CERC persistence reference manual

Release 0.1.0.2

CERC Next-Generation Cities

Nov 29, 2023

CONTENTS:

CHAPTER

ONE

CERC PERSISTENCE' REFERENCE MANUAL

1.1 Authors

- Guillermo Gutierrez Morote
- Pilar Monsalvete Alvarez de Uribarri

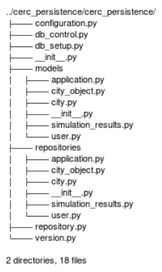
1.2 Contributors

- Seyedehrabeeh Hosseinihaghighi
- Milad Aghamohamadnia
- Peter Yefi
- Koa Wells
- Sanam Dabirian
- Soroush Samareh Abolhassani

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

CHAPTER

TWO

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

INDEX