# Practice 4

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# Chapter 1

# Hierarchical Index

## 1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:


Dashboard . . . 16
CLDashboard . . . 9
Database . . . 21
Interface . . . 23
CLInterface . . . 12
LoginInterface . . . 24
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Moisture . . . 27
Thermometer . . . 29
User . . . 30
Admin . . . 5

# Chapter 2

# Class Index

## 2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

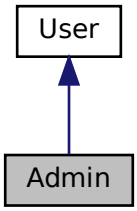

Admin . . . . . 5
AirQuality . . . . . 6
CameraBW . . . . . 7
CameraRGB . . . . . 8
CLDashboard . . . . . 9
CLInterface . . . . . 12
CLLoginInterface . . . . . 13
CLMenu . . . . . 14
CLMenuBar . . . . . 15
Dashboard . . . . . 16
Database . . . . . 21
Humidity . . . . . 22
Interface . . . . . 23
LoginInterface . . . . . 24
Menu . . . . . 25
MenuBar . . . . . 26
Moisture . . . . . 27
Sensor . . . . . 28
Thermometer . . . . . 29
User . . . . . 30

# Chapter 3

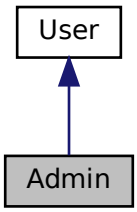
# Class Documentation

## 3.1 Admin Class Reference

Inheritance diagram for Admin:




Collaboration diagram for Admin:




### Public Member Functions

- **Admin** (std::string number="00000", std::string nif="00000000", std::string name="default")

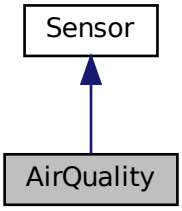
### Additional Inherited Members

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

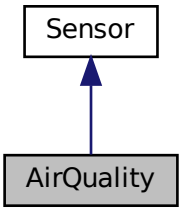
- include/Admin.h
- src/Admin.cpp

## 3.2 AirQuality Class Reference

Inheritance diagram for AirQuality:




Collaboration diagram for AirQuality:




### Public Member Functions

- **AirQuality** (bool active=false, int valPerMin=1)
- std::vector< int > **requestData** ()

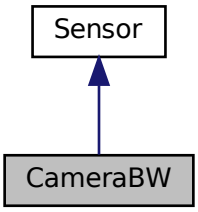
### Additional Inherited Members

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

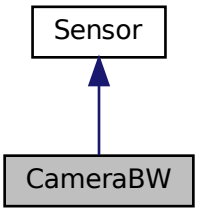
- include/AirQuality.h
- src/AirQuality.cpp

## 3.3 CameraBW Class Reference

Inheritance diagram for CameraBW:




Collaboration diagram for CameraBW:




### Public Member Functions

- **CameraBW** (bool active=false, int valPerMin=1)
- std::vector< int > **requestData** ()

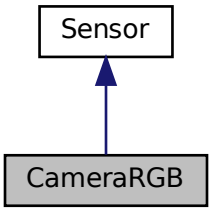
### Additional Inherited Members

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

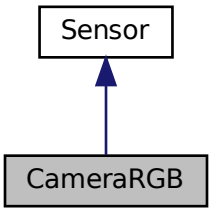
- include/CameraBW.h
- src/CameraBW.cpp

## 3.4 CameraRGB Class Reference

Inheritance diagram for CameraRGB:




Collaboration diagram for CameraRGB:




### Public Member Functions

- **CameraRGB** (bool active=false, int valPerMin=1)
- std::vector< int > **requestData** ()

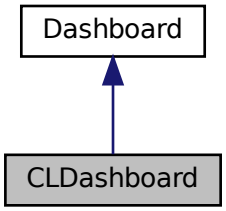
### Additional Inherited Members

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

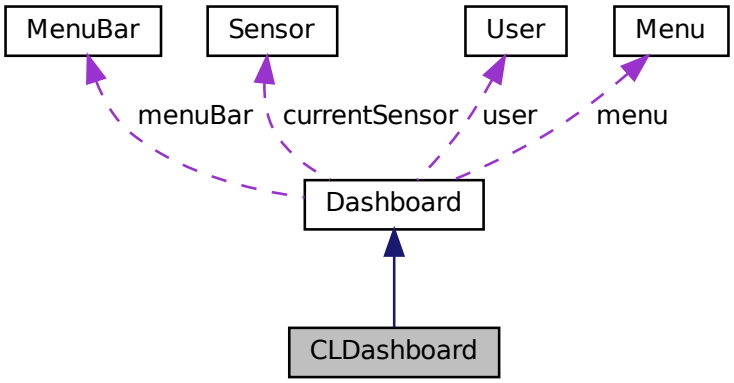
- include/CameraRGB.h
- src/CameraRGB.cpp

