Final Project

2 computer paper things
> Morse code sender and receiver
> Hopefully sound and light

Connect to computer
> XO hopefully

Send messages over wifi
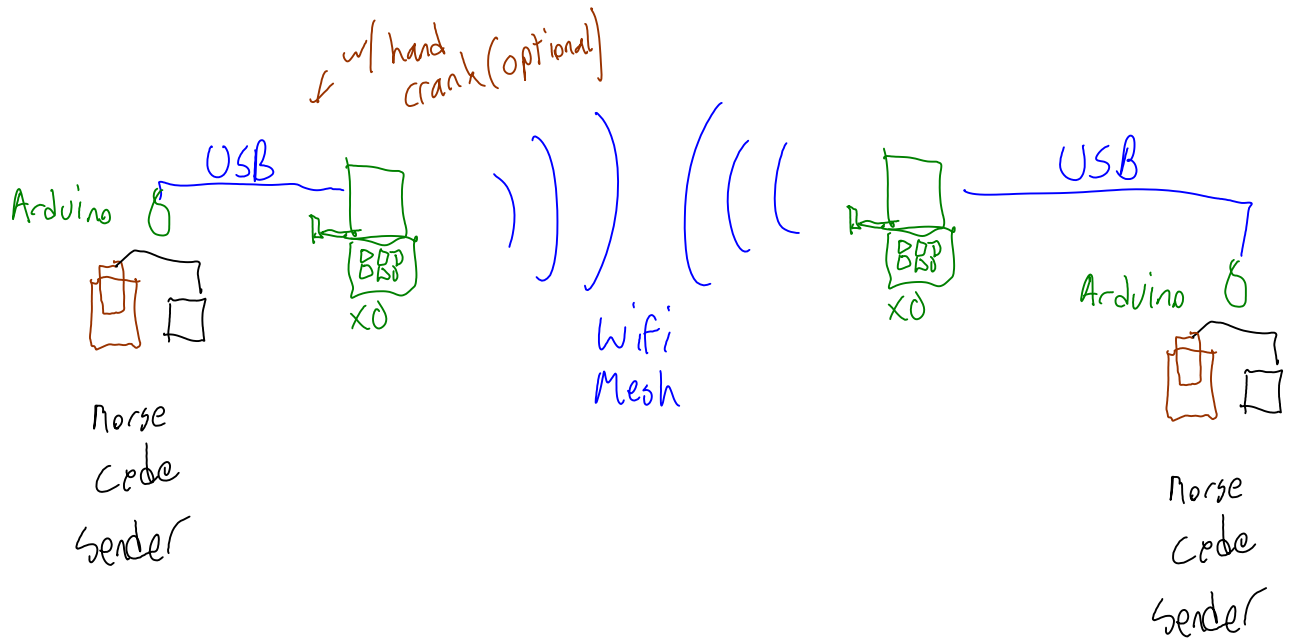> Or use existing chat protocals
> Or XO mesh networking

Final Project Proposal

Michael Plasmeier, Juan Carrillo, Kimberly Aziz, TyShaun Wynter

- 2 computational paper systems
  - Morse code sender and receiver
  - On magnetic paper
  - Using tin foil instead of paint
  - Hopefully sound and light receiver
- Connect to computer via USB
  - An XO, hopefully
- Send messages over wifi
  - Or XO mesh networking
  - Using existing chat protocols

Networking

Networking

From OLPC

This page is monitored by the OLPC team.

english | 한국어   HowTo **[ID# 223748]** +/- (http://wiki.laptop.org/index.php?title=Networking/translations&action=edit)

Mesh networking, &c. See also : Radio and broadcast

Network connectivity and mesh functionality is being headed by **Michail Bletsas (http://www.laptop.org/en/vision/people/MichailBletsas/)** , Chief Connectivity Officer of the One Laptop Per Child organization.

Contents

- 1 Hardware
- 2 Software
- 3 Deployment
- 4 Press Coverage
- 5 Ideas

Hardware

The laptop comes with a built-in wireless card compatible with 802.11b/g standards. Marvell (http://www.marvell.com) developed the wireless chip and wrote its firmware and the initial device drivers. A unique ability of the laptop is that the wireless chip will have very low-level mesh routing capabilities built-in. Because of this, the laptop will be able to act as a router while the main processor is idle (turned off). In this mode, the machine is expected to use roughly 0.5 watts of battery power.

Two 'bunny ear' antenna on either side of the display swivel upwards. Doing this reveals USB and audio ports, normally sealed from the elements, and also extends the wireless range significantly.

Wikipedia (http://en.wikipedia.org/wiki/Ad_hoc_routing_protocol_list#Power_aware) 's article on Ad hoc routing protocol notes that: "Transmitting a signal half the distance requires one fourth of the energy and if there is a node in the middle willing spend another fourth of its energy for the second half, data would be transmitted for half of the energy than through a direct transmission." Marvell's card is designed to scale to very low power usage. Lower power output allows for less wasted battery. Longer range transmissions are also possible with lower power/bandwidth, allowing a large area to be covered by the mesh.

An Active Antenna provides the same wireless mesh network interface in a USB peripheral. It may be

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used to connect a School server or other computer to the mesh network, simultaneously repeating any packets on the local mesh. It may also be provided with only power, in which case it acts solely as a repeater to extend the mesh.

Details on the card itself can be found on the wireless page.

Software

To encourage collaboration and to make maximum use of minimum resources, the laptop will implement 802.11s (http://en.wikipedia.org/wiki/IEEE_802.11s) , a proposed wireless mesh standard from Intel (http://www.intel.com/) intended for small home/office networks.

Additional details on the mesh networking are available.

The sources for the current community-developed driver (http://git.infradead.org/?p=libertas-2.6.git; a=summary) for the Marvell 8388 are being hosted at infradead.org, discussions about its development can be found at the libertas-dev (http://lists.infradead.org/mailman/listinfo/libertas-dev) mailing list.

Deployment

Some features described on this page are a work in progress,
and might work as described only in some circumstances.
Please use the discussion page to make suggestions,
share how this works for you, and see other's comments.

OLPC is working with schools to saturate each location as they deploy machines. This solves several problems (jealousy, in-fighting, unequal opportunity to education) but also allows for optimal mesh conditions. Each school is working to have Internet access of some capacity, and school servers. The server will function as a gateway/proxy for many Internet services(web proxy, email server, ntp daemon), and as a beacon for Internet connectivity sharing.

The network itself is expected not to be more than 4-5 hops from any 2 nodes. Actual hop count, latency and bandwidth will require further field testing.

Press Coverage

- Audio Lecture (http://www.ourmedia.org/node/203095) - A public lecture in Greek by Michail Bletsas on the wireless mesh of the $100 laptop
- The Social Side of Mesh (http://www.olpcnews.com/internet/access/the_social_side_of_m.html) - Courtesy OLPC News

Ideas

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- Have the laptops be able to intelligently turn themselves off when their routing abilities do not improve the network's mesh. In dense networks such as might be found in a classroom or apartment complex, having all idle machines function as routers may be inefficient for the overall network. This would further save battery on the machines, and simplify the network topology.
- Could simplistic packet shaping improve overall network throughput?

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Mesh Network Details

From OLPC

This page is monitored by the OLPC team.

english | 한국어   HowTo **[ID# 219022]** +/– (http://wiki.laptop.org/index.php?title=Mesh_Network_Details/translations&
action=edit)

Introduction

Details of the mesh networking provided by the XO laptop and School server are provided here. See also a related Mesh Network FAQ.

Design goals

- Ability to act as a mesh point when laptop's main CPU is off. (Small enough to run autonomously on Marvell's 88W8388 802.11 wireless module)
- Minimize power consumption in autonomous mode.
- Support for asymmetric links/paths.
- Incremental releases -- mesh networking is needed immediately on XO. Upgrades will continue to improve functionality and adherence with standards.
- Simultaneously act as a Mesh Point as well as an infrastructure node.
- Follow 802.11s draft when possible.

Contents

Standards Compliance

The Mesh Routing Protocol used in the OLPC laptop (OLPC-Mesh) is based on the 802.11s standard being developed by the 802.11 Task Group S [1] (http://www.ieee802.org/11/Reports/tgs_update.htm) .

OLPC-Mesh was based on the first draft produced by TGs, version 0.1. Currently (Oct, 2008) TGs is working on version 2.0 of the draft.

More information on the differences between OLPC-Mesh and the 802.11s mesh can be found here.

Backward Compatibility

In order to avoid forced obsolescence of XO laptops already deployed in a school, limited backwards compatibility should be an important feature of future firmware revisions. Laptops issued in previous years should mesh network peacefully with laptops issued to new classes. This compatibility may take a form similar to 802.11b/g operation --- if a single laptop requiring extended WDS frames is present on a mesh, all mesh points and portals should revert to extended WDS frames in order to support it and its brethren.

Mesh Points

In typical operation, the XO laptop is operating as a mesh point. It uses its WiFi interface to both access the network itself and to relay traffic from other mesh points. A mesh network requires a more dynamic path selection (routing) protocol than that utilized in wired networks. Even the decision of which wireless channel to use is more difficult in the mesh case.

Mesh Path Selection and Forwarding

The path selection mechanism is based on a simplified version of the Hybrid Wireless Mesh Protocol (HWMP) proposed in the 802.11s draft. HWMP combines on-demand route discovery with support for proactive routing.

