

The Parma Watchdog Library

User's Manual^{*}

(version 0.8)

Roberto Bagnara[†]

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[†]bagnara@cs.unipr.it, Department of Mathematics, University of Parma, Italy.

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3 Class Index

3.1 Class Hierarchy

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

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4 Class Index

4.1 Class List

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

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5 Class Documentation

5.1 Parma_Watchdog_Library::Doubly_Linked_Object Class Reference

A (base) class for doubly linked objects.

```
#include <pwl.hh>
```

Inherited by [Parma_Watchdog_Library::EList< Pending_Element< typename Traits::Threshold > >](#)[private], [Parma_Watchdog_Library::EList< T >](#)[private], and [Parma_Watchdog_Library::Pending_Element< Threshold >](#).

Public Member Functions

- [Doubly_Linked_Object](#) ()
Default constructor.
- [Doubly_Linked_Object](#) ([Doubly_Linked_Object](#) *f, [Doubly_Linked_Object](#) *b)
Creates a chain element with forward link f and backward link b.
- void [insert_before](#) ([Doubly_Linked_Object](#) &y)
*Inserts y before *this.*
- void [insert_after](#) ([Doubly_Linked_Object](#) &y)
*Inserts y after *this.*

- [Doubly_Linked_Object * erase \(\)](#)
*Erases *this from the chain and returns a pointer to the next element.*
- [~Doubly_Linked_Object \(\)](#)
*Erases *this from the chain.*

5.1.1 Detailed Description

A (base) class for doubly linked objects.

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

- `pwl.hh`

5.2 Parma_Watchdog_Library::EList< T > Class Template Reference

A simple kind of embedded list (i.e., a doubly linked objects where the links are embedded in the objects themselves).

```
#include <pwl.hh>
```

Inherits [Parma_Watchdog_Library::Doubly_Linked_Object](#).

Public Types

- typedef [EList_Iterator< const T >](#) [Const_Iterator](#)
A const iterator to traverse the list.
- typedef [EList_Iterator< T >](#) [Iterator](#)
A non-const iterator to traverse the list.

Public Member Functions

- [EList \(\)](#)
Constructs an empty list.
- [~EList \(\)](#)
Destructs the list and all the elements in it.
- void [push_front \(T &obj\)](#)
Pushes obj to the front of the list.
- void [push_back \(T &obj\)](#)
Pushes obj to the back of the list.
- [Iterator insert \(Iterator position, T &obj\)](#)
Inserts obj just before position and returns an iterator that points to the inserted object.

- **Iterator erase** (**Iterator** position)
Removes the element pointed to by `position`, returning an iterator pointing to the next element, if any, or `end()`, otherwise.
- **bool empty** () const
Returns `true` if and only if the list is empty.
- **Iterator begin** ()
Returns an iterator pointing to the beginning of the list.
- **Iterator end** ()
Returns an iterator pointing one past the last element in the list.
- **Const_Iterator begin** () const
Returns a const iterator pointing to the beginning of the list.
- **Const_Iterator end** () const
Returns a const iterator pointing one past the last element in the list.
- **bool OK** () const
Checks if all the invariants are satisfied.

5.2.1 Detailed Description

template<typename T> class Parma_Watchdog_Library::EList< T >

A simple kind of embedded list (i.e., a doubly linked objects where the links are embedded in the objects themselves).

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

- `pwl.hh`

5.3 Parma_Watchdog_Library::EList_Iterator< T > Class Template Reference

A class providing iterators for embedded lists.

```
#include <pwl.hh>
```

Public Member Functions

- **EList_Iterator** ()
Constructs an iterator pointing to nothing.
- **EList_Iterator** (**Doubly_Linked_Object** *p)
Constructs an iterator pointing to `p`.
- **EList_Iterator & operator=** (**Doubly_Linked_Object** *p)

*Changes `*this` so that it points to `p`.*

- `T * operator-> ()`
Indirect member selector.
- `T & operator* ()`
Dereference operator.
- `EList_Iterator & operator++ ()`
Preincrement operator.
- `EList_Iterator operator++ (int)`
Postincrement operator.
- `EList_Iterator & operator-- ()`
Predecrement operator.
- `EList_Iterator operator-- (int)`
Postdecrement operator.