## 3.5 CLDashboard Class Reference

Inheritance diagram for CLDashboard:




Collaboration diagram for CLDashboard:




### Public Member Functions

- void showMainMenu ()

  *Shows the default menu and starts the custom terminal.*

### Protected Member Functions

- void changeMainMenu (int n)

  *Change the page of the menu.*
- void readCommand ()

  *Reads and executes a command from the terminal.*
- void listSensor ()

*Command that lists the sensors in the current menu page.*

- void helpCommand (std::string command="")

  *Displays the use of the command.*

- void errorCommand (std::string command="")

  *Shows error message because the command not being found.*

- void permissionError ()

  *Shows error message because the permission being denied to execute it.*

## Additional Inherited Members

## 3.5.1 Member Function Documentation

### 3.5.1.1 changeMainMenu()

```
void CLDashboard::changeMainMenu (
            int n )  [protected]
```

Change the page of the menu.

**Parameters**

| | |
|---|---|
| *n* | Number of pages to shift ( positive to the right ) |

### 3.5.1.2 errorCommand()

```
void CLDashboard::errorCommand (
            std::string command = "" )  [protected]
```

Shows error message because the command not being found.

**Parameters**

| | |
|---|---|
| *command* | Command input |

### 3.5.1.3 helpCommand()

```
void CLDashboard::helpCommand (
            std::string command = "" )  [protected]
```

Displays the use of the command.

**Parameters**

| | |
|---|---|
| *command* | Command to display info about |

#### 3.5.1.4 listSensor()

```
void CLDashboard::listSensor ( )  [protected]
```

Command that lists the sensors in the current menu page.

#### 3.5.1.5 permissionError()

```
void CLDashboard::permissionError ( )  [protected]
```

Shows error message because the permission being denied to execute it.

#### 3.5.1.6 readCommand()

```
void CLDashboard::readCommand ( )  [protected]
```

Reads and executes a command from the terminal.

#### 3.5.1.7 showMainMenu()

```
void CLDashboard::showMainMenu ( )  [virtual]
```

Shows the default menu and starts the custom terminal.

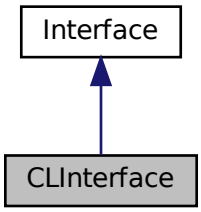
Implements Dashboard.

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

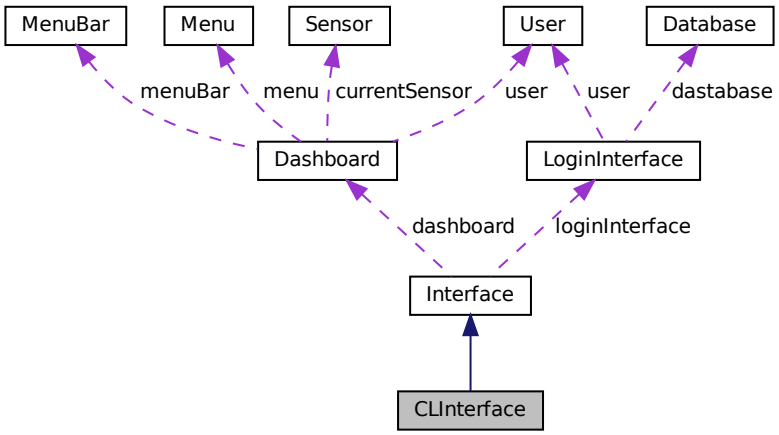
- include/CLDashboard.h
- src/CLDashboard.cpp

## 3.6 CLInterface Class Reference

Inheritance diagram for CLInterface:




Collaboration diagram for CLInterface:




### Public Member Functions

- void **login** (int tries)
- void **loadMenu** ()