Proactive routing requires the formation of a tree topology under a root node. OLPC-Mesh does not support proactive routing at this time.

On-demand path discovery is largely based on Ad-Hoc On-demand Distance Vector (AODV) routing.

Paths are built using a route request / route reply management frames. When a source node needs to transmit a frame to a destination for which no path exists, a broadcast route request (RREQ) is broadcast through the mesh. As these requests are propagated, nodes receiving them will create routes to the source node in their routing tables. These routes are termed **reverse routes** and are only used to forward mesh management frames. When a node receives a RREQ destined to itself, it will respond with a unicast route reply (RREP), which will be sent back to the source via **reverse routes**. The intermediate nodes that forward RREPs back to the source will create routes to the destination node. This routes are termed **forward routes**, and are the routes used to forward data frames.

A comprehensive discussion on the Path Selection Mechanism, is also available.

Route Tear-down and Recovery

If a frame cannot be transmitted to the next hop (i.e. when the maximum number of retries is exceeded), the route that was used for the frame is marked as invalid. If the failed route has predecessors, route error (RERR) management frames are transmitted to the source of the route. This

improves the route recovery time after a mesh node leaves the coverage area of a neighbor.

Limited Broadcast

The RREQ/RREP mechanism only works for unicast traffic. Broadcast traffic is propagated through the mesh through limited flooding. Each mesh data frame contains a unique end-to-end sequence number that is set at the source. Intermediate nodes maintain a list of **recently broadcast** frames indexed by this sequence number and the address of the source. This table ensures that broadcast frames are retransmitted only once.

Multicast

Multicast is supported in firmware versions 5.220.9.p9 and above.

Mesh Networking Security Implications

Mesh Point operation has some additional security implications compared to WiFi station or Ad-Hoc modes.

OLPC-Mesh Association Algorithm

Under HWMP, a Mesh Point should use active or passive scanning to discover neighbors and establish peer links. OLPC-Mesh does not use this mechanism. Neighbors are discovered only via the RREQ/RREP cycle.

Upon power-up (resume as well?), an XO laptop will associate itself with a mesh network in the following manner:

1. The laptop will issue a DHCP request, followed by a RREQ for a Mesh Portal anycast address and wait for RREP replies, on all three channels being proposed for OLPC meshes (1, 6, and 11) before making any decisions.
2. If any channel provides a lower hop count to a Mesh Portal, it is selected unless its signal strength is significantly lower.
3. If all channels provide the same hop count to a Mesh Portal, random selection is used.

As no authentication of neighboring mesh points is performed, the mesh is not protected against route disruption or node isolation attacks. It is unclear if such an authentication mechanism could be successfully implemented within the guidelines of OLPC.

Mesh Portals

Up to now we have described the operation of Mesh Points. Mesh Points that are connected to an external network, and that forward traffic in and out of the mesh are referred to as Mesh Portals (MPP).

Mesh Points must find paths to a Mesh Portal in order to access the Internet. When multiple Mesh Portals exist in the mesh, the Mesh Point must select one of them. The way the OLPC Mesh resolves this problem is by defining a layer 2 ANYCAST MAC address (0xC027C027C027) that will be claimed by all the MPPs in the mesh. When a Mesh Point needs to find an MPP, a RREQ is sent for that special ANYCAST address. Each Mesh Portal receiving the RREQ will generate a RREP. The path selection method in the firmware will assign higher precedence to those MPPs that can be reached through lower cost routes.

The Mesh Point then sends a UDP datagram to the selected mesh portal, which also replies with a datagram. In order to generate the ANYCAST message, a static binding is made in the Mesh Point ARP table between an arbitrary MPP IP address (172.31.255.254 is currently used) and the ANYCAST MAC address. Then a UDP message is composed to the MPP IP address and MPP service port (currently 16), containing the contents "MPPREQ".

Mesh Portals must bind the MPP IP address (172.31.255.254) to one of their network interfaces, and listen for configuration requests sent by Mesh Points to that address on the MPP service port (16). In reply to these requests, Mesh Portals will send to the Mesh Points all the information required to access outside the mesh network. At this time this configuration information is composed of the IP address of the selected Mesh Portal and the addresses of DNS servers.

More information about this configuration daemon can be found:

- Establishing a Mesh Portal
- Trial1 School Server Software
- Cozybit's MPP Utils (http://www.cozybit.com/projects/mpp-utils)

Traffic forwarding in and out of the mesh is done at layer 3 via Network Address Translation (NAT) at the host. This gives the flexibility to use any other network connection to connect the mesh to the world (e.g. PPP, GPRS, etc.).

Driver Interface

The wireless driver creates a virtual network interface just for mesh traffic (msh0 on the laptop). The main interface (usually eth0 on the laptop) is used for infrastructure traffic when the laptop is associated to an AP. It is also used for some control operations that aren't currently supported by the mesh interface, such as assigning a MAC address.

Userspace Controls

There are several system calls available to examine and modify the behavior of the OLPC-Mesh. This calls are implemented as ioctls, and can be invoked via iwpriv commands.

The first of such tools are the `iwpriv fwt_*` family of commands. With these commands one can examine and modify the routing table. See the Wireless Driver README file in the libertas driver directory for details.

Another useful feature for debugging and testing is the blinding table. Incoming traffic from any address that exists in the blinding table will be silently discarded by the firmware. This is useful to test specific mesh topologies that would otherwise be hard to setup. The blinding table can be accessed using `iwpriv bt_{add,del,reset,list}`.

There is also one ioctl call that will change the maximum TTL of outgoing mesh traffic. The TTL determines the maximum number of hops that a frame will cross before being dropped. This is used to minimize the consequences of routing loops but it also limits the number of neighbors that can be reached in the mesh. The mesh TTL can be modified via `iwpriv mesh_{get,set}_ttl`.

Finally, there are mesh specific statistics available through `ethtool -s` Currently the following counters are implemented:

```
drop_duplicate_bcast
drop_ttl_zero
drop_no_fwd_route
drop_no_buffers
fwded_unicast_cnt
fwded_bcast_cnt
drop_blind_table
tx_failed_cnt
```

Usage

These are the steps to start the mesh manually.

1. Bring up a console (click Terminal on the Developer Console)

2. Type:

```
su -                                # enter root password if needed
iwconfig msh0 mode ad-hoc channel <channel> essid <any name>
ifconfig msh0 <IP address>
```

channel: Pick the same for all the nodes in the mesh. If in doubt, pick 6
IP address: Pick a unique IP address in the mesh. If in doubt, pick 10.X.Y.Z, and replace X.Y.Z with these 3 numbers (http://www.random.org/integers/?num=3&min=0&max=254&col=5&format=html&rnd=new&base=10)
any name: Literally, any name will work. If in doubt, pick "olpc-mesh".

Soon turning on the mesh and IP address assignment will happen automatically. But these steps will allow you to start using the mesh as of build 368.

Disabling the mesh network

Befor connecting to a conventional access point, the XO attempts to connect on each mesh channel, then repeats a second time. This slows connection to a conventional AP. To disable mesh networking, from http://en.forum.laptop.org/viewtopic.php?f=6&t=162394 , in Terminal activity as root, enter the

command

```
echo 0 > /sys/class/net/eth0/lbs_mesh
```

To make this happen automatically, you could add the line to a startup file, e.g. enter the command

```
echo "echo 0 > /sys/class/net/eth0/lbs_mesh" >> /etc/rc.local
```

Mesh in linear layout

http://video.google.com/videoplay?docid=-3339545498848597316

Mesh in separate groups

http://video.google.com/videoplay?docid=-5598928296852168708

Experimenting

Want to run a simple experiment to see the mesh in action? You will need 3 laptops, xoa, xob and xoc, with IP addresses IPa and IPc (xob does not need an IP for this experiment):

1. Bring all three xo's together.

```
xoa, xob, xoc -------------------------------------------------
```

2. At the terminal of laptop C type

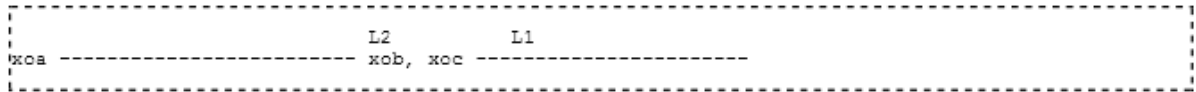```
ping IPa
```

3. Move xoc away from xoa and xob, until pings start failing. Mark that location (L1): that will indicate the direct range limit.

```
                                        L1
xoa, xob ------------------------------ xoc -----------------------------------
```

4. Move xoc closer to xoa and xob. As soon as pings restart, mark that location (L2).

```
                              L2          L1
xoa, xob -------------------- xoc --------------------------
```
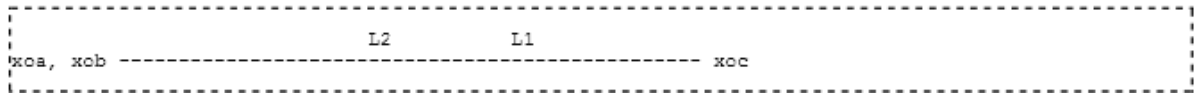
5. Pick up xob and move it to L2.

