confduino Documentation

Release 0.1.0

ponty

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CONTENTS

confduino

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PDF confduino.pdf

Contents:

confduino is an arduino library configurator

Links:

- home: https://github.com/ponty/confduino
- documentation: http://ponty.github.com/confduino

Features:

- list, install, remove arduino libraries
- install libraries from internet or local drive
- fix `examples` directory name before installing
- clean library (.*,_*,..) before installing
- move examples under `examples` directory
- list, install, remove arduino programmers
- list, install, remove arduino boards
- written in python
- cross-platform
- can be used as a python library or as a console program
- unpacker back-end: pyunpack
- downloader back-end: urllib
- some functionality is based on arscons
- supported python versions: 2.5, 2.6, 2.7, PyPy

Known problems:

- Python 3 is not supported
- tested only on linux
- tested only with arduino version 0022
- some libraries with unusual structure can not be installed
- not all commands have console interface

arduino libraries: http://www.arduino.cc/en/Reference/Libraries

CHAPTER

ONE

BASIC USAGE

install library:

```
>>> from confduino.libinstall import install_lib
>>> install_lib('http://arduino.cc/playground/uploads/Main/PS2Keyboard002.zip')
```

or on console:

```
python -m confduino.libinstall http://arduino.cc/playground/uploads/Main/PS2Keyboard002.zip
```

install a lot of libraries:

```
python -m confduino.libinstall.examples.upgrademany
```

CHAPTER

TWO

INSTALLATION

2.1 General

- install arduino
- install python
- install pip
- install back-ends for pyunpack (optional)
- install the program:

```
# as root
pip install confduino
```

2.2 Ubuntu

```
sudo apt-get install arduino
sudo apt-get install python-pip
sudo pip install confduino
sudo apt-get install unzip unrar p7zip-full
```

2.3 Uninstall

```
# as root
pip uninstall confduino
```

CHAPTER

THREE

ARDUINO PATH

If Arduino can not be found at default path, then `ARDUINO_HOME` environment variable should be set.

on Ubuntu (https://help.ubuntu.com/community/EnvironmentVariables): in `~/.profile`:

```
ARDUINO_HOME=~/opt/arduino
export ARDUINO_HOME
```

temporary changes:

```
$ env ARDUINO_HOME=~/opt/arduino-1.0 python -m confduino.version
1.0

$ env ARDUINO_HOME=/usr/share/arduino/ python -m confduino.version
0022ubuntu0.1
```

Default path:

- Mac: /Applications/Arduino.app/Contents/Resources/Java
- Linux: /usr/share/arduino/

CHAPTER

FOUR

CHECK ARDUINO VERSION

4.1 From python

```
>>> from confduino.version import version, intversion, sketch_extension
>>> from confduino import set_arduino_path
>>>
>>> version()
'0022'
>>> intversion()
22
>>> sketch_extension()
'.pde'
>>>
>>> set_arduino_path('~/opt/arduino-0023')
>>> version()
'0023'
>>> intversion()
23
>>> sketch_extension()
'.pde'
>>>
>>> set_arduino_path('~/opt/arduino-1.0')
>>> version()
'1.0'
>>> intversion()
100
>>> sketch_extension()
'.ino'
>>>
>>> set_arduino_path('/usr/share/arduino')
>>> version()
'0022ubuntu0.1'
>>> intversion()
22
>>> sketch_extension()
'.pde'
```

4.2 From console

```
$ python -m confduino.version
0022
```

Help:

```
$ python -m confduino.version --help
usage: version.py [-h] [-i] [--debug] [--version]

print arduino version

optional arguments:
  -h, --help     show this help message and exit
  -i, --integer
  --debug        set logging level to DEBUG
  --version      show program's version number and exit
```

4.3 Examples

```
$ env ARDUINO_HOME=~/opt/arduino-0022 python -m confduino.version
0022

$ env ARDUINO_HOME=~/opt/arduino-0022 python -m confduino.version --integer
22

$ env ARDUINO_HOME=~/opt/arduino-0023 python -m confduino.version
0023

$ env ARDUINO_HOME=~/opt/arduino-0023 python -m confduino.version --integer
23

$ env ARDUINO_HOME=~/opt/arduino-1.0 python -m confduino.version
1.0

$ env ARDUINO_HOME=~/opt/arduino-1.0 python -m confduino.version --integer
100

$ env ARDUINO_HOME=/usr/share/arduino/ python -m confduino.version
0022ubuntu0.1

$ env ARDUINO_HOME=/usr/share/arduino/ python -m confduino.version --integer
22
```

CHAPTER

FIVE

MENU ITEM “ALL”

5.1 Create menu item “all” for examples

If you have a lot of libraries and low screen resolution then all menu items under “examples” can not be accessed.

Bug report: “Long menus don’t scroll” (http://code.google.com/p/arduino/issues/detail?id=426)

My workaround creates a 2 level deep menu structure without changing other menu items. Symbolic links are used if possible.

From python:

```
>>> from confduino.exampallcreate import create_examples_all
>>> create_examples_all()
```

