

MemoryOracle

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# Chapter 1

## Namespace Index

### 1.1 Namespace List

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## Chapter 2

# Hierarchical Index

### 2.1 Class Hierarchy

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## Chapter 3

# Class Index

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## Chapter 5

# Namespace Documentation

### 5.1 memoryoracle Namespace Reference

#### Namespaces

- [container](#)
- [descriptions](#)
- [execution](#)
- [frame](#)
- [instance](#)
- [migrations](#)
- [models](#)
- [registry](#)
- [settings](#)
- [symbol](#)
- [test\\_models](#)
- [tracked](#)
- [typed](#)
- [urls](#)
- [watch](#)
- [whip](#)
- [wsgi](#)

#### Variables

- [read\\_preference](#) = \

#### 5.1.1 Variable Documentation

##### 5.1.1.1 memoryoracle.read\_preference = \

Definition at line 10 of file `__init__.py`.

### 5.2 memoryoracle.container Namespace Reference

#### Classes

- class [Container](#)

- class [SLArray](#)
- class [SLBitset](#)
- class [SLContainer](#)
- class [SLDeque](#)
- class [SLForwardList](#)
- class [SLList](#)
- class [SLMap](#)
- class [SLQueue](#)
- class [SLSet](#)
- class [SLStack](#)
- class [SLUnorderedMap](#)
- class [SLUnorderedSet](#)
- class [SLVector](#)

## 5.3 `memoryoracle.descriptions` Namespace Reference

### Classes

- class [BlackBoxDecorator](#)
- class [Description](#)
- class [ExternalDescriptionDecorator](#)
- class [FileDescription](#)
- class [MemoryDescription](#)
- class [ObjectFileDescription](#)
- class [SourceFileDescription](#)
- class [StandardDescriptionDecorator](#)

## 5.4 `memoryoracle.execution` Namespace Reference

### Classes

- class [Commit](#)
- class [Executable](#)
- class [Execution](#)
- class [Instance](#)

### Variables

- tuple [connection](#)
- `db` = `connection.memoryoracle`
- tuple `commit` = [Commit](#)()
- tuple `executable` = [Executable](#)()
- tuple `execution` = [Execution](#)()
- tuple `instance` = [Instance](#)(name="some\_memory")

### 5.4.1 Variable Documentation

#### 5.4.1.1 tuple `memoryoracle.execution.commit` = [Commit](#)()

Definition at line 57 of file `execution.py`.

#### 5.4.1.2 tuple memoryoracle.execution.connection

**Initial value:**

```
1 = mongoengine.connect('memoryoracle',  
2     read_preference=\  
3         pymongo.read_preferences.ReadPreference.PRIMARY)
```

Definition at line 15 of file execution.py.

#### 5.4.1.3 memoryoracle.execution.db = connection.memoryoracle

Definition at line 18 of file execution.py.

#### 5.4.1.4 tuple memoryoracle.execution.executable = Executable()

Definition at line 59 of file execution.py.

#### 5.4.1.5 tuple memoryoracle.execution.execution = Execution()

Definition at line 64 of file execution.py.

#### 5.4.1.6 tuple memoryoracle.execution.instance = Instance(name="some\_memory")

Definition at line 66 of file execution.py.

## 5.5 memoryoracle.frame Namespace Reference

### Classes

- class [Frame](#)
- class [Selector](#)

## 5.6 memoryoracle.instance Namespace Reference

### Classes

- class [Array](#)
- class [Call](#)
- class [CharString](#)
- class [ConstDecorator](#)
- class [ExternDecorator](#)
- class [Float](#)
- class [Int](#)
- class [MemberDecorator](#)
- class [Memory](#)
- class [MemoryWatcher](#)
- class [Pointer](#)
- class [Primitive](#)
- class [RegisterDecorator](#)
- class [StateSerializer](#)

- class [StaticDecorator](#)
- class [Structure](#)
- class [Void](#)
- class [VolatileDecorator](#)

## Functions

- def [addressable\\_factory](#) (description)
- def [get\\_frame\\_symbols](#)
- def [serialize\\_frame\\_globals](#)
- def [serialize\\_upward](#)
- def [serialize\\_block\\_locals](#)
- def [serialize\\_frame\\_locals](#)
- def [target\\_type\\_name](#) (t)
- def [stopped](#) (event)

## Variables

- tuple [connection](#)
- [db](#) = connection.memoryoracle
- tuple [frameDescription](#) = [descriptions.MemoryDescription](#)("yourframe")
- tuple [f](#) = [frame.Frame](#)(gdb.selected\_frame())
- tuple [e](#) = [execution.Execution](#)()
- tuple [d](#) = [descriptions.MemoryDescription](#)("a", address="1", execution=[e](#))
- tuple [x](#) = [Float.factory](#)(descript=[d](#))

## 5.6.1 Function Documentation

### 5.6.1.1 def memoryoracle.instance.addressable\_factory ( *description* )

Definition at line 519 of file instance.py.

Referenced by [memoryoracle.instance.Structure.\\_track\(\)](#), [memoryoracle.instance.Pointer.\\_track\(\)](#), [memoryoracle.instance.Int.\\_track\(\)](#), [memoryoracle.instance.serialize\\_block\\_locals\(\)](#), and [memoryoracle.instance.serialize\\_frame\\_locals\(\)](#).

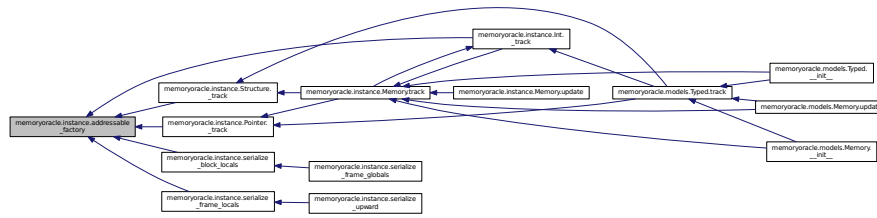
```

519 def addressable_factory(description):
520     _stdLibChecker = re.compile("^std::.+")
521     s = description.object
522     if s is not None:
523         standardLib = _stdLibChecker.match(descriptions.type_name(s.type))
524         description._address = s.address
525         handler = typed.type_lookup(s.type.strip_typedefs().code)
526         if standardLib:
527             return tracked.StandardDecorator(handler(description), toTrack = False)
528         return handler(description)
529     else:
530         return Untracked()
531
532

```



Here is the caller graph for this function:



### 5.6.1.2 def memoryoracle.instance.get\_frame\_symbols ( frm = None )

Definition at line 533 of file instance.py.

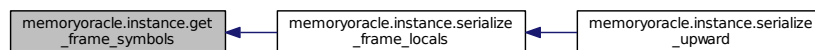
Referenced by memoryoracle.instance.serialize\_frame\_locals().

```

533 def get_frame_symbols (frm=None):
534     with frame.Selector(frm) as fs:
535         f = fs.frame
536         if f.is_valid():
537             return { str(sym) for sym in f.block() }
538         else:
539             raise Exception("Frame no longer valid")
540

```

Here is the caller graph for this function:



### 5.6.1.3 def memoryoracle.instance.serialize\_block\_locals ( blk = None )

Definition at line 554 of file instance.py.

References memoryoracle.instance.addressable\_factory().

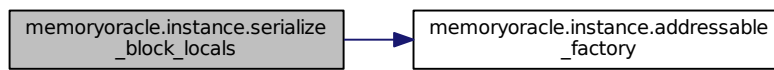
Referenced by memoryoracle.instance.serialize\_frame\_globals().

```

554 def serialize_block_locals (blk = None):
555     Memory._updatedNames.clear()
556     block = blk if blk is not None else gdb.selected_frame().block()
557     for sym in block:
558         if sym.is_constant:
559             continue
560         desc = descriptions.MemoryDescription(sym.name, symbol = sym)
561         if isinstance(desc.object, gdb.Symbol):
562             continue
563         obj = addressable_factory(desc)
564         obj.track()
565

```

Here is the call graph for this function:



Here is the caller graph for this function:



#### 5.6.1.4 def memoryoracle.instance.serialize\_frame\_globals ( frm = None )

Definition at line 541 of file instance.py.

References memoryoracle.instance.serialize\_block\_locals().

```

541 def serialize_frame_globals(frm=None):
542     frame = frm if frm is not None else gdb.selected_frame()
543     block = frame.block().global_block
544     serialize_block_locals(block)
545 
```

Here is the call graph for this function:



#### 5.6.1.5 def memoryoracle.instance.serialize\_frame\_locals ( frm = None )

Definition at line 566 of file instance.py.

References memoryoracle.instance.addressable\_factory(), and memoryoracle.instance.get\_frame\_symbols().

Referenced by memoryoracle.instance.serialize\_upward().

```

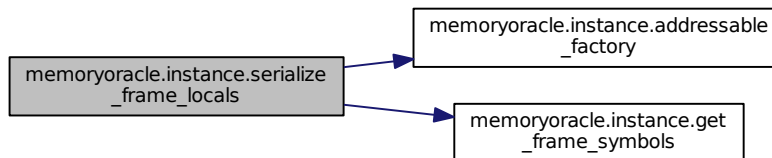
566 def serialize_frame_locals(frm = None):
567     Memory._updatedNames.clear()
568     for k in get_frame_symbols(frm = frm):
569         desc = descriptions.MemoryDescription(k)
570         obj = addressable_factory(desc)
571         obj.track()
572
573 # def type_name(t, nameDecorators = ""):
574 #     if t.code == gdb.TYPE_CODE_PTR:
  
```

```

575 #         return type_name(t.target(), nameDecorators + "*")
576 #     elif t.code == gdb.TYPE_CODE_ARRAY:
577 #         length = str(t.range()[1] - t.range()[0] + 1)
578 #         return type_name(t.target(), nameDecorators + "[" + length + "]")
579 #     else:
580 #         return t.name + nameDecorators
581

```

Here is the call graph for this function:



Here is the caller graph for this function:



#### 5.6.1.6 def memoryoracle.instance.serialize\_upward ( baseBlock = None )

Definition at line 546 of file instance.py.

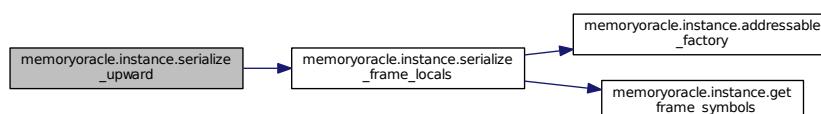
References `memoryoracle.instance.serialize_frame_locals()`.

```

546 def serialize_upward(baseBlock = None):
547     if baseBlock is None:
548         f = gdb.newest_frame()
549
550     while f is not None:
551         serialize_frame_locals(f)
552         f = f.older()
553

```

Here is the call graph for this function:



### 5.6.1.7 def memoryoracle.instance.stopped ( event )

Definition at line 594 of file instance.py.

```

594 def stopped(event):
595     arrayData = [ v2 for k, v in Array.repository.items() for k2, v2 in v.items() ]
596
597     with open("arrays.json", "w") as outfile:
598         json.dump(arrayData, outfile, cls=StateSerializer)
599
600     with open("pointers.json", "w") as outfile:
601         json.dump(Pointer.repository, outfile, cls=StateSerializer)
602
603     with open("structs.json", "w") as outfile:
604         json.dump(Structure.repository, outfile, cls=StateSerializer)
605
606     with open("values.json", "w") as outfile:
607         json.dump(Int.repository, outfile, cls=StateSerializer)
608
609     # with open("functions.json", "w") as outfile:
610     #     json.dump(Call.repository, outfile, cls=StateSerializer)
611
612     gdb.events.stop.connect(stopped)
613

```

### 5.6.1.8 def memoryoracle.instance.target\_type\_name ( t )

Definition at line 582 of file instance.py.

```

582 def target_type_name(t):
583     if t.code == gdb.TYPE_CODE_PTR or t.code == gdb.TYPE_CODE_ARRAY:
584         return target_type_name(t.target())
585     return t.name
586

```

## 5.6.2 Variable Documentation

### 5.6.2.1 tuple memoryoracle.instance.connection

**Initial value:**

```

1 = mongoengine.connect('memoryoracle',
2     read_preference=\
3         pymongo.read_preferences.ReadPreference.PRIMARY)

```

Definition at line 28 of file instance.py.

### 5.6.2.2 tuple memoryoracle.instance.d = descriptions.MemoryDescription("a", address="1", execution=e)

Definition at line 618 of file instance.py.

### 5.6.2.3 memoryoracle.instance.db = connection.memoryoracle

Definition at line 32 of file instance.py.

### 5.6.2.4 tuple memoryoracle.instance.e = execution.Execution()

Definition at line 616 of file instance.py.

### 5.6.2.5 tuple memoryoracle.instance.f = frame.Frame(gdb.selected\_frame())

Definition at line 615 of file instance.py.

5.6.2.6 tuple memoryoracle.instance.frameDescription = descriptions.MemoryDescription("yourframe")

Definition at line 614 of file instance.py.

5.6.2.7 tuple memoryoracle.instance.x = Float.factory(descript=d)

Definition at line 619 of file instance.py.

Referenced by memoryoracle.test\_models.ProgramTestData.set\_up\_class(), memoryoracle.test\_models.CommitTest  
TestData.set\_up\_class(), memoryoracle.test\_models.ExecutableTestData.set\_up\_class(), memoryoracle.test\_models.ExecutionTestData.set\_up\_class(), memoryoracle.test\_models.MemoryTestData.set\_up\_class(), memoryoracle.test\_models.ObjectFileTestData.set\_up\_class(), memoryoracle.test\_models.SourceFileTestData.set\_up\_class(), and memoryoracle.test\_models.SymbolTestData.set\_up\_class().

## 5.7 memoryoracle.migrations Namespace Reference

### Namespaces

- [0001\\_initial](#)
- [0002\\_auto\\_20150402\\_2000](#)
- [0003\\_auto\\_20150402\\_2000](#)
- [0004\\_auto\\_20150402\\_2000](#)
- [0005\\_auto\\_20150403\\_0100](#)
- [0006\\_program\\_path](#)
- [0007\\_auto\\_20150403\\_0248](#)

## 5.8 memoryoracle.migrations.0001\_initial Namespace Reference

### Classes

- class [Migration](#)

## 5.9 memoryoracle.migrations.0002\_auto\_20150402\_2000 Namespace Reference

### Classes

- class [Migration](#)

## 5.10 memoryoracle.migrations.0003\_auto\_20150402\_2000 Namespace Reference

### Classes

- class [Migration](#)

## 5.11 memoryoracle.migrations.0004\_auto\_20150402\_2000 Namespace Reference

### Classes

- class [Migration](#)

## 5.12 memoryoracle.migrations.0005\_auto\_20150403\_0100 Namespace Reference

### Classes

- class [Migration](#)

## 5.13 memoryoracle.migrations.0006\_program\_path Namespace Reference

### Classes

- class [Migration](#)

## 5.14 memoryoracle.migrations.0007\_auto\_20150403\_0248 Namespace Reference

### Classes

- class [Migration](#)

## 5.15 memoryoracle.models Namespace Reference

### Classes

- class [Commit](#)
- class [Executable](#)
- class [Execution](#)
- class [Memory](#)
- class [ObjectFile](#)
- class [Program](#)
- class [ProgramFile](#)
- class [Schema](#)
- class [SourceFile](#)
- class [Symbol](#)
- class [Tracked](#)
- class [Type](#)
- class [Typed](#)

## 5.16 memoryoracle.registry Namespace Reference

### Classes

- class [TypeDetectionError](#)
- class [TypeRegistration](#)

## 5.17 memoryoracle.settings Namespace Reference

### Variables

- tuple [BASE\\_DIR](#) = os.path.dirname(os.path.dirname(\_\_file\_\_))

- string `SECRET_KEY` = 'w=6vi9p\_z8ik%0(843=zmjv\*\$5qc\$kf\_g!lo5-vqy1nd+e368b'
- `DEBUG` = True
- `TEMPLATE_DEBUG` = True
- list `ALLOWED_HOSTS` = []
- tuple `INSTALLED_APPS`
- tuple `MIDDLEWARE_CLASSES`
- string `ROOT_URLCONF` = 'memoryoracle.urls'
- string `WSGI_APPLICATION` = 'memoryoracle.wsgi.application'
- dictionary `DATABASES`
- string `LANGUAGE_CODE` = 'en-us'
- string `TIME_ZONE` = 'UTC'
- `USE_I18N` = True
- `USE_L10N` = True
- `USE_TZ` = True
- string `STATIC_URL` = '/static/'

### 5.17.1 Detailed Description

Django settings for memoryoracle project.

For more information on this file, see  
<https://docs.djangoproject.com/en/1.7/topics/settings/>

For the full list of settings and their values, see  
<https://docs.djangoproject.com/en/1.7/ref/settings/>

### 5.17.2 Variable Documentation

#### 5.17.2.1 list memoryoracle.settings.ALLOWED\_HOSTS = []

Definition at line 27 of file settings.py.

#### 5.17.2.2 tuple memoryoracle.settings.BASE\_DIR = os.path.dirname(os.path.dirname(\_\_file\_\_))

Definition at line 13 of file settings.py.

#### 5.17.2.3 dictionary memoryoracle.settings.DATABASES

**Initial value:**

```
1 = {
2     'default': {
3         'ENGINE': 'django_mongodb_engine',
4         'NAME': 'memoryoracle'
5     }
6 }
```

Definition at line 70 of file settings.py.

#### 5.17.2.4 memoryoracle.settings.DEBUG = True

Definition at line 23 of file settings.py.

#### 5.17.2.5 tuple memoryoracle.settings.INSTALLED\_APPS

##### Initial value:

```
1 = (  
2     'django.contrib.admin',  
3     'django.contrib.auth',  
4     'django.contrib.contenttypes',  
5     'django.contrib.sessions',  
6     'django.contrib.messages',  
7     'django.contrib.staticfiles',  
8     'memoryoracle',  
9 )
```

Definition at line 32 of file settings.py.

#### 5.17.2.6 string memoryoracle.settings.LANGUAGE\_CODE = 'en-us'

Definition at line 80 of file settings.py.

#### 5.17.2.7 tuple memoryoracle.settings.MIDDLEWARE\_CLASSES

##### Initial value:

```
1 = (  
2     'django.contrib.sessions.middleware.SessionMiddleware',  
3     'django.middleware.common.CommonMiddleware',  
4     'django.middleware.csrf.CsrfViewMiddleware',  
5     'django.contrib.auth.middleware.AuthenticationMiddleware',  
6     'django.contrib.auth.middleware.SessionAuthenticationMiddleware',  
7     'django.contrib.messages.middleware.MessageMiddleware',  
8     'django.middleware.clickjacking.XFrameOptionsMiddleware',  
9 )
```

Definition at line 42 of file settings.py.

#### 5.17.2.8 string memoryoracle.settings.ROOT\_URLCONF = 'memoryoracle.urls'

Definition at line 52 of file settings.py.

#### 5.17.2.9 string memoryoracle.settings.SECRET\_KEY = 'w=6vi9p\_z8ik%0(843=zmjv\*\$5qc\$kf\_g!lo5-vqy1nd+e368b'

Definition at line 20 of file settings.py.

#### 5.17.2.10 string memoryoracle.settings.STATIC\_URL = '/static/'

Definition at line 94 of file settings.py.

#### 5.17.2.11 memoryoracle.settings.TEMPLATE\_DEBUG = True

Definition at line 25 of file settings.py.

#### 5.17.2.12 string memoryoracle.settings.TIME\_ZONE = 'UTC'

Definition at line 82 of file settings.py.



#### 5.17.2.13 memoryoracle.settings.USE\_I18N = True

Definition at line 84 of file settings.py.

#### 5.17.2.14 memoryoracle.settings.USE\_L10N = True

Definition at line 86 of file settings.py.

#### 5.17.2.15 memoryoracle.settings.USE\_TZ = True

Definition at line 88 of file settings.py.

#### 5.17.2.16 string memoryoracle.settings.WSGI\_APPLICATION = 'memoryoracle.wsgi.application'

Definition at line 54 of file settings.py.

## 5.18 memoryoracle.symbol Namespace Reference

### Classes

- class [Alias](#)
- class [Enum](#)
- class [Function](#)
- class [Namespace](#)
- class [SimpleType](#)
- class [StronglyTypedEnum](#)
- class [Structure](#)
- class [Symbol](#)
- class [TemplatedDecorator](#)
- class [TemplateDecorator](#)
- class [Type](#)
- class [Typedef](#)
- class [Union](#)
- class [Variable](#)

## 5.19 memoryoracle.test\_models Namespace Reference

### Classes

- class [CommitTestData](#)
- class [ExecutableTestData](#)
- class [ExecutionTestData](#)
- class [MemoryTestData](#)
- class [ModelTest](#)
- class [ModelTestData](#)
- class [ObjectFileTestData](#)
- class [ProgramTestData](#)
- class [SourceFileTestData](#)
- class [SymbolTestData](#)
- class [TestModelCommit](#)
- class [TestModelExecutable](#)

- class [TestModelExecution](#)
- class [TestModelMemory](#)
- class [TestModelObjectFile](#)
- class [TestModelProgram](#)
- class [TestModelSourceFile](#)
- class [TestModelSymbol](#)

## 5.20 memoryoracle.tracked Namespace Reference

### Classes

- class [ObjectFile](#)
- class [Owner](#)
- class [ProgramFile](#)
- class [Reference](#)
- class [SourceFile](#)
- class [Tracked](#)
- class [UntrackedDecorator](#)

### Variables

- [read\\_preference](#) = \

### 5.20.1 Variable Documentation

5.20.1.1 `memoryoracle.tracked.read_preference = \`

Definition at line 18 of file `tracked.py`.

## 5.21 memoryoracle.typed Namespace Reference

### Classes

- class [Typed](#)

## 5.22 memoryoracle.urls Namespace Reference

### Variables

- tuple [urlpatterns](#)

### 5.22.1 Variable Documentation

5.22.1.1 `tuple memoryoracle.urls.urlpatterns`

**Initial value:**

```

1 = patterns('',
2     # Examples:
3     # url(r'^$', 'memoryoracle.views.home', name='home'),
4     # url(r'^blog/', include('blog.urls')),
5
6     url(r'^admin/', include(admin.site.urls)),
7 )

```

Definition at line 4 of file urls.py.

## 5.23 memoryoracle.watch Namespace Reference

### Classes

- class [AddressableWatcher](#)
- class [FrameFinish](#)
- class [StateCatch](#)

## 5.24 memoryoracle.whip Namespace Reference

### Classes

- class [Coffee](#)
- class [SugarDecorator](#)
- class [WhipDecorator](#)

### Functions

- def [coffee\\_factory](#) (toppingsList)

### Variables

- tuple [myCoffee](#) = [Coffee](#)()
- tuple [myWhipCoffee](#) = [WhipDecorator](#)([Coffee](#)())
- tuple [mySugarCoffee](#) = [SugarDecorator](#)([Coffee](#)())
- tuple [myWhipSugarCoffee](#) = [WhipDecorator](#)([SugarDecorator](#)([Coffee](#)()))
- tuple [myWhipWhipSugarCoffee](#) = [WhipDecorator](#)([WhipDecorator](#)([SugarDecorator](#)([Coffee](#)())))
- list [topList](#) = ["whip", "whip", "double whip", "sugar", "sugar", "whip", "whip"]
- tuple [yourCoffee](#) = [coffee\\_factory](#)([topList](#))

### 5.24.1 Function Documentation

#### 5.24.1.1 def memoryoracle.whip.coffee\_factory ( toppingsList )

Definition at line 45 of file whip.py.

```

45 def coffee_factory(toppingsList):
46
47     coffee = Coffee()
48
49     for top in toppingsList:
50         if top == "sugar":
51             coffee = SugarDecorator(coffee)
52         elif top == "whip":
53             coffee = WhipDecorator(coffee)
54         elif top == "double whip":
55             coffee = WhipDecorator(WhipDecorator(coffee))

```

```

56         else:
57             raise Exception("Invalid topping!")
58
59     return coffee
60
61

```

## 5.24.2 Variable Documentation

### 5.24.2.1 tuple memoryoracle.whip.myCoffee = Coffee()

Definition at line 62 of file whip.py.

### 5.24.2.2 tuple memoryoracle.whip.mySugarCoffee = SugarDecorator(Coffee())

Definition at line 68 of file whip.py.

### 5.24.2.3 tuple memoryoracle.whip.myWhipCoffee = WhipDecorator(Coffee())

Definition at line 65 of file whip.py.

### 5.24.2.4 tuple memoryoracle.whip.myWhipSugarCoffee = WhipDecorator(SugarDecorator(Coffee()))

Definition at line 71 of file whip.py.

### 5.24.2.5 tuple memoryoracle.whip.myWhipWhipSugarCoffee = WhipDecorator(WhipDecorator(SugarDecorator(WhipDecorator(Coffee()))))

Definition at line 74 of file whip.py.

### 5.24.2.6 list memoryoracle.whip.topList = ["whip", "whip", "double whip", "sugar", "sugar", "whip", "whip"]

Definition at line 77 of file whip.py.

### 5.24.2.7 tuple memoryoracle.whip.yourCoffee = coffee\_factory(topList)

Definition at line 78 of file whip.py.

## 5.25 memoryoracle.wsgi Namespace Reference

### Variables

- tuple [application](#) = get\_wsgi\_application()

### 5.25.1 Detailed Description

WSGI config for memoryoracle project.

It exposes the WSGI callable as a module-level variable named `application`.

For more information on this file, see  
<https://docs.djangoproject.com/en/1.7/howto/deployment/wsgi/>

## 5.25.2 Variable Documentation

### 5.25.2.1 tuple memoryoracle.wsgi.application = get\_wsgi\_application()

Definition at line 14 of file wsgi.py.

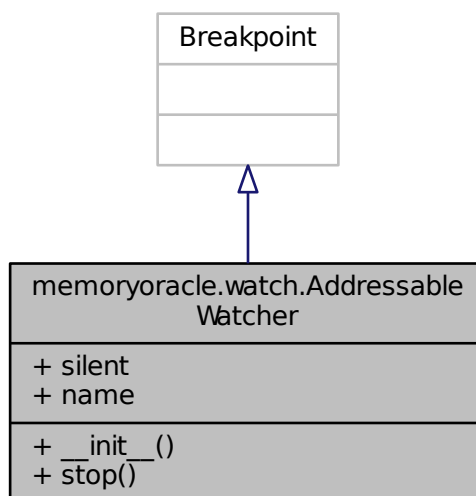


## Chapter 6

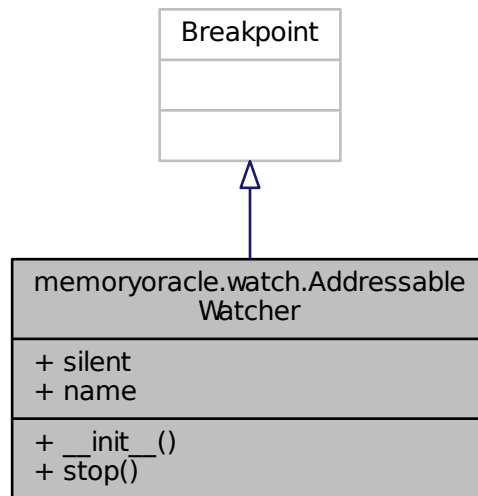
# Class Documentation

### 6.1 memoryoracle.watch.AddressableWatcher Class Reference

Inheritance diagram for memoryoracle.watch.AddressableWatcher:



Collaboration diagram for memoryoracle.watch.AddressableWatcher:



## Public Member Functions

- `def __init__(self)`
- `def stop(self)`

## Public Attributes

- `silent`
- `name`

### 6.1.1 Detailed Description

Definition at line 28 of file watch.py.

### 6.1.2 Constructor & Destructor Documentation

#### 6.1.2.1 `def memoryoracle.watch.AddressableWatcher.__init__( self )`

Definition at line 30 of file watch.py.

```

30     def __init__(self, ):
31         super(StateWatcher, self).__init__("*" + addr,
32             gdb.BP_WATCHPOINT,
33             gdb.WP_WRITE,
34             True,
35             False)
36         self.silent = True
37         self.name = name
38 
```



### 6.1.3 Member Function Documentation

#### 6.1.3.1 def memoryoracle.watch.AddressableWatcher.stop ( self )

Definition at line 39 of file watch.py.

References `memoryoracle.execution.Instance.name`, `memoryoracle.watch.AddressableWatcher.name`, `memoryoracle.execution.Executable.name`, `memoryoracle.models.Tracked.name`, and `memoryoracle.instance.Memory.name`.

```

39     def stop(self):
40         frameName = str(gdb.selected_frame())
41         addr = self.expression[1:]
42         state = State._instances.get(frameName, None)
43
44         if not state:
45             state = State()
46             c = state.serialize_locals()
47             if not c:
48                 return False
49
50         try:
51             val = state.name_to_val(self.name)
52             names = state.get_serial(val = val).keys()
53             for name in names:
54                 state.update(val, name)
55
56         except Exception as e:
57             traceback.print_exc()
58             state.serialize(self.name, address = addr)
59             print("ERROR: could not find address " + addr)
60         return False
61

```

### 6.1.4 Member Data Documentation

#### 6.1.4.1 memoryoracle.watch.AddressableWatcher.name

Definition at line 37 of file watch.py.

Referenced by `memoryoracle.descriptions.MemoryDescription.dict()`, and `memoryoracle.watch.AddressableWatcher.stop()`.

#### 6.1.4.2 memoryoracle.watch.AddressableWatcher.silent

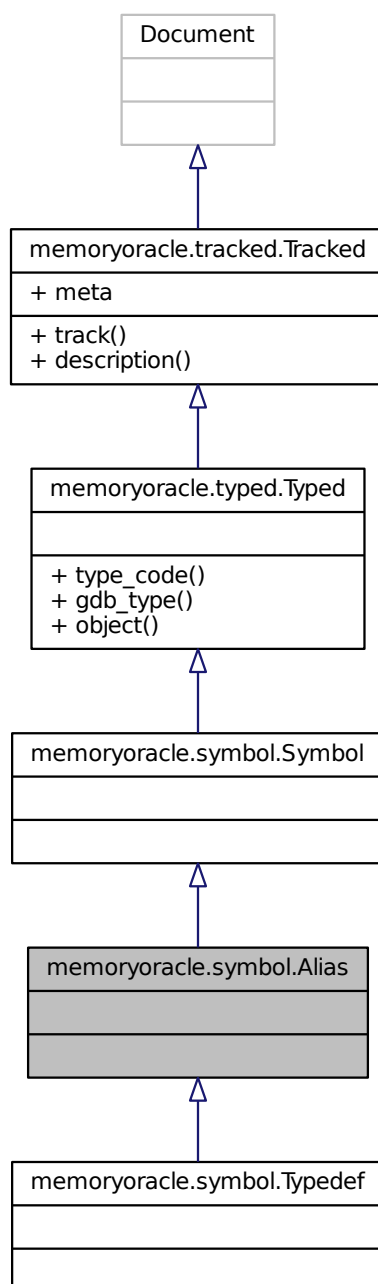
Definition at line 36 of file watch.py.

The documentation for this class was generated from the following file:

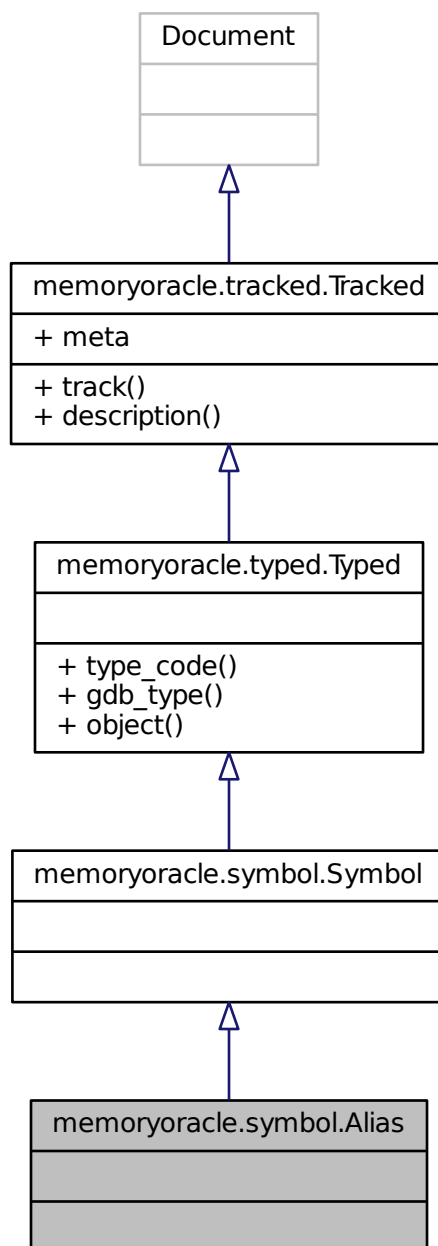
- [memoryoracle/watch.py](#)

## 6.2 memoryoracle.symbol.Alias Class Reference

Inheritance diagram for memoryoracle.symbol.Alias:



Collaboration diagram for memoryoracle.symbol.Alias:



## Additional Inherited Members

### 6.2.1 Detailed Description

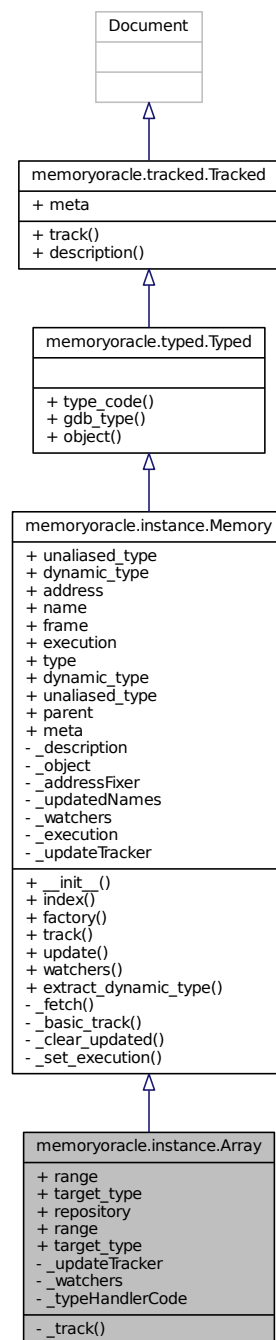
Definition at line 28 of file `symbol.py`.

The documentation for this class was generated from the following file:

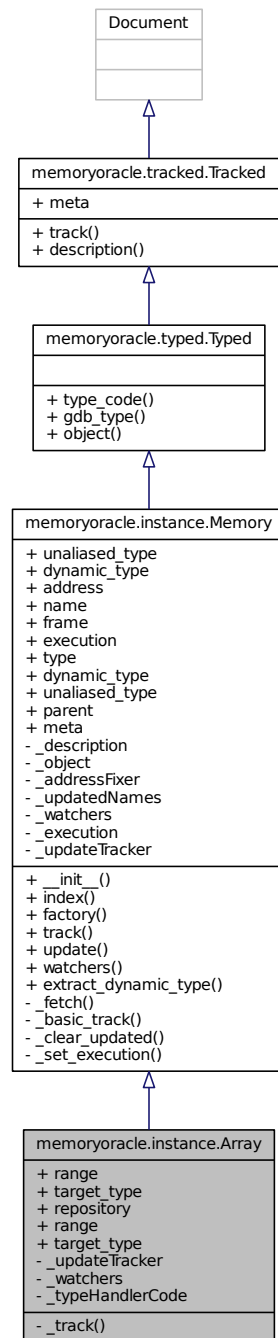
- [memoryoracle/symbol.py](#)

### 6.3 memoryoracle.instance.Array Class Reference

Inheritance diagram for memoryoracle.instance.Array:



Collaboration diagram for memoryoracle.instance.Array:



## Public Attributes

- [range](#)
- [target\\_type](#)

## Static Public Attributes

- tuple `repository` = dict()
- tuple `range` = mongoengine.ListField()
- tuple `target_type` = mongoengine.StringField()

## Private Member Functions

- def `_track` (self)  
*TODO: upgrade this to ref field.*

## Static Private Attributes

- tuple `_updateTracker` = set()
- tuple `_watchers` = dict()
- `_typeHandlerCode` = gdb.TYPE\_CODE\_ARRAY

## Additional Inherited Members

### 6.3.1 Detailed Description

\*Concrete\* class to represent an array in the debugge.

Definition at line 263 of file instance.py.

### 6.3.2 Member Function Documentation

#### 6.3.2.1 def memoryoracle.instance.Array.\_track ( self ) [private]

TODO: upgrade this to ref field.

Definition at line 277 of file instance.py.

References `memoryoracle.typed.Typed.object()`, and `memoryoracle.descriptions.MemoryDescription.object()`.

Referenced by `memoryoracle.instance.Memory.track()`, and `memoryoracle.models.Typed.track()`.

```

277     def _track(self):
278         # convenience vars:
279         s = self.object
280
281         # compute range of array in C sizeof(type) units
282         arrayRange = self.object.type.range()
283         self.range = arrayRange
284
285         # compute the type of data the array contains
286         # e.g. for float[2] the answer is float
287         # for float[3][2][7] the answer is float
288         self.target_type = target_type_name(self.type)
289
290         # compute the immediate type of data the array
291         # contains. e.g. for float[2] the answer is float.
292         # for float[3][2][7] the answer is float[3][2]
293         immediateTarget = s.type.target()
294
295         # if the immediateTarget is an array type, then
296         # it will have the same address as the current
297         # array. Still, we want to treat it as a different
298         # creature, so we remove the current address
299         # from the updateTracker.
300
301         # TODO: if the first element of the array
302         # is a pointer back to the array, this may
303         # cause an infinite loop. *This algorithm
304         # needs torture testing.*

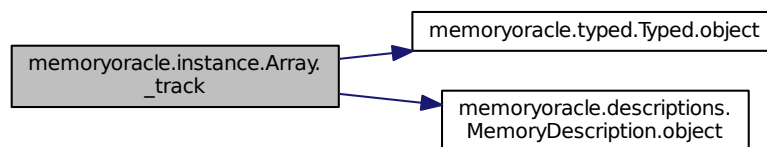
```

```

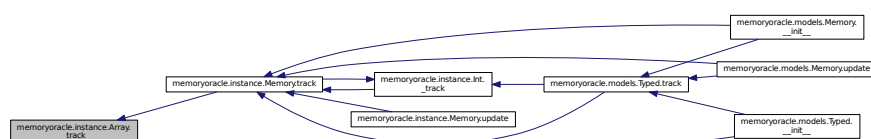
305         if immediateTarget.code == gdb.TYPE_CODE_ARRAY:
306             self._updateTracker.remove(self.index)
307
308         # Compute the total length of the array.
309
310         # CONCERN: This should always be correct, but I
311         # can't think of a time when the first value of
312         # range would be non zero. Still, this costs
313         # very little, and if we support some "1 indexed"
314         # language, then the algorithm should still work.
315         for i in range(arrayRange[0], arrayRange[1] + 1):
316             relativeName = "[" + str(i) + "]",
317             childName = self.name + relativeName
318             childDesc = descriptions.MemoryDescription(
319                 childName,
320                 relativeName=relativeName,
321                 parent=self,
322                 parent_class="array")
323
324             childObj = addressable_factory(childDesc)
325             childObj.track()
326
327
328     # Register the Array class with the type handler
329     registry.TypeRegistration(Array)
330
331

```

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.3.3 Member Data Documentation

#### 6.3.3.1 memoryoracle.instance.Array.\_typeHandlerCode = gdb.TYPE\_CODE\_ARRAY [static], [private]

Definition at line 272 of file instance.py.

Referenced by memoryoracle.models.Typed.type\_handler().

#### 6.3.3.2 tuple memoryoracle.instance.Array.\_updateTracker = set() [static], [private]

Definition at line 269 of file instance.py.

**6.3.3.3** `tuple memoryoracle.instance.Array._watchers = dict()` `[static], [private]`

Definition at line 270 of file instance.py.

Referenced by `memoryoracle.models.Typed.__init__()`, and `memoryoracle.models.Memory.watchers()`.

**6.3.3.4** `tuple memoryoracle.instance.Array.range = mongoengine.ListField()` `[static]`

Definition at line 274 of file instance.py.

**6.3.3.5** `memoryoracle.instance.Array.range`

Definition at line 283 of file instance.py.

**6.3.3.6** `tuple memoryoracle.instance.Array.repository = dict()` `[static]`

Definition at line 268 of file instance.py.

**6.3.3.7** `tuple memoryoracle.instance.Array.target_type = mongoengine.StringField()` `[static]`

Definition at line 275 of file instance.py.

**6.3.3.8** `memoryoracle.instance.Array.target_type`

Definition at line 288 of file instance.py.

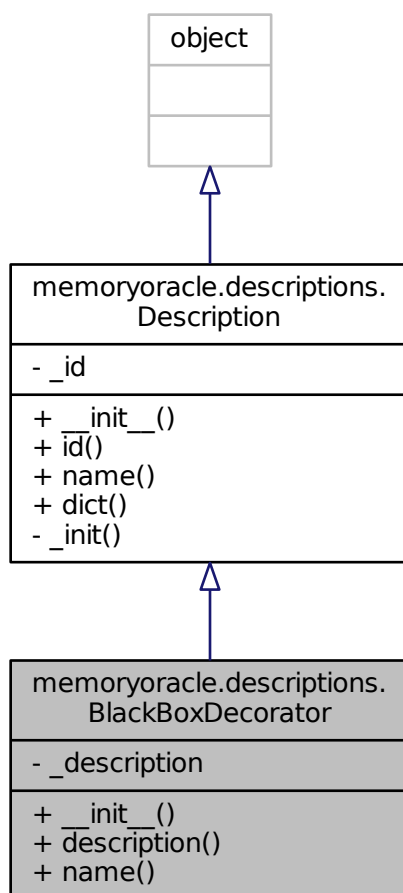
The documentation for this class was generated from the following file:

- `memoryoracle/instance.py`

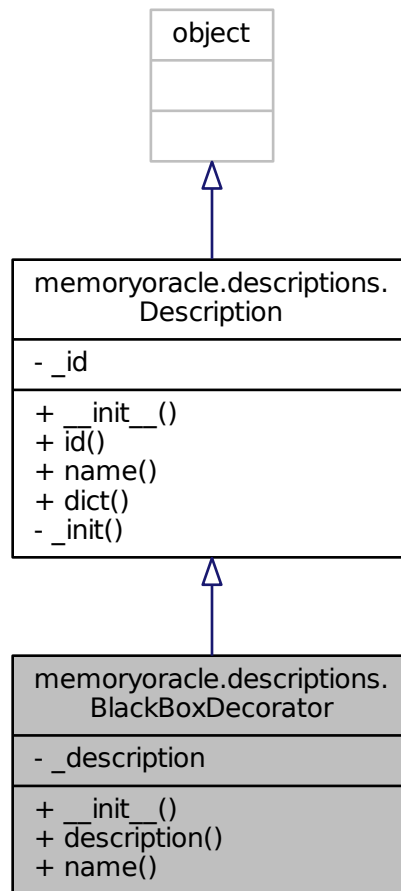


## 6.4 memoryoracle.descriptions.BlackBoxDecorator Class Reference

Inheritance diagram for memoryoracle.descriptions.BlackBoxDecorator:



Collaboration diagram for memoryoracle.descriptions.BlackBoxDecorator:



## Public Member Functions

- `def __init__(self, description)`
- `def description(self)`
- `def name(self)`

## Private Attributes

- `_description`

### 6.4.1 Detailed Description

\*Decorator\* BlackBoxDecorator class.

A decorator to mark a description as referring to a piece of information which should not be intrusively explored by MemoryOracle.

Definition at line 41 of file descriptions.py.

## 6.4.2 Constructor & Destructor Documentation

### 6.4.2.1 def memoryoracle.descriptions.BlackBoxDecorator.\_\_init\_\_( self, description )

Definition at line 50 of file descriptions.py.

```
50     def __init__(self, description):
51         self._description = description
52
```

## 6.4.3 Member Function Documentation

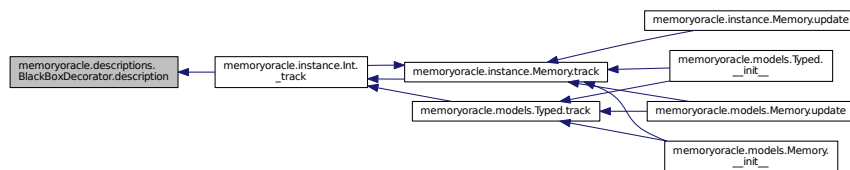
### 6.4.3.1 def memoryoracle.descriptions.BlackBoxDecorator.description ( self )

Definition at line 54 of file descriptions.py.

Referenced by memoryoracle.instance.Int.\_track().

```
54     def description(self):
55         return "---black box---"
56
```

Here is the caller graph for this function:



### 6.4.3.2 def memoryoracle.descriptions.BlackBoxDecorator.name ( self )

Definition at line 58 of file descriptions.py.

```
58     def name(self):
59         return self._description.name
60
61
```

## 6.4.4 Member Data Documentation

### 6.4.4.1 memoryoracle.descriptions.BlackBoxDecorator.\_description [private]

Definition at line 51 of file descriptions.py.

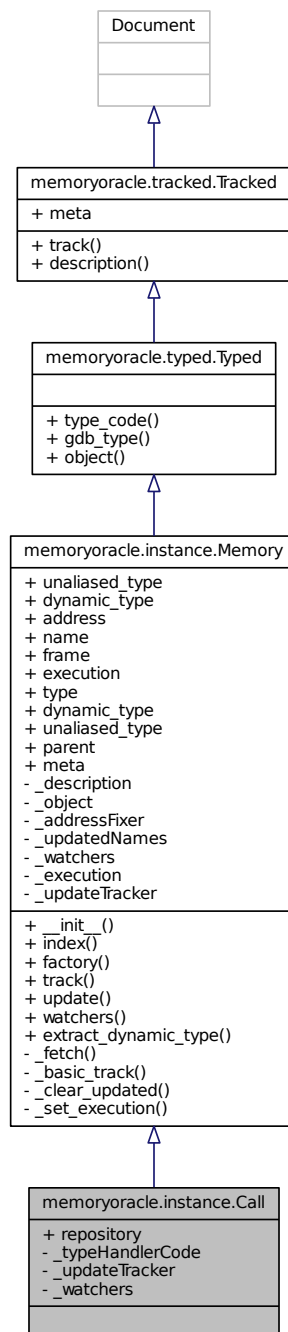
Referenced by memoryoracle.tracked.Tracked.description(), memoryoracle.descriptions.ExternalDescriptionDecorator.description(), and memoryoracle.descriptions.StandardDescriptionDecorator.description().

The documentation for this class was generated from the following file:

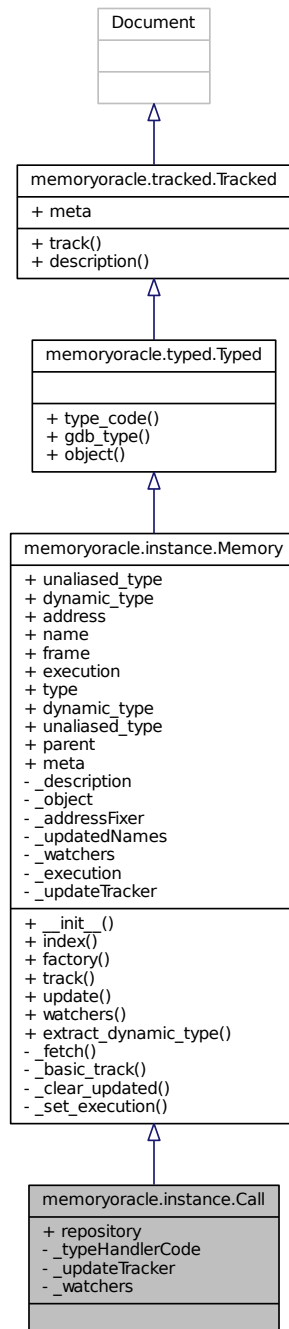
- [memoryoracle/descriptions.py](#)

## 6.5 memoryoracle.instance.Call Class Reference

Inheritance diagram for memoryoracle.instance.Call:



Collaboration diagram for memoryoracle.instance.Call:



### Static Public Attributes

- tuple `repository` = dict()

### Static Private Attributes

- `_typeHandlerCode` = gdb.TYPE\_CODE\_FUNC

- tuple `_updateTracker` = `set()`
- tuple `_watchers` = `dict()`

## Additional Inherited Members

### 6.5.1 Detailed Description

*\*Concrete\** class representing a particaular call to a function.

This includes class / struct member functions, but does not include gdb Xmethods or similar.

Definition at line 174 of file `instance.py`.

### 6.5.2 Member Data Documentation

**6.5.2.1** `memoryoracle.instance.Call._typeHandlerCode` = `gdb.TYPE_CODE_FUNC` `[static]`, `[private]`

Definition at line 182 of file `instance.py`.

Referenced by `memoryoracle.models.Typed.type_handler()`.

**6.5.2.2** tuple `memoryoracle.instance.Call._updateTracker` = `set()` `[static]`, `[private]`

Definition at line 183 of file `instance.py`.

**6.5.2.3** tuple `memoryoracle.instance.Call._watchers` = `dict()` `[static]`, `[private]`

Definition at line 184 of file `instance.py`.

Referenced by `memoryoracle.models.Typed.__init__()`, and `memoryoracle.models.Memory.watchers()`.

**6.5.2.4** tuple `memoryoracle.instance.Call.repository` = `dict()` `[static]`

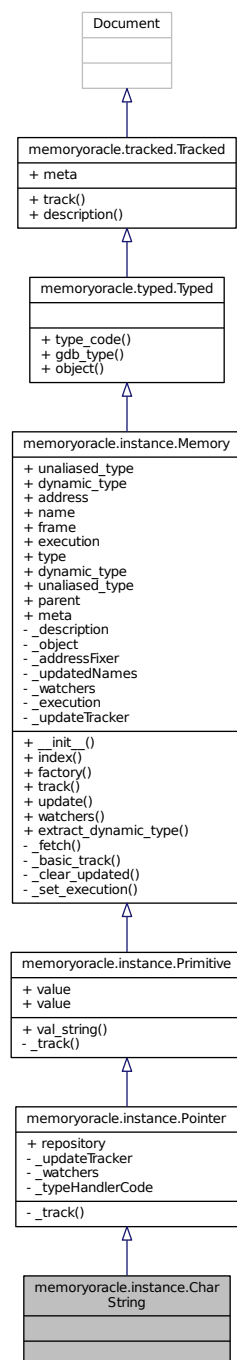
Definition at line 181 of file `instance.py`.

The documentation for this class was generated from the following file:

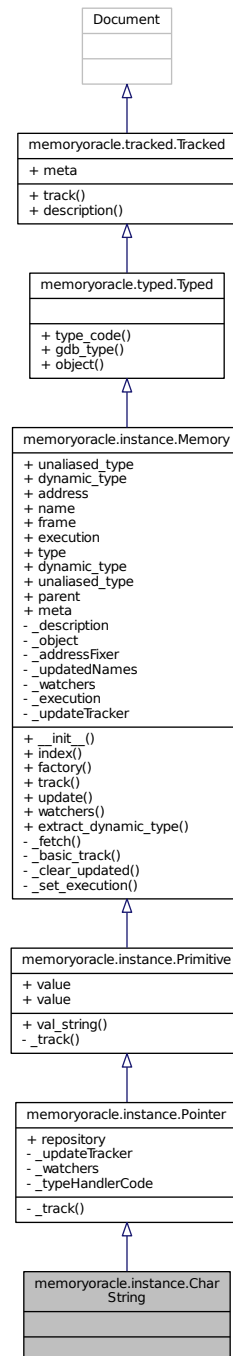
- `memoryoracle/instance.py`

## 6.6 memoryoracle.instance.CharString Class Reference

Inheritance diagram for memoryoracle.instance.CharString:



Collaboration diagram for `memoryoracle.instance.CharString`:



## Additional Inherited Members

### 6.6.1 Detailed Description

*\*Concrete\** class to represent an old style null terminated C string.

Definition at line 458 of file `instance.py`.

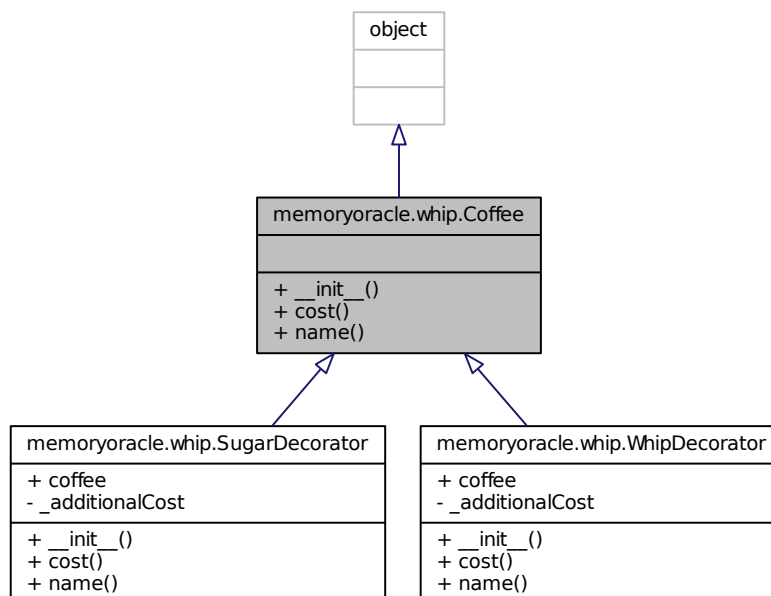


The documentation for this class was generated from the following file:

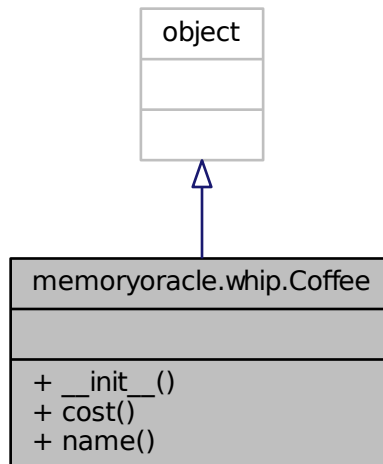
- [memoryoracle/instance.py](#)

## 6.7 memoryoracle.whip.Coffee Class Reference

Inheritance diagram for memoryoracle.whip.Coffee:



Collaboration diagram for memoryoracle.whip.Coffee:



## Public Member Functions

- def `__init__`(self)
- def `cost`(self)
- def `name`(self)

### 6.7.1 Detailed Description

Definition at line 5 of file whip.py.

### 6.7.2 Constructor & Destructor Documentation

#### 6.7.2.1 def memoryoracle.whip.Coffee.\_\_init\_\_( self )

Definition at line 7 of file whip.py.

```
7  def __init__(self):
8      pass
9
```

### 6.7.3 Member Function Documentation

#### 6.7.3.1 def memoryoracle.whip.Coffee.cost( self )

Definition at line 10 of file whip.py.

```
10  def cost(self):
11      return 1.00
12
```

## 6.7.3.2 def memoryoracle.whip.Coffee.name ( self )

Definition at line 13 of file whip.py.

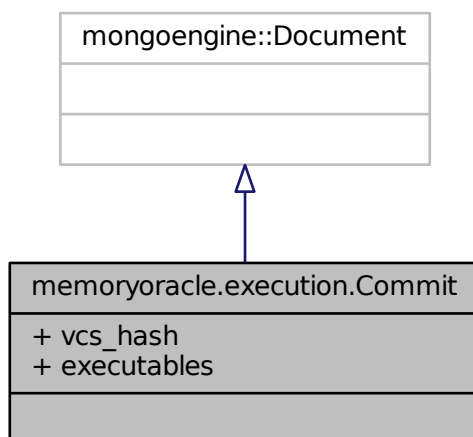
```
13     def name(self):  
14         return "coffee"  
15  
16
```

The documentation for this class was generated from the following file:

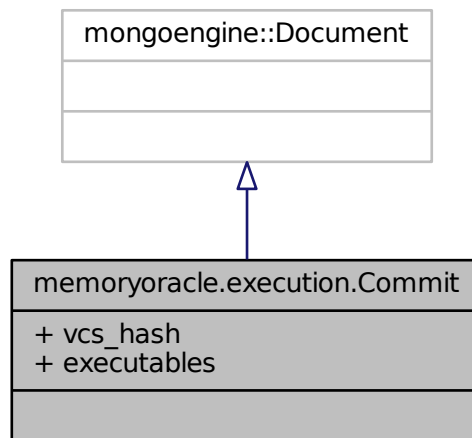
- memoryoracle/[whip.py](#)

## 6.8 memoryoracle.execution.Commit Class Reference

Inheritance diagram for memoryoracle.execution.Commit:



Collaboration diagram for `memoryoracle.execution.Commit`:



### Static Public Attributes

- tuple `vcs_hash` = `mongoengine.StringField()`
- tuple `executables` = `mongoengine.EmbeddedDocumentListField(Executable)`

### 6.8.1 Detailed Description

*\*Concrete\** class representing a version control system commit.

Definition at line 48 of file `execution.py`.

### 6.8.2 Member Data Documentation

**6.8.2.1** tuple `memoryoracle.execution.Commit.executables` = `mongoengine.EmbeddedDocumentListField(Executable)`  
`[static]`

Definition at line 53 of file `execution.py`.

**6.8.2.2** tuple `memoryoracle.execution.Commit.vcs_hash` = `mongoengine.StringField()` `[static]`

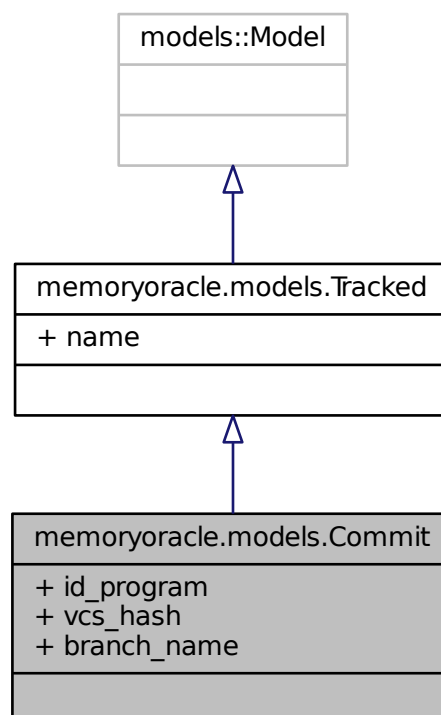
Definition at line 52 of file `execution.py`.

The documentation for this class was generated from the following file:

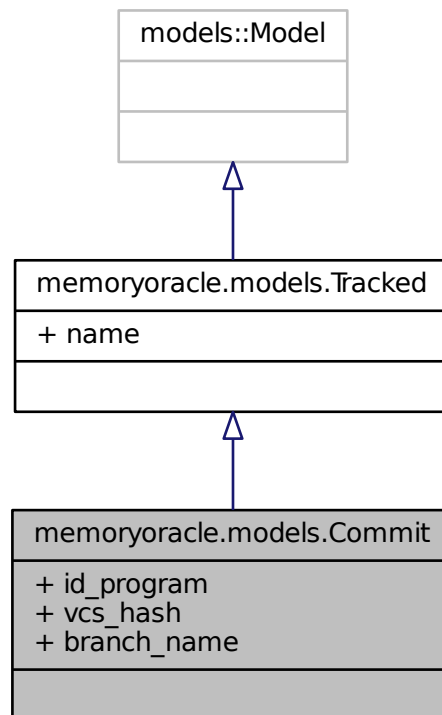
- `memoryoracle/execution.py`

## 6.9 memoryoracle.models.Commit Class Reference

Inheritance diagram for memoryoracle.models.Commit:



Collaboration diagram for memoryoracle.models.Commit:



## Classes

- class [Meta](#)

## Static Public Attributes

- tuple `id_program` = `models.ForeignKey(Program)`
- tuple `vcs_hash` = `models.CharField(unique=True, max_length=200)`
- tuple `branch_name` = `models.CharField(max_length=200)`

### 6.9.1 Detailed Description

Definition at line 52 of file `models.py`.

### 6.9.2 Member Data Documentation

6.9.2.1 tuple `memoryoracle.models.Commit.branch_name` = `models.CharField(max_length=200)` [`static`]

Definition at line 56 of file `models.py`.

6.9.2.2 tuple memoryoracle.models.Commit.id\_program = models.ForeignKey(**Program**) [static]

Definition at line 54 of file models.py.

6.9.2.3 tuple memoryoracle.models.Commit.vcs\_hash = models.CharField(unique=True, max\_length=200) [static]

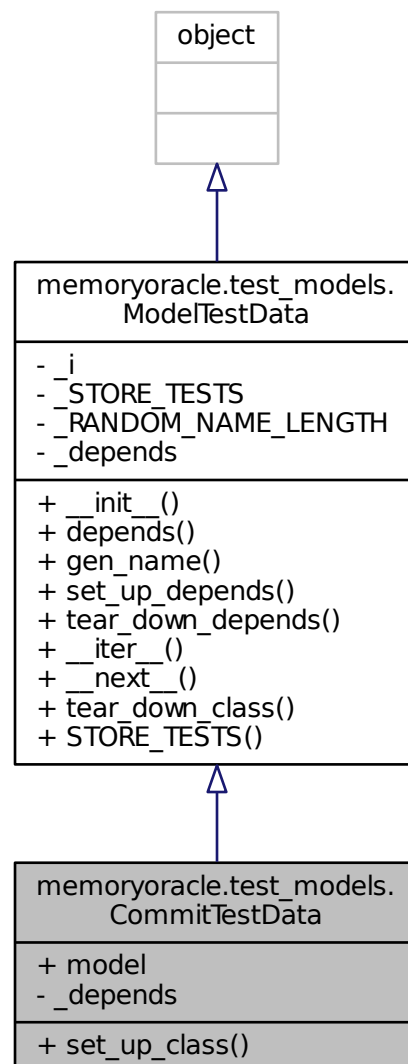
Definition at line 55 of file models.py.

The documentation for this class was generated from the following file:

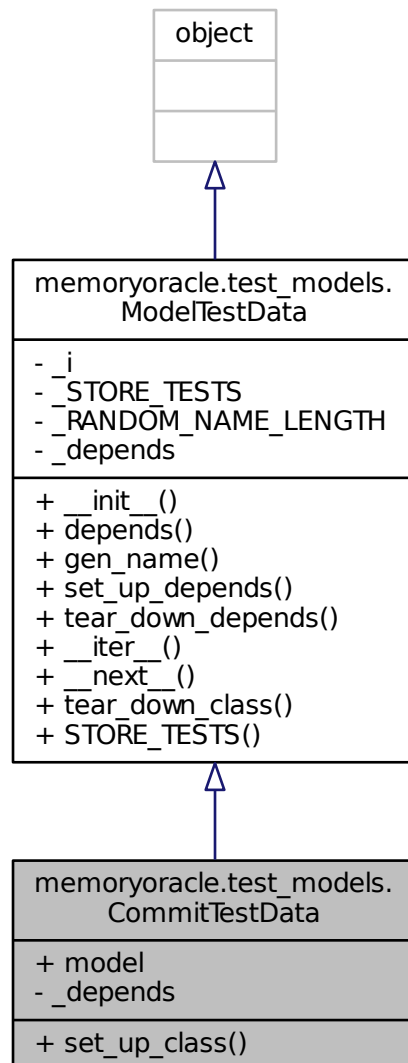
- memoryoracle/[models.py](#)

## 6.10 memoryoracle.test\_models.CommitTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.CommitTestData:



Collaboration diagram for `memoryoracle.test_models.CommitTestData`:



### Public Member Functions

- def `set_up_class` (cls)

### Static Public Attributes

- `model` = `memoryoracle.models.Commit`

### Static Private Attributes

- `list _depends` = [`ProgramTestData`]



## Additional Inherited Members

### 6.10.1 Detailed Description

Definition at line 114 of file test\_models.py.

### 6.10.2 Member Function Documentation

#### 6.10.2.1 def memoryoracle.test\_models.CommitTestData.set\_up\_class ( cls )

Definition at line 121 of file test\_models.py.

References memoryoracle.instance.x.

```
121     def set_up_class(cls):
122         cls.set_up_depends()
123         cls.data = { x.__name__: x() for x in cls.depends() }
124         cls.argsList = [
125             {
126                 "name": ModelTestData.gen_name(),
127                 "id_program": prog,
128                 "branch_name": ModelTestData.gen_name(),
129                 "vcs_hash": ModelTestData.gen_name()
130             } for prog in cls.data["ProgramTestData"] ]
131         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
132
133
```

### 6.10.3 Member Data Documentation

#### 6.10.3.1 list memoryoracle.test\_models.CommitTestData.\_depends = [ProgramTestData] [static], [private]

Definition at line 118 of file test\_models.py.

#### 6.10.3.2 memoryoracle.test\_models.CommitTestData.model = memoryoracle.models.Commit [static]

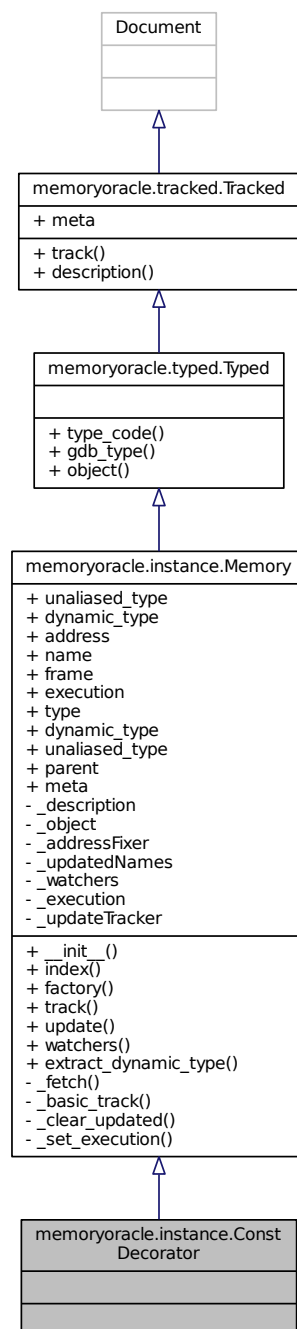
Definition at line 116 of file test\_models.py.

