confduino Documentation

Release 0.0.9

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
- crossplatform
- can be used as a python library or as a console program
- unpacker backend: pyunpack
- downloader backend: urllib
- some functionality is based on arscons

Known problems:

- Python 3 is not supported
- tested only on linux
- 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 backends 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

USAGE WITH LIBRARIES

3.1 Arduino path

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

on Ubuntu: in ~/.profile:

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

Default path:

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

3.2 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
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
SoftwareSerial
Sprite
StackArray
StackList
Streaming
TButton
TimedAction
TimerOne
TinyGPS
Tween
Twitter
UComms
UsbDevice
UsbKeyboard
WebServer
WiShield
Wire
arduinode
bassdll
libcoll
morse
multiCameraIrControl
myprojects
osa
```

```
spline
tmp
usb
x10
```

3.3 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
```

3.4 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
```

3.5 Remove existing library

From python:

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

From console:

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

3.6 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.

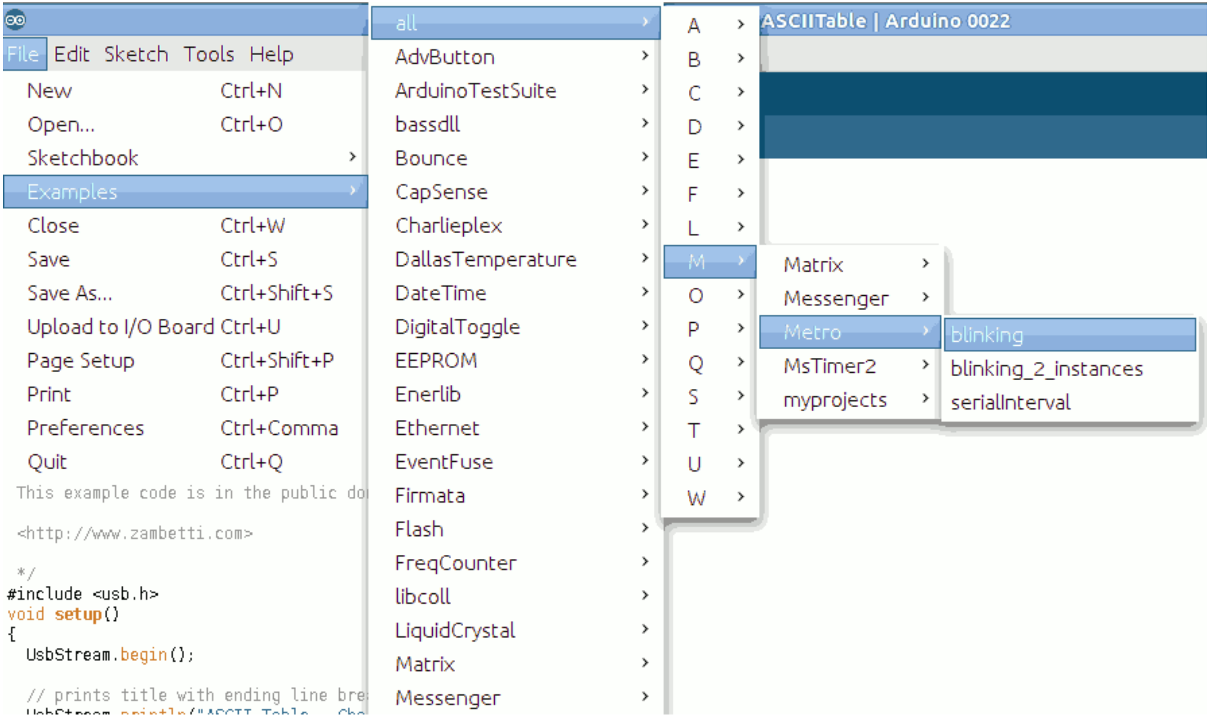
From python:

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

From console:

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

Result:



