
UHDL Documentation

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Contents:

Installation

At the command line:

```
$ easy_install uhd1
```

Or, if you have virtualenvwrapper installed:

```
$ mkvirtualenv uhd1  
$ pip install uhd1
```

Usage

To use Utilities for MyHDL in a project:

```
import uhdl
```

Developer Interface

3.1 Constructors

`uhdl.randbits (n)`

`uhdl.Sig (val=None, w=None, min=None, max=None)`

`uhdl.create (n, constructor, *args, **kwargs)`

Helper function for constructing multiple objects with the same arguments.

Shorthand for `[constructor(*args, **kwargs) for i in range(n)]`

`uhdl.Sigs (n, *args, **kwargs)`

Create multiple Signals cleanly.

Parameters

- **n** – number of signals to create.
- ***args** – passed through to `Sig()`
- ****kwargs** – passed through to `Sig()`

Returns `[Sig(*args, **kwargs) for i in range(n)]`

3.2 Simulation

`class uhdl.HW (top, *args, **kwargs)`

A Hardware module.

Provides a uniform API for conversion and simulation of MyHDL Instances.

config

dict

Dictionary(*CaselessDict*) containing the default config.

Modifying this attribute will change the default argument values of the `convert()` and `sim()` methods.

convert (***kwargs*)

Converts the top function to another HDL

Note: VHDL conversion has not been implemented yet.

Parameters

- **hdl** (*str, optional*) – The target language. Defaults to ‘verilog’.
- **path** (*str, optional*) – Destination folder. Defaults to current dir.
- **name** (*str, optional*) – Top level instance name, and output file name. Defaults to *self.top.__name__*
- **tb** (*bool, optional*) – Specifies whether a test bench should be created. Defaults to True.
- **trace** (*bool, optional*) – Whether the testbench should dump all signal waveforms. Defaults to True.
- **timescale** (*str, optional*) – Defaults to ‘1ns/1ps’

sim (***kwargs*)

Simulate the top function.

Parameters

- **backend** (*str, optional*) – Simulation runner. Available options are ‘myhdl’, ‘icarus’ and ‘modelsim’. Defaults to ‘myhdl’.
- **hdl** (*str*) – Target HDL for conversion before simulation.
- ****kwargs** – Optional arguments that *convert()* takes.

Returns

Generator sequence if the backend is myhdl,

myhdl.Cosimulation object if the backend is a simulator.

4.1 uhdl.structures

Data structures(unrelated to hardware description) used internally by uhdl.

class `uhdl.structures.CaselessDict` (*data=None, **kwargs*)
A case-insensitive dictionary.

All keys are expected to be strings. The structure converts the key to lower case before storing or retrieving objects.

4.2 uhdl.utils

Utility functions(unrelated to hardware description) used within uhdl.

`uhdl.utils.cd` (*path*)
Context manager which changes the current working directory

Parameters *path* (*str*) – path to change directory to.

Usage:

```
with cd('path/to/somewhere') :  
    #do something..
```

class `uhdl.utils.classproperty` (*fget*)
Decorator which allows read only class properties

`uhdl.utils.flatten` (**args*)
Flattens arbitrarily nested iterators(Except strings)

Parameters **args* – objects and iterables.

Returns list of all objects.

Changelog

5.1 Unreleased

- Python 3 support
- `run` has been split into a `sim` decorator and a `run_sim` function

5.2 (2013-10-27)

- First public version. Not available on PyPI anymore because of various issues.
- **Features:**
 - Constructors: `bits`, `randbits`, `create`, `Sig`, `Sigs`, `Clock`, `Reset`
 - Simulation: `HW`, `run`
 - math: `clog2`, `roundup`

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