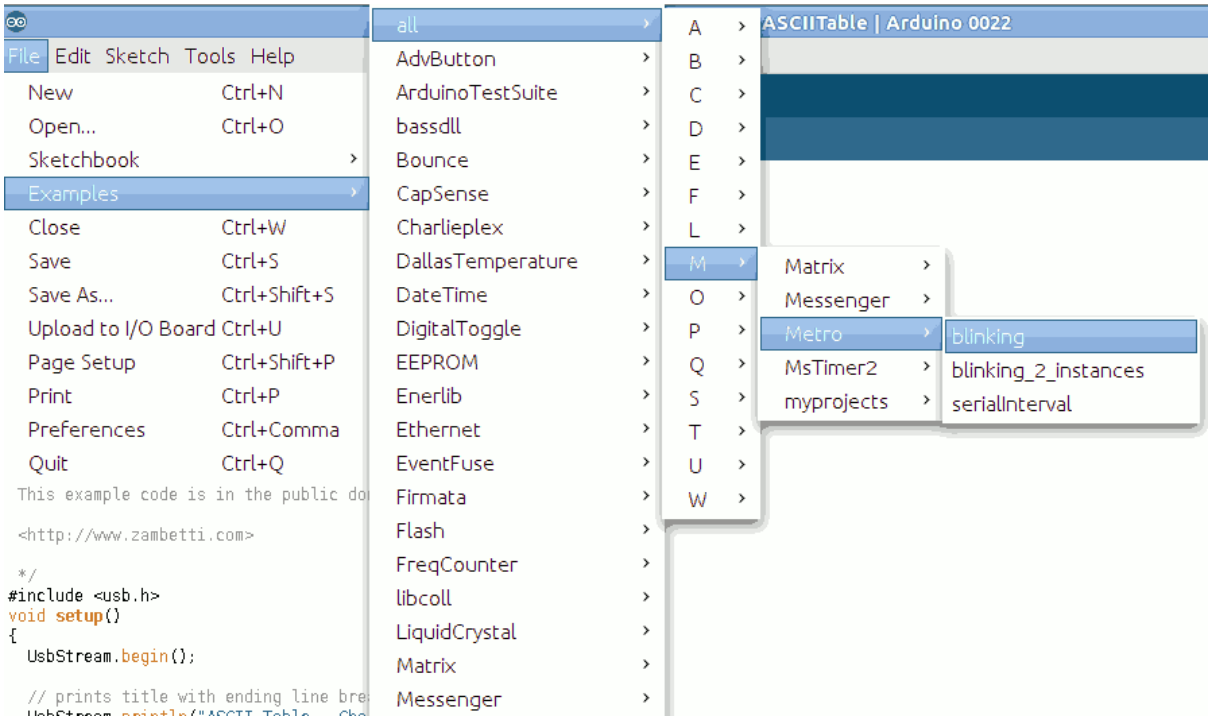
From console:

```
python -m confduino.exampallcreate
```

Help:

```
$ python -m confduino.exampallcreate --help
usage: exampallcreate.py [-h] [--debug]

create arduino/examples/all directory

optional arguments:
  -h, --help  show this help message and exit
  --debug     set logging level to DEBUG
```

Result:



5.2 Removing menu item ‘all’

From python:

```
>>> from confduino.exampallremove import remove_examples_all
>>> remove_examples_all()
```

From console:

```
python -m confduino.exampallremove
```

Help:

```
$ python -m confduino.exampallremove --help
usage: exampallremove.py [-h] [--debug]

remove arduino/examples/all directory

optional arguments:
  -h, --help  show this help message and exit
  --debug     set logging level to DEBUG
```

CHAPTER

SIX

USAGE WITH LIBRARIES

6.1 List installed libraries

From python:

```
>>> from confduino.liblist import libraries
>>> libraries()
['AdvButton', 'ArduinoTestSuite', 'ArduinoUnit', 'AtTouch', 'Bounce', 'Button', 'ByteBuffer', 'Ca
```

From console:

```
$ python -m confduino.liblist
AdvButton
ArduinoTestSuite
ArduinoUnit
AtTouch
Bounce
Button
ByteBuffer
CapSense
Charlieplex
Coll
DB
DallasTemperature
DataFlash
DateTime
DateTimeStrings
DigitalToggle
EDB
EEPROM
EasyTransfer
Enerlib
Ethernet
EventFuse
FancyLED
Firmata
Flash
FreqCounter
FrequencyTimer2
LED
LPM11162
LedControl
LedDisplay
LiquidCrystal
Matrix
MatrixMath
Messenger
Metro
```

```
Morse
MorseEnDecoder
MsTimer2
NewSoftSerial
OneWire
PID_v1
PS2Keyboard
PS2X_lib
PString
PWMServo
PinChangeInt
Ping
Qtouch1Wire
QueueArray
QueueList
SD
SPI
SSerial2Mobile
SerialIP
SerialManager
Servo
SevenSegment
SimpleMessageSystem
SoftEasyTransfer
SoftUsb
SoftwareSerial
Sprite
StackArray
StackList
Streaming
TButton
TVout
TimedAction
TimerOne
TinyGPS
Tween
Twitter
UComms
UsbDevice
UsbKeyboard
WebServer
WiShield
Wire
arduinode
bassdll
morse
multiCameraIrControl
myprojects
osa
spline
tmp
x10
```

Help:

```
$ python -m confduino.liblist --help
usage: liblist.py [-h] [--debug]

print installed arduino libraries

optional arguments:
  -h, --help  show this help message and exit
  --debug     set logging level to DEBUG
```

6.2 Install new library

Existing library will not be changed.

From python:

```
>>> from confduino.libinstall import install_lib
>>> install_lib('http://arduino.cc/playground/uploads/Main/PS2Keyboard002.zip')
```

From console:

```
python -m confduino.libinstall http://arduino.cc/playground/uploads/Main/PS2Keyboard002.zip
```

6.3 Upgrade existing library

Same as install with *replace_existing* option.

From python:

```
>>> from confduino.libinstall import install_lib
>>> install_lib('http://arduino.cc/playground/uploads/Main/PS2Keyboard002.zip', replace_existing=
```

From console:

```
python -m confduino.libinstall http://arduino.cc/playground/uploads/Main/PS2Keyboard002.zip --rep
```

Help:

```
$ python -m confduino.libinstall --help
usage: libinstall.py [-h] [-r] [--debug] url

install library from web or local files system

positional arguments:
  url                   web address or file path

optional arguments:
  -h, --help            show this help message and exit
  -r, --replace-existing
                        bool
  --debug               set logging level to DEBUG
```

6.4 Remove existing library

From python:

```
>>> from confduino.libremove import remove_lib
>>> remove_lib('PS2Keyboard')
```

From console:

```
python -m confduino.libremove PS2Keyboard
```

Help:

```
$ python -m confduino.libremove --help
usage: libremove.py [-h] [--debug] lib_name

remove library
```

```
positional arguments:
  lib_name    library name (e.g. 'PS2Keyboard')

optional arguments:
  -h, --help  show this help message and exit
  --debug     set logging level to DEBUG
```

CHAPTER

SEVEN

USAGE WITH BOARDS

7.1 List installed boards

From python:

```
>>> from confduino.boardlist import boards
>>> boards()
AutoBunch(atmega8=AutoBunch(bootloader=AutoBunch(file='ATmegaBOOT.hex', high_fuses='0xca', lock_b
>>> boards().diecimila.build.f_cpu
'16000000L'
>>> boards()['diecimila']['build']['f_cpu']
'16000000L'
```