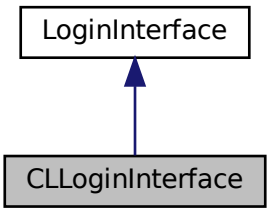
### Additional Inherited Members

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

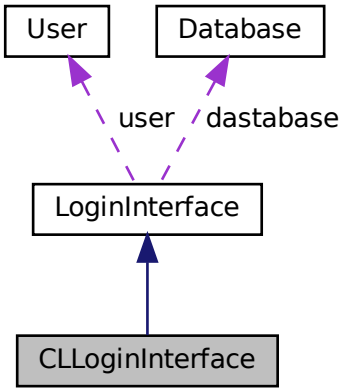
- include/CLInterface.h
- src/CLInterface.cpp

## 3.7 CLLoginInterface Class Reference

Inheritance diagram for CLLoginInterface:




Collaboration diagram for CLLoginInterface:




### Public Member Functions

- void **showWelcomeMessage** ()
- void **askEmployeeNumber** ()
- void **askEmployeeNumber** (const std::string &userNumber)
- void **askNIF** ()
- void **askNIF** (const std::string &nif)

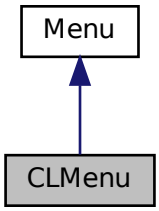
### Additional Inherited Members

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

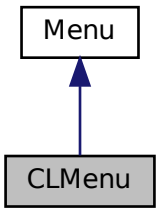
- include/CLLoginInterface.h
- src/CLLoginInterface.cpp

## 3.8 CLMenu Class Reference

Inheritance diagram for CLMenu:




Collaboration diagram for CLMenu:




### Public Member Functions

- void **show** (std::vector< Sensor * >)
- void **show** (Sensor *sensor)

### Protected Member Functions

- void **clearMenu** ()

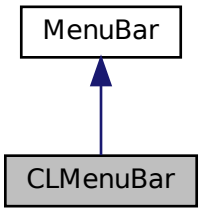
### Additional Inherited Members

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

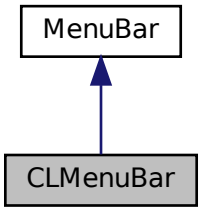
- include/CLMenu.h
- src/CLMenu.cpp

## 3.9 CLMenuBar Class Reference

Inheritance diagram for CLMenuBar:




Collaboration diagram for CLMenuBar:




### Public Member Functions

- void **show** ()

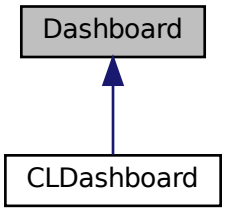
### Additional Inherited Members

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

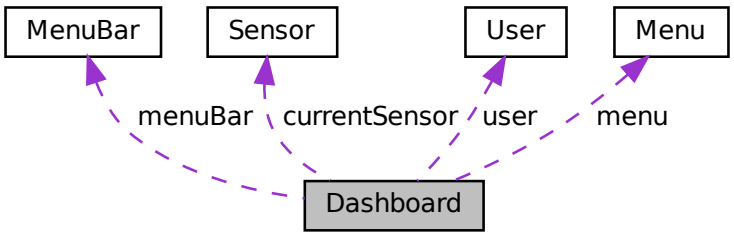
- include/CLMenuBar.h
- src/CLMenuBar.cpp

## 3.10 Dashboard Class Reference

Inheritance diagram for Dashboard:




Collaboration diagram for Dashboard:




### Public Member Functions

- virtual void **showMainMenu** ()=0
- void changeInterface (std::string newInterface="")

  *Changes the current interface to the input one.*
- void addToMainMenu ()

  *Adds all the current sensors to the dashboard.*
- void addToMainMenu (Sensor *sensor)

  *Adds a sensor to the dashboard.*
- void moveWindowMainMenu (int n=1)

  *Shifts the main menu n pages.*
- void changeCurrentSensorInfo (std::string toChange, std::string newValue)

  *Changes the current sensor values.*
- void setUser (User user)

  *Adds the user to the dashboard.*
- void addNewSensor (std::string type)

*Creates the new sensor and calls addToMainMenu.*

- void deleteSensor (std::string id)

