(inherited documentation)

**cleanup**(*self*)

Will be called before the end of the benchmark.

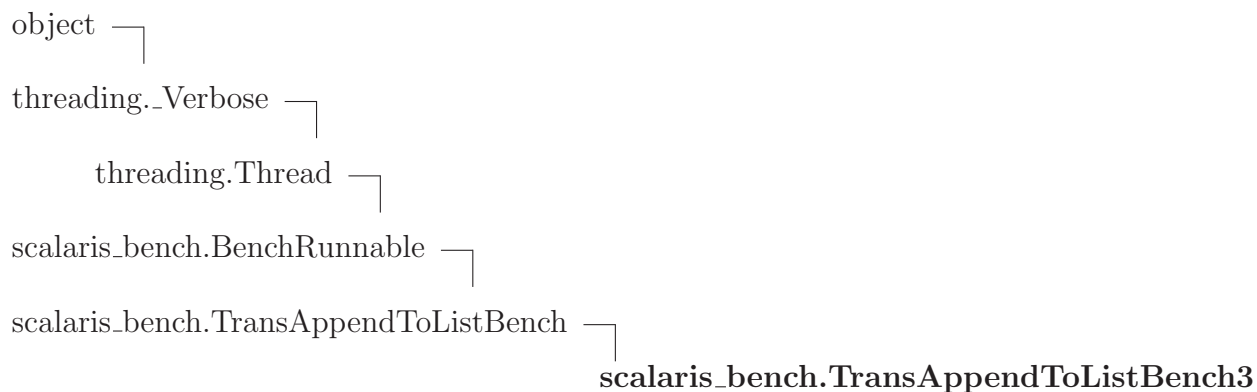
Overrides: *scalaris\_bench.BenchRunnable.cleanup* *exitit*(inherited documentation)**operation**(*self*, *j*)

The operation to execute during the benchmark.

Overrides: *scalaris\_bench.BenchRunnable.operation* *exitit*(inherited documentation)***Inherited from scalaris\_bench.TransAppendToListBench(Section 2.19)****operation2*(), *pre\_init*()***Inherited from scalaris\_bench.BenchRunnable(Section 2.3)****getSpeed*(), *run*(), *shouldStop*()***Inherited from threading.Thread****\_\_repr\_\_*(), *getName*(), *isAlive*(), *isDaemon*(), *is\_alive*(), *join*(), *setDaemon*(), *setName*(), *start*()***Inherited from object****\_\_delattr\_\_*(), *\_\_format\_\_*(), *\_\_getattr\_\_*(), *\_\_hash\_\_*(), *\_\_new\_\_*(), *\_\_reduce\_\_*(), *\_\_reduce\_ex\_\_*(), *\_\_setattr\_\_*(), *\_\_sizeof\_\_*(), *\_\_str\_\_*(), *\_\_subclasshook\_\_*()**2.21.2 Properties**

Name	Description
<i>Inherited from threading.Thread</i> daemon, ident, name	
<i>Inherited from object</i> __class__	

## 2.22 Class **TransAppendToListBench3**



Performs a benchmark adding values to a list inside a transaction using a single Transaction object for all tests.

### 2.22.1 Methods

**`__init__(self, key, value, operations)`**

Create a new runnable.

Overrides: `object.__init__` extit(inherited documentation)

**`init(self)`**

Will be called at the start of the benchmark.

Overrides: `scalaris_bench.BenchRunnable.init` extit(inherited documentation)

**`cleanup(self)`**

Will be called before the end of the benchmark.

Overrides: `scalaris_bench.BenchRunnable.cleanup` extit(inherited documentation)

**`operation(self, j)`**

The operation to execute during the benchmark.

Overrides: `scalaris_bench.BenchRunnable.operation` extit(inherited documentation)

*Inherited from `scalaris_bench.TransAppendToListBench` (Section 2.19)*

operation2(), pre\_init()

***Inherited from scalaris\_bench.BenchRunnable(Section 2.3)***

getSpeed(), run(), shouldStop()

***Inherited from threading.Thread***

\_\_repr\_\_(), getName(), isAlive(), isDaemon(), is\_alive(), join(), setDaemon(), setName(), start()

***Inherited from object***

\_\_delattr\_\_(), \_\_format\_\_(), \_\_getattr\_\_(), \_\_hash\_\_(), \_\_new\_\_(), \_\_reduce\_\_(), \_\_reduce\_ex\_\_(), \_\_setattr\_\_(), \_\_sizeof\_\_(), \_\_str\_\_(), \_\_subclasshook\_\_()

### 2.22.2 Properties

Name	Description
<i>Inherited from threading.Thread</i>	
daemon, ident, name	
<i>Inherited from object</i>	
__class__	

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