From console:

```
$ python -m confduino.boardlist
atmega8
atmega88
bt
bt328
diecimila
fio
lilypad
lilypad328
mega
mega2560
metaboard
mini
pro
pro328
pro5v
pro5v328
uno
```

verbose:

```
$ python -m confduino.boardlist --verbose
{'atmega8': {'bootloader': {'file': 'ATmegaBOOT.hex',
                            'high_fuses': '0xca',
                            'lock_bits': '0x0F',
                            'low_fuses': '0xdf',
                            'path': 'atmega8',
                            'unlock_bits': '0x3F'},
             'build': {'core': 'arduino',
                       'f_cpu': '16000000L',
                       'mcu': 'atmega8'},
             'name': 'Arduino NG or older w/ ATmega8',
             'upload': {'maximum_size': '7168',
                        'protocol': 'stk500',
```

```
                        'speed': '19200'}},
 'atmega88': {'build': {'core': 'arduino',
                        'f_cpu': '20000000L',
                        'mcu': 'atmega88'},
              'name': 'atmega88@20000000 programmer:usbasp',
              'upload': {'maximum_size': '8192',
                         'using': 'usbasp'}},
 'bt': {'bootloader': {'extended_fuses': '0x00',
                       'file': 'ATmegaBOOT_168.hex',
                       'high_fuses': '0xdd',
                       'lock_bits': '0x0F',
                       'low_fuses': '0xff',
                       'path': 'bt',
                       'unlock_bits': '0x3F'},
        'build': {'core': 'arduino',
                  'f_cpu': '16000000L',
                  'mcu': 'atmega168'},
        'name': 'Arduino BT w/ ATmega168',
        'upload': {'disable_flushing': 'true',
                   'maximum_size': '14336',
                   'protocol': 'stk500',
                   'speed': '19200'}},
 'bt328': {'bootloader': {'extended_fuses': '0x05',
                          'file': 'ATmegaBOOT_168_atmega328_bt.hex',
                          'high_fuses': '0xd8',
                          'lock_bits': '0x0F',
                          'low_fuses': '0xff',
                          'path': 'bt',
                          'unlock_bits': '0x3F'},
           'build': {'core': 'arduino',
                     'f_cpu': '16000000L',
                     'mcu': 'atmega328p'},
           'name': 'Arduino BT w/ ATmega328',
           'upload': {'disable_flushing': 'true',
                      'maximum_size': '28672',
                      'protocol': 'stk500',
                      'speed': '19200'}},
 'diecimila': {'bootloader': {'extended_fuses': '0x00',
                              'file': 'ATmegaBOOT_168_diecimila.hex',
                              'high_fuses': '0xdd',
                              'lock_bits': '0x0F',
                              'low_fuses': '0xff',
                              'path': 'atmega',
                              'unlock_bits': '0x3F'},
               'build': {'core': 'arduino',
                         'f_cpu': '16000000L',
                         'mcu': 'atmega168'},
               'name': 'Arduino Diecimila, Duemilanove, or Nano w/ ATmega168',
               'upload': {'maximum_size': '14336',
                          'protocol': 'stk500',
                          'speed': '19200'}},
 'fio': {'bootloader': {'extended_fuses': '0x05',
                        'file': 'ATmegaBOOT_168_atmega328_pro_8MHz.hex',
                        'high_fuses': '0xDA',
                        'lock_bits': '0x0F',
                        'low_fuses': '0xFF',
                        'path': 'arduino:atmega',
                        'unlock_bits': '0x3F'},
         'build': {'core': 'arduino:arduino',
                   'f_cpu': '8000000L',
                   'mcu': 'atmega328p'},
         'name': 'Arduino Fio',
         'upload': {'maximum_size': '30720',
```

```
                  'protocol': 'stk500',
                  'speed': '57600'}},
 'lilypad': {'bootloader': {'extended_fuses': '0x00',
                            'file': 'LilyPadBOOT_168.hex',
                            'high_fuses': '0xdd',
                            'lock_bits': '0x0F',
                            'low_fuses': '0xe2',
                            'path': 'lilypad',
                            'unlock_bits': '0x3F'},
             'build': {'core': 'arduino',
                       'f_cpu': '8000000L',
                       'mcu': 'atmega168'},
             'name': 'LilyPad Arduino w/ ATmega168',
             'upload': {'maximum_size': '14336',
                        'protocol': 'stk500',
                        'speed': '19200'}},
 'lilypad328': {'bootloader': {'extended_fuses': '0x05',
                               'file': 'ATmegaBOOT_168_atmega328_pro_8MHz.hex',
                               'high_fuses': '0xDA',
                               'lock_bits': '0x0F',
                               'low_fuses': '0xFF',
                               'path': 'atmega',
                               'unlock_bits': '0x3F'},
                'build': {'core': 'arduino',
                          'f_cpu': '8000000L',
                          'mcu': 'atmega328p'},
                'name': 'LilyPad Arduino w/ ATmega328',
                'upload': {'maximum_size': '30720',
                           'protocol': 'stk500',
                           'speed': '57600'}},
 'mega': {'bootloader': {'extended_fuses': '0xF5',
                         'file': 'ATmegaBOOT_168_atmega1280.hex',
                         'high_fuses': '0xDA',
                         'lock_bits': '0x0F',
                         'low_fuses': '0xFF',
                         'path': 'atmega',
                         'unlock_bits': '0x3F'},
          'build': {'core': 'arduino',
                    'f_cpu': '16000000L',
                    'mcu': 'atmega1280'},
          'name': 'Arduino Mega (ATmega1280)',
          'upload': {'maximum_size': '126976',
                     'protocol': 'stk500',
                     'speed': '57600'}},
 'mega2560': {'bootloader': {'extended_fuses': '0xFD',
                             'file': 'stk500boot_v2_mega2560.hex',
                             'high_fuses': '0xD8',
                             'lock_bits': '0x0F',
                             'low_fuses': '0xFF',
                             'path': 'stk500v2',
                             'unlock_bits': '0x3F'},
              'build': {'core': 'arduino',
                        'f_cpu': '16000000L',
                        'mcu': 'atmega2560'},
              'name': 'Arduino Mega 2560',
              'upload': {'maximum_size': '258048',
                         'protocol': 'stk500v2',
                         'speed': '115200'}},
 'metaboard': {'build': {'core': 'arduino',
                         'f_cpu': '16000000L',
                         'mcu': 'atmega168'},
               'name': 'Metaboard',
               'upload': {'disable_flushing': 'true',
```

```
                        'maximum_size': '14336',
                        'protocol': 'usbasp',
                        'speed': '19200'}},
'mini': {'bootloader': {'extended_fuses': '0x00',
                        'file': 'ATmegaBOOT_168_ng.hex',
                        'high_fuses': '0xdd',
                        'lock_bits': '0x0F',
                        'low_fuses': '0xff',
                        'path': 'atmega',
                        'unlock_bits': '0x3F'},
         'build': {'core': 'arduino',
                   'f_cpu': '16000000L',
                   'mcu': 'atmega168'},
         'name': 'Arduino Mini',
         'upload': {'maximum_size': '14336',
                    'protocol': 'stk500',
                    'speed': '19200'}},
'pro': {'bootloader': {'extended_fuses': '0x00',
                       'file': 'ATmegaBOOT_168_pro_8MHz.hex',
                       'high_fuses': '0xdd',
                       'lock_bits': '0x0F',
                       'low_fuses': '0xc6',
                       'path': 'atmega',
                       'unlock_bits': '0x3F'},
        'build': {'core': 'arduino',
                  'f_cpu': '8000000L',
                  'mcu': 'atmega168'},
        'name': 'Arduino Pro or Pro Mini (3.3V, 8 MHz) w/ ATmega168',
        'upload': {'maximum_size': '14336',
                   'protocol': 'stk500',
                   'speed': '19200'}},
'pro328': {'bootloader': {'extended_fuses': '0x05',
                          'file': 'ATmegaBOOT_168_atmega328_pro_8MHz.hex',
                          'high_fuses': '0xDA',
                          'lock_bits': '0x0F',
                          'low_fuses': '0xFF',
                          'path': 'atmega',
                          'unlock_bits': '0x3F'},
           'build': {'core': 'arduino',
                     'f_cpu': '8000000L',
                     'mcu': 'atmega328p'},
           'name': 'Arduino Pro or Pro Mini (3.3V, 8 MHz) w/ ATmega328',
           'upload': {'maximum_size': '30720',
                      'protocol': 'stk500',
                      'speed': '57600'}},
'pro5v': {'bootloader': {'extended_fuses': '0x00',
                         'file': 'ATmegaBOOT_168_diecimila.hex',
                         'high_fuses': '0xdd',
                         'lock_bits': '0x0F',
                         'low_fuses': '0xff',
                         'path': 'atmega',
                         'unlock_bits': '0x3F'},
          'build': {'core': 'arduino',
                    'f_cpu': '16000000L',
                    'mcu': 'atmega168'},
          'name': 'Arduino Pro or Pro Mini (5V, 16 MHz) w/ ATmega168',
          'upload': {'maximum_size': '14336',
                     'protocol': 'stk500',
                     'speed': '19200'}},
'pro5v328': {'bootloader': {'extended_fuses': '0x05',
                            'file': 'ATmegaBOOT_168_atmega328.hex',
                            'high_fuses': '0xDA',
                            'lock_bits': '0x0F',
```

```
                              'low_fuses': '0xFF',
                              'path': 'atmega',
                              'unlock_bits': '0x3F'},
                'build': {'core': 'arduino',
                          'f_cpu': '16000000L',
                          'mcu': 'atmega328p'},
                'name': 'Arduino Pro or Pro Mini (5V, 16 MHz) w/ ATmega328',
                'upload': {'maximum_size': '30720',
                           'protocol': 'stk500',
                           'speed': '57600'}},
 'uno': {'bootloader': {'extended_fuses': '0x05',
                        'file': 'optiboot_atmega328.hex',
                        'high_fuses': '0xde',
                        'lock_bits': '0x0F',
                        'low_fuses': '0xff',
                        'path': 'optiboot',
                        'unlock_bits': '0x3F'},
         'build': {'core': 'arduino',
                   'f_cpu': '16000000L',
                   'mcu': 'atmega328p'},
         'name': 'Arduino Uno',
         'upload': {'maximum_size': '32256',
                    'protocol': 'stk500',
                    'speed': '115200'}}}
```