```
This example code is in the public do
<http://www.zambetti.com>
*/
#include <usb.h>
void setup()
{
  UsbStream.begin();
  // prints title with ending line bre
```

3.7 Removing menu item 'all'

From python:

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

From console:

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

CHAPTER

FOUR

USAGE WITH BOARDS

4.1 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'}}}
```

4.2 List installed MCUs

From python:

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

From console:

4.3 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', replac
    '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

4.4 Remove existing board

From python:

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

From console:

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

CHAPTER

FIVE

USAGE WITH PROGRAMMERS

5.1 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': {'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'}}
```

5.2 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

5.3 Remove existing programmer

From python:

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

From console:

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

CHAPTER

SIX

EXAMPLES

6.1 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')

  ############################
  # 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'
```

6.2 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)
```

6.3 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)
```

6.4 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’, replac
    ’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:

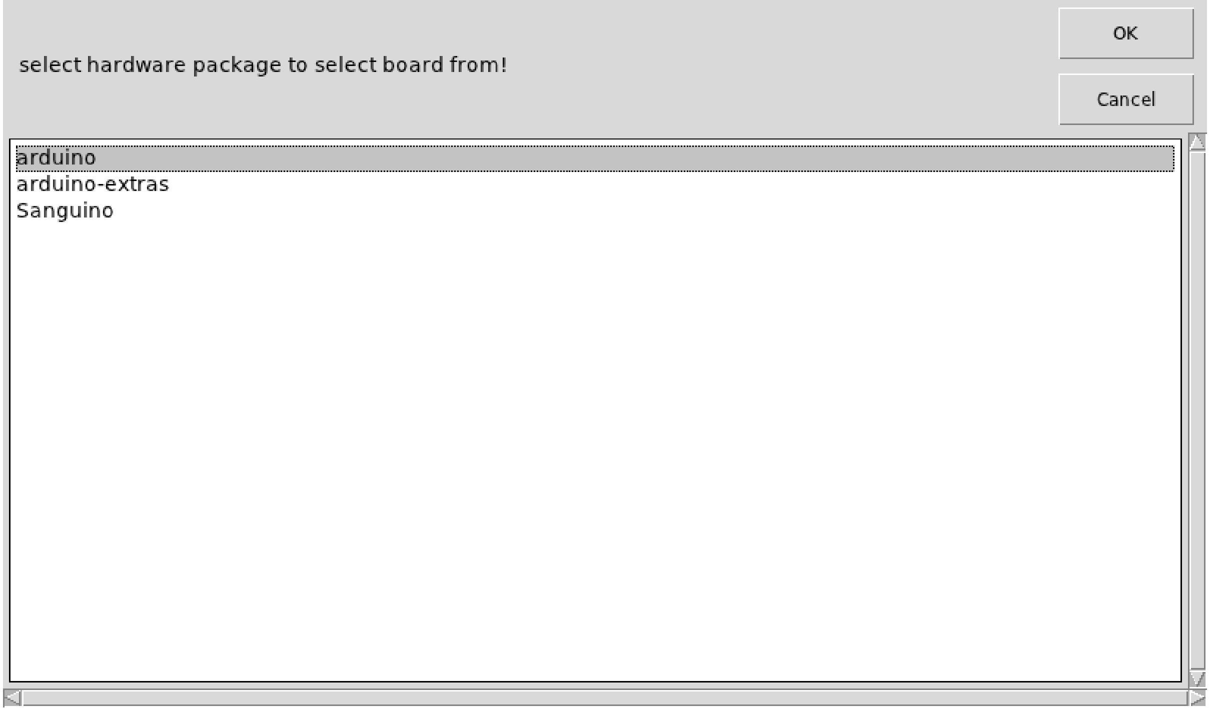
```
$ python -m confduino.examples.atmega88 --help
usage: atmega88.py [-h] [-i ID] [-m MCU] [-f F_CPU] [-u UPLOAD] [-c CORE] [-r]
                   [--debug]

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
```

