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# **CERC persistence reference manual**

*Release 0.1.0.2*

## **CERC Next-Generation Cities**

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## CERC PERSISTENCE' REFERENCE MANUAL

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### 1.3 About the PERSISTENCE

This document contains the essential documentation for the CERC PERSISTENCE, a set of classes, factories, and helpers that simplifies the research at urban scale in multiples domains; these components are designed around three central axes, **extensibility**, **code clarity** and **consistency** as we intend to allow domain experts to perform urban scale simulations with multiple programs and enrich the city from several data sources. PERSISTENCE is composed of four main components: **repositories** and **models**.

## 1.4 Folder structure

```

./cerc_persistence/cerc_persistence/
├── configuration.py
├── db_control.py
├── db_setup.py
├── __init__.py
├── models
│   ├── application.py
│   ├── city_object.py
│   ├── city.py
│   ├── __init__.py
│   ├── simulation_results.py
│   └── user.py
├── repositories
│   ├── application.py
│   ├── city_object.py
│   ├── city.py
│   ├── __init__.py
│   ├── simulation_results.py
│   └── user.py
├── repository.py
└── version.py
2 directories, 18 files

```

## 1.5 Model Classes

### 1.5.1 Application

```

class Application(name, description, application_uuid)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of an application

```

### 1.5.2 City

```

class City(pickle_path, name, scenario, application_id, user_id, hub_release)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of a city

```

### 1.5.3 CityObject

```

class CityObject(city_id, building)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of an application

```

### 1.5.4 SimulationResults

```

class SimulationResults(name, values, city_id=None, city_object_id=None)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of an application

```

### 1.5.5 User

```
class User (name, password, role, application_id)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of a city
```

### 1.5.6 UserRoles

```
class UserRoles (value)
Inherit: Enum
    User roles enum
```

## 1.6 Repository Classes

### 1.6.1 Application

```
class Application (name, description, application_uuid)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of an application
```

### 1.6.2 City

```
class City (pickle_path, name, scenario, application_id, user_id, hub_release)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of a city
```

### 1.6.3 CityObject

```
class CityObject (city_id, building)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of an application
```

### 1.6.4 SimulationResults

```
class SimulationResults (name, values, city_id=None, city_object_id=None)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of an application
```

### 1.6.5 User

```
class User (name, password, role, application_id)
Inherit: _DynamicAttributesType, Mapper\ [:obj:Any]
    A model representation of a city
```

## 1.7 Classes

### 1.7.1 Configuration

**class Configuration** (*db\_name: str, dotenv\_path: str, app\_env='TEST'*)  
 Configuration class to hold common cerc\_persistence configuration

### 1.7.2 DB Control

**class DBControl** (*db\_name, app\_env, dotenv\_path*)  
 DBFactory class

**add\_simulation\_results** (*name, values, city\_id=None, city\_object\_id=None*)  
 Add simulation results to the city or to the city\_object to the database

**Parameter** name simulation and simulation engine name

**Parameter** values simulation values in json format

**Parameter** city\_id city id or None

**Parameter** city\_object\_id city object id or None

**application\_info** (*application\_uuid*) → *Application*  
 Retrieve the application info for the given uuid from the database

**Parameter** application\_uuid the uuid for the application

**Returns** Application

**building** (*name, user\_id, application\_id, scenario*) → *CityObject*  
 Retrieve the building from the database

**Parameter** name Building name

**Parameter** user\_id User id

**Parameter** application\_id Application id

**Parameter** scenario Scenario

:

**building\_info** (*name, city\_id*) → *CityObject*  
 Retrieve the building info from the database

**Parameter** name Building name

**Parameter** city\_id City ID

**Returns** CityObject

**building\_info\_in\_cities** (*name, cities*) → *CityObject*  
 Retrieve the building info from the database

**Parameter** name Building name

**Parameter** cities [City ID]

**Returns** CityObject

**buildings\_info** (*request\_values, city\_id*) → [CityObject']>  
 Retrieve the buildings info from the database

**Parameter** request\_values Building names

**Parameter** city\_id City ID

**Returns** [CityObject]

**cities\_by\_user\_and\_application** (*user\_id, application\_id*) → [City']>  
 Retrieve the cities belonging to the user and the application from the database