Help:

```
$ python -m confduino.boardlist --help
usage: boardlist.py [-h] [--hwpack HWPACK] [-v] [--debug]

print boards from boards.txt

optional arguments:
  -h, --help       show this help message and exit
  --hwpack HWPACK
  -v, --verbose
  --debug          set logging level to DEBUG
```

7.2 List installed MCUs

From python:

```
>>> from confduino.mculist import mcus
>>> mcus()
['at90can128', 'at90can32', 'at90can64', 'at90usb1286', 'at90usb1287', 'at90usb162', 'at90usb646',
```

From console:

```
$ python -m confduino.mculist
at90can128
at90can32
at90can64
at90usb1286
at90usb1287
at90usb162
at90usb646
at90usb647
atmega128
atmega1280
atmega1281
atmega1284p
```

```
atmega16
atmega165
atmega165p
atmega168
atmega169
atmega2560
atmega2561
atmega32
atmega324p
atmega328p
atmega3290p
atmega32u4
atmega48
atmega64
atmega640
atmega644
atmega644p
atmega645
atmega8
atmega8515
atmega8535
atmega88
atmega88p
atmega8u2
attiny2313
attiny26
attiny45
attiny85
attiny861
```

Help:

```
$ python -m confduino.mculist --help
usage: mculist.py [-h] [--debug]

print boards from boards.txt

optional arguments:
  -h, --help  show this help message and exit
  --debug     set logging level to DEBUG
```

7.3 Install new board

Existing board will not be changed.