Friends

- `bool operator== (const EList_Iterator &x, const EList_Iterator &y)`
Returns `true` if and only if `x` and `y` are equal.
- `bool operator!= (const EList_Iterator &x, const EList_Iterator &y)`
Returns `true` if and only if `x` and `y` are different.

5.3.1 Detailed Description

`template<typename T> class Parma_Watchdog_Library::EList_Iterator< T >`

A class providing iterators for embedded lists.

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

- `pwl.hh`

5.4 Parma_Watchdog_Library::Handler Class Reference

Abstract base class for handlers of the watchdog events.

```
#include <pwl.hh>
```

Inherited by `Parma_Watchdog_Library::Handler_Flag< Flag_Base, Flag >[virtual]`, and `Parma_Watchdog_Library::Handler_Function[virtual]`.

Public Member Functions

- virtual void `act` () const =0
Does the job.
- virtual `~Handler` ()
Virtual destructor.

5.4.1 Detailed Description

Abstract base class for handlers of the watchdog events.

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

- `pwl.hh`

5.5 Parma_Watchdog_Library::Handler_Flag< Flag_Base, Flag > Class Template Reference

A kind of `Handler` that installs a flag onto a flag-holder.

```
#include <pwl.hh>
```

Inherits `Parma_Watchdog_Library::Handler`.

Public Member Functions

- `Handler_Flag` (const `Flag_Base` *volatile &holder, `Flag` &flag)
Constructor with a given function.
- void `act` () const

5.5.1 Detailed Description

```
template<typename Flag_Base, typename Flag> class Parma_Watchdog_Library::Handler_Flag<
Flag_Base, Flag >
```

A kind of `Handler` that installs a flag onto a flag-holder. The template class `Handler_Flag<Flag_Base, Flag>` is an handler whose job is to install a flag onto an *holder* for the flag. The flag is of type `Flag` and the holder is a (volatile) pointer to `Flag_Base`. Installing the flag onto the holder means making the holder point to the flag, so that it must be possible to assign a value of type `Flag*` to an entity of type `Flag_Base*`. The class `Flag` must provide the method

```
int priority() const
```

returning an integer priority associated to the flag.

The handler will install its flag onto the holder only if the holder is empty, namely, it is the null pointer, or if the holder holds a flag of strictly lower priority.

5.5.2 Member Function Documentation

5.5.2.1 `template<typename Flag_Base , typename Flag > void Parma_Watchdog_Library::Handler_Flag< Flag_Base, Flag >::act () const` [virtual]

Does its job: installs the flag onto the holder, if a flag with an higher priority has not already been installed.

Implements [Parma_Watchdog_Library::Handler](#).

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

- `pwl.hh`

5.6 Parma_Watchdog_Library::Handler_Function Class Reference

A kind of [Handler](#) calling a given function.

```
#include <pwl.hh>
```

Inherits [Parma_Watchdog_Library::Handler](#).

Public Member Functions

- [Handler_Function](#) (void(*function)())
Constructor with a given function.
- void [act](#) () const
Does its job: calls the embedded function.

5.6.1 Detailed Description

A kind of [Handler](#) calling a given function.

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

- `pwl.hh`

5.7 Parma_Watchdog_Library::Pending_Element< Threshold > Class Template Reference

A class for pending watchdog events with embedded links.

```
#include <pwl.hh>
```

Inherits [Parma_Watchdog_Library::Doubly_Linked_Object](#).

Public Member Functions

- [Pending_Element](#) (const Threshold &deadline, const [Handler](#) &handler, bool &expired_flag)
Constructs an element with the given attributes.

- void `assign` (const Threshold &deadline, const Handler &handler, bool &expired_flag)
*Modifies `*this` so that it has the given attributes.*
- const Threshold & `deadline` () const
Returns the deadline of the event.
- const Handler & `handler` () const
Returns the handler associated to the event.
- bool & `expired_flag` () const
Returns a reference to the "event-expired" flag.
- bool `OK` () const
Checks if all the invariants are satisfied.