```
┌──────────────────────────────────────────────────────────────────────┐
│                                  L2          L1                        │
│ xoa ----------------------- xob, xoc -----------------------           │
└──────────────────────────────────────────────────────────────────────┘
```

6. Move xoc to L1, you should now be able go substantially beyond L1 and successfully ping xoa.

```
┌──────────────────────────────────────────────────────────────────────┐
│                                  L2          L1                        │
│ xoa ----------------------- xob ----------------------- xoc            │
└──────────────────────────────────────────────────────────────────────┘
```

7. Move xob back to xoa, you should find that xoc will no longer be able to ping xoa.

```
┌──────────────────────────────────────────────────────────────────────┐
│                                  L2          L1                        │
│ xoa, xob ------------------------------------------- xoc               │
└──────────────────────────────────────────────────────────────────────┘
```

That's the beauty of the mesh: you can extend the range just by inviting more people over to your party.

Interactions With Wireless Equipment

The mesh may be affected by legacy wireless equipment.

Footnotes

[1] Note that although the frame is discarded, it will still be acknowledged by the MAC layer.

See also

- Libertas

Retrieved from "http://wiki.laptop.org/go/Mesh_Network_Details"
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- [10 watching users]
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Mesh Network FAQ

From OLPC

This page is monitored by the OLPC team.

| **english** \| 한국어 \| español | HowTo [ID# 142878] +/- (http://wiki.laptop.org/index.php?title=Mesh_Network_FAQ /translations&action=edit) |

These are questions about the Mesh Network used by the XO laptop. A related page is Mesh Network Details.

Contents

- 1 How many servers per school?
- 2 How is the mesh channel for a laptop to join chosen?
- 3 How can we determine whether a channel has other active mesh users?
- 4 How many radios can one mesh channel support?
- 5 Will physically adjacent laptops be on the same mesh ?
- 6 What about WiFi encryption ?
- 7 How are school servers (network gateways) discovered?

How many servers per school?

How will the school servers in one school be connected, and how many users each are they expected to support?

The ratio of students to school servers is currently planned to be no more than 100:1. The interconnection between servers will be best possible: Cat3/5 or powerline is strongly recommended, with a fallback to wireless if necessary.

Each server will support at least two WiFi access points (the Marvell modules), with up to five or six access points possible. The optimum deployment scenario probably provides two or three meshes per school (on channels 11, 1, and 6). Each server provides access points on two or more meshes (i.e. there are multiple servers/access points on each mesh.)

How is the mesh channel for a laptop to join chosen?

You have to spend some time on every channel and estimate how heavy the traffic is from the RREQ and RREP packets.

This is tricky, as these packets are not sent to the host. One way to determine this

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indirectly is to examine the forwarding table: when RREQs are received, reverse routes are created. Alternatively, one could monitor the forwarding statistics of the mesh interface (ethtool -S msh0). These are all "passive" detection methods: will not work if all the hosts in the mesh are silent.

Yet another alternative would be to run daemons attached to the mesh interface, such as http://www.cozybit.com/projects/lsmesh

This is now answered by the Mesh Network Details

How can we determine whether a channel has other active mesh users?

There are no beacons currently (although they are in the implementation plan) so you really have to listen for mesh traffic.

How many radios can one mesh channel support?

How will a laptop decide to join another mesh channel if the current one gets too busy?

Is there an answer ?
Is the XO-1 Laptop Mesh atennea limited to aprox 24 connections before bad collisions, similar to regular WiFi technology ? --iainD 21:28, 16 January 2008 (EST)

Will physically adjacent laptops be on the same mesh ?

Is it possible that two children sitting next to one another are on different channels and therefore cannot "see" each other on the net?