From python:

```
from confduino.boardinstall import install_board
from confduino.util import AutoBunch
from entrypoint2 import entrypoint

@entrypoint
def install(id='atmega88', mcu='atmega88', f_cpu=20000000, upload='usbasp', core='arduino', repla
    'install atmega88 board'
    board = AutoBunch()
    board.name = '{mcu}@{f_cpu} programmer:{upload}'.format(mcu=mcu,f_cpu=f_cpu,upload=upload)

    board.upload.using = upload
    board.upload.maximum_size = 8*1024

    board.build.mcu = mcu
```

```
    board.build.f_cpu = str(f_cpu) + 'L'
    board.build.core = core

    install_board(id, board, replace_existing=replace_existing)
```

console is not implemented

7.4 Remove existing board

From python:

```
>>> from confduino.boardremove import remove_board
>>> remove_board('diecimila')
```

From console:

```
python -m confduino.boardremove diecimila
```

Help:

```
$ python -m confduino.boardremove --help
usage: boardremove.py [-h] [--debug] board_id

remove board

positional arguments:
  board_id    board id (e.g. 'diecimila')

optional arguments:
  -h, --help  show this help message and exit
  --debug     set logging level to DEBUG
```

CHAPTER

EIGHT

USAGE WITH PROGRAMMERS

8.1 List installed programmers

From python:

```
>>> from confduino.proglist import programmers
>>> programmers()
AutoBunch(arduinoisp=AutoBunch(communication='serial', name='Arduino as ISP', protocol='stk500v1',
>>> programmers().arduinoisp.speed
'19200'
>>> programmers()['arduinoisp']['speed']
'19200'
```

From console:

```
$ python -m confduino.proglist
arduinoisp
avrisp
avrispmkii
parallel
stk200
usbasp
usbtinyisp
```

verbose:

```
$ python -m confduino.proglist --verbose
{'arduinoisp': {'communication': 'serial',
                'name': 'Arduino as ISP',
                'protocol': 'stk500v1',
                'speed': '19200'},
 'avrisp': {'communication': 'serial',
            'name': 'AVR ISP',
            'protocol': 'stk500v1'},
 'avrispmkii': {'communication': 'usb',
                'name': 'AVRISP mkII',
                'protocol': 'stk500v2'},
 'parallel': {'force': 'true',
              'name': 'Parallel Programmer',
              'protocol': 'dapa'},
 'stk200': {'force': 'true', 'name': 'STK200', 'protocol': 'dapa'},
 'usbasp': {'communication': 'usb', 'name': 'USBasp', 'protocol': 'usbasp'},
 'usbtinyisp': {'name': 'USBtinyISP', 'protocol': 'usbtiny'}}
```

Help:

```
$ python -m confduino.proglist --help
usage: proglist.py [-h] [-v] [--debug]
```

```
print programmers from programmers.txt

optional arguments:
  -h, --help     show this help message and exit
  -v, --verbose
  --debug        set logging level to DEBUG
```

8.2 Install new programmer

From python:

```
from confduino.proginstall import install_programmer
from confduino.util import AutoBunch
from entrypoint2 import entrypoint

@entrypoint
def install(replace_existing=False):
    'install usbasp programmer'
    usbasp = AutoBunch()
    usbasp.name = 'USBasp'
    usbasp.communication = 'usb'
    usbasp.protocol = 'usbasp'

    install_programmer('usbasp', usbasp, replace_existing=replace_existing)
```

console is not implemented

8.3 Remove existing programmer

From python:

```
>>> from confduino.progremove import remove_programmer
>>> remove_programmer('parallel')
```

From console:

```
python -m confduino.progremove parallel
```

Help:

```
$ python -m confduino.progremove --help
usage: progremove.py [-h] [--debug] programmer_id

remove programmer

positional arguments:
  programmer_id  programmer id (e.g. 'avrisp')

optional arguments:
  -h, --help     show this help message and exit
  --debug        set logging level to DEBUG
```

CHAPTER

NINE

EXAMPLES

9.1 Install libraries

Many libraries are upgraded in examples/upgrademany.py, this can be started:

```
python -m confduino.examples.upgrademany
```