The documentation for this class was generated from the following file:

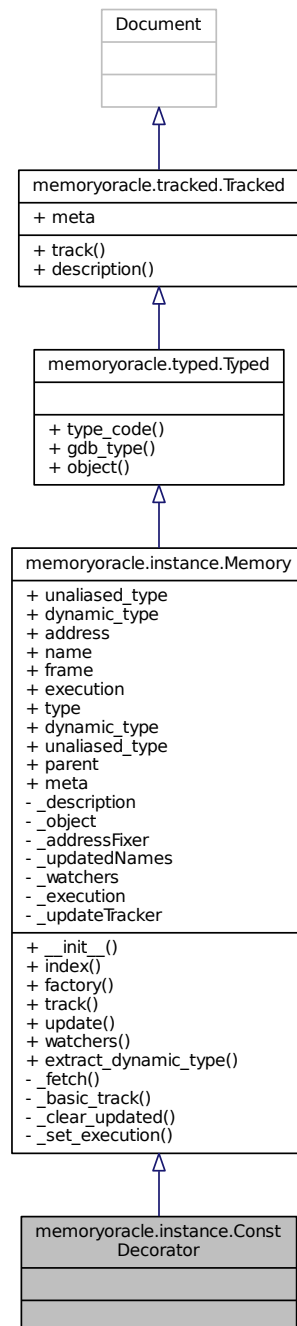
- memoryoracle/[test\\_models.py](#)

## 6.11 memoryoracle.instance.ConstDecorator Class Reference

Inheritance diagram for memoryoracle.instance.ConstDecorator:



Collaboration diagram for memoryoracle.instance.ConstDecorator:



## Additional Inherited Members

### 6.11.1 Detailed Description

`*Decorator*` class to decorate an addressable as being marked `const`.

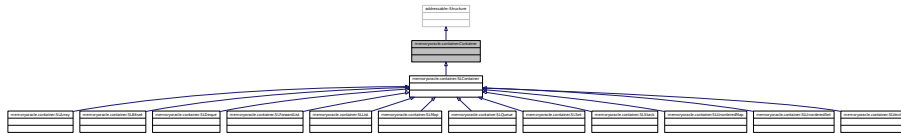
Definition at line 465 of file `instance.py`.

The documentation for this class was generated from the following file:

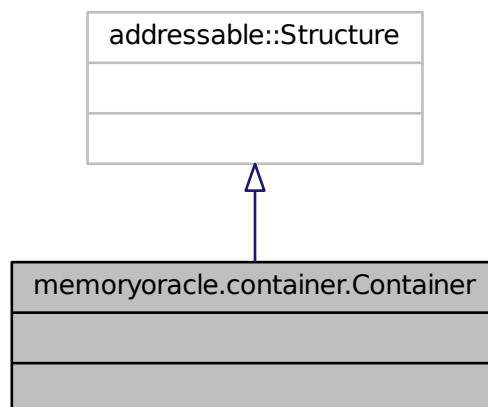
- [memoryoracle/instance.py](#)

## 6.12 memoryoracle.container.Container Class Reference

Inheritance diagram for memoryoracle.container.Container:



Collaboration diagram for memoryoracle.container.Container:



### 6.12.1 Detailed Description

*\*Abstract\** class to represent a C++ container.

This is mostly intended to help correct rendering for standard library containers, but should be helpful for user defined containers as well.

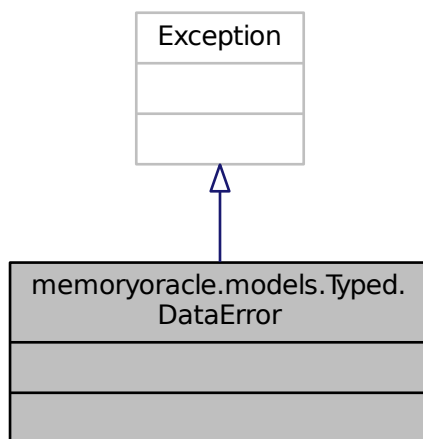
Definition at line 6 of file container.py.

The documentation for this class was generated from the following file:

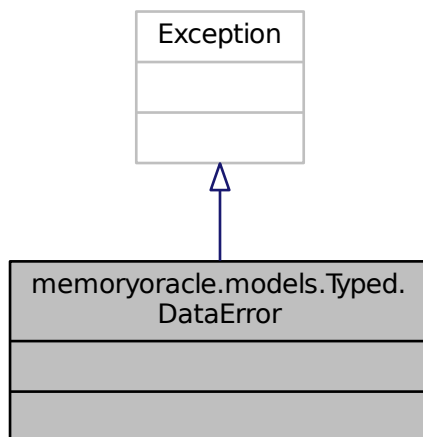
- [memoryoracle/container.py](#)

## 6.13 memoryoracle.models.Typed.DataError Class Reference

Inheritance diagram for memoryoracle.models.Typed.DataError:



Collaboration diagram for memoryoracle.models.Typed.DataError:



### 6.13.1 Detailed Description

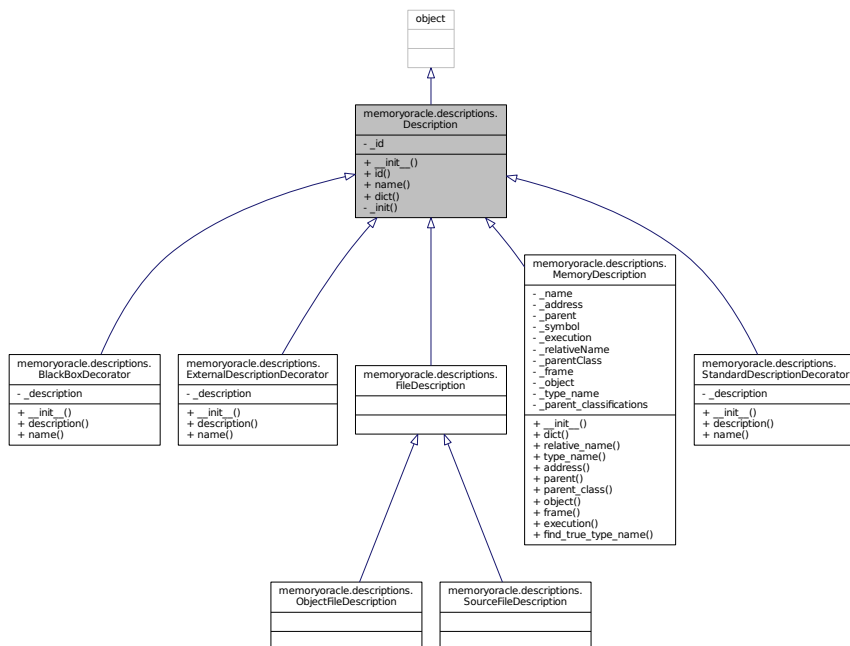
Definition at line 94 of file models.py.

The documentation for this class was generated from the following file:

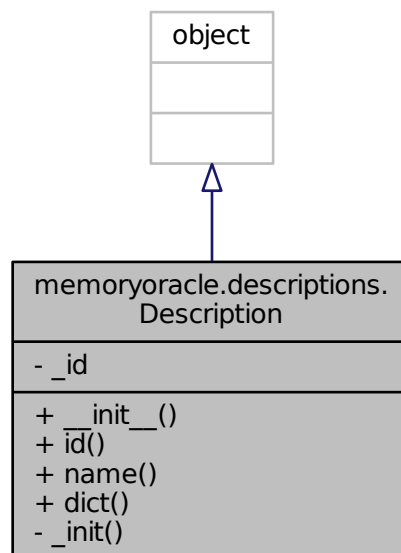
- memoryoracle/[models.py](#)

## 6.14 memoryoracle.descriptions.Description Class Reference

Inheritance diagram for memoryoracle.descriptions.Description:



Collaboration diagram for memoryoracle.descriptions.Description:



## Public Member Functions

- def `__init__` (self, args, kwargs)
- def `id` (self)
- def `name` (self)
- def `dict` (self)

## Private Member Functions

- def `__init` (self)

## Private Attributes

- `_id`

### 6.14.1 Detailed Description

*\*Abstract\** Description class.

This is the superclass of all the different kinds of descriptions used by the subclasses of Tracked.

Definition at line 12 of file descriptions.py.

### 6.14.2 Constructor & Destructor Documentation

#### 6.14.2.1 def memoryoracle.descriptions.Description.\_\_init\_\_( self, args, kwargs )

Definition at line 23 of file descriptions.py.

```
23     def __init__(self, *args, **kwargs):
24         raise NotImplementedError(
25             "Attempt to instantiate abstract class");
26
```

### 6.14.3 Member Function Documentation

#### 6.14.3.1 def memoryoracle.descriptions.Description.\_init( self ) [private]

Definition at line 20 of file descriptions.py.

```
20     def _init(self):
21         self._id = str(uuid())
22
```

#### 6.14.3.2 def memoryoracle.descriptions.Description.dict( self )

Definition at line 36 of file descriptions.py.

```
36     def dict(self):
37         raise NotImplementedError(
38             "Can not transform abstract class Description to dict")
39
40
```

#### 6.14.3.3 `memoryoracle.descriptions.Description.id ( self )`

Definition at line 28 of file `descriptions.py`.

References `memoryoracle.descriptions.Description._id`.

```
28     def id(self):
29         return self._id
30
```

#### 6.14.3.4 `memoryoracle.descriptions.Description.name ( self )`

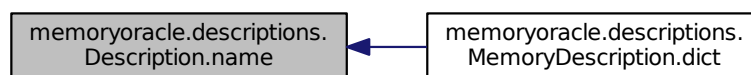
Definition at line 32 of file `descriptions.py`.

References `memoryoracle.descriptions.MemoryDescription._name`.

Referenced by `memoryoracle.descriptions.MemoryDescription.dict()`.

```
32     def name(self):
33         return self._name
34
```

Here is the caller graph for this function:



### 6.14.4 Member Data Documentation

#### 6.14.4.1 `memoryoracle.descriptions.Description._id` [private]

Definition at line 21 of file `descriptions.py`.

Referenced by `memoryoracle.descriptions.Description.id()`.

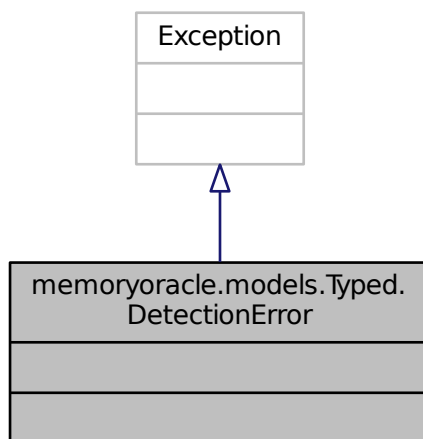
The documentation for this class was generated from the following file:

- `memoryoracle/descriptions.py`

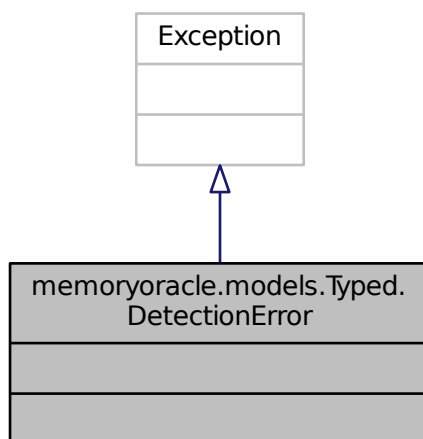


## 6.15 memoryoracle.models.Typed.DetectionError Class Reference

Inheritance diagram for memoryoracle.models.Typed.DetectionError:



Collaboration diagram for memoryoracle.models.Typed.DetectionError:



### 6.15.1 Detailed Description

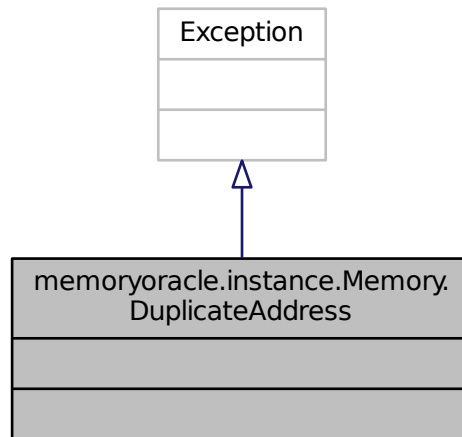
Definition at line 91 of file models.py.

The documentation for this class was generated from the following file:

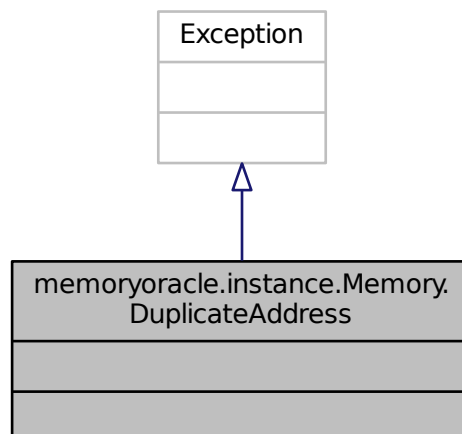
- memoryoracle/[models.py](#)

## 6.16 memoryoracle.instance.Memory.DuplicateAddress Class Reference

Inheritance diagram for memoryoracle.instance.Memory.DuplicateAddress:



Collaboration diagram for memoryoracle.instance.Memory.DuplicateAddress:



### 6.16.1 Detailed Description

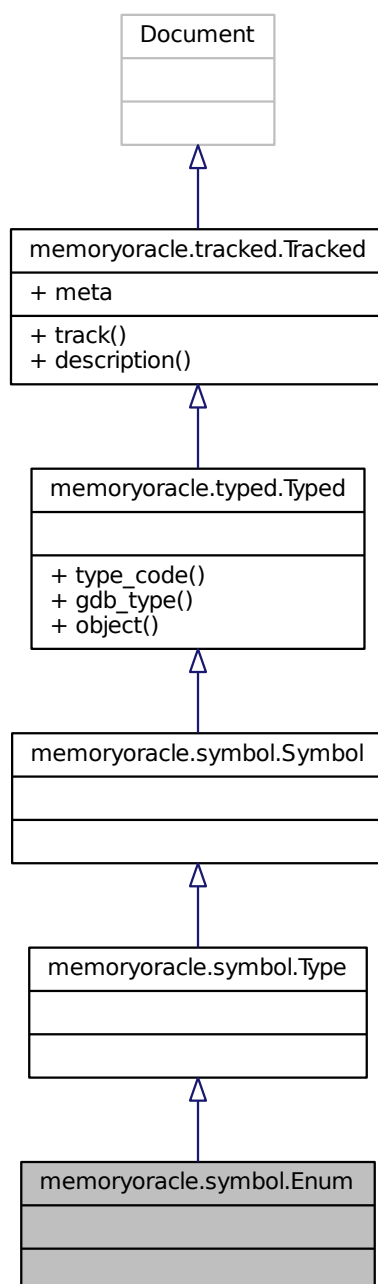
Definition at line 62 of file instance.py.

The documentation for this class was generated from the following file:

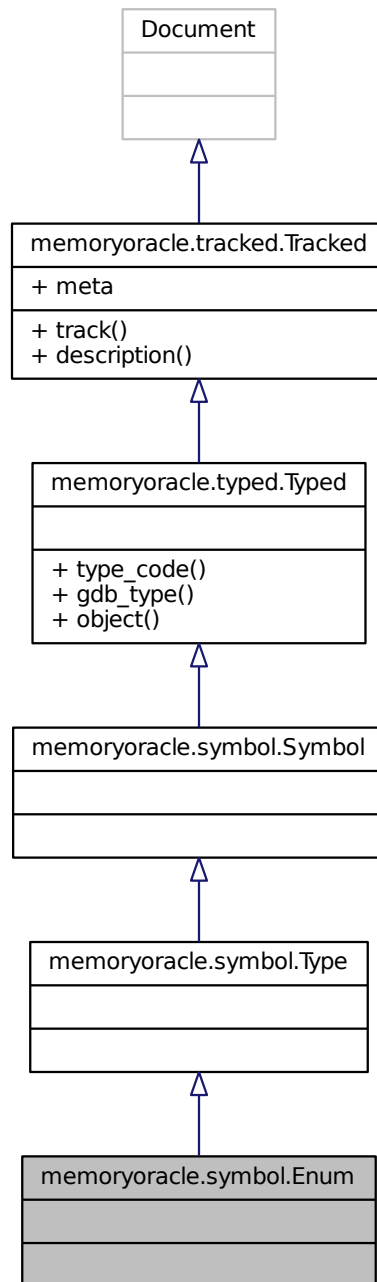
- memoryoracle/[instance.py](#)

## 6.17 memoryoracle.symbol.Enum Class Reference

Inheritance diagram for memoryoracle.symbol.Enum:



Collaboration diagram for memoryoracle.symbol.Enum:



## Additional Inherited Members

### 6.17.1 Detailed Description

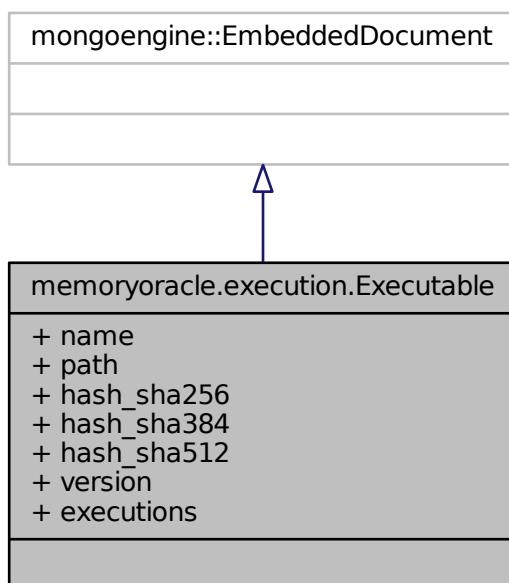
Definition at line 52 of file `symbol.py`.

The documentation for this class was generated from the following file:

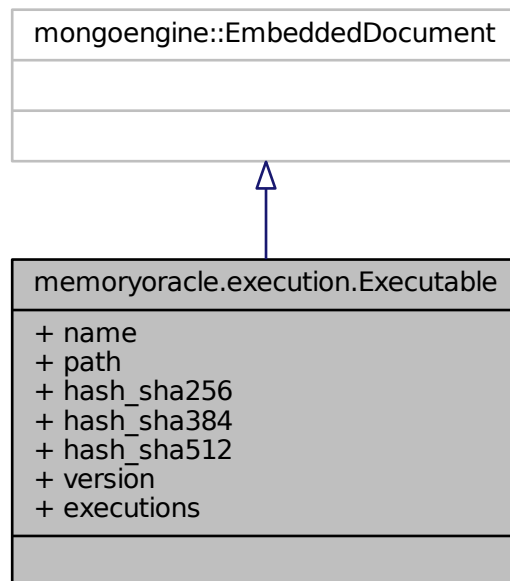
- [memoryoracle/symbol.py](#)

## 6.18 memoryoracle.execution.Executable Class Reference

Inheritance diagram for memoryoracle.execution.Executable:



Collaboration diagram for memoryoracle.execution.Executable:



### Static Public Attributes

- tuple `name` = `mongoengine.StringField()`
- tuple `path` = `mongoengine.StringField()`
- tuple `hash_sha256` = `mongoengine.StringField()`
- tuple `hash_sha384` = `mongoengine.StringField()`
- tuple `hash_sha512` = `mongoengine.StringField()`
- tuple `version` = `mongoengine.StringField()`
- tuple `executions` = `mongoengine.ListField(mongoengine.ReferenceField(Execution))`

### 6.18.1 Detailed Description

*\*Concrete\** class representing a executable file generated by running build on a commit

Definition at line 34 of file `execution.py`.

### 6.18.2 Member Data Documentation

6.18.2.1 tuple `memoryoracle.execution.Executable.executions` = `mongoengine.ListField(mongoengine.ReferenceField(Execution))` [static]

Definition at line 45 of file `execution.py`.

6.18.2.2 tuple `memoryoracle.execution.Executable.hash_sha256` = `mongoengine.StringField()` [static]

Definition at line 41 of file `execution.py`.

6.18.2.3 tuple memoryoracle.execution.Executable.hash\_sha384 = mongoengine.StringField() [static]

Definition at line 42 of file execution.py.

6.18.2.4 tuple memoryoracle.execution.Executable.hash\_sha512 = mongoengine.StringField() [static]

Definition at line 43 of file execution.py.

6.18.2.5 tuple memoryoracle.execution.Executable.name = mongoengine.StringField() [static]

Definition at line 39 of file execution.py.

Referenced by memoryoracle.instance.Memory.\_basic\_track(), memoryoracle.instance.Structure.\_track(), memoryoracle.instance.Pointer.\_track(), memoryoracle.descriptions.MemoryDescription.dict(), memoryoracle.↔ watch.AddressableWatcher.stop(), and memoryoracle.instance.Primitive.val\_string().

6.18.2.6 tuple memoryoracle.execution.Executable.path = mongoengine.StringField() [static]

Definition at line 40 of file execution.py.

6.18.2.7 tuple memoryoracle.execution.Executable.version = mongoengine.StringField() [static]

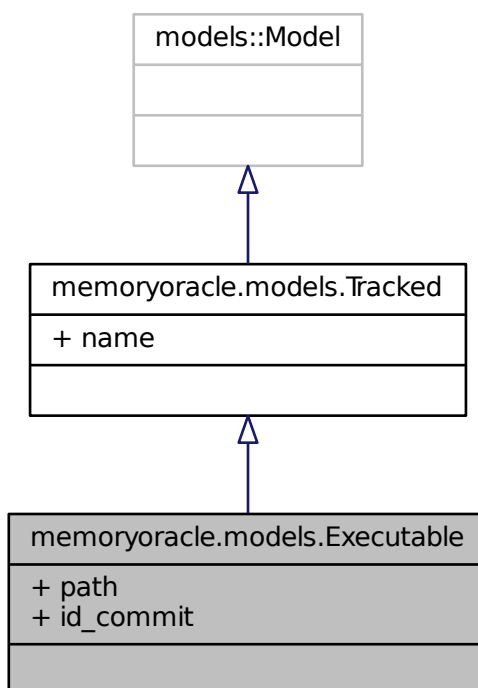
Definition at line 44 of file execution.py.

The documentation for this class was generated from the following file:

- memoryoracle/[execution.py](#)

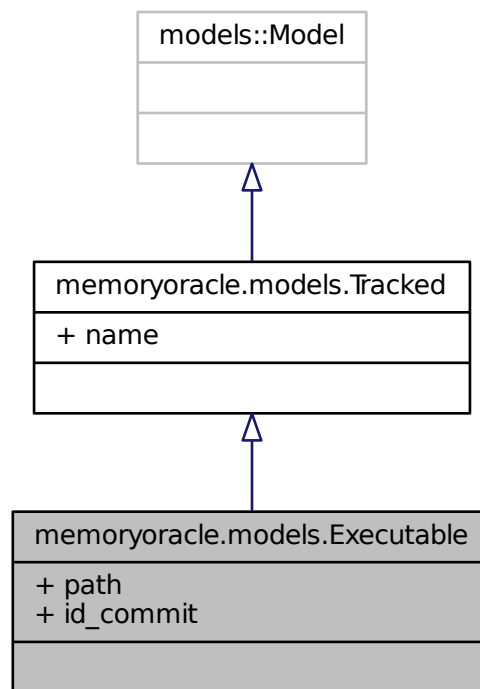
## 6.19 memoryoracle.models.Executable Class Reference

Inheritance diagram for memoryoracle.models.Executable:





Collaboration diagram for memoryoracle.models.Executable:



## Classes

- class [Meta](#)

## Static Public Attributes

- tuple [path](#) = models.TextField(default="/a.out")
- tuple [id\\_commit](#) = models.ForeignKey([Commit](#))

### 6.19.1 Detailed Description

Definition at line 62 of file models.py.

### 6.19.2 Member Data Documentation

6.19.2.1 tuple `memoryoracle.models.Executable.id_commit = models.ForeignKey(Commit)` `[static]`

Definition at line 65 of file models.py.

6.19.2.2 tuple `memoryoracle.models.Executable.path = models.TextField(default="/a.out")` `[static]`

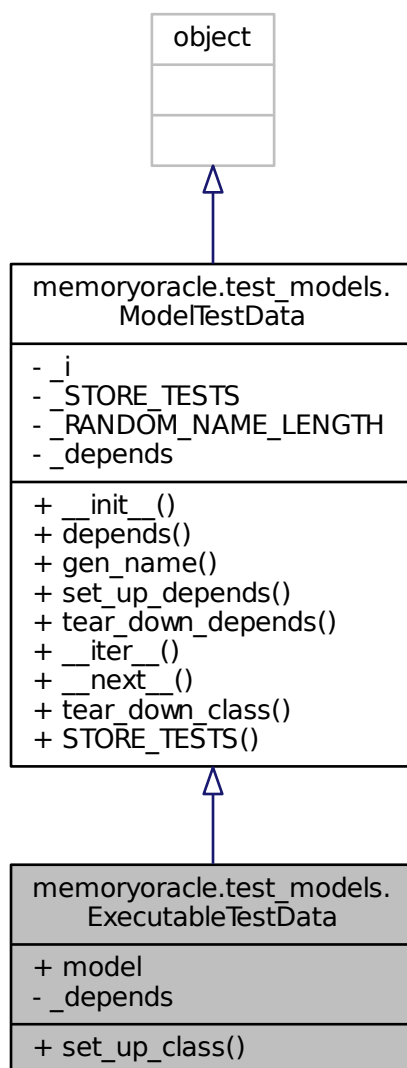
Definition at line 64 of file models.py.

The documentation for this class was generated from the following file:

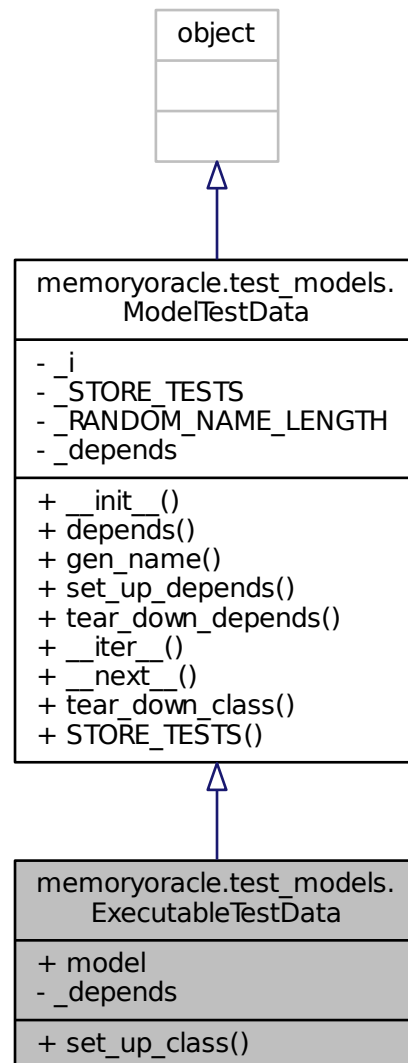
- [memoryoracle/models.py](#)

## 6.20 memoryoracle.test\_models.ExecutableTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.ExecutableTestData:



Collaboration diagram for memoryoracle.test\_models.ExecutableTestData:



### Public Member Functions

- def [set\\_up\\_class](#) (cls)

### Static Public Attributes

- [model](#) = [memoryoracle.models.Executable](#)

### Static Private Attributes

- list [\\_depends](#) = [[CommitTestData](#)]

## Additional Inherited Members

### 6.20.1 Detailed Description

Definition at line 149 of file test\_models.py.

### 6.20.2 Member Function Documentation

#### 6.20.2.1 `def memoryoracle.test_models.ExecutableTestData.set_up_class ( cls )`

Definition at line 156 of file test\_models.py.

References `memoryoracle.instance.x`.

```
156     def set_up_class(cls):
157         cls.set_up_depends()
158         cls.data = { x.__name__: x() for x in cls.depends() }
159         cls.argsList = [
160             {
161                 "name": ModelTestData.gen_name(),
162                 "path": ModelTestData.gen_name(),
163                 "id_commit": commit,
164             } for commit in cls.data["CommitTestData"] ]
165         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
166
167
```

### 6.20.3 Member Data Documentation

#### 6.20.3.1 `list memoryoracle.test_models.ExecutableTestData._depends = [CommitTestData] [static], [private]`

Definition at line 153 of file test\_models.py.

#### 6.20.3.2 `memoryoracle.test_models.ExecutableTestData.model = memoryoracle.models.Executable [static]`

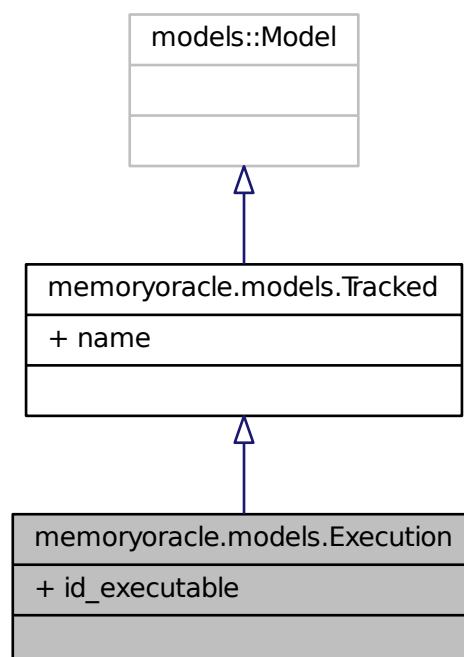
Definition at line 151 of file test\_models.py.

The documentation for this class was generated from the following file:

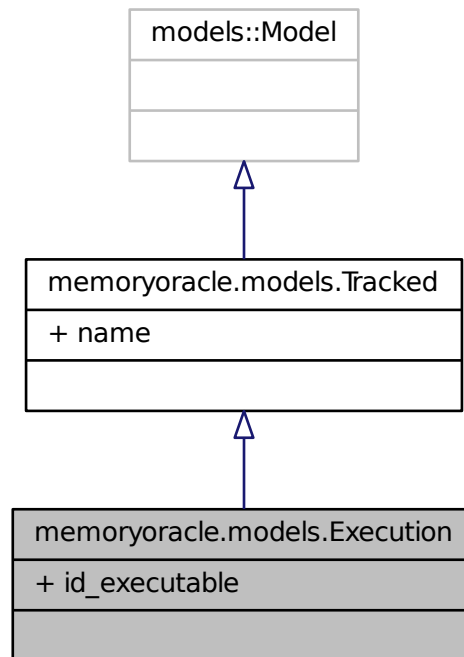
- `memoryoracle/test_models.py`

## 6.21 memoryoracle.models.Execution Class Reference

Inheritance diagram for memoryoracle.models.Execution:



Collaboration diagram for memoryoracle.models.Execution:



## Classes

- class [Meta](#)

## Static Public Attributes

- tuple `id_executable` = `models.ForeignKey(Executable, default=None)`

### 6.21.1 Detailed Description

Definition at line 71 of file `models.py`.

### 6.21.2 Member Data Documentation

6.21.2.1 tuple `memoryoracle.models.Execution.id_executable` = `models.ForeignKey(Executable, default=None)`  
`[static]`

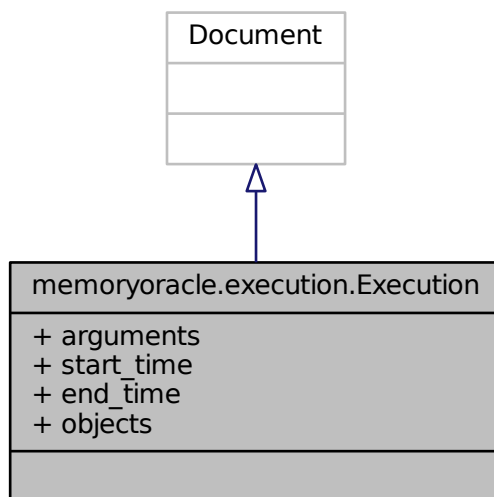
Definition at line 73 of file `models.py`.

The documentation for this class was generated from the following file:

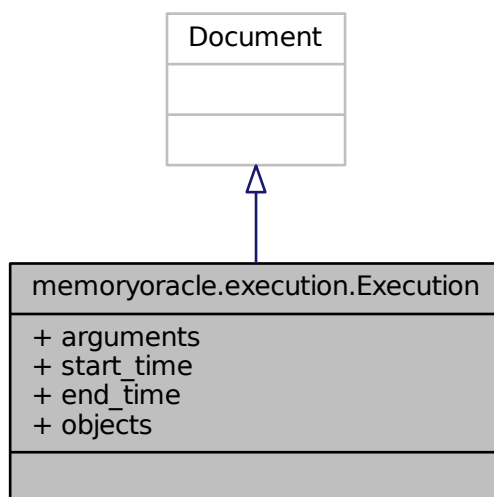
- `memoryoracle/models.py`

## 6.22 memoryoracle.execution.Execution Class Reference

Inheritance diagram for memoryoracle.execution.Execution:



Collaboration diagram for memoryoracle.execution.Execution:



### Static Public Attributes

- tuple `arguments` = `mongoengine.StringField()`

- tuple `start_time` = `mongoengine.ComplexDateTimeField()`
- tuple `end_time` = `mongoengine.ComplexDateTimeField()`
- tuple `objects` = `mongoengine.ListField(mongoengine.ReferenceField(Instance))`

### 6.22.1 Detailed Description

*\*Concrete\** class representing a particular call to an executable.

Definition at line 24 of file `execution.py`.

### 6.22.2 Member Data Documentation

6.22.2.1 tuple `memoryoracle.execution.Execution.arguments` = `mongoengine.StringField()` `[static]`

Definition at line 28 of file `execution.py`.

6.22.2.2 tuple `memoryoracle.execution.Execution.end_time` = `mongoengine.ComplexDateTimeField()` `[static]`

Definition at line 30 of file `execution.py`.

6.22.2.3 tuple `memoryoracle.execution.Execution.objects` = `mongoengine.ListField(mongoengine.ReferenceField(Instance))`  
`[static]`

Definition at line 32 of file `execution.py`.

6.22.2.4 tuple `memoryoracle.execution.Execution.start_time` = `mongoengine.ComplexDateTimeField()` `[static]`

Definition at line 29 of file `execution.py`.

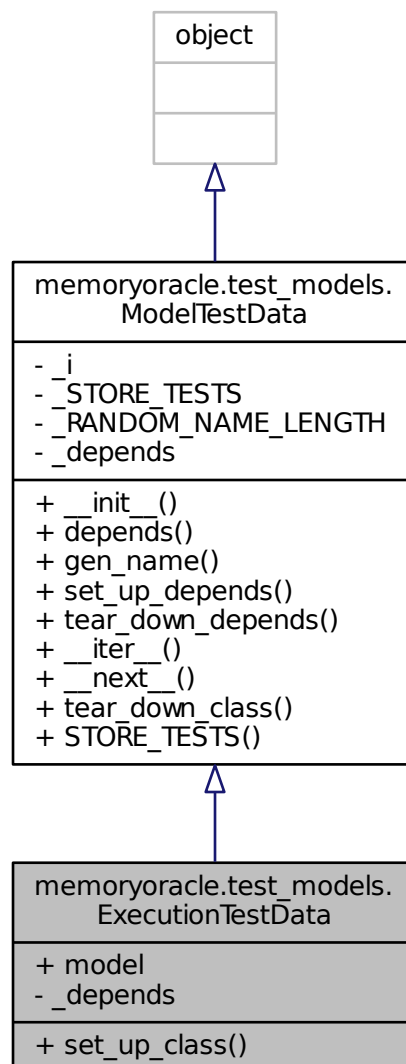
The documentation for this class was generated from the following file:

- `memoryoracle/execution.py`

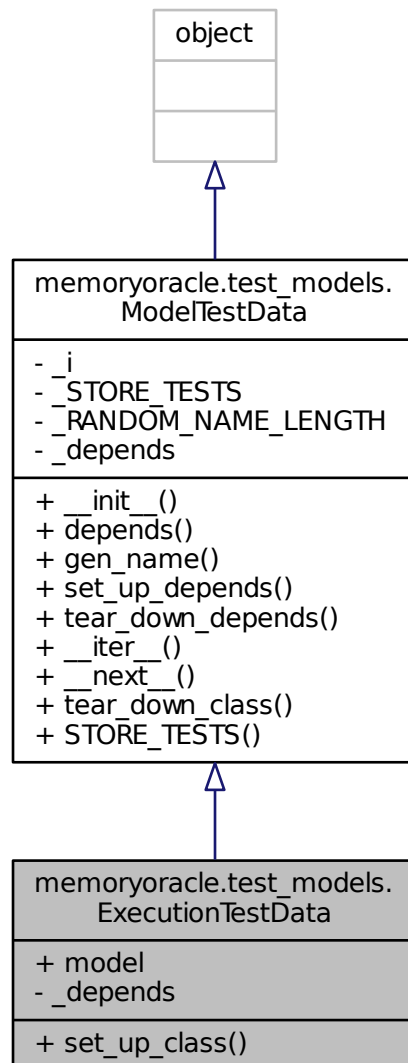


## 6.23 memoryoracle.test\_models.ExecutionTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.ExecutionTestData:



Collaboration diagram for `memoryoracle.test_models.ExecutionTestData`:



### Public Member Functions

- def `set_up_class` (cls)

### Static Public Attributes

- `model` = `memoryoracle.models.Execution`

### Static Private Attributes

- `list _depends` = [`ExecutableTestData`]

## Additional Inherited Members

### 6.23.1 Detailed Description

Definition at line 183 of file test\_models.py.

### 6.23.2 Member Function Documentation

#### 6.23.2.1 def memoryoracle.test\_models.ExecutionTestData.set\_up\_class ( cls )

Definition at line 190 of file test\_models.py.

References memoryoracle.instance.x.

```

190     def set_up_class(cls):
191         cls.set_up_depends()
192         cls.data = { x.__name__: x() for x in cls.depends() }
193         cls.argsList = [
194             {
195                 "name": ModelTestData.gen_name(),
196                 "id_executable": executable,
197             } for executable in cls.data["ExecutableTestData"] ]
198         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
199
200
```

### 6.23.3 Member Data Documentation

#### 6.23.3.1 list memoryoracle.test\_models.ExecutionTestData.\_depends = [ExecutableTestData] [static], [private]

Definition at line 187 of file test\_models.py.

#### 6.23.3.2 memoryoracle.test\_models.ExecutionTestData.model = memoryoracle.models.Execution [static]

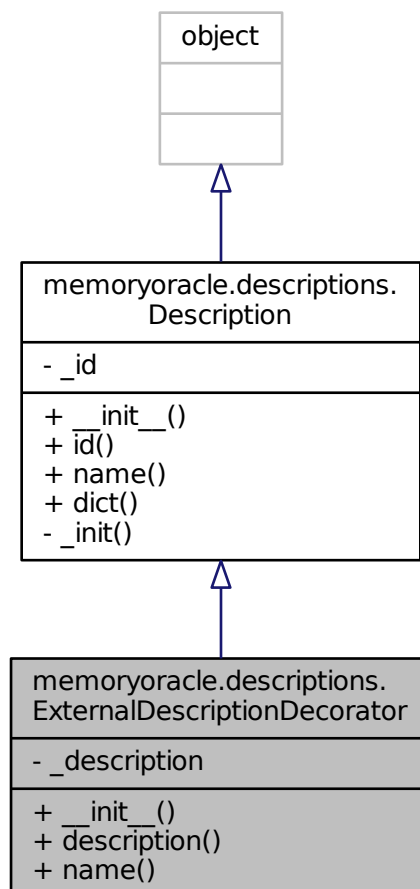
Definition at line 185 of file test\_models.py.

The documentation for this class was generated from the following file:

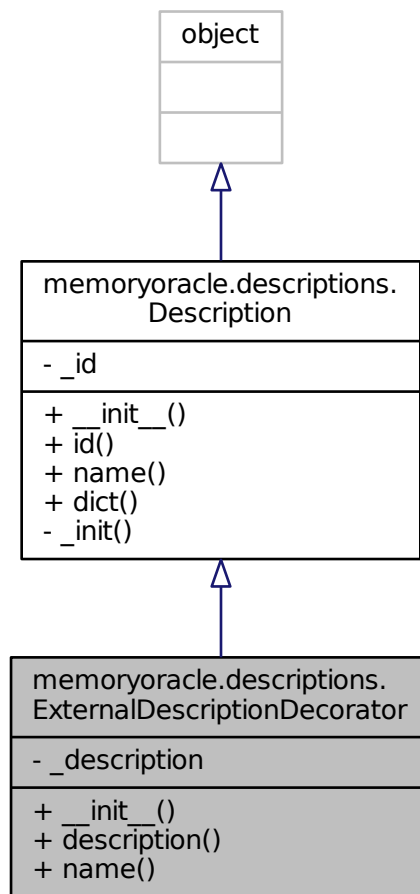
- [memoryoracle/test\\_models.py](#)

## 6.24 memoryoracle.descriptions.ExternalDescriptionDecorator Class Reference

Inheritance diagram for memoryoracle.descriptions.ExternalDescriptionDecorator:



Collaboration diagram for memoryoracle.descriptions.ExternalDescriptionDecorator:



## Public Member Functions

- `def __init__(self, description)`
- `def description(self)`
- `def name(self)`

## Private Attributes

- `_description`

### 6.24.1 Detailed Description

\*Decorator\* ExternalDescriptionDecorator class.

A decorator to mark another description as referring to an external piece of information, such as a standard library header file or a library file which is external to your project.

Definition at line 62 of file descriptions.py.

## 6.24.2 Constructor & Destructor Documentation

### 6.24.2.1 `def memoryoracle.descriptions.ExternalDescriptionDecorator.__init__( self, description )`

Definition at line 72 of file descriptions.py.

```
72     def __init__(self, description):
73         self._description = description
74
```

## 6.24.3 Member Function Documentation

### 6.24.3.1 `def memoryoracle.descriptions.ExternalDescriptionDecorator.description ( self )`

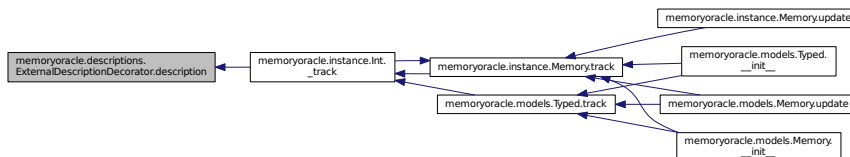
Definition at line 76 of file descriptions.py.

References `memoryoracle.descriptions.BlackBoxDecorator._description`, and `memoryoracle.descriptions.ExternalDescriptionDecorator._description`.

Referenced by `memoryoracle.instance.Int._track()`.

```
76     def description(self):
77         return { "external": self._description }
78
```

Here is the caller graph for this function:



### 6.24.3.2 `def memoryoracle.descriptions.ExternalDescriptionDecorator.name ( self )`

Definition at line 80 of file descriptions.py.

```
80     def name(self):
81         return self._description.name
82
83
```

## 6.24.4 Member Data Documentation

### 6.24.4.1 `memoryoracle.descriptions.ExternalDescriptionDecorator._description` [private]

Definition at line 73 of file descriptions.py.

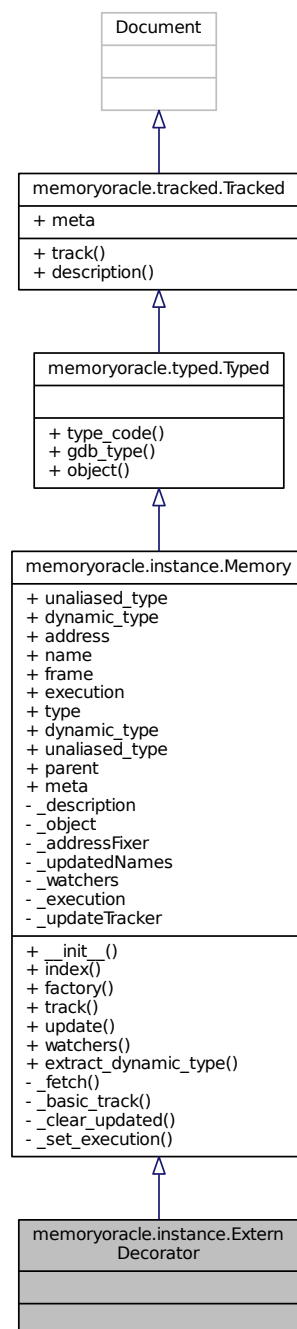
Referenced by `memoryoracle.tracked.Tracked.description()`, `memoryoracle.descriptions.ExternalDescriptionDecorator.description()`, and `memoryoracle.descriptions.StandardDescriptionDecorator.description()`.

The documentation for this class was generated from the following file:

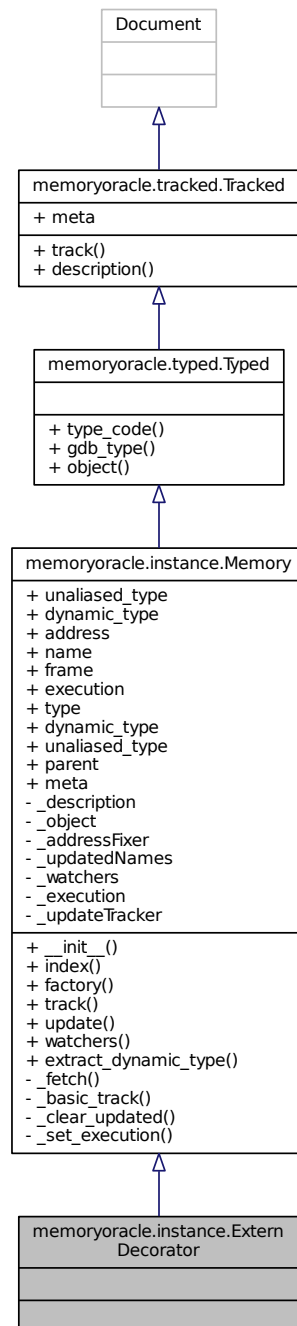
- `memoryoracle/descriptions.py`

## 6.25 memoryoracle.instance.ExternDecorator Class Reference

Inheritance diagram for memoryoracle.instance.ExternDecorator:



Collaboration diagram for memoryoracle.instance.ExternDecorator:



## Additional Inherited Members

### 6.25.1 Detailed Description

`*Decorator*` class to decorate an addressable as being marked extern.

Definition at line 248 of file `instance.py`.

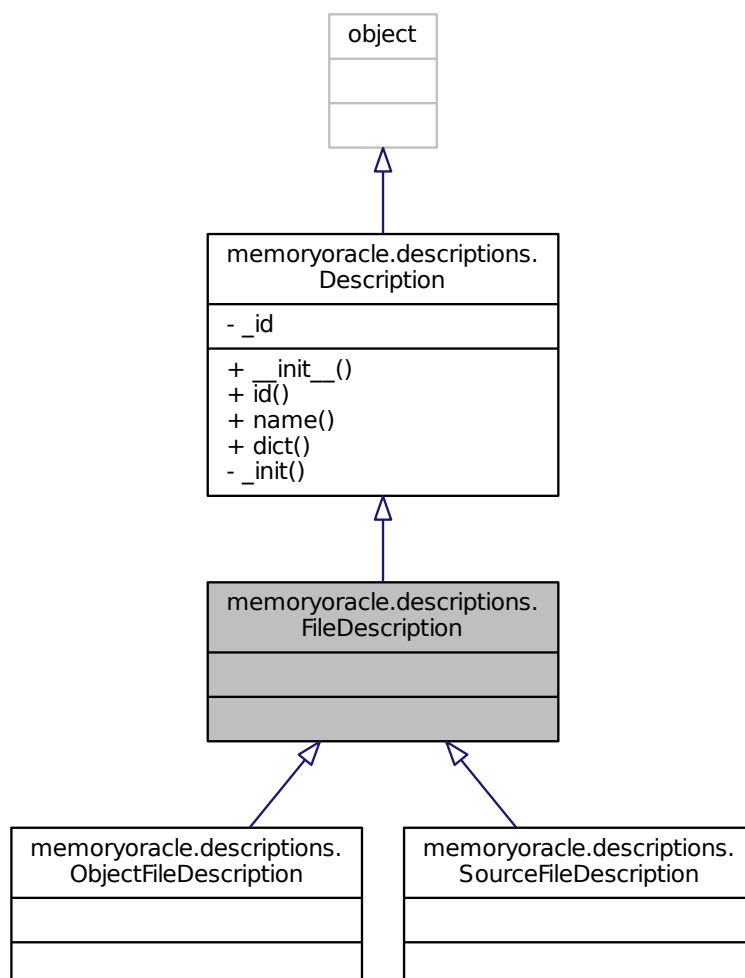


The documentation for this class was generated from the following file:

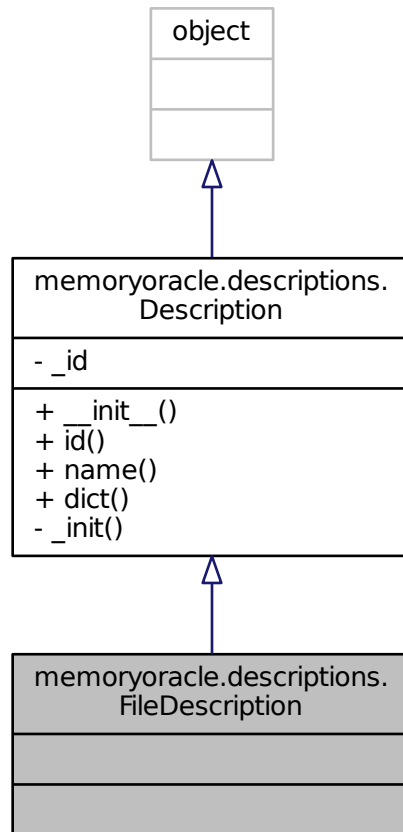
- memoryoracle/[instance.py](#)

## 6.26 memoryoracle.descriptions.FileDescription Class Reference

Inheritance diagram for memoryoracle.descriptions.FileDescription:



Collaboration diagram for memoryoracle.descriptions.FileDescription:



## Additional Inherited Members

### 6.26.1 Detailed Description

`*Abstract* FileDescription class.`

A description of a file object.

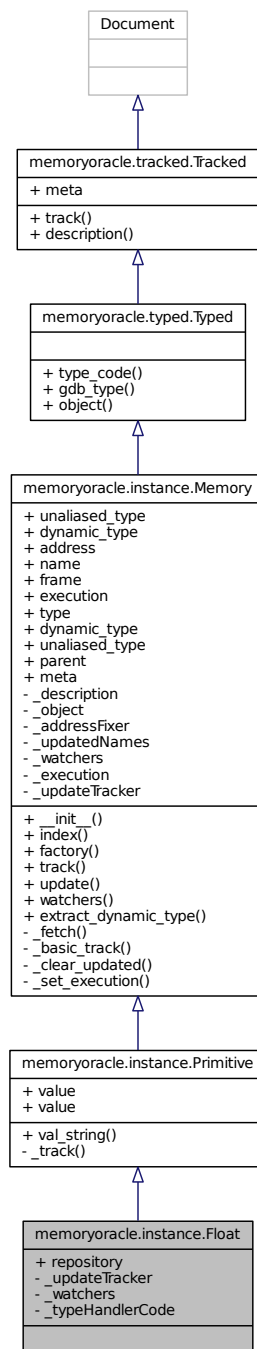
Definition at line 104 of file `descriptions.py`.

The documentation for this class was generated from the following file:

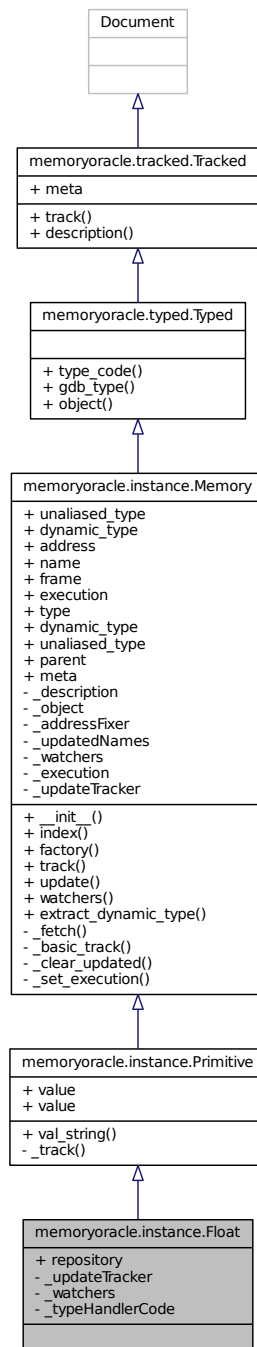
- [memoryoracle/descriptions.py](#)

## 6.27 memoryoracle.instance.Float Class Reference

Inheritance diagram for memoryoracle.instance.Float:



Collaboration diagram for memoryoracle.instance.Float:



### Static Public Attributes

- tuple `repository` = dict()

### Static Private Attributes

- tuple `_updateTracker` = set()

- tuple `_watchers` = dict()
- `_typeHandlerCode` = gdb.TYPE\_CODE\_FLT

## Additional Inherited Members

### 6.27.1 Detailed Description

*\*Concrete\** class to represent floating point primitives.

Definition at line 445 of file instance.py.

### 6.27.2 Member Data Documentation

**6.27.2.1** `memoryoracle.instance.Float._typeHandlerCode = gdb.TYPE_CODE_FLT` `[static]`, `[private]`

Definition at line 453 of file instance.py.

Referenced by `memoryoracle.models.Typed.type_handler()`.

**6.27.2.2** `tuple memoryoracle.instance.Float._updateTracker = set()` `[static]`, `[private]`

Definition at line 450 of file instance.py.

**6.27.2.3** `tuple memoryoracle.instance.Float._watchers = dict()` `[static]`, `[private]`

Definition at line 451 of file instance.py.

Referenced by `memoryoracle.models.Typed.__init__()`, and `memoryoracle.models.Memory.watchers()`.

**6.27.2.4** `tuple memoryoracle.instance.Float.repository = dict()` `[static]`

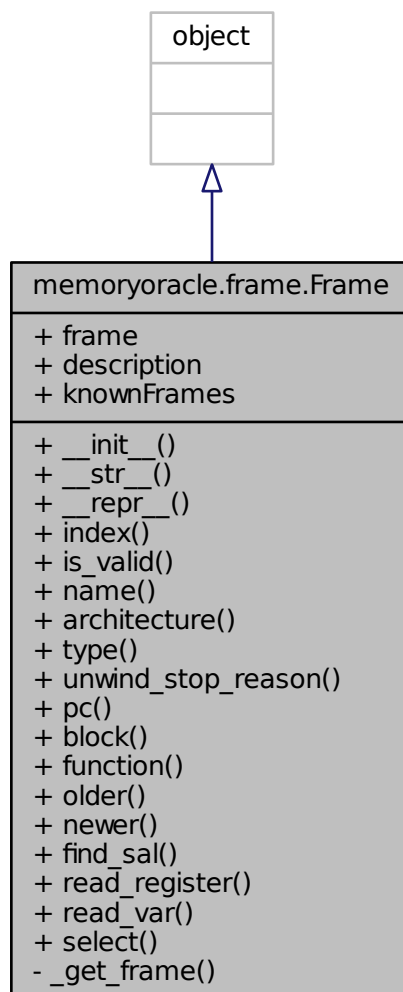
Definition at line 449 of file instance.py.

The documentation for this class was generated from the following file:

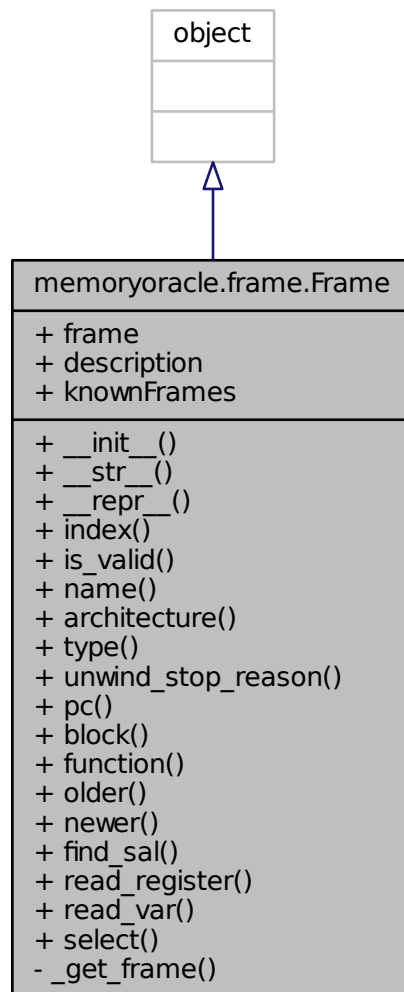
- `memoryoracle/instance.py`

## 6.28 memoryoracle.frame.Frame Class Reference

Inheritance diagram for memoryoracle.frame.Frame:



Collaboration diagram for memoryoracle.frame.Frame:



## Public Member Functions

- `def __init__(self, gdbFrame)`
- `def __str__(self)`
- `def __repr__(self)`
- `def index(self)`
- `def is_valid(self)`
- `def name(self)`
- `def architecture(self)`
- `def type(self)`
- `def unwind_stop_reason(self)`
- `def pc(self)`
- `def block(self)`
- `def function(self)`
- `def older(self)`

- def `newer` (self)
- def `find_sal` (self)
- def `read_register` (self, register)
- def `read_var`
- def `select` (self)

## Public Attributes

- `frame`
- `description`

## Static Public Attributes

- tuple `knownFrames` = dict()

## Private Member Functions

- def `__get_frame`

### 6.28.1 Detailed Description

*\*Concrete\** class to track a frame in the debuggee

Definition at line 9 of file frame.py.

### 6.28.2 Constructor & Destructor Documentation

#### 6.28.2.1 def memoryoracle.frame.Frame.\_\_init\_\_( self, gdbFrame )

Definition at line 20 of file frame.py.

```

20     def __init__(self, gdbFrame):
21         self.frame = gdbFrame
22         self.description = str(self.frame)
23         if self.frame.is_valid():
24             self.knownFrames[self.description] = self
25
26
```

### 6.28.3 Member Function Documentation

#### 6.28.3.1 def memoryoracle.frame.Frame.\_\_repr\_\_( self )

Definition at line 30 of file frame.py.

References memoryoracle.frame.Frame.frame.

```

30     def __repr__(self):
31         return repr(self.frame)
32
```



### 6.28.3.2 def memoryoracle.frame.Frame.\_\_str\_\_( self )

Definition at line 27 of file frame.py.

References memoryoracle.frame.Frame.frame.

```
27     def __str__(self):
28         return str(self.frame)
29
```

### 6.28.3.3 def memoryoracle.frame.Frame.\_get\_frame( self, gdbFrame = None ) [private]

Definition at line 17 of file frame.py.

```
17     def _get_frame(self, gdbFrame=None):
18         return gdbFrame if gdbFrame is not None else gdb.selected_frame()
19
```

### 6.28.3.4 def memoryoracle.frame.Frame.architecture( self )

Definition at line 43 of file frame.py.

```
43     def architecture(self):
44         return self.frame.architecture()
45
```

### 6.28.3.5 def memoryoracle.frame.Frame.block( self )

Definition at line 55 of file frame.py.

```
55     def block(self):
56         return self.frame.block()
57
```

### 6.28.3.6 def memoryoracle.frame.Frame.find\_sal( self )

Definition at line 67 of file frame.py.

```
67     def find_sal(self):
68         return self.frame.find_sal()
69
```

### 6.28.3.7 def memoryoracle.frame.Frame.function( self )

Definition at line 58 of file frame.py.

```
58     def function(self):
59         return self.frame.function()
60
```



#### 6.28.3.13 def memoryoracle.frame.Frame.pc ( self )

Definition at line 52 of file frame.py.

```
52     def pc(self):
53         return self.frame.pc()
54
```

#### 6.28.3.14 def memoryoracle.frame.Frame.read\_register ( self, register )

Definition at line 70 of file frame.py.

```
70     def read_register(self, register):
71         return self.frame.read_register()
72
```

#### 6.28.3.15 def memoryoracle.frame.Frame.read\_var ( self, variable, block = None )

Definition at line 73 of file frame.py.

```
73     def read_var(self, variable, block = None):
74         if block is not None:
75             return self.frame.read_var(variable, block)
76         else:
77             return self.frame.read_var(variable)
78
```

#### 6.28.3.16 def memoryoracle.frame.Frame.select ( self )

Definition at line 79 of file frame.py.

```
79     def select(self):
80         self.frame.select()
81
82
```

#### 6.28.3.17 def memoryoracle.frame.Frame.type ( self )

Definition at line 46 of file frame.py.

```
46     def type(self):
47         return self.frame.type()
48
```

#### 6.28.3.18 def memoryoracle.frame.Frame.unwind\_stop\_reason ( self )

Definition at line 49 of file frame.py.

```
49     def unwind_stop_reason(self):
50         return self.frame.unwind_stop_reason()
51
```

### 6.28.4 Member Data Documentation

#### 6.28.4.1 memoryoracle.frame.Frame.description

Definition at line 22 of file frame.py.

Referenced by memoryoracle.instance.Int.\_track().

#### 6.28.4.2 memoryoracle.frame.Frame.frame

Definition at line 21 of file frame.py.

Referenced by memoryoracle.frame.Frame.\_\_repr\_\_(), memoryoracle.frame.Frame.\_\_str\_\_(), memoryoracle.descriptions.MemoryDescription.dict(), and memoryoracle.instance.Primitive.val\_string().

#### 6.28.4.3 tuple memoryoracle.frame.Frame.knownFrames = dict() [static]

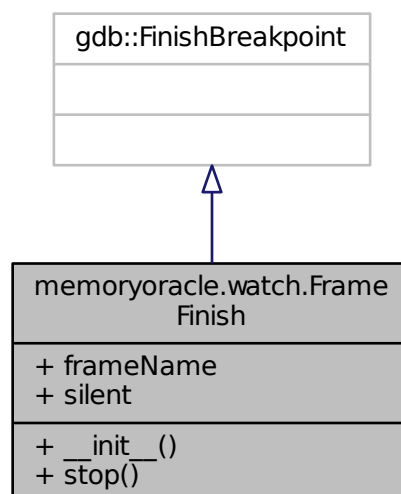
Definition at line 15 of file frame.py.

The documentation for this class was generated from the following file:

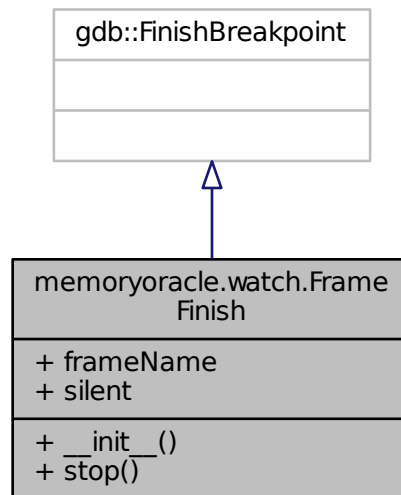
- memoryoracle/[frame.py](#)

## 6.29 memoryoracle.watch.FrameFinish Class Reference

Inheritance diagram for memoryoracle.watch.FrameFinish:



Collaboration diagram for memoryoracle.watch.FrameFinish:



## Public Member Functions

- `def __init__(self, frame)`
- `def stop(self)`

## Public Attributes

- `frameName`
- `silent`

### 6.29.1 Detailed Description

Definition at line 10 of file `watch.py`.

### 6.29.2 Constructor & Destructor Documentation

#### 6.29.2.1 `def memoryoracle.watch.FrameFinish.__init__( self, frame )`

Definition at line 12 of file `watch.py`.

```

12     def __init__(self, frame):
13         super(StateFinish, self).__init__(frame, internal = True)
14         self.frameName = str(frame)
15         self.silent = True
16 
```

### 6.29.3 Member Function Documentation

### 6.29.3.1 def memoryoracle.watch.FrameFinish.stop ( self )

Definition at line 17 of file watch.py.

References memoryoracle.watch.FrameFinish.frameName.

```
17     def stop(self):
18         state = State._instances.get(self.frameName, None)
19         if not state:
20             print("Frame name not found " + self.frameName)
21             return False
22         for wp in state.watchers.values():
23             wp.delete()
24         State._instances.pop(self.frameName)
25         return False
26
27
```

## 6.29.4 Member Data Documentation

### 6.29.4.1 memoryoracle.watch.FrameFinish.frameName

Definition at line 14 of file watch.py.

Referenced by memoryoracle.watch.FrameFinish.stop().

### 6.29.4.2 memoryoracle.watch.FrameFinish.silent

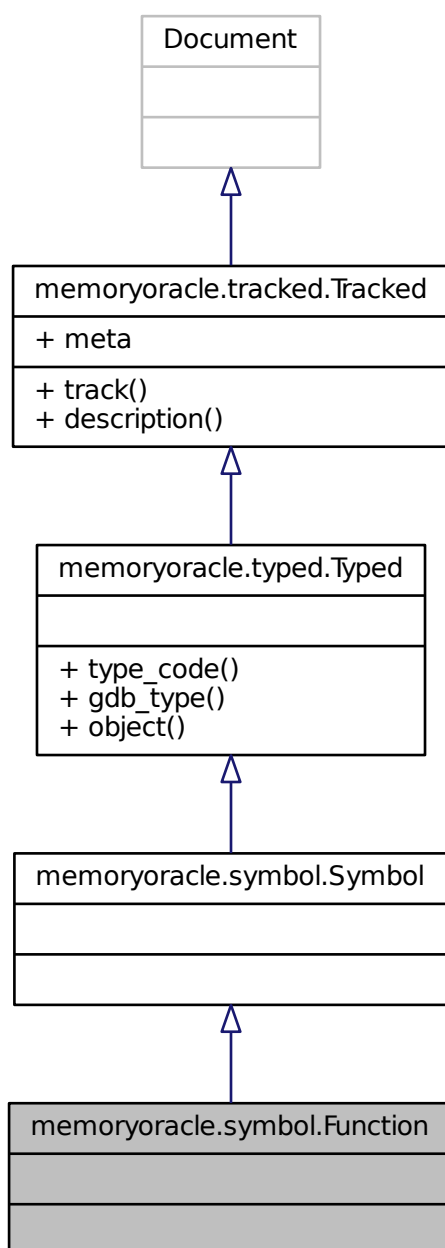
Definition at line 15 of file watch.py.