One of the roles of the School server will be to bridge between mesh clouds running on different channels. How do you decide what mesh (channel) to join was a previous question.

What about WiFi encryption ?

Does the mesh part of the firmware use the same encryption settings as the b interface? Do we care about making a 'private mesh' with WPA-PSK or WEP or something like that?

Yes, the mesh uses the same encryption.

Down the road, we care, and will probably use WPA-PSK.--Michalis

I will argue that link layer encryption is the wrong place to protect secrets. If an application handles private or sensitive data, it should apply encryption at that time (e.g. HTTPS). My concern is the management overhead of the authentication server for WPA-PSK. The ability of devices other than XO laptops to join the school network will be supported. --Wad 00:21, 22 February 2007 (EST)

I read here which WPA(PSK) can work for mesh network but it is a several days that i am trying to

configure the PWA(PSK) for mesh network in OpenWrt, i did not get result, and also gave a message that shows " WPA(PSK) does not support ad-hoc network. if some one know that how can apply the WPA(PSK) on ad-hoc network please inform me, my E-mail: salimsaay@gmail.com

How are school servers (network gateways) discovered?

Will servers send out some sort of announcements to allow the laptops to find them automatically, or must we cache a DNS name or IP address for the server?

> They will act as gateways and respond to RREQs for a reserved anycast address.--Michalis

> This is two different questions. At the layer 2 networking level, the laptop is looking for a default gateway. This will be supplied by a mesh network configuration server running on all school servers, which responds to a request for a particular anycast address with its IP address. The laptop will then use DHCP to request an IP address, netmask, domain name servers, and default domain.

> At the services level, each laptop will be associated with a particular school server that contains a student's journal and backups, through a mechanism which is still being defined.--Wad

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How well does this work

All the documentation is 1.5 years old

Project

Transmission shapes
    Really crazy wires

Code from Conner via TyShawn

Juan
    Talk with high low tech people
    Send email

Kimberly
    Get speaker
    Learn how to use it
    Get another arguenio

Steps

Coner's code would be handy

Get arguendo hooked up xo
      Or normal pc if that does not work

Get chat working on XO
      Pref using XO and not infrastructure mode

First priority arguino

                                        12/8: 2:40
                                        Got arduino to install on xo (4hrs)

                                        Need to try to load code onto arduino (don't have one)
                                        Need to try to get mesh networking to work
                                            Did not get chat working yet over mesh
                                        Then need to measure arduino input (conner's code)

                                        So here I hope to see Conner
                                        Otherwise waste of time

                                        Learn arduino too

                                        Ask Bove

      12/8 3:40
      Got code
            Questions for conner
                    Resister used in parallel with key?
                    Read key only?
            Ask bove if mesh works?
                    Says yes
                    If not many machines around
                    So I just need to spend more time on this
                    Don't want it to suck up too much time

Now need to understand how conner's code works

Should take the time to publish this on theplaz.com
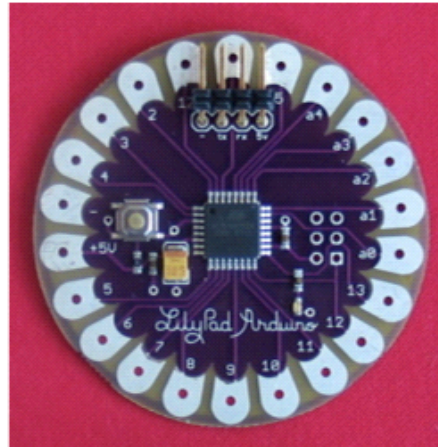 Ask conner if ok
 Picture
 Code sample

Arguino

LilyPad home

help!

1. setup

2. software install

3. introduction to Arduino

4. light (LEDs)

5. sensing (switches)

6. color (RGB LEDs)

7. sound

8. sensing (sensors)

9. build something!

10. share it

welcome to LilyPad

The LilyPad Arduino is a set of
components that let you build y
fashion. To get started, snag a
all of the available LilyPad sens
get only the pieces that you wa
mainboard, FTDI board, power
conductive thread.

Work through the tutorials here
of soft interactive stuff...perhap
that sing when you're squeezec
wear? Enjoy!

Note: for a more general introd
programming, and the regular (