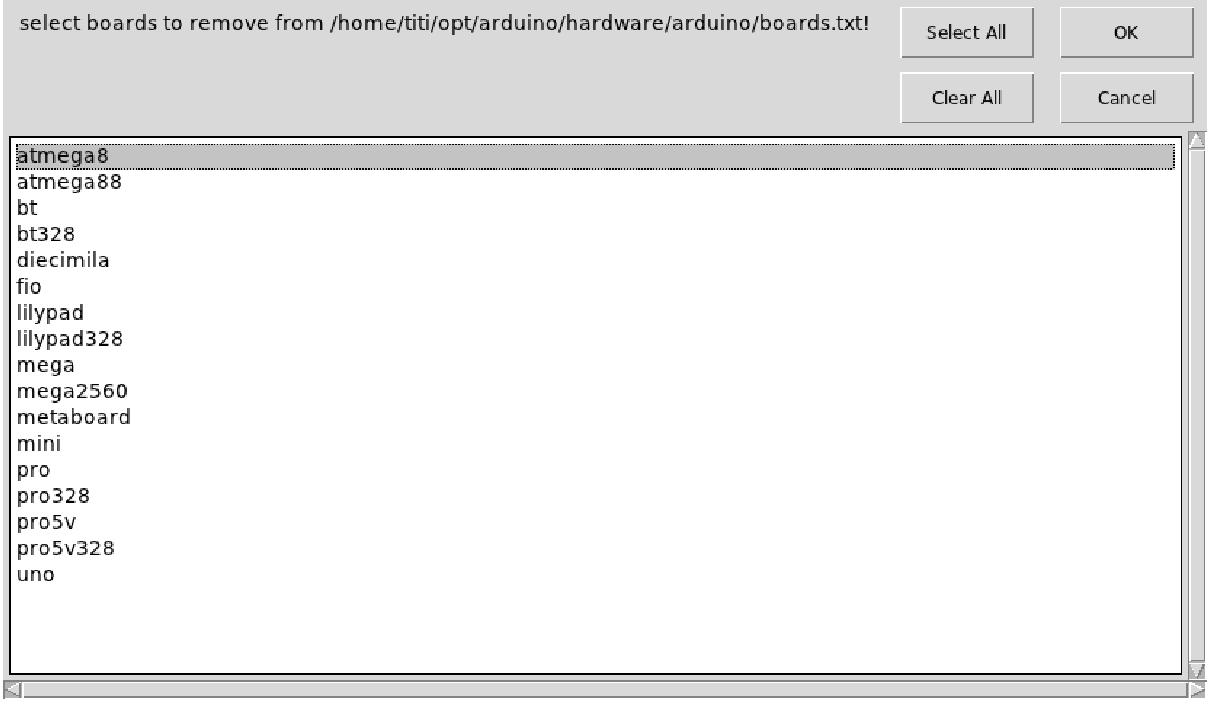
6.5 remove boards

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


select hardware package to select board from!

arduino
arduino-extras
Sanguino

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


select boards to remove from /home/titi/opt/arduino/hardware/arduino/boards.txt!

atmega8
atmega88
bt
bt328
diecimila
fio
lilypad
lilypad328
mega
mega2560
metaboard
mini
pro
pro328
pro5v
pro5v328
uno