  *Deletes the desired sensor from the dashboard.*
- void cleanSensor ()

  *Deletes all the sensors from the dashboard.*
- void exit ()

  *Exits the dashboard and finishes the program.*
- void logout ()

  *Exits the dashboard and goes back to the login screen.*
- bool canExit ()

  *Called from main, checks if the program is allowed to exit.*

## Static Public Member Functions

- static Dashboard * Create (const std::string type="CLI")

  *Create a new instance of the desired Dashboard interface.*

## Protected Attributes

- std::vector< Sensor * > sensor

  *Vector of all the vectors in the dashboard.*
- std::vector< std::vector< Sensor * > > mainMenu

  *Vetor that contains the pages of the main Menu.*
- int mainMenuIndex

  *Current page of the main Menu.*
- MenuBar * **menuBar**
- Menu * **menu**
- User **user**
- std::string currentInterface

  *Current interface, can be a sensor ID or the main menu (..)*
- std::string lastInterface

  *Last interface, can be a sensor ID or the main menu (..)*
- Sensor * currentSensor

  *If the currentInterface is a sensor then the value would be that sensor, if not the value is nullptr.*
- bool **allowedToExit**

### 3.10.1 Member Function Documentation

#### 3.10.1.1 addNewSensor()

```
void Dashboard::addNewSensor (
            std::string type )
```

Creates the new sensor and calls addToMainMenu.

**Parameters**

| | |
|---|---|
| *id* | New sensor type |

**See also**

addToMainMenu

#### 3.10.1.2 addToMainMenu() [1/2]

```
void Dashboard::addToMainMenu ( )
```

Adds all the current sensors to the dashboard.

**Note**

Only called at the start of the program

#### 3.10.1.3 addToMainMenu() [2/2]

```
void Dashboard::addToMainMenu (
            Sensor * sensor )
```

Adds a sensor to the dashboard.

**Parameters**

| | |
|---|---|
| *sensor* | Sensor to add |

#### 3.10.1.4 canExit()

```
bool Dashboard::canExit ( )
```

Called from main, checks if the program is allowed to exit.

**Returns**

true End the program

false Cannot exit, goes to login screen

#### 3.10.1.5 changeCurrentSensorInfo()

```
void Dashboard::changeCurrentSensorInfo (
            std::string toChange,
            std::string newValue )
```

Changes the current sensor values.

**Parameters**

| | |
|---|---|
| *toChange* | Desired value to change |
| *newValue* | New value to add |

#### 3.10.1.6 changeInterface()

```
void Dashboard::changeInterface (
            std::string newInterface = "" )
```

Changes the current interface to the input one.

**Parameters**

| | |
|---|---|
| *newInterface* | Desired interface to change ( .. = main Menu) |

#### 3.10.1.7 cleanSensor()

```
void Dashboard::cleanSensor ( )
```

Deletes all the sensors from the dashboard.

**Note**

Only called when exiting the dashboard

#### 3.10.1.8 Create()

```
Dashboard * Dashboard::Create (
            const std::string type = "CLI" )  [static]
```

Create a new instance of the desired Dashboard interface.

**Parameters**

| | |
|---|---|
| *type* | Type of Dashboard interface |

**Returns**

Dashboard*

#### 3.10.1.9 deleteSensor()

```
void Dashboard::deleteSensor (
            std::string id )
```

Deletes the desired sensor from the dashboard.

**Parameters**

| | |
|---|---|
| *id* | ID of the sensor to delete |

**See also**

addToMainMenu

#### 3.10.1.10 exit()

```
void Dashboard::exit ( )
```

Exits the dashboard and finishes the program.

**See also**

cleanSensor

#### 3.10.1.11 logout()

```
void Dashboard::logout ( )
```

Exits the dashboard and goes back to the login screen.

**See also**

cleanSensor

#### 3.10.1.12 moveWindowMainMenu()

```
void Dashboard::moveWindowMainMenu (
            int n = 1 )
```

Shifts the main menu n pages.

**Parameters**

| | |
|---|---|
| *n* | Number of pages to shift ( positive to the right ) |

#### 3.10.1.13 setUser()

```
void Dashboard::setUser (
            User user )
```

Adds the user to the dashboard.