ladyada's excellent tutorials.

Click here to return to my home

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Instructions

setup: attaching the LilyPad Arduino to your computer

You need to attach your LilyPad Arduino to your computer so that you can talk to the LilyPad. If your LilyPad ha
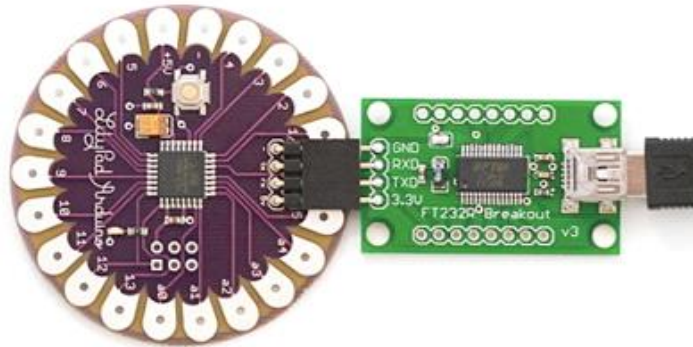pins and you're using SparkFun's FTDI breakout board, this is what your connection should look like:
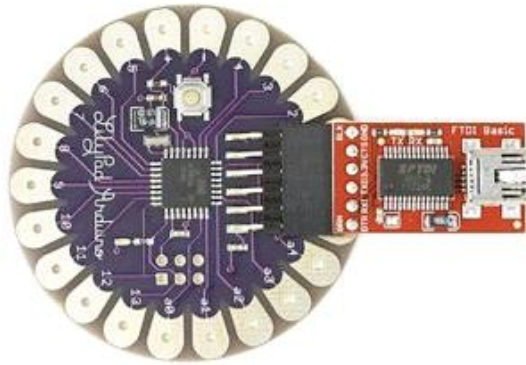
If your LilyPad has 6 pins and you're using an encapsulated FTDI cable, this is what your connection should loo
The green wire goes on the right and the black wire goes on the left:
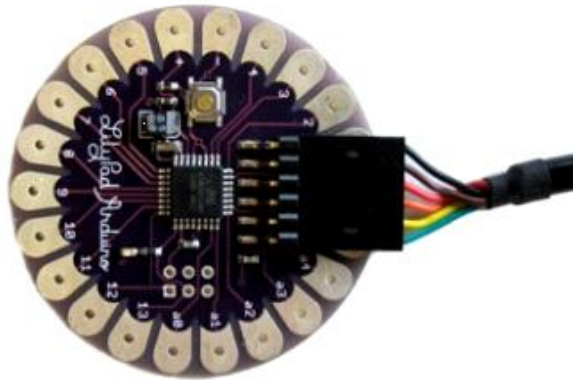
If your LilyPad has 4 pins, this is what your connection should look like:

Note: there are other ways to make the computer-LilyPad connection. For detailed information on several optic information on how to attach earlier LilyPad Arduino versions see this tutorial page.

installing and configuring the arduino software

Click on one of the links below for instructions on installing and configuring the software. Everything will also rur
Linux, but if you're using Linux, you don't need my instructions, figure things out from the Arduino guide ;).

mac OS X
PC

mac OS X

1. Download the software

The latest version of the Arduino software can be found here: http://www.arduino.cc/en/Main/Software. Dov
and unzip the software file. Note, the LilyPad will only work with software versions 10.0 and higher.

2. Install the USB drivers.

Open the Arduino folder you just downloaded, and browse to the drivers folder. There should be two disk in
in this folder, one for the power PC drivers and one for the Intel drivers. Double click on the appropriate file
your computer to mount the disk. Double click on the FTDIUSBSerialDriver.pkg within the disk to install the c
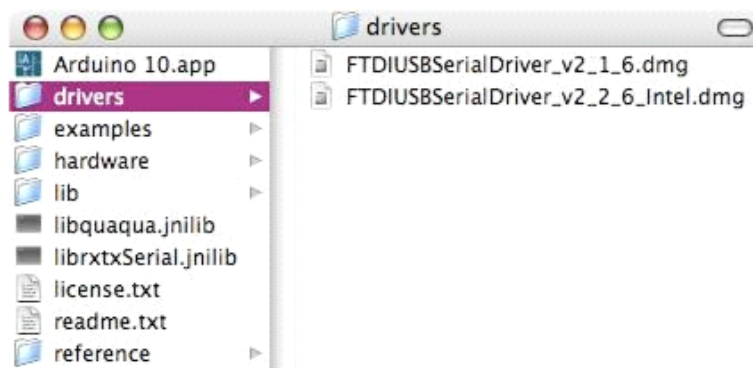
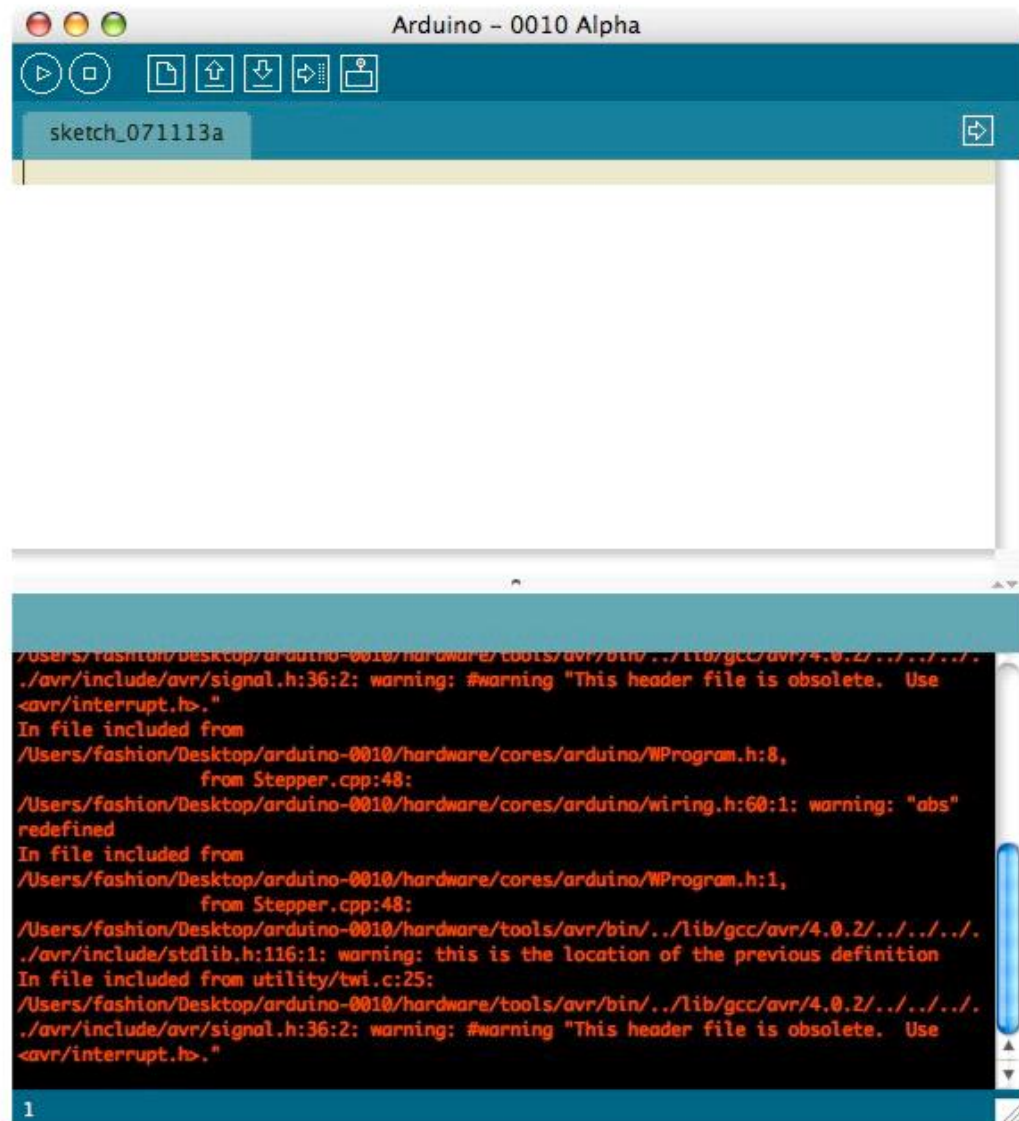### 3. Attach your LilyPad to your computer

Plug the USB to serial device that is attached to your LilyPad into your computer. The LED on the LilyPad sl
flash a few times very quickly.

4. Open the Arduino software

Browse to the Arduino file you just downloaded and double click on the Arduino xx.app file to start the Ardui
software.

Final Project Page 30

When you first open this software, the window will look something like the picture below, with lots of ugly re text in the bottom half of the window. Don't worry! This is normal.

5. Select the correct serial port

Now you need to select the right serial port so that the Arduino software can talk to your LilyPad. Under the "Tools-->Serial Port" menu, you should see an entry that looks something like this: "/dev/tty.usbserial-A4001 Select this port.

Note, you can also find your port by unplugging your board, looking at the menu, and then plugging your boa and looking at the menu again. The item that has appeared is your port.
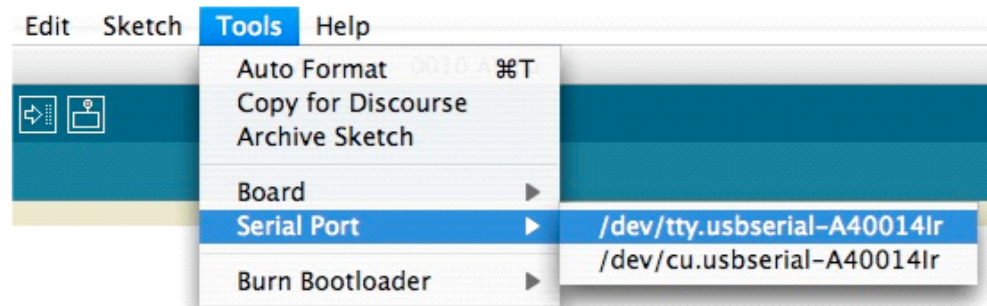
6. Select the right board

Now you need to select the right board, so that the software knows you're using a LilyPad and not some other Arduino board. Under the "Tools-->Boards" menu, select "LilyPad Arduino"
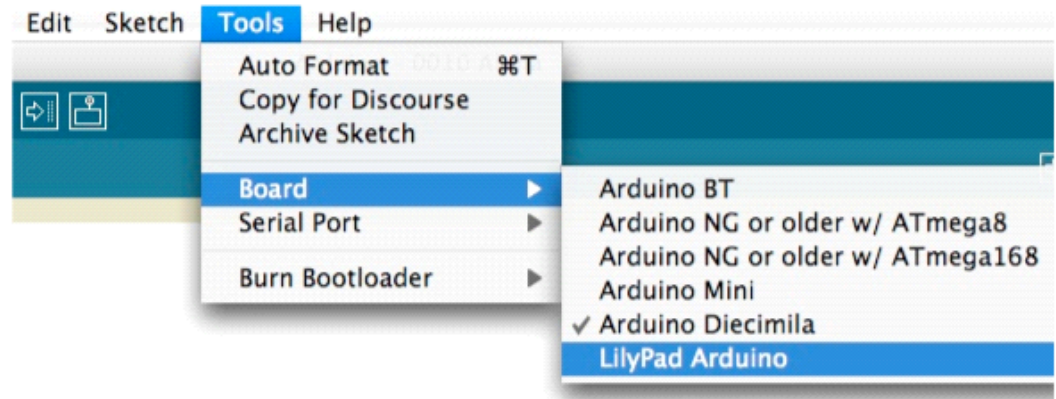
Now you're ready to start programming!

PC

1. Download the software
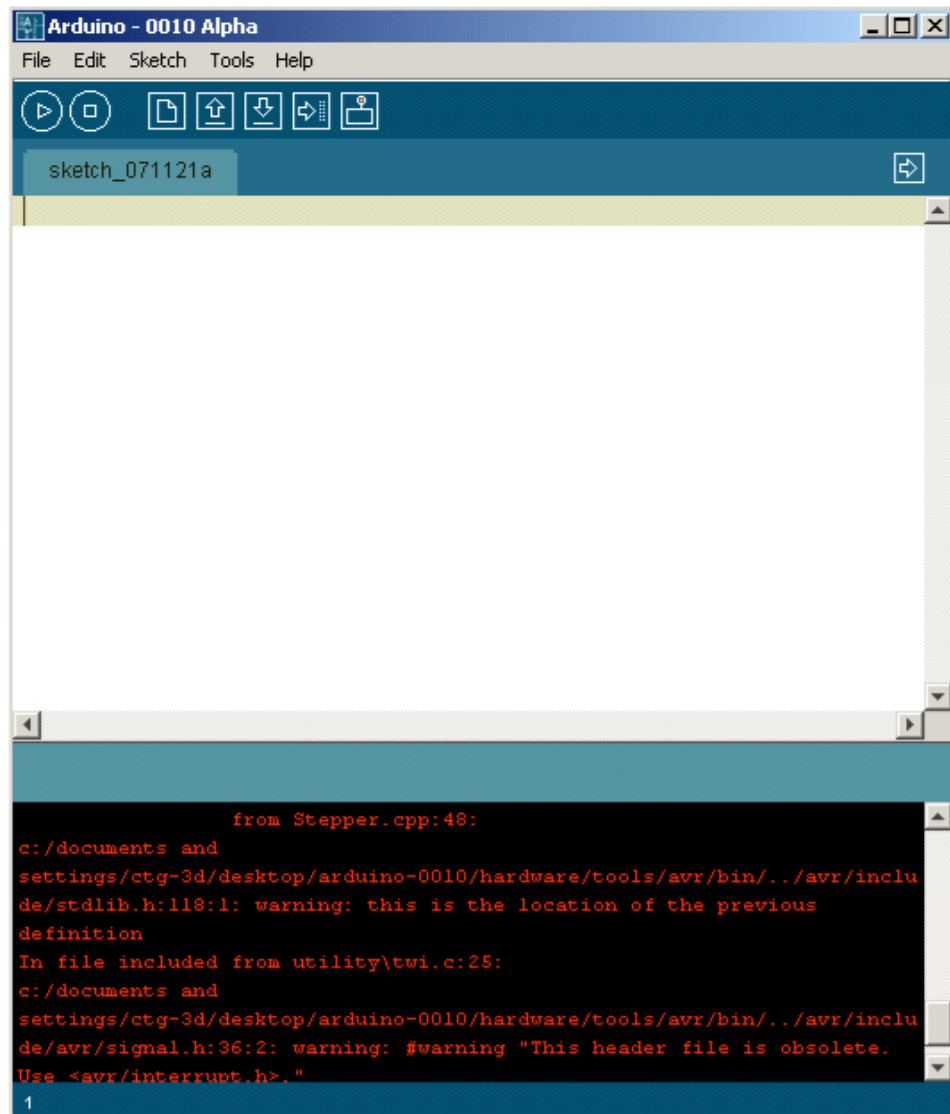
The latest version of the Arduino software can be found here: http://www.arduino.cc/en/Main/Software. Download and unzip the software file. Note, the LilyPad will only work with software versions 10.0 and higher.

2. Open the Arduino software

Browse to the Arduino file you just downloaded and double click on the arduino.exe file to start the Arduino software.
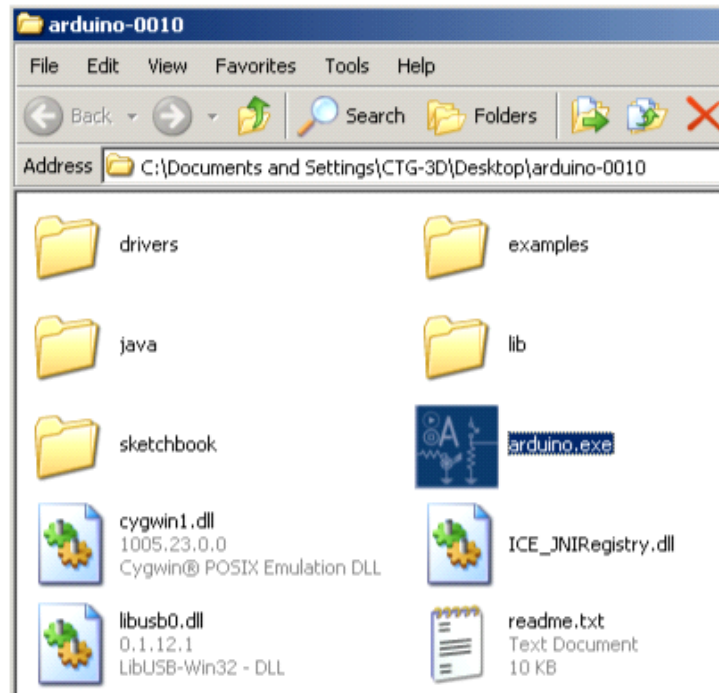
When you first open this software, the window will look something like the picture below, with lots of ugly re text in the bottom half of the window. Don't worry! This is normal.

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```
Arduino - 0010 Alpha                                    _ □ ×
File   Edit   Sketch   Tools   Help

sketch_071121a
```

```
                    from Stepper.cpp:48:
c:/documents and
settings/ctg-3d/desktop/arduino-0010/hardware/tools/avr/bin/../avr/inclu
de/stdlib.h:118:1: warning: this is the location of the previous
definition
In file included from utility\twi.c:25:
c:/documents and
settings/ctg-3d/desktop/arduino-0010/hardware/tools/avr/bin/../avr/inclu
de/avr/signal.h:36:2: warning: #warning "This header file is obsolete.
Use <avr/interrupt.h>."
1
```