5.7.1 Detailed Description

template<typename Threshold> class Parma_Watchdog_Library::Pending_Element< Threshold >

A class for pending watchdog events with embedded links. Each pending watchdog event is characterized by a deadline (a positive time interval), an associated handler that will be invoked upon event expiration, and a Boolean flag that indicates whether the event has already expired or not.

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

- `pwl.hh`

5.8 Parma_Watchdog_Library::Pending_List< Traits > Class Template Reference

An ordered list for recording pending watchdog events.

```
#include <pwl.hh>
```

Public Types

- typedef `EList< Pending_Element< typename Traits::Threshold > >::Iterator` `Iterator`
A non-const iterator to traverse the list.
- typedef `EList< Pending_Element< typename Traits::Threshold > >::Const_Iterator` `Const_Iterator`
A const iterator to traverse the list.

Public Member Functions

- [Pending_List](#) ()
Constructs an empty list.
- [~Pending_List](#) ()
Destructor.
- [Iterator insert](#) (const typename Traits::Threshold &deadline, const [Handler](#) &handler, bool &expired_flag)
Inserts a new [Pending_Element](#) object with the given attributes.
- [Iterator erase](#) ([Iterator](#) position)
Removes the element pointed to by `position`, returning an iterator pointing to the next element, if any, or `end()`, otherwise.
- bool [empty](#) () const
Returns `true` if and only if the list is empty.
- [Iterator begin](#) ()
Returns an iterator pointing to the beginning of the list.
- [Iterator end](#) ()
Returns an iterator pointing one past the last element in the list.
- bool [OK](#) () const
Checks if all the invariants are satisfied.

5.8.1 Detailed Description

```
template<typename Traits> class Parma_Watchdog_Library::Pending_List< Traits >
```

An ordered list for recording pending watchdog events.

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

- pwl.hh

5.9 Parma_Watchdog_Library::Threshold_Watcher< Traits > Class Template Reference

A class of watchdogs controlling the exceeding of a threshold.

```
#include <pwl.hh>
```

5.9.1 Detailed Description

```
template<typename Traits> class Parma_Watchdog_Library::Threshold_Watcher< Traits >
```

A class of watchdogs controlling the exceeding of a threshold.

Template Parameters

Traits A class to set data types and functions for the threshold handling. See `Parma_Polyhedra_Library::Weightwatch_Traits` for an example.

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

- `pwl.hh`

5.10 Parma_Watchdog_Library::Time Class Reference

A class for representing and manipulating positive time intervals.

```
#include <pwl.hh>
```

Public Member Functions

- [Time](#) ()
Zero seconds.
- [Time](#) (unsigned long hundredths_of_a_second)
Constructor taking a number of hundredths of a second.
- [Time](#) (unsigned long s, unsigned long m)
Constructor with seconds and microseconds.
- unsigned long [seconds](#) () const
Returns the number of whole seconds contained in the represented time interval.
- unsigned long [microseconds](#) () const
Returns the number of microseconds that, when added to the number of seconds returned by [seconds\(\)](#), give the represent time interval.
- [Time](#) & [operator+=](#) (const [Time](#) &y)
*Adds y to *this.*
- [Time](#) & [operator-=](#) (const [Time](#) &y)
*Subtracts y from *this; if *this is shorter than y, *this is set to the null interval.*
- bool [OK](#) () const
Checks if all the invariants are satisfied.

5.10.1 Detailed Description

A class for representing and manipulating positive time intervals.

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

- `pwl.hh`

5.11 Parma_Watchdog_Library::Watchdog Class Reference

A watchdog timer.

```
#include <pwl.hh>
```

Public Member Functions

- [Watchdog](#) (unsigned int units, void(*function)())
Constructor: if not reset, the watchdog will trigger after units hundreths of seconds, invoking handler function.
- [~Watchdog](#) ()
Destructor.

5.11.1 Detailed Description

A watchdog timer.

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

- pwl.hh

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