timeutils Documentation

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CHAPTER 1

timeutils package

Submodules

timeutils.stopwatch module

Stopwatch

class timeutils.stopwatch.**Stopwatch**(*start=False*, *verbose=False*, *label=None*, *logger=None*, *logger_level=None*)

Provides a set of methods and properties that you can use to accurately measure elapsed time.

Parameters

- **start** (*bool, optional*) – if set to *True*, immediately starts measuring the time (by calling *start()*). By default set to *False*.
- **verbose** (*bool, optional*) – if set to *True*, logs the elapsed time when the *stop()* method is called. By default set to *False*.
- **label** (*str, optional*) – Optional stopwatch label to be included in the log messages (only if *verbose* is *True*).
- **logger** (logging.Logger, optional) – logger object for logging stopwatch messages if *verbose* is *True*. If set to *None* (the default), the logger is set to sys.stdout.
- **logger_level** (*int, optional*) – logging level as defined in the build-in logging package (only if the *logger* object is set).

Examples

Simple time measurement:

```
sw = Stopwatch(start=True)
# code to be measured
sw.stop()
```

Getting the elapsed time:

```
print(sw.elapsed)  # hh:mm:ss.ms
print(sw.elapsed.human_str())  # human-readable time
```

Restarting the stopwatch instance:

```
sw.restart()
```

Pausing and resuming the stopwatch:

```
sw.suspend()
# code block not included in the measurement
sw.resume()
```

Using a logger:

```
import logging

logger = logging.getLogger()
logger.setLevel(logging.INFO)
logger.addHandler(logging.FileHandler(filename='example.log'))

sw = Stopwatch(verbose=True, label='Example', logger=logger)
sw.start()
# code to be measured
sw.stop()
```

Note: *Stopwatch* methods are protected against inappropriate calls. It is an error to start or stop a *Stopwatch* object that is already in the desired state.

See also:

Documentation of the *TimeSpan* class.

elapsed
The total elapsed time measured by the current instance.

elapsed_seconds
The total elapsed time in fractions of a second measured by the current instance.

is_running
Indicates whether the *Stopwatch* instance is running.

is_suspended
Indicates whether the *Stopwatch* instance is suspended.

reset()
Stops time interval measurement and resets the *Stopwatch* instance. The time elapsed before reset is set to zero.

restart()
Stops time interval measurement, resets the *Stopwatch* instance, and starts measuring elapsed time. The time elapsed before restart is set to zero.

resume()
Resumes measuring elapsed time after calling *suspend()*.

start()
Starts measuring elapsed time for an interval.

start_time
The time at which the time measurement has been started.

stop()
Stops the time measurement. Returns the total elapsed time measured by the current instance.

stop_time
The time at which the time measurement has been stopped.

suspend()
Pauses the time measurement until the *Stopwatch* instance is resumed or stopped. Returns the total elapsed time measured by the current instance.

Call *resume()* to resume measuring elapsed time.

timeutils.timespan module

TimeSpan

class timeutils.timespan.**TimeSpan**
Bases: datetime.timedelta

Represents a time span.

All arguments are optional and default to 0. Arguments may be integers or floats, and may be positive or negative.

As in the base datetime.timedelta class, only days, seconds and microseconds are stored internally. Arguments are converted to those units:

•A millisecond is converted to 1000 microseconds.

•A minute is converted to 60 seconds.

•An hour is converted to 3600 seconds.

and days, seconds and microseconds are then normalized so that the representation is unique.

If any argument is a float and there are fractional microseconds, the fractional microseconds left over from all arguments are combined and their sum is rounded to the nearest microsecond using round-half-to-even tiebreaker.

Parameters

- **seconds** (*float*, *optional*) – number of seconds in the time span.
- **microseconds** (*float*, *optional*) – number of microseconds in the time span.
- **milliseconds** (*float*, *optional*) – number of milliseconds in the time span.
- **minutes** (*float*, *optional*) – number of minutes in the time span.
- **hours** (*float*, *optional*) – number of hours in the time span.
- **days** (*float*, *optional*) – number of days in the time span.

__str__

days
Number of days.

human_str(*trim_zeros=True*)
Returns a human-readable *TimeSpan* object, represented as time units such as days, hours, minutes, and seconds.

Parameters **trim_zeros** (*bool, optional*) – indicates whether the leading zeros in the result should be skipped

Returns human-readable time span

Return type str

microseconds
Number of microseconds (>= 0 and less than 1 second).

seconds
Number of seconds (>= 0 and less than 1 day).

total_hours()
Total hours in the duration.

total_milliseconds()
Total milliseconds in the duration.

total_minutes()
Total minutes in the duration.

total_seconds()
Total seconds in the duration.

Module contents

A set of methods and classes to accurately measure elapsed time.

See https://gitlab.com/cmick/timeutils for more information.

Examples

```
>>> from timeutils import Stopwatch
>>> sw = Stopwatch(start=True)
>>> sw.elapsed_seconds
16.282313108444214
>>> str(sw.stop())
'00:01:30.416'
>>> sw.elapsed.human_str()
'1 min, 30 secs'
```

See also:

Documentation of the *Stopwatch* class.

timeutils.**current_time_millis**()
Returns the difference, measured in milliseconds, between the current time and midnight, January 1, 1970 UTC.

timeutils.**timeit**(*func*, *number=1000*, *repeat=1*, *args=None*, *kwargs=None*)
Measures the execution time of the provided function.

Parameters

- **func** (*Callable*) – function to be executed

- **number** (*int*) – number of executions (1000 by default)
- **repeat** (*int*) – indicates the number of times the time is measured; if greater than 1, a list of results is returned.
- **args** (*tuple*, *list*) – positional arguments to be passed to function *func*
- **kwargs** (*dict[str, Any]*) – keyword arguments to be passed to function *func*

Returns measured time, or list of time measurements if *repeat* > 1

Return type *TimeSpan* or list[*TimeSpan*]

New in version 0.3.0.

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