
labequipment

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Arduino Sketches for Lab Equipment

Python code for all the different bits of lab kit

1.1 Shaker Arduino Sketch

```
class labequipment.arduino.Arduino (port=None, rate=9600, wait=True)
```

Bases: object

```
choose_port (os='linux')
```

```
flush ()
```

```
ignorelines (n)
```

```
quit_serial ()
```

Close the serial port

```
read_all ()
```

```
read_serial_bytes (no_of_bytes)
```

Read a given no_of_bytes from the serial port

```
read_serial_line ()
```

Waits for data in the input buffer then reads a single line from the serial port.

Outputs: text the data from serial in unicode

```
readlines (n)
```

```
send_serial_line (text)
```

Send a string over the serial port making sure it ends in a new line .

Input: text the string to be sent to the arduino

```
wait_for_ready ()
```

Ensure the arduino has initialised by waiting for the 'ready' command

```
labequipment.arduino.find_port ()
```


Python code for all the different bits of lab kit

2.1 Arduino

```
class labequipment.arduino.Arduino (port=None, rate=9600, wait=True)
```

Bases: object

```
choose_port (os='linux')
```

```
flush ()
```

```
ignorelines (n)
```

```
quit_serial ()
```

Close the serial port

```
read_all ()
```

```
read_serial_bytes (no_of_bytes)
```

Read a given no_of_bytes from the serial port

```
read_serial_line ()
```

Waits for data in the input buffer then reads a single line from the serial port.

Outputs: text the data from serial in unicode

```
readlines (n)
```

```
send_serial_line (text)
```

Send a string over the serial port making sure it ends in a new line .

Input: text the string to be sent to the arduino

```
wait_for_ready ()
```

Ensure the arduino has initialised by waiting for the 'ready' command

```
labequipment.arduino.find_port ()
```

2.2 Lauda Water Bath

```
class laquipment.lauda.Lauda (port)
    Bases: sphinx.ext.autodoc.importer._MockObject

    read_current_temp ()

    set_pumping_speed (val)

    set_temp (new_temp)

    start ()

    stop ()
```

2.3 Omega Temperature and Humidity Sensor

```
class laquipment.omega_temperature_probe.Probe (port='/dev/serial/by-id/usb-
                                                Omega_Engineering_RH-
                                                USB_N13012205-if00-port0')
    Bases: sphinx.ext.autodoc.importer._MockObject

    get_relative_humidity ()

    get_temp_C ()
```

2.4 Shaker

```
class laquipment.shaker.Shaker
    Bases: object

    change_duty (val)

    init_duty (val)

    quit ()

    ramp (start, end, rate, step_size=1, record=False, stop_at_end=False)

    read_all ()

    start_serial ()

    switch_mode ()

laquipment.shaker.convert_audio_frequency_to_duty_cycle (freqs)
    Converts audio frequencies to duty cycle (out of 1000)
```

2.5 Stepper

```
class laquipment.stepper.Stepper (ard)
    Bases: object

    Class to manage the movement of stepper motors
```


move_motor (*motor_no, steps, direction*)

Generate the message to be sent to self.ard.send_serial_line

Inputs: motor_no: 1 or 2 steps: int direction: either '+' or '-'

CHAPTER 3

Indices and tables

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