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
```

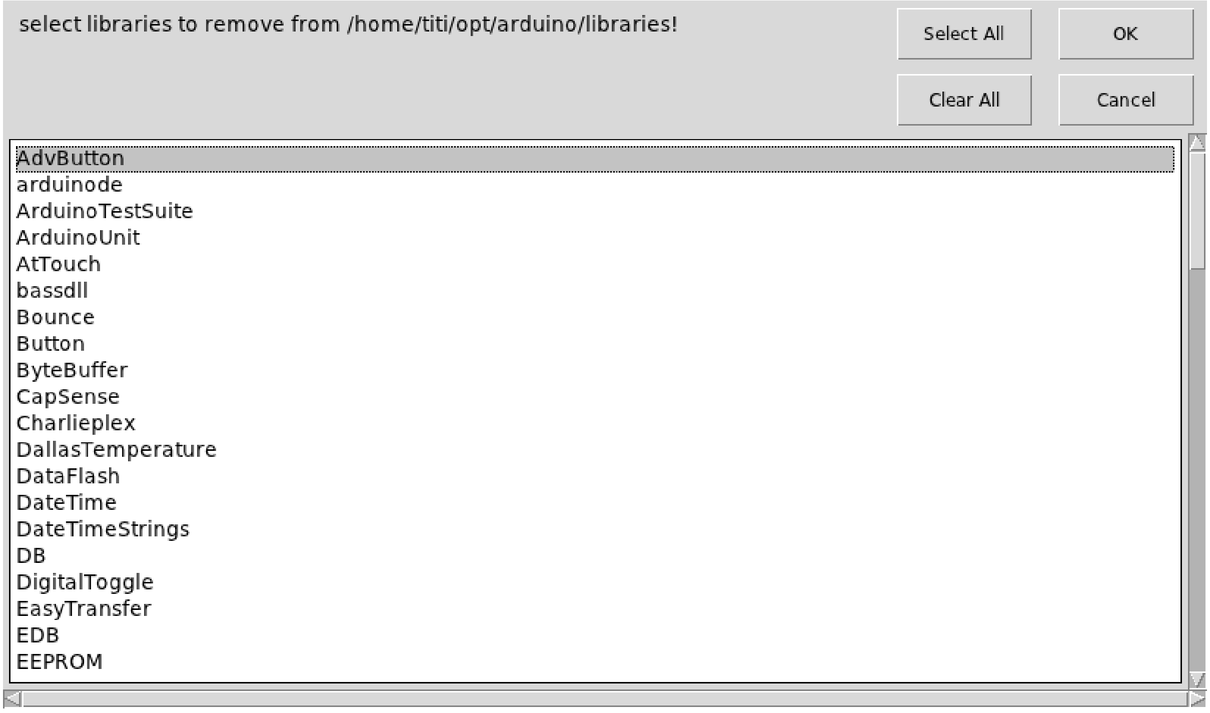
```
@entrypoint
def remove_boards_gui(hwpack=''):
    'remove boards by GUI'
    if not hwpack:
        if len(hwpack_names()) > 1:
            hwpack = psidialogs.choice(hwpack_names(),
                                       'select hardware package to select board from!',
                         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

6.6 remove libraries

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



select libraries to remove from /home/titi/opt/arduino/libraries!

AdvButton
arduinode
ArduinoTestSuite
ArduinoUnit
AtTouch
bassdll
Bounce
Button
ByteBuffer
CapSense
Charlieplex
DallasTemperature
DataFlash
DateTime
DateTimeStrings
DB
DigitalToggle
EasyTransfer
EDB
EEPROM

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

SEVEN

COMMAND LINE HELP

7.1 lib

7.1.1 list

```
$ 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
```

7.1.2 install

```
$ 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
```

7.1.3 remove

```
$ 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
```

7.2 board

7.2.1 list

```
$ 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
```

7.2.2 install

not implemented

7.2.3 remove

```
$ 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
```

7.3 programmer

7.3.1 list

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

print programmers from programmers.txt

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

7.3.2 install

not implemented

7.3.3 remove

```
$ 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
```

7.4 version

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

print arduino version

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

CHAPTER

EIGHT

API

8.1 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.`**`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.libremove.`**`remove_lib`**`(`*lib_name*`)`

remove library

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

Return type None

8.2 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

8.3 programmer

`confduino.proglist.`**`print_programmers`**()
print programmers from programmers.txt

`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

8.4 version

`confduino.version.`**`print_version`**`()`

print arduino version

example: 0022

`confduino.version.`**`version`**`()`

return version

example: 0022

`confduino.version.`**`version_txt`**`()`

return version.txt path

$ARDUINO/lib/version.txt

CHAPTER

NINE

INDICES AND TABLES

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

PYTHON MODULE INDEX

INDEX