The documentation for this class was generated from the following file:

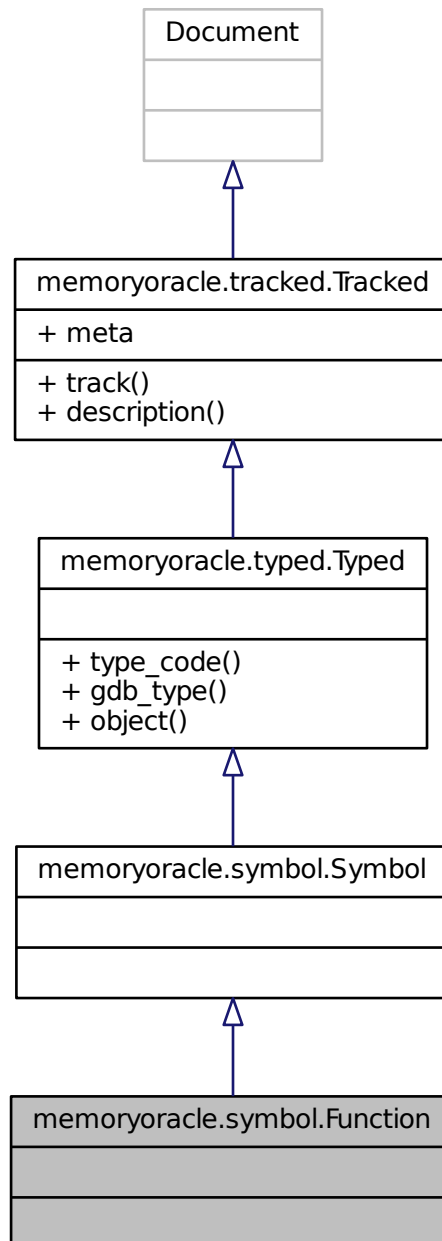
- memoryoracle/[watch.py](#)

## 6.30 memoryoracle.symbol.Function Class Reference

Inheritance diagram for memoryoracle.symbol.Function:



Collaboration diagram for memoryoracle.symbol.Function:



## Additional Inherited Members

### 6.30.1 Detailed Description

*\*Concrete\** class to track a function symbol in the debuggee.

Definition at line 21 of file `symbol.py`.

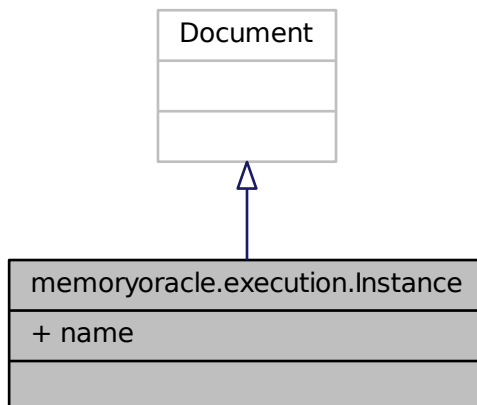


The documentation for this class was generated from the following file:

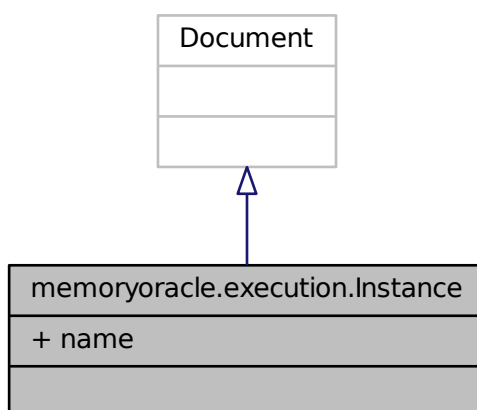
- [memoryoracle/symbol.py](#)

## 6.31 memoryoracle.execution.Instance Class Reference

Inheritance diagram for memoryoracle.execution.Instance:



Collaboration diagram for memoryoracle.execution.Instance:



### Static Public Attributes

- tuple [name](#) = mongoengine.StringField()

### 6.31.1 Detailed Description

Definition at line 20 of file execution.py.

### 6.31.2 Member Data Documentation

6.31.2.1 `tuple memoryoracle.execution.Instance.name = mongoengine.StringField()` `[static]`

Definition at line 22 of file execution.py.

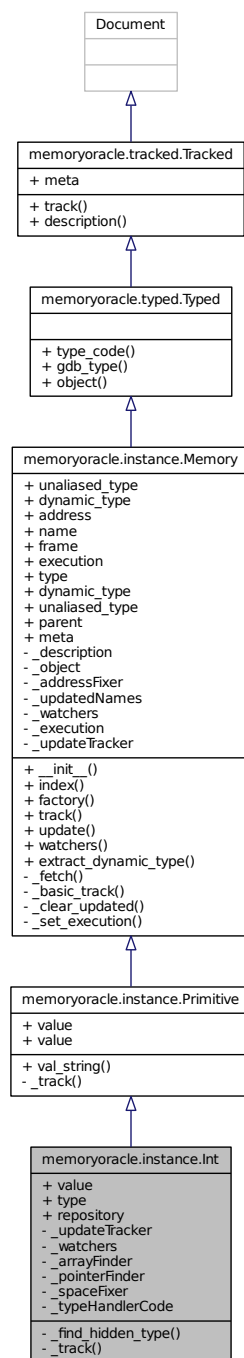
Referenced by `memoryoracle.instance.Memory._basic_track()`, `memoryoracle.instance.Structure._track()`, `memoryoracle.instance.Pointer._track()`, `memoryoracle.descriptions.MemoryDescription.dict()`, `memoryoracle.↔watch.AddressableWatcher.stop()`, and `memoryoracle.instance.Primitive.val_string()`.

The documentation for this class was generated from the following file:

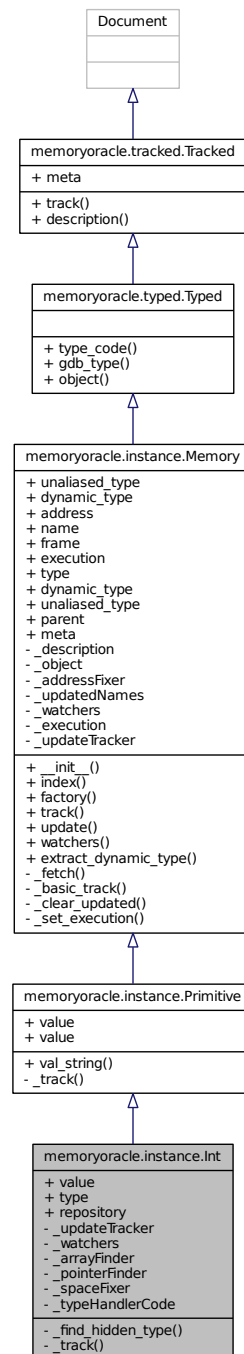
- [memoryoracle/execution.py](#)

## 6.32 memoryoracle.instance.Int Class Reference

Inheritance diagram for memoryoracle.instance.Int:



Collaboration diagram for memoryoracle.instance.Int:



## Public Attributes

- [value](#)
- `DEBUG.`
- [type](#)

## Static Public Attributes

- tuple `repository` = dict()

## Private Member Functions

- def `_find_hidden_type` (self)
- def `_track` (self)

## Static Private Attributes

- tuple `_updateTracker` = set()
- tuple `_watchers` = dict()
- tuple `_arrayFinder` = re.compile(r"(.\*)((?:[d\*\\])+)" )
- tuple `_pointerFinder` = re.compile(r"(\.\* \\\*)" )
- tuple `_spaceFixer` = re.compile(r" ")
- `_typeHandlerCode` = gdb.TYPE\_CODE\_INT

## Additional Inherited Members

### 6.32.1 Detailed Description

\*Concrete\* class to represent integral types.

Definition at line 395 of file instance.py.

### 6.32.2 Member Function Documentation

#### 6.32.2.1 def memoryoracle.instance.Int.\_find\_hidden\_type ( self ) [private]

Definition at line 408 of file instance.py.

References `memoryoracle.typed.Typed.object()`, `memoryoracle.descriptions.MemoryDescription.object()`, and `memoryoracle.instance.Primitive.val_string()`.

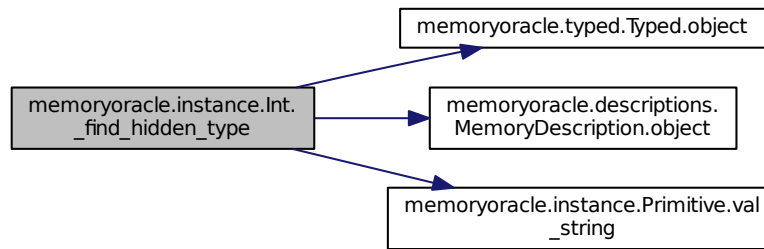
Referenced by `memoryoracle.instance.Int._track()`.

```

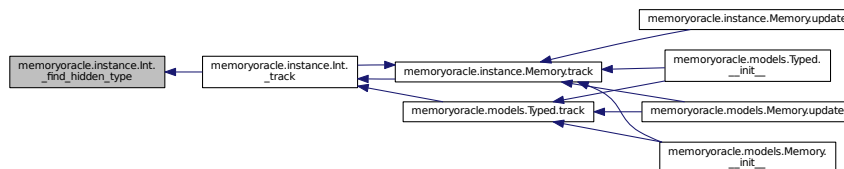
408     def _find_hidden_type(self):
409         v = self.object
410         atyp = Int._arrayFinder.match(str(v.type))
411         if atyp:
412             typ = atyp.group(1)
413             dims = map(int, atyp.group(2)[1:-1].split(" "))
414             t = gdb.lookup_type(typ)
415             for dim in dims:
416                 t = t.array(dim - 1)
417             return t
418
419         valString = self.val_string()
420         ptyp = Int._pointerFinder.match(valString)
421         if ptyp:
422             typ = Int._spaceFixer.sub("", ptyp.group(0)[1:-3])
423             return gdb.lookup_type(typ).pointer()
424
425         return False
426

```

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.32.2.2 def memoryoracle.instance.Int.\_track ( self ) [private]

Definition at line 427 of file instance.py.

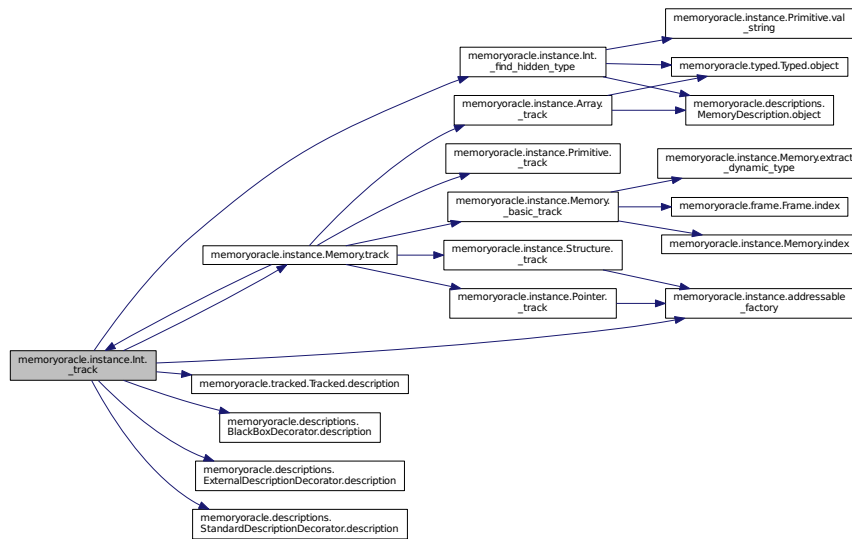
References `memoryoracle.instance.Int._find_hidden_type()`, `memoryoracle.instance.addressable_factory()`, `memoryoracle.frame.Frame.description`, `memoryoracle.tracked.Tracked.description()`, `memoryoracle.descriptions.ExternalDescriptionDecorator.description()`, `memoryoracle.models.Typed.description`, `memoryoracle.descriptions.StandardDescriptionDecorator.description()`, and `memoryoracle.instance.Memory.track()`.

Referenced by `memoryoracle.instance.Memory.track()`, and `memoryoracle.models.Typed.track()`.

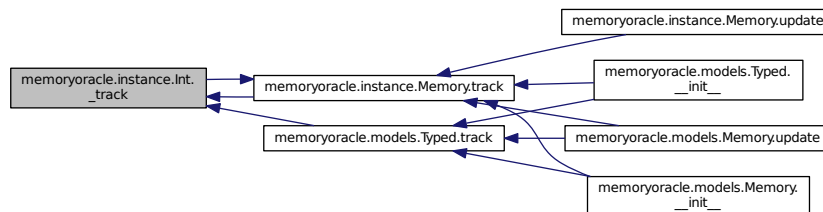
```

427     def _track(self):
428         # NOTE: I know this is a hack, but nothing I can do.
429         # The problem is that sometimes gdb thinks pointers
430         # and arrays are ints.
431         hidden_typ = self._find_hidden_type()
432         if isinstance(hidden_typ, gdb.Type):
433             print("Found hidden type!") ## DEBUG
434             self._description._object = self.object.cast(hidden_typ)
435             addressable_factory(self.description).
track()
436         else:
437             self.value = self.val_string()
438             typ = self.object.type
439             self.type = descriptions.MemoryDescription.find_true_type_name(typ)
440
441
442     registry.TypeRegistration(Int)
443
444
  
```

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.32.3 Member Data Documentation

**6.32.3.1** `tuple memoryoracle.instance.Int._arrayFinder = re.compile(r"(.*) ((?:[\\d*\\])+)")` `[static], [private]`

Definition at line 403 of file instance.py.

**6.32.3.2** `tuple memoryoracle.instance.Int._pointerFinder = re.compile(r"([.*\\*\\]) ")` `[static], [private]`

Definition at line 404 of file instance.py.

**6.32.3.3** `tuple memoryoracle.instance.Int._spaceFixer = re.compile(r" ")` `[static], [private]`

Definition at line 405 of file instance.py.

**6.32.3.4** `memoryoracle.instance.Int._typeHandlerCode = gdb.TYPE_CODE_INT` `[static], [private]`

Definition at line 406 of file instance.py.

Referenced by `memoryoracle.models.Typed.type_handler()`.

**6.32.3.5** `tuple memoryoracle.instance.Int._updateTracker = set()` `[static], [private]`

Definition at line 400 of file `instance.py`.

**6.32.3.6** `tuple memoryoracle.instance.Int._watchers = dict()` `[static], [private]`

Definition at line 402 of file `instance.py`.

Referenced by `memoryoracle.models.Typed.__init__()`, and `memoryoracle.models.Memory.watchers()`.

**6.32.3.7** `tuple memoryoracle.instance.Int.repository = dict()` `[static]`

Definition at line 401 of file `instance.py`.

**6.32.3.8** `memoryoracle.instance.Int.type`

Definition at line 439 of file `instance.py`.

**6.32.3.9** `memoryoracle.instance.Int.value`

DEBUG.

Definition at line 437 of file `instance.py`.

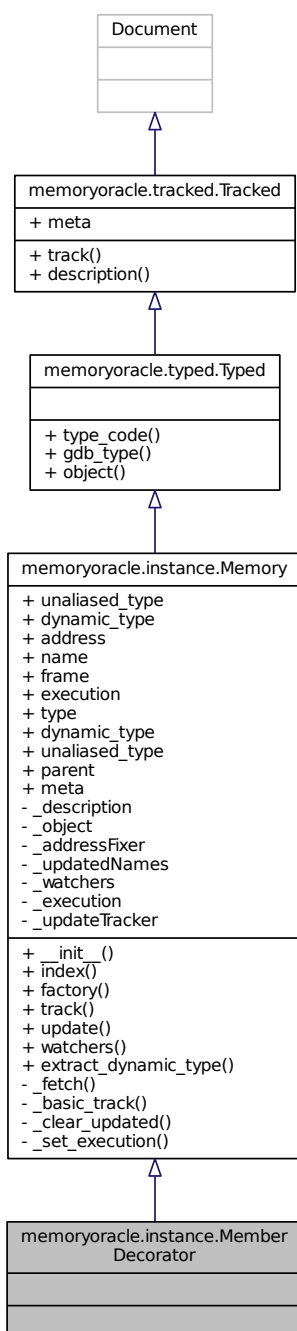
The documentation for this class was generated from the following file:

- `memoryoracle/instance.py`

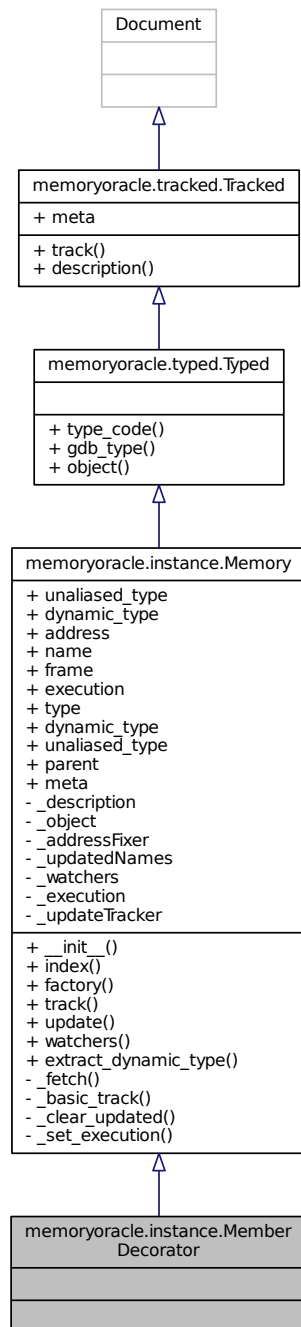


## 6.33 memoryoracle.instance.MemberDecorator Class Reference

Inheritance diagram for memoryoracle.instance.MemberDecorator:



Collaboration diagram for memoryoracle.instance.MemberDecorator:



## Additional Inherited Members

### 6.33.1 Detailed Description

\*Decorator\* class to decorate an addressable as being a member value of another class.

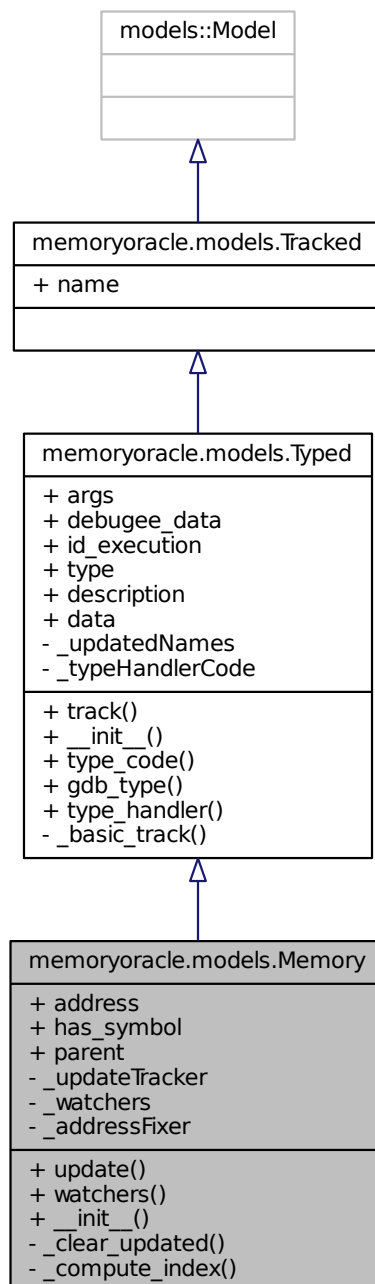
Definition at line 255 of file instance.py.

The documentation for this class was generated from the following file:

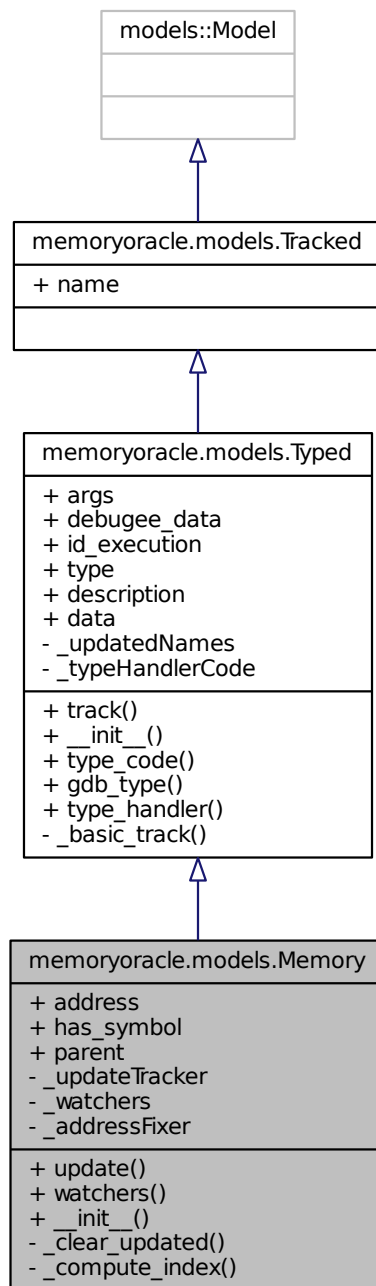
- [memoryoracle/instance.py](#)

## 6.34 memoryoracle.models.Memory Class Reference

Inheritance diagram for memoryoracle.models.Memory:



Collaboration diagram for memoryoracle.models.Memory:



## Classes

- class [Meta](#)

## Public Member Functions

- def [update](#) (self)

- def `watchers` (self)
- def `__init__` (self, `args`, `kwargs`)

### Static Public Attributes

- tuple `address` = `models.CharField(max_length=64)`
- tuple `has_symbol` = `models.BooleanField(default=False)`
- tuple `parent` = `models.ForeignKey('self', null=True, blank=True, related_name="children")`

### Private Member Functions

- def `_clear_updated` (self)
- def `_compute_index` (self)

### Static Private Attributes

- tuple `_updateTracker` = `set()`
- tuple `_watchers` = `dict()`
- tuple `_addressFixer` = `re.compile(r" .*")`

### Additional Inherited Members

#### 6.34.1 Detailed Description

Model representing an instance of an addressable object with a type from the debuggee.

This class enforces that the object have a memory address in the debuggee, or that an appropriate address is specified.

Definition at line 165 of file `models.py`.

#### 6.34.2 Constructor & Destructor Documentation

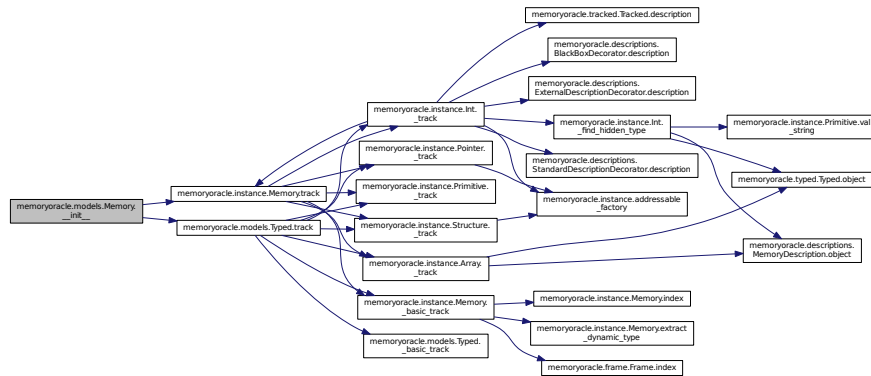
##### 6.34.2.1 `def memoryoracle.models.Memory.__init__( self, args, kwargs )`

Definition at line 200 of file `models.py`.

References `memoryoracle.instance.Memory.track()`, and `memoryoracle.models.Typed.track()`.

```
200     def __init__(self, *args, **kwargs):
201         super(Memory, self).__init__(*args, **kwargs)
202         self.track()
203
```

Here is the call graph for this function:



### 6.34.3 Member Function Documentation

#### 6.34.3.1 def memoryoracle.models.Memory.\_clear\_updated ( self ) [private]

Definition at line 186 of file models.py.

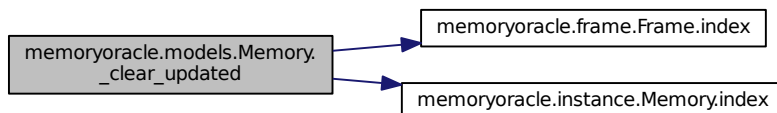
References memoryoracle.frame.Frame.index(), and memoryoracle.instance.Memory.index().

Referenced by memoryoracle.models.Memory.update().

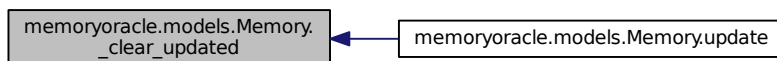
```

186     def _clear_updated(self):
187         self._updateTracker.discard(self.index)
188 
```

Here is the call graph for this function:



Here is the caller graph for this function:



#### 6.34.3.2 def memoryoracle.models.Memory.\_compute\_index ( self ) [private]

Definition at line 193 of file models.py.

References memoryoracle.instance.Memory.address, and memoryoracle.models.Memory.address.

```
193     def _compute_index(self):
194         return self._addressFixer.sub("", str(self.address))
195
```

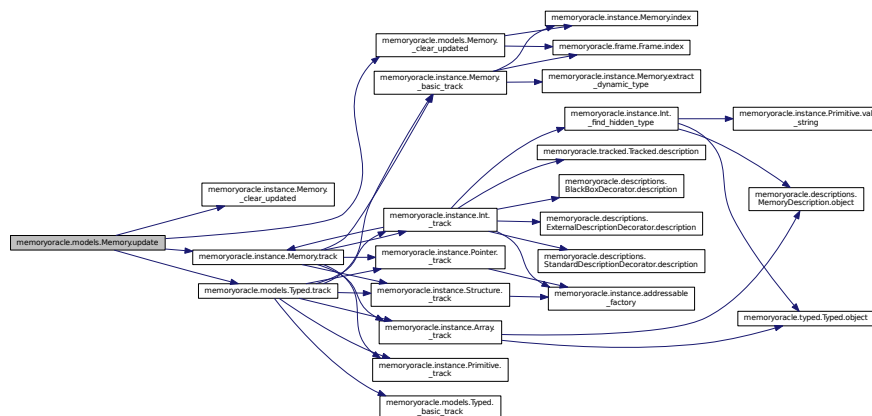
#### 6.34.3.3 def memoryoracle.models.Memory.update ( self )

Definition at line 182 of file models.py.

References memoryoracle.instance.Memory.\_clear\_updated(), memoryoracle.models.Memory.\_clear\_updated(), memoryoracle.instance.Memory.track(), and memoryoracle.models.Typed.track().

```
182     def update(self):
183         self._clear_updated()
184         self.track()
185
```

Here is the call graph for this function:



#### 6.34.3.4 def memoryoracle.models.Memory.watchers ( self )

Definition at line 190 of file models.py.

References memoryoracle.instance.Memory.\_watchers, memoryoracle.models.Memory.\_watchers, memoryoracle.instance.Call.\_watchers, memoryoracle.instance.Structure.\_watchers, memoryoracle.instance.Array.\_watchers, memoryoracle.instance.Pointer.\_watchers, memoryoracle.instance.Int.\_watchers, and memoryoracle.instance.Float.\_watchers.

```
190     def watchers(self):
191         return self._watchers
192
```

### 6.34.4 Member Data Documentation

#### 6.34.4.1 tuple memoryoracle.models.Memory.\_addressFixer = re.compile(r".\*") [static], [private]

Definition at line 180 of file models.py.

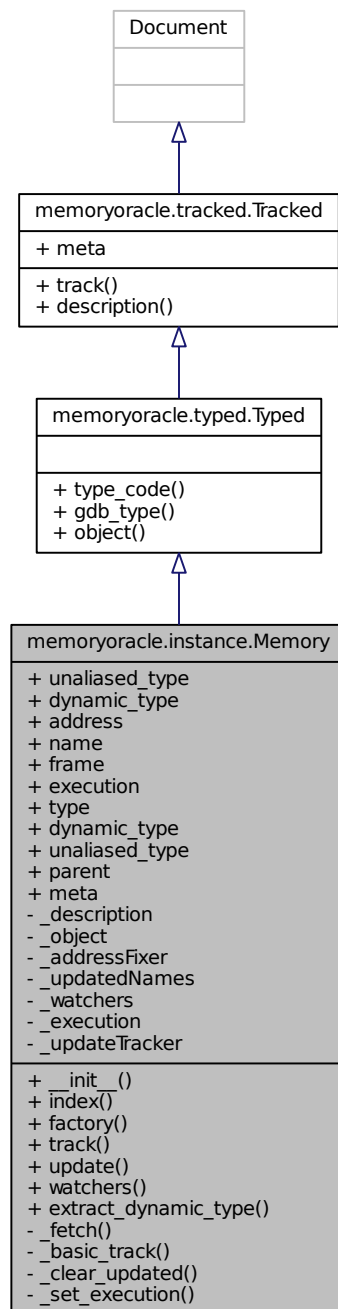
#### 6.34.4.2 tuple memoryoracle.models.Memory.\_updateTracker = set() [static], [private]

Definition at line 178 of file models.py.





Collaboration diagram for memoryoracle.instance.Memory:



## Classes

- class [DuplicateAddress](#)

## Public Member Functions

- def `__init__` (self, args, kwargs)

- def [index](#) (self)
- def [factory](#)
- def [track](#) (self)
- def [update](#) (self)
- def [watchers](#) (self)
- def [extract\\_dynamic\\_type](#) (self)

### Public Attributes

- [unaliasd\\_type](#)
- [dynamic\\_type](#)

### Static Public Attributes

- tuple [address](#) = mongoengine.StringField()
- tuple [name](#) = mongoengine.StringField()
- tuple [frame](#) = mongoengine.StringField()
- tuple [execution](#) = mongoengine.ReferenceField([execution.Execution](#))
- tuple [type](#) = mongoengine.StringField()
- tuple [dynamic\\_type](#) = mongoengine.StringField()
- tuple [unaliasd\\_type](#) = mongoengine.StringField()
- tuple [parent](#) = mongoengine.ReferenceField('Memory')
- dictionary [meta](#)

### Private Member Functions

- def [\\_fetch](#) (cls, [description](#))
- def [\\_basic\\_track](#) (self)
- def [\\_clear\\_updated](#) (self)

### Static Private Member Functions

- def [\\_set\\_execution](#) ([execution](#))

### Private Attributes

- [\\_description](#)
- [\\_object](#)

### Static Private Attributes

- tuple [\\_addressFixer](#) = re.compile(r" .\*")
- tuple [\\_updatedNames](#) = set()
- tuple [\\_watchers](#) = dict()
- [\\_execution](#) = None
- tuple [\\_updateTracker](#) = set()

### 6.35.1 Detailed Description

*\*Abstract\** class representing a instance of an object with a type.

This class enforces that the object have a memory address in the debugge, or that an appropriate address is specified.

Definition at line 35 of file instance.py.

### 6.35.2 Constructor & Destructor Documentation

#### 6.35.2.1 def memoryoracle.instance.Memory.\_\_init\_\_( self, args, kwargs )

Definition at line 65 of file instance.py.

```

65     def __init__(self, *args, **kwargs):
66         self._description = kwargs["descript"]
67         self._object = kwargs["descript"].object
68         super(Memory, self).__init__(*args, **(kwargs["descript"].dict))
69

```

### 6.35.3 Member Function Documentation

#### 6.35.3.1 def memoryoracle.instance.Memory.\_basic\_track( self ) [private]

Definition at line 119 of file instance.py.

References `memoryoracle.instance.Memory._updatedNames`, `memoryoracle.instance.Memory._updateTracker`, `memoryoracle.instance.Memory.extract_dynamic_type()`, `memoryoracle.frame.Frame.index()`, `memoryoracle.instance.Memory.index()`, `memoryoracle.execution.Instance.name`, `memoryoracle.execution.Executable.name`, and `memoryoracle.instance.Memory.name`.

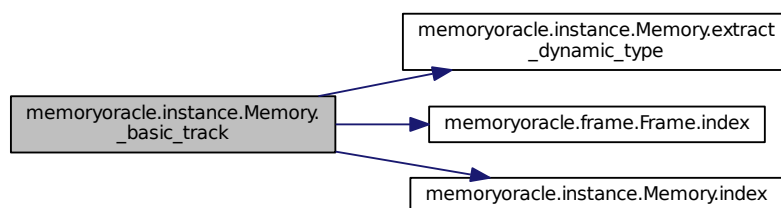
Referenced by `memoryoracle.instance.Memory.track()`, and `memoryoracle.models.Typed.track()`.

```

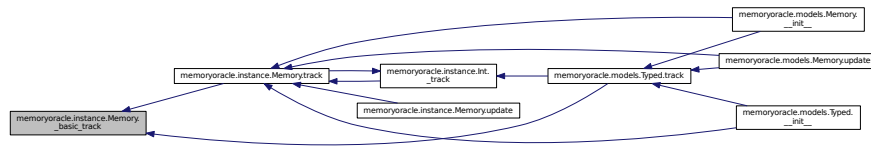
119     def _basic_track(self):
120         if self.name in self._updatedNames:
121             return False
122         else:
123             self._updatedNames.add(self.name)
124
125         if self.index not in self._updateTracker:
126             self._updateTracker.add(self.index)
127             self.extract_dynamic_type()
128             return True
129         else:
130             return False
131

```

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.35.3.2 def memoryoracle.instance.Memory.\_clear\_updated ( self ) [private]

Definition at line 144 of file instance.py.

References memoryoracle.instance.Memory.address.

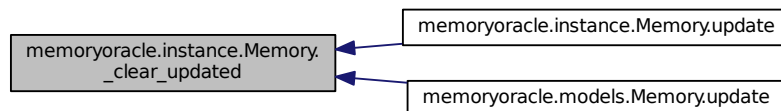
Referenced by memoryoracle.instance.Memory.update(), and memoryoracle.models.Memory.update().

```

144     def _clear_updated(self):
145         self._updateTracker.discard(self.address)
146

```

Here is the caller graph for this function:



### 6.35.3.3 def memoryoracle.instance.Memory.\_fetch ( cls, description ) [private]

Definition at line 75 of file instance.py.

```

75     def _fetch(cls, description):
76         if description is None:
77             raise Exception("Description required to fetch object!")
78
79         execution = description.execution
80         frameDescription = descriptions.MemoryDescription("myframe", address=
str(gdb.selected_frame()))
81
82         # TODO: replace selected_frame call with something more flexible
83         frm = frame.Frame(gdb.selected_frame())
84         address = description.address
85         memories = cls.objects(
86             execution=execution,
87             frame=str(frm),
88             address=address
89         )
90         if len(memories) > 1:
91             raise DuplicateAddress("Duplicate address for memory!")
92         elif len(memories) == 0:
93             return False
94         return memories[0]
95

```

#### 6.35.3.4 def memoryoracle.instance.Memory.\_set\_execution ( execution ) [static],[private]

Definition at line 97 of file instance.py.

```

97     def _set_execution(execution):
98         Memory._execution = execution
99 
```

#### 6.35.3.5 def memoryoracle.instance.Memory.extract\_dynamic\_type ( self )

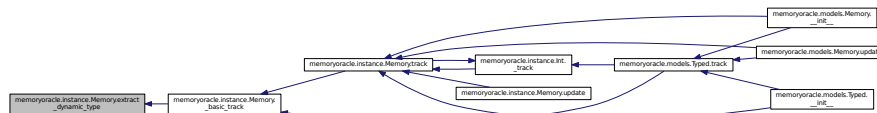
Definition at line 151 of file instance.py.

Referenced by memoryoracle.instance.Memory.\_basic\_track().

```

151     def extract_dynamic_type(self):
152         s = self.description.object
153         # If the type is aliased, remove those aliases
154         # and store that type
155         strip = s.type.strip_typedefs()
156         if strip != s.type:
157             self.unaliased_type = strip.name
158
159         # If the type is dynamic, detect this and store
160         # accordingly
161         dynamic = s.dynamic_type
162         if dynamic != s.type:
163             self.dynamic_type = dynamic.name
164 
```

Here is the caller graph for this function:



#### 6.35.3.6 def memoryoracle.instance.Memory.factory ( cls, descript=None )

build an object based on a description, or fetch that object from the database if it already exists.

Definition at line 101 of file instance.py.

```

101     def factory(cls, descript=None):
102         """
103         build an object based on a description, or fetch that object
104         from the database if it already exists.
105         """
106
107         if descript.execution is not None:
108             Memory._set_execution(descript.execution)
109         else:
110             descript._execution = Memory._execution
111
112         fetchedVal = cls._fetch(descript)
113
114         if fetchedVal != False:
115             return fetchedVal
116
117         return cls(descript=descript)
118 
```

### 6.35.3.7 def memoryoracle.instance.Memory.index ( self )

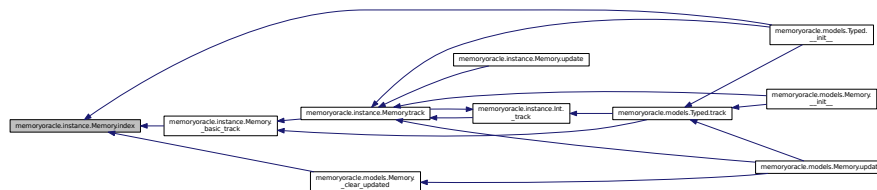
Definition at line 71 of file instance.py.

References memoryoracle.instance.Memory.address.

Referenced by memoryoracle.models.Typed.\_\_init\_\_(), memoryoracle.instance.Memory.\_basic\_track(), and memoryoracle.models.Memory.\_clear\_updated().

```
71     def index(self):
72         return str(self.address)
73
```

Here is the caller graph for this function:



### 6.35.3.8 def memoryoracle.instance.Memory.track ( self )

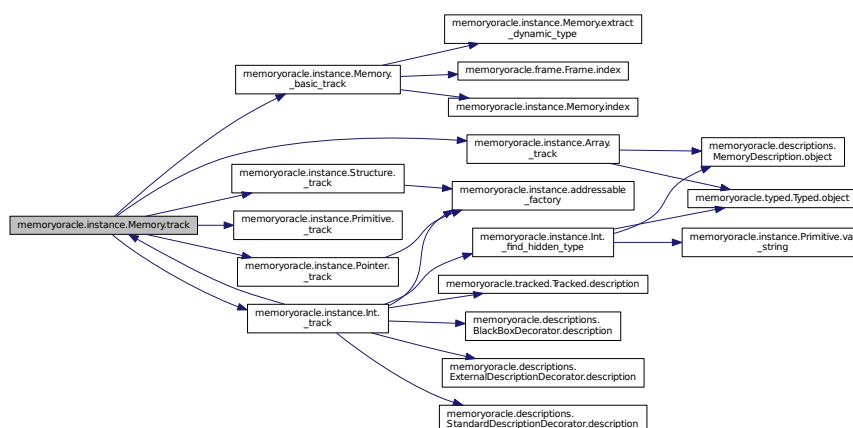
Definition at line 132 of file instance.py.

References memoryoracle.instance.Memory.\_basic\_track(), memoryoracle.instance.Structure.\_track(), memoryoracle.instance.Array.\_track(), memoryoracle.instance.Primitive.\_track(), memoryoracle.instance.Pointer.\_track(), and memoryoracle.instance.Int.\_track().

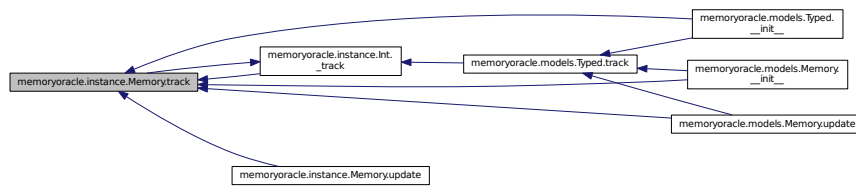
Referenced by memoryoracle.models.Typed.\_\_init\_\_(), memoryoracle.models.Memory.\_\_init\_\_(), memoryoracle.instance.Int.\_track(), memoryoracle.instance.Memory.update(), and memoryoracle.models.Memory.update().

```
132     def track(self):
133         if self._basic_track():
134             self._track()
135             ## TODO: enable memory watchers
136             # self._watchers[self.index] = MemoryWatcher(self)
137             self.save()
138             print(self.to_json()) ## DEBUG
139
```

Here is the call graph for this function:



Here is the caller graph for this function:



#### 6.35.3.9 def memoryoracle.instance.Memory.update ( self )

Definition at line 140 of file instance.py.

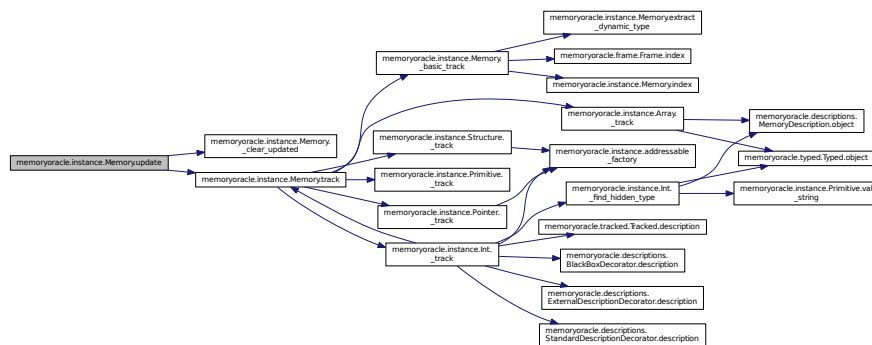
References `memoryoracle.instance.Memory._clear_updated()`, and `memoryoracle.instance.Memory.track()`.

```

140     def update(self):
141         self._clear_updated()
142         self.track()
143

```

Here is the call graph for this function:



#### 6.35.3.10 def memoryoracle.instance.Memory.watchers ( self )

Definition at line 148 of file instance.py.

References `memoryoracle.instance.Memory._watchers`.

```

148     def watchers(self):
149         return self._watchers
150

```

### 6.35.4 Member Data Documentation

#### 6.35.4.1 tuple memoryoracle.instance.Memory.\_addressFixer = re.compile(r".\*") [static], [private]

Definition at line 43 of file instance.py.

**6.35.4.2** `memoryoracle.instance.Memory._description` `[private]`

Definition at line 66 of file instance.py.

Referenced by `memoryoracle.tracked.Tracked.description()`.

**6.35.4.3** `memoryoracle.instance.Memory._execution = None` `[static]`, `[private]`

Definition at line 58 of file instance.py.

**6.35.4.4** `memoryoracle.instance.Memory._object` `[private]`

Definition at line 67 of file instance.py.

Referenced by `memoryoracle.typed.Typed.object()`.

**6.35.4.5** `tuple memoryoracle.instance.Memory._updatedNames = set()` `[static]`, `[private]`

Definition at line 44 of file instance.py.

Referenced by `memoryoracle.instance.Memory._basic_track()`.

**6.35.4.6** `tuple memoryoracle.instance.Memory._updateTracker = set()` `[static]`, `[private]`

Definition at line 60 of file instance.py.

Referenced by `memoryoracle.instance.Memory._basic_track()`.

**6.35.4.7** `tuple memoryoracle.instance.Memory._watchers = dict()` `[static]`, `[private]`

Definition at line 56 of file instance.py.

Referenced by `memoryoracle.models.Typed.__init__()`, `memoryoracle.instance.Memory.watchers()`, and `memoryoracle.models.Memory.watchers()`.

**6.35.4.8** `tuple memoryoracle.instance.Memory.address = mongoengine.StringField()` `[static]`

Definition at line 46 of file instance.py.

Referenced by `memoryoracle.instance.Memory._clear_updated()`, `memoryoracle.models.Memory._compute_index()`, `memoryoracle.descriptions.MemoryDescription.dict()`, and `memoryoracle.instance.Memory.index()`.

**6.35.4.9** `tuple memoryoracle.instance.Memory.dynamic_type = mongoengine.StringField()` `[static]`

Definition at line 52 of file instance.py.

**6.35.4.10** `memoryoracle.instance.Memory.dynamic_type`

Definition at line 163 of file instance.py.

**6.35.4.11** `tuple memoryoracle.instance.Memory.execution = mongoengine.ReferenceField(execution.Execution)`  
`[static]`

Definition at line 49 of file instance.py.



**6.35.4.12 tuple memoryoracle.instance.Memory.frame = mongoengine.StringField() [static]**

Definition at line 48 of file instance.py.

Referenced by memoryoracle.descriptions.MemoryDescription.dict(), and memoryoracle.instance.Primitive.val\_string().

**6.35.4.13 dictionary memoryoracle.instance.Memory.meta [static]**

**Initial value:**

```
1 = {  
2     'indexes': [  
3         'address',  
4         'frame'  
5     ]  
6 }
```

Definition at line 165 of file instance.py.

**6.35.4.14 tuple memoryoracle.instance.Memory.name = mongoengine.StringField() [static]**

Definition at line 47 of file instance.py.

Referenced by memoryoracle.instance.Memory.\_basic\_track(), memoryoracle.instance.Structure.\_track(), memoryoracle.instance.Pointer.\_track(), memoryoracle.descriptions.MemoryDescription.dict(), memoryoracle.watch.AddressableWatcher.stop(), and memoryoracle.instance.Primitive.val\_string().

**6.35.4.15 tuple memoryoracle.instance.Memory.parent = mongoengine.ReferenceField('Memory') [static]**

Definition at line 54 of file instance.py.

Referenced by memoryoracle.descriptions.MemoryDescription.dict().

**6.35.4.16 tuple memoryoracle.instance.Memory.type = mongoengine.StringField() [static]**

Definition at line 51 of file instance.py.

**6.35.4.17 tuple memoryoracle.instance.Memory.unaliased\_type = mongoengine.StringField() [static]**

Definition at line 53 of file instance.py.

**6.35.4.18 memoryoracle.instance.Memory.unaliased\_type**

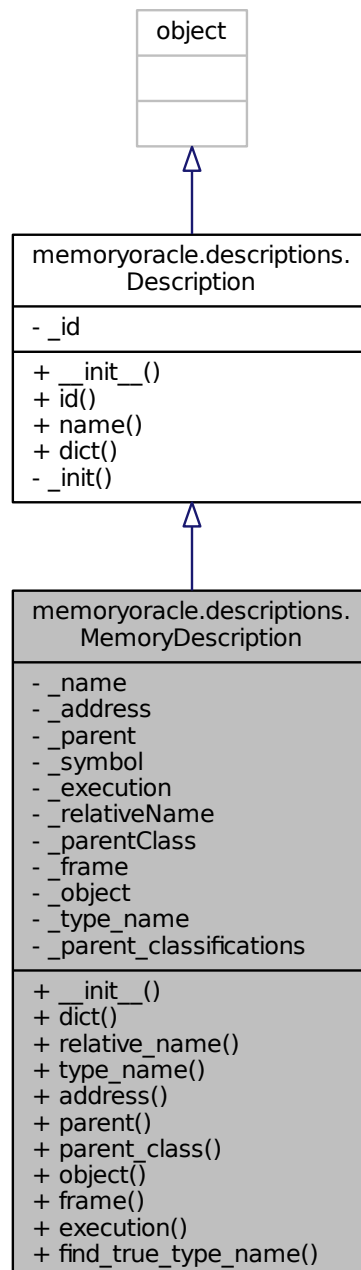
Definition at line 157 of file instance.py.

The documentation for this class was generated from the following file:

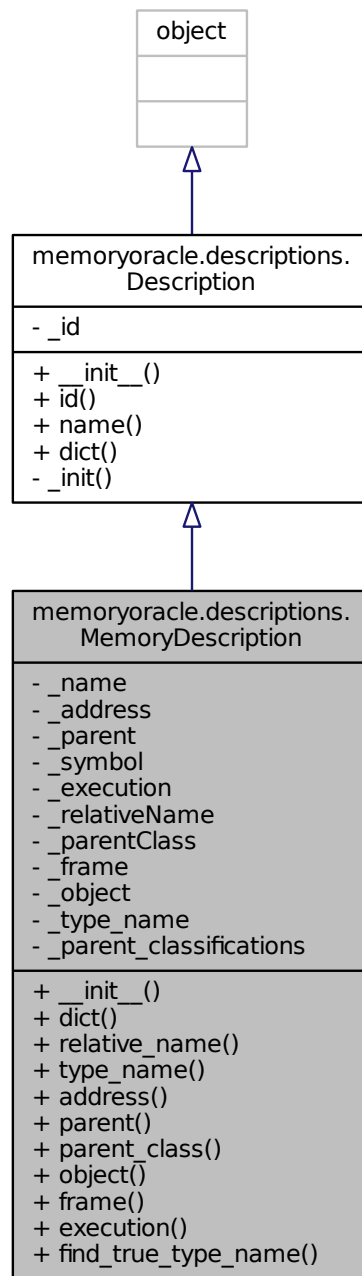
- memoryoracle/[instance.py](#)

## 6.36 memoryoracle.descriptions.MemoryDescription Class Reference

Inheritance diagram for memoryoracle.descriptions.MemoryDescription:



Collaboration diagram for memoryoracle.descriptions.MemoryDescription:



## Public Member Functions

- `def __init__ (self, name, kwargs)`
- `def dict (self)`
- `def relative_name (self)`
- `def type_name (self)`
- `def address (self)`

- def [parent](#) (self)
- def [parent\\_class](#) (self)
- def [object](#) (self)
- def [frame](#) (self)
- def [execution](#) (self)
- def [find\\_true\\_type\\_name](#)

### Private Attributes

- [\\_name](#)
- [\\_address](#)
- [\\_parent](#)
- [\\_symbol](#)
- [\\_execution](#)
- [\\_relativeName](#)
- [\\_parentClass](#)
- [\\_frame](#)
- [\\_object](#)
- [\\_type\\_name](#)

### Static Private Attributes

- [\\_parent\\_classifications](#) = \

## 6.36.1 Detailed Description

\*Concrete\* MemoryDescription class.

A description of a memory addressable object.

Definition at line 131 of file descriptions.py.

## 6.36.2 Constructor & Destructor Documentation

### 6.36.2.1 def memoryoracle.descriptions.MemoryDescription.\_\_init\_\_( self, name, kwargs )

Definition at line 141 of file descriptions.py.

```

141     def __init__(self, name, **kwargs):
142         self._name = name
143         self._address = kwargs.get("address")
144         self._parent = kwargs.get("parent")
145         self._symbol = kwargs.get("symbol")
146         self._execution = kwargs.get("execution")
147         self._relativeName = kwargs.get("relativeName")
148         # self._parents = \
149         #     deepcopy(AddressableDescription._parent_classifications)
150         self._parentClass = kwargs.get("parent_class")
151         # self._parents[self.parent_class] = self.parent
152         self._frame = kwargs.get("frame", gdb.selected_frame())
153
154         if self.parent is not None and self.parent_class is None:
155             raise ValueError("Parent supplied but no parent class!")
156         elif self.parent is None and self.parent_class is not None:
157             raise ValueError("parent_class supplied but no parent!")
158
159         with frame.Selector(self.frame) as fs:
160             sym = self._symbol
161             if sym is not None:
162                 typ = sym.type
163                 print(sym.name, str(sym.type))
164                 if typ.code in {

```

```

165         gdb.TYPE_CODE_PTR,
166         gdb.TYPE_CODE_ARRAY,
167         gdb.TYPE_CODE_STRUCT,
168         gdb.TYPE_CODE_INT,
169         gdb.TYPE_CODE_FUNC,
170     }:
171     try:
172         self._object = sym.value(fs.frame.frame)
173     except TypeError:
174         self._object = None
175     else:
176         self._object = None
177     else:
178     try:
179         self._object = gdb.parse_and_eval(self.name)
180     except gdb.error as e:
181         # traceback.print_exc()
182         self._object = None
183
184     if self._symbol and self._symbol.type:
185         self._type_name = str(self._symbol.type)
186     elif isinstance(self._object, gdb.Value):
187         self._type_name = MemoryDescription.find_true_type_name(self._object.type)
188     else:
189         # TODO: This is for dev. Remove in production code.
190         self._type_name = "void"
191         # raise Exception("Untyped memory", self)
192

```

## 6.36.3 Member Function Documentation

### 6.36.3.1 def memoryoracle.descriptions.MemoryDescription.address ( self )

Definition at line 207 of file descriptions.py.

References `memoryoracle.descriptions.MemoryDescription._address`.

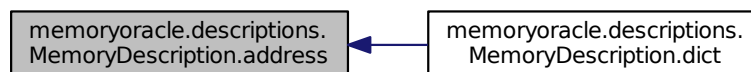
Referenced by `memoryoracle.descriptions.MemoryDescription.dict()`.

```

207     def address(self):
208         return self._address
209

```

Here is the caller graph for this function:



### 6.36.3.2 def memoryoracle.descriptions.MemoryDescription.dict ( self )

Definition at line 194 of file descriptions.py.

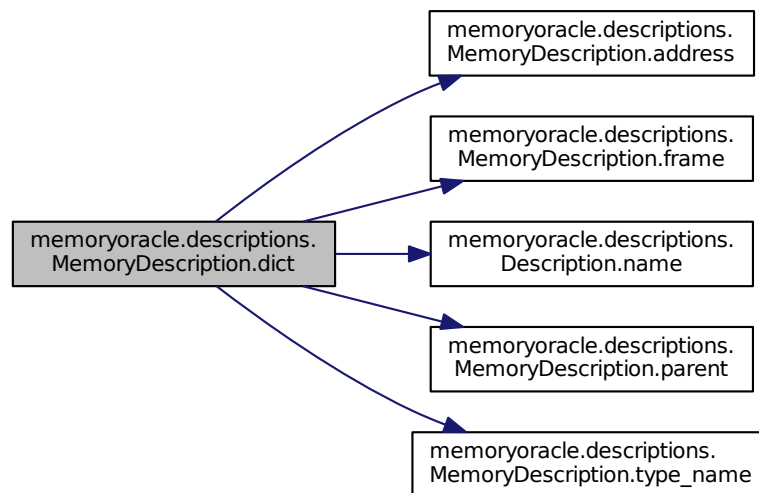
References `memoryoracle.instance.Memory.address`, `memoryoracle.models.Memory.address`, `memoryoracle.descriptions.MemoryDescription.address()`, `memoryoracle.frame.Frame.frame`, `memoryoracle.instance.Memory.frame`, `memoryoracle.watch.StateCatch.frame`, `memoryoracle.descriptions.MemoryDescription.frame()`, `memoryoracle.execution.Instance.name`, `memoryoracle.descriptions.Description.name()`, `memoryoracle.watch.AddressableWatcher.name`, `memoryoracle.execution.Executable.name`, `memoryoracle.models.Tracked.name`, `memoryoracle.instance.Memory.name`, `memoryoracle.instance.Memory.parent`, `memoryoracle.models.Memory.parent`, `memoryoracle.descriptions.MemoryDescription.parent()`, and `memoryoracle.descriptions.MemoryDescription.type_name()`.

```

194     def dict(self):
195         return { "name": self.name, "parent": self.parent, "address": self.
address,
196                 "frame": str(self.frame), "type": self.type_name }
197

```

Here is the call graph for this function:



### 6.36.3.3 def memoryoracle.descriptions.MemoryDescription.execution ( self )

Definition at line 231 of file descriptions.py.

References memoryoracle.descriptions.MemoryDescription.\_execution.

```

231     def execution(self):
232         return self._execution
233

```

### 6.36.3.4 def memoryoracle.descriptions.MemoryDescription.find\_true\_type\_name ( cls, t, nameDecorators = "" )

Definition at line 235 of file descriptions.py.

```

235     def find_true_type_name(cls, t, nameDecorators = ""):
236         if t.code == gdb.TYPE_CODE_PTR:
237             return cls.find_true_type_name(t.target(), nameDecorators + "*")
238         elif t.code == gdb.TYPE_CODE_ARRAY:
239             length = str(t.range()[1] - t.range()[0] + 1)
240             return cls.find_true_type_name(t.target(), nameDecorators + "[" + length + "]")
241         else:
242             if isinstance(t.name, str):
243                 return t.name + nameDecorators
244             else:
245                 return "<## unknown type ##>"
246

```

## 6.36.3.5 def memoryoracle.descriptions.MemoryDescription.frame ( self )

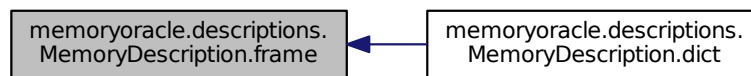
Definition at line 227 of file descriptions.py.

References memoryoracle.descriptions.MemoryDescription.\_frame.

Referenced by memoryoracle.descriptions.MemoryDescription.dict().

```
227     def frame(self):
228         return self._frame
229
```

Here is the caller graph for this function:



## 6.36.3.6 def memoryoracle.descriptions.MemoryDescription.object ( self )

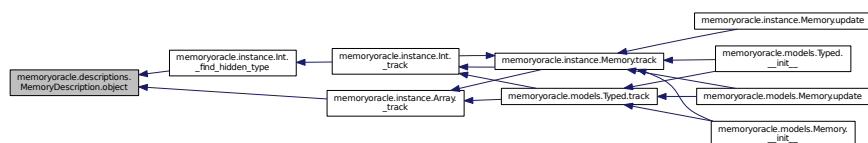
Definition at line 223 of file descriptions.py.

References memoryoracle.descriptions.MemoryDescription.\_object.

Referenced by memoryoracle.instance.Int.\_find\_hidden\_type(), and memoryoracle.instance.Array.\_track().

```
223     def object(self):
224         return self._object
225
```

Here is the caller graph for this function:



## 6.36.3.7 def memoryoracle.descriptions.MemoryDescription.parent ( self )

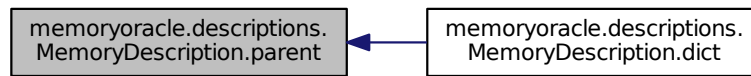
Definition at line 211 of file descriptions.py.

References memoryoracle.descriptions.MemoryDescription.\_parent.

Referenced by memoryoracle.descriptions.MemoryDescription.dict().

```
211     def parent(self):
212         return self._parent
213
```

Here is the caller graph for this function:



#### 6.36.3.8 `def memoryoracle.descriptions.MemoryDescription.parent_class ( self )`

Definition at line 219 of file `descriptions.py`.

References `memoryoracle.descriptions.MemoryDescription._parentClass`.

```
219     def parent_class(self):
220         return self._parentClass
221
```

#### 6.36.3.9 `def memoryoracle.descriptions.MemoryDescription.relative_name ( self )`

Definition at line 199 of file `descriptions.py`.

References `memoryoracle.descriptions.MemoryDescription._relativeName`.

```
199     def relative_name(self):
200         return self._relativeName
201
```

#### 6.36.3.10 `def memoryoracle.descriptions.MemoryDescription.type_name ( self )`

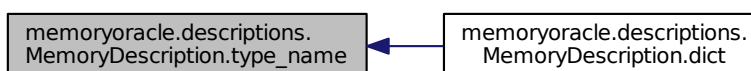
Definition at line 203 of file `descriptions.py`.

References `memoryoracle.descriptions.MemoryDescription._type_name`.

Referenced by `memoryoracle.descriptions.MemoryDescription.dict()`.

```
203     def type_name(self):
204         return self._type_name
205
```

Here is the caller graph for this function:





### 6.36.4 Member Data Documentation

#### 6.36.4.1 memoryoracle.descriptions.MemoryDescription.\_address [private]

Definition at line 143 of file descriptions.py.

Referenced by memoryoracle.descriptions.MemoryDescription.address().

#### 6.36.4.2 memoryoracle.descriptions.MemoryDescription.\_execution [private]

Definition at line 146 of file descriptions.py.

Referenced by memoryoracle.descriptions.MemoryDescription.execution().

#### 6.36.4.3 memoryoracle.descriptions.MemoryDescription.\_frame [private]

Definition at line 152 of file descriptions.py.

Referenced by memoryoracle.frame.Selector.frame(), and memoryoracle.descriptions.MemoryDescription.frame().

#### 6.36.4.4 memoryoracle.descriptions.MemoryDescription.\_name [private]

Definition at line 142 of file descriptions.py.

Referenced by memoryoracle.descriptions.Description.name().

#### 6.36.4.5 memoryoracle.descriptions.MemoryDescription.\_object [private]

Definition at line 172 of file descriptions.py.

Referenced by memoryoracle.typed.Typed.object(), and memoryoracle.descriptions.MemoryDescription.object().

#### 6.36.4.6 memoryoracle.descriptions.MemoryDescription.\_parent [private]

Definition at line 144 of file descriptions.py.

Referenced by memoryoracle.descriptions.MemoryDescription.parent().

#### 6.36.4.7 memoryoracle.descriptions.MemoryDescription.\_parent\_classifications = \ [static], [private]

Definition at line 138 of file descriptions.py.

#### 6.36.4.8 memoryoracle.descriptions.MemoryDescription.\_parentClass [private]

Definition at line 150 of file descriptions.py.

Referenced by memoryoracle.descriptions.MemoryDescription.parent\_class().

#### 6.36.4.9 memoryoracle.descriptions.MemoryDescription.\_relativeName [private]

Definition at line 147 of file descriptions.py.

Referenced by memoryoracle.descriptions.MemoryDescription.relative\_name().

#### 6.36.4.10 `memoryoracle.descriptions.MemoryDescription._symbol` `[private]`

Definition at line 145 of file `descriptions.py`.

#### 6.36.4.11 `memoryoracle.descriptions.MemoryDescription._type_name` `[private]`

Definition at line 185 of file `descriptions.py`.

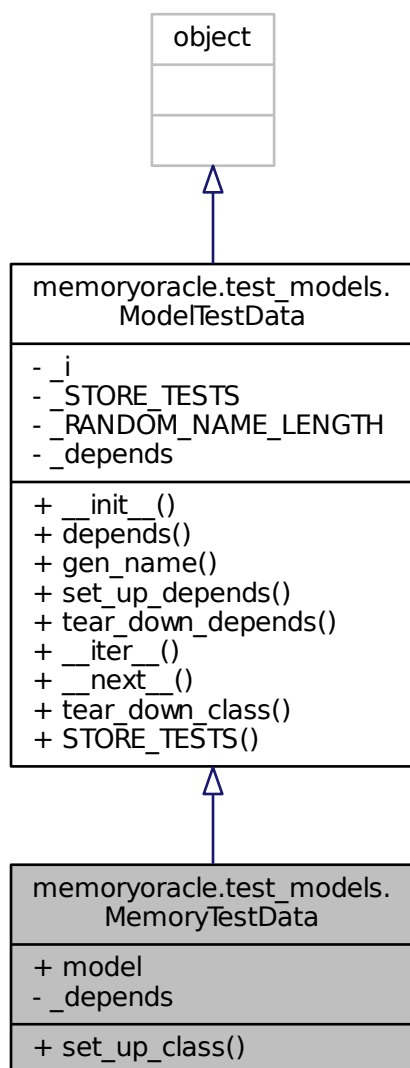
Referenced by `memoryoracle.descriptions.MemoryDescription.type_name()`.

The documentation for this class was generated from the following file:

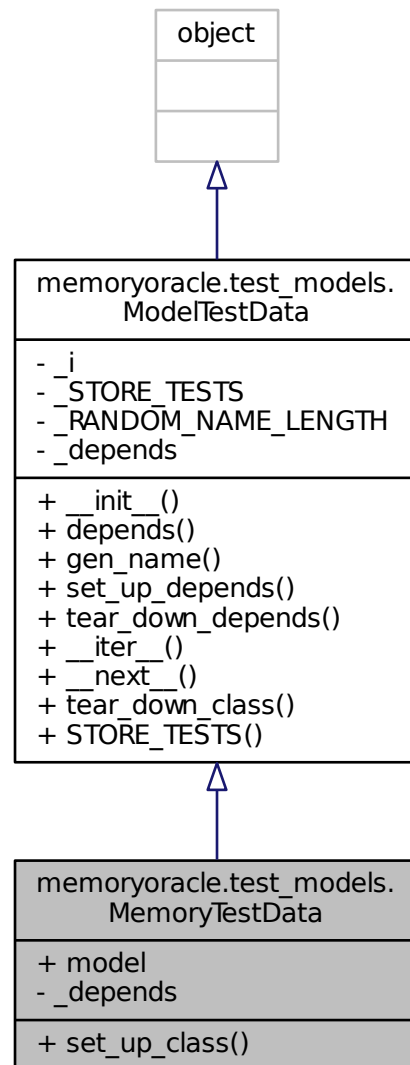
- `memoryoracle/descriptions.py`

## 6.37 memoryoracle.test\_models.MemoryTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.MemoryTestData:



Collaboration diagram for `memoryoracle.test_models.MemoryTestData`:



### Public Member Functions

- def `set_up_class` (cls)

### Static Public Attributes

- `model` = `memoryoracle.models.Memory`

### Static Private Attributes

- `list __depends` = [`ExecutionTestData`]

## Additional Inherited Members

### 6.37.1 Detailed Description

Definition at line 216 of file test\_models.py.

### 6.37.2 Member Function Documentation

#### 6.37.2.1 def memoryoracle.test\_models.MemoryTestData.set\_up\_class ( cls )

Definition at line 223 of file test\_models.py.

References `memoryoracle.instance.x`.

```

223     def set_up_class(cls):
224         cls.set_up_depends()
225         cls.data = { x.__name__: x() for x in cls.depends() }
226         cls.argsList = [
227             {
228                 "name": ModelTestData.gen_name(),
229                 "id_execution": execution,
230                 "type": "__test_type__",
231                 "address": ModelTestData.gen_name(),
232                 "has_symbol": random.choice([True, False]),
233                 "data": ModelTestData.gen_name(),
234             } for execution in cls.data["ExecutionTestData"] ]
235         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
236
237
```

### 6.37.3 Member Data Documentation

#### 6.37.3.1 list memoryoracle.test\_models.MemoryTestData.\_depends = [ExecutionTestData] [static], [private]

Definition at line 220 of file test\_models.py.

#### 6.37.3.2 memoryoracle.test\_models.MemoryTestData.model = memoryoracle.models.Memory [static]

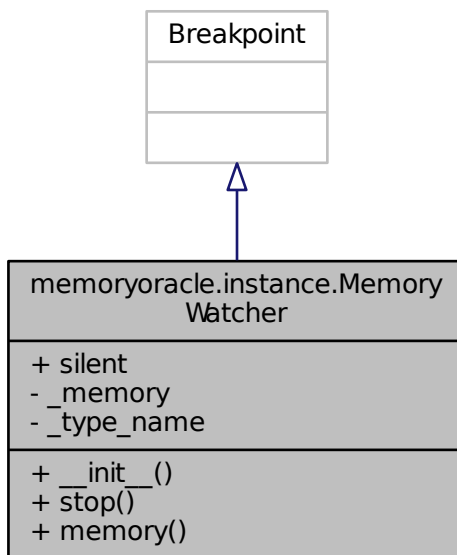
Definition at line 218 of file test\_models.py.

