
Aquino Documentation

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Aquino (which is a development name) is an opensource tool directed to measure and control freshwater aquariums.
[Fork it on github](#)

Warning: Aquino is currently in very early stage. We are working on measurements and web parts (REST API and WebApp client). There is no device which is running.

Note: If you'd like to contact us, please do it via IRC. Find `zalun` or `dwarder` on freenode `#arduino` or `#jsfiddle` channels

Aquino is measuring at least one of the parameters important for the ecosystem.

One of the major feature of Aquino is alarming the user if any of the measured parameters will change its value away from defined range.

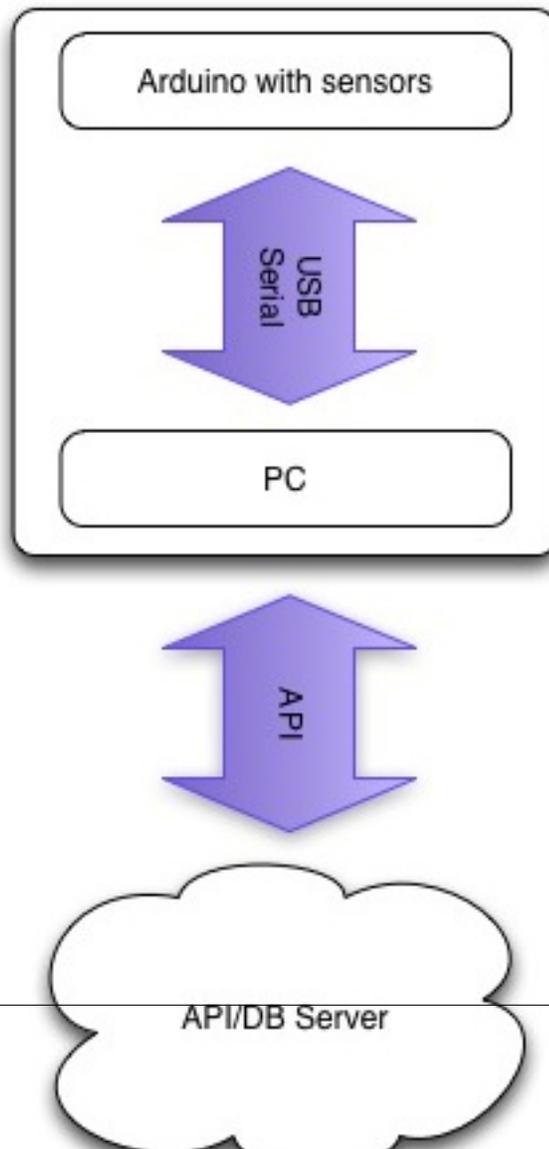
Aquino is also able to control the tank. Following features are considered:

- feeder
- switch the filter onoff while feeding
- manipulate lights
- apply chemicals

Contents:

Arduino(s)
and
PC
are
form-
ing
an
“**Aquino
device**”

Arduino
is pro-
viding
mea-
sure-
ments
over the
serial
inter-
face in
JSON
format.
It is
also
using
the
same
way of
com-
muni-
cation
to re-
ceive



orders
to con-
trol
aquar-
ium
system.

Note: There is an idea to allow for more than one Arduino connected to the PC. Each Arduino (with the set of sensors) is used to measure and control a different tank. This would lower the cost of potential multitank installation

PC
is
a
Linux
box.
It
is
tem-
porar-
ily
col-
lect-
ing
the
data
in
database
(redis)
and
storing
them
on the

server when web is available. PC might be configured using web interface. Configuration is stored in database.

Note: Typical Aquino device will use Raspberry Pi

There is also an **LCD display** to show measurements next to the tank.

REST API server will work as an invisible layer between client applications and the device. It is providing the way to save measurements, serving data to the clients, passing orders from client to device.

Everything which is displaying collected data is considered a Client. Be it mobile app (Mozilla WebApp will be written as a part of this project) website or desktop app.

WebApp. Part of the Aquino is an [Open WebApp](#) to receive notifications and control the devices and notifications on all possible clients (mobile/tablet/desktop)

Note: Why mozilla webApp? As it will work on any device

By any, do you imply any device that could run mozilla browser? i.e. not iphone? Almost every smartphone is (or will be at the time this project will see daylight) able to run this type of webapps. It's already possible on iOS, Android. Also, there will be an open REST API which will allow to write apps for any system.

Measuring aquarium parameters

Every installation has to measure at least one of the following parameters:

Temperature

Note: Check if sensor needs to be submerged or how accurate would it be to glue it on the glass

pH

There are few options:

- phDuino
- Oakton pH electrode, general purpose, BNC connector (\$53) [TODO: ask for reading data from device]
- pH electrode designed to be used in aquarium (~\$50) [TODO: ask for reading data from device]

Note: Check the innards of http://www.ebay.com/itm/Digital-PH-Meter-Tester-Water-LCD-Monitor-Pen-Aquarium-/160562316004?pt=LH_DefaultDomain_0&hash=item25624282e4 (\$9) Although the best is to use off the shelf parts it might be useful to check if its possible to easily build one.

Total Dissolved Solids

http://en.wikipedia.org/wiki/Total_dissolved_solids

Dissolved Oxygen

Note: Something cheaper than <http://www.sensorex.com/docs/SpecsDO1200.pdf> would be cool 'cause this one cost \$139

Water Level

Simple too low / too high sensors - water level should be between two sensors checking if there is an electrical connection or not

Water Flow

- <https://www.adafruit.com/products/828>
- <http://labs.teague.com/?p=722> DIY water flow sensor

Take Picture

Taken on demand. USB camera should be the cheapest, but there is one coming for rPi <http://www.raspberrypi.org/archives/1254>

If one wants a live camera there are other projects to support it.

CHAPTER 3

Indices and tables

- `genindex`
- `modindex`
- `search`