3. Attach your LilyPad to your computer

Plug the USB to serial device that is attached to your LilyPad into your computer. The LED on the LilyPad sl
flash a few times very quickly and a "Found New Hardware" window will pop up.

4. Install the USB drivers

In the "Found New Hardware" window, select the "No, not this time" option and click "Next".

Now, select the Advanced option, telling the computer that you will show it where the drivers are.
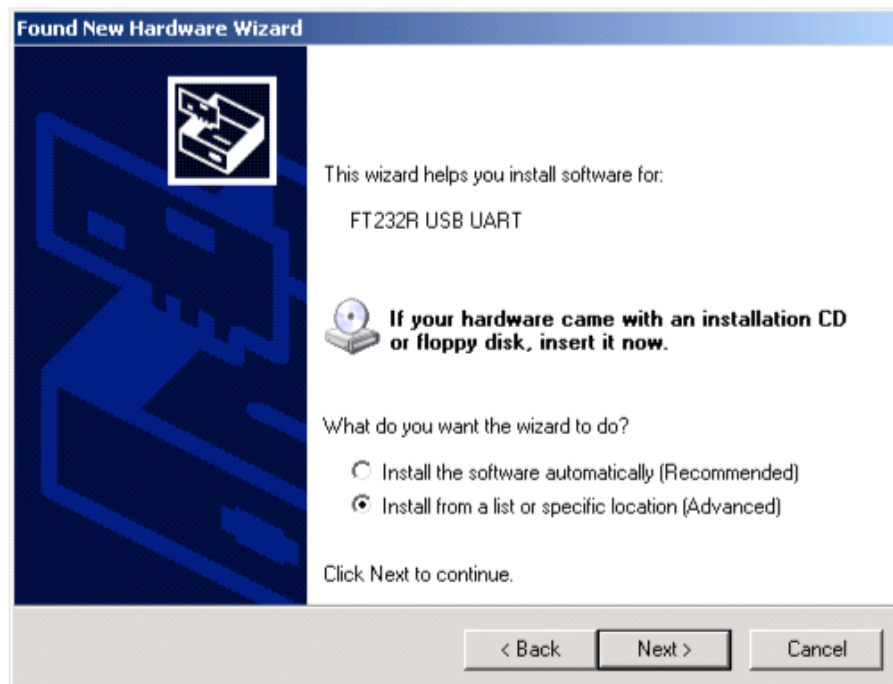
Now, select the "Include this location..." option and browse to the folder with the USB drivers: located in the Arduino-00xx folder you downloaded, in "drivers/FTDI USB Drivers". Once you've found and selected this fol click "Next".
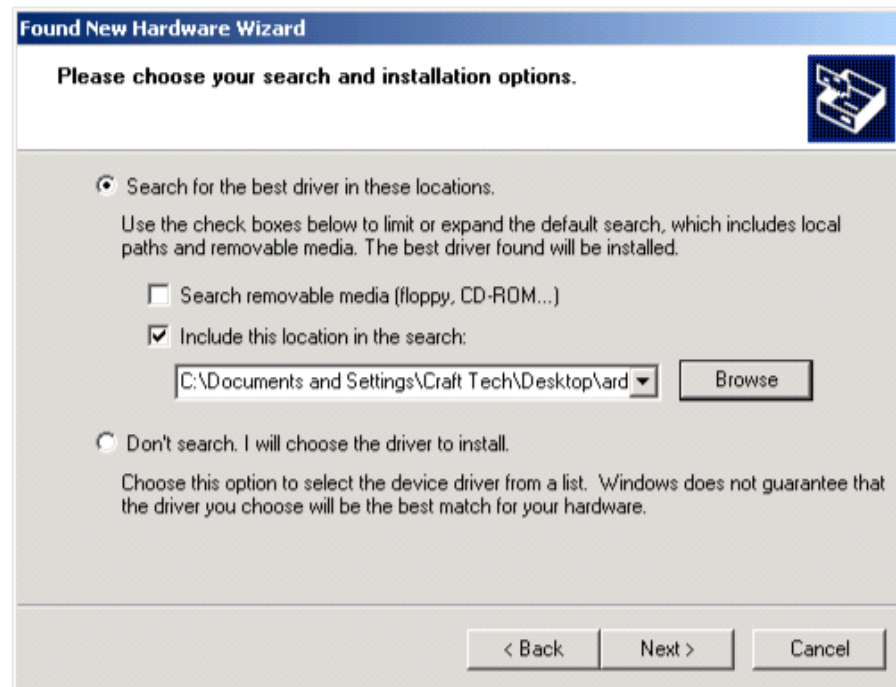
The computer should find and install the appropriate drivers, and once this process finishes, you'll see a win like the one below. Click finish and return to the Arduino software.
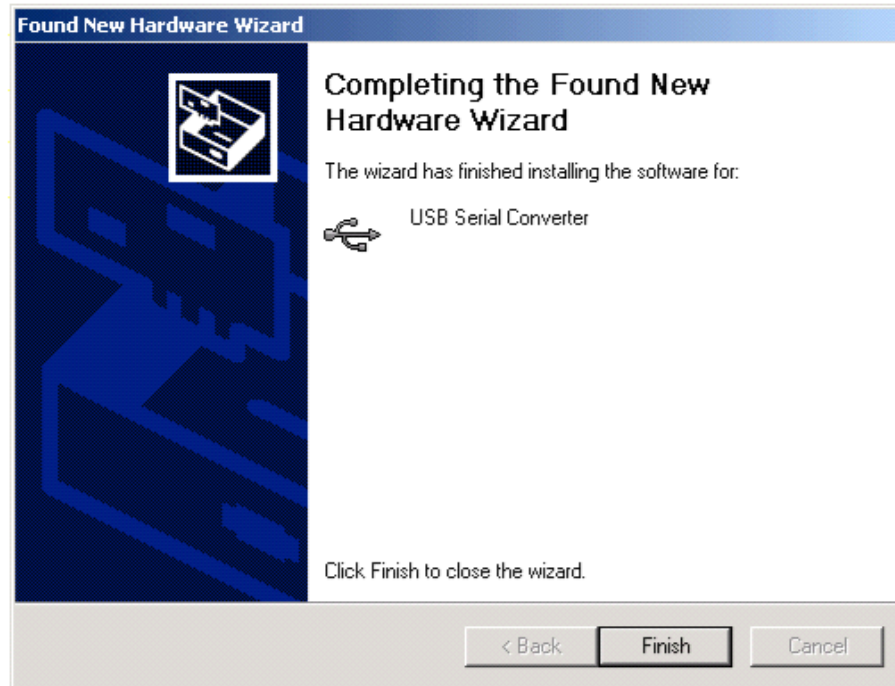
Found New Hardware Wizard

Completing the Found New Hardware Wizard

The wizard has finished installing the software for:

USB Serial Converter

Click Finish to close the wizard.

| < Back | **Finish** | Cancel |

5. Select the correct serial port

Now you need to select the right serial port so that the Arduino software can talk to your LilyPad. Under the "Tools-->Serial Port" menu, select the highest numbered COM port. If this doesn't work see ladyada's fabul help page or the Arduino Troubleshooting guide for help.
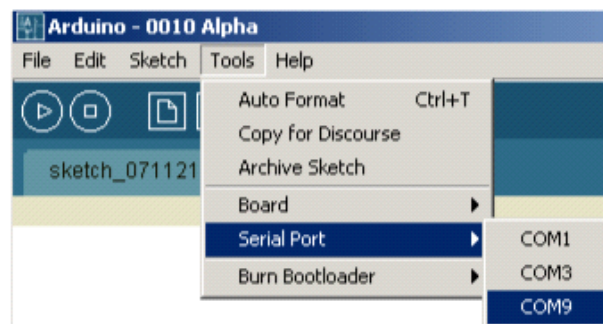
Arduino - 0010 Alpha

File   Edit   Sketch   Tools   Help

Auto Format   Ctrl+T
Copy for Discourse
Archive Sketch

sketch_071121

Board   ▶
Serial Port   ▶   COM1
Burn Bootloader ▶   COM3
                      COM9

6. Select the right board

Now you need to select the right board, so that the software knows you're using a LilyPad and not some otl Arduino board. Under the "Tools-->Boards" menu, select "LilyPad Arduino"
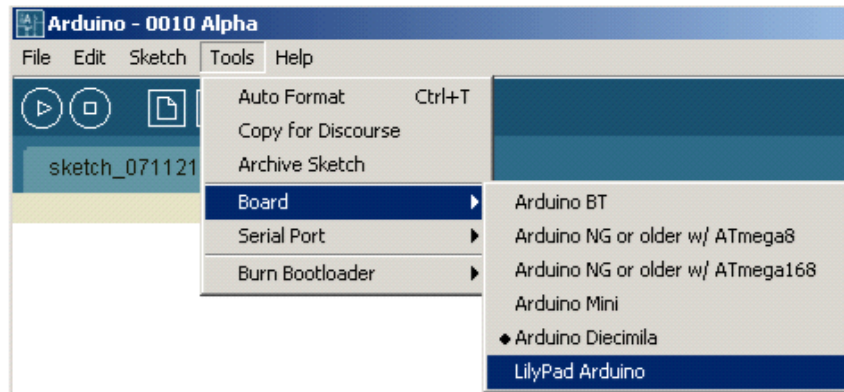
Now you're ready to start programming!

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teardrop: a kit for paper computing
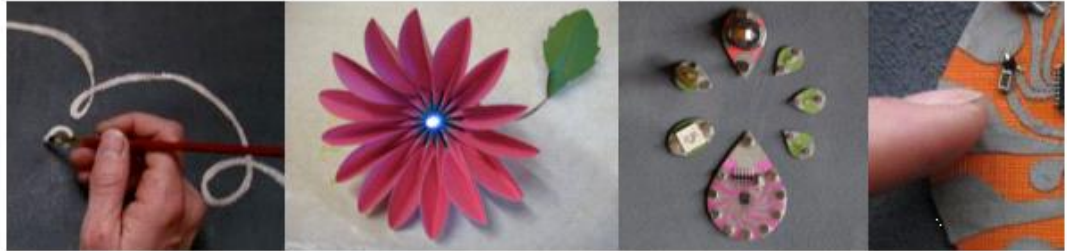
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people
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Tshen Chew
Hannah Perner-Wilson
Emily Lovell
Jie Qi

inspirations/references
Graffiti Research Labs
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return to
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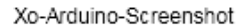
Datalogging Disney with a LEGO NXT   Main   Ladybuds- Earplug earrings
controller brick

HOWTO run Arduino on the XO laptop
Brian writes...

Xo-Arduino-Screenshot

The XO Laptop comes with the drivers you need to talk to an Arduino board, but you need to do a few things before you can run the Arduino environment. Once you get it running, though, it works just fine. The first step is to install Java. To install Java on the XO Laptop, check out these instructions (the version of Java that you download will be different from what's listed on that page, so you'll need to modify the commands slightly to take that into account).