The documentation for this class was generated from the following file:

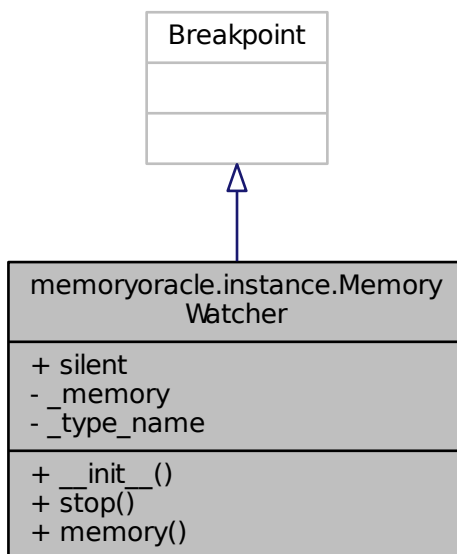
- `memoryoracle/test_models.py`

## 6.38 memoryoracle.instance.MemoryWatcher Class Reference

Inheritance diagram for memoryoracle.instance.MemoryWatcher:



Collaboration diagram for memoryoracle.instance.MemoryWatcher:



## Public Member Functions

- def `__init__` (self, `memory`)
- def `stop` (self)
- def `memory` (self)

## Public Attributes

- `silent`

## Private Attributes

- `__memory`
- `__type_name`

### 6.38.1 Detailed Description

Definition at line 490 of file instance.py.

### 6.38.2 Constructor & Destructor Documentation

#### 6.38.2.1 def memoryoracle.instance.MemoryWatcher.\_\_init\_\_( self, memory )

Definition at line 492 of file instance.py.

```
492     def __init__(self, memory):
493         self.__memory = memory
494         self.__type_name = descriptions.type_name(memory.type)
495         addr = memory.address
496         expression = self.__memory.name
497         super(MemoryWatcher, self).__init__(
498             expression,
499             gdb.BP_WATCHPOINT,
500             gdb.WP_WRITE,
501             True,
502             False)
503         self.silent = True
504
```

### 6.38.3 Member Function Documentation

#### 6.38.3.1 def memoryoracle.instance.MemoryWatcher.memory ( self )

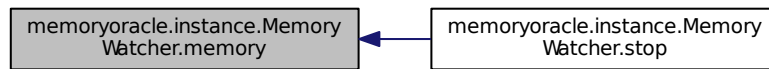
Definition at line 516 of file instance.py.

References `memoryoracle.instance.MemoryWatcher.__memory`.

Referenced by `memoryoracle.instance.MemoryWatcher.stop()`.

```
516     def memory(self):
517         return self.__memory
518
```

Here is the caller graph for this function:



#### 6.38.3.2 def memoryoracle.instance.MemoryWatcher.stop ( self )

Definition at line 505 of file instance.py.

References memoryoracle.instance.MemoryWatcher.memory().

```

505     def stop(self):
506         try:
507             if self.memory:
508                 self.memory.update()
509             else:
510                 print("Memory gone!")
511         except Exception as e:
512             traceback.print_exc()
513         return False
514
  
```

Here is the call graph for this function:



### 6.38.4 Member Data Documentation

#### 6.38.4.1 memoryoracle.instance.MemoryWatcher.\_memory [private]

Definition at line 493 of file instance.py.

Referenced by memoryoracle.instance.MemoryWatcher.memory().

#### 6.38.4.2 memoryoracle.instance.MemoryWatcher.\_type\_name [private]

Definition at line 494 of file instance.py.

#### 6.38.4.3 memoryoracle.instance.MemoryWatcher.silent

Definition at line 503 of file instance.py.

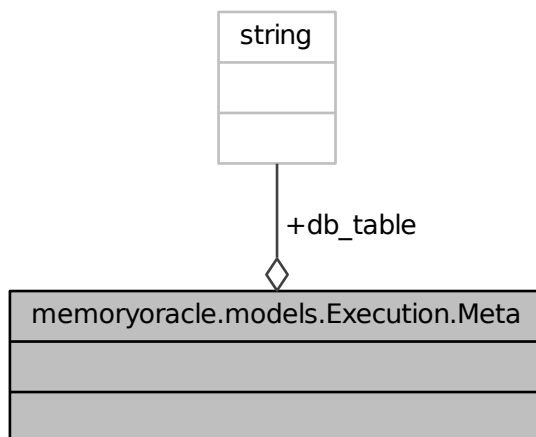
The documentation for this class was generated from the following file:

- memoryoracle/[instance.py](#)



## 6.39 memoryoracle.models.Execution.Meta Class Reference

Collaboration diagram for memoryoracle.models.Execution.Meta:



### Static Public Attributes

- string `db_table` = 'execution'

### 6.39.1 Detailed Description

Definition at line 75 of file `models.py`.

### 6.39.2 Member Data Documentation

6.39.2.1 `string memoryoracle.models.Execution.Meta.db_table = 'execution'` `[static]`

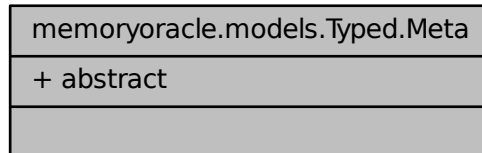
Definition at line 76 of file `models.py`.

The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

## 6.40 memoryoracle.models.Typed.Meta Class Reference

Collaboration diagram for memoryoracle.models.Typed.Meta:



### Static Public Attributes

- `abstract` = True

#### 6.40.1 Detailed Description

Definition at line 88 of file `models.py`.

#### 6.40.2 Member Data Documentation

##### 6.40.2.1 `memoryoracle.models.Typed.Meta.abstract = True` `[static]`

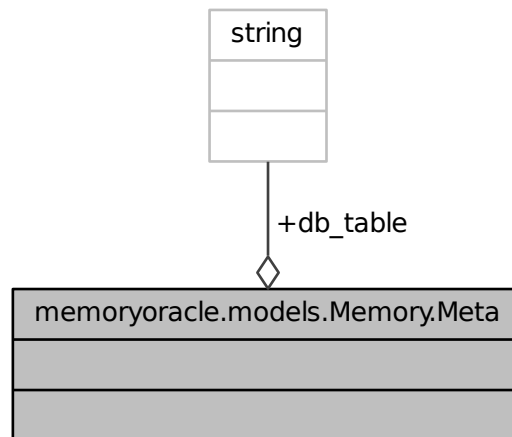
Definition at line 89 of file `models.py`.

The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

## 6.41 memoryoracle.models.Memory.Meta Class Reference

Collaboration diagram for memoryoracle.models.Memory.Meta:



### Static Public Attributes

- string `db_table` = 'memory'

#### 6.41.1 Detailed Description

Definition at line 204 of file `models.py`.

#### 6.41.2 Member Data Documentation

6.41.2.1 `string memoryoracle.models.Memory.Meta.db_table = 'memory'` `[static]`

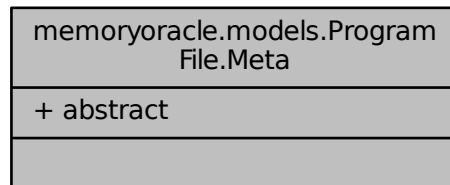
Definition at line 205 of file `models.py`.

The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

## 6.42 memoryoracle.models.ProgramFile.Meta Class Reference

Collaboration diagram for memoryoracle.models.ProgramFile.Meta:



### Static Public Attributes

- `abstract` = True

### 6.42.1 Detailed Description

Definition at line 214 of file `models.py`.

### 6.42.2 Member Data Documentation

#### 6.42.2.1 `memoryoracle.models.ProgramFile.Meta.abstract = True` `[static]`

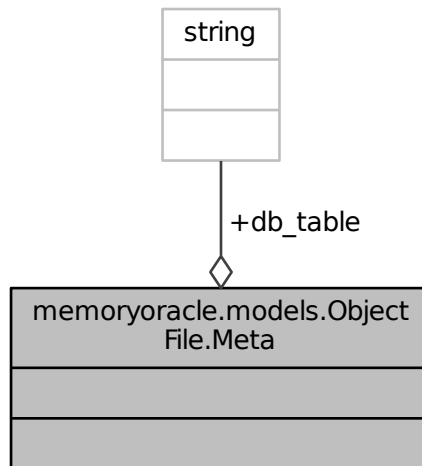
Definition at line 215 of file `models.py`.

The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

## 6.43 memoryoracle.models.ObjectFile.Meta Class Reference

Collaboration diagram for memoryoracle.models.ObjectFile.Meta:



### Static Public Attributes

- string `db_table` = 'object\_file'

#### 6.43.1 Detailed Description

Definition at line 220 of file models.py.

#### 6.43.2 Member Data Documentation

6.43.2.1 `string memoryoracle.models.ObjectFile.Meta.db_table = 'object_file' [static]`

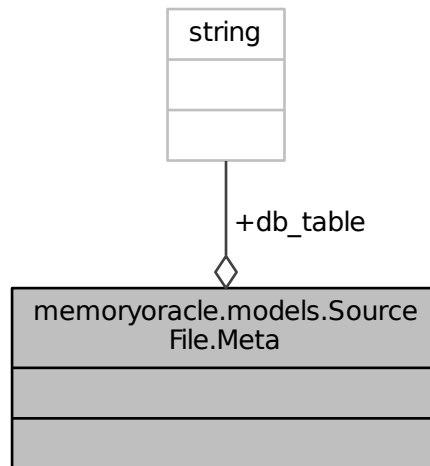
Definition at line 221 of file models.py.

The documentation for this class was generated from the following file:

- memoryoracle/[models.py](#)

## 6.44 memoryoracle.models.SourceFile.Meta Class Reference

Collaboration diagram for memoryoracle.models.SourceFile.Meta:



### Static Public Attributes

- string `db_table` = 'source\_file'

#### 6.44.1 Detailed Description

Definition at line 228 of file `models.py`.

#### 6.44.2 Member Data Documentation

6.44.2.1 `string memoryoracle.models.SourceFile.Meta.db_table = 'source_file' [static]`

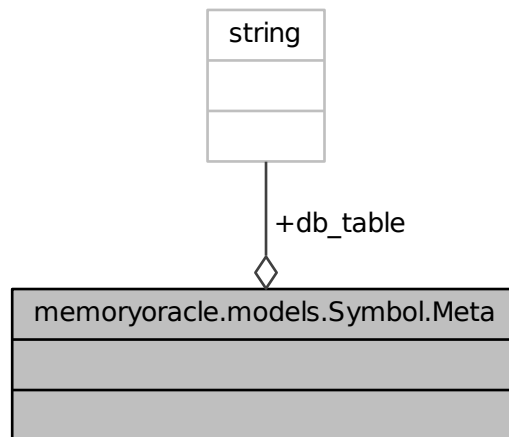
Definition at line 229 of file `models.py`.

The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

## 6.45 memoryoracle.models.Symbol.Meta Class Reference

Collaboration diagram for memoryoracle.models.Symbol.Meta:



### Static Public Attributes

- string `db_table` = 'symbol'

### 6.45.1 Detailed Description

Definition at line 234 of file `models.py`.

### 6.45.2 Member Data Documentation

6.45.2.1 `string memoryoracle.models.Symbol.Meta.db_table = 'symbol'` `[static]`

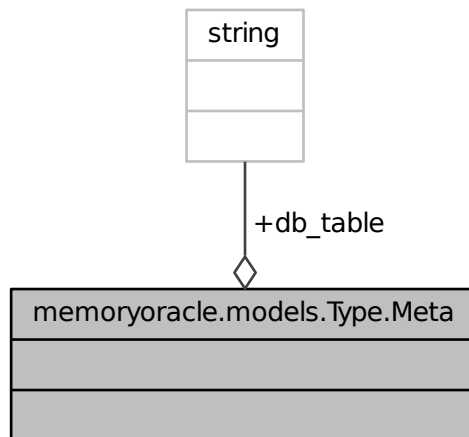
Definition at line 235 of file `models.py`.

The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

## 6.46 memoryoracle.models.Type.Meta Class Reference

Collaboration diagram for memoryoracle.models.Type.Meta:



### Static Public Attributes

- string `db_table` = 'type'

### 6.46.1 Detailed Description

Definition at line 240 of file `models.py`.

### 6.46.2 Member Data Documentation

6.46.2.1 `string memoryoracle.models.Type.Meta.db_table = 'type'` `[static]`

Definition at line 241 of file `models.py`.

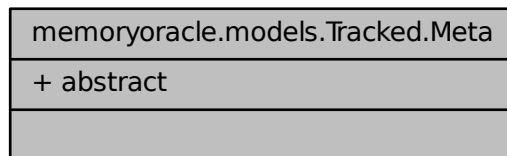
The documentation for this class was generated from the following file:

- `memoryoracle/models.py`



## 6.47 memoryoracle.models.Tracked.Meta Class Reference

Collaboration diagram for memoryoracle.models.Tracked.Meta:



### Static Public Attributes

- `abstract` = True

#### 6.47.1 Detailed Description

Definition at line 42 of file `models.py`.

#### 6.47.2 Member Data Documentation

##### 6.47.2.1 `memoryoracle.models.Tracked.Meta.abstract = True` [static]

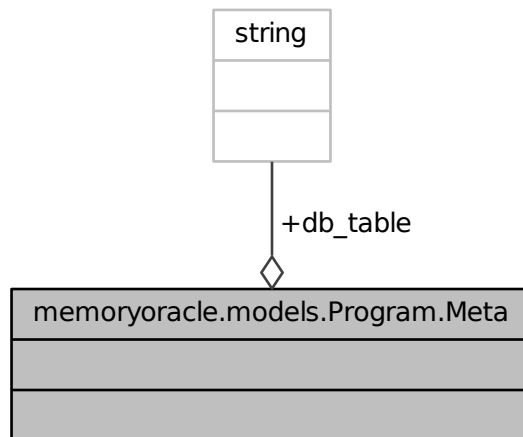
Definition at line 43 of file `models.py`.

The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

## 6.48 memoryoracle.models.Program.Meta Class Reference

Collaboration diagram for memoryoracle.models.Program.Meta:



### Static Public Attributes

- string `db_table` = 'program'

### 6.48.1 Detailed Description

Definition at line 48 of file models.py.

### 6.48.2 Member Data Documentation

6.48.2.1 `string memoryoracle.models.Program.Meta.db_table = 'program' [static]`

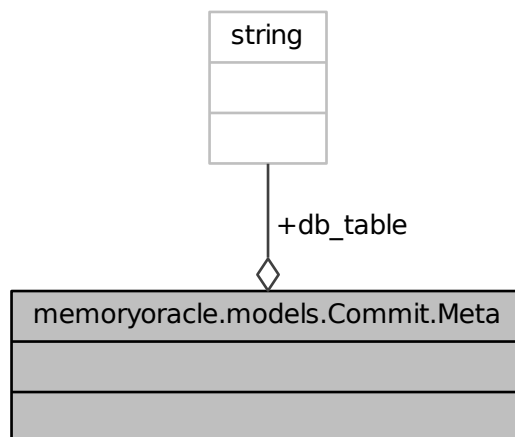
Definition at line 49 of file models.py.

The documentation for this class was generated from the following file:

- memoryoracle/[models.py](#)

## 6.49 memoryoracle.models.Commit.Meta Class Reference

Collaboration diagram for memoryoracle.models.Commit.Meta:



### Static Public Attributes

- string `db_table` = 'commit'

### 6.49.1 Detailed Description

Definition at line 58 of file models.py.

### 6.49.2 Member Data Documentation

6.49.2.1 `string memoryoracle.models.Commit.Meta.db_table = 'commit'` `[static]`

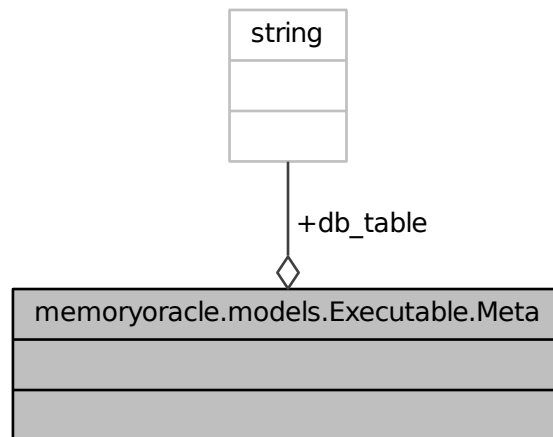
Definition at line 59 of file models.py.

The documentation for this class was generated from the following file:

- memoryoracle/[models.py](#)

## 6.50 memoryoracle.models.Executable.Meta Class Reference

Collaboration diagram for memoryoracle.models.Executable.Meta:



### Static Public Attributes

- string `db_table` = 'executable'

#### 6.50.1 Detailed Description

Definition at line 67 of file `models.py`.

#### 6.50.2 Member Data Documentation

6.50.2.1 `string memoryoracle.models.Executable.Meta.db_table = 'executable'` `[static]`

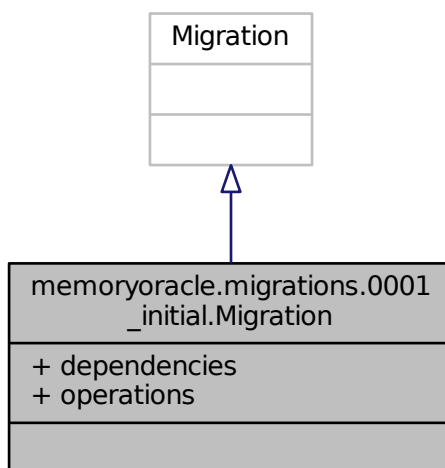
Definition at line 68 of file `models.py`.

The documentation for this class was generated from the following file:

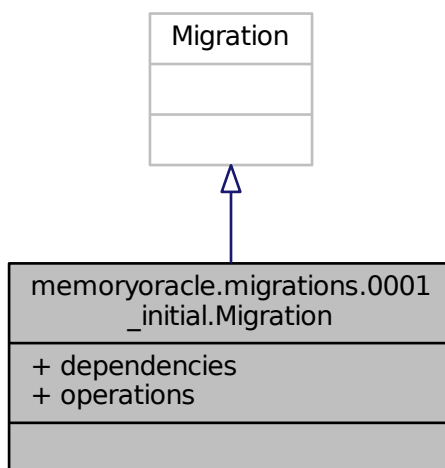
- `memoryoracle/models.py`

## 6.51 memoryoracle.migrations.0001\_initial.Migration Class Reference

Inheritance diagram for memoryoracle.migrations.0001\_initial.Migration:



Collaboration diagram for memoryoracle.migrations.0001\_initial.Migration:



### Static Public Attributes

- list [dependencies](#)
- list [operations](#)

### 6.51.1 Detailed Description

Definition at line 7 of file 0001\_initial.py.

### 6.51.2 Member Data Documentation

#### 6.51.2.1 list memoryoracle.migrations.0001\_initial.Migration.dependencies [static]

**Initial value:**

```
1 = [  
2     ]
```

Definition at line 9 of file 0001\_initial.py.

#### 6.51.2.2 list memoryoracle.migrations.0001\_initial.Migration.operations [static]

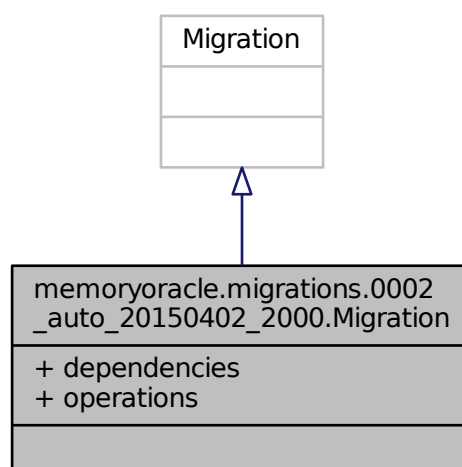
Definition at line 12 of file 0001\_initial.py.

The documentation for this class was generated from the following file:

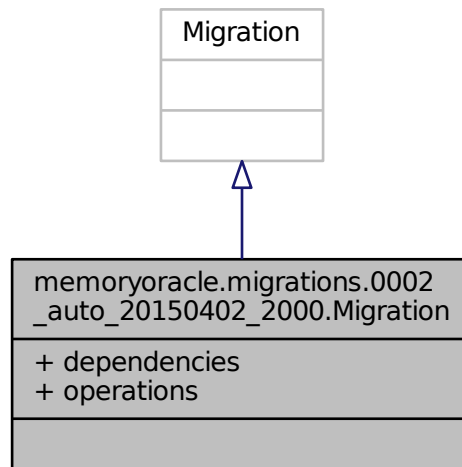
- [memoryoracle/migrations/0001\\_initial.py](#)

## 6.52 memoryoracle.migrations.0002\_auto\_20150402\_2000.Migration Class Reference

Inheritance diagram for memoryoracle.migrations.0002\_auto\_20150402\_2000.Migration:



Collaboration diagram for memoryoracle.migrations.0002\_auto\_20150402\_2000.Migration:



### Static Public Attributes

- list [dependencies](#)
- list [operations](#)

### 6.52.1 Detailed Description

Definition at line 7 of file 0002\_auto\_20150402\_2000.py.

### 6.52.2 Member Data Documentation

#### 6.52.2.1 list memoryoracle.migrations.0002\_auto\_20150402\_2000.Migration.dependencies [static]

**Initial value:**

```

1 = [
2     ('memoryoracle', '0001_initial'),
3 ]

```

Definition at line 9 of file 0002\_auto\_20150402\_2000.py.

#### 6.52.2.2 list memoryoracle.migrations.0002\_auto\_20150402\_2000.Migration.operations [static]

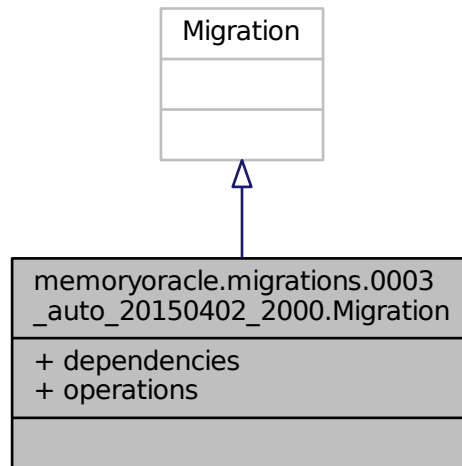
Definition at line 13 of file 0002\_auto\_20150402\_2000.py.

The documentation for this class was generated from the following file:

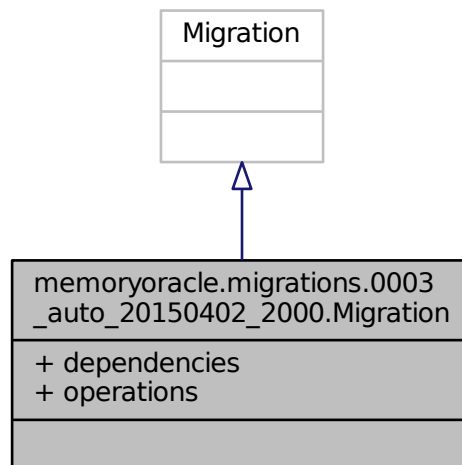
- memoryoracle/migrations/[0002\\_auto\\_20150402\\_2000.py](#)

## 6.53 memoryoracle.migrations.0003\_auto\_20150402\_2000.Migration Class Reference

Inheritance diagram for memoryoracle.migrations.0003\_auto\_20150402\_2000.Migration:



Collaboration diagram for memoryoracle.migrations.0003\_auto\_20150402\_2000.Migration:



### Static Public Attributes

- list [dependencies](#)
- list [operations](#)



### 6.53.1 Detailed Description

Definition at line 7 of file 0003\_auto\_20150402\_2000.py.

### 6.53.2 Member Data Documentation

#### 6.53.2.1 list memoryoracle.migrations.0003\_auto\_20150402\_2000.Migration.dependencies [static]

**Initial value:**

```
1 = [  
2     ('memoryoracle', '0002_auto_20150402_2000'),  
3 ]
```

Definition at line 9 of file 0003\_auto\_20150402\_2000.py.

#### 6.53.2.2 list memoryoracle.migrations.0003\_auto\_20150402\_2000.Migration.operations [static]

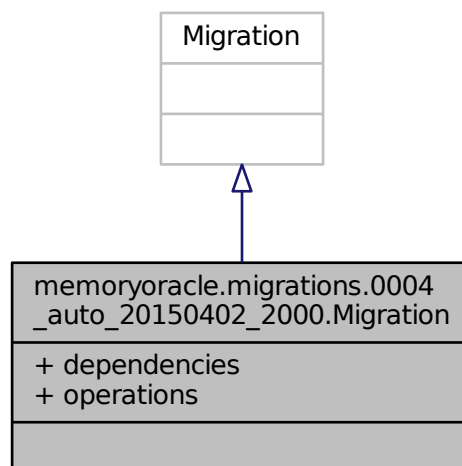
Definition at line 13 of file 0003\_auto\_20150402\_2000.py.

The documentation for this class was generated from the following file:

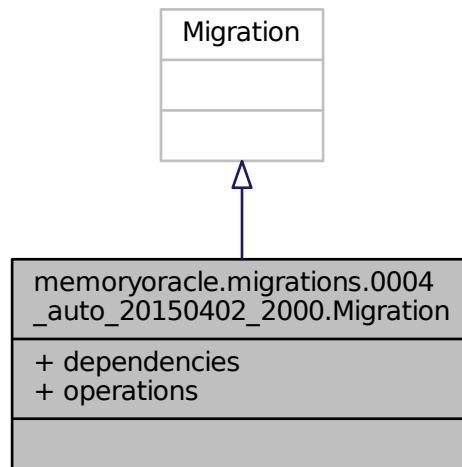
- [memoryoracle/migrations/0003\\_auto\\_20150402\\_2000.py](#)

## 6.54 memoryoracle.migrations.0004\_auto\_20150402\_2000.Migration Class Reference

Inheritance diagram for memoryoracle.migrations.0004\_auto\_20150402\_2000.Migration:



Collaboration diagram for `memoryoracle.migrations.0004_auto_20150402_2000.Migration`:



### Static Public Attributes

- list [dependencies](#)
- list [operations](#)

### 6.54.1 Detailed Description

Definition at line 7 of file `0004_auto_20150402_2000.py`.

### 6.54.2 Member Data Documentation

#### 6.54.2.1 list `memoryoracle.migrations.0004_auto_20150402_2000.Migration.dependencies` `[static]`

**Initial value:**

```

1 = [
2     ('memoryoracle', '0003_auto_20150402_2000'),
3 ]

```

Definition at line 9 of file `0004_auto_20150402_2000.py`.

#### 6.54.2.2 list `memoryoracle.migrations.0004_auto_20150402_2000.Migration.operations` `[static]`

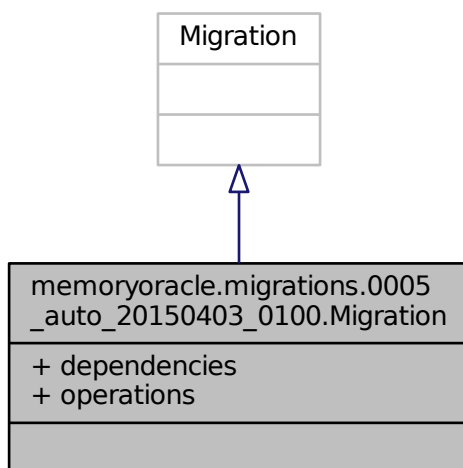
Definition at line 13 of file `0004_auto_20150402_2000.py`.

The documentation for this class was generated from the following file:

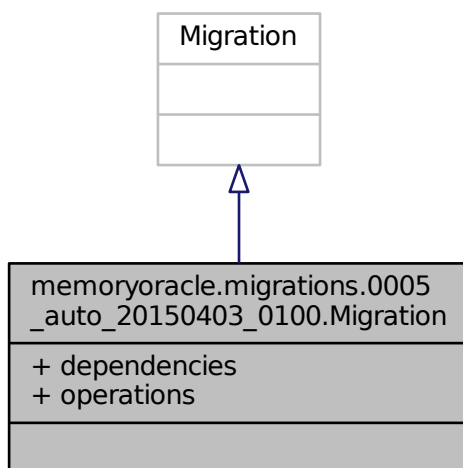
- `memoryoracle/migrations/0004_auto_20150402_2000.py`

## 6.55 memoryoracle.migrations.0005\_auto\_20150403\_0100.Migration Class Reference

Inheritance diagram for memoryoracle.migrations.0005\_auto\_20150403\_0100.Migration:



Collaboration diagram for memoryoracle.migrations.0005\_auto\_20150403\_0100.Migration:



### Static Public Attributes

- list [dependencies](#)
- list [operations](#)

### 6.55.1 Detailed Description

Definition at line 7 of file 0005\_auto\_20150403\_0100.py.

### 6.55.2 Member Data Documentation

#### 6.55.2.1 list memoryoracle.migrations.0005\_auto\_20150403\_0100.Migration.dependencies [static]

**Initial value:**

```
1 = [
2     ('memoryoracle', '0004_auto_20150402_2000'),
3 ]
```

Definition at line 9 of file 0005\_auto\_20150403\_0100.py.

#### 6.55.2.2 list memoryoracle.migrations.0005\_auto\_20150403\_0100.Migration.operations [static]

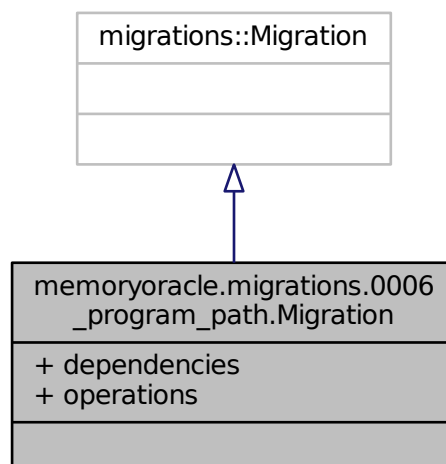
Definition at line 13 of file 0005\_auto\_20150403\_0100.py.

The documentation for this class was generated from the following file:

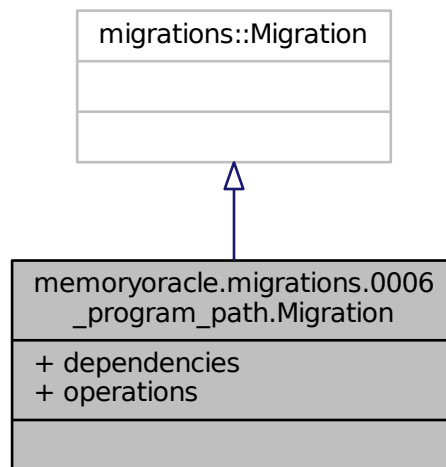
- [memoryoracle/migrations/0005\\_auto\\_20150403\\_0100.py](#)

## 6.56 memoryoracle.migrations.0006\_program\_path.Migration Class Reference

Inheritance diagram for memoryoracle.migrations.0006\_program\_path.Migration:



Collaboration diagram for memoryoracle.migrations.0006\_program\_path.Migration:



### Static Public Attributes

- list [dependencies](#)
- list [operations](#)

### 6.56.1 Detailed Description

Definition at line 7 of file 0006\_program\_path.py.

### 6.56.2 Member Data Documentation

#### 6.56.2.1 list memoryoracle.migrations.0006\_program\_path.Migration.dependencies [static]

**Initial value:**

```

1 = [
2     ('memoryoracle', '0005_auto_20150403_0100'),
3 ]
  
```

Definition at line 9 of file 0006\_program\_path.py.

#### 6.56.2.2 list memoryoracle.migrations.0006\_program\_path.Migration.operations [static]

**Initial value:**

```

1 = [
2     migrations.AddField(
3         model_name='program',
4         name='path',
5         field=models.TextField(default='./a.out'),
6         preserve_default=True,
7     ),
8 ]
  
```

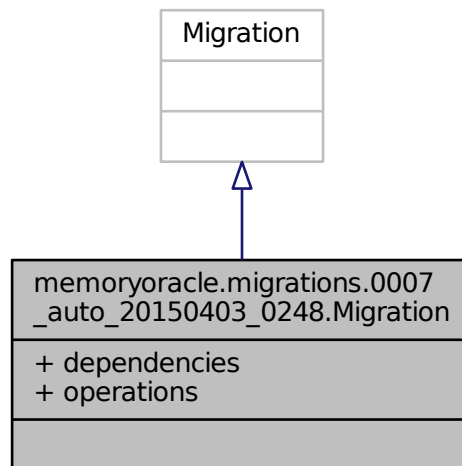
Definition at line 13 of file 0006\_program\_path.py.

The documentation for this class was generated from the following file:

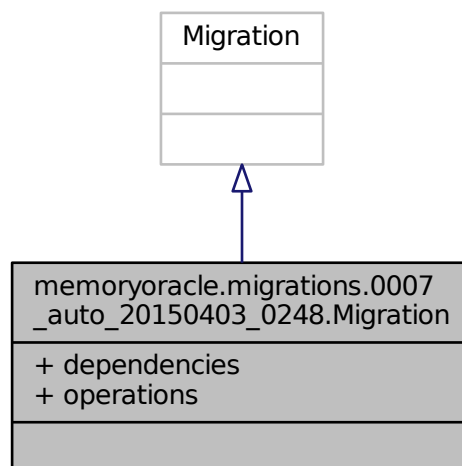
- [memoryoracle/migrations/0006\\_program\\_path.py](#)

## 6.57 memoryoracle.migrations.0007\_auto\_20150403\_0248.Migration Class Reference

Inheritance diagram for memoryoracle.migrations.0007\_auto\_20150403\_0248.Migration:



Collaboration diagram for memoryoracle.migrations.0007\_auto\_20150403\_0248.Migration:



## Static Public Attributes

- list [dependencies](#)
- list [operations](#)

### 6.57.1 Detailed Description

Definition at line 7 of file 0007\_auto\_20150403\_0248.py.

## 6.57.2 Member Data Documentation

6.57.2.1 list memoryoracle.migrations.0007\_auto\_20150403\_0248.Migration.dependencies [static]

**Initial value:**

```
1 = [
2     ('memoryoracle', '0006_program_path'),
3 ]
```

Definition at line 9 of file 0007\_auto\_20150403\_0248.py.

6.57.2.2 list memoryoracle.migrations.0007\_auto\_20150403\_0248.Migration.operations [static]

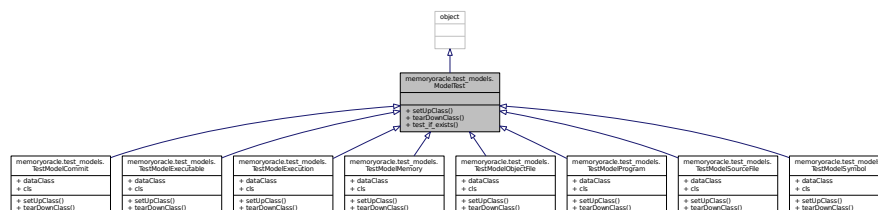
Definition at line 13 of file 0007\_auto\_20150403\_0248.py.

The documentation for this class was generated from the following file:

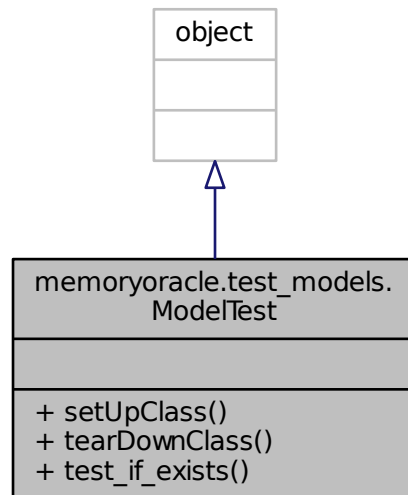
- [memoryoracle/migrations/0007\\_auto\\_20150403\\_0248.py](#)

## 6.58 memoryoracle.test\_models.ModelTest Class Reference

Inheritance diagram for memoryoracle.test\_models.ModelTest:



Collaboration diagram for `memoryoracle.test_models.ModelTest`:



## Public Member Functions

- def `setUpClass` (cls)
- def `tearDownClass` (cls)
- def `test_if_exists` (self)

### 6.58.1 Detailed Description

Definition at line 14 of file `test_models.py`.

### 6.58.2 Member Function Documentation

#### 6.58.2.1 def `memoryoracle.test_models.ModelTest.setUpClass` ( cls )

Definition at line 17 of file `test_models.py`.

```
17     def setUpClass(cls):
18         data = cls.dataClass.set_up_class()
19
```

#### 6.58.2.2 def `memoryoracle.test_models.ModelTest.tearDownClass` ( cls )

Definition at line 21 of file `test_models.py`.

```
21     def tearDownClass(cls):
22         cls.dataClass.tear_down_class()
23
```



## 6.58.2.3 def memoryoracle.test\_models.ModelTest.test\_if\_exists ( self )

Definition at line 24 of file test\_models.py.

References `memoryoracle.test_models.TestModelProgram.dataClass`, `memoryoracle.test_models.TestModelCommit.dataClass`, `memoryoracle.test_models.TestModelExecutable.dataClass`, `memoryoracle.test_models.TestModelExecution.dataClass`, `memoryoracle.test_models.TestModelMemory.dataClass`, `memoryoracle.test_models.TestModelObjectFile.dataClass`, `memoryoracle.test_models.TestModelSourceFile.dataClass`, and `memoryoracle.test_models.TestModelSymbol.dataClass`.

```

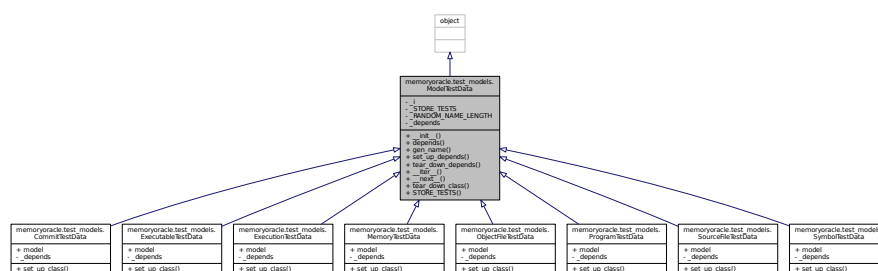
24     def test_if_exists(self):
25         createdObjects = self.dataClass()
26         for orm in createdObjects:
27             testOrm = self.cls.objects.get(id=orm.id)
28             self.assertEqual(testOrm.id, orm.id)
29             self.assertEqual(testOrm, orm)
30
31
```

The documentation for this class was generated from the following file:

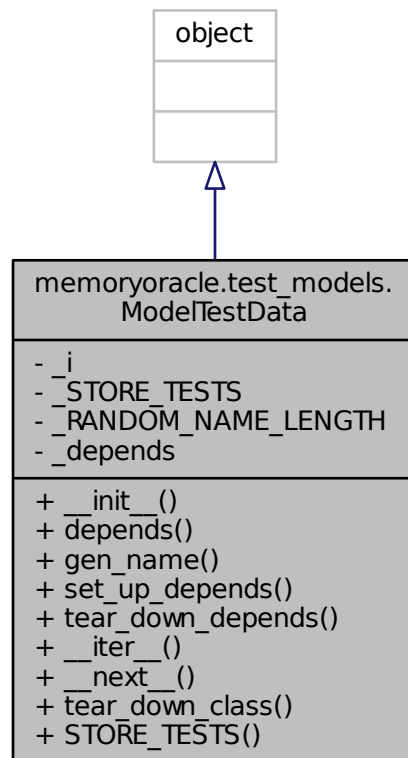
- `memoryoracle/test_models.py`

## 6.59 memoryoracle.test\_models.ModelTestData Class Reference

Inheritance diagram for `memoryoracle.test_models.ModelTestData`:



Collaboration diagram for memoryoracle.test\_models.ModelTestData:



## Public Member Functions

- def `__init__` (self)
- def `depends` (cls)
- def `gen_name` (cls)
- def `set_up_depends` (cls)
- def `tear_down_depends` (cls)
- def `__iter__` (self)
- def `__next__` (self)
- def `tear_down_class` (cls)

## Static Public Member Functions

- def `STORE_TESTS` ()

## Private Attributes

- `_i`

## Static Private Attributes

- int `_STORE_TESTS` = 10
- int `_RANDOM_NAME_LENGTH` = 20
- list `_depends` = []

### 6.59.1 Detailed Description

Definition at line 32 of file `test_models.py`.

### 6.59.2 Constructor & Destructor Documentation

#### 6.59.2.1 `def memoryoracle.test_models.ModelTestData.__init__( self )`

Definition at line 39 of file `test_models.py`.

```
39     def __init__(self):
40         pass
41
```

### 6.59.3 Member Function Documentation

#### 6.59.3.1 `def memoryoracle.test_models.ModelTestData.__iter__( self )`

Definition at line 66 of file `test_models.py`.

```
66     def __iter__(self):
67         self._i = 0
68         return self
69
```

#### 6.59.3.2 `def memoryoracle.test_models.ModelTestData.__next__( self )`

Definition at line 70 of file `test_models.py`.

References `memoryoracle.test_models.ModelTestData._i`.

```
70     def __next__(self):
71         if self._i < len(self.orms):
72             self._i += 1
73             return self.orms[self._i - 1]
74         else:
75             raise StopIteration()
76
```

#### 6.59.3.3 `def memoryoracle.test_models.ModelTestData.depends ( cls )`

Definition at line 43 of file `test_models.py`.

```
43     def depends(cls):
44         return cls._depends
45
```

#### 6.59.3.4 def memoryoracle.test\_models.ModelTestData.gen\_name ( cls )

Definition at line 51 of file test\_models.py.

```

51     def gen_name(cls):
52         return "___test_name___" + \
53             ''.join(random.choice(string.ascii_lowercase)
54                     for i in range(ModelTestData._RANDOM_NAME_LENGTH))
55 
```

#### 6.59.3.5 def memoryoracle.test\_models.ModelTestData.set\_up\_depends ( cls )

Definition at line 57 of file test\_models.py.

```

57     def set_up_depends(cls):
58         for dep in cls.depends():
59             dep.set_up_class()
60 
```

#### 6.59.3.6 def memoryoracle.test\_models.ModelTestData.STORE\_TESTS ( ) [static]

Definition at line 47 of file test\_models.py.

```

47     def STORE_TESTS():
48         return ModelTestData._STORE_TESTS
49 
```

#### 6.59.3.7 def memoryoracle.test\_models.ModelTestData.tear\_down\_class ( cls )

Definition at line 78 of file test\_models.py.

```

78     def tear_down_class(cls):
79         for orm in cls.orms:
80             print("toasting orm: ", orm.id)
81             orm.delete()
82         cls.tear_down_depends()
83
84 
```

#### 6.59.3.8 def memoryoracle.test\_models.ModelTestData.tear\_down\_depends ( cls )

Definition at line 62 of file test\_models.py.

```

62     def tear_down_depends(cls):
63         for dep in cls.depends():
64             dep.tear_down_class()
65 
```

### 6.59.4 Member Data Documentation

#### 6.59.4.1 list memoryoracle.test\_models.ModelTestData.\_depends = [] [static], [private]

Definition at line 37 of file test\_models.py.

#### 6.59.4.2 memoryoracle.test\_models.ModelTestData.\_i [private]

Definition at line 67 of file test\_models.py.

Referenced by memoryoracle.test\_models.ModelTestData.\_\_next\_\_().

6.59.4.3 `int memoryoracle.test_models.ModelTestData._RANDOM_NAME_LENGTH = 20` `[static], [private]`

Definition at line 35 of file `test_models.py`.

6.59.4.4 `int memoryoracle.test_models.ModelTestData._STORE_TESTS = 10` `[static], [private]`

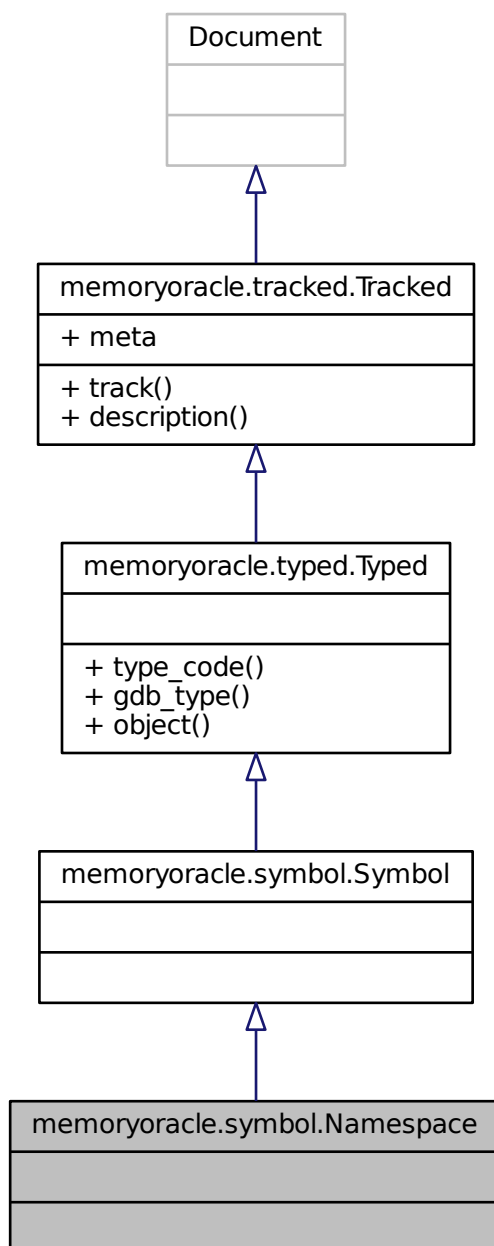
Definition at line 34 of file `test_models.py`.

The documentation for this class was generated from the following file:

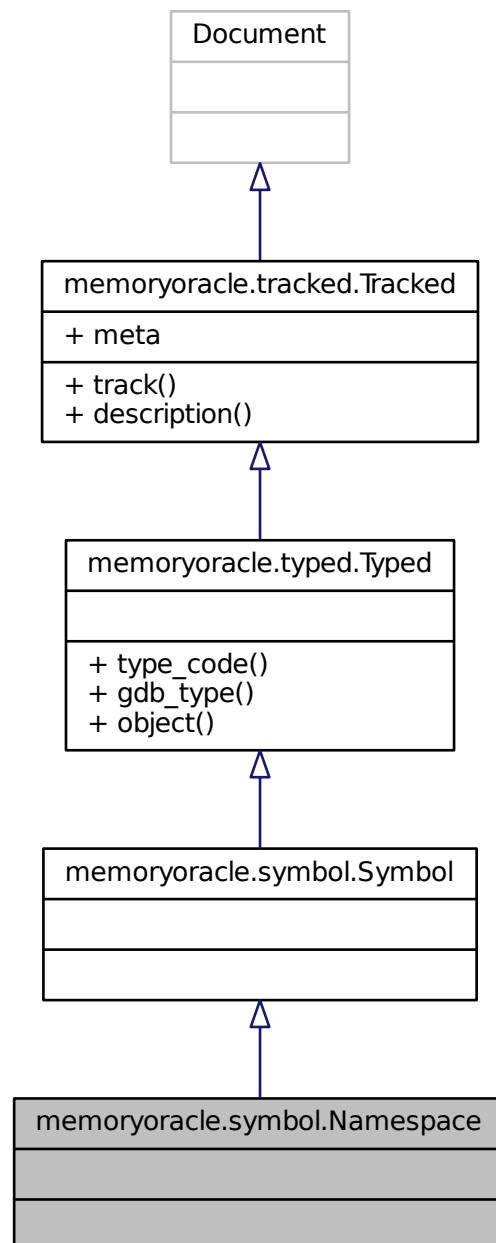
- `memoryoracle/test_models.py`

## 6.60 memoryoracle.symbol.Namespace Class Reference

Inheritance diagram for memoryoracle.symbol.Namespace:



Collaboration diagram for memoryoracle.symbol.Namespace:



## Additional Inherited Members

### 6.60.1 Detailed Description

*\*Concrete\** class to track a namespace defined in the debuggee.

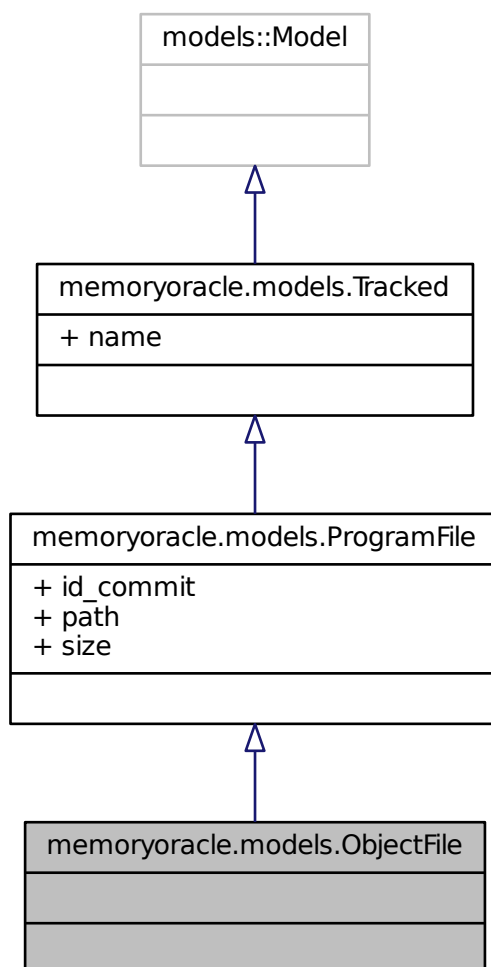
Definition at line 76 of file `symbol.py`.

The documentation for this class was generated from the following file:

- [memoryoracle/symbol.py](#)

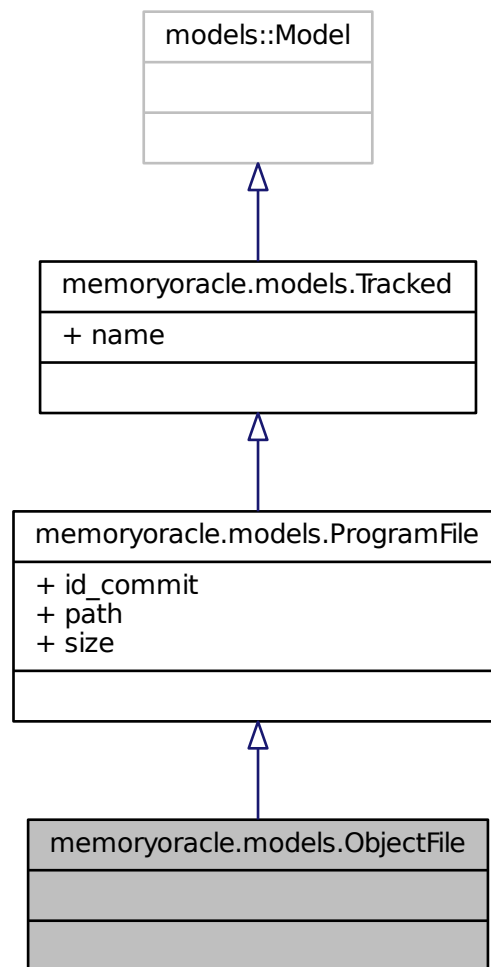
## 6.61 memoryoracle.models.ObjectFile Class Reference

Inheritance diagram for memoryoracle.models.ObjectFile:





Collaboration diagram for memoryoracle.models.ObjectFile:



## Classes

- class [Meta](#)

## Additional Inherited Members

### 6.61.1 Detailed Description

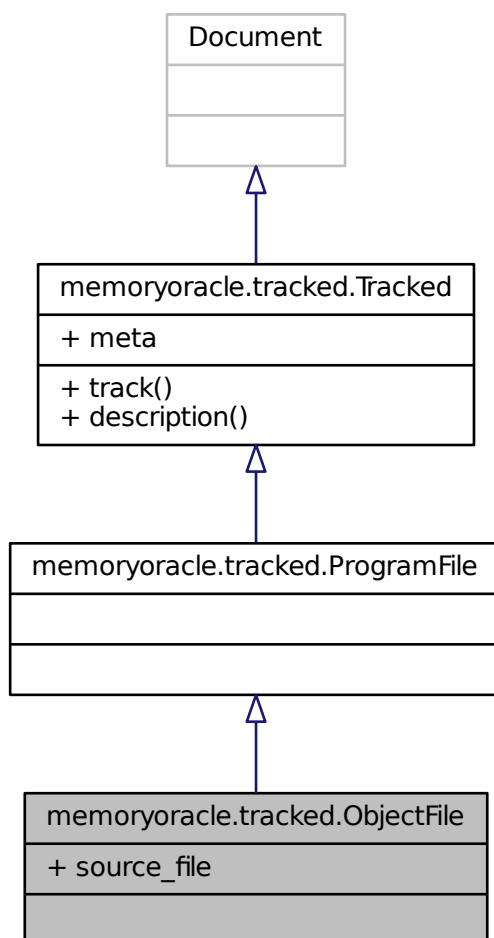
Definition at line 218 of file `models.py`.

The documentation for this class was generated from the following file:

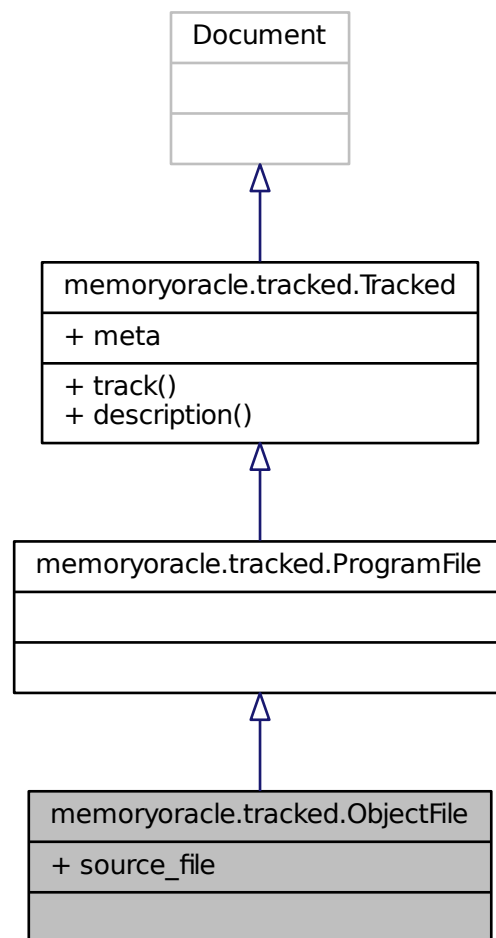
- `memoryoracle/models.py`

## 6.62 memoryoracle.tracked.ObjectFile Class Reference

Inheritance diagram for memoryoracle.tracked.ObjectFile:



Collaboration diagram for memoryoracle.tracked.ObjectFile:



### Static Public Attributes

- tuple `source_file` = `mongoengine.ReferenceField("SourceFile")`

### Additional Inherited Members

#### 6.62.1 Detailed Description

*\*Concrete\** class to track a compiled object file in the debuggee

Definition at line 78 of file `tracked.py`.

#### 6.62.2 Member Data Documentation

6.62.2.1 tuple `memoryoracle.tracked.ObjectFile.source_file = mongoengine.ReferenceField("SourceFile")` `[static]`

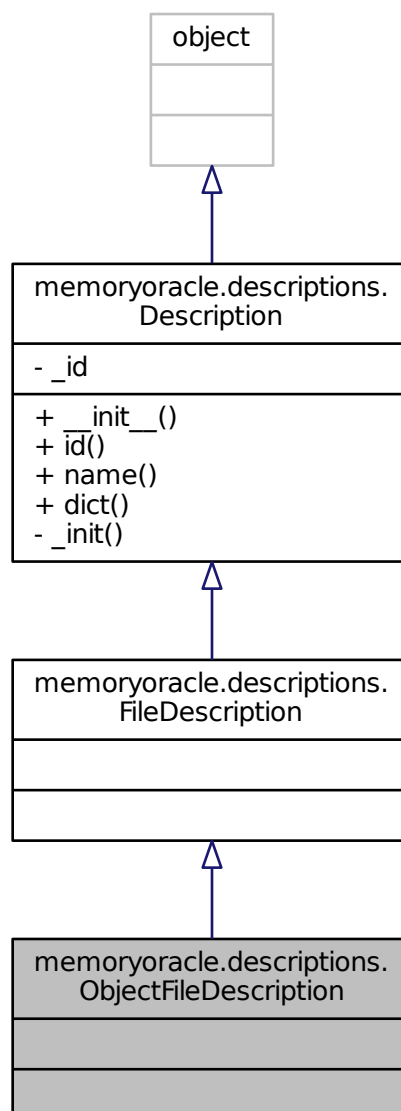
Definition at line 82 of file `tracked.py`.

The documentation for this class was generated from the following file:

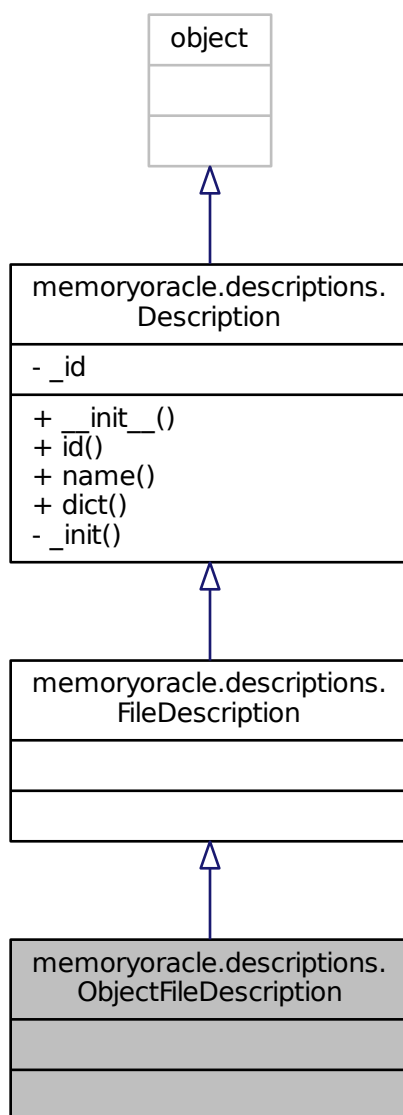
- `memoryoracle/tracked.py`

## 6.63 `memoryoracle.descriptions.ObjectFileDescription` Class Reference

Inheritance diagram for `memoryoracle.descriptions.ObjectFileDescription`:



Collaboration diagram for memoryoracle.descriptions.ObjectFileDescription:



## Additional Inherited Members

### 6.63.1 Detailed Description

*\*Concrete\** `ObjectFileDescription` class.

An description of a program's compiled object file.

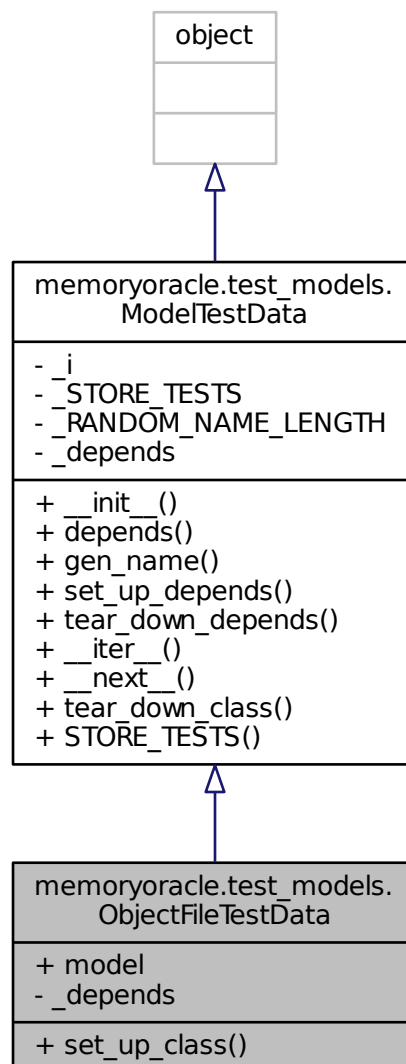
Definition at line 122 of file `descriptions.py`.

The documentation for this class was generated from the following file:

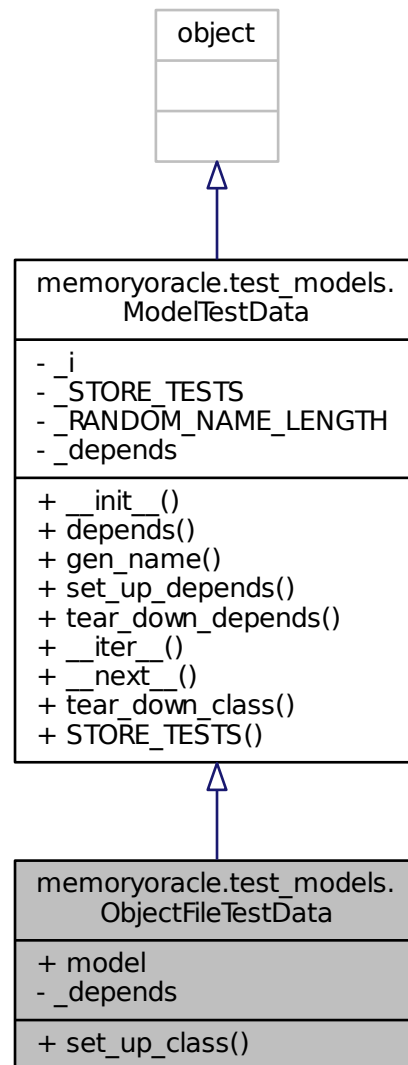
- `memoryoracle/descriptions.py`

## 6.64 memoryoracle.test\_models.ObjectFileTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.ObjectFileTestData:



Collaboration diagram for memoryoracle.test\_models.ObjectFileTestData:



### Public Member Functions

- def `set_up_class` (cls)

### Static Public Attributes

- `model` = `memoryoracle.models.ObjectFile`

### Static Private Attributes

- `list _depends` = [`CommitTestData`]

## Additional Inherited Members

### 6.64.1 Detailed Description

Definition at line 253 of file test\_models.py.

### 6.64.2 Member Function Documentation

#### 6.64.2.1 `def memoryoracle.test_models.ObjectFileTestData.set_up_class ( cls )`

Definition at line 260 of file test\_models.py.

References `memoryoracle.instance.x`.

```

260     def set_up_class(cls):
261         cls.set_up_depends()
262         cls.data = { x.__name__: x() for x in cls.depends() }
263         cls.argsList = [
264             {
265                 "id_commit": commit,
266                 "path": ModelTestData.gen_name(),
267                 "size": random.randint(0, 1000),
268             } for commit in cls.data["CommitTestData"] ]
269         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
270
271

```

### 6.64.3 Member Data Documentation

#### 6.64.3.1 `list memoryoracle.test_models.ObjectFileTestData._depends = [CommitTestData] [static], [private]`

Definition at line 257 of file test\_models.py.

#### 6.64.3.2 `memoryoracle.test_models.ObjectFileTestData.model = memoryoracle.models.ObjectFile [static]`

Definition at line 255 of file test\_models.py.

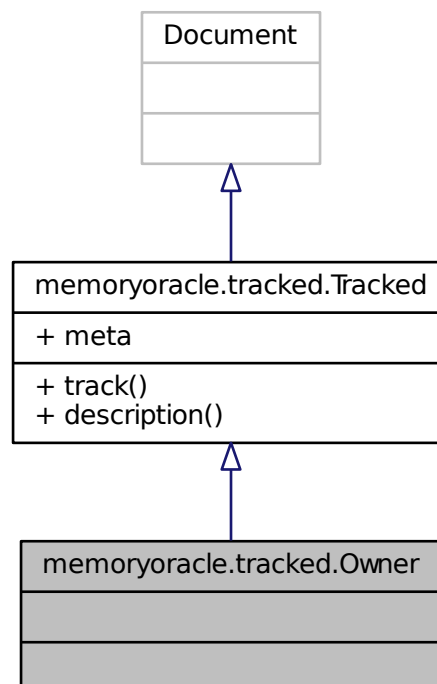
The documentation for this class was generated from the following file:

- `memoryoracle/test_models.py`

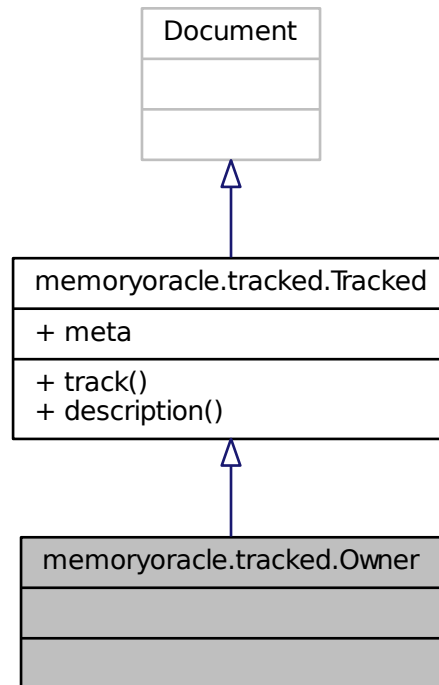


## 6.65 memoryoracle.tracked.Owner Class Reference

Inheritance diagram for memoryoracle.tracked.Owner:



Collaboration diagram for memoryoracle.tracked.Owner:



## Additional Inherited Members

### 6.65.1 Detailed Description

`*Abstract*` class representing an object which owns another object.

The Owner may both be owned, and contain objects which own other objects

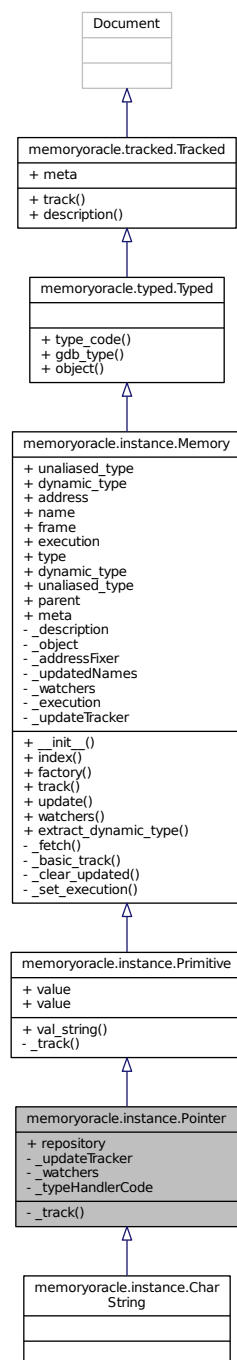
Definition at line 55 of file `tracked.py`.