Code:

```
from confduino import exampallcreate
from confduino.libinstall import install_lib
from confduino.util import ConfduinoError
from entrypoint2 import entrypoint


@entrypoint
def upgrade_many(upgrade=True, create_examples_all=True):
    '''upgrade many libs

    source: http://arduino.cc/playground/Main/LibraryList

    you can set your arduino path if it is not default
    os.environ['ARDUINO_HOME'] = '/home/...'
    '''
    urls=set()
    def inst(url):
        print 'upgrading ' + url
        assert url not in urls
        urls.add(url)
        try:
            lib = install_lib(url, upgrade)
            print ' -> ', lib
        except ConfduinoError as e:
            print e


    ############################
    # github.com
    ############################
    inst('https://github.com/madsci1016/Arduino-EasyTransfer/zipball/master')
    inst('https://github.com/madsci1016/Arduino-SoftEasyTransfer/zipball/master')
    inst('https://github.com/madsci1016/Arduino-PS2X/zipball/master')
#    inst('http://github.com/wimleers/flexitimer2/zipball/v1.0')# can't install
    inst('https://github.com/kerinin/arduino-splines/zipball/master')
    inst('https://github.com/asynclabs/WiShield/zipball/master')
    inst('https://github.com/asynclabs/dataflash/zipball/master')
    inst('https://github.com/slugmobile/AtTouch/zipball/master')
    inst('https://github.com/carlynorama/Arduino-Library-Button/zipball/master')
```

```
    inst('https://github.com/carlynorama/Arduino-Library-FancyLED/zipball/master')
    inst('https://github.com/markfickett/arduinomorse/zipball/master')


    ############################
    # arduiniana.org
    ############################
    # TODO: how to get latest version??
    inst('http://arduiniana.org/PString/PString2.zip')
    inst('http://arduiniana.org/Flash/Flash3.zip')
    inst('http://arduiniana.org/NewSoftSerial/NewSoftSerial10c.zip')
    inst('http://arduiniana.org/Streaming/Streaming4.zip')
    inst('http://arduiniana.org/PWMServo/PWMServo.zip')
    inst('http://arduiniana.org/TinyGPS/TinyGPS10.zip')


    ############################
    # google
    ############################
    # TODO: how to get latest version??
    # parse http://code.google.com/p/arduino-pinchangeint/downloads/list

#    inst('http://rogue-code.googlecode.com/files/Arduino-Library-Tone.zip') # already in core!
    inst('http://arduino-playground.googlecode.com/files/LedDisplay03.zip')
    inst('http://sserial2mobile.googlecode.com/files/SSerial2Mobile-1.1.0.zip')
    inst('http://webduino.googlecode.com/files/webduino-1.4.1.zip')# can't install
    inst('http://arduino-pid-library.googlecode.com/files/PID_v1.0.1.zip')
    inst('http://ideoarduinolibraries.googlecode.com/files/Qtouch1Wire.zip')
    inst('http://arduino-timerone.googlecode.com/files/TimerOne-v8.zip')
    inst('http://arduinounit.googlecode.com/files/arduinounit-1.4.2.zip')
    inst('http://arduinode.googlecode.com/files/arduinode_0.1.zip')
    inst('http://arduino-edb.googlecode.com/files/EDB_r7.zip')
    inst('http://arduino-dblib.googlecode.com/files/DB.zip')
    inst('http://morse-endecoder.googlecode.com/files/Morse_EnDecoder_2010.12.06.tar.gz')
    inst('http://arduino-pinchangeint.googlecode.com/files/PinChangeInt.zip')
    inst('http://arduino-tvout.googlecode.com/files/TVout_R5.91.zip')

    ############################
    # others
    ############################
    inst('http://download.milesburton.com/Arduino/MaximTemperature/DallasTemperature_370Beta.zip')
    inst('http://www.pjrc.com/teensy/arduino_libraries/OneWire.zip')
    inst('http://interface.khm.de/wp-content/uploads/2009/01/FreqCounter1.zip')
#    inst('http://www.state-machine.com/arduino/qp_arduino.zip') # too big
    inst('ftp://momjian.us/pub/arduino/TButton.zip') # AdvButton is better
    inst('http://johnmchilton.com/media/UComms.zip')
    inst('http://www.shikadi.net/files/arduino/SerialIP-1.0.zip')
    inst('http://siggiorn.com/wp-content/uploads/libraries/ArduinoByteBuffer.zip')
    inst('http://siggiorn.com/wp-content/uploads/libraries/ArduinoSerialManager.zip')
    inst('http://arduino-tweet.appspot.com/Library-Twitter-1.2.2.zip')
#    inst('http://gkaindl.com/php/download.php?key=ArduinoEthernet')# can't install
    inst('http://geekcowboy.net/downloads/x10.zip')
    inst('http://sebastian.setz.name/wp-content/uploads/2011/01/multiCameraIrControl_1-5.zip')
    inst('http://www.familjenlinder.se/Morse.7z')
    inst('http://www.pjrc.com/teensy/arduino_libraries/FrequencyTimer2.zip')
    inst('http://alexandre.quessy.net/static/avr/Tween_01.zip')
    inst('http://www.lpelettronica.it/images/stories/LPM11162_images/Arduino/LPM11162_ArduinoLib_

    ############################
    # arduino.cc
    ############################
    inst('http://arduino.cc/playground/uploads/Main/PS2Keyboard002.zip')
    inst('http://arduino.cc/playground/uploads/Code/Metro.zip')
```

```
    inst('http://www.arduino.cc/playground/uploads/Main/MsTimer2.zip')
#    inst('http://www.arduino.cc/playground/uploads/Code/Time.zip')# can't install
    inst('http://arduino.cc/playground/uploads/Main/LedControl.zip')
#    inst('http://www.arduino.cc/playground/uploads/Code/ks0108GLCD.zip')# can't install
    inst('http://arduino.cc/playground/uploads/Code/Bounce.zip')
    inst('http://arduino.cc/playground/uploads/Main/CapacitiveSense003.zip')
    inst('http://arduino.cc/playground/uploads/Main/PinChangeInt.zip')
#    inst('http://arduino.cc/playground/uploads/Code/TimerThree.zip')# can't install
    inst('http://arduino.cc/playground/uploads/Code/TimedAction-1_6.zip')
#    inst('http://www.arduino.cc/playground/uploads/Code/Time.zip')# can't install
    inst('http://arduino.cc/playground/uploads/Code/EventFuse.zip')
    inst('http://arduino.cc/playground/uploads/Code/Charlieplex.zip')
    inst('http://arduino.cc/playground/uploads/Code/DigitalToggle.zip')
    inst('http://arduino.cc/playground/uploads/Code/Enerlib.zip')

    inst('http://arduino.cc/playground/uploads/Code/AdvButton_11.zip')
    #inst('http://arduino.cc/playground/uploads/Code/AdvButton.zip') # old version

#    inst('http://arduino.cc/playground/uploads/Code/SerialDebugger.zip') # can't install
    inst('http://arduino.cc/playground/uploads/Code/MatrixMath.zip')

    inst('http://arduino.cc/playground/uploads/Code/StackArray.zip')
    inst('http://arduino.cc/playground/uploads/Code/StackList.zip')
    inst('http://arduino.cc/playground/uploads/Code/QueueArray.zip')
    inst('http://arduino.cc/playground/uploads/Code/QueueList.zip')
    inst('http://arduino.cc/playground/uploads/Code/Ping-1_3.zip')
    inst('http://www.arduino.cc/playground/uploads/Code/LED.zip')

#    inst('')
    if create_examples_all:
        print 'create "all" menu item'
        exampallcreate.create_examples_all()
    print 'install finished'
```

9.2 Install USBasp programmer

```
python -m confduino.examples.usbasp
```

Code:

```
from confduino.proginstall import install_programmer
from confduino.util import AutoBunch
from entrypoint2 import entrypoint

@entrypoint
def install(replace_existing=False):
    'install usbasp programmer'
    usbasp = AutoBunch()
    usbasp.name = 'USBasp'
    usbasp.communication = 'usb'
    usbasp.protocol = 'usbasp'

    install_programmer('usbasp', usbasp, replace_existing=replace_existing)
```

9.3 Install STK200 programmer

```
python -m confduino.examples.stk200
```

Code:

```
from confduino.proginstall import install_programmer
from confduino.util import AutoBunch
from entrypoint2 import entrypoint

@entrypoint
def install(replace_existing=False):
    'install stk200 programmer'
    bunch = AutoBunch()
    bunch.name = 'STK200'
    bunch.protocol = 'stk200'
    #bunch.force = 'true'
    # bunch.delay=200

    install_programmer('stk200', bunch, replace_existing=replace_existing)
```