**Parameters**

| | |
|---|---|
| *user* | Current user |

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

- include/Dashboard.h
- src/Dashboard.cpp

## 3.11 Database Class Reference

### Public Member Functions

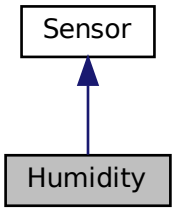
- void **addUser** (User)
- User **getUser** (std::string, std::string)

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

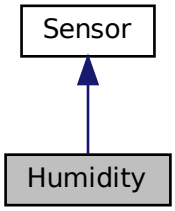
- include/Database.h
- src/Database.cpp

## 3.12 Humidity Class Reference

Inheritance diagram for Humidity:




Collaboration diagram for Humidity:




### Public Member Functions

- **Humidity** (bool active=false, int valPerMin=1)
- std::vector< int > **requestData** ()

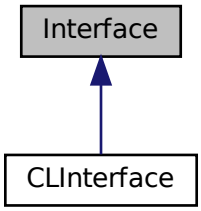
### Additional Inherited Members

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

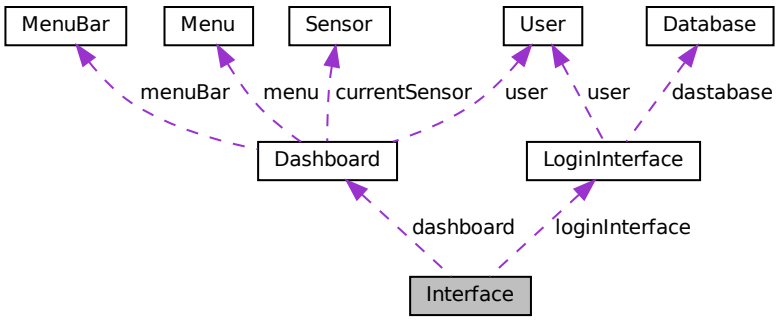
- include/Humidity.h
- src/Humidity.cpp

## 3.13 Interface Class Reference

Inheritance diagram for Interface:




Collaboration diagram for Interface:




### Public Member Functions

- virtual void **login** (int tries)=0
- void **login** (std::string userNumber, std::string nif)
- bool **loadMenu** ()

### Static Public Member Functions

- static Interface * **Create** (const std::string type="CLI")

### Protected Attributes

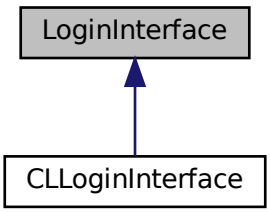
- LoginInterface * **loginInterface**
- Dashboard * **dashboard**

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

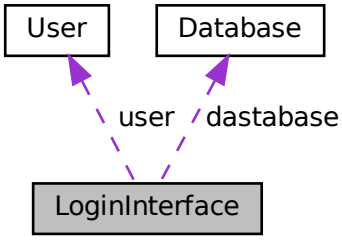
- include/Interface.h
- src/Interface.cpp

## 3.14 LoginInterface Class Reference

Inheritance diagram for LoginInterface:




Collaboration diagram for LoginInterface:




### Public Member Functions

- virtual void **showWelcomeMessage** ()=0
- virtual void **askEmployeeNumber** ()=0
- virtual void **askEmployeeNumber** (const std::string &userNumber)=0
- virtual void **askNIF** ()=0
- virtual void **askNIF** (const std::string &userNumber)=0
- bool **checkUser** ()
- User **getUser** ()

### Static Public Member Functions

- static LoginInterface * **Create** (const std::string="CLI")

### Protected Attributes

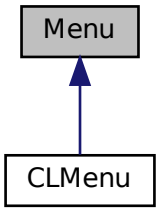
- std::string **inputNIF**
- std::string **inputEmployeeNumber**
- User **user**
- Database **dastabase**

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

- include/LoginInterface.h
- src/LoginInterface.cpp

## 3.15 Menu Class Reference

Inheritance diagram for Menu:




### Public Member Functions

- virtual void **show** (std::vector< Sensor * >)=0
- virtual void **show** (Sensor *)=0