The documentation for this class was generated from the following file:

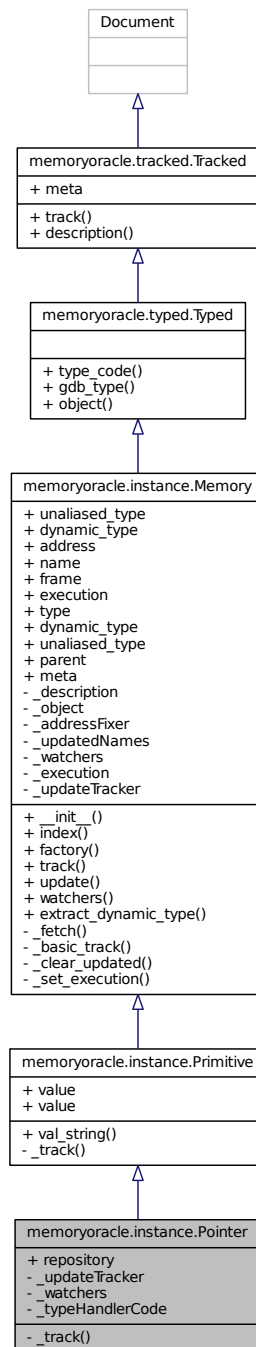
- `memoryoracle/tracked.py`

## 6.66 memoryoracle.instance.Pointer Class Reference

Inheritance diagram for memoryoracle.instance.Pointer:



Collaboration diagram for memoryoracle.instance.Pointer:



## Static Public Attributes

- tuple `repository` = dict()

## Private Member Functions

- def `_track` (self)

## Static Private Attributes

- tuple `_updateTracker` = set()
- tuple `_watchers` = dict()
- `_typeHandlerCode` = gdb.TYPE\_CODE\_PTR

## Additional Inherited Members

### 6.66.1 Detailed Description

\*Concrete\* class to represent a pointer in the debugge.

Definition at line 361 of file instance.py.

### 6.66.2 Member Function Documentation

#### 6.66.2.1 def memoryoracle.instance.Pointer.\_track( self ) [private]

Definition at line 372 of file instance.py.

References `memoryoracle.instance.addressable_factory()`, `memoryoracle.execution.Instance.name`, `memoryoracle.execution.Executable.name`, and `memoryoracle.instance.Memory.name`.

Referenced by `memoryoracle.instance.Memory.track()`, and `memoryoracle.models.Typed.track()`.

```

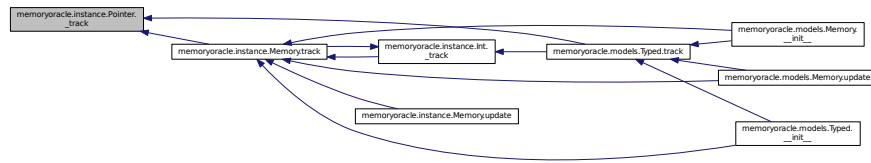
372     def _track(self):
373         super(Pointer, self)._track()
374         relativeName = "*"
375         targetName = relativeName + self.name
376         desc = descriptions.MemoryDescription(
377             targetName,
378             relativeName=(relativeName, None),
379             parent=self,
380             parent_class="pointer"
381         )
382         try:
383             target = addressable_factory(desc)
384             target.track()
385         except gdb.MemoryError as e:
386             # TODO: Decorate target as invalid in this case.
387             print("Found invalid target")
388             pass
389
390
391 # Register the Pointer class with the type handler
392 registry.TypeRegistration(Pointer)
393
394

```

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.66.3 Member Data Documentation

**6.66.3.1** `memoryoracle.instance.Pointer._typeHandlerCode = gdb.TYPE_CODE_PTR` `[static]`, `[private]`

Definition at line 370 of file `instance.py`.

Referenced by `memoryoracle.models.Typed.type_handler()`.

**6.66.3.2** `tuple memoryoracle.instance.Pointer._updateTracker = set()` `[static]`, `[private]`

Definition at line 367 of file `instance.py`.

**6.66.3.3** `tuple memoryoracle.instance.Pointer._watchers = dict()` `[static]`, `[private]`

Definition at line 368 of file `instance.py`.

Referenced by `memoryoracle.models.Typed.__init__()`, and `memoryoracle.models.Memory.watchers()`.

**6.66.3.4** `tuple memoryoracle.instance.Pointer.repository = dict()` `[static]`

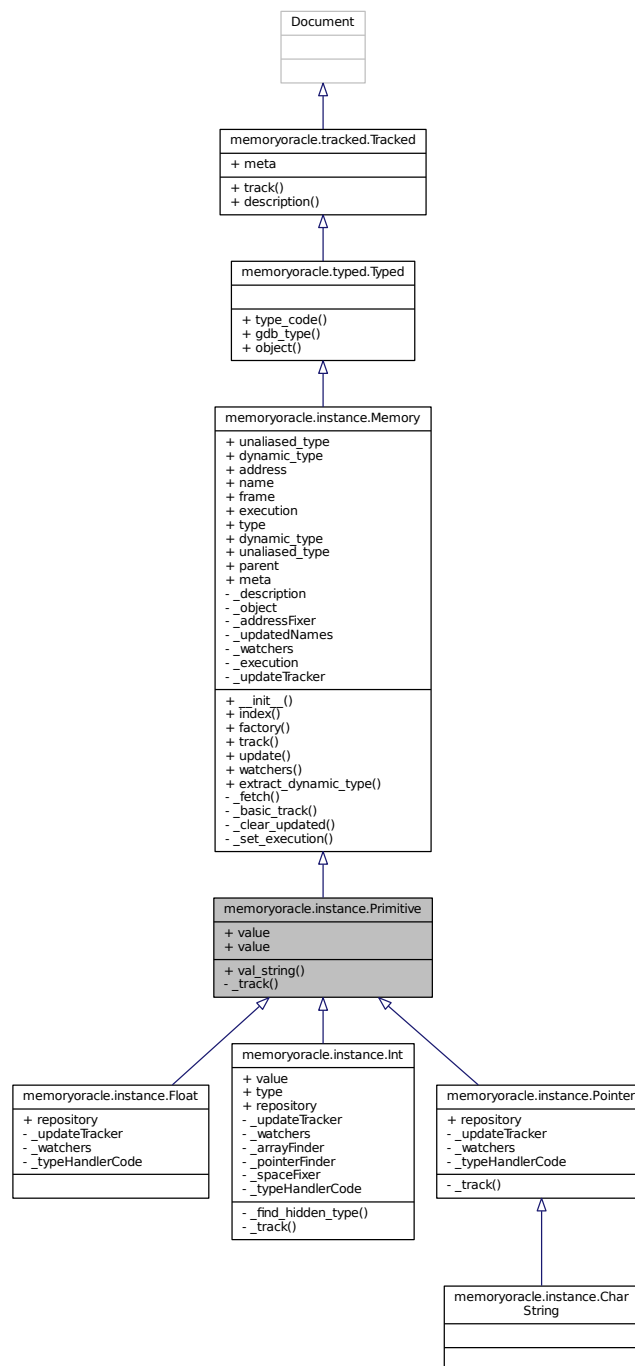
Definition at line 366 of file `instance.py`.

The documentation for this class was generated from the following file:

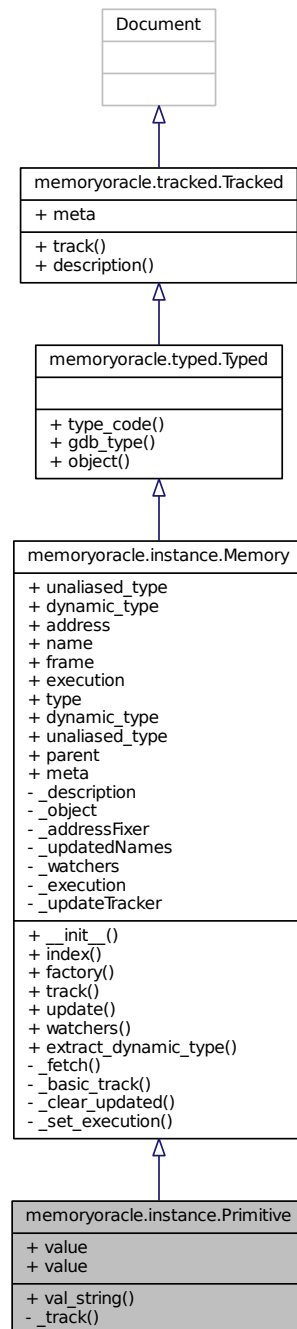
- `memoryoracle/instance.py`

## 6.67 memoryoracle.instance.Primitive Class Reference

Inheritance diagram for memoryoracle.instance.Primitive:



Collaboration diagram for memoryoracle.instance.Primitive:



## Public Member Functions

- def `val_string` (self)

## Public Attributes

- `value`



## Static Public Attributes

- tuple `value` = `mongoengine.StringField()`

## Private Member Functions

- def `_track` (self)

### 6.67.1 Detailed Description

`*Abstract*` class to represent a primitive data type in the debugge.

Primitive data types are directly printable types such as `int` and `double`.

Definition at line 332 of file `instance.py`.

### 6.67.2 Member Function Documentation

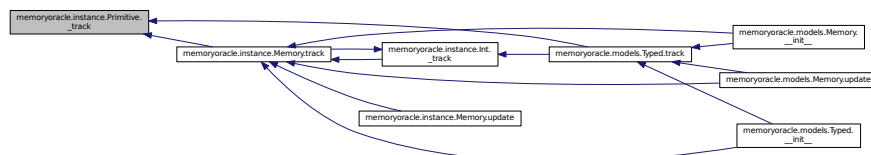
#### 6.67.2.1 def memoryoracle.instance.Primitive.\_track ( self ) [private]

Definition at line 344 of file `instance.py`.

Referenced by `memoryoracle.instance.Memory.track()`, and `memoryoracle.models.Typed.track()`.

```
344     def _track(self):
345         self.value = self.val_string()
346
```

Here is the caller graph for this function:



#### 6.67.2.2 def memoryoracle.instance.Primitive.val\_string ( self )

Get the printed value of a primitive object

Definition at line 347 of file `instance.py`.

References `memoryoracle.frame.Frame.frame`, `memoryoracle.instance.Memory.frame`, `memoryoracle.execution.Execution.frame`, `Instance.name`, `memoryoracle.execution.Executable.name`, and `memoryoracle.instance.Memory.name`.

Referenced by `memoryoracle.instance.Int._find_hidden_type()`.

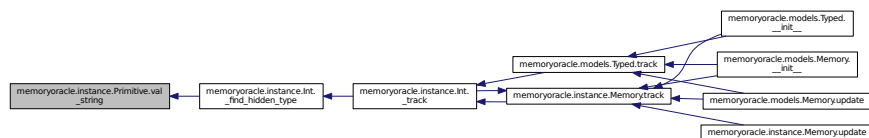
```
347     def val_string(self):
348         """
349         Get the printed value of a primitive object
350         """
351         with frame.Selector(self.frame) as s:
352             ## TODO: Find a way to print values without messing with the $# var
353             # in the gdb interface.
354             gdbPrint = gdb.execute("print " + self.name, False, True)
355             ## TODO: If we can't fix the $# var, we may as well use it.
356             ## this is free information we may as well store for the user's use.
```

```

357         ansSections = gdbPrint[: -1].split(" = ")[1:]
358         return " ".join(ansSections)
359
360

```

Here is the caller graph for this function:



## 6.67.3 Member Data Documentation

### 6.67.3.1 tuple memoryoracle.instance.Primitive.value = mongoengine.StringField() [static]

Definition at line 342 of file instance.py.

### 6.67.3.2 memoryoracle.instance.Primitive.value

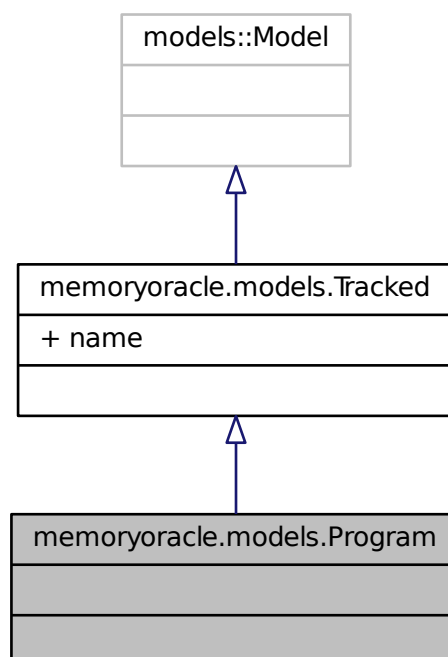
Definition at line 345 of file instance.py.

The documentation for this class was generated from the following file:

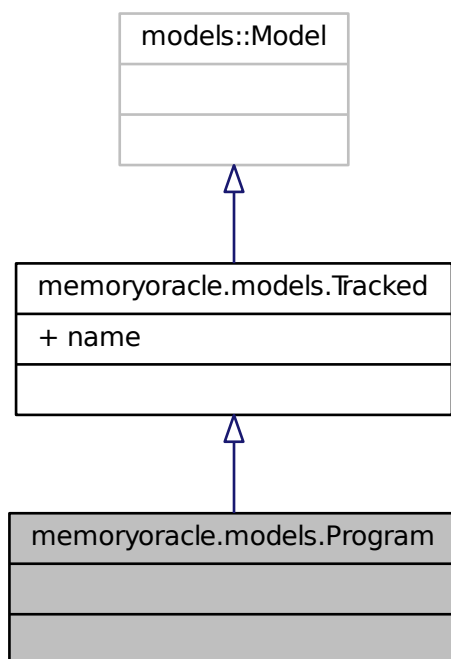
- memoryoracle/[instance.py](#)

## 6.68 memoryoracle.models.Program Class Reference

Inheritance diagram for memoryoracle.models.Program:



Collaboration diagram for memoryoracle.models.Program:



## Classes

- class [Meta](#)

## Additional Inherited Members

### 6.68.1 Detailed Description

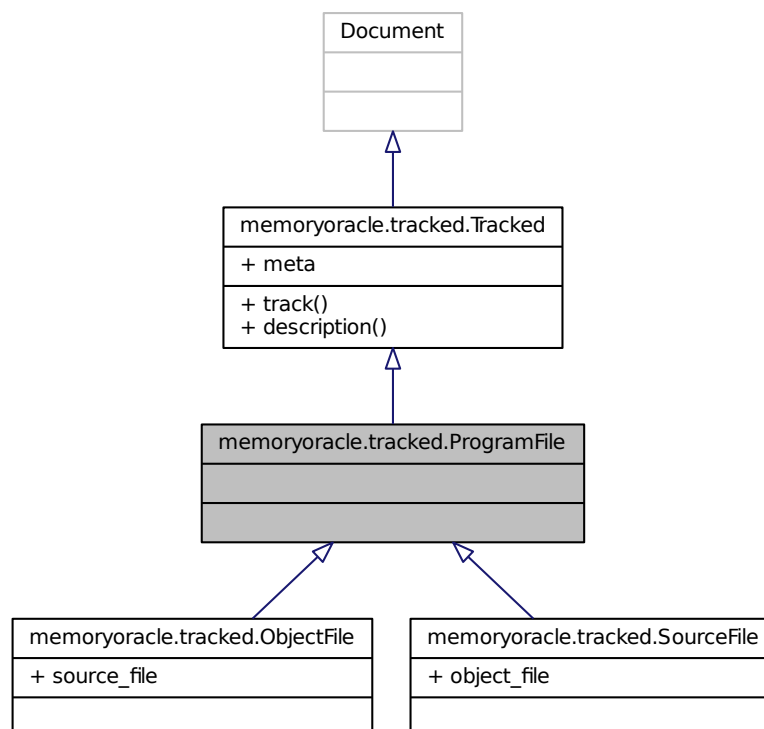
Definition at line 46 of file models.py.

The documentation for this class was generated from the following file:

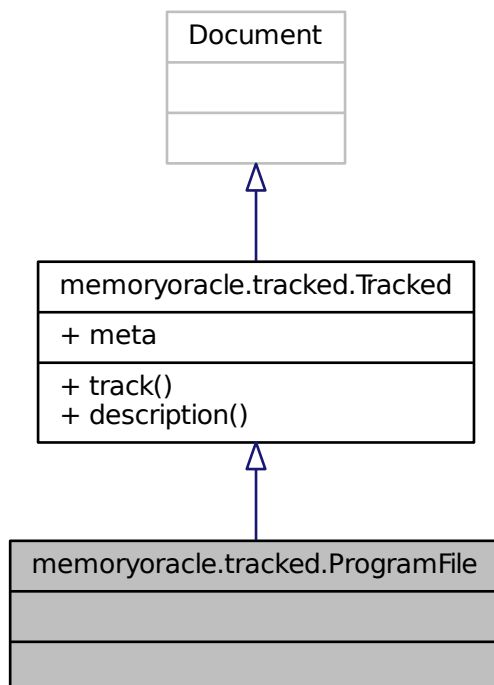
- memoryoracle/[models.py](#)

## 6.69 memoryoracle.tracked.ProgramFile Class Reference

Inheritance diagram for memoryoracle.tracked.ProgramFile:



Collaboration diagram for memoryoracle.tracked.ProgramFile:



## Additional Inherited Members

### 6.69.1 Detailed Description

`*Abstract*` class to track a file belonging to the debuggee

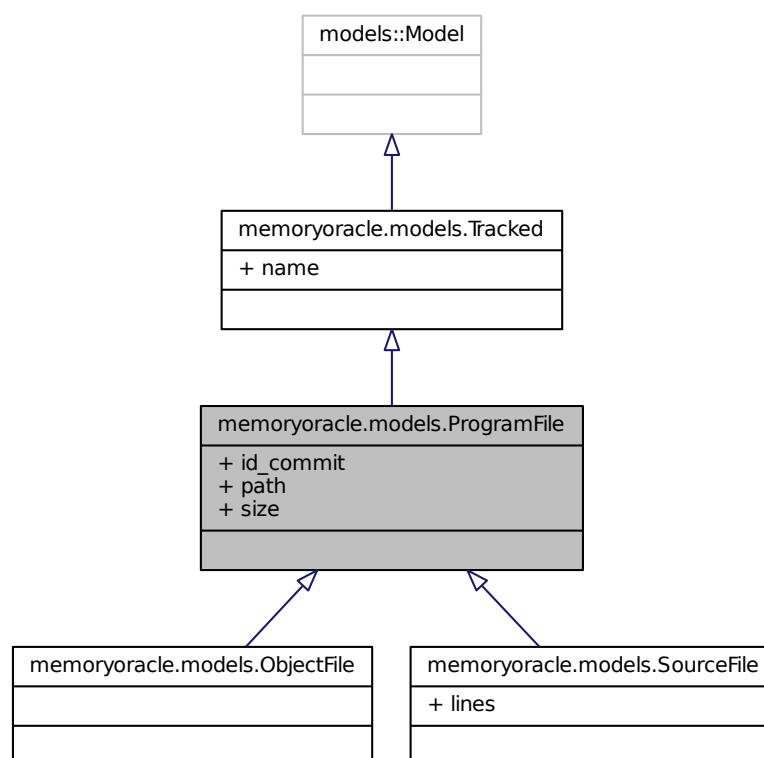
Definition at line 71 of file `tracked.py`.

The documentation for this class was generated from the following file:

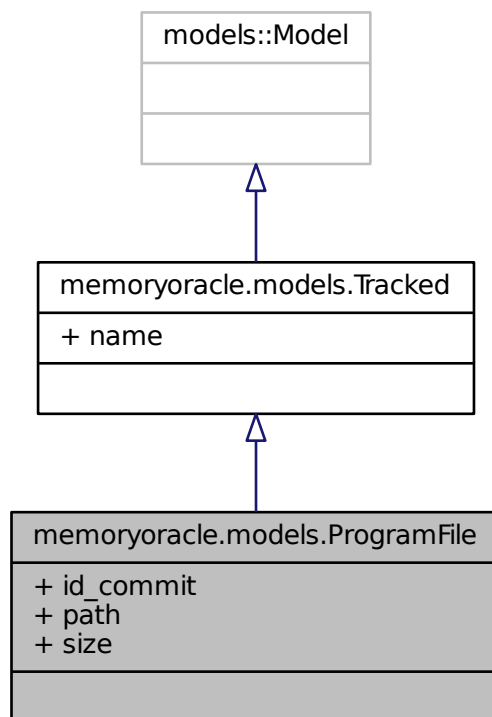
- `memoryoracle/tracked.py`

## 6.70 memoryoracle.models.ProgramFile Class Reference

Inheritance diagram for memoryoracle.models.ProgramFile:



Collaboration diagram for memoryoracle.models.ProgramFile:



## Classes

- class [Meta](#)

## Static Public Attributes

- tuple `id_commit` = `models.ForeignKey(Commit)`
- tuple `path` = `models.CharField(max_length=200)`
- tuple `size` = `models.BigIntegerField()`

### 6.70.1 Detailed Description

Definition at line 208 of file `models.py`.

### 6.70.2 Member Data Documentation

6.70.2.1 tuple `memoryoracle.models.ProgramFile.id_commit` = `models.ForeignKey(Commit)` `[static]`

Definition at line 210 of file `models.py`.



6.70.2.2 tuple memoryoracle.models.ProgramFile.path = models.CharField(max\_length=200) [static]

Definition at line 211 of file models.py.

6.70.2.3 tuple memoryoracle.models.ProgramFile.size = models.BigIntegerField() [static]

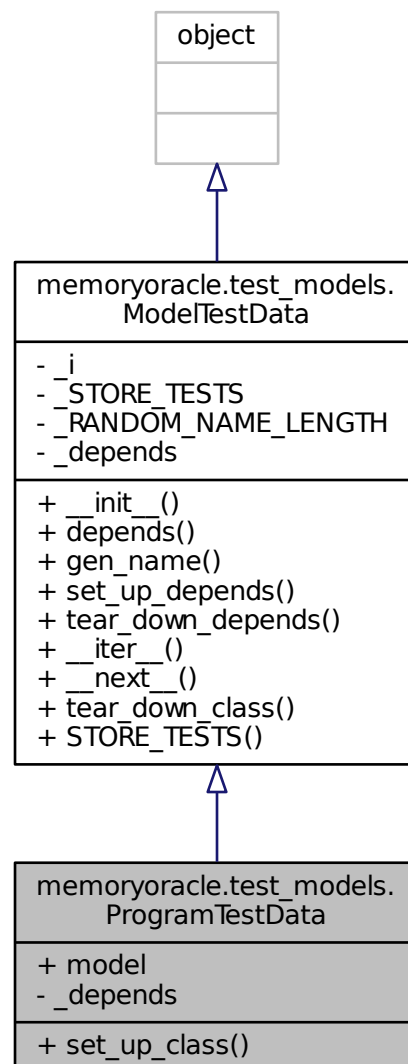
Definition at line 212 of file models.py.

The documentation for this class was generated from the following file:

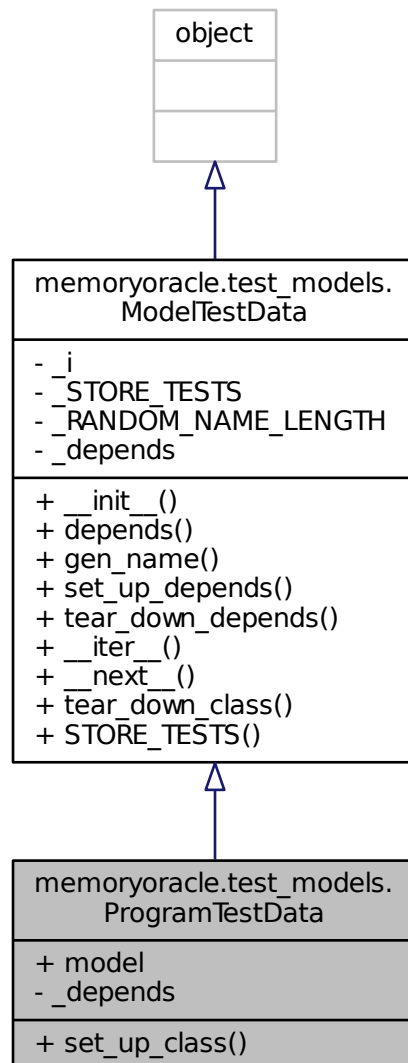
- memoryoracle/[models.py](#)

## 6.71 memoryoracle.test\_models.ProgramTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.ProgramTestData:



Collaboration diagram for memoryoracle.test\_models.ProgramTestData:



### Public Member Functions

- def `set_up_class` (cls)

### Static Public Attributes

- `model` = `memoryoracle.models.Program`

### Static Private Attributes

- `list _depends` = []

## Additional Inherited Members

### 6.71.1 Detailed Description

Definition at line 85 of file test\_models.py.

### 6.71.2 Member Function Documentation

#### 6.71.2.1 def memoryoracle.test\_models.ProgramTestData.set\_up\_class ( cls )

Definition at line 92 of file test\_models.py.

References memoryoracle.instance.x.

```
92     def set_up_class(cls):
93         cls.set_up_depends()
94         cls.data = { x.__name__: x() for x in cls.depends() }
95         cls.argsList = [ {"name": cls.gen_name()} for x in range(cls.STORE_TESTS()) ]
96         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
97
98
```

### 6.71.3 Member Data Documentation

#### 6.71.3.1 list memoryoracle.test\_models.ProgramTestData.\_depends = [] [static],[private]

Definition at line 89 of file test\_models.py.

#### 6.71.3.2 memoryoracle.test\_models.ProgramTestData.model = memoryoracle.models.Program [static]

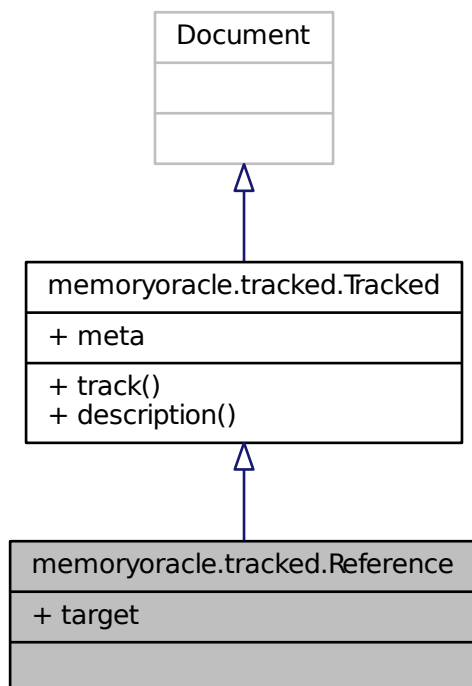
Definition at line 87 of file test\_models.py.

The documentation for this class was generated from the following file:

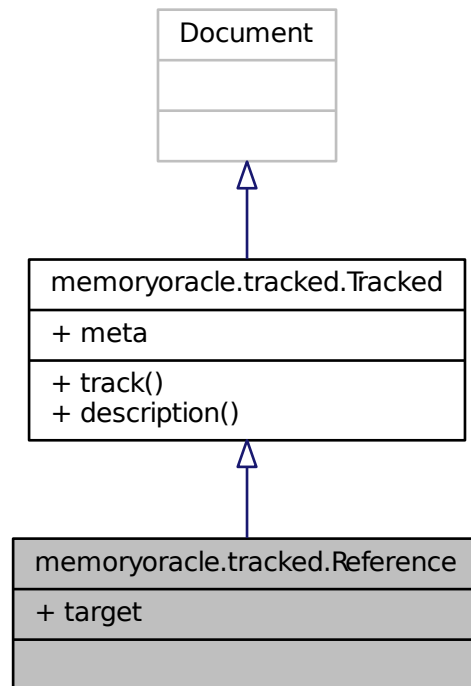
- [memoryoracle/test\\_models.py](#)

## 6.72 memoryoracle.tracked.Reference Class Reference

Inheritance diagram for memoryoracle.tracked.Reference:



Collaboration diagram for memoryoracle.tracked.Reference:



### Static Public Attributes

- tuple `target` = `mongoengine.ReferenceField(Tracked)`

### Additional Inherited Members

#### 6.72.1 Detailed Description

`*Abstract*` class representing an object which is a reference to another object.

Definition at line 63 of file `tracked.py`.

#### 6.72.2 Member Data Documentation

6.72.2.1 tuple `memoryoracle.tracked.Reference.target` = `mongoengine.ReferenceField(Tracked)` `[static]`

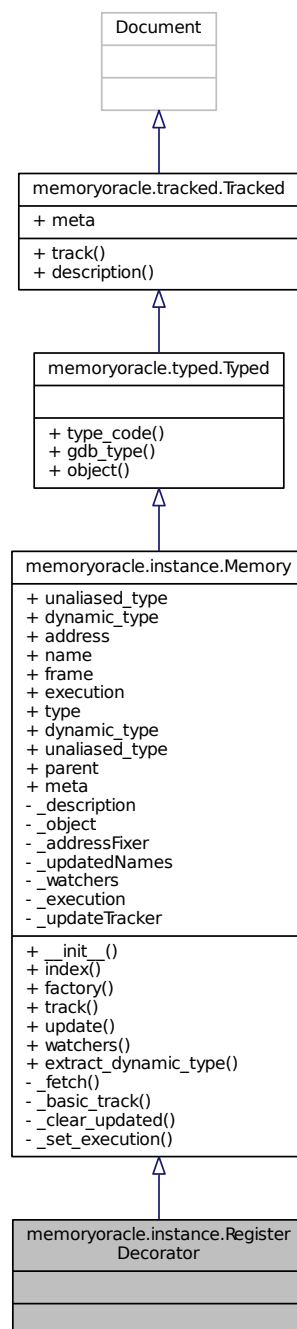
Definition at line 68 of file `tracked.py`.

The documentation for this class was generated from the following file:

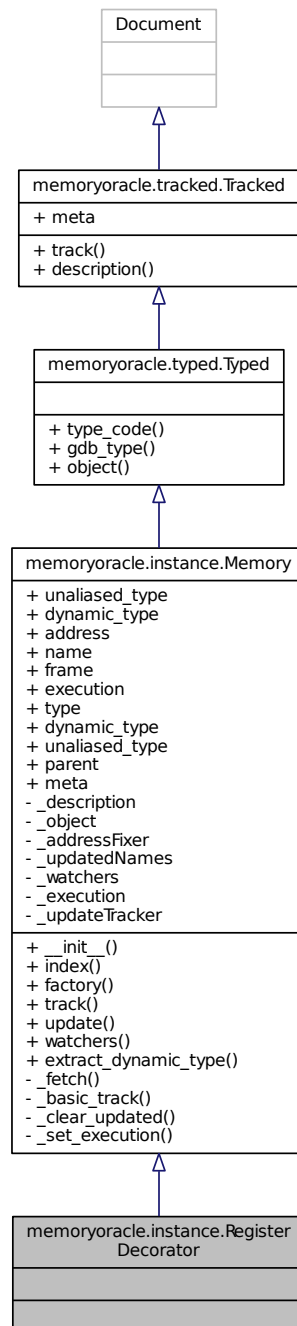
- `memoryoracle/tracked.py`

## 6.73 memoryoracle.instance.RegisterDecorator Class Reference

Inheritance diagram for memoryoracle.instance.RegisterDecorator:



Collaboration diagram for memoryoracle.instance.RegisterDecorator:



## Additional Inherited Members

### 6.73.1 Detailed Description

`*Decorator*` class to decorate an addressable as being marked register.

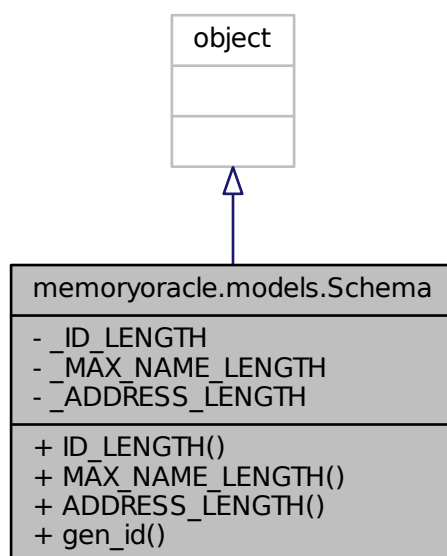
Definition at line 241 of file `instance.py`.

The documentation for this class was generated from the following file:

- [memoryoracle/instance.py](#)

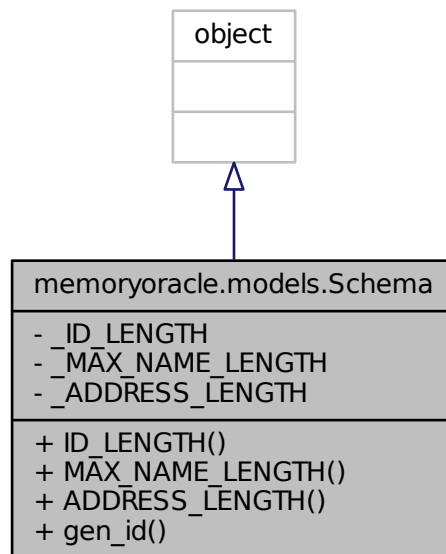
## 6.74 memoryoracle.models.Schema Class Reference

Inheritance diagram for memoryoracle.models.Schema:





Collaboration diagram for memoryoracle.models.Schema:



### Static Public Member Functions

- def `ID_LENGTH()`
- def `MAX_NAME_LENGTH()`
- def `ADDRESS_LENGTH()`
- def `gen_id()`

### Static Private Attributes

- int `_ID_LENGTH` = 36
- int `_MAX_NAME_LENGTH` = 200
- int `_ADDRESS_LENGTH` = 64

#### 6.74.1 Detailed Description

Definition at line 10 of file models.py.

#### 6.74.2 Member Function Documentation

##### 6.74.2.1 def memoryoracle.models.Schema.ADDRESS\_LENGTH( ) [static]

Definition at line 29 of file models.py.

```

29     def ADDRESS_LENGTH():
30         return Schema._ADDRESS_LENGTH
31 
```

#### 6.74.2.2 `def memoryoracle.models.Schema.gen_id( ) [static]`

Definition at line 33 of file models.py.

```
33     def gen_id():
34         return str(uuid())
35
36
```

#### 6.74.2.3 `def memoryoracle.models.Schema.ID_LENGTH( ) [static]`

Definition at line 19 of file models.py.

```
19     def ID_LENGTH():
20         return Schema._ID_LENGTH
21
```

#### 6.74.2.4 `def memoryoracle.models.Schema.MAX_NAME_LENGTH( ) [static]`

Definition at line 24 of file models.py.

```
24     def MAX_NAME_LENGTH():
25         return Schema._MAX_NAME_LENGTH
26
```

### 6.74.3 Member Data Documentation

#### 6.74.3.1 `int memoryoracle.models.Schema._ADDRESS_LENGTH = 64 [static], [private]`

Definition at line 16 of file models.py.

#### 6.74.3.2 `int memoryoracle.models.Schema._ID_LENGTH = 36 [static], [private]`

Definition at line 12 of file models.py.

#### 6.74.3.3 `int memoryoracle.models.Schema._MAX_NAME_LENGTH = 200 [static], [private]`

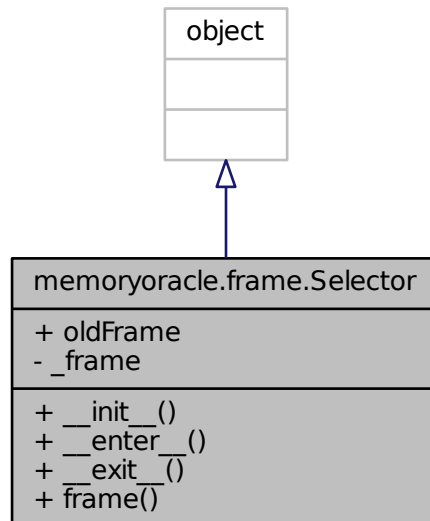
Definition at line 14 of file models.py.

The documentation for this class was generated from the following file:

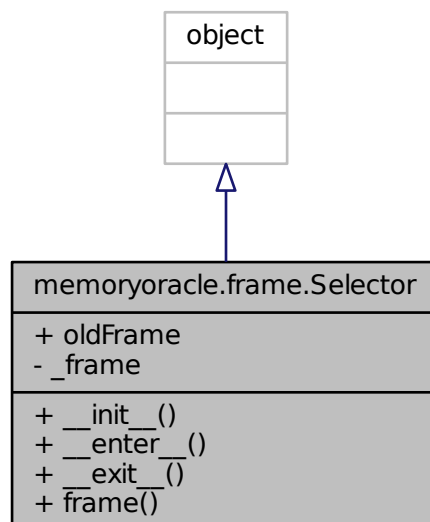
- [memoryoracle/models.py](#)

## 6.75 memoryoracle.frame.Selector Class Reference

Inheritance diagram for memoryoracle.frame.Selector:



Collaboration diagram for memoryoracle.frame.Selector:



## Public Member Functions

- `def __init__`
- `def __enter__ (self)`
- `def __exit__ (self, type, value, tb)`
- `def frame (self)`

## Public Attributes

- `oldFrame`

## Private Attributes

- `_frame`

### 6.75.1 Detailed Description

Definition at line 83 of file frame.py.

### 6.75.2 Constructor & Destructor Documentation

#### 6.75.2.1 `def memoryoracle.frame.Selector.__init__ ( self, f=None )`

Definition at line 85 of file frame.py.

```

85     def __init__(self, f=None):
86         if f is None:
87             self._frame = Frame(gdb.newest_frame())
88         elif isinstance(f, gdb.Frame):
89             self._frame = Frame(f)
90         elif isinstance(f, str):
91             self._frame = Frame.knownFrames.get(f, Frame(gdb.newest_frame()))
92         else:
93             print("Frame param of invalid type!")
94             raise ValueError("frame param of invalid type: " + str(type(f)))
95
96         # self.frame.track()
97
```

### 6.75.3 Member Function Documentation

#### 6.75.3.1 `def memoryoracle.frame.Selector.__enter__ ( self )`

Definition at line 98 of file frame.py.

```

98     def __enter__(self):
99         self.oldFrame = gdb.selected_frame()
100         self.frame.select()
101         return self
102
```

#### 6.75.3.2 `def memoryoracle.frame.Selector.__exit__ ( self, type, value, tb )`

Definition at line 103 of file frame.py.

```

103     def __exit__(self, type, value, tb):
104         self.oldFrame.select()
105
```

### 6.75.3.3 def memoryoracle.frame.Selector.frame ( self )

Definition at line 107 of file frame.py.

References `memoryoracle.frame.Selector._frame`, and `memoryoracle.descriptions.MemoryDescription._frame`.

```
107     def frame(self):  
108         return self._frame  
109
```

## 6.75.4 Member Data Documentation

### 6.75.4.1 memoryoracle.frame.Selector.\_frame [private]

Definition at line 87 of file frame.py.

Referenced by `memoryoracle.frame.Selector.frame()`.

### 6.75.4.2 memoryoracle.frame.Selector.oldFrame

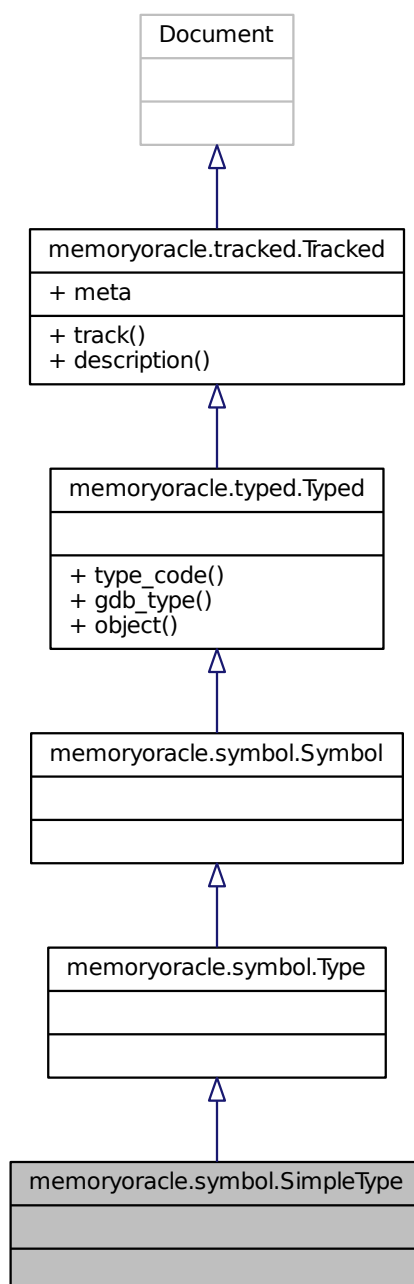
Definition at line 99 of file frame.py.

The documentation for this class was generated from the following file:

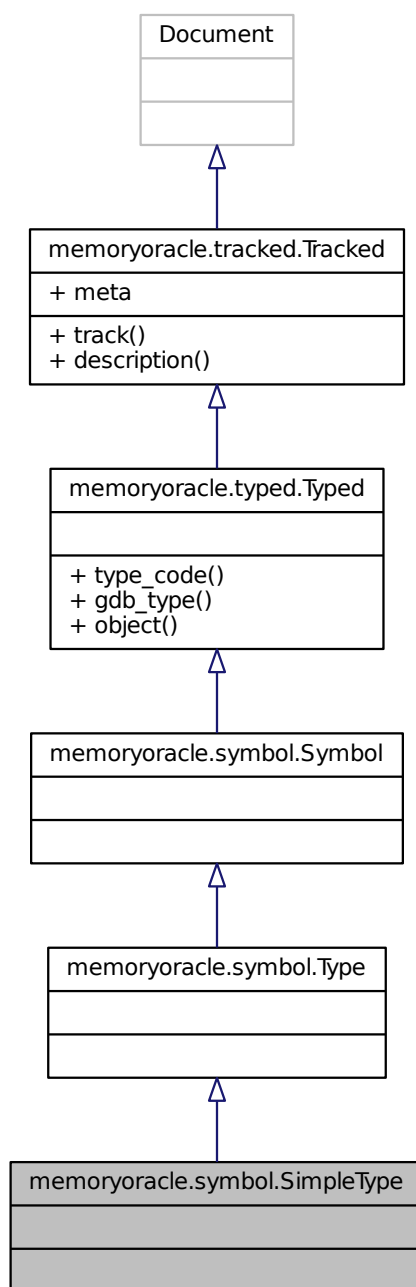
- [memoryoracle/frame.py](#)

## 6.76 memoryoracle.symbol.SimpleType Class Reference

Inheritance diagram for memoryoracle.symbol.SimpleType:



Collaboration diagram for memoryoracle.symbol.SimpleType:



## Additional Inherited Members

### 6.76.1 Detailed Description

\*Concrete\* class to track a simple type in the debuggee.

Examples of simple types include `int`, `float`, `double`, `int*` and so on.

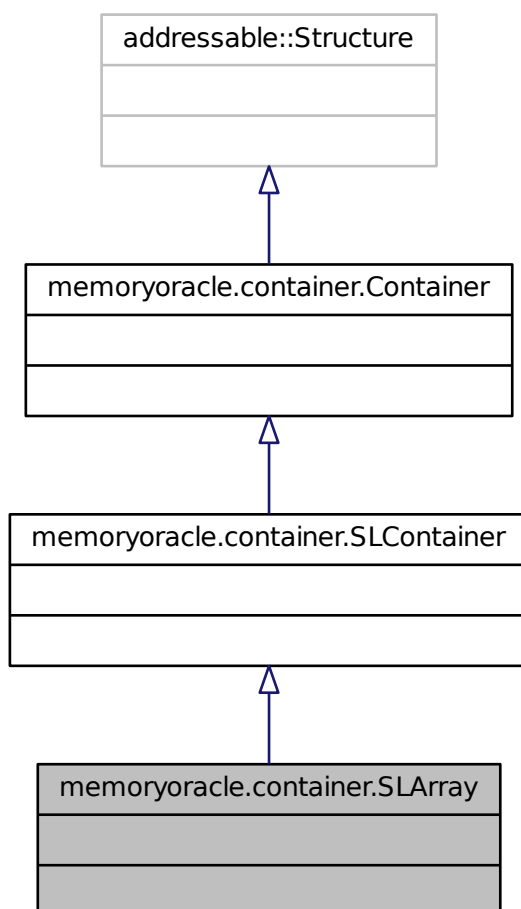
Definition at line 56 of file symbol.py.

The documentation for this class was generated from the following file:

- [memoryoracle/symbol.py](#)

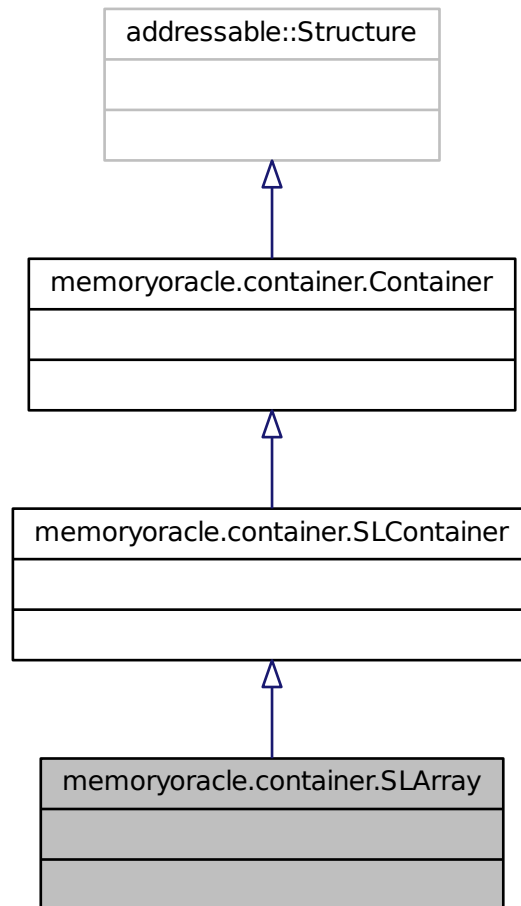
## 6.77 memoryoracle.container.SLArray Class Reference

Inheritance diagram for memoryoracle.container.SLArray:





Collaboration diagram for memoryoracle.container.SLArray:



### 6.77.1 Detailed Description

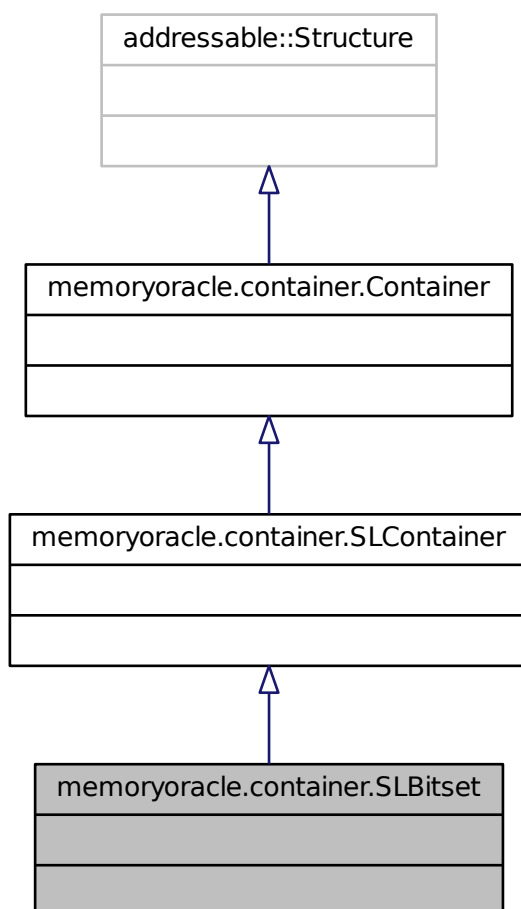
Definition at line 61 of file `container.py`.

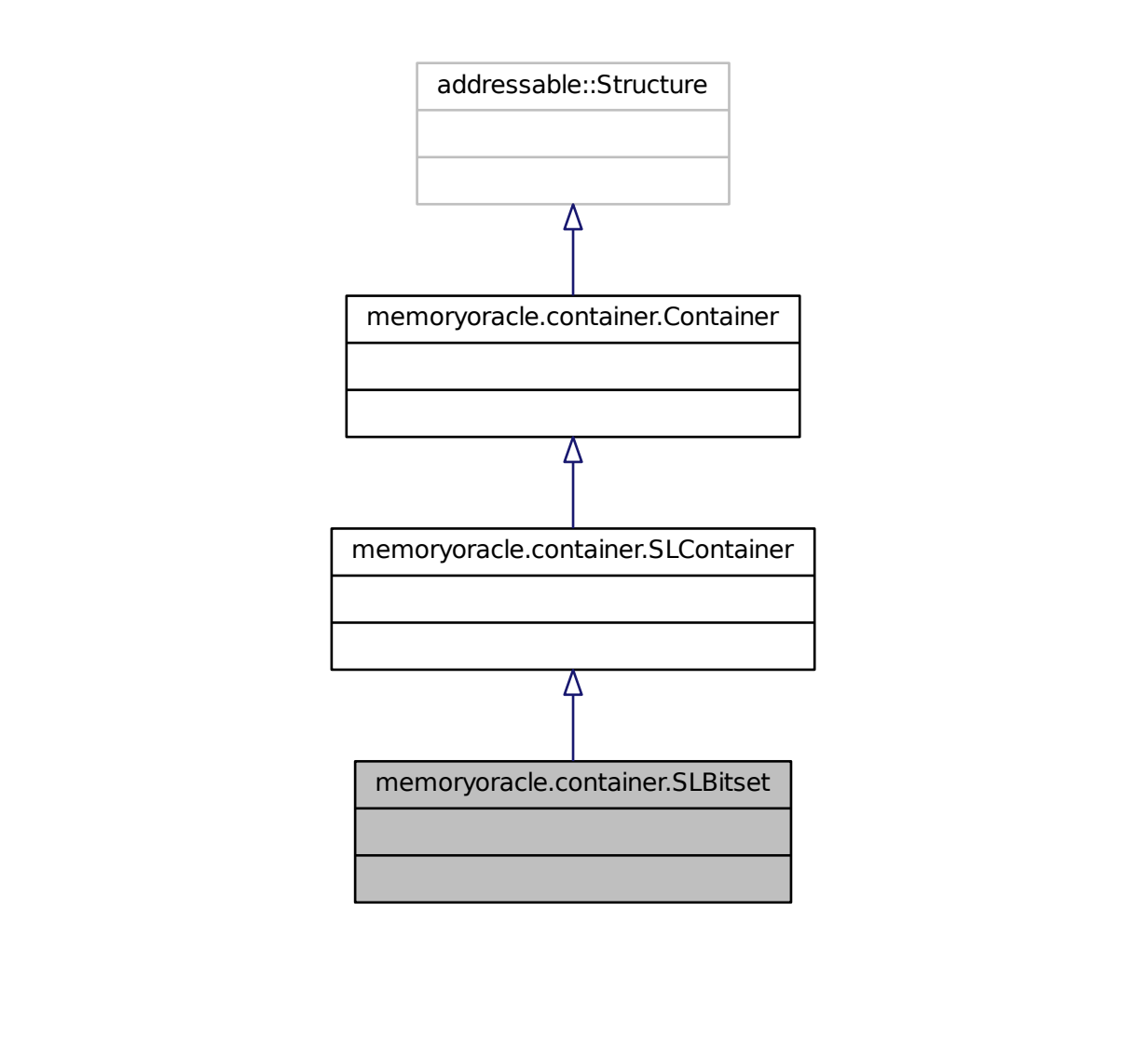
The documentation for this class was generated from the following file:

- `memoryoracle/container.py`

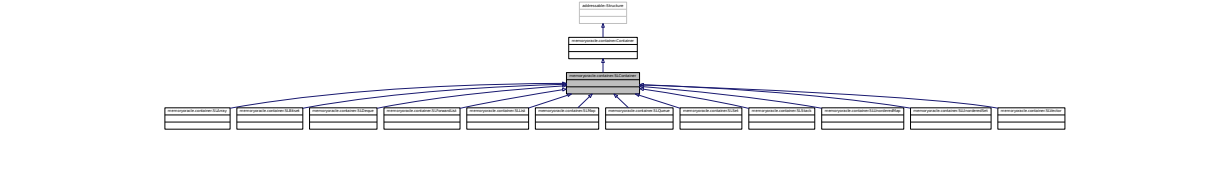
## 6.78 memoryoracle.container.SLBitset Class Reference

Inheritance diagram for memoryoracle.container.SLBitset:

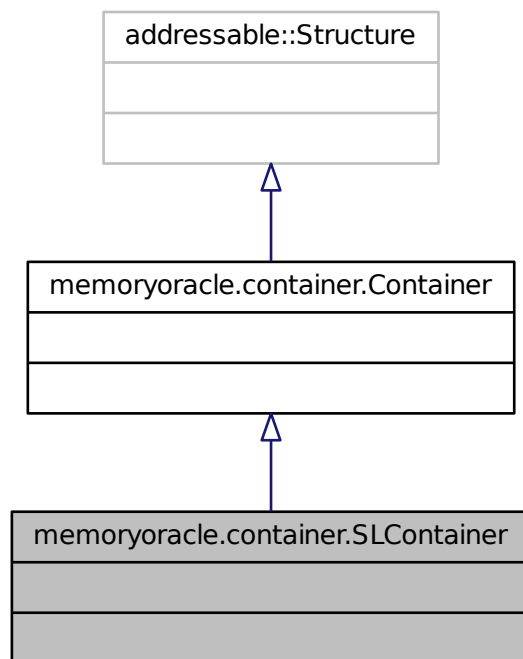




The documentation for this class was generated from the following file:



Collaboration diagram for memoryoracle.container.SLContainer:



### 6.79.1 Detailed Description

`*Abstract*` class to represent a C++ standard library container.

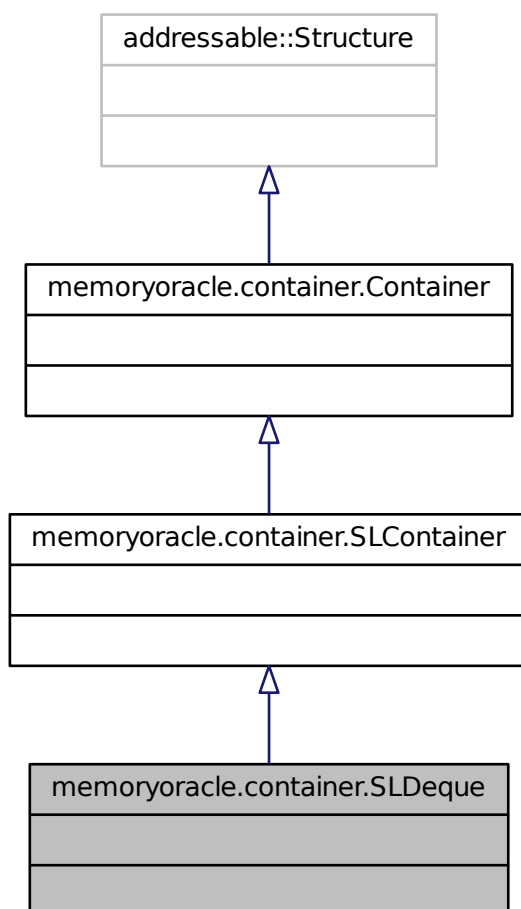
Definition at line 17 of file `container.py`.

The documentation for this class was generated from the following file:

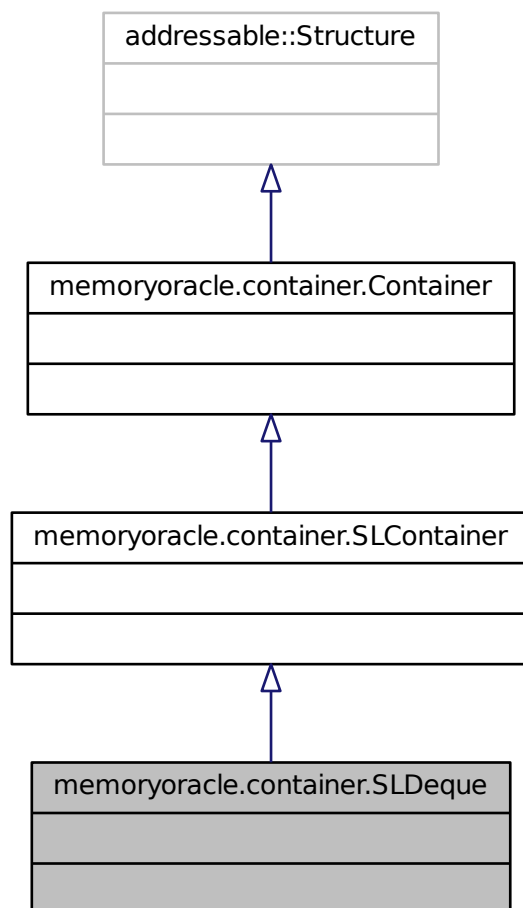
- [memoryoracle/container.py](#)

## 6.80 memoryoracle.container.SLDeque Class Reference

Inheritance diagram for memoryoracle.container.SLDeque:



Collaboration diagram for memoryoracle.container.SLDeque:



### 6.80.1 Detailed Description

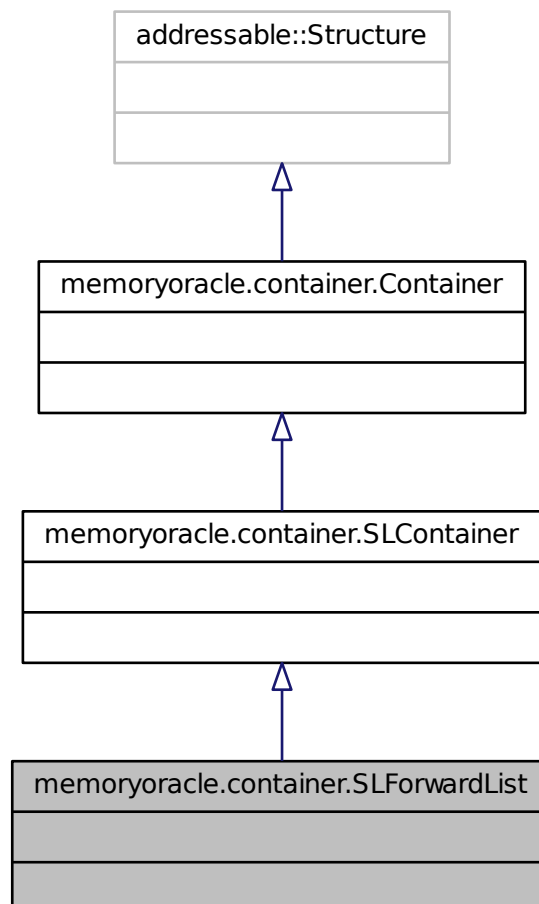
Definition at line 69 of file `container.py`.

The documentation for this class was generated from the following file:

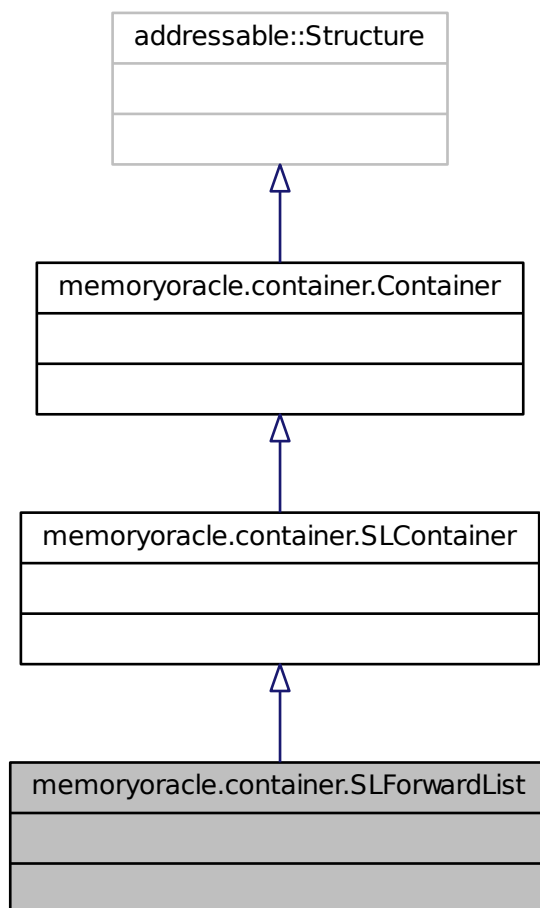
- `memoryoracle/container.py`

## 6.81 memoryoracle.container.SLForwardList Class Reference

Inheritance diagram for memoryoracle.container.SLForwardList:



Collaboration diagram for memoryoracle.container.SLForwardList:



### 6.81.1 Detailed Description

Definition at line 25 of file `container.py`.

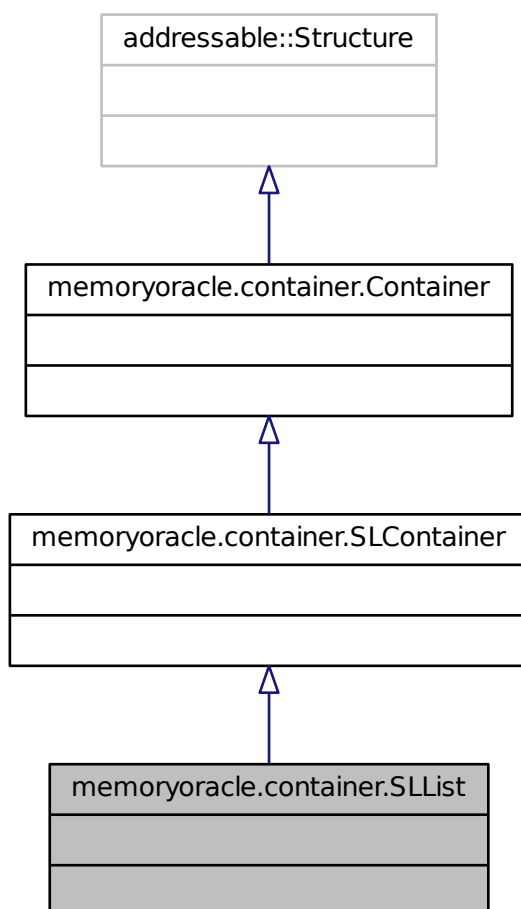
The documentation for this class was generated from the following file:

- `memoryoracle/container.py`

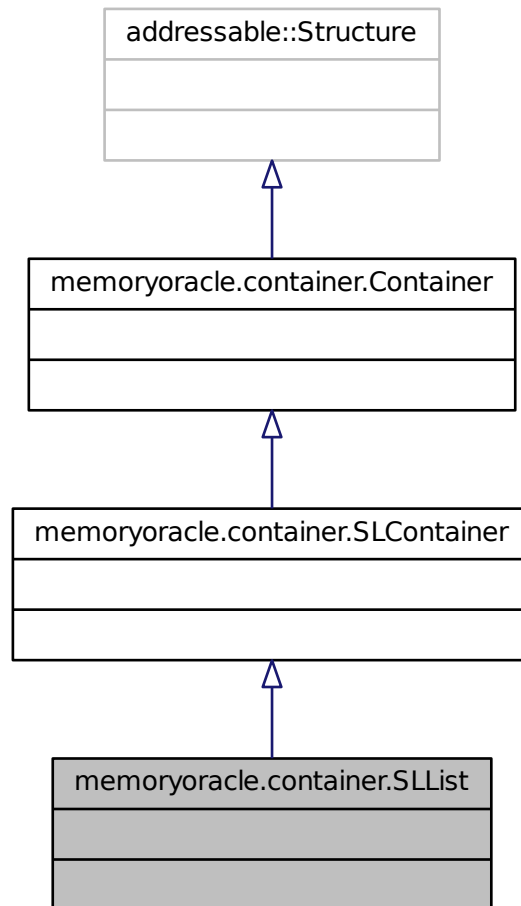


## 6.82 memoryoracle.container.SLList Class Reference

Inheritance diagram for memoryoracle.container.SLList:



Collaboration diagram for memoryoracle.container.SLList:



### 6.82.1 Detailed Description

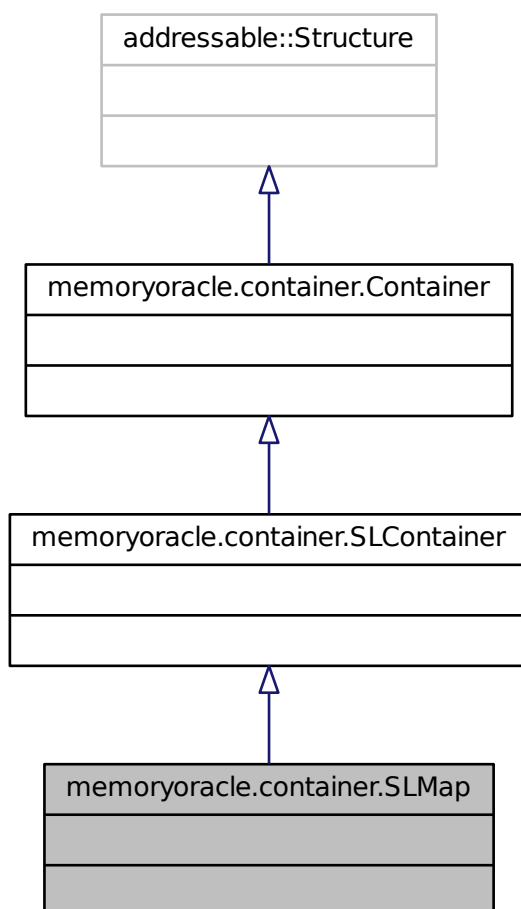
Definition at line 29 of file `container.py`.

The documentation for this class was generated from the following file:

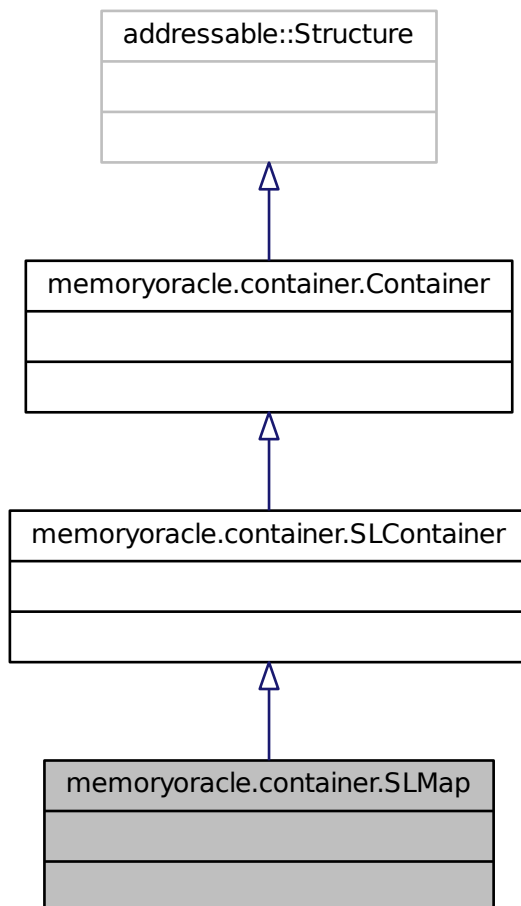
- `memoryoracle/container.py`

## 6.83 memoryoracle.container.SLMap Class Reference

Inheritance diagram for memoryoracle.container.SLMap:



Collaboration diagram for memoryoracle.container.SLMap:



### 6.83.1 Detailed Description

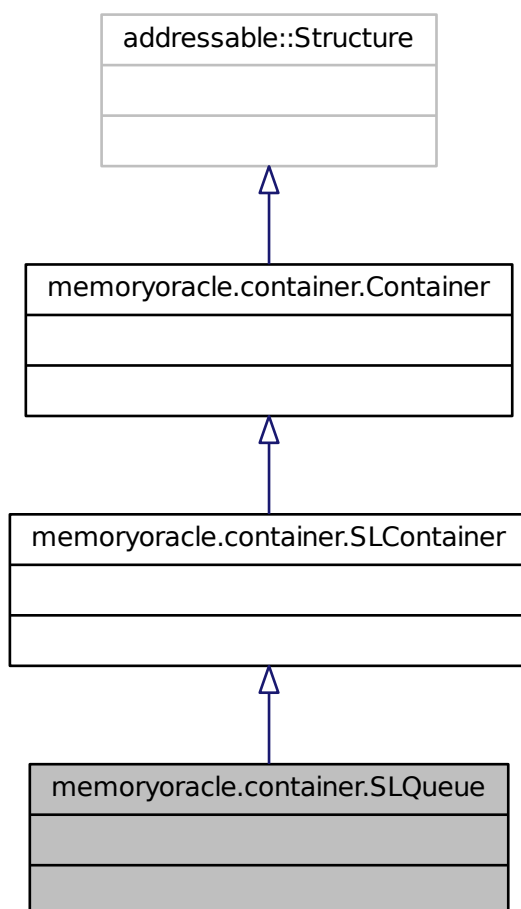
Definition at line 33 of file `container.py`.