9.4 Install atmega88 board

```
python -m confduino.examples.atmega88
```

Code:

```
from confduino.boardinstall import install_board
from confduino.util import AutoBunch
from entrypoint2 import entrypoint

@entrypoint
def install(id='atmega88', mcu='atmega88', f_cpu=20000000, upload='usbasp', core='arduino', repla
    'install atmega88 board'
    board = AutoBunch()
    board.name = '{mcu}@{f_cpu} programmer:{upload}'.format(mcu=mcu,f_cpu=f_cpu,upload=upload)

    board.upload.using = upload
    board.upload.maximum_size = 8*1024

    board.build.mcu = mcu
    board.build.f_cpu = str(f_cpu) + 'L'
    board.build.core = core

    install_board(id, board, replace_existing=replace_existing)
```

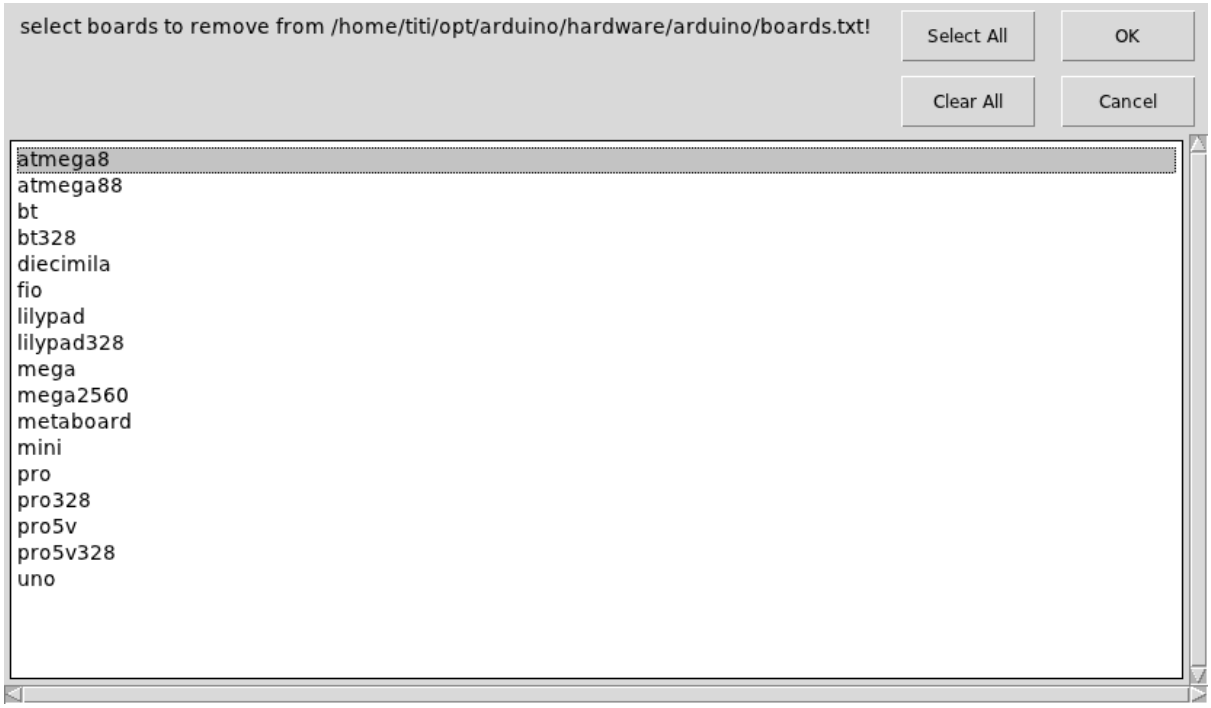
options:

```
$ python -m confduino.examples.atmega88 --help
usage: atmega88.py [-h] [-i ID] [-m MCU] [-f F_CPU] [-u UPLOAD] [-c CORE] [-r]
                   [--debug]

install atmega88 board

optional arguments:
  -h, --help            show this help message and exit
  -i ID, --id ID
  -m MCU, --mcu MCU
  -f F_CPU, --f-cpu F_CPU
  -u UPLOAD, --upload UPLOAD
  -c CORE, --core CORE
  -r, --replace-existing
  --debug               set logging level to DEBUG
```

9.5 remove boards

```
$ python -m confduino.examples.remove_boards
```


```
$ python -m confduino.examples.remove_boards --hwpack arduino
```



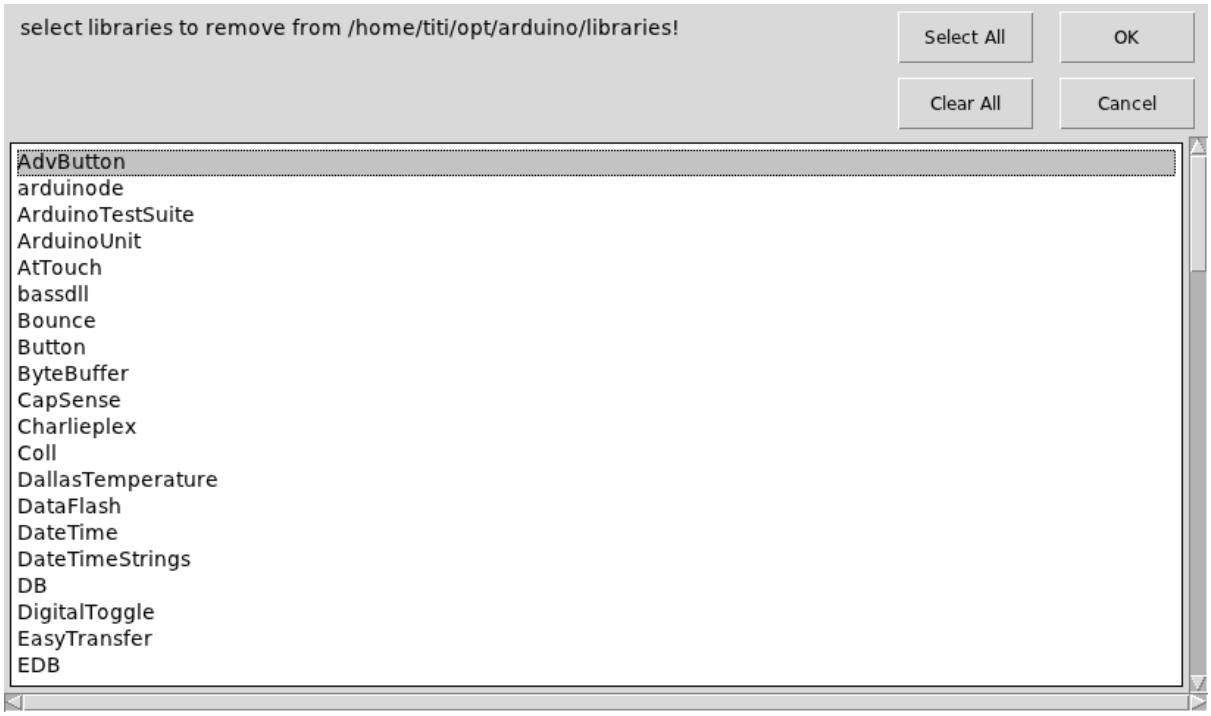
Code:

```
from confduino.boardlist import boards, boards_txt, board_names
from confduino.boardremove import remove_board
from confduino.hwpacklist import hwpack_names
from entrypoint2 import entrypoint
import psidialogs
```

```
@entrypoint
def remove_boards_gui(hwpack=''):
    'remove boards by GUI'
    if not hwpack:
        if len(hwpack_names()) > 1:
            hwpack = psidialogs.choice(hwpack_names(),
                                       'select hardware package to select board from!',
                                       title='select')
        else:
            hwpack = hwpack_names()[0]
    print hwpack, 'selected'

    if hwpack:
        sel = psidialogs.multi_choice(board_names(hwpack),
                                      'select boards to remove from %s!' % boards_txt(hwpack),
                                      title='remove boards')
        print sel, 'selected'

        if sel:
            for x in sel:
                remove_board(x)
                print x + ' was removed'
```