Once you've got Java up and running, you need to install the GNU C and C++ compilers as well as the LIBC for the AVR chip that the Arduino uses. To do this, open up the Terminal activity, su to root, and install avr-gcc, avr-libc, and avr-gcc-c++ using yum:

```
$ su

# yum install avr-gcc avr-libc avr-gcc-c++
```

While you're root, you may as well make one of the changes you need to make; add the olpc user to the lock and uucp groups. To do this, edit the /etc/group file with the /usr/sbin/vigr command and add the olpc user to the end of the lock group:

```
lock::54:olpc
```

and to the end of the uucp group:

```
uucp::14:uucp,olpc
```

After you exit vigr (which is just a script that starts vi to safely edit the group file), decline its offer to edit the gshadow file, and type exit to get back to a normal (non-root) shell):

```
# /usr/sbin/vigr

You are using shadow groups on this system.

Would you like to edit /etc/gshadow now [y/n]? n

# exit

exit

$
```

Next, make sure you're in your home directory, download Arduino (there may be a more recent version of it, so check the Arduino page to be sure. Extract Arduino in your home directory (you'll be running it out of your home directory as well):

```
$ cd

$ wget http://www.arduino.cc/files/arduino-0010-linux.tgz
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HOWTO run Arduino on the XO Laptop

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The XO Laptop comes with the drivers you need to talk to an Arduino board, but you need to do a few things before you can run the Arduino environment. Once you get it running, though, it works just fine. The first step is to install Java. To install Java on the XO Laptop, check out these instructions (the version of Java that you download will be different from what's listed on that page, so you'll need to modify the commands slightly to take that into account). Once you've got Java up and running, you need to install the GNU C and C++ compilers as well as the LIBC for the AVR chip that the Arduino uses. To do this, open up the Terminal activity, su to root, and install avr-gcc, avr-libc, and avr-gcc-c++ using yum:

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lock::54:olpc
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and to the end of the uucp group:

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uucp::14:uucp,olpc
```

After you exit vigr (which is just a script that starts vi to safely edit the group file), decline its offer to edit the gshadow file, and type exit to get back to a normal (non-root) shell):

```
# /usr/sbin/vigr
You are using shadow groups on this system.
Would you like to edit /etc/gshadow now [y/n]? n
# exit
exit
$
```

Next, make sure you're in your home directory, download Arduino (there may be a more recent version of it, so check the Arduino page to be sure. Extract Arduino in your home directory (you'll be running it out of your home directory as well):

```
$ cd
$ wget http://www.arduino.cc/files/arduino-0010-linux.tgz
$ tar xvfz arduino-0010-linux.tgz
```

Now, you're all Arduino-fied. To run it, cd to the arduino-0010 and run the arduino script:

```
$ cd ~/arduino-0010
$ ./arduino
```

There is one last trick: you'll likely find that the Arduino user interface misbehaves quite a bit. To get it to work right, press the screen rotate button four times to get a nice 360 degree rotation. Arduino will redraw and start behaving itself as shown in the screenshot.

Update: As Seth points out in the comments, the Update.1 build that is coming out this month will do away with the su command, so you should use sudo -s instead of su (or simply prefix each superuser command with sudo).

Update 2: If you use JRE 5 from the Java technology archive instead of JRE 6, you won't need to use the screen rotation trick. You'll need to add these two lines to the .bashrc file in your home directory, and then stop and relaunch the Terminal activity:

```
export JAVA_HOME=/usr/java/jre1.5.0_13/
export PATH=$PATH:$JAVA_HOME/bin
```

You'll need to install Java and modify your ~/.bashrc before you try running ./arduino

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11:00 PM

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 See the Ubuntu RestrictedFormats (https://help.ubuntu.com/community/RestrictedFormats) page for more ideas.

In some jurisdictions, patents on algorithms apply and royalty payments may be required. Examples include MP3, and MPEG-4. This is a particular nuisance for media players, for which many of the common codecs algorithms are patented. In other jurisdictions, software patents do not apply and there are usually freely available implementations for these algorithms available.

Sometimes, as in Adobe Flash®, or the Real Helix® player there are free (as in beer) (http://en.wikipedia.org/wiki/Gratis_versus_Libre) implementations available, where those corporations have paid these patent royalties and made usually (binary) versions of codecs available. This has direct consequences as OLPC does not want to burden all machines with payment of what may be unnecessary duplicate patent royalties: OLPC must therefore leave the customization of the distribution for these formats for "in country". For jurisdictions in which such patent laws apply, there are now solutions such as those sold by Fluendo (http://www.fluendo.com/) to these issues.

The Flash format (whether Adobe's Flash 9 or Gnash) illustrates this problem well; even though we include Gnash, we distribute a build that does not have support for MP3 or MPEG-4; you may rebuild Gnash to include these codecs.

 For the general public

Instructions for installing software for dealing with web-based multimedia such as Flash and Java applets using proprietary players or codecs are found below. You use the Terminal activity to install these tools.

Contents

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- 3 Proprietary code bundle for the Helix player
- 4 Sun Java
    - 4.1 OpenJDK alternative
    - 4.2 Sun Java issues
        - 4.2.1 Java plugin does not work
    - 4.3 Installing Sun Java

MP3

Adding MP3 support to GStreamer

You can also add "non-free" packages that implement additional codecs. See GStreamer#MP3

Fluendo MP3 codec

Fluendo (https://shop.fluendo.com/) has made available a free (as in beer) (http://en.wikipedia.org /wiki/Gratis_versus_Libre) MP3 codec, with a free (as in speech) implementation, with a paid up license for the GStreamer code framework. This requires execution of a license agreement for redistribution (http://www.fluendo.com/resources/fluendo_mp3.php) ; unfortunately, the agreement does not permit sub-licensing, so while including it would be convenient and OLPC may choose to execute this agreement in the future, those redistributing our software would still have to execute this agreement to legally redistribute the codec. (According to Thomson's MP3 licensing page (http://mp3licensing.com/royalty/emd.html) , "no license is needed" for private or non-revenue-generating activities. This should be sufficient for our software distributors, but IANAL.)

In order to download the codec you have to "check out" the Fluendo mp3 decoder from their store for $0.00. You are then allowed to download the file **fluendo-mp3-2.i386.tar.bz2**

For more info, see the Fluendo mp3 decoder page. Also see the talk page for more options.

Rebuilding Gnash for MP3 and MPEG-4 support

The source code for the OLPC system software is available. You can rebuild it to include MP3 support: when configuring Gnash, use the following option:

```
./configure --enable-media=ffmpeg
```

Adobe Flash

Browse uses the Gnash plug-in which has some ability to render animations in .swf files.

To install the Adobe Flash player; From the Terminal Activity:

```
su -l
rpm -i http://fpdownload.macromedia.com/get/flashplayer/current/flash-plugin-9.0.115.0-release.i386
exit
```

The Adobe Flash page has more detailed instructions.

Proprietary code bundle for the Helix player

See the Helix media activity page for details.

Sun Java

Sun Java's size (the SDK "on disk" size is 75 megabytes and its memory consumption is large) makes it difficult to swallow. We are investigating other Java implementations as they mature, and the BTest-3 systems and after will have 1GB of flash.

OpenJDK alternative

OpenJDK (http://openjdk.java.net/) is an unrestricted open version of Java available for Linux, but not for the Fedora 7 code underlying 2007 and Update.1 builds; see Java#Installing_OpenJDK_Java. Note: the java plug-in provided by OpenJDK works with the Web.Activity browser (2008-08-27 using build 8.2-756).

Sun Java issues

Note that jre1.5.0_13 has been known to work, while **jre-6u3 does not work** on the XO.

Java plugin does not work

The java browser plugin in Sun Java does *not* work in either jre1.5.0_13 or jre-6u3. (See ticket #6465 and ticket #865.)

Installing Sun Java

You cannot download a Java RPM directly from Sun. You need to follow the somewhat more convoluted steps outlined below:

1. Get the Java RPM:

1.1 On an non-XO machine, go to http://java.sun.com/products/archive/j2se/5.0_13/index.html and click the "Download JRE" link.

1.2 On the webpage which follows, click "Accept License Agreement", find the section title: "Linux Platform - Java Runtime Environment 5.0 Update 13", and right-click or ctrl-click (mac) the "Linux RPM in self-extracting file" link to save the file named jre-1_5_0_13-linux-i586-rpm.bin

[As of 9 Apr 08 that version no longer seems to be available. Whether I use the right-click save-as, or just click the link, or use the Sun Download Manager option that appears in IE, both the rpm file and the plain bin option arrive as a 15 byte file containing "File not found." I don't see them anywhere else on the web, either. Maybe 1_5_0_15 would work?] -> jre1.5.0_15 works with both Opera 9.52 and Processing-0148 on OS 711. Doesn't appear on browse activity

what I found,...

```
jre-1_5_0_13-linux-i586-rpm
```

Hello, For security reasons, you may only download any file once per transaction (a "transaction" is a single session on the SDLC, from login to download). If your download fails part way through, just click the same link again. However, if the system records that you have completed the download, the link will be disabled. If you need to download the file again please start again from the referring page that brought you into the SDLC (usually the product page with a "download now" link on it). You can download a product as many times as you like, but only once per transaction. Thank you for your interest in Sun! Regards, Silvia Hernandez Sun Customer Support

>>> LINK >>> http://java.sun.com/products/archive/

Java 2 Platform Standard Edition (J2SE) JDK/JRE - 6 JDK/JRE - 5.0 ...5.0 Update 14 ...Arrow down 1 to ...5.0 Update 13...

It IS there!