### Static Public Member Functions

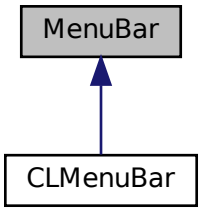
- static Menu * **Create** (const std::string type="CLI")

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

- include/Menu.h
- src/Menu.cpp

## 3.16 MenuBar Class Reference

Inheritance diagram for MenuBar:




### Public Member Functions

- virtual void **show** ()=0
- void **setUserName** (std::string userName)
- void **setCurrentMenu** (std::string currentMenu)

### Static Public Member Functions

- static MenuBar * **Create** (const std::string type="CLI")

### Protected Attributes

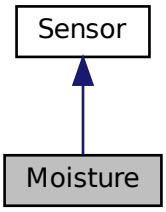
- std::string **userName**
- std::string **currentMenu**

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

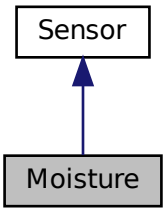
- include/MenuBar.h
- src/MenuBar.cpp

## 3.17 Moisture Class Reference

Inheritance diagram for Moisture:




Collaboration diagram for Moisture:




### Public Member Functions

- **Moisture** (bool active=false, int valPerMin=1)
- std::vector< int > **requestData** ()

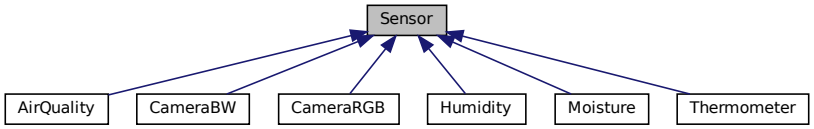
### Additional Inherited Members

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

- include/Moisture.h
- src/Moisture.cpp

## 3.18 Sensor Class Reference

Inheritance diagram for Sensor:




### Public Member Functions

- **Sensor** (std::string id="0000", std::string type="none", std::string magnitude="-", bool active=true, int valPerMin=1)
- std::string **getId** ()
- std::string **getType** ()
- void **setActive** (bool)
- bool **isActive** ()
- void **setArea** (std::string)
- std::string **getArea** ()
- void **setMagnitude** (std::string magnitude)
- std::string **getMagnitude** ()
- void **setValPerMin** (int valPerMin)
- int **getValPerMin** ()
- virtual std::vector< int > **requestData** ()=0

### Static Public Member Functions

- static Sensor * **Create** (const std::string type)

### Protected Member Functions

- void **addNewData** (int)
- void **removeOldData** (int)

### Protected Attributes

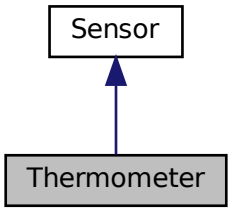
- std::string **id**
- bool **active**
- std::string **type**
- std::string **area**
- std::vector< int > **data**
- std::string **magnitude**
- int **valPerMin**

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

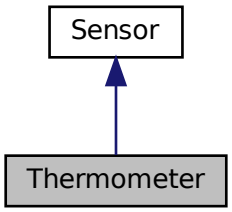
- include/Sensor.h
- src/Sensor.cpp

## 3.19 Thermometer Class Reference

Inheritance diagram for Thermometer:




Collaboration diagram for Thermometer:




### Public Member Functions

- **Thermometer** (bool active=false, int valPerMin=1)
- std::vector< int > **requestData** ()

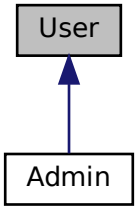
### Additional Inherited Members

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

- include/Thermometer.h
- src/Thermometer.cpp

## 3.20 User Class Reference

Inheritance diagram for User:




### Public Member Functions

- **User** (std::string number="00000", std::string nif="00000000", std::string name="default")
- bool **isSameNIF** (std::string)
- bool **isSameEmployeeNumber** (std::string)
- std::string **getName** ()
- void **addTimestamp** ()
- std::string **getTimestamp** ()
- bool **hasAdminPermission** ()

### Protected Member Functions

- void **setNIF** (std::string)
- void **setEmployeeNumber** (std::string)

### Protected Attributes

- std::string **name**
- std::string **NIF**
- std::string **employeeNumber**
- std::string **lastLogTime**
- bool **adminPermission**

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

- include/User.h
- src/User.cpp

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