
objectfactory

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objectfactory is a python package to easily implement the factory design pattern for object creation, serialization, and polymorphism

- designed to support polymorphism
- integrates seamlessly with [marshmallow](#) and other serialization frameworks
- schema inherent in class definition
- load any object with a generic interface
- serialize objects to JSON

QUICKSTART

objectfactory is a python package to easily implement the factory design pattern for object creation, serialization, and polymorphism

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- schema inherent in class definition
- load any object with a generic interface
- serialize objects to JSON

1.1 Example

Simple **shapes** example:

```
import objectfactory

@objectfactory.register
class Square( objectfactory.Serializable ):
    side = objectfactory.Field()

    def get_area( self ):
        return self.side * self.side

@objectfactory.register
class Triangle( objectfactory.Serializable ):
    base = objectfactory.Field()
    height = objectfactory.Field()

    def get_area( self ):
        return 0.5 * self.base * self.height

serialized_data = [
    { "_type": "Square", "side": 2.0 },
    { "_type": "Triangle", "base": 1.75, "height": 2.50 },
    { "_type": "Square", "side": 1.5 },
```

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```
]

for data in serialized_data:
    shape = objectfactory.create( data )
    print( 'class type: {}, shape area: {}'.format( type( shape ), shape.get_area() ) )
    ↵
```

Output:

```
class type: <class '__main__.Square'>, shape area: 4.0
class type: <class '__main__.Triangle'>, shape area: 2.1875
class type: <class '__main__.Square'>, shape area: 2.25
```

1.1.1 More examples

See more advanced examples [here](#)

1.2 Install

Use `pip` for installation

```
pip install objectfactory
```

1.3 Documentation

Read the full documentation at objectfactory.readthedocs.io

OBJECTFACTORY

objectfactory is a python package to easily implement the factory design pattern for object creation, serialization, and polymorphism

2.1 objectfactory.base

base module

implements abstract base classes for objectfactory

```
class objectfactory.base.FieldABC (default=None, key=None, required=False, allow_none=True)
```

Bases: `abc.ABC`

abstract base class for serializable field

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

```
abstract marshmallow ()
```

create generic marshmallow field to do actual serialization

Returns associated marshmallow field

```
class objectfactory.base.SerializableABC
```

Bases: `abc.ABC`

abstract base class for serializable object

```
abstract deserialize (body: dict)
```

deserialize model from dictionary

Parameters **body** – serialized data to load into object

```
abstract serialize (include_type: bool = True, use_full_type: bool = True)  $\rightarrow$  dict
```

serialize model to dictionary

Parameters

- **include_type** – if true, type information will be included in body
- **use_full_type** – if true, the fully qualified path will be specified in body

Returns serialized object as dict

2.2 objectfactory.factory

factory module

implements serializable object factory

class objectfactory.factory.**Factory** (*name*)

Bases: object

factory class for registering and creating serializable objects

create (*body*: dict, *object_type*: Type[T] = <class 'objectfactory.serializable.Serializable'>) → T
create object from dictionary

Parameters

- **body** – serialized object data
- **object_type** – (optional) specified object type

Raises **TypeError** – if the object is not an instance of the specified type

Returns deserialized object of specified type

register (*serializable*: objectfactory.serializable.Serializable)

decorator to register class with factory

Parameters **serializable** – serializable object class

Returns registered class

objectfactory.factory.**create** (*body*: dict, *object_type*: Type[T] = <class 'objectfactory.serializable.Serializable'>) → T
create object from dictionary with the global factory

Parameters

- **body** – serialized object data
- **object_type** – (optional) specified object type

Raises **TypeError** – if the object is not an instance of the specified type

Returns deserialized object of specified type

objectfactory.factory.**register** (*serializable*: objectfactory.serializable.Serializable)

decorator to register class with the global factory

Parameters **serializable** – serializable object class

Returns registered class

2.3 objectfactory.field

field module

implements serializable fields

class objectfactory.field.**Boolean** (*default=None, key=None, required=False, allow_none=True*)

Bases: *objectfactory.field.Field*

serializable field for boolean data

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

marshmallow ()

create generic marshmallow field to do actual serialization

Returns associated marshmallow field

class objectfactory.field.**Field** (*default=None, key=None, required=False, allow_none=True*)

Bases: *objectfactory.base.FieldABC*

base class for serializable field

this is a class level descriptor for abstracting access to fields of serializable objects

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

marshmallow ()

create generic marshmallow field to do actual serialization

Returns associated marshmallow field

class objectfactory.field.**Float** (*default=None, key=None, required=False, allow_none=True*)

Bases: *objectfactory.field.Field*

serializable field for float data

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

marshmallow ()

create generic marshmallow field to do actual serialization

Returns associated marshmallow field

class objectfactory.field.**Integer** (*default=None, key=None, required=False, allow_none=True*)

Bases: *objectfactory.field.Field*

serializable field for integer data

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

marshmallow ()

create generic marshmallow field to do actual serialization

Returns associated marshmallow field

class objectfactory.field.**List** (*default=None, key=None, field_type=None, required=False, allow_none=True*)

Bases: *objectfactory.field.Field*

field type for list of serializable objects

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **field_type** – specified type for list of nested objects
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

marshmallow ()

create generic marshmallow field to do actual serialization

Returns associated marshmallow field

class objectfactory.field.**Nested** (*default=None, key=None, field_type=None, required=False, allow_none=True*)

Bases: *objectfactory.field.Field*

field type for nested serializable object

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **field_type** – specified type for nested object
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

marshmallow ()

create generic marshmallow field to do actual serialization

Returns associated marshmallow field

class objectfactory.field.String (default=None, key=None, required=False, allow_none=True)
 Bases: *objectfactory.field.Field*

serializable field for string data

Parameters

- **default** – default value for field if unset
- **key** – dictionary key to use for field serialization
- **required** – whether this field is required to deserialize an object
- **allow_none** – whether null should be considered a valid value

marshmallow()
 create generic marshmallow field to do actual serialization

Returns associated marshmallow field

2.4 objectfactory.serializable

serializable module

implements base class and metaclass for serializable objects

class objectfactory.serializable.Meta (name, bases, attributes, schema=None)
 Bases: *abc.ABCMeta*

metaclass for serializable classes

this is a metaclass to be used for collecting relevant field information when defining a new serializable class

define a new serializable object class, collect and register all field descriptors, construct marshmallow schema

Parameters

- **name** – class name
- **bases** – list of base classes to inherit from
- **attributes** – dictionary of class attributes
- **schema** – (optional) predefined marshmallow schema

Returns newly defined class

class objectfactory.serializable.Serializable
 Bases: *objectfactory.base.SerializableABC*

base class for serializable objects

deserialize (body: dict)
 deserialize model from dictionary

Parameters **body** – serialized data to load into object

classmethod **from_dict** (body: dict)
 constructor to set data with dictionary

Parameters **body** – dictionary

Returns new instance of serializable object

classmethod from_kwargs (***kwargs*)
constructor to set field data by keyword args

Parameters **kwargs** – keyword arguments by field

Returns new instance of serializable object

serialize (*include_type: bool = True, use_full_type: bool = True*) → dict
serialize model to dictionary

Parameters

- **include_type** – if true, type information will be included in body
- **use_full_type** – if true, the fully qualified path will be specified in body

Returns serialized object as dict

- **genindex**

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