1.3 Copy the file (jre-1_5_0_13-linux-i586-rpm.bin) to a USB stick

1.4 Insert the USB memory stick in the XO;

1.5 From the Terminal activity, copy the file off of the USB stick:

```
cp /media/yourUSBdisk/jre-1_5_0_13-linux-i586-rpm.bin ./
```

where yourUSBdisk is the name of your USB stick. If you don't know the name, you can find out by typing:

```
df
```

You'll see a list of file systems. Your USB stick is the one "Mounted on" /media.

2. Change the file permissions on the Java file

```
chmod a+x jre-1_5_0_13-linux-i586-rpm.bin
```

3. Run the self-extracting file:

```
su -
cd /home/olpc
./jre-1_5_0_13-linux-i586-rpm.bin
exit
```

4. Link to the Java plugin from the Mozilla plugin directory:

```
su -
cd /usr/lib/mozilla/plugins
ln -s /usr/java/jre1.5.0_13/plugin/i386/ns7/libjavaplugin_oji.so
exit
```

(Take care to check that the filenames in the above commands match those that you download: copying these instructions in their entirety will not work since the filenames change as Sun issues new releases.)

You can check which browser plugins you have installed by visiting the page "about:plugins" in the Browse activity.

Retrieved from "http://wiki.laptop.org/go/Restricted_formats"
Categories: Pages monitored by OLPC | General Public | Software

---

General Public
Pages monitored by OLPC
Projects > Software

Personal tools

-
- Login with OpenID

translate ■ Log in / create account

Search

Google search
Wiki search

About OLPC

- Main Page
- Recent changes
- Community news
- Blog and Planet
- Contact us
- Email lists and IRC
- Ways to participate
- Laptop.org

About the XO

- Help using the XO
- Support for the XO

Projects

- for Educators
- for Developers
- Software, LiveCDs
- Hardware, Periphs
- Activities, Content
- Testing
- Deployment guide
- School server

OLPC wiki

- Random page
- Help using the wiki

Toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version
- Permanent link

- Last edited on 00:41, 27 February 2009.
- [9 watching users]
- Creative Commons Attribution 2.5

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Java Path

Java not found

/usr/java/jre1.5.0_13

How to specify
~/.bashrc

JAVA_HOME=/usr/java/jre1.5.0_13
PATH=$JAVA_HOME/bin:/$PATH

Pasted from <http://www.linuxquestions.org/questions/programming-9/java-command-bash-java-command-not-found-25935/>

Serial Port

Tools > Serial Port > /dev/ttyUSB0

Lang Ref

Tuesday, December 08, 2009
2:46 PM

Arduino

Reference   Language (extended) | Libraries | Comparison | Changes

Language Reference

See the **extended reference** *for more advanced features of the Arduino languages and the* **libraries page** *for interfacing wi*
particular types of hardware.

Arduino programs can be divided in three main parts: *structure*, *values* (variables and constants), and *functions*. The Arduino
language is based on C/C++.

Structure

- void setup()
- void loop()

Control Structures

- if
- if...else
- for
- switch case
- while
- do... while
- break
- continue
- return

Further Syntax

- ; (semicolon)
- {} (curly braces)
- // (single line comment)
- /* */ (multi-line comment)

Arithmetic Operators

- = (assignment)
- + (addition)
- - (subtraction)
- * (multiplication)
- / (division)
- % (modulo)

Comparison Operators

- == (equal to)
- != (not equal to)
- < (less than)
- > (greater than)
- <= (less than or equal to)

Functions

Digital I/O

- pinMode(pin, mode)
- digitalWrite(pin, value)
- int digitalRead(pin)

Analog I/O

- int analogRead(pin)
- analogWrite(pin, value) - *PWM*

Advanced I/O

- shiftOut(dataPin, clockPin, bitOrder, value)
- unsigned long pulseIn(pin, value)

Time

- unsigned long millis()
- unsigned long micros()
- delay(ms)
- delayMicroseconds(us)

Math

- min(x, y)
- max(x, y)
- abs(x)
- constrain(x, a, b)
- map(value, fromLow, fromHigh, toLow, toHigh)
- pow(base, exponent)
- sq(x)
- sqrt(x)

Trigonometry

- sin(rad)
- cos(rad)
- tan(rad)

Random Numbers

- >= (greater than or equal to)

Boolean Operators

- && (and)
- || (or)
- ! (not)

Compound Operators

- ++ (increment)
- -- (decrement)
- += (compound addition)
- -= (compound subtraction)
- *= (compound multiplication)
- /= (compound division)

- randomSeed(seed)
- long random(max)
- long random(min, max)

Communication

- Serial

Didn't find something? Check the extended reference or libraries. Or see the list of community-contributed code.

Variables

Variables are expressions that you can use in programs to store values, such as a sensor reading from an analog pin.

Constants

Constants are particular values with specific meanings.

- HIGH | LOW
- INPUT | OUTPUT
- true | false

- Integer Constants

Data Types

Variables can have various types, which are described below.

- boolean
- char
- byte
- int
- unsigned int
- long
- unsigned long
- float
- double
- string
- array
- void

Conversion

- char()
- byte()
- int()
- long()
- float()

Reference

- ASCII chart

Reference Home

Corrections, suggestions, and new documentation should be posted to the Forum.

The text of the Arduino reference is licensed under a Creative Commons Attribution-ShareAlike 3.0 License. Code samples in t reference are released into the public domain.

Edit Page | Page History | Printable View | All Recent Site Changes

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Backwards

Vincent said could do it other way

Reinvent the phone line
Have the XOs communicate over

Class

Give a lot of stuff to you
Need time to decompress and think about the class

Still don't know what class is about

Other Proposals

Use Apple visualizations to have projector respond to sound

Conner's Code

Tuesday, December 08, 2009
3:26 PM

--------arduino code-----------------

```
const int  buttonPin = 2;
int buttonState=0;

void setup() {
  // initialize the button pin as a input:
  pinMode(buttonPin, INPUT);
  pinMode(10, OUTPUT);
  digitalWrite(10, LOW);
  // initialize serial communication:
  Serial.begin(9600);
}


void loop() {


    buttonState = analogRead(buttonPin);
    if(buttonState>850){
      digitalWrite(10, HIGH);
    }
    else{
     digitalWrite(10, LOW);
    }
    Serial.println(buttonState);



}
```

-------python------------------------------------

```
import serial

timeout=250
reading=True
print "\n\n\n\n\n\n\n\n\n\n\n\n"
zerocount=0
codes=["._" , "_..." , "_._." , "_.." , "." , ".._." , "__." , "...." , ".." , ".___" , "_._" , ".._.." , "__" , "_." , "___" , ".__." ,
"__._" , "._." , "..." , "_" , ".._" , "..._" , ".__" , "_.._" , "_.__" , "__.."] keys=["A", "B", "C", "D", "E", "F", "G", "H",
"I", "J", "K", "L", "M", "N", "O", "P", "Q", "R", "S", "T", "U", "V", "W", "X", "Y", "Z"] ser =
serial.Serial('/dev/tty.usbserial-A6007z03', 9600)
```

```python
def analyze(s):
        s=s[s.find("1"):]
        s=s.replace("10", "1 0")
        s=s.replace("01", "0 1")
        s=s.replace("010", "000")
        s=s.replace("101", "111")
        s=s.replace("0110", "0000")
        while (s.find("00")!=-1):
                s=s.replace("00", "0")
        s=s.replace("0", " ")
        #print s
        blocks=s.split()
        #print blocks
        total=0
        count=0
        min=100000000000
        for i in range(0, len(blocks)):
                if(len(blocks[i])<min):
                        min=len(blocks[i])
        mess=""
        for i in range(0, len(blocks)):
                if(len(blocks[i])>=2*min):
                        mess+="_"
                else:
                        mess+="."
        if(mess!=""):
                if(mess.find("_")==-1):
                        if(min>=75):
                                mess=mess.replace(".","_")
                print mess

        for i in range(0, len(codes)):
                if(mess==codes[i]):
                        #print min
                        print keys[i]+"\n"
s=""
temp=0
count=0
while 1:
        rl=ser.readline()
        try:
                rl = int((rl.strip()).replace("?", ""))
        except:
                #print "whoops"
                1
        if(rl>800):
                rl="1"
        else:
                rl="0"
        s+=rl
```

```python
        if(rl=="0"):
                zerocount+=1
                if(zerocount>=timeout):
                        analyze(s)
                        s=""
                        zerocount=0
        else:
                zerocount=0
```

Communications Code

Tuesday, December 08, 2009
5:24 PM

# programming the LilyPad Arduino: sensing (switches)

1. If you haven't yet, make a coaster for your LilyPad

See this tutorial for instructions. This will prevent the alligator clips that we'll be using from sliding around on the LilyPad. Trust me, it's worth it to do this!

2. Make a simple switch out of alligator clips

A switch is basically 2 pieces of conductive material that are sometimes pressed together and sometimes kept The switch is CLOSED (pressed or triggered) when the conductors are pressed together and OPEN when the conductors are separated. We'll make a really simple switch using 2 alligator clips.

Attach a black alligator clip to the - tab on the LilyPad and an alligator clip of a different color (preferably not re tab 2 on the LilyPad. Now, when we touch the two alligator clips together we are closing or "pressing" the switc Note that when we touch the clips together, the switchPin (flower petal 2) will be attached to ground or "-" via tl alligator clips. We refer to ground or "-" in Arduino code as "LOW" and power or "+" or "+5V" as "HIGH". More this in a second.