The documentation for this class was generated from the following file:

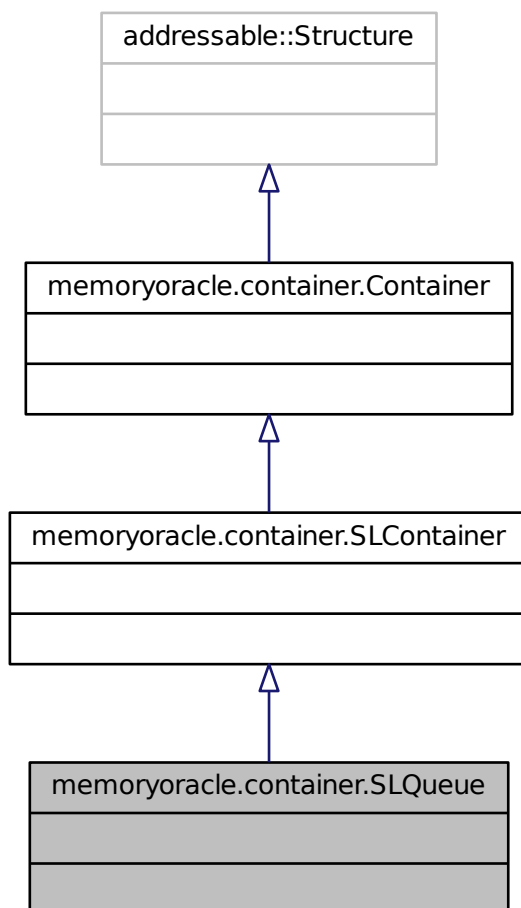
- `memoryoracle/container.py`

## 6.84 memoryoracle.container.SLQueue Class Reference

Inheritance diagram for memoryoracle.container.SLQueue:



Collaboration diagram for memoryoracle.container.SLQueue:



### 6.84.1 Detailed Description

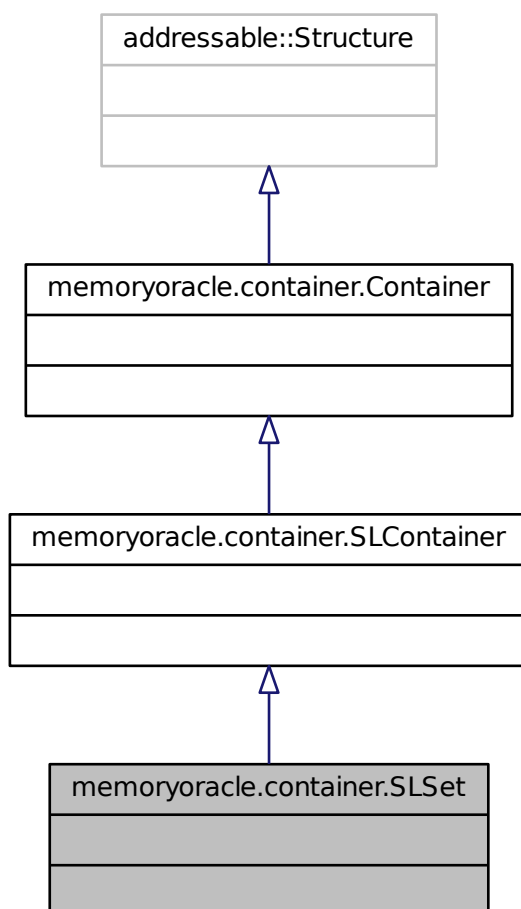
Definition at line 37 of file `container.py`.

The documentation for this class was generated from the following file:

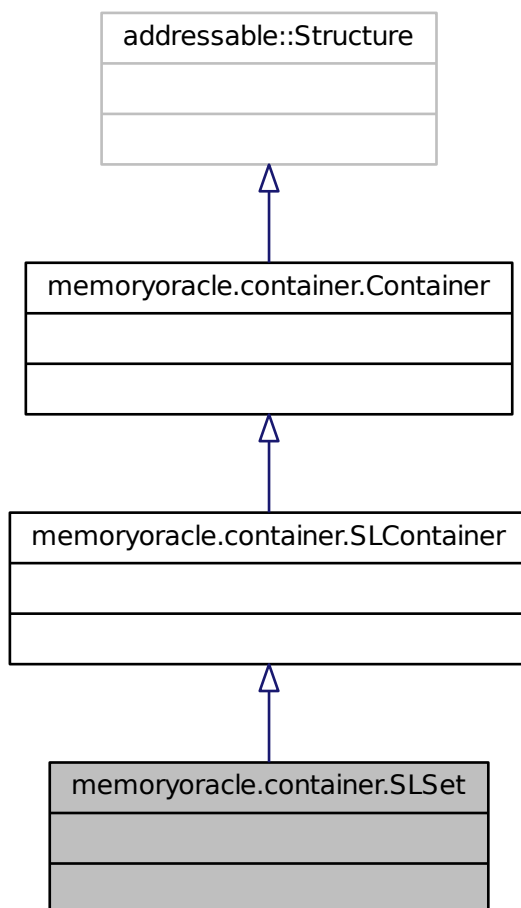
- `memoryoracle/container.py`

## 6.85 memoryoracle.container.SLSet Class Reference

Inheritance diagram for memoryoracle.container.SLSet:



Collaboration diagram for memoryoracle.container.SLSet:



### 6.85.1 Detailed Description

Definition at line 41 of file `container.py`.

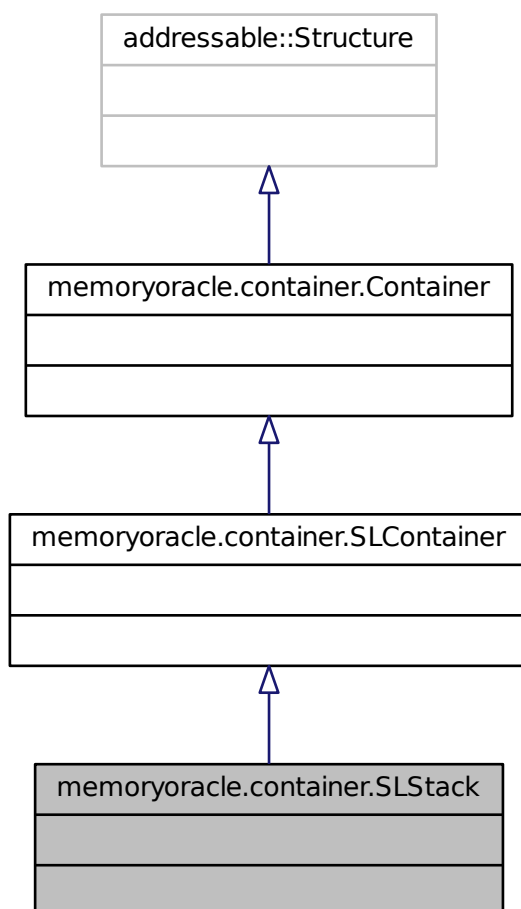
The documentation for this class was generated from the following file:

- `memoryoracle/container.py`

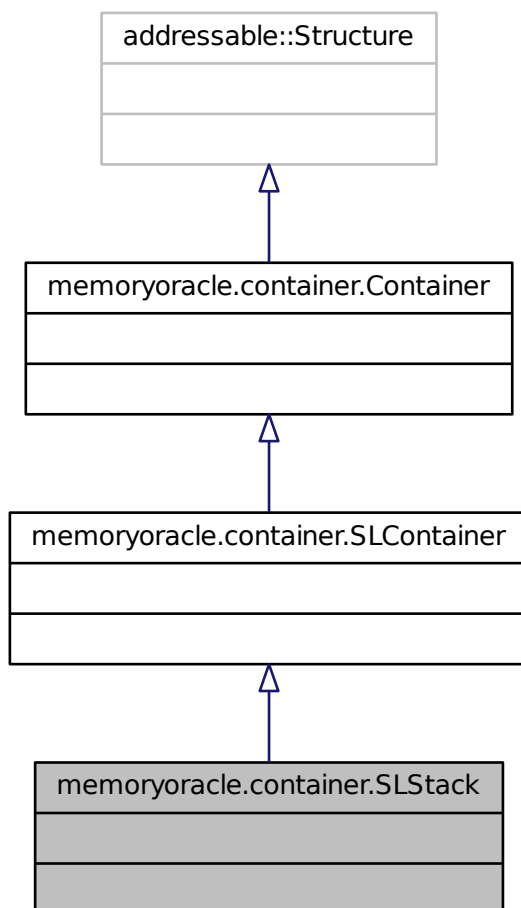


## 6.86 memoryoracle.container.SLStack Class Reference

Inheritance diagram for memoryoracle.container.SLStack:



Collaboration diagram for memoryoracle.container.SLStack:



### 6.86.1 Detailed Description

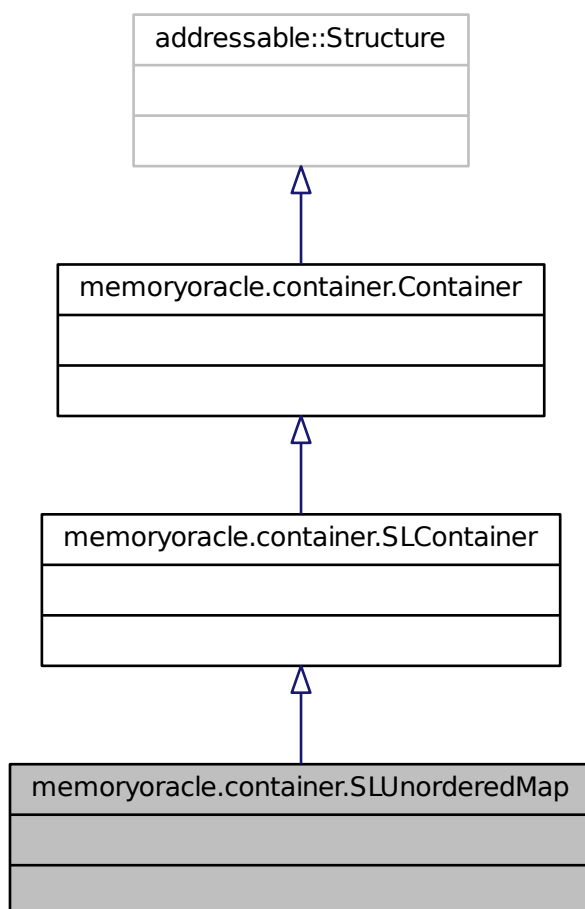
Definition at line 45 of file `container.py`.

The documentation for this class was generated from the following file:

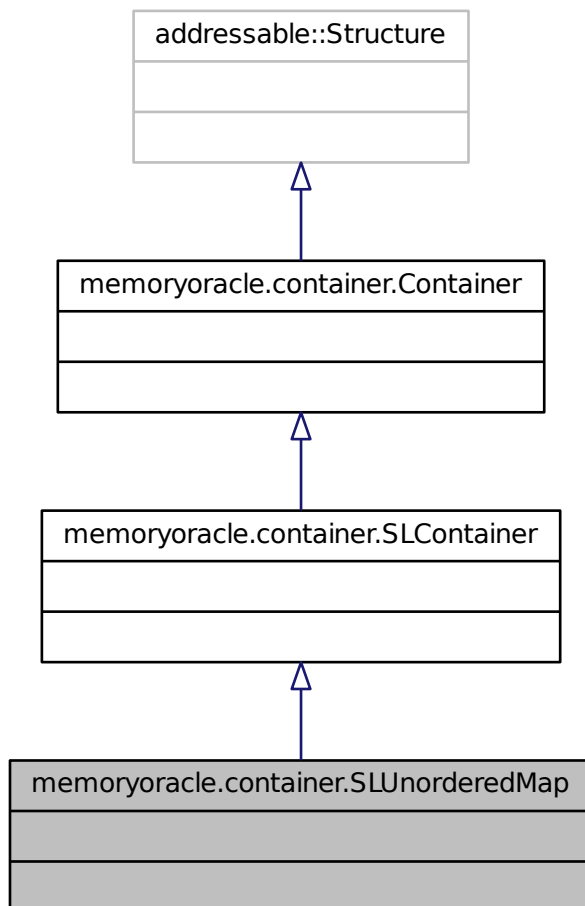
- `memoryoracle/container.py`

## 6.87 memoryoracle.container.SLUnorderedMap Class Reference

Inheritance diagram for memoryoracle.container.SLUnorderedMap:



Collaboration diagram for memoryoracle.container.SLUnorderedMap:



### 6.87.1 Detailed Description

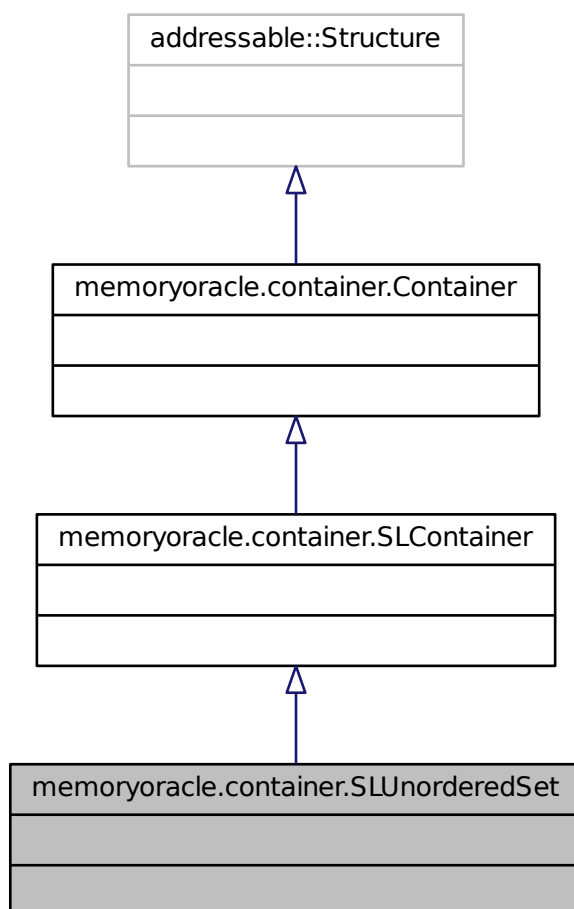
Definition at line 49 of file `container.py`.

The documentation for this class was generated from the following file:

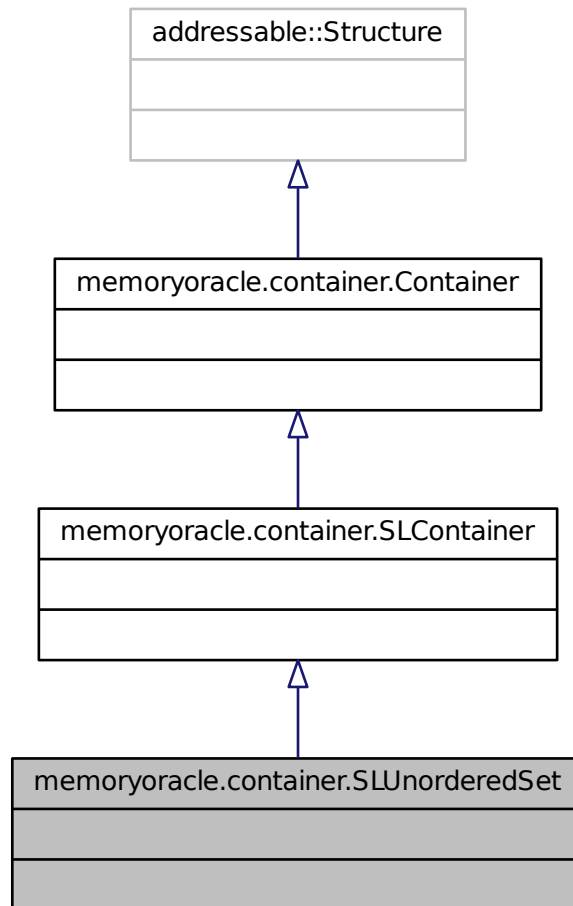
- `memoryoracle/container.py`

## 6.88 memoryoracle.container.SLUnorderedSet Class Reference

Inheritance diagram for memoryoracle.container.SLUnorderedSet:



Collaboration diagram for memoryoracle.container.SLUnorderedSet:



### 6.88.1 Detailed Description

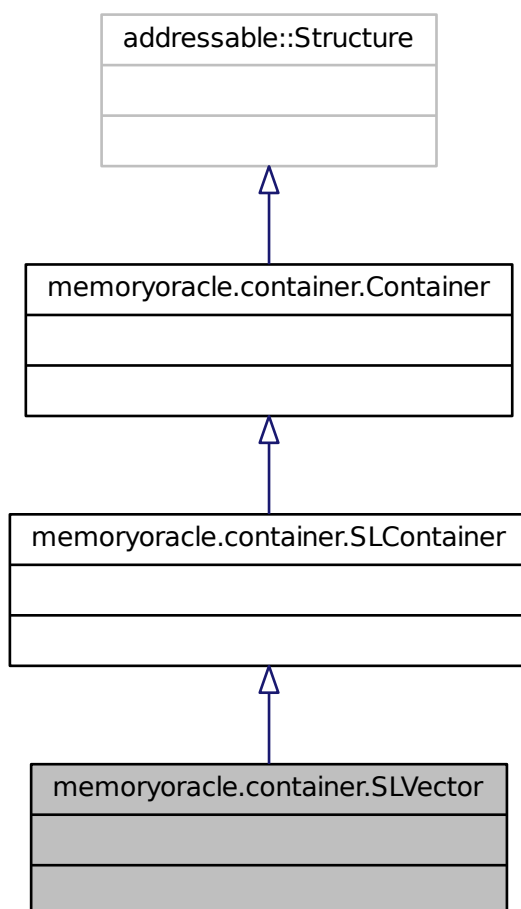
Definition at line 53 of file `container.py`.

The documentation for this class was generated from the following file:

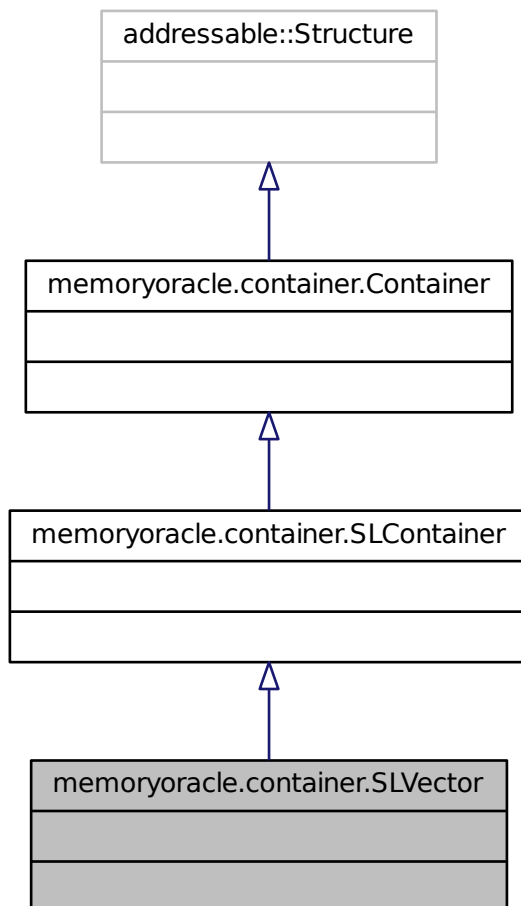
- `memoryoracle/container.py`

## 6.89 memoryoracle.container.SLVector Class Reference

Inheritance diagram for memoryoracle.container.SLVector:



Collaboration diagram for memoryoracle.container.SLVector:



### 6.89.1 Detailed Description

Definition at line 57 of file `container.py`.

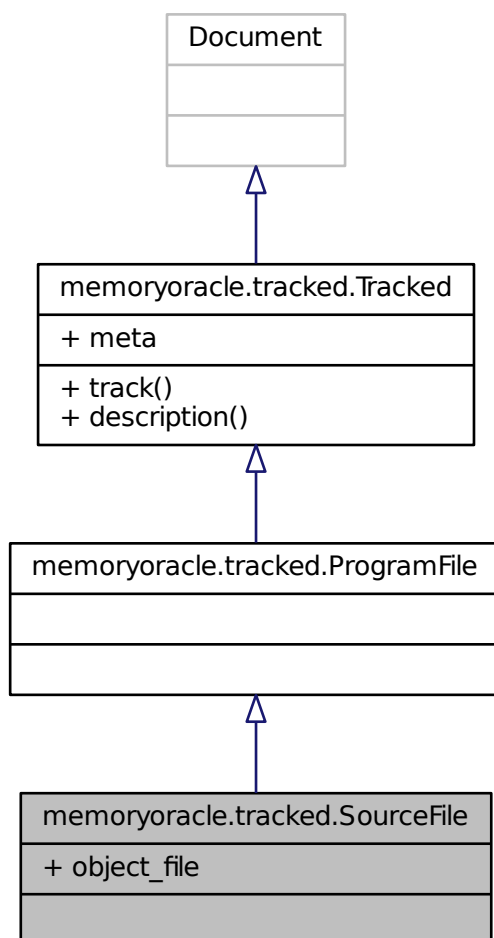
The documentation for this class was generated from the following file:

- `memoryoracle/container.py`

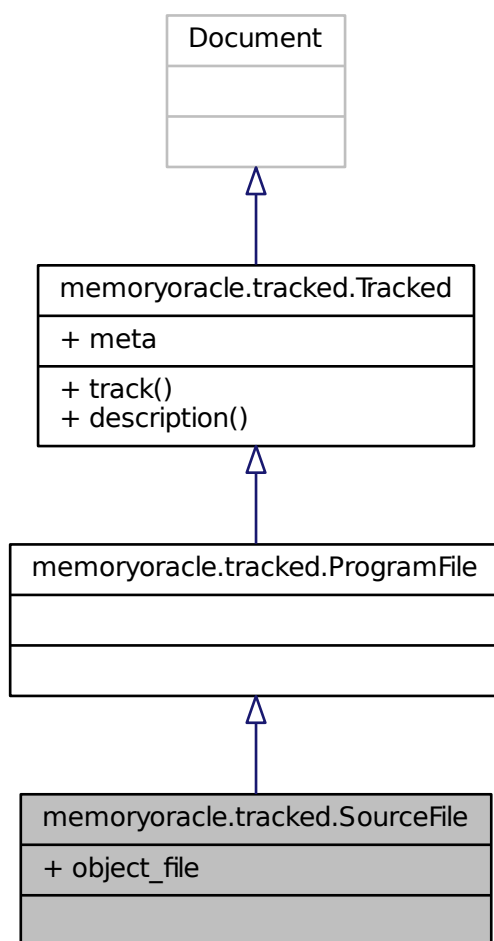


## 6.90 memoryoracle.tracked.SourceFile Class Reference

Inheritance diagram for memoryoracle.tracked.SourceFile:



Collaboration diagram for memoryoracle.tracked.SourceFile:



### Static Public Attributes

- tuple `object_file` = `mongoengine.ReferenceField(ObjectFile)`

### Additional Inherited Members

#### 6.90.1 Detailed Description

*\*Abstract\** class to track a source code file belonging to the debuggee.

Definition at line 86 of file `tracked.py`.

#### 6.90.2 Member Data Documentation

6.90.2.1 tuple memoryoracle.tracked.SourceFile.object\_file = mongoengine.ReferenceField(ObjectFile) [static]

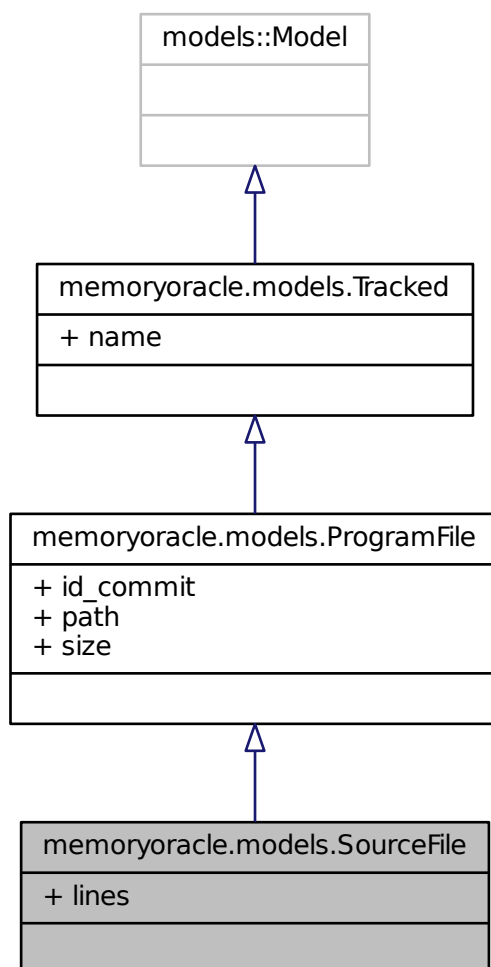
Definition at line 90 of file tracked.py.

The documentation for this class was generated from the following file:

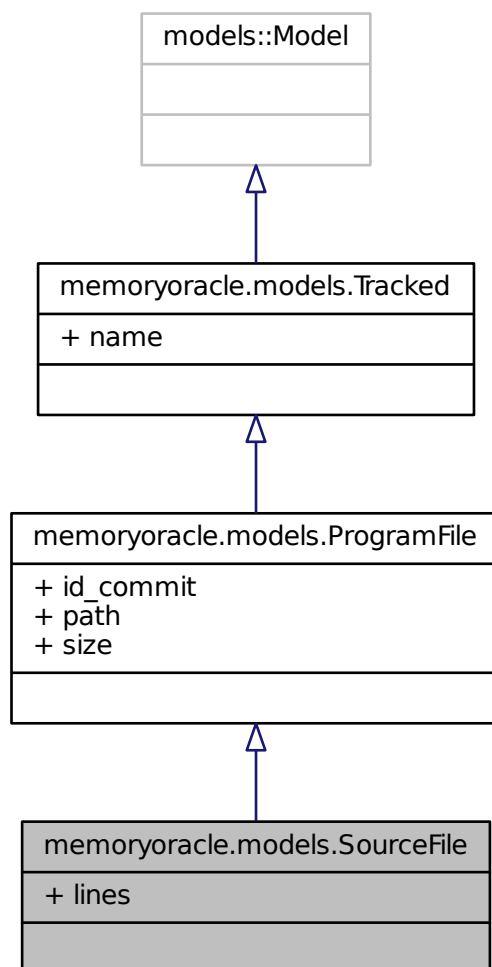
- [memoryoracle/tracked.py](#)

## 6.91 memoryoracle.models.SourceFile Class Reference

Inheritance diagram for memoryoracle.models.SourceFile:



Collaboration diagram for memoryoracle.models.SourceFile:



## Classes

- class [Meta](#)

## Static Public Attributes

- tuple `lines` = `models.BigIntegerField()`

### 6.91.1 Detailed Description

Definition at line 224 of file `models.py`.

### 6.91.2 Member Data Documentation

6.91.2.1 tuple memoryoracle.models.SourceFile.lines = models.BigIntegerField() [static]

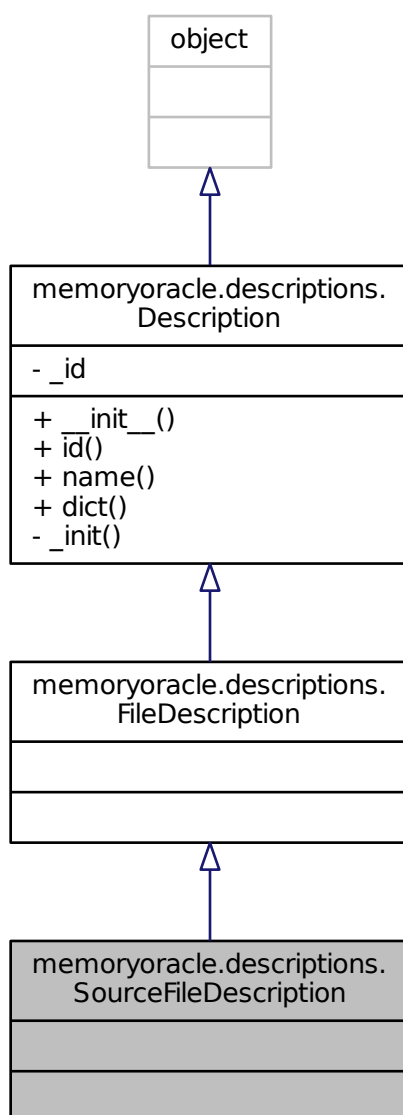
Definition at line 226 of file models.py.

The documentation for this class was generated from the following file:

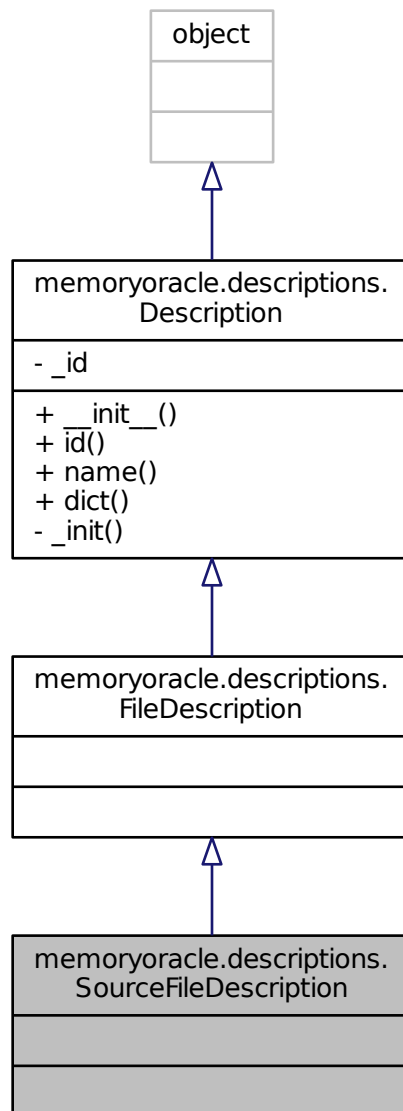
- memoryoracle/[models.py](#)

## 6.92 memoryoracle.descriptions.SourceFileDescription Class Reference

Inheritance diagram for memoryoracle.descriptions.SourceFileDescription:



Collaboration diagram for memoryoracle.descriptions.SourceFileDescription:



## Additional Inherited Members

### 6.92.1 Detailed Description

*\*Concrete\** SourceFileDescription class.

An description of a program source code file.

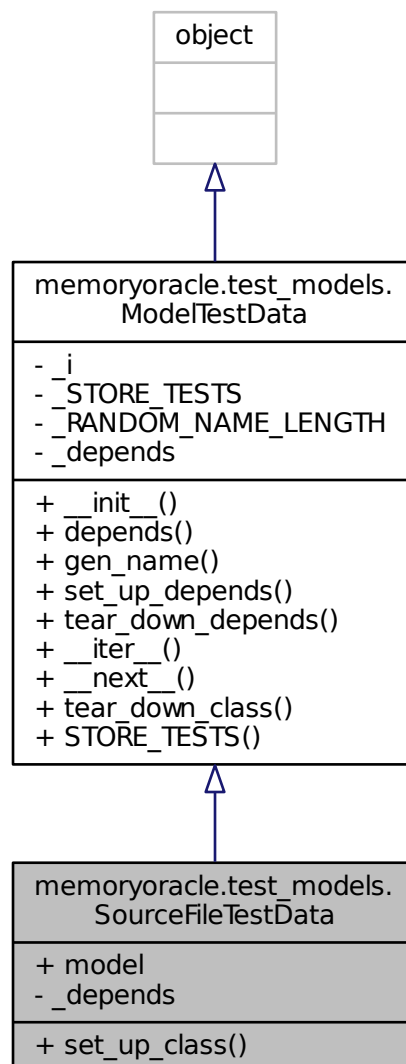
Definition at line 113 of file descriptions.py.

The documentation for this class was generated from the following file:

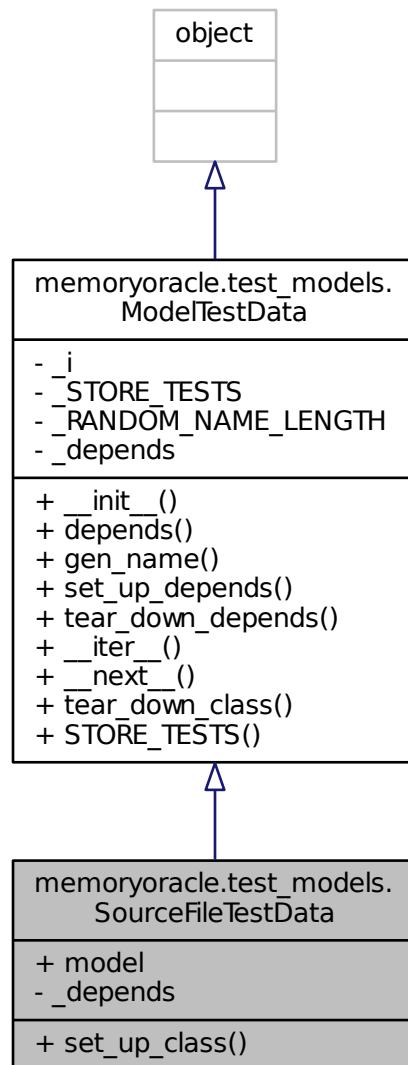
- memoryoracle/[descriptions.py](#)

## 6.93 memoryoracle.test\_models.SourceFileTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.SourceFileTestData:



Collaboration diagram for `memoryoracle.test_models.SourceFileTestData`:



### Public Member Functions

- def `set_up_class` (cls)

### Static Public Attributes

- `model` = `memoryoracle.models.SourceFile`

### Static Private Attributes

- list `__depends` = [`CommitTestData`]



## Additional Inherited Members

### 6.93.1 Detailed Description

Definition at line 287 of file test\_models.py.

### 6.93.2 Member Function Documentation

#### 6.93.2.1 def memoryoracle.test\_models.SourceFileTestData.set\_up\_class ( cls )

Definition at line 294 of file test\_models.py.

References memoryoracle.instance.x.

```
294     def set_up_class(cls):
295         cls.set_up_depends()
296         cls.data = { x.__name__: x() for x in cls.depends() }
297         cls.argsList = [
298             {
299                 "id_commit": commit,
300                 "path": ModelTestData.gen_name(),
301                 "size": random.randint(0, 1000),
302                 "lines": random.randint(0, 1000),
303             } for commit in cls.data["CommitTestData"] ]
304         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
305
306
```

### 6.93.3 Member Data Documentation

#### 6.93.3.1 list memoryoracle.test\_models.SourceFileTestData.\_depends = [CommitTestData] [static], [private]

Definition at line 291 of file test\_models.py.

#### 6.93.3.2 memoryoracle.test\_models.SourceFileTestData.model = memoryoracle.models.SourceFile [static]

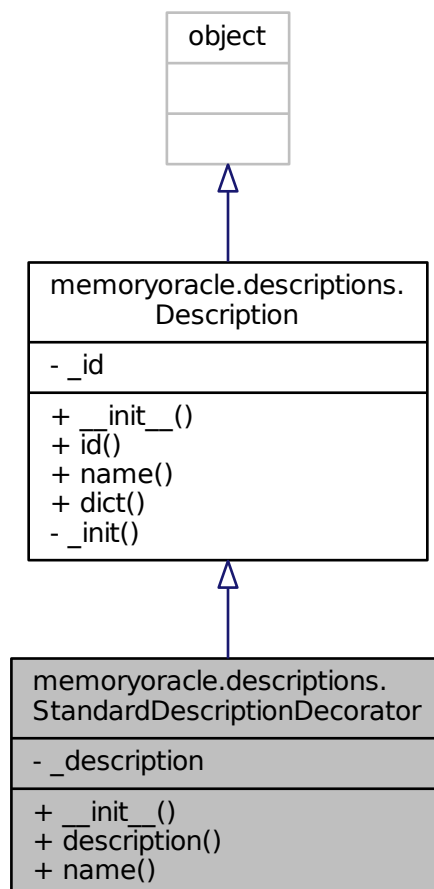
Definition at line 289 of file test\_models.py.

The documentation for this class was generated from the following file:

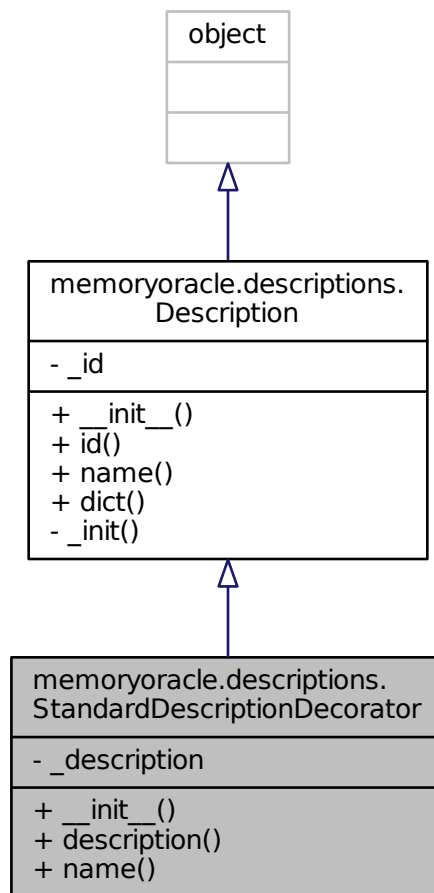
- [memoryoracle/test\\_models.py](#)

## 6.94 memoryoracle.descriptions.StandardDescriptionDecorator Class Reference

Inheritance diagram for memoryoracle.descriptions.StandardDescriptionDecorator:



Collaboration diagram for memoryoracle.descriptions.StandardDescriptionDecorator:



## Public Member Functions

- `def __init__(self, description)`
- `def description(self)`
- `def name(self)`

## Private Attributes

- `_description`

### 6.94.1 Detailed Description

`*Decorator*` `StandardDescriptionDecorator` class.

A decorator to mark another description as pertaining to a piece of the language's standard library.

Definition at line 84 of file `descriptions.py`.

## 6.94.2 Constructor & Destructor Documentation

### 6.94.2.1 def memoryoracle.descriptions.StandardDescriptionDecorator.\_\_init\_\_( self, description )

Definition at line 92 of file descriptions.py.

```

92     def __init__(self, description):
93         self._description = description
94 
```

## 6.94.3 Member Function Documentation

### 6.94.3.1 def memoryoracle.descriptions.StandardDescriptionDecorator.description ( self )

Definition at line 96 of file descriptions.py.

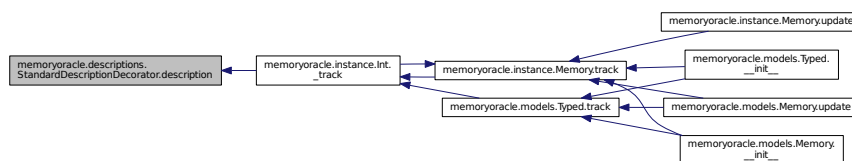
References `memoryoracle.descriptions.BlackBoxDecorator._description`, `memoryoracle.descriptions.ExternalDescriptionDecorator._description`, and `memoryoracle.descriptions.StandardDescriptionDecorator._description`.

Referenced by `memoryoracle.instance.Int._track()`.

```

96     def description(self):
97         return { "standard": self._description }
98 
```

Here is the caller graph for this function:



### 6.94.3.2 def memoryoracle.descriptions.StandardDescriptionDecorator.name ( self )

Definition at line 100 of file descriptions.py.

```

100    def name(self):
101        return self._description.name
102
103 
```

## 6.94.4 Member Data Documentation

### 6.94.4.1 memoryoracle.descriptions.StandardDescriptionDecorator.\_description [private]

Definition at line 93 of file descriptions.py.

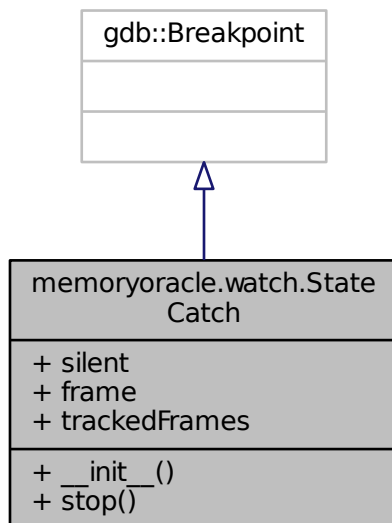
Referenced by `memoryoracle.tracked.Tracked.description()`, and `memoryoracle.descriptions.StandardDescriptionDecorator.description()`.

The documentation for this class was generated from the following file:

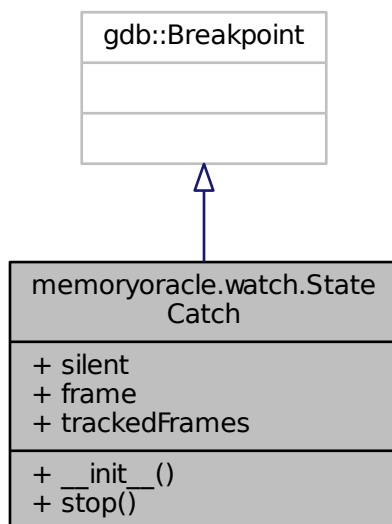
- `memoryoracle/descriptions.py`

## 6.95 memoryoracle.watch.StateCatch Class Reference

Inheritance diagram for memoryoracle.watch.StateCatch:



Collaboration diagram for memoryoracle.watch.StateCatch:



## Public Member Functions

- def [\\_\\_init\\_\\_](#)
- def [stop](#) (self)

## Public Attributes

- [silent](#)
- [frame](#)

## Static Public Attributes

- tuple [trackedFrames](#) = dict()

### 6.95.1 Detailed Description

Definition at line 62 of file watch.py.

### 6.95.2 Constructor & Destructor Documentation

#### 6.95.2.1 def memoryoracle.watch.StateCatch.\_\_init\_\_ ( self, breakCond, frame = None )

Definition at line 66 of file watch.py.

```

66     def __init__(self, breakCond, frame = None):
67         super(StateCatch, self).__init__(breakCond, internal=True)
68         self.silent = True
69         self.frame = str(frame) if frame else str(gdb.selected_frame())
70
```

### 6.95.3 Member Function Documentation

#### 6.95.3.1 def memoryoracle.watch.StateCatch.stop ( self )

Definition at line 71 of file watch.py.

```

71     def stop(self):
72         s = State()
73         s.serialize_locals()
74
```

### 6.95.4 Member Data Documentation

#### 6.95.4.1 memoryoracle.watch.StateCatch.frame

Definition at line 69 of file watch.py.

Referenced by memoryoracle.descriptions.MemoryDescription.dict().

#### 6.95.4.2 memoryoracle.watch.StateCatch.silent

Definition at line 68 of file watch.py.

6.95.4.3 tuple memoryoracle.watch.StateCatch.trackedFrames = dict() [static]

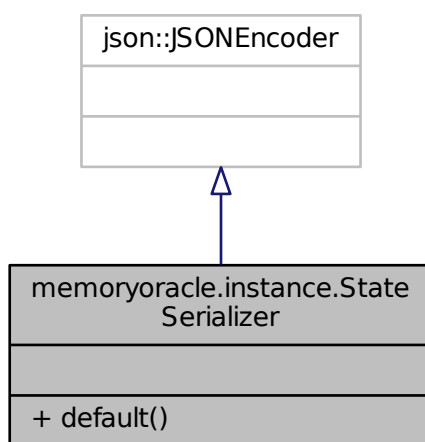
Definition at line 64 of file watch.py.

The documentation for this class was generated from the following file:

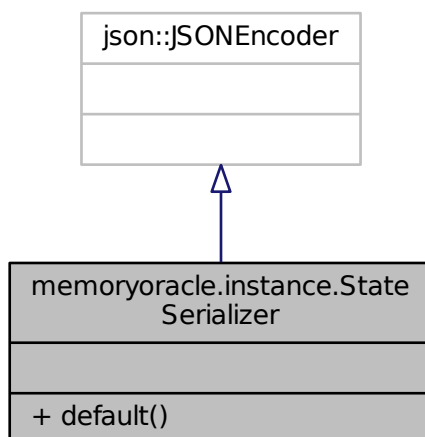
- memoryoracle/[watch.py](#)

## 6.96 memoryoracle.instance.StateSerializer Class Reference

Inheritance diagram for memoryoracle.instance.StateSerializer:



Collaboration diagram for memoryoracle.instance.StateSerializer:



## Public Member Functions

- def [default](#) (self, obj)

### 6.96.1 Detailed Description

Definition at line 587 of file instance.py.

### 6.96.2 Member Function Documentation

#### 6.96.2.1 def memoryoracle.instance.StateSerializer.default ( *self*, *obj* )

Definition at line 589 of file instance.py.

```
589     def default(self, obj):
590         if isinstance(obj, set):
591             return {"set": list(obj)}
592         return json.JSONEncoder.default(self, StateSerializer.equal_fix(obj))
593
```

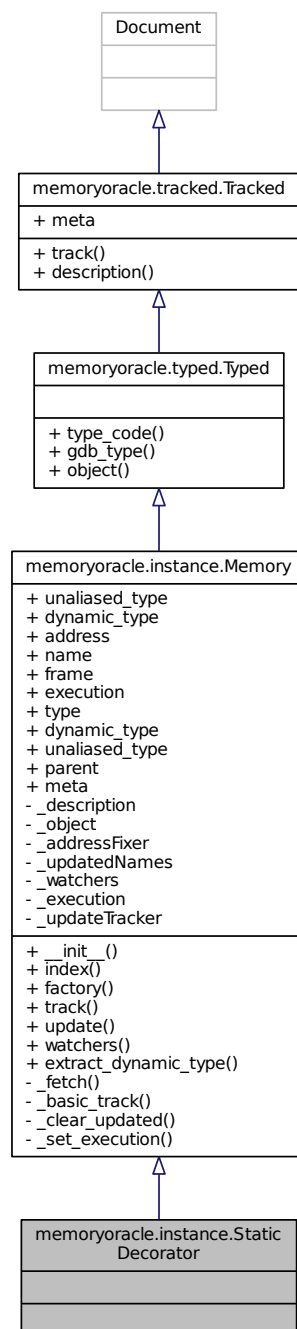
The documentation for this class was generated from the following file:

- memoryoracle/[instance.py](#)

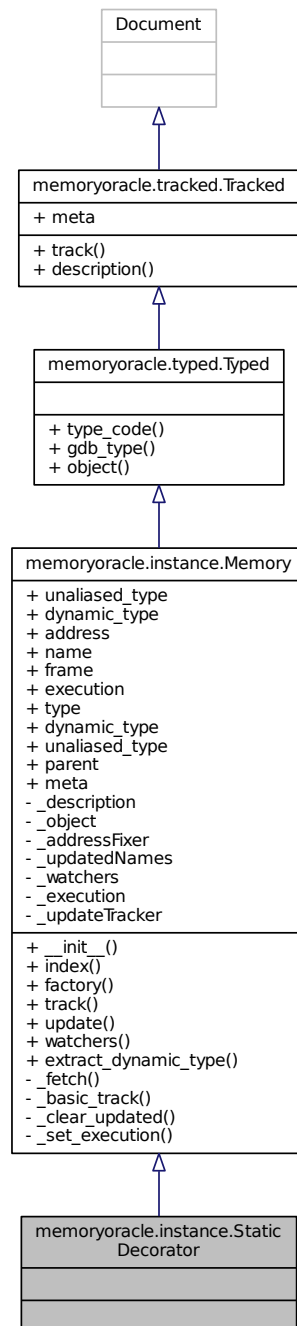


## 6.97 memoryoracle.instance.StaticDecorator Class Reference

Inheritance diagram for memoryoracle.instance.StaticDecorator:



Collaboration diagram for memoryoracle.instance.StaticDecorator:



## Additional Inherited Members

### 6.97.1 Detailed Description

`*Decorator*` class to decorate an addressable as being marked static.

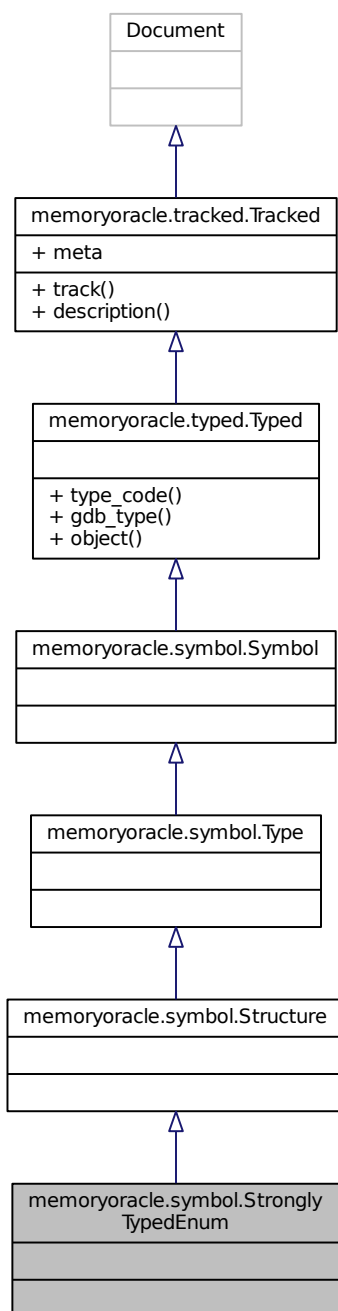
Definition at line 472 of file `instance.py`.

The documentation for this class was generated from the following file:

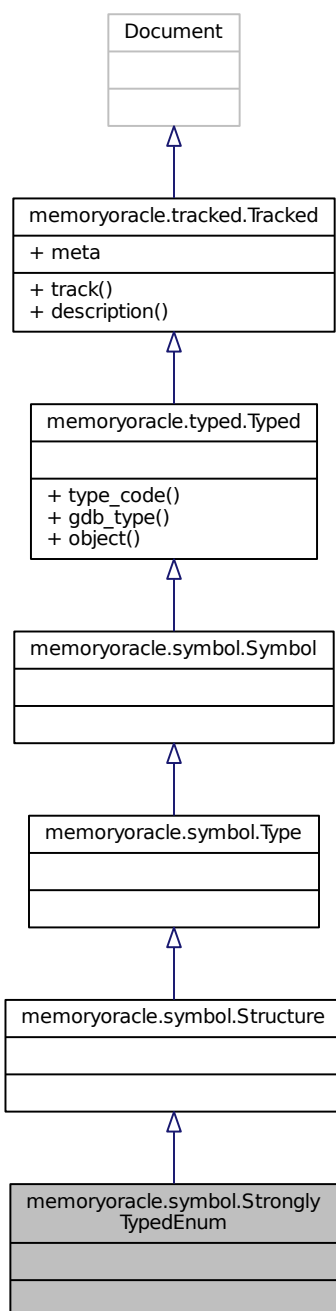
- memoryoracle/[instance.py](#)

## 6.98 memoryoracle.symbol.StronglyTypedEnum Class Reference

Inheritance diagram for memoryoracle.symbol.StronglyTypedEnum:



Collaboration diagram for memoryoracle.symbol.StronglyTypedEnum:



## Additional Inherited Members

### 6.98.1 Detailed Description

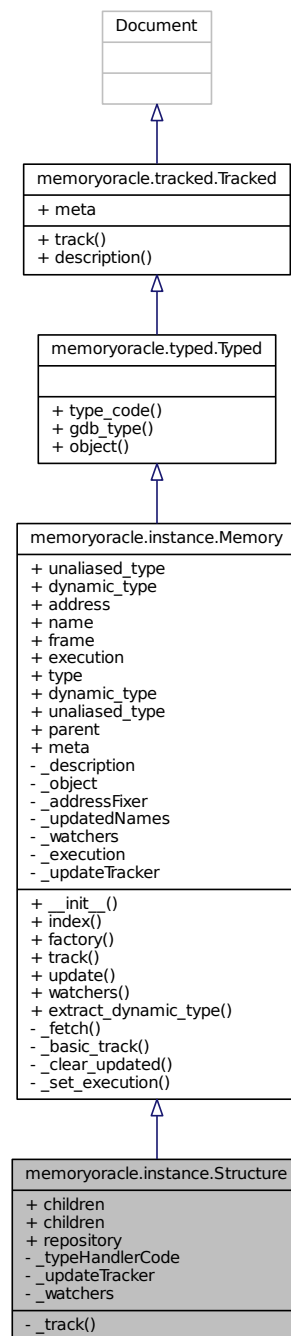
Definition at line 72 of file `symbol.py`.

The documentation for this class was generated from the following file:

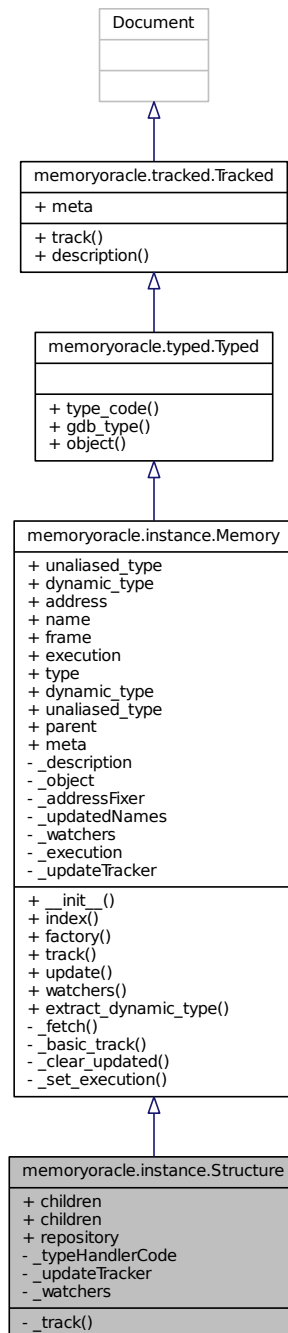
- [memoryoracle/symbol.py](#)

## 6.99 memoryoracle.instance.Structure Class Reference

Inheritance diagram for memoryoracle.instance.Structure:



Collaboration diagram for memoryoracle.instance.Structure:



## Public Attributes

- [children](#)

## Static Public Attributes

- tuple [children](#) = `mongoengine.ListField(mongoengine.ReferenceField(tracked.Tracked))`

- tuple `repository` = dict()

## Private Member Functions

- def `_track` (self)

## Static Private Attributes

- `_typeHandlerCode` = gdb.TYPE\_CODE\_STRUCT
- tuple `_updateTracker` = set()
- tuple `_watchers` = dict()

## Additional Inherited Members

### 6.99.1 Detailed Description

\*Concrete" class representing a specific memory structure.

This includes all instances of classes and structs in C++. It is worth noting that the first member variable of a memory structure has the same address as the memory structure, and may thus share a node in the memory topology.

Definition at line 190 of file instance.py.

### 6.99.2 Member Function Documentation

#### 6.99.2.1 def memoryoracle.instance.Structure.\_track ( self ) [private]

Definition at line 208 of file instance.py.

References `memoryoracle.instance.addressable_factory()`, `memoryoracle.execution.Instance.name`, `memoryoracle.execution.Executable.name`, and `memoryoracle.instance.Memory.name`.

Referenced by `memoryoracle.instance.Memory.track()`, and `memoryoracle.models.Typed.track()`.

```

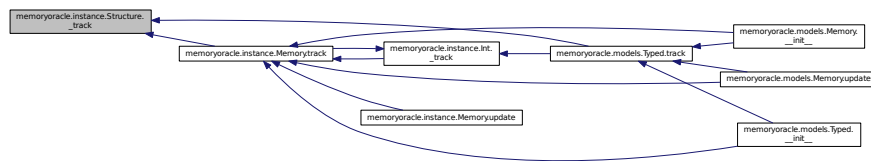
208     def _track(self):
209         name = deepcopy(str(self.name))
210         if name[0] == "*":
211             name = name[1:]
212             marker = "->"
213         else:
214             marker = "."
215         name += marker
216         children = []
217         for f in self.object.type.fields():
218             desc = descriptions.MemoryDescription(
219                 name + f.name,
220                 relativeName=(marker, f.name),
221                 parent=self,
222                 parent_class="struct")
223             # TODO: Use member decorator
224             # childObj = MemberDecorator(addressable_factory(desc))
225             childObj = addressable_factory(desc)
226             childObj.track()
227             children.append(childObj)
228         self.children = children
229
230
231 registry.TypeRegistration(Structure)
232
233

```

Here is the call graph for this function:



Here is the caller graph for this function:



### 6.99.3 Member Data Documentation

**6.99.3.1** `memoryoracle.instance.Structure._typeHandlerCode = gdb.TYPE_CODE_STRUCT` `[static]`, `[private]`

Definition at line 203 of file instance.py.

Referenced by `memoryoracle.models.Typed.type_handler()`.

**6.99.3.2** `tuple memoryoracle.instance.Structure._updateTracker = set()` `[static]`, `[private]`

Definition at line 204 of file instance.py.

**6.99.3.3** `tuple memoryoracle.instance.Structure._watchers = dict()` `[static]`, `[private]`

Definition at line 205 of file instance.py.

Referenced by `memoryoracle.models.Typed.__init__()`, and `memoryoracle.models.Memory.watchers()`.

**6.99.3.4** `tuple memoryoracle.instance.Structure.children = mongoengine.ListField(mongoengine.ReferenceField(tracked.Tracked))` `[static]`

Definition at line 200 of file instance.py.

**6.99.3.5** `memoryoracle.instance.Structure.children`

Definition at line 228 of file instance.py.

**6.99.3.6** `tuple memoryoracle.instance.Structure.repository = dict()` `[static]`

Definition at line 202 of file instance.py.

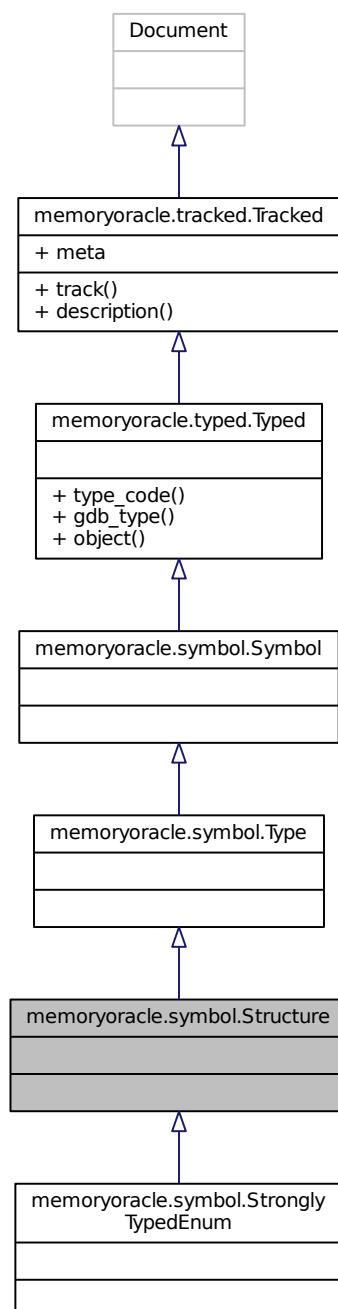
The documentation for this class was generated from the following file:

- `memoryoracle/instance.py`

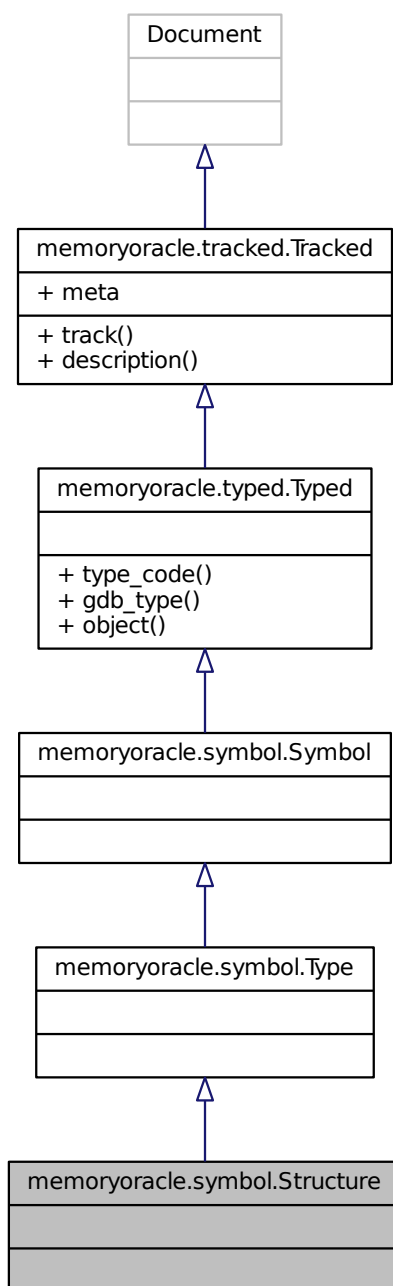


## 6.100 memoryoracle.symbol.Structure Class Reference

Inheritance diagram for memoryoracle.symbol.Structure:



Collaboration diagram for memoryoracle.symbol.Structure:



## Additional Inherited Members

### 6.100.1 Detailed Description

\*Concrete\* class to track the def of a structure or class in C++.

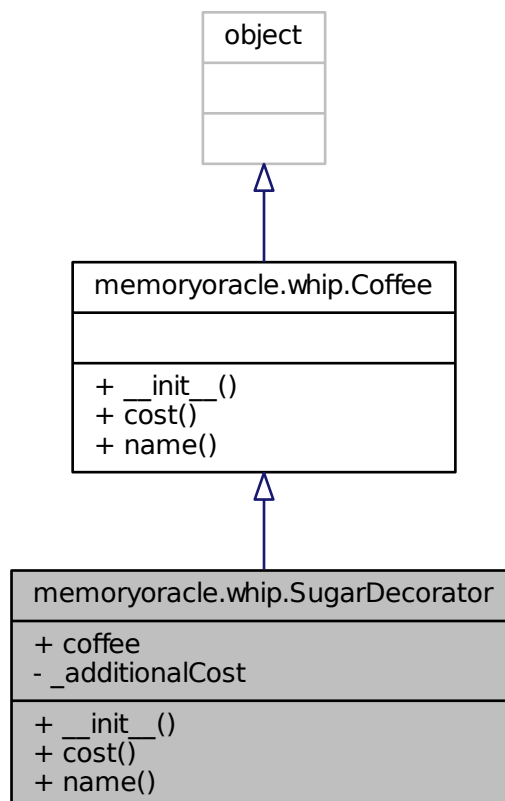
Definition at line 65 of file `symbol.py`.

The documentation for this class was generated from the following file:

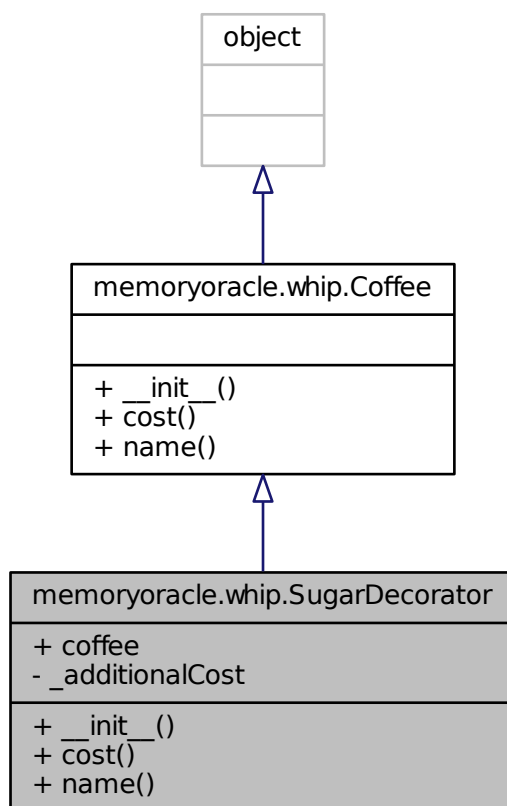
- [memoryoracle/symbol.py](#)

## 6.101 memoryoracle.whip.SugarDecorator Class Reference

Inheritance diagram for memoryoracle.whip.SugarDecorator:



Collaboration diagram for memoryoracle.whip.SugarDecorator:



### Public Member Functions

- `def __init__(self, coffee)`
- `def cost(self)`
- `def name(self)`

### Public Attributes

- `coffee`

### Static Private Attributes

- `float __additionalCost = 0.05`

### 6.101.1 Detailed Description

Definition at line 31 of file `whip.py`.

## 6.101.2 Constructor & Destructor Documentation

### 6.101.2.1 def memoryoracle.whip.SugarDecorator.\_\_init\_\_( self, coffee )

Definition at line 35 of file whip.py.

```
35     def __init__(self, coffee):
36         self.coffee = coffee
37
```

## 6.101.3 Member Function Documentation

### 6.101.3.1 def memoryoracle.whip.SugarDecorator.cost ( self )

Definition at line 38 of file whip.py.

```
38     def cost(self):
39         return SugarDecorator._additionalCost + self.coffee.cost()
40
```

### 6.101.3.2 def memoryoracle.whip.SugarDecorator.name ( self )

Definition at line 41 of file whip.py.

```
41     def name(self):
42         return self.coffee.name() + ", sugar"
43
44
```

## 6.101.4 Member Data Documentation

### 6.101.4.1 float memoryoracle.whip.SugarDecorator.\_additionalCost = 0.05 [static],[private]

Definition at line 33 of file whip.py.