**Parameter** user\_id User id

**Parameter** application\_id Application id

**Returns** [City]

**create\_user** (*name: str, application\_id: int, password: str, role: cerc\_persistence.models.user.UserRoles*)  
 Creates a new user in the database

**Parameter** name the name of the user

**Parameter** application\_id the application id of the user

**Parameter** password the password of the user

**Parameter** role the role of the user

**delete\_application** (*application\_uuid*)  
 Deletes a single application from the database

**Parameter** application\_uuid the id of the application to get

**delete\_city** (*city\_id*)  
 Deletes a single city from the database

**Parameter** city\_id the id of the city to get

**delete\_results\_by\_name** (*name, city\_id=None, city\_object\_id=None*)  
 Deletes city object simulation results from the database

**Parameter** name simulation name

**Parameter** city\_id if given, delete delete the results for the city with id city\_id

**Parameter** city\_object\_id if given, delete delete the results for the city object with id city\_object\_id

**delete\_user** (*user\_id*)  
 Delete a single user from the database

**Parameter** user\_id the id of the user to delete

**get\_by\_name\_and\_application** (*name: str, application: int*)  
 Retrieve a single user from the database

**Parameter** name username

**Parameter** application application accessing hub

**persist\_application** (*name: str, description: str, application\_uuid: str*)  
 Creates information for an application in the database

**Parameter** name name of application

**Parameter** description the description of the application

**Parameter** application\_uuid the uuid of the application to be created

**persist\_city** (*city: cerc\_persistence.repositories.city.City, pickle\_path, scenario, application\_id: int, user\_id: int*)

Creates a city into the database

**Parameter** city City to be stored

**Parameter** pickle\_path Path to save the pickle file

**Parameter** scenario Simulation scenario name

**Parameter** application\_id Application id owning this city

**Parameter** user\_id User who create the city

return identity\_id

**results** (*user\_id, application\_id, request\_values, result\_names=None*) → Dict

Retrieve the simulation results for the given cities from the database

**Parameter** user\_id the user id owning the results

**Parameter** application\_id the application id owning the results

**Parameter** request\_values dictionary containing the scenario and building names to grab the results

**Parameter** result\_names if given, filter the results to the selected names

**update\_application** (*name: str, description: str, application\_uuid: str*)

Update the application information stored in the database

**Parameter** name name of application

**Parameter** description the description of the application

**Parameter** application\_uuid the uuid of the application to be created

**update\_city** (*city\_id, city*)

Update an existing city in the database

**Parameter** city\_id the id of the city to update

**Parameter** city the updated city object

**update\_user** (*user\_id: int, name: str, password: str, role: cerc\_persistence.models.user.UserRoles*)

Updates a user in the database

**Parameter** user\_id the id of the user

**Parameter** name the name of the user

**Parameter** password the password of the user

**Parameter** role the role of the user

**user\_info** (*name, password, application\_id*) → *User*

Retrieve the user info for the given name and password and application\_id from the database

**Parameter** name the username

**Parameter** password the user password

**Parameter** application\_id the application id

**Returns** User



**user\_login** (*name, password, application\_uuid*) → *User*

Retrieve the user info from the database

**Parameter** name the username

**Parameter** password the user password

**Parameter** application\_uuid the application uuid

**Returns** User

### 1.7.3 DB Setup

**class DBSetup** (*db\_name, app\_env, dotenv\_path, admin\_password, application\_uuid*)

Creates a Persistence database structure

### 1.7.4 Repository

**class Repository** (*db\_name, dotenv\_path: str, app\_env='TEST'*)

Base repository class to establish db connection

## ADDITIONAL FILES

### 2.1 Readme

README.md

### 2.2 License

LICENSE.md

### 2.3 Code of conduct

CODE\_OF\_CONDUCT.md

### 2.4 How to contribute

CONTRIBUTING.md

### 2.5 Coding style

PYGUIDE.md

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