9.6 remove libraries

```
$ python -m confduino.examples.remove_libraries
```



Code:

```
from confduino.liblist import libraries, libraries_dir
from confduino.libremove import remove_lib
from entrypoint2 import entrypoint
import psidialogs


@entrypoint
```

```
def gui():
    'remove libraries by GUI'

    sel = psidialogs.multi_choice(libraries(),
                          'select libraries to remove from %s!' % libraries_dir(),
                          title='remove boards')
    print sel, 'selected'

    if sel:
        if psidialogs.ask_yes_no('Do you really want to remove selected libraries?\n'+'\n'.join(se
            for x in sel:
                remove_lib(x)
                print x + ' was removed'
```

CHAPTER

TEN

API

10.1 lib

confduino.liblist.**lib_dir**(*lib*)
return library directory

$ARDUINO/libraries/$LIB

confduino.liblist.**lib_example_dir**(*lib*, *example*)
return library example directory

$ARDUINO/libraries/$LIB/examples/$EXAMPLE

confduino.liblist.**lib_examples**(*lib*)
return library examples

EXAMPLE1,EXAMPLE2,..

confduino.liblist.**lib_examples_dir**(*lib*)
return library examples directory

$ARDUINO/libraries/$LIB/examples

confduino.liblist.**libraries**()
return installed library names

confduino.liblist.**libraries_dir**()
return library root path

$ARDUINO/libraries

confduino.liblist.**print_libraries**()
print installed arduino libraries

confduino.libinstall.**find_lib_dir**(*root*)
search for lib dir under root

confduino.libinstall.**fix_examples_dir**(*lib_dir*)
rename examples dir to `examples`

confduino.libinstall.**install_lib**(*url*, *replace_existing=False*)
install library from web or local files system

Parameters

- **url** – web address or file path
- **replace_existing** – bool

Return type None

confduino.libinstall.**move_examples**(*root*, *lib_dir*)
find examples not under lib dir, and move into `examples`

confduino.libremove.**remove_lib**(*lib_name*)
remove library

Parameters **lib_name** – library name (e.g. 'PS2Keyboard')

Return type None

10.2 board

confduino.boardlist.**board_names**(*hwpack='arduino'*)
return installed board names

confduino.boardlist.**boards**(*hwpack='arduino'*)
read boards from boards.txt

Parameters **core_package** – 'all,'arduino',..

confduino.boardlist.**boards_txt**(*hwpack='arduino'*)
path of boards.txt

confduino.boardlist.**print_boards**(*hwpack='arduino'*, *verbose=False*)
print boards from boards.txt

confduino.boardinstall.**install_board**(*board_id*, *board_options*, *hwpack='arduino'*, *replace_existing=False*)
install board in boards.txt

Parameters

- **board_id** – string identifier
- **board_options** – dict like
- **replace_existing** – bool

Return type None

confduino.boardremove.**remove_board**(*board_id*)
remove board

Parameters **board_id** – board id (e.g. 'diecimila')

Return type None

10.3 programmer

confduino.proglist.**print_programmers**(*verbose=False*)
print programmers from programmers.txt

confduino.proglist.**programmer_names**(*hwpack='arduino'*)
return installed board names

confduino.proglist.**programmers**()
read programmers from programmers.txt

confduino.proglist.**programmers_txt**()
path of programmers.txt

confduino.proginstall.**install_programmer**(*programmer_id*, *programmer_options*, *replace_existing=False*)
install programmer in programmers.txt

Parameters

- **programmer_id** – string identifier

- **programmer_options** – dict like
- **replace_existing** – bool

Return type None

confduino.progremove.**remove_programmer**(*programmer_id*)
remove programmer

Parameters **programmer_id** – programmer id (e.g. 'avrisp')

Return type None

10.4 version

confduino.version.**all_sketch_extensions**()
['.pde','.ino']

confduino.version.**intversion**(*text=None*)
return version as int

0022 -> 22 0022ubuntu0.1 -> 22 0023 -> 23 1.0 -> 100

confduino.version.**print_version**(*integer=False*)
print arduino version

example: 0022

confduino.version.**sketch_extension**()
.pde or .ino

confduino.version.**version**()
return version as string

example: 0022

confduino.version.**version_txt**()
return version.txt path

$ARDUINO/lib/version.txt

CHAPTER

ELEVEN

INDICES AND TABLES

- *genindex*
- *modindex*
- *search*

PYTHON MODULE INDEX

C

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