### 6.101.4.2 memoryoracle.whip.SugarDecorator.coffee

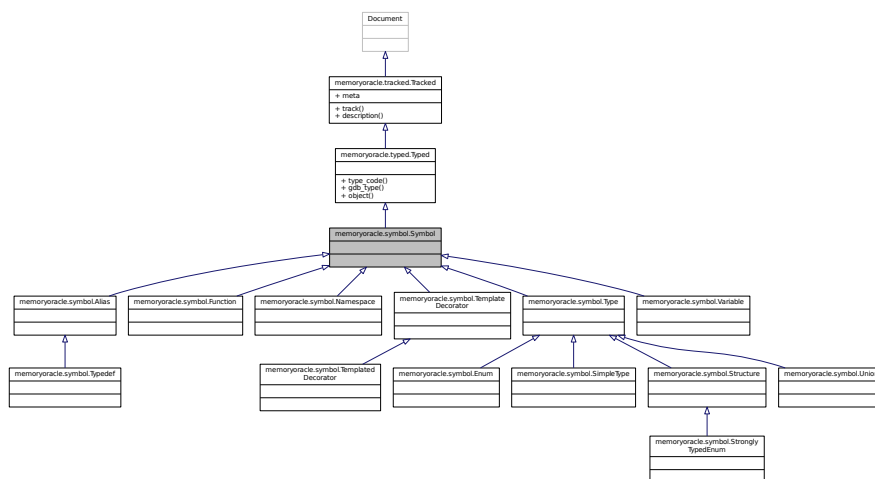
Definition at line 36 of file whip.py.

The documentation for this class was generated from the following file:

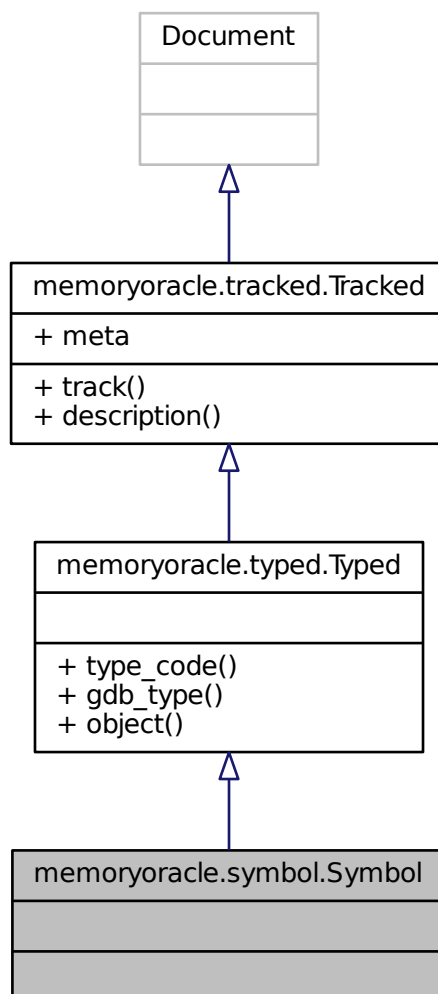
- memoryoracle/[whip.py](#)

## 6.102 memoryoracle.symbol.Symbol Class Reference

Inheritance diagram for memoryoracle.symbol.Symbol:



Collaboration diagram for memoryoracle.symbol.Symbol:



## Additional Inherited Members

### 6.102.1 Detailed Description

`*Abstract*` class to track a symbol in the debuggee

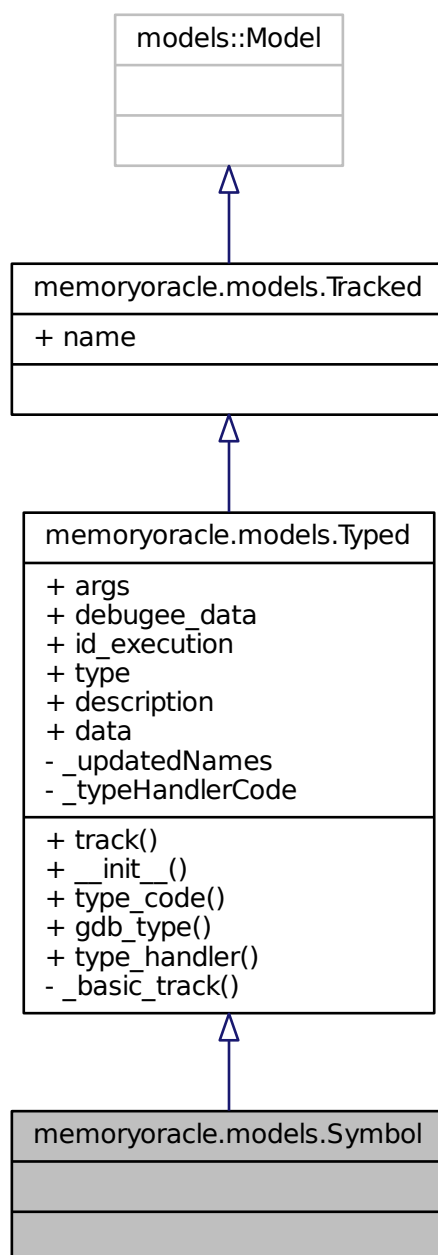
Definition at line 7 of file `symbol.py`.

The documentation for this class was generated from the following file:

- [memoryoracle/symbol.py](#)

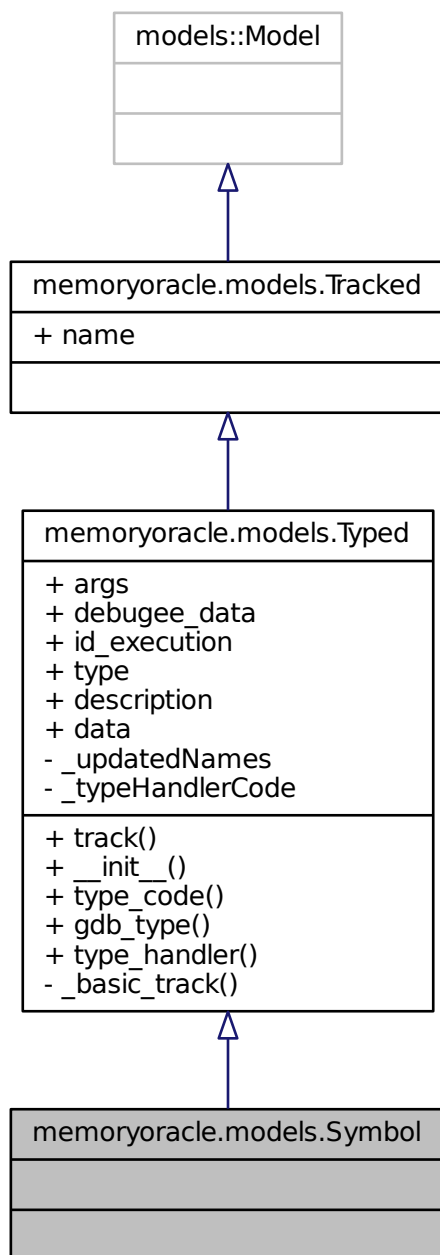
## 6.103 memoryoracle.models.Symbol Class Reference

Inheritance diagram for memoryoracle.models.Symbol:





Collaboration diagram for memoryoracle.models.Symbol:



## Classes

- class [Meta](#)

## Additional Inherited Members

### 6.103.1 Detailed Description

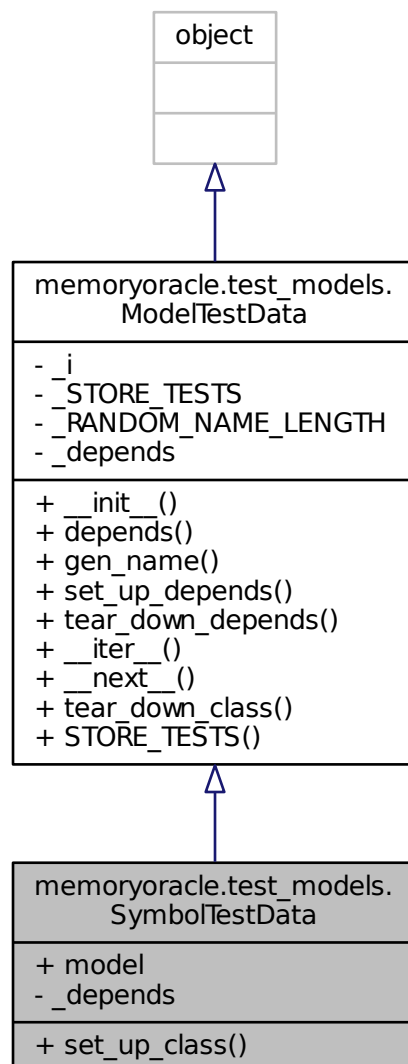
Definition at line 232 of file models.py.

The documentation for this class was generated from the following file:

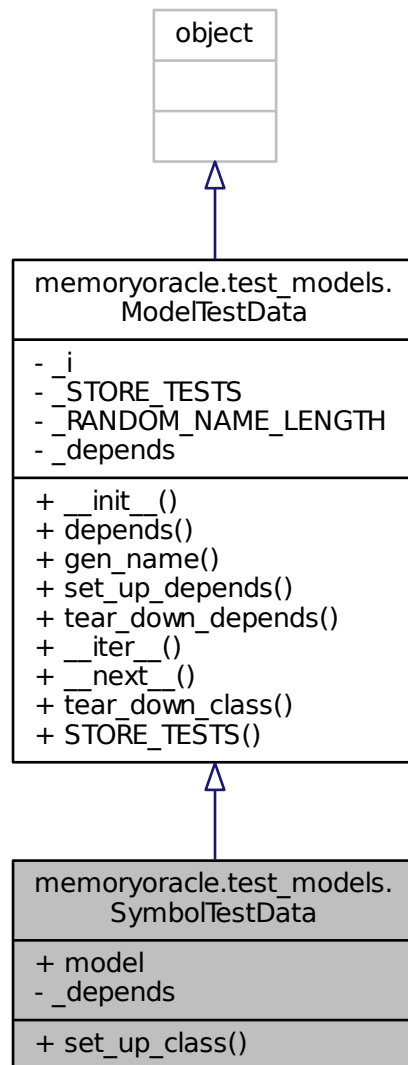
- [memoryoracle/models.py](#)

## 6.104 memoryoracle.test\_models.SymbolTestData Class Reference

Inheritance diagram for memoryoracle.test\_models.SymbolTestData:



Collaboration diagram for memoryoracle.test\_models.SymbolTestData:



## Public Member Functions

- def `set_up_class` (cls)

## Static Public Attributes

- `model` = `memoryoracle.models.Symbol`

## Static Private Attributes

- `list _depends` = [`ExecutionTestData`]

## Additional Inherited Members

### 6.104.1 Detailed Description

Definition at line 322 of file test\_models.py.

### 6.104.2 Member Function Documentation

#### 6.104.2.1 `def memoryoracle.test_models.SymbolTestData.set_up_class ( cls )`

Definition at line 329 of file test\_models.py.

References `memoryoracle.instance.x`.

```

329     def set_up_class(cls):
330         cls.set_up_depends()
331         cls.data = { x.__name__: x() for x in cls.depends() }
332         cls.argsList = [
333             {
334                 "id_execution": execution,
335                 "type": ModelTestData.gen_name(),
336             } for execution in cls.data["ExecutionTestData"] ]
337         cls.orms = [ cls.model.objects.create(**kwargs) for kwargs in cls.argsList ]
338
339 
```

### 6.104.3 Member Data Documentation

#### 6.104.3.1 `list memoryoracle.test_models.SymbolTestData._depends = [ExecutionTestData] [static], [private]`

Definition at line 326 of file test\_models.py.

#### 6.104.3.2 `memoryoracle.test_models.SymbolTestData.model = memoryoracle.models.Symbol [static]`

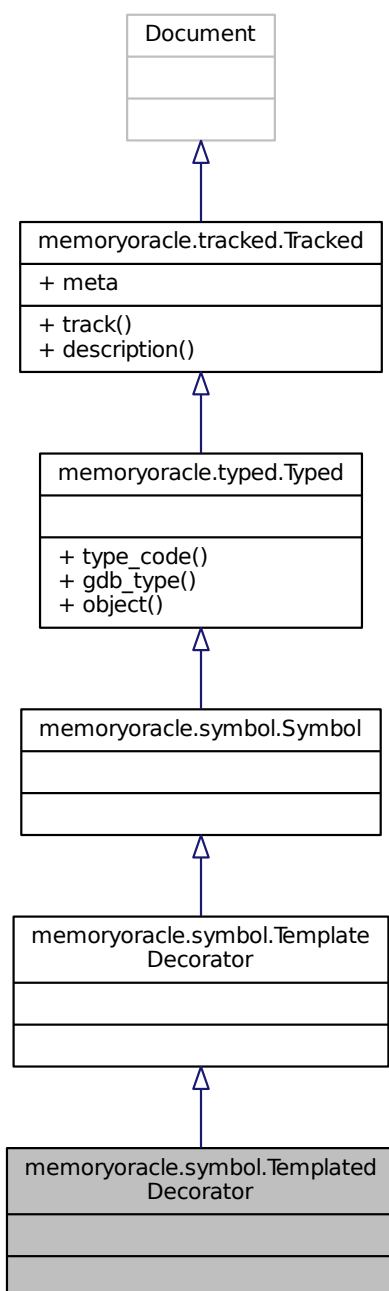
Definition at line 324 of file test\_models.py.

The documentation for this class was generated from the following file:

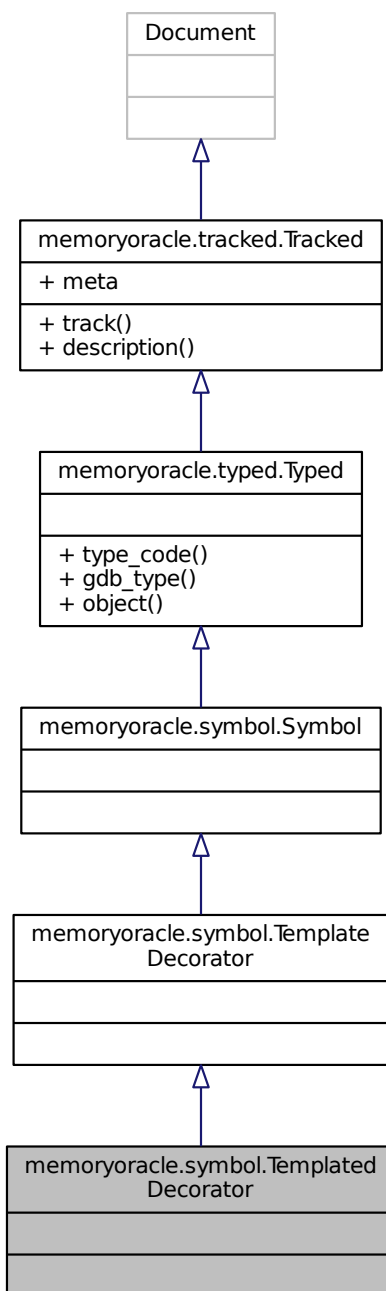
- `memoryoracle/test_models.py`

## 6.105 memoryoracle.symbol.TemplatedDecorator Class Reference

Inheritance diagram for memoryoracle.symbol.TemplatedDecorator:



Collaboration diagram for memoryoracle.symbol.TemplatedDecorator:



## Additional Inherited Members

### 6.105.1 Detailed Description

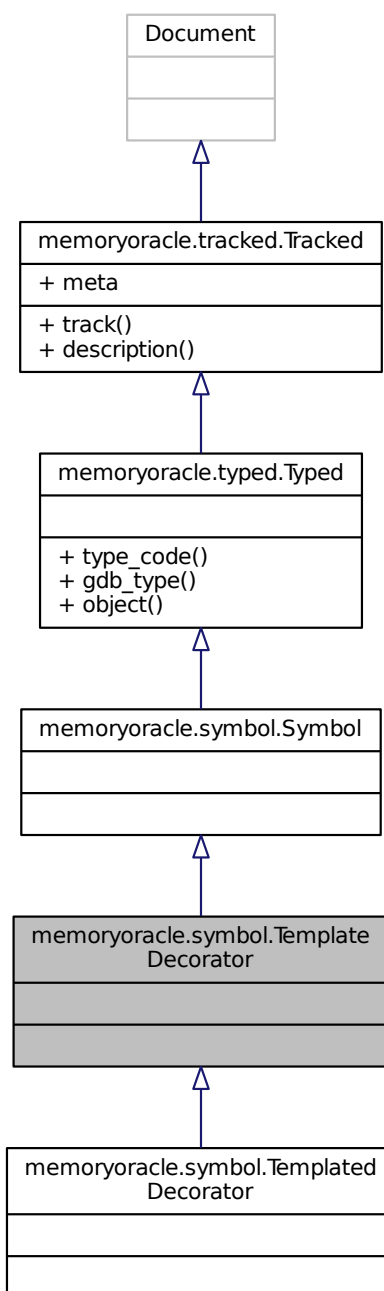
Definition at line 44 of file `symbol.py`.

The documentation for this class was generated from the following file:

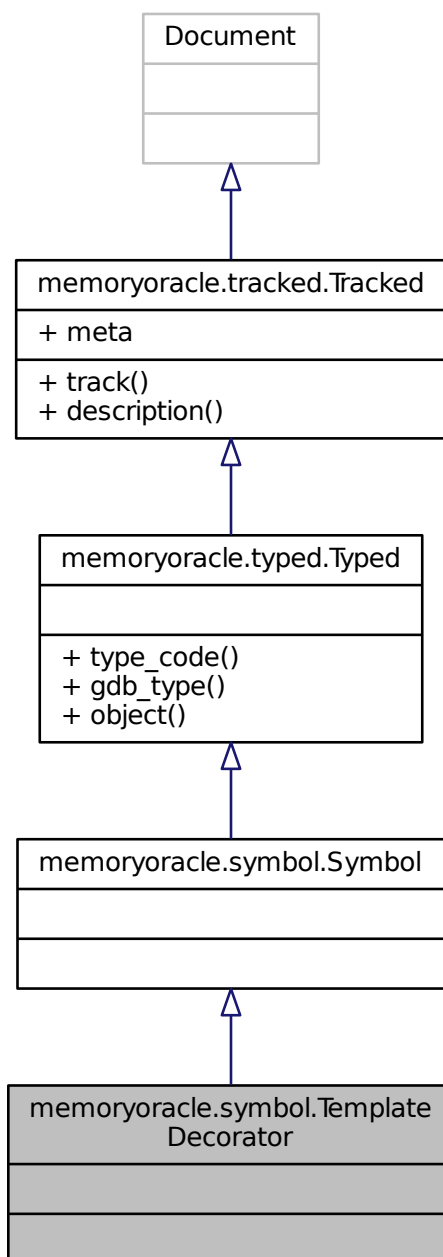
- [memoryoracle/symbol.py](#)

## 6.106 memoryoracle.symbol.TemplateDecorator Class Reference

Inheritance diagram for memoryoracle.symbol.TemplateDecorator:



Collaboration diagram for memoryoracle.symbol.TemplateDecorator:



## Additional Inherited Members

### 6.106.1 Detailed Description

Definition at line 40 of file `symbol.py`.

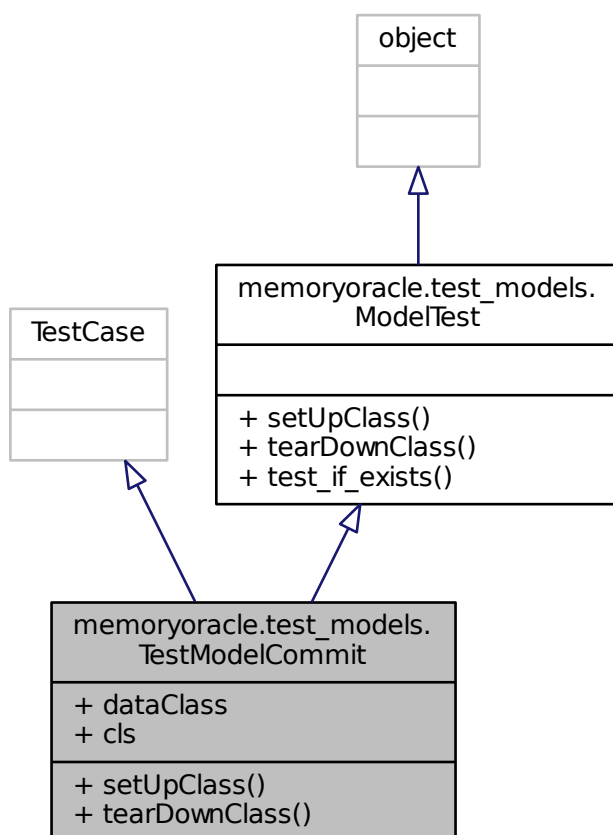
The documentation for this class was generated from the following file:



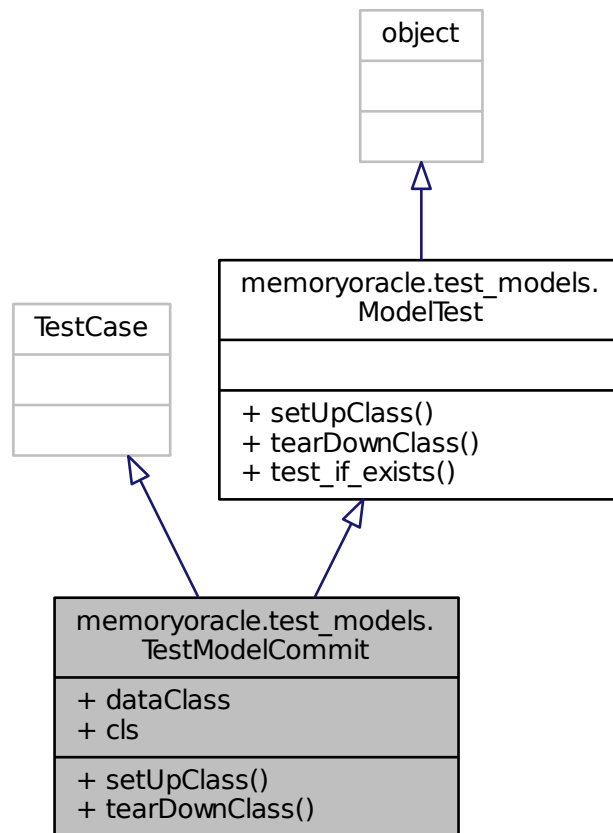
- [memoryoracle/symbol.py](#)

## 6.107 memoryoracle.test\_models.TestModelCommit Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelCommit:



Collaboration diagram for `memoryoracle.test_models.TestModelCommit`:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- `dataClass` = [CommitTestData](#)
- `cls` = [memoryoracle.models.Commit](#)

### 6.107.1 Detailed Description

Definition at line 134 of file `test_models.py`.

### 6.107.2 Member Function Documentation

#### 6.107.2.1 def memoryoracle.test\_models.TestModelCommit.setUpClass ( cls )

Definition at line 137 of file test\_models.py.

```
137     def setUpClass(cls):
138         data = cls.dataClass.set_up_class()
139
```

#### 6.107.2.2 def memoryoracle.test\_models.TestModelCommit.tearDownClass ( cls )

Definition at line 141 of file test\_models.py.

```
141     def tearDownClass(cls):
142         cls.dataClass.tear_down_class()
143
```

### 6.107.3 Member Data Documentation

#### 6.107.3.1 memoryoracle.test\_models.TestModelCommit.cls = memoryoracle.models.Commit [static]

Definition at line 146 of file test\_models.py.

#### 6.107.3.2 memoryoracle.test\_models.TestModelCommit.dataClass = CommitTestData [static]

Definition at line 144 of file test\_models.py.

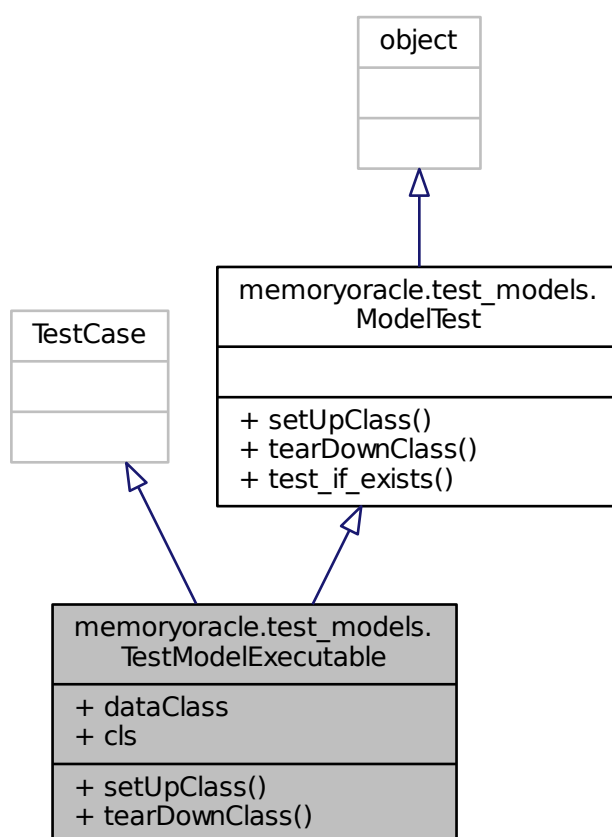
Referenced by memoryoracle.test\_models.ModelTest.test\_if\_exists().

The documentation for this class was generated from the following file:

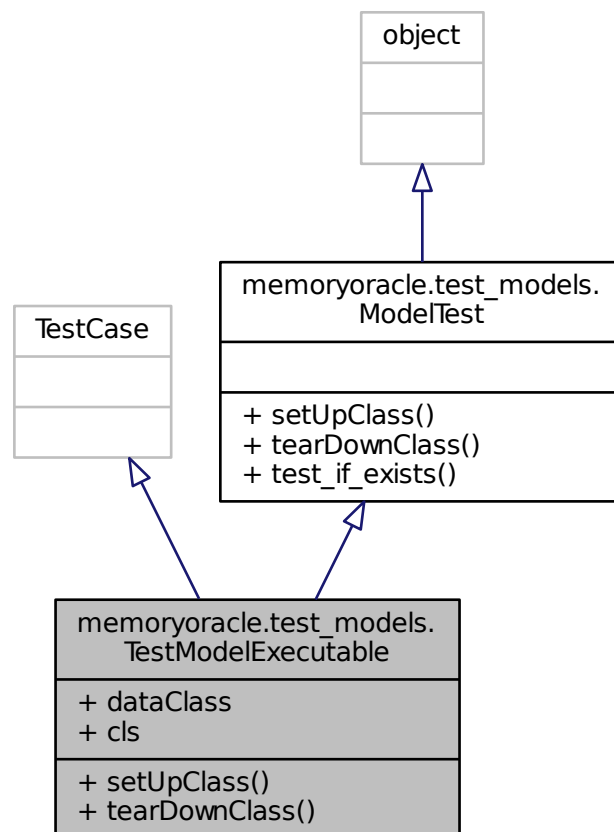
- memoryoracle/[test\\_models.py](#)

## 6.108 memoryoracle.test\_models.TestModelExecutable Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelExecutable:



Collaboration diagram for memoryoracle.test\_models.TestModelExecutable:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- `dataClass` = [ExecutableTestData](#)
- `cls` = [memoryoracle.models.Executable](#)

### 6.108.1 Detailed Description

Definition at line 168 of file `test_models.py`.

### 6.108.2 Member Function Documentation

#### 6.108.2.1 `def memoryoracle.test_models.TestModelExecutable.setUpClass ( cls )`

Definition at line 171 of file `test_models.py`.

```
171     def setUpClass(cls):
172         data = cls.dataClass.setUp_class()
173
```

#### 6.108.2.2 `def memoryoracle.test_models.TestModelExecutable.tearDownClass ( cls )`

Definition at line 175 of file `test_models.py`.

```
175     def tearDownClass(cls):
176         cls.dataClass.tearDown_class()
177
```

### 6.108.3 Member Data Documentation

#### 6.108.3.1 `memoryoracle.test_models.TestModelExecutable.cls = memoryoracle.models.Executable` `[static]`

Definition at line 180 of file `test_models.py`.

#### 6.108.3.2 `memoryoracle.test_models.TestModelExecutable.dataClass = ExecutableTestData` `[static]`

Definition at line 178 of file `test_models.py`.

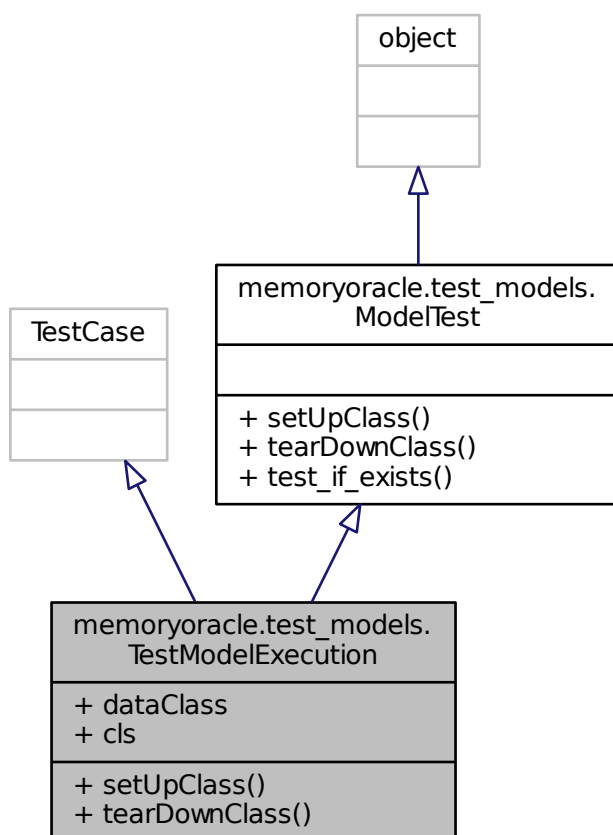
Referenced by `memoryoracle.test_models.ModelTest.test_if_exists()`.

The documentation for this class was generated from the following file:

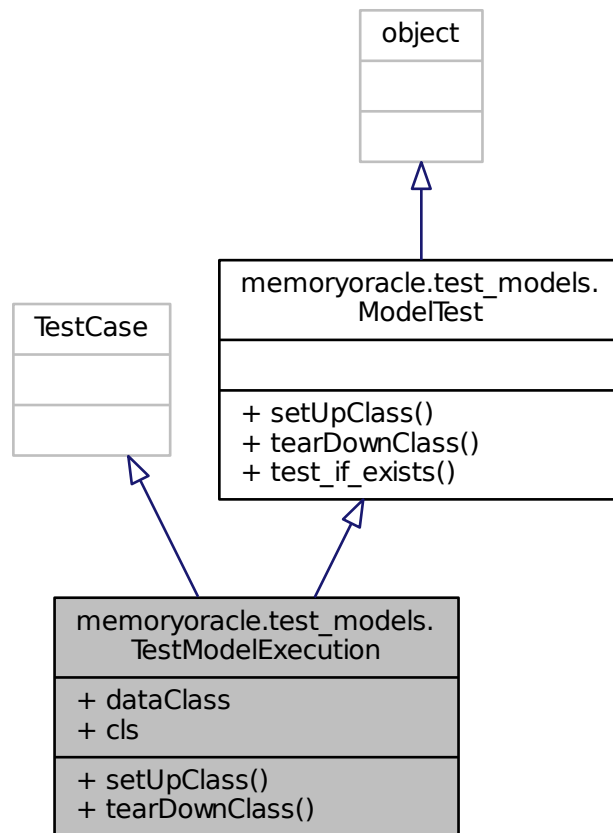
- [memoryoracle/test\\_models.py](#)

## 6.109 memoryoracle.test\_models.TestModelExecution Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelExecution:



Collaboration diagram for `memoryoracle.test_models.TestModelExecution`:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- `dataClass` = [ExecutionTestData](#)
- `cls` = [memoryoracle.models.Execution](#)

### 6.109.1 Detailed Description

Definition at line 201 of file `test_models.py`.

### 6.109.2 Member Function Documentation



#### 6.109.2.1 def memoryoracle.test\_models.TestModelExecution.setUpClass ( cls )

Definition at line 204 of file test\_models.py.

```
204     def setUpClass(cls):
205         data = cls.dataClass.set_up_class()
206
```

#### 6.109.2.2 def memoryoracle.test\_models.TestModelExecution.tearDownClass ( cls )

Definition at line 208 of file test\_models.py.

```
208     def tearDownClass(cls):
209         cls.dataClass.tear_down_class()
210
```

### 6.109.3 Member Data Documentation

#### 6.109.3.1 memoryoracle.test\_models.TestModelExecution.cls = memoryoracle.models.Execution [static]

Definition at line 213 of file test\_models.py.

#### 6.109.3.2 memoryoracle.test\_models.TestModelExecution.dataClass = ExecutionTestData [static]

Definition at line 211 of file test\_models.py.

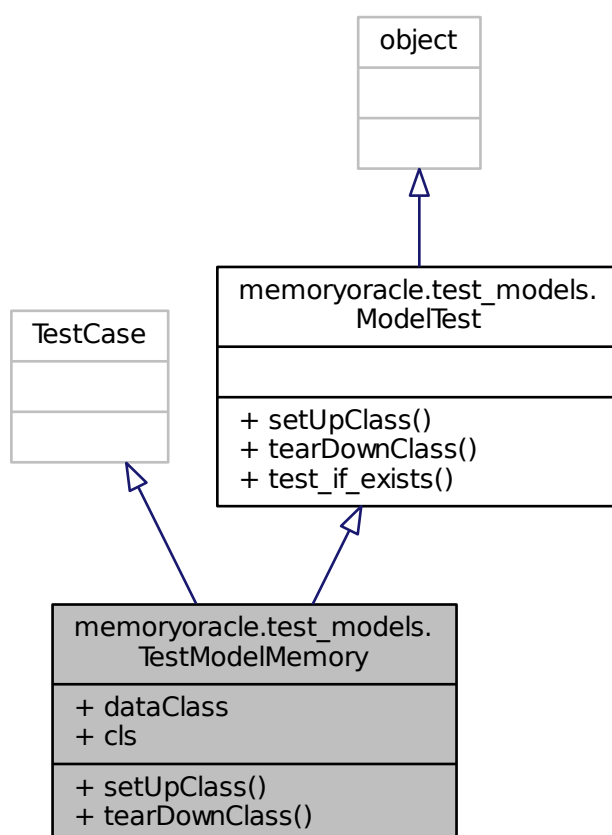
Referenced by memoryoracle.test\_models.ModelTest.test\_if\_exists().

The documentation for this class was generated from the following file:

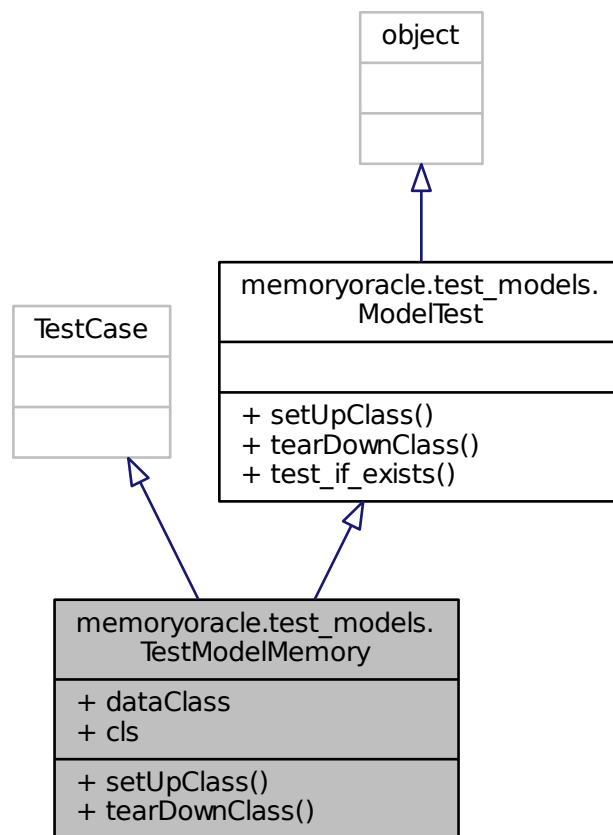
- memoryoracle/[test\\_models.py](#)

## 6.110 memoryoracle.test\_models.TestModelMemory Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelMemory:



Collaboration diagram for memoryoracle.test\_models.TestModelMemory:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- [dataClass](#) = [MemoryTestData](#)
- [cls](#) = [memoryoracle.models.Memory](#)

### 6.110.1 Detailed Description

Definition at line 238 of file test\_models.py.

### 6.110.2 Member Function Documentation

#### 6.110.2.1 `def memoryoracle.test_models.TestModelMemory.setUpClass ( cls )`

Definition at line 241 of file `test_models.py`.

```
241     def setUpClass(cls):  
242         data = cls.dataClass.setUp_class()  
243
```

#### 6.110.2.2 `def memoryoracle.test_models.TestModelMemory.tearDownClass ( cls )`

Definition at line 245 of file `test_models.py`.

```
245     def tearDownClass(cls):  
246         cls.dataClass.tearDown_class()  
247
```

### 6.110.3 Member Data Documentation

#### 6.110.3.1 `memoryoracle.test_models.TestModelMemory.cls = memoryoracle.models.Memory` `[static]`

Definition at line 250 of file `test_models.py`.

#### 6.110.3.2 `memoryoracle.test_models.TestModelMemory.dataClass = MemoryTestData` `[static]`

Definition at line 248 of file `test_models.py`.

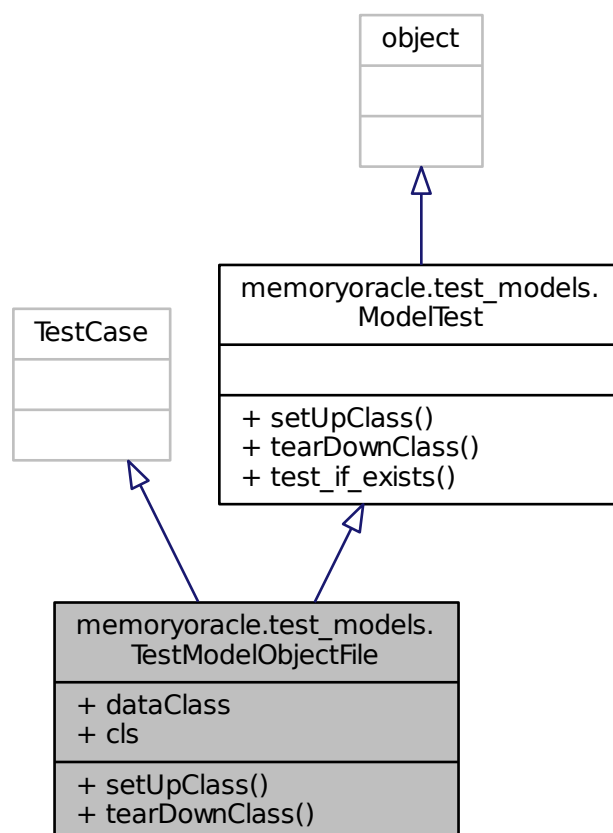
Referenced by `memoryoracle.test_models.ModelTest.test_if_exists()`.

The documentation for this class was generated from the following file:

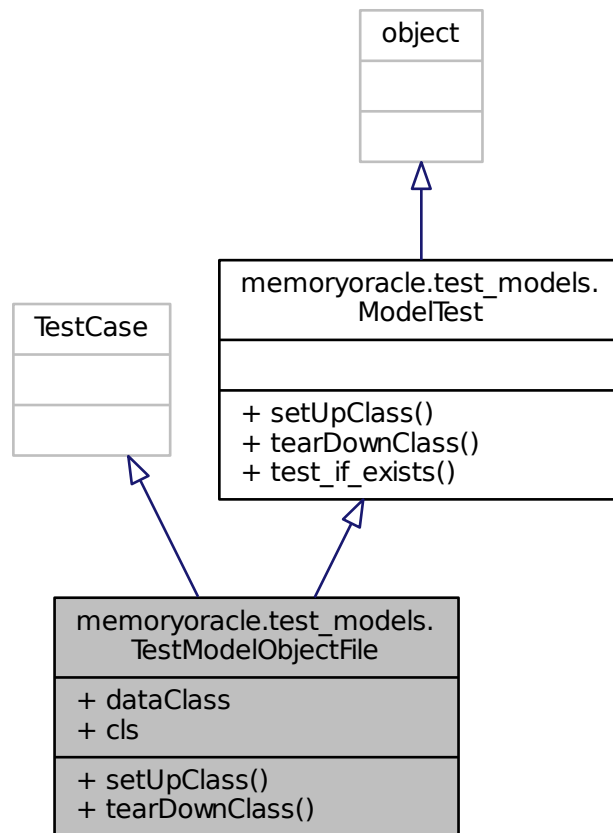
- `memoryoracle/test_models.py`

## 6.111 memoryoracle.test\_models.TestModelObjectFile Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelObjectFile:



Collaboration diagram for `memoryoracle.test_models.TestModelObjectFile`:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- [dataClass](#) = [ObjectFileTestData](#)
- [cls](#) = [memoryoracle.models.ObjectFile](#)

### 6.111.1 Detailed Description

Definition at line 272 of file `test_models.py`.

### 6.111.2 Member Function Documentation

#### 6.111.2.1 def memoryoracle.test\_models.TestModelObjectFile.setUpClass ( cls )

Definition at line 275 of file test\_models.py.

```
275     def setUpClass(cls):
276         data = cls.dataClass.set_up_class()
277
```

#### 6.111.2.2 def memoryoracle.test\_models.TestModelObjectFile.tearDownClass ( cls )

Definition at line 279 of file test\_models.py.

```
279     def tearDownClass(cls):
280         cls.dataClass.tear_down_class()
281
```

### 6.111.3 Member Data Documentation

#### 6.111.3.1 memoryoracle.test\_models.TestModelObjectFile.cls = memoryoracle.models.ObjectFile [static]

Definition at line 284 of file test\_models.py.

#### 6.111.3.2 memoryoracle.test\_models.TestModelObjectFile.dataClass = ObjectFileTestData [static]

Definition at line 282 of file test\_models.py.

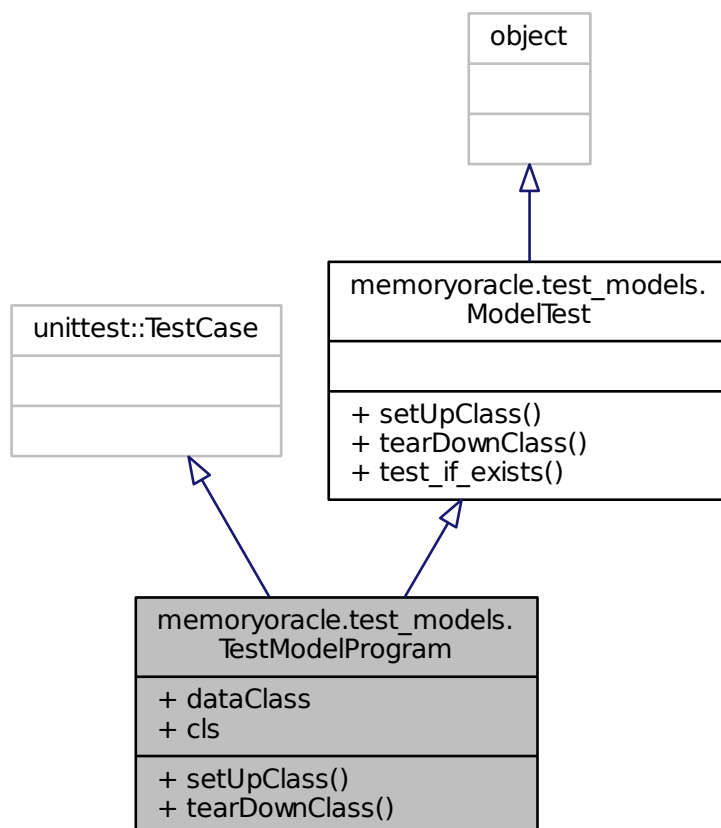
Referenced by memoryoracle.test\_models.ModelTest.test\_if\_exists().

The documentation for this class was generated from the following file:

- memoryoracle/[test\\_models.py](#)

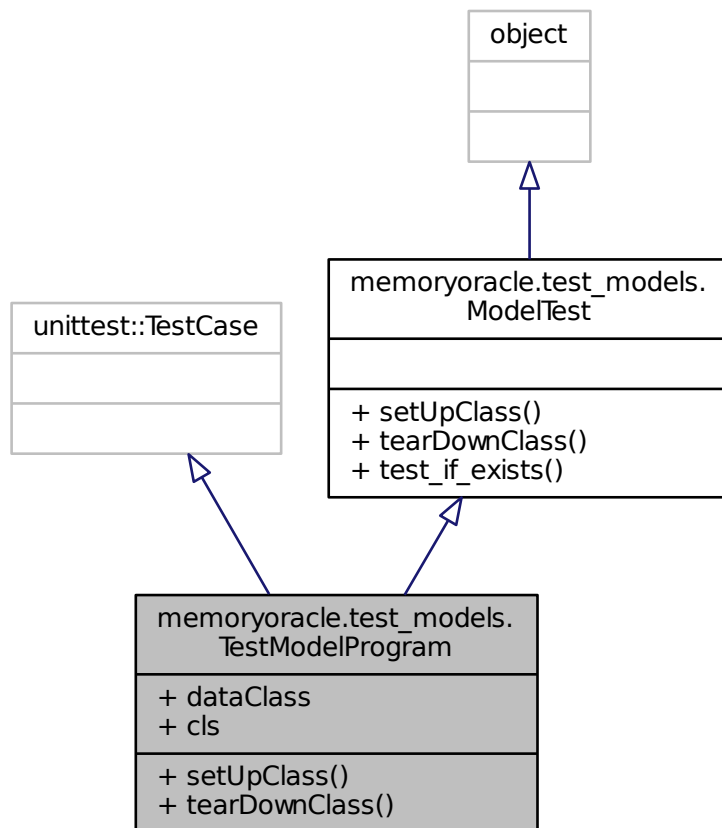
## 6.112 memoryoracle.test\_models.TestModelProgram Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelProgram:





Collaboration diagram for memoryoracle.test\_models.TestModelProgram:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- [dataClass](#) = [ProgramTestData](#)
- [cls](#) = [memoryoracle.models.Program](#)

### 6.112.1 Detailed Description

Definition at line 99 of file test\_models.py.

### 6.112.2 Member Function Documentation

#### 6.112.2.1 def memoryoracle.test\_models.TestModelProgram.setUpClass ( cls )

Definition at line 106 of file test\_models.py.

```
106     def setUpClass(cls):
107         data = cls.dataClass.setUp_class()
108
```

#### 6.112.2.2 def memoryoracle.test\_models.TestModelProgram.tearDownClass ( cls )

Definition at line 110 of file test\_models.py.

```
110     def tearDownClass(cls):
111         cls.dataClass.tearDown_class()
112
113
```

### 6.112.3 Member Data Documentation

#### 6.112.3.1 memoryoracle.test\_models.TestModelProgram.cls = memoryoracle.models.Program [static]

Definition at line 103 of file test\_models.py.

#### 6.112.3.2 memoryoracle.test\_models.TestModelProgram.dataClass = ProgramTestData [static]

Definition at line 101 of file test\_models.py.

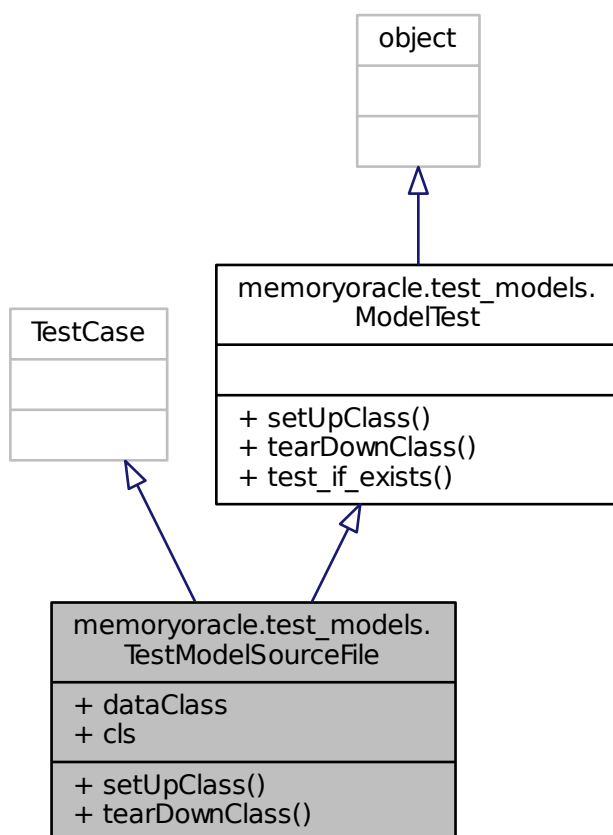
Referenced by memoryoracle.test\_models.ModelTest.test\_if\_exists().

The documentation for this class was generated from the following file:

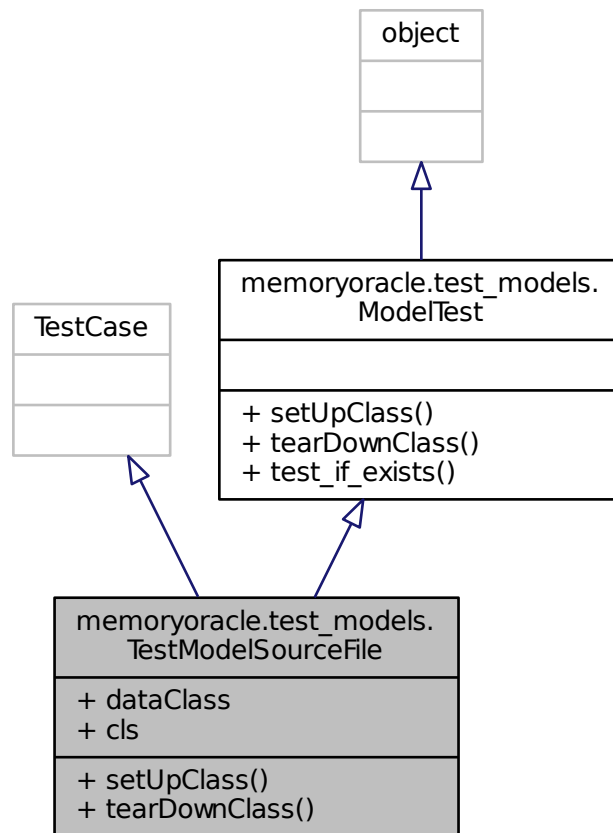
- memoryoracle/[test\\_models.py](#)

## 6.113 memoryoracle.test\_models.TestModelSourceFile Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelSourceFile:



Collaboration diagram for `memoryoracle.test_models.TestModelSourceFile`:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- `dataClass` = [SourceFileTestData](#)
- `cls` = [memoryoracle.models.SourceFile](#)

### 6.113.1 Detailed Description

Definition at line 307 of file `test_models.py`.

### 6.113.2 Member Function Documentation

#### 6.113.2.1 def memoryoracle.test\_models.TestModelSourceFile.setUpClass ( cls )

Definition at line 310 of file test\_models.py.

```
310     def setUpClass(cls):  
311         data = cls.dataClass.set_up_class()  
312
```

#### 6.113.2.2 def memoryoracle.test\_models.TestModelSourceFile.tearDownClass ( cls )

Definition at line 314 of file test\_models.py.

```
314     def tearDownClass(cls):  
315         cls.dataClass.tear_down_class()  
316
```

### 6.113.3 Member Data Documentation

#### 6.113.3.1 memoryoracle.test\_models.TestModelSourceFile.cls = memoryoracle.models.SourceFile [static]

Definition at line 319 of file test\_models.py.

#### 6.113.3.2 memoryoracle.test\_models.TestModelSourceFile.dataClass = SourceFileTestData [static]

Definition at line 317 of file test\_models.py.

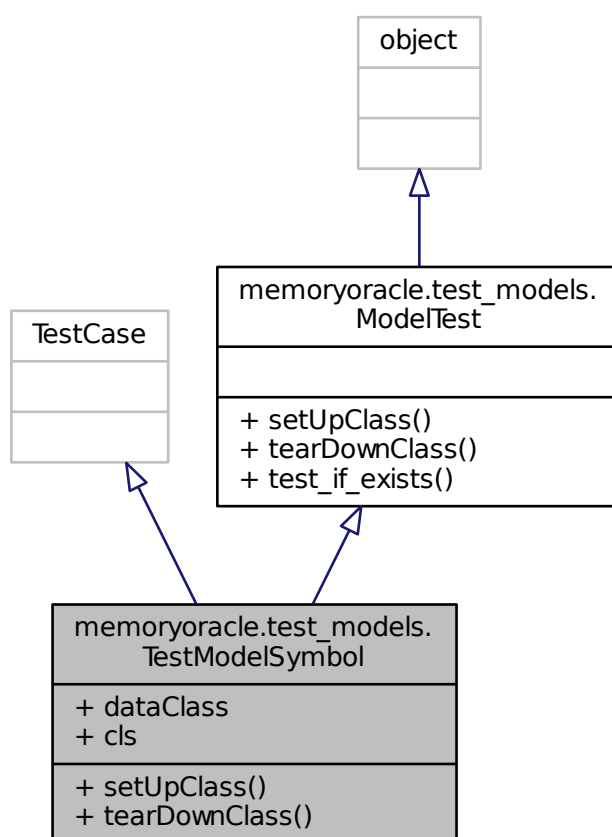
Referenced by memoryoracle.test\_models.ModelTest.test\_if\_exists().

The documentation for this class was generated from the following file:

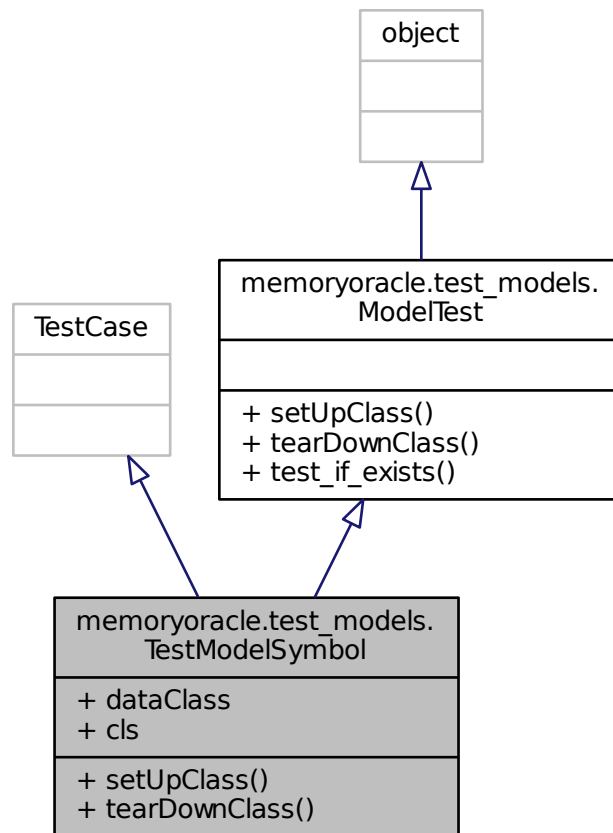
- memoryoracle/[test\\_models.py](#)

## 6.114 memoryoracle.test\_models.TestModelSymbol Class Reference

Inheritance diagram for memoryoracle.test\_models.TestModelSymbol:



Collaboration diagram for memoryoracle.test\_models.TestModelSymbol:



## Public Member Functions

- def [setUpClass](#) (cls)
- def [tearDownClass](#) (cls)

## Static Public Attributes

- [dataClass](#) = [SymbolTestData](#)
- [cls](#) = [memoryoracle.models.Symbol](#)

### 6.114.1 Detailed Description

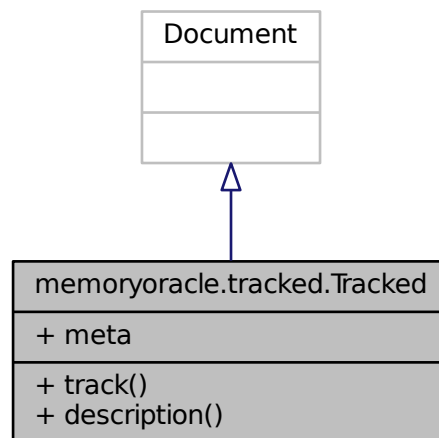
Definition at line 340 of file test\_models.py.

### 6.114.2 Member Function Documentation





Collaboration diagram for memoryoracle.tracked.Tracked:



## Public Member Functions

- def `track` (self)
- def `description` (self)

## Static Public Attributes

- dictionary `meta` = {'allow\_inheritance': True}

### 6.115.1 Detailed Description

`*Abstract*` class to represent a piece of information from the debuggee to track.

Definition at line 22 of file `tracked.py`.

### 6.115.2 Member Function Documentation

#### 6.115.2.1 def memoryoracle.tracked.Tracked.description ( self )

Definition at line 51 of file `tracked.py`.

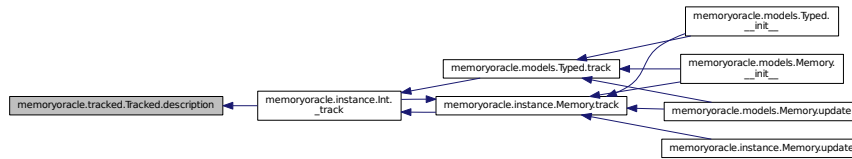
References `memoryoracle.descriptions.BlackBoxDecorator._description`, `memoryoracle.instance.Memory._description`, `memoryoracle.descriptions.ExternalDescriptionDecorator._description`, and `memoryoracle.descriptions.StandardDescriptionDecorator._description`.

Referenced by `memoryoracle.instance.Int._track()`.

```

51     def description(self):
52         return self._description
53
54 
```

Here is the caller graph for this function:



### 6.115.2.2 def memoryoracle.tracked.Tracked.track ( self )

Definition at line 46 of file tracked.py.

```

46     def track(self):
47         raise NotImplementedError(
48             "Attempted to track abstract class")
49 
```

## 6.115.3 Member Data Documentation

### 6.115.3.1 dictionary memoryoracle.tracked.Tracked.meta = {'allow\_inheritance': True} [static]

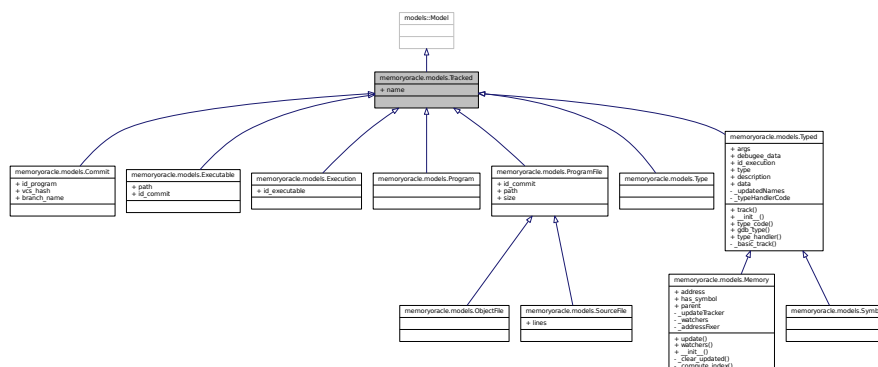
Definition at line 27 of file tracked.py.

The documentation for this class was generated from the following file:

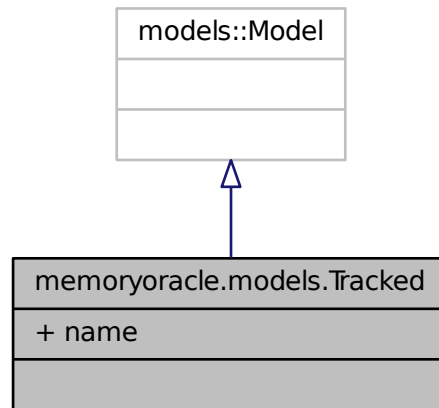
- [memoryoracle/tracked.py](#)

## 6.116 memoryoracle.models.Tracked Class Reference

Inheritance diagram for memoryoracle.models.Tracked:



Collaboration diagram for memoryoracle.models.Tracked:



## Classes

- class [Meta](#)

## Static Public Attributes

- tuple `name` = `models.TextField(default=None)`

### 6.116.1 Detailed Description

Definition at line 37 of file `models.py`.

### 6.116.2 Member Data Documentation

6.116.2.1 tuple `memoryoracle.models.Tracked.name` = `models.TextField(default=None)` `[static]`

Definition at line 40 of file `models.py`.

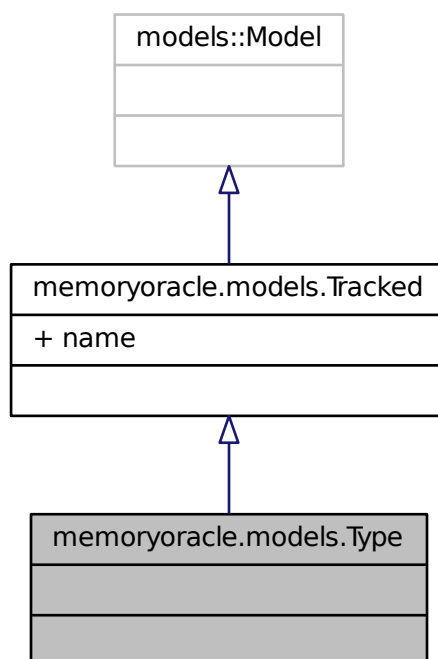
Referenced by `memoryoracle.descriptions.MemoryDescription.dict()`, and `memoryoracle.watch.Addressable↔  
Watcher.stop()`.

The documentation for this class was generated from the following file:

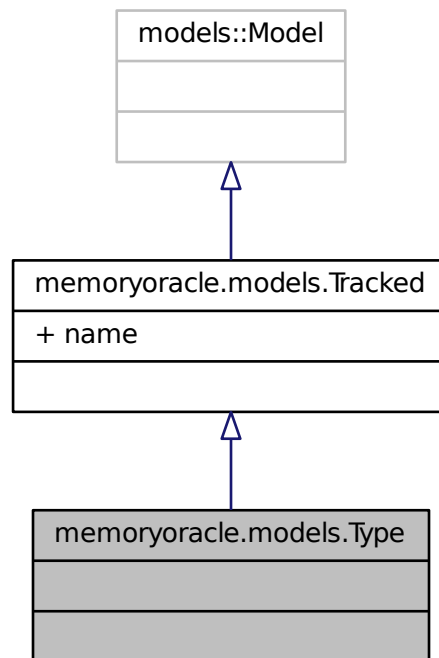
- `memoryoracle/models.py`

## 6.117 memoryoracle.models.Type Class Reference

Inheritance diagram for memoryoracle.models.Type:



Collaboration diagram for memoryoracle.models.Type:



## Classes

- class [Meta](#)

## Additional Inherited Members

### 6.117.1 Detailed Description

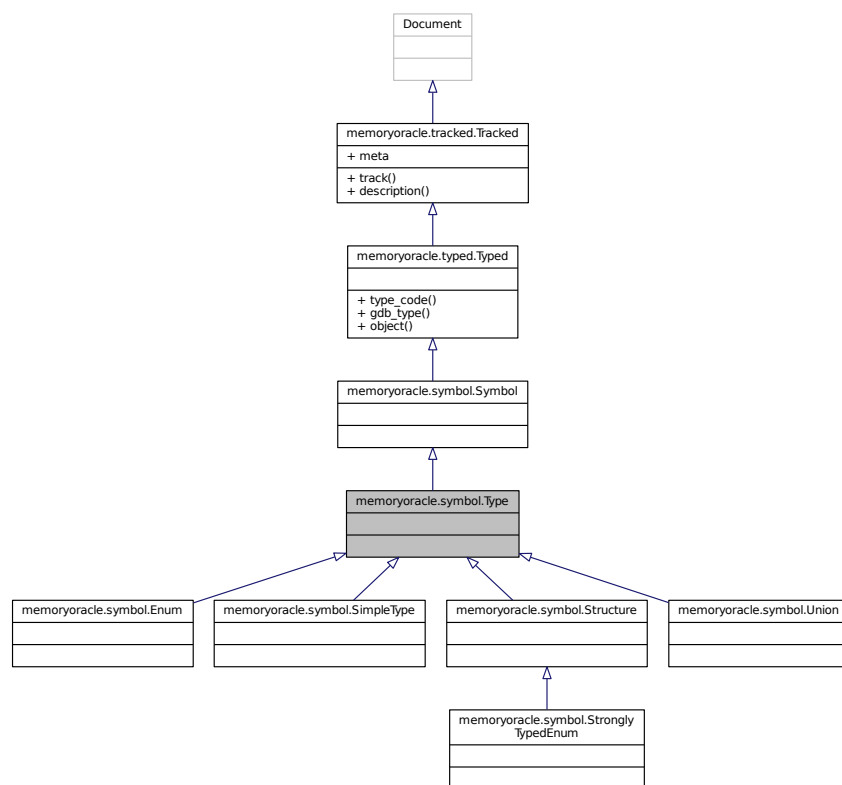
Definition at line 238 of file `models.py`.

The documentation for this class was generated from the following file:

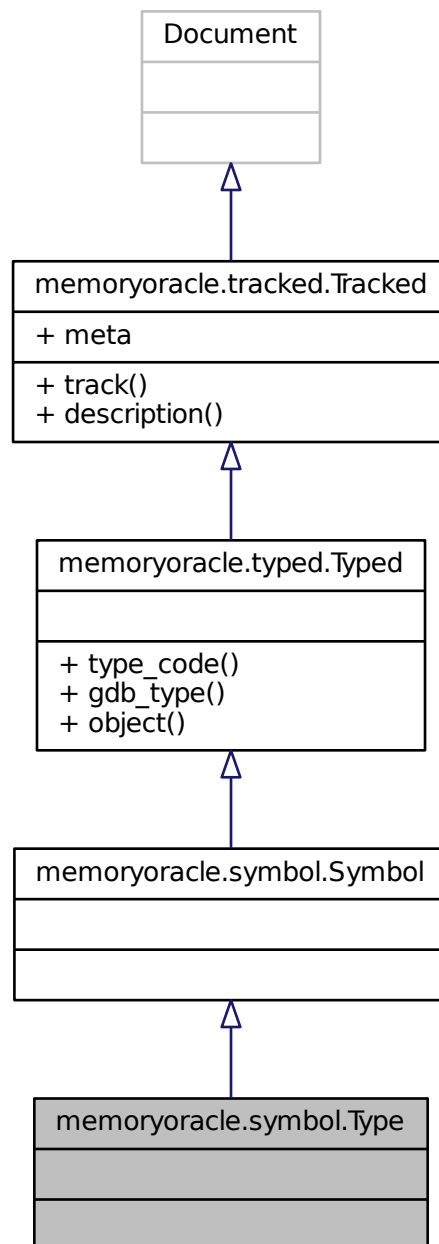
- `memoryoracle/models.py`

## 6.118 memoryoracle.symbol.Type Class Reference

Inheritance diagram for memoryoracle.symbol.Type:



Collaboration diagram for memoryoracle.symbol.Type:



## Additional Inherited Members

### 6.118.1 Detailed Description

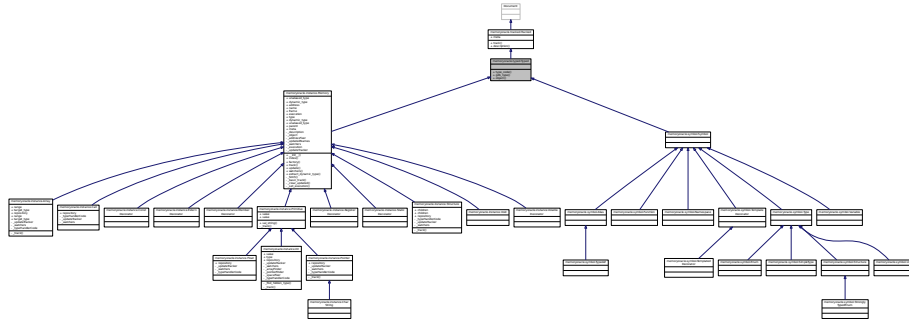
Definition at line 32 of file `symbol.py`.

The documentation for this class was generated from the following file:

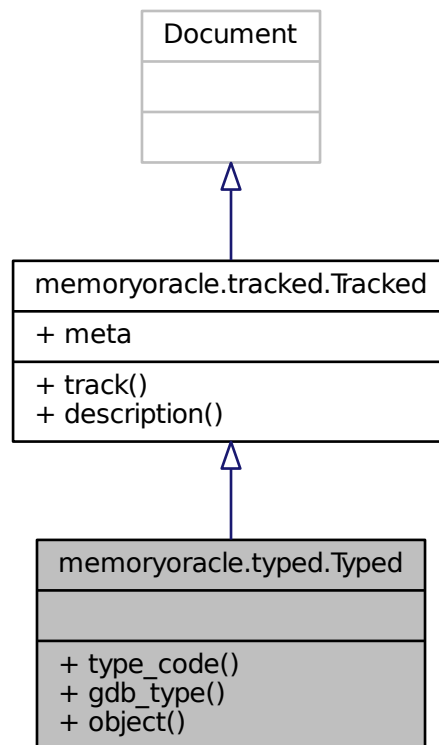
- [memoryoracle/symbol.py](#)

## 6.119 memoryoracle.typed.Typed Class Reference

Inheritance diagram for memoryoracle.typed.Typed:



Collaboration diagram for memoryoracle.typed.Typed:



### Public Member Functions

- `def type_code (self)`



- def [gdb\\_type](#) (self)
- def [object](#) (self)

## Additional Inherited Members

### 6.119.1 Detailed Description

Definition at line 16 of file typed.py.

### 6.119.2 Member Function Documentation

#### 6.119.2.1 def memoryoracle.typed.Typed.gdb\_type ( self )

Definition at line 25 of file typed.py.

```
25     def gdb_type(self):
26         return self.object.type
27
```

#### 6.119.2.2 def memoryoracle.typed.Typed.object ( self )

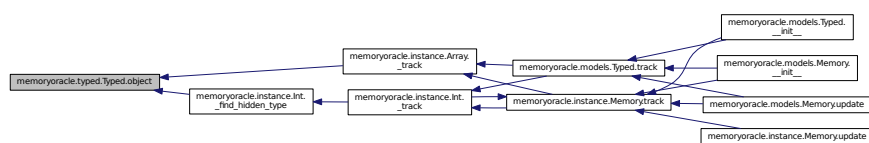
Definition at line 29 of file typed.py.

References `memoryoracle.instance.Memory._object`, and `memoryoracle.descriptions.MemoryDescription._object`.

Referenced by `memoryoracle.instance.Int._find_hidden_type()`, and `memoryoracle.instance.Array._track()`.

```
29     def object(self):
30         return self._object
31
```

Here is the caller graph for this function:



#### 6.119.2.3 def memoryoracle.typed.Typed.type\_code ( self )

Definition at line 21 of file typed.py.

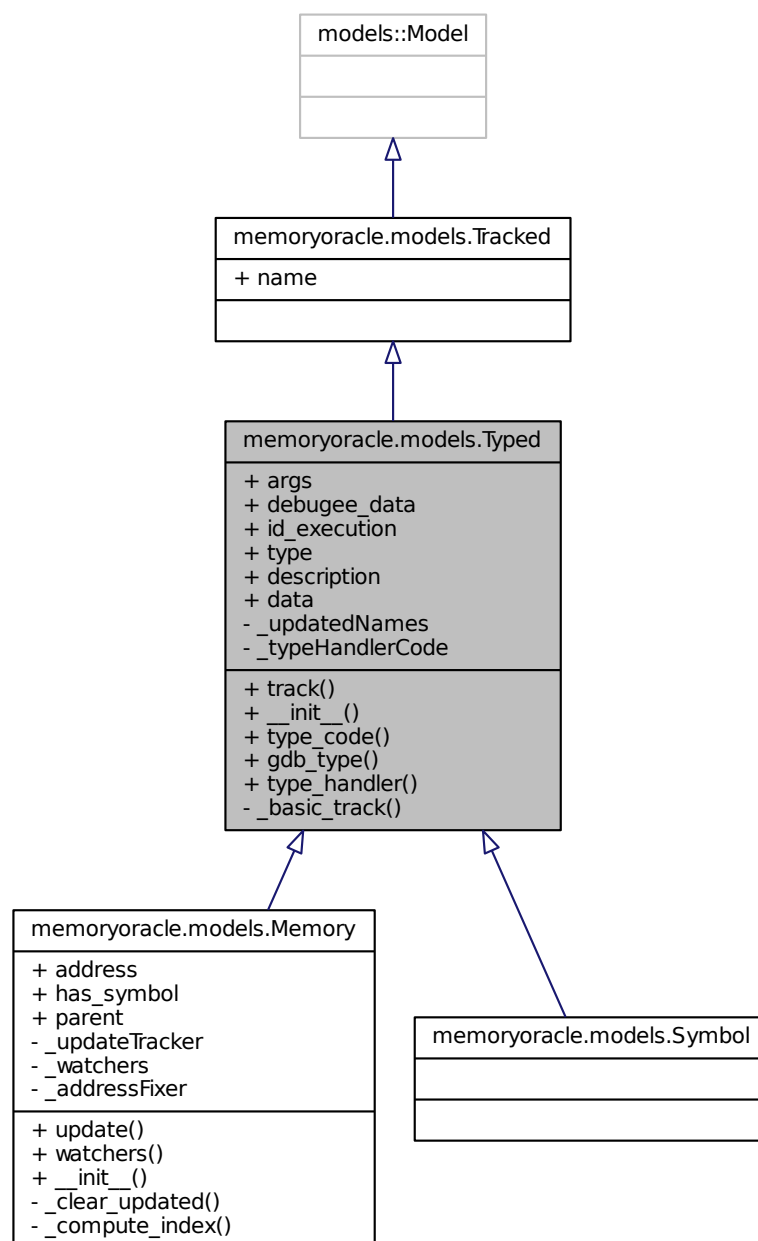
```
21     def type_code(self):
22         raise NotImplementedError("Abstract class Typed has no type code")
23
```

The documentation for this class was generated from the following file:

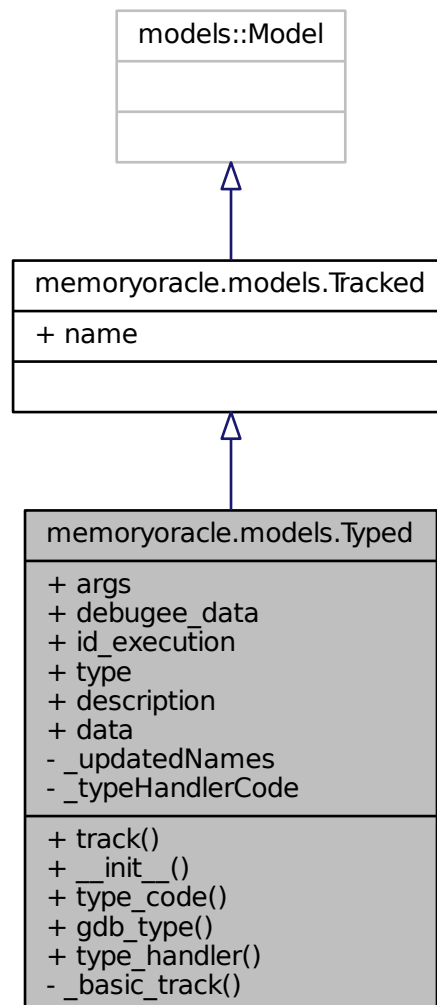
- [memoryoracle/typed.py](#)

## 6.120 memoryoracle.models.Typed Class Reference

Inheritance diagram for memoryoracle.models.Typed:



Collaboration diagram for memoryoracle.models.Typed:



## Classes

- class [DataError](#)
- class [DetectionError](#)
- class [Meta](#)

## Public Member Functions

- def [track](#) (self, kwargs)
- def [\\_\\_init\\_\\_](#) (self, [args](#), kwargs)
- def [type\\_code](#) (self)
- def [gdb\\_type](#) (self)

## Static Public Member Functions

- def [type\\_handler](#) ()

## Public Attributes

- [args](#)
- [debugee\\_data](#)

## Static Public Attributes

- tuple [id\\_execution](#) = models.ForeignKey([Execution](#))
- tuple [type](#) = models.TextField()
- tuple [description](#) = models.JSONField(default=None)
- tuple [data](#) = models.JSONField(default=None)

## Private Member Functions

- def [\\_basic\\_track](#) (self, kwargs)

## Static Private Attributes

- tuple [\\_updatedNames](#) = set()
- [\\_typeHandlerCode](#) = gdb.TYPE\_CODE\_ERROR

### 6.120.1 Detailed Description

Definition at line 79 of file models.py.

### 6.120.2 Constructor & Destructor Documentation

#### 6.120.2.1 def memoryoracle.models.Typed.\_\_init\_\_( self, args, kwargs )

Definition at line 143 of file models.py.

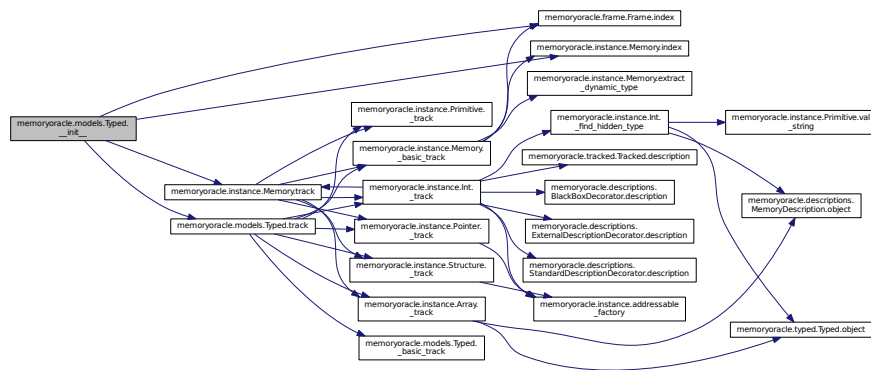
References [memoryoracle.instance.Memory.\\_watchers](#), [memoryoracle.models.Memory.\\_watchers](#), [memoryoracle.instance.Call.\\_watchers](#), [memoryoracle.instance.Structure.\\_watchers](#), [memoryoracle.instance.Array.\\_watchers](#), [memoryoracle.instance.Pointer.\\_watchers](#), [memoryoracle.instance.Int.\\_watchers](#), [memoryoracle.instance.Float.\\_watchers](#), [memoryoracle.models.Typed.args](#), [memoryoracle.frame.Frame.index\(\)](#), [memoryoracle.instance.Memory.index\(\)](#), [memoryoracle.instance.Memory.track\(\)](#), and [memoryoracle.models.Typed.track\(\)](#).

```

143     def __init__(self, *args, **kwargs):
144
145         if len(args) > 0:
146             raise Exception("Only keyword values allowed in __init__!")
147
148         self.track(self, **kwargs)
149         super(Typed, self).__init__(*args, **self.args)
150         self._watchers[self.index] = InstanceWatcher(self)
151

```

Here is the call graph for this function:



### 6.120.3 Member Function Documentation

#### 6.120.3.1 def memoryoracle.models.Typed.\_basic\_track ( self, kwargs ) [private]

Definition at line 103 of file models.py.

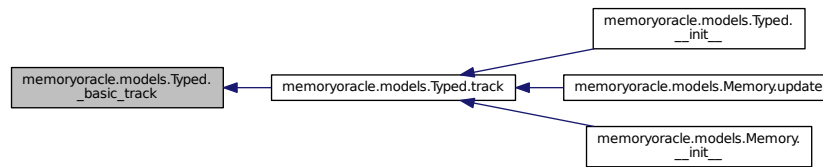
Referenced by memoryoracle.models.Typed.track().

```

103     def _basic_track(self, **kwargs):
104
105         self.args = deepcopy(kwargs)
106
107         if kwargs["name"] in self._updatedNames:
108             self.args["update"] = False
109             return self.args["update"]
110
111         self._updatedNames.add(kwargs["name"])
112
113         if isinstance(kwargs["type"], gdb.Type):
114             self.args["type"] = str(typ)
115
116         if isinstance(kwargs["description"], Description):
117             self.args["description"] = kwargs["description"].dict
118
119         if isinstance(kwargs["data"], gdb.Value):
120             self.args["data"] = dict()
121             self.debuggee_data = kwargs["data"]
122
123         if isinstance(self.args["data"], dict):
124             self.debuggee_data = None
125         else:
126             raise DataError(
127                 "Invalid data field! Must be dictionary or gdb.Value")
128
129         if self.index(self.args) not in self._updateTracker:
130             self._updateTracker.add(self.args["index"])
131             # self.repository[self.index][self.name] = self.description.dict
132             self.args["description"] = self.args["description"].dict
133             self.args["update"] = True
134         else:
135             self.args["update"] = False
136
137         return self.args["update"]
138

```

Here is the caller graph for this function:



### 6.120.3.2 def memoryoracle.models.Typed.gdb\_type ( self )

Definition at line 161 of file models.py.

References memoryoracle.models.Typed.data.

```

161     def gdb_type(self):
162         return json.loads(self.data) ["type"]
163
164

```

### 6.120.3.3 def memoryoracle.models.Typed.track ( self, kwargs )

Definition at line 139 of file models.py.

References memoryoracle.models.Typed.\_basic\_track(), memoryoracle.instance.Memory.\_basic\_track(), memoryoracle.instance.Structure.\_track(), memoryoracle.instance.Array.\_track(), memoryoracle.instance.Primitive.\_track(), memoryoracle.instance.Pointer.\_track(), and memoryoracle.instance.Int.\_track().

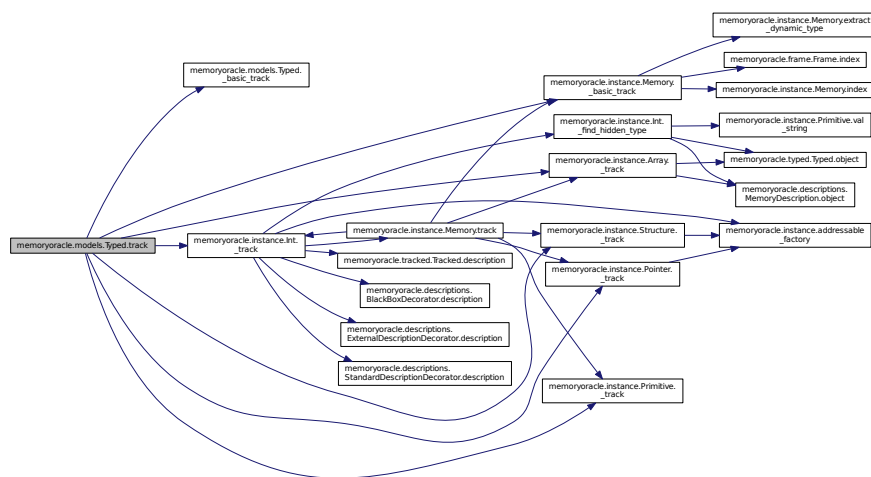
Referenced by memoryoracle.models.Typed.\_\_init\_\_(), memoryoracle.models.Memory.\_\_init\_\_(), and memoryoracle.models.Memory.update().

```

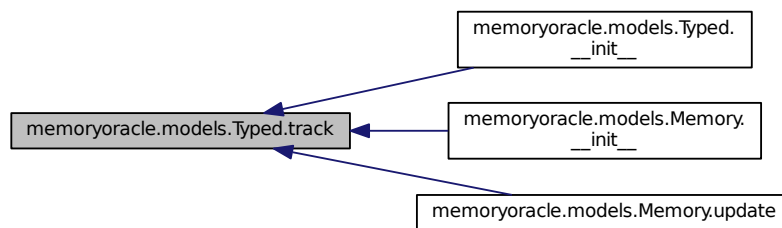
139     def track(self, **kwargs):
140         if self._basic_track(**kwargs):
141             self._track()
142

```

Here is the call graph for this function:



Here is the caller graph for this function:



#### 6.120.3.4 def memoryoracle.models.Typed.type\_code ( self )

Definition at line 157 of file models.py.

```

157     def type_code(self):
158         raise NotImplementedError("Abstract class Typed has no type code")
159 
```

#### 6.120.3.5 def memoryoracle.models.Typed.type\_handler ( ) [static]

Definition at line 153 of file models.py.

References memoryoracle.models.Typed.\_typeHandlerCode, memoryoracle.instance.Call.\_typeHandler↵  
Code, memoryoracle.instance.Structure.\_typeHandlerCode, memoryoracle.instance.Array.\_typeHandler↵  
Code, memoryoracle.instance.Pointer.\_typeHandlerCode, memoryoracle.instance.Int.\_typeHandlerCode, and  
memoryoracle.instance.Float.\_typeHandlerCode.

```

153     def type_handler():
154         return Typed._type_lookup(self._typeHandlerCode)
155 
```

### 6.120.4 Member Data Documentation

#### 6.120.4.1 memoryoracle.models.Typed.\_typeHandlerCode = gdb.TYPE\_CODE\_ERROR [static],[private]

Definition at line 101 of file models.py.

Referenced by memoryoracle.models.Typed.type\_handler().

#### 6.120.4.2 tuple memoryoracle.models.Typed.\_updatedNames = set() [static],[private]

Definition at line 86 of file models.py.

#### 6.120.4.3 memoryoracle.models.Typed.args

Definition at line 105 of file models.py.

Referenced by memoryoracle.models.Typed.\_\_init\_\_().

6.120.4.4 tuple `memoryoracle.models.Typed.data = models.JSONField(default=None)` `[static]`

Definition at line 84 of file `models.py`.

Referenced by `memoryoracle.models.Typed.gdb_type()`.

6.120.4.5 `memoryoracle.models.Typed.debuggee_data`

Definition at line 121 of file `models.py`.

6.120.4.6 tuple `memoryoracle.models.Typed.description = models.JSONField(default=None)` `[static]`

Definition at line 83 of file `models.py`.

Referenced by `memoryoracle.instance.Int._track()`.

6.120.4.7 tuple `memoryoracle.models.Typed.id_execution = models.ForeignKey(Execution)` `[static]`

Definition at line 81 of file `models.py`.

6.120.4.8 tuple `memoryoracle.models.Typed.type = models.TextField()` `[static]`

Definition at line 82 of file `models.py`.

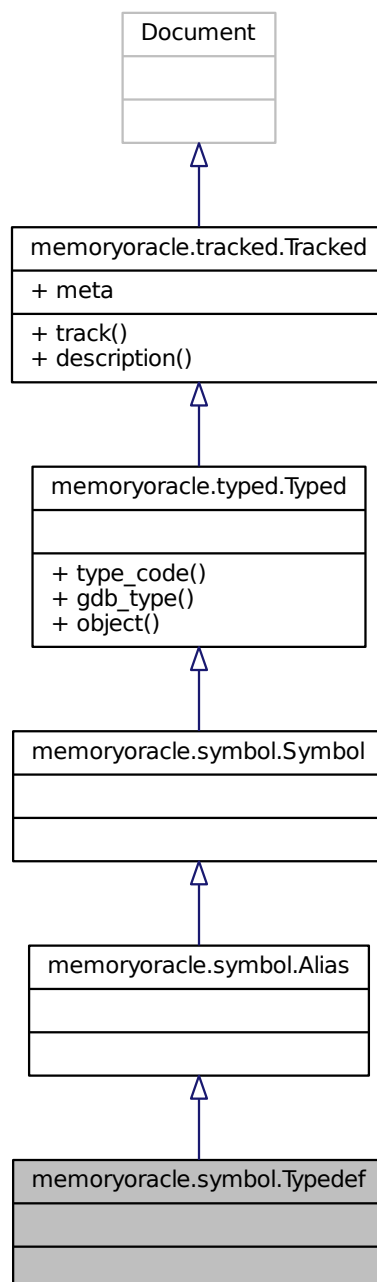
The documentation for this class was generated from the following file:

- `memoryoracle/models.py`

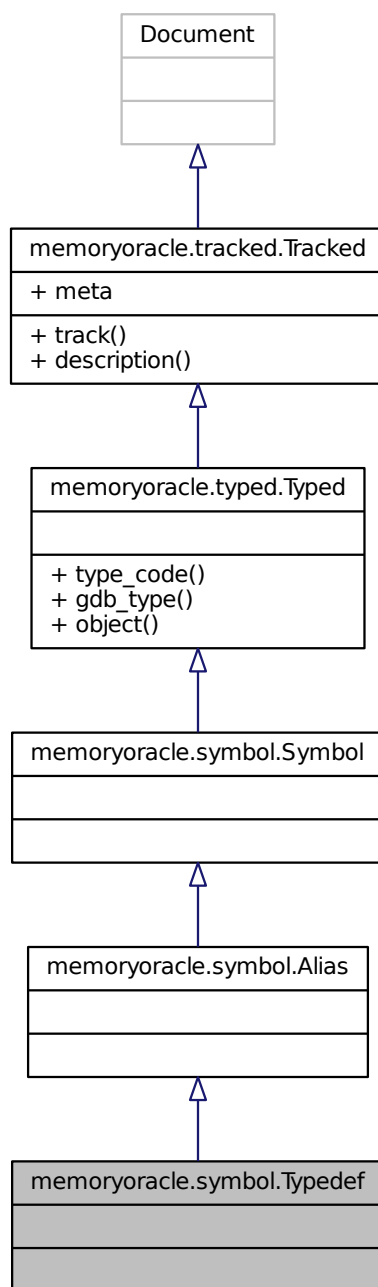


## 6.121 memoryoracle.symbol.Typedef Class Reference

Inheritance diagram for memoryoracle.symbol.Typedef:



Collaboration diagram for memoryoracle.symbol.Typedef:



## Additional Inherited Members

### 6.121.1 Detailed Description

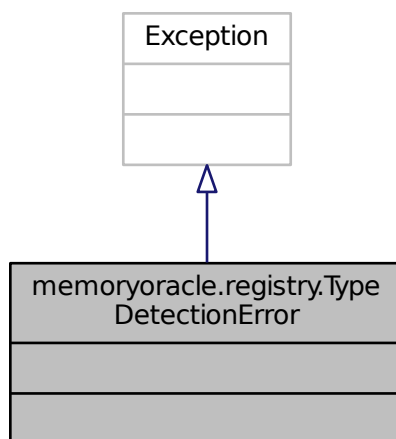
Definition at line 48 of file `symbol.py`.

The documentation for this class was generated from the following file:

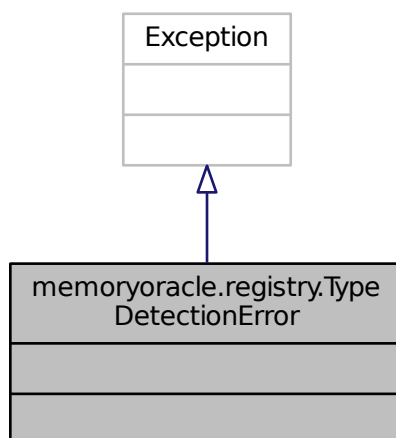
- [memoryoracle/symbol.py](#)

## 6.122 memoryoracle.registry.TypeDetectionError Class Reference

Inheritance diagram for memoryoracle.registry.TypeDetectionError:



Collaboration diagram for memoryoracle.registry.TypeDetectionError:



### 6.122.1 Detailed Description

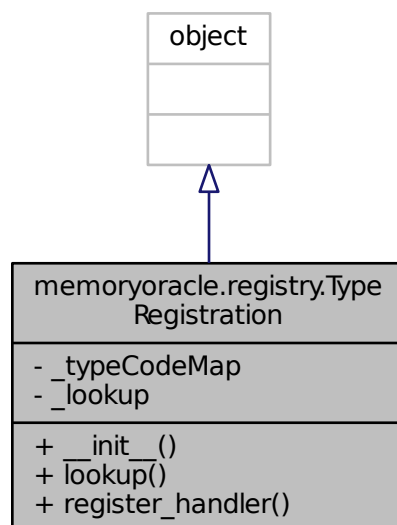
Definition at line 8 of file registry.py.

The documentation for this class was generated from the following file:

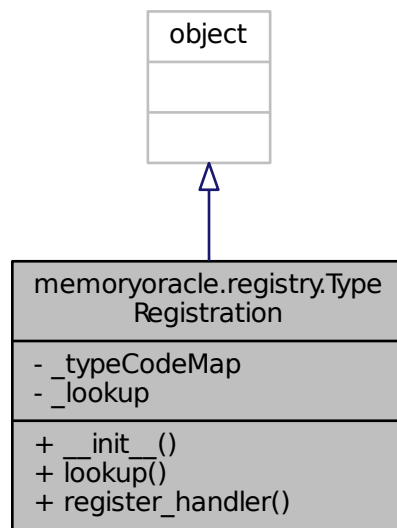
- `memoryoracle/registry.py`

### 6.123 `memoryoracle.registry.TypeRegistration` Class Reference

Inheritance diagram for `memoryoracle.registry.TypeRegistration`:



Collaboration diagram for memoryoracle.registry.TypeRegistration:



## Public Member Functions

- def `__init__` (self, handler)
- def `lookup` (self)
- def `register_handler` (cls, handler)

## Static Private Attributes

- dictionary `_typeCodeMap` = {gdb.TYPE\_CODE\_ERROR: `TypeDetectionError`}
- dictionary `_lookup`

### 6.123.1 Detailed Description

*\*Concrete\** class to register discovered debuggee types for lookup.

Definition at line 12 of file registry.py.

### 6.123.2 Constructor & Destructor Documentation

#### 6.123.2.1 def memoryoracle.registry.TypeRegistration.\_\_init\_\_( self, handler )

Definition at line 43 of file registry.py.

References `memoryoracle.registry.TypeRegistration.register_handler()`.

```

43     def __init__(self, handler):
44         self.register_handler(handler)
45 
```

Here is the call graph for this function:



### 6.123.3 Member Function Documentation

#### 6.123.3.1 def memoryoracle.registry.TypeRegistration.lookup ( self )

Definition at line 47 of file registry.py.

References memoryoracle.registry.TypeRegistration.\_lookup.

```

47     def lookup(self):
48         return self._lookup
49 
```

#### 6.123.3.2 def memoryoracle.registry.TypeRegistration.register\_handler ( cls, handler )

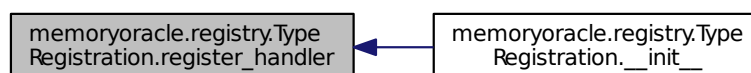
Definition at line 51 of file registry.py.

Referenced by memoryoracle.registry.TypeRegistration.\_\_init\_\_().

```

51     def register_handler(cls, handler):
52
53         if not isinstance(handler, typed.Typed):
54             raise ValueError("Type handler must be a Typed object")
55
56         if not cls._typeCodeMap.get(handler._typeHandlerCode):
57             cls._typeCodeMap[handler._typeHandlerCode] = handler
58             print("Registered type code handler " + str(handler))
59         else:
60             error = "Type code already in use: "
61             error += "code: " + str(handler._typeHandlerCode)
62             error += ", handler: " + str(handler) + "\n"
63             raise KeyError(error)
64 
```

Here is the caller graph for this function:



### 6.123.4 Member Data Documentation

#### 6.123.4.1 dictionary memoryoracle.registry.TypeRegistration.\_lookup [static], [private]

Initial value:

```
1 = {
2     gdb.TYPE_CODE_PTR: "Pointer",
3     gdb.TYPE_CODE_ARRAY: "Array",
4     gdb.TYPE_CODE_STRUCT: "Struct",
5     gdb.TYPE_CODE_UNION: "Union",
6     gdb.TYPE_CODE_ENUM: "Enum",
7     gdb.TYPE_CODE_FUNC: "Function",
8     gdb.TYPE_CODE_INT: "Int",
9     gdb.TYPE_CODE_FLT: "Float",
10    gdb.TYPE_CODE_VOID: "Void",
11    gdb.TYPE_CODE_STRING: "String",
12    gdb.TYPE_CODE_ERROR: "TypeDetectionError",
13    gdb.TYPE_CODE_METHOD: "Method",
14    gdb.TYPE_CODE_METHODPTR: "MethodPointer",
15    gdb.TYPE_CODE_MEMBERPTR: "MemberPointer",
16    gdb.TYPE_CODE_REF: "Reference",
17    gdb.TYPE_CODE_CHAR: "Character",
18    gdb.TYPE_CODE_BOOL: "Bool",
19    gdb.TYPE_CODE_COMPLEX: "ComplexFloat",
20    gdb.TYPE_CODE_TYPEDEF: "AliasedAddressable",
21    gdb.TYPE_CODE_NAMESPACE: "Namespace",
22    gdb.TYPE_CODE_INTERNAL_FUNCTION: "DebuggerFunction",
23 }
```

Definition at line 19 of file registry.py.

Referenced by memoryoracle.registry.TypeRegistration.lookup().

#### 6.123.4.2 dictionary memoryoracle.registry.TypeRegistration.\_typeCodeMap = {gdb.TYPE\_CODE\_ERROR: TypeDetectionError} [static],[private]

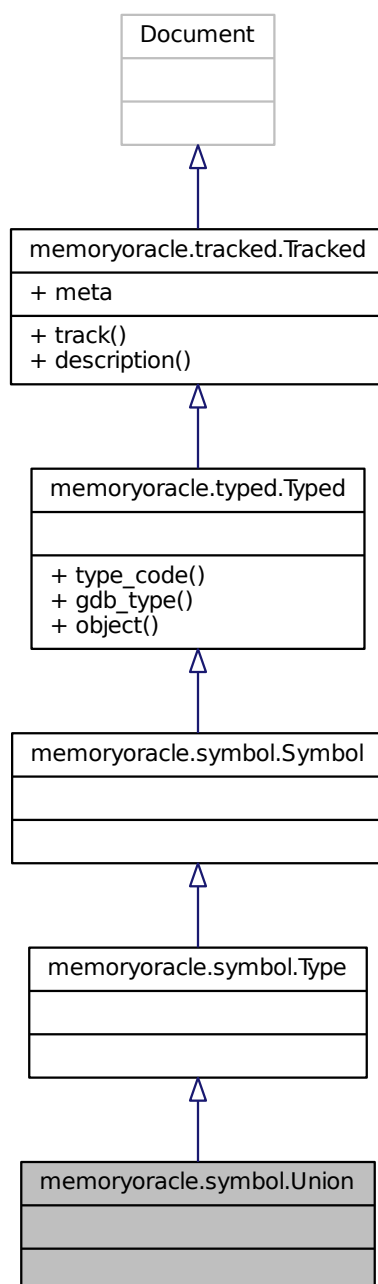
Definition at line 17 of file registry.py.

The documentation for this class was generated from the following file:

- [memoryoracle/registry.py](#)

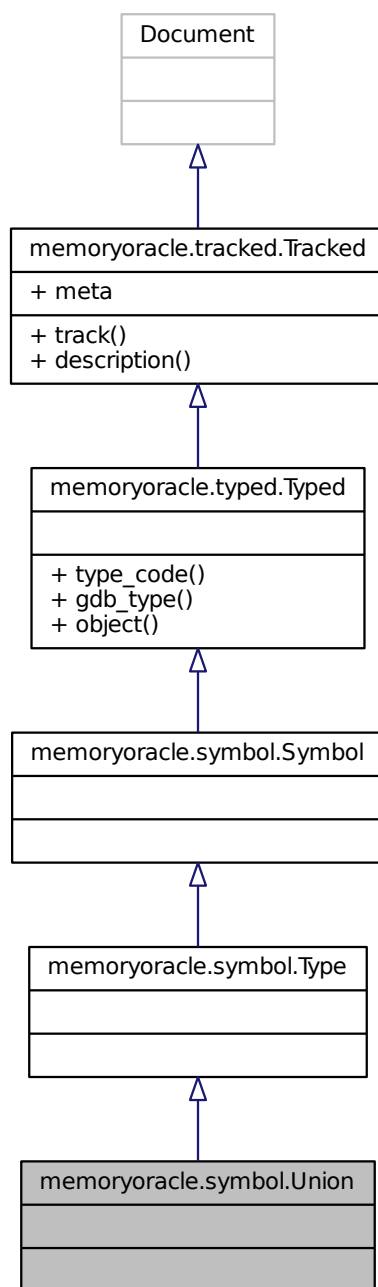
## 6.124 memoryoracle.symbol.Union Class Reference

Inheritance diagram for memoryoracle.symbol.Union:





Collaboration diagram for memoryoracle.symbol.Union:



## Additional Inherited Members

### 6.124.1 Detailed Description

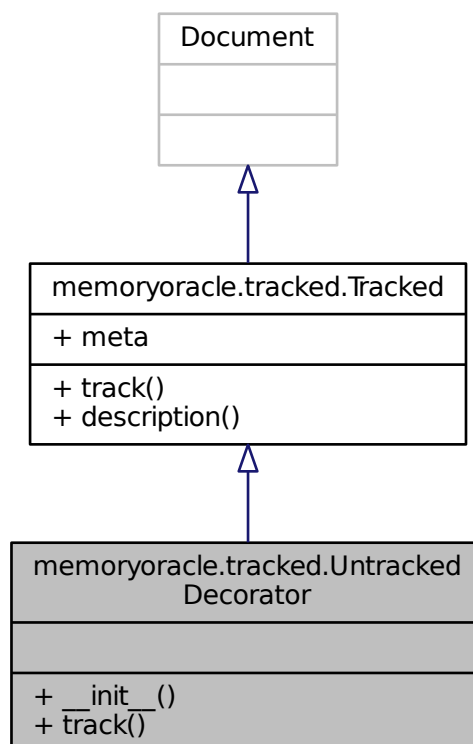
Definition at line 36 of file `symbol.py`.

The documentation for this class was generated from the following file:

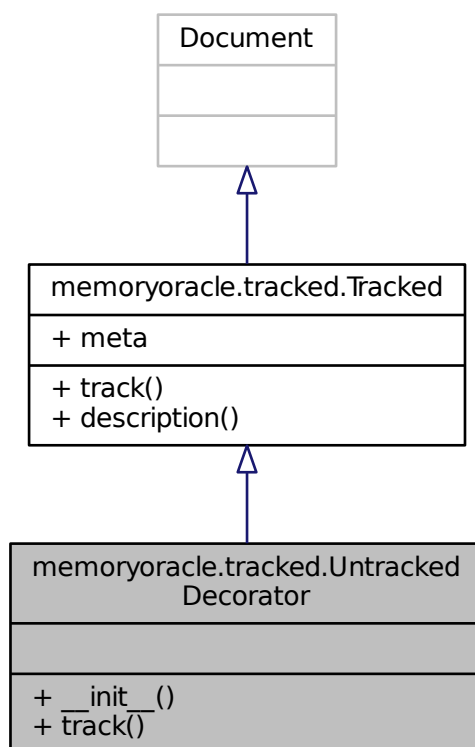
- [memoryoracle/symbol.py](#)

## 6.125 memoryoracle.tracked.UntrackedDecorator Class Reference

Inheritance diagram for memoryoracle.tracked.UntrackedDecorator:



Collaboration diagram for memoryoracle.tracked.UntrackedDecorator:



## Public Member Functions

- `def __init__ (self, args, kwargs)`
- `def track (self)`

## Additional Inherited Members

### 6.125.1 Detailed Description

*\*Decorator\** anti-class to essentially turn off the behavior of the parent.

Use this class when an object would normally be tracked, but you do not wish it to be.

Definition at line 94 of file `tracked.py`.

### 6.125.2 Constructor & Destructor Documentation

6.125.2.1 `def memoryoracle.tracked.UntrackedDecorator.__init__ ( self, args, kwargs )`

Definition at line 102 of file `tracked.py`.

```
102     def __init__(self, *args, **kwargs):
103         pass
104
```

### 6.125.3 Member Function Documentation

#### 6.125.3.1 def memoryoracle.tracked.UntrackedDecorator.track ( self )

Definition at line 105 of file tracked.py.

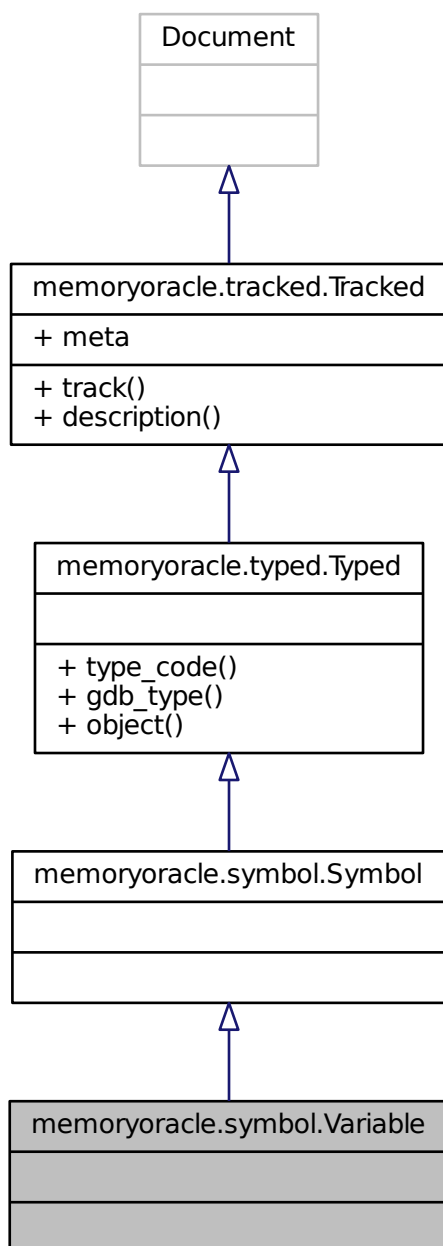
```
105     def track(self):
106         pass
107
108
109
```

The documentation for this class was generated from the following file:

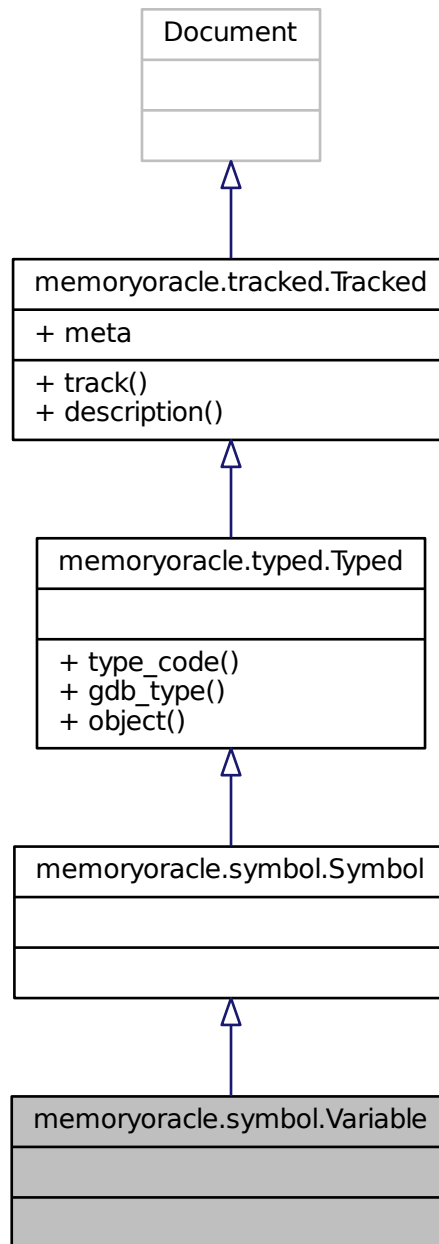
- [memoryoracle/tracked.py](#)

## 6.126 memoryoracle.symbol.Variable Class Reference

Inheritance diagram for memoryoracle.symbol.Variable:



Collaboration diagram for memoryoracle.symbol.Variable:



## Additional Inherited Members

### 6.126.1 Detailed Description

*\*Concrete\** class to track a variable in the debuggee.

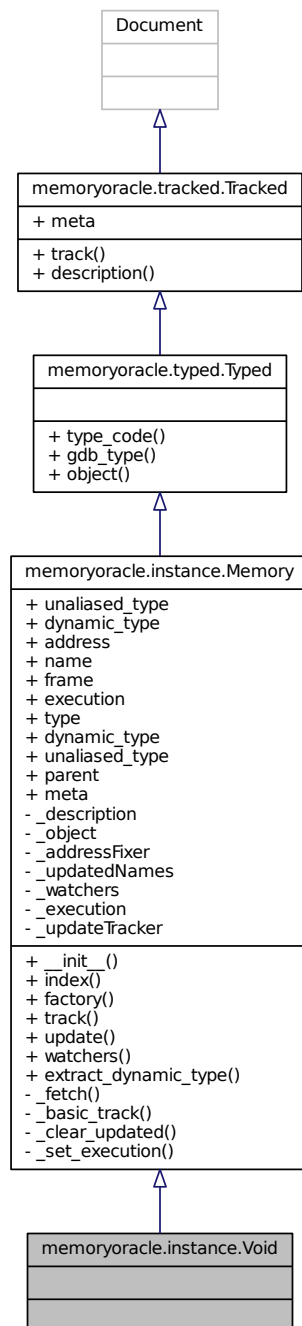
Definition at line 14 of file `symbol.py`.

The documentation for this class was generated from the following file:

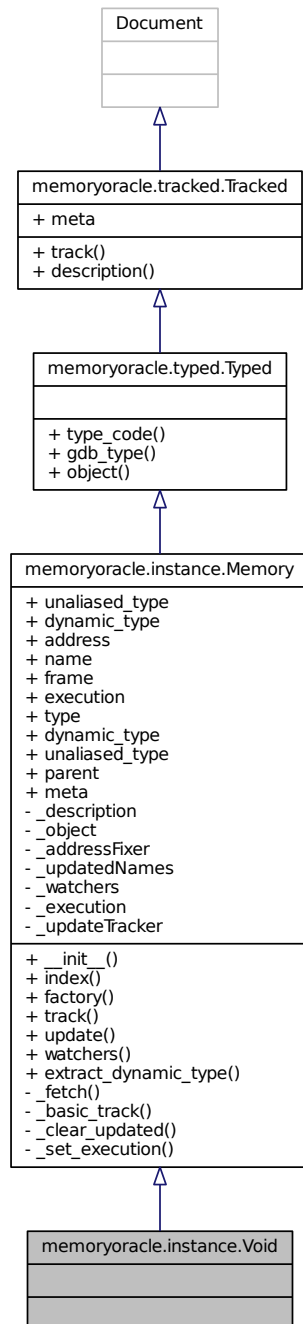
- [memoryoracle/symbol.py](#)

## 6.127 memoryoracle.instance.Void Class Reference

Inheritance diagram for memoryoracle.instance.Void:



Collaboration diagram for memoryoracle.instance.Void:



## Additional Inherited Members

### 6.127.1 Detailed Description

\*Concrete\* class to describe an object of the type void

Definition at line 479 of file instance.py.

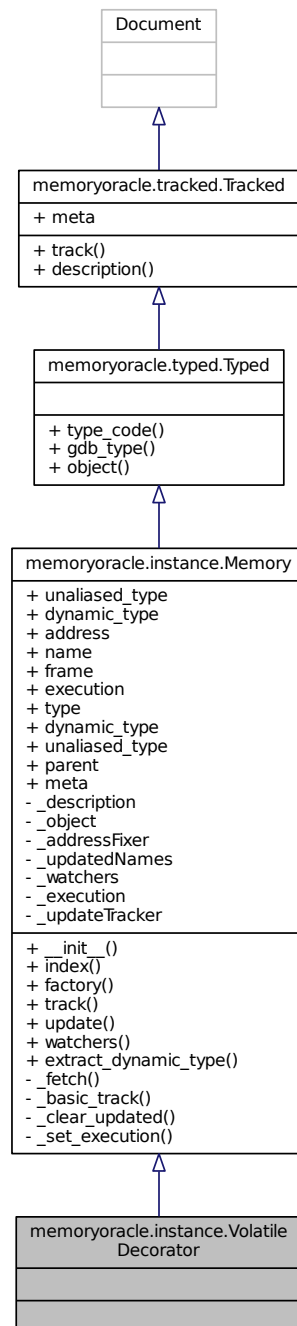


The documentation for this class was generated from the following file:

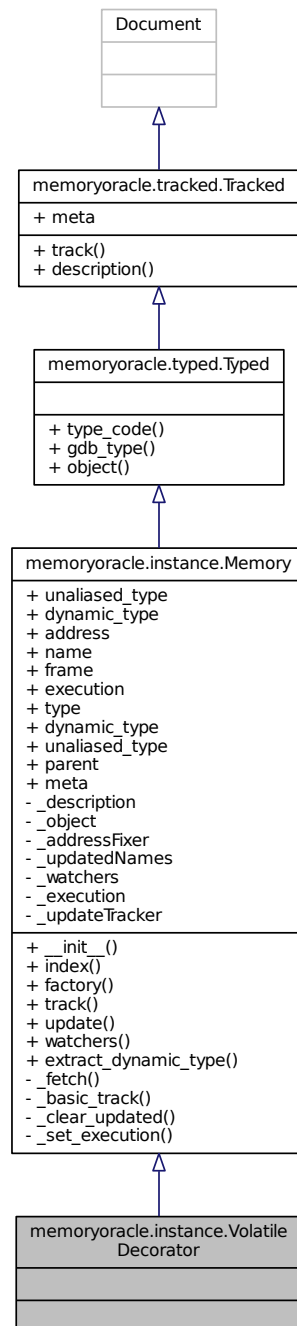
- [memoryoracle/instance.py](#)

## 6.128 memoryoracle.instance.VolatileDecorator Class Reference

Inheritance diagram for memoryoracle.instance.VolatileDecorator:



Collaboration diagram for memoryoracle.instance.VolatileDecorator:



## Additional Inherited Members

### 6.128.1 Detailed Description

\*Decorator\* class to indicate an addressable is volatile.

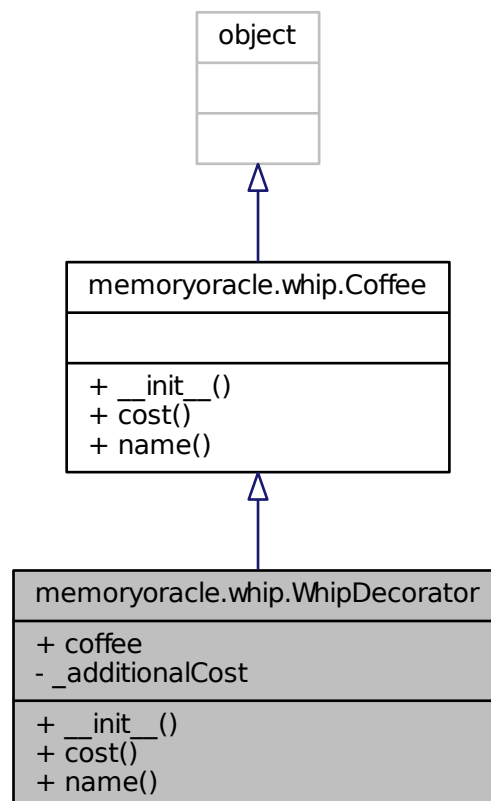
Definition at line 234 of file instance.py.

The documentation for this class was generated from the following file:

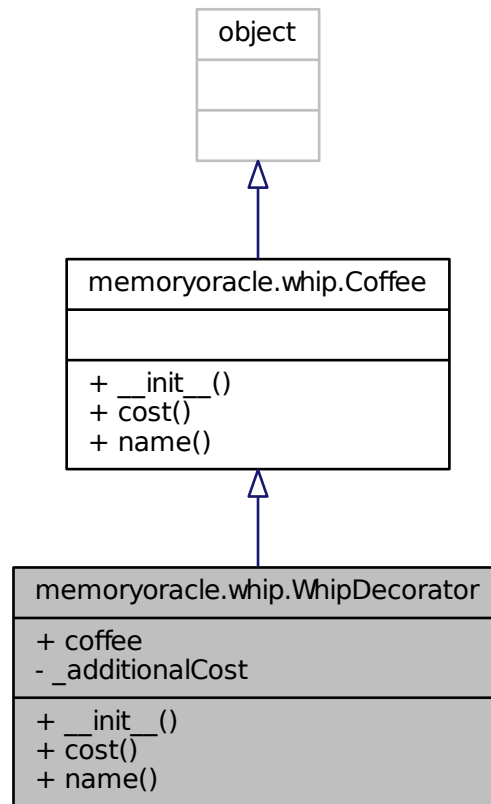
- memoryoracle/[instance.py](#)

## 6.129 memoryoracle.whip.WhipDecorator Class Reference

Inheritance diagram for memoryoracle.whip.WhipDecorator:



Collaboration diagram for memoryoracle.whip.WhipDecorator:



### Public Member Functions

- def `__init__`(self, `coffee`)
- def `cost`(self)
- def `name`(self)

### Public Attributes

- `coffee`

### Static Private Attributes

- float `_additionalCost` = 0.35

### 6.129.1 Detailed Description

Definition at line 17 of file `whip.py`.

## 6.129.2 Constructor & Destructor Documentation

### 6.129.2.1 def memoryoracle.whip.WhipDecorator.\_\_init\_\_( self, coffee )

Definition at line 21 of file whip.py.

```
21     def __init__(self, coffee):
22         self.coffee = coffee
23
```

## 6.129.3 Member Function Documentation

### 6.129.3.1 def memoryoracle.whip.WhipDecorator.cost( self )

Definition at line 24 of file whip.py.

```
24     def cost(self):
25         return WhipDecorator._additionalCost + self.coffee.cost()
26
```

### 6.129.3.2 def memoryoracle.whip.WhipDecorator.name( self )

Definition at line 27 of file whip.py.

```
27     def name(self):
28         return self.coffee.name() + ", whip"
29
30
```

## 6.129.4 Member Data Documentation

### 6.129.4.1 float memoryoracle.whip.WhipDecorator.\_additionalCost = 0.35 [static], [private]

Definition at line 19 of file whip.py.

### 6.129.4.2 memoryoracle.whip.WhipDecorator.coffee

Definition at line 22 of file whip.py.

The documentation for this class was generated from the following file:

- memoryoracle/[whip.py](#)



## Chapter 7

# File Documentation

### 7.1 `memoryoracle/__init__.py` File Reference

#### Namespaces

- `memoryoracle`

#### Variables

- `memoryoracle.read_preference = \`

### 7.2 `memoryoracle/migrations/__init__.py` File Reference

#### Namespaces

- `memoryoracle.migrations`

### 7.3 `memoryoracle/container.py` File Reference

#### Classes

- class `memoryoracle.container.Container`
- class `memoryoracle.container.SLContainer`
- class `memoryoracle.container.SLForwardList`
- class `memoryoracle.container.SLList`
- class `memoryoracle.container.SLMap`
- class `memoryoracle.container.SLQueue`
- class `memoryoracle.container.SLSet`
- class `memoryoracle.container.SLStack`
- class `memoryoracle.container.SLUnorderedMap`
- class `memoryoracle.container.SLUnorderedSet`
- class `memoryoracle.container.SLVector`
- class `memoryoracle.container.SLArray`
- class `memoryoracle.container.SLBitset`
- class `memoryoracle.container.SLDeque`

## Namespaces

- [memoryoracle.container](#)

## 7.4 memoryoracle/descriptions.py File Reference

### Classes

- class [memoryoracle.descriptions.Description](#)
- class [memoryoracle.descriptions.BlackBoxDecorator](#)
- class [memoryoracle.descriptions.ExternalDescriptionDecorator](#)
- class [memoryoracle.descriptions.StandardDescriptionDecorator](#)
- class [memoryoracle.descriptions.FileDescription](#)
- class [memoryoracle.descriptions.SourceFileDescription](#)
- class [memoryoracle.descriptions.ObjectFileDescription](#)
- class [memoryoracle.descriptions.MemoryDescription](#)

### Namespaces

- [memoryoracle.descriptions](#)

## 7.5 memoryoracle/execution.py File Reference

### Classes

- class [memoryoracle.execution.Instance](#)
- class [memoryoracle.execution.Execution](#)
- class [memoryoracle.execution.Executable](#)
- class [memoryoracle.execution.Commit](#)

### Namespaces

- [memoryoracle.execution](#)

### Variables

- tuple [memoryoracle.execution.connection](#)
- [memoryoracle.execution.db](#) = [connection.memoryoracle](#)
- tuple [memoryoracle.execution.commit](#) = [Commit\(\)](#)
- tuple [memoryoracle.execution.executable](#) = [Executable\(\)](#)
- tuple [memoryoracle.execution.execution](#) = [Execution\(\)](#)
- tuple [memoryoracle.execution.instance](#) = [Instance\(name="some\\_memory"\)](#)

## 7.6 memoryoracle/frame.py File Reference

### Classes

- class [memoryoracle.frame.Frame](#)
- class [memoryoracle.frame.Selector](#)



## Namespaces

- [memoryoracle.frame](#)

## 7.7 memoryoracle/instance.py File Reference

### Classes

- class [memoryoracle.instance.Memory](#)
- class [memoryoracle.instance.Memory.DuplicateAddress](#)
- class [memoryoracle.instance.Call](#)
- class [memoryoracle.instance.Structure](#)
- class [memoryoracle.instance.VolatileDecorator](#)
- class [memoryoracle.instance.RegisterDecorator](#)
- class [memoryoracle.instance.ExternDecorator](#)
- class [memoryoracle.instance.MemberDecorator](#)
- class [memoryoracle.instance.Array](#)
- class [memoryoracle.instance.Primitive](#)
- class [memoryoracle.instance.Pointer](#)
- class [memoryoracle.instance.Int](#)
- class [memoryoracle.instance.Float](#)
- class [memoryoracle.instance.CharString](#)
- class [memoryoracle.instance.ConstDecorator](#)
- class [memoryoracle.instance.StaticDecorator](#)
- class [memoryoracle.instance.Void](#)
- class [memoryoracle.instance.MemoryWatcher](#)
- class [memoryoracle.instance.StateSerializer](#)

### Namespaces

- [memoryoracle.instance](#)

### Functions

- def [memoryoracle.instance.addressable\\_factory](#) (description)
- def [memoryoracle.instance.get\\_frame\\_symbols](#)
- def [memoryoracle.instance.serialize\\_frame\\_globals](#)
- def [memoryoracle.instance.serialize\\_upward](#)
- def [memoryoracle.instance.serialize\\_block\\_locals](#)
- def [memoryoracle.instance.serialize\\_frame\\_locals](#)
- def [memoryoracle.instance.target\\_type\\_name](#) (t)
- def [memoryoracle.instance.stopped](#) (event)

### Variables

- tuple [memoryoracle.instance.connection](#)
- [memoryoracle.instance.db](#) = connection.memoryoracle
- tuple [memoryoracle.instance.frameDescription](#) = descriptions.MemoryDescription("yourframe")
- tuple [memoryoracle.instance.f](#) = frame.Frame(gdb.selected\_frame())
- tuple [memoryoracle.instance.e](#) = execution.Execution()
- tuple [memoryoracle.instance.d](#) = descriptions.MemoryDescription("a", address="1", execution=e)
- tuple [memoryoracle.instance.x](#) = Float.factory(descript=d)

## 7.8 memoryoracle/migrations/0001\_initial.py File Reference

### Classes

- class [memoryoracle.migrations.0001\\_initial.Migration](#)

### Namespaces

- [memoryoracle.migrations.0001\\_initial](#)

## 7.9 memoryoracle/migrations/0002\_auto\_20150402\_2000.py File Reference

### Classes

- class [memoryoracle.migrations.0002\\_auto\\_20150402\\_2000.Migration](#)

### Namespaces

- [memoryoracle.migrations.0002\\_auto\\_20150402\\_2000](#)

## 7.10 memoryoracle/migrations/0003\_auto\_20150402\_2000.py File Reference

### Classes

- class [memoryoracle.migrations.0003\\_auto\\_20150402\\_2000.Migration](#)

### Namespaces

- [memoryoracle.migrations.0003\\_auto\\_20150402\\_2000](#)

## 7.11 memoryoracle/migrations/0004\_auto\_20150402\_2000.py File Reference

### Classes

- class [memoryoracle.migrations.0004\\_auto\\_20150402\\_2000.Migration](#)

### Namespaces

- [memoryoracle.migrations.0004\\_auto\\_20150402\\_2000](#)

## 7.12 memoryoracle/migrations/0005\_auto\_20150403\_0100.py File Reference

### Classes

- class [memoryoracle.migrations.0005\\_auto\\_20150403\\_0100.Migration](#)

## Namespaces

- [memoryoracle.migrations.0005\\_auto\\_20150403\\_0100](#)

## 7.13 memoryoracle/migrations/0006\_program\_path.py File Reference

### Classes

- class [memoryoracle.migrations.0006\\_program\\_path.Migration](#)

### Namespaces

- [memoryoracle.migrations.0006\\_program\\_path](#)

## 7.14 memoryoracle/migrations/0007\_auto\_20150403\_0248.py File Reference

### Classes

- class [memoryoracle.migrations.0007\\_auto\\_20150403\\_0248.Migration](#)

### Namespaces

- [memoryoracle.migrations.0007\\_auto\\_20150403\\_0248](#)

## 7.15 memoryoracle/models.py File Reference

### Classes

- class [memoryoracle.models.Schema](#)
- class [memoryoracle.models.Tracked](#)
- class [memoryoracle.models.Tracked.Meta](#)
- class [memoryoracle.models.Program](#)
- class [memoryoracle.models.Program.Meta](#)
- class [memoryoracle.models.Commit](#)
- class [memoryoracle.models.Commit.Meta](#)
- class [memoryoracle.models.Executable](#)
- class [memoryoracle.models.Executable.Meta](#)
- class [memoryoracle.models.Execution](#)
- class [memoryoracle.models.Execution.Meta](#)
- class [memoryoracle.models.Typed](#)
- class [memoryoracle.models.Typed.Meta](#)
- class [memoryoracle.models.Typed.DetectionError](#)
- class [memoryoracle.models.Typed.DataError](#)
- class [memoryoracle.models.Memory](#)
- class [memoryoracle.models.Memory.Meta](#)
- class [memoryoracle.models.ProgramFile](#)
- class [memoryoracle.models.ProgramFile.Meta](#)
- class [memoryoracle.models.ObjectFile](#)
- class [memoryoracle.models.ObjectFile.Meta](#)
- class [memoryoracle.models.SourceFile](#)

- class [memoryoracle.models.SourceFile.Meta](#)
- class [memoryoracle.models.Symbol](#)
- class [memoryoracle.models.Symbol.Meta](#)
- class [memoryoracle.models.Type](#)
- class [memoryoracle.models.Type.Meta](#)

## Namespaces

- [memoryoracle.models](#)

## 7.16 memoryoracle/registry.py File Reference

### Classes

- class [memoryoracle.registry.TypeDetectionError](#)
- class [memoryoracle.registry.TypeRegistration](#)

### Namespaces

- [memoryoracle.registry](#)

## 7.17 memoryoracle/settings.py File Reference

### Namespaces

- [memoryoracle.settings](#)

### Variables

- tuple [memoryoracle.settings.BASE\\_DIR](#) = `os.path.dirname(os.path.dirname(__file__))`
- string [memoryoracle.settings.SECRET\\_KEY](#) = `'w=6vi9p_z8ik%0(843=zmjv*$5qc$kf_g!lo5-vqy1nd+e368b'`
- [memoryoracle.settings.DEBUG](#) = `True`
- [memoryoracle.settings.TEMPLATE\\_DEBUG](#) = `True`
- list [memoryoracle.settings.ALLOWED\\_HOSTS](#) = `[]`
- tuple [memoryoracle.settings.INSTALLED\\_APPS](#)
- tuple [memoryoracle.settings.MIDDLEWARE\\_CLASSES](#)
- string [memoryoracle.settings.ROOT\\_URLCONF](#) = `'memoryoracle.urls'`
- string [memoryoracle.settings.WSGI\\_APPLICATION](#) = `'memoryoracle.wsgi.application'`
- dictionary [memoryoracle.settings.DATABASES](#)
- string [memoryoracle.settings.LANGUAGE\\_CODE](#) = `'en-us'`
- string [memoryoracle.settings.TIME\\_ZONE](#) = `'UTC'`
- [memoryoracle.settings.USE\\_I18N](#) = `True`
- [memoryoracle.settings.USE\\_L10N](#) = `True`
- [memoryoracle.settings.USE\\_TZ](#) = `True`
- string [memoryoracle.settings.STATIC\\_URL](#) = `'/static/'`

## 7.18 memoryoracle/symbol.py File Reference

### Classes

- class [memoryoracle.symbol.Symbol](#)
- class [memoryoracle.symbol.Variable](#)
- class [memoryoracle.symbol.Function](#)
- class [memoryoracle.symbol.Alias](#)
- class [memoryoracle.symbol.Type](#)
- class [memoryoracle.symbol.Union](#)
- class [memoryoracle.symbol.TemplateDecorator](#)
- class [memoryoracle.symbol.TemplatedDecorator](#)
- class [memoryoracle.symbol.Typedef](#)
- class [memoryoracle.symbol.Enum](#)
- class [memoryoracle.symbol.SimpleType](#)
- class [memoryoracle.symbol.Structure](#)
- class [memoryoracle.symbol.StronglyTypedEnum](#)
- class [memoryoracle.symbol.Namespace](#)

### Namespaces

- [memoryoracle.symbol](#)

## 7.19 memoryoracle/test\_models.py File Reference

### Classes

- class [memoryoracle.test\\_models.ModelTest](#)
- class [memoryoracle.test\\_models.ModelTestData](#)
- class [memoryoracle.test\\_models.ProgramTestData](#)
- class [memoryoracle.test\\_models.TestModelProgram](#)
- class [memoryoracle.test\\_models.CommitTestData](#)
- class [memoryoracle.test\\_models.TestModelCommit](#)
- class [memoryoracle.test\\_models.ExecutableTestData](#)
- class [memoryoracle.test\\_models.TestModelExecutable](#)
- class [memoryoracle.test\\_models.ExecutionTestData](#)
- class [memoryoracle.test\\_models.TestModelExecution](#)
- class [memoryoracle.test\\_models.MemoryTestData](#)
- class [memoryoracle.test\\_models.TestModelMemory](#)
- class [memoryoracle.test\\_models.ObjectFileTestData](#)
- class [memoryoracle.test\\_models.TestModelObjectFile](#)
- class [memoryoracle.test\\_models.SourceFileTestData](#)
- class [memoryoracle.test\\_models.TestModelSourceFile](#)
- class [memoryoracle.test\\_models.SymbolTestData](#)
- class [memoryoracle.test\\_models.TestModelSymbol](#)

### Namespaces

- [memoryoracle.test\\_models](#)

## 7.20 memoryoracle/tracked.py File Reference

### Classes

- class [memoryoracle.tracked.Tracked](#)
- class [memoryoracle.tracked.Owner](#)
- class [memoryoracle.tracked.Reference](#)
- class [memoryoracle.tracked.ProgramFile](#)
- class [memoryoracle.tracked.ObjectFile](#)
- class [memoryoracle.tracked.SourceFile](#)
- class [memoryoracle.tracked.UntrackedDecorator](#)

### Namespaces

- [memoryoracle.tracked](#)

### Variables

- [memoryoracle.tracked.read\\_preference](#) = \

## 7.21 memoryoracle/typed.py File Reference

### Classes

- class [memoryoracle.typed.Typed](#)

### Namespaces

- [memoryoracle.typed](#)

## 7.22 memoryoracle/urls.py File Reference

### Namespaces

- [memoryoracle.urls](#)

### Variables

- tuple [memoryoracle.urls.urlpatterns](#)

## 7.23 memoryoracle/watch.py File Reference

### Classes

- class [memoryoracle.watch.FrameFinish](#)
- class [memoryoracle.watch.AddressableWatcher](#)
- class [memoryoracle.watch.StateCatch](#)

## Namespaces

- [memoryoracle.watch](#)

## 7.24 memoryoracle/whip.py File Reference

### Classes

- class [memoryoracle.whip.Coffee](#)
- class [memoryoracle.whip.WhipDecorator](#)
- class [memoryoracle.whip.SugarDecorator](#)

### Namespaces

- [memoryoracle.whip](#)

### Functions

- def [memoryoracle.whip.coffee\\_factory](#) (toppingsList)

### Variables

- tuple [memoryoracle.whip.myCoffee](#) = [Coffee\(\)](#)
- tuple [memoryoracle.whip.myWhipCoffee](#) = [WhipDecorator\(Coffee\(\)\)](#)
- tuple [memoryoracle.whip.mySugarCoffee](#) = [SugarDecorator\(Coffee\(\)\)](#)
- tuple [memoryoracle.whip.myWhipSugarCoffee](#) = [WhipDecorator\(SugarDecorator\(Coffee\(\)\)\)](#)
- tuple [memoryoracle.whip.myWhipWhipSugarCoffee](#) = [WhipDecorator\(WhipDecorator\(SugarDecorator\(Coffee\(\)\)\)\)](#)
- list [memoryoracle.whip.topList](#) = ["whip", "whip", "double whip", "sugar", "sugar", "whip", "whip"]
- tuple [memoryoracle.whip.yourCoffee](#) = [coffee\\_factory\(topList\)](#)

## 7.25 memoryoracle/wsgi.py File Reference

### Namespaces

- [memoryoracle.wsgi](#)

### Variables

- tuple [memoryoracle.wsgi.application](#) = [get\\_wsgi\\_application\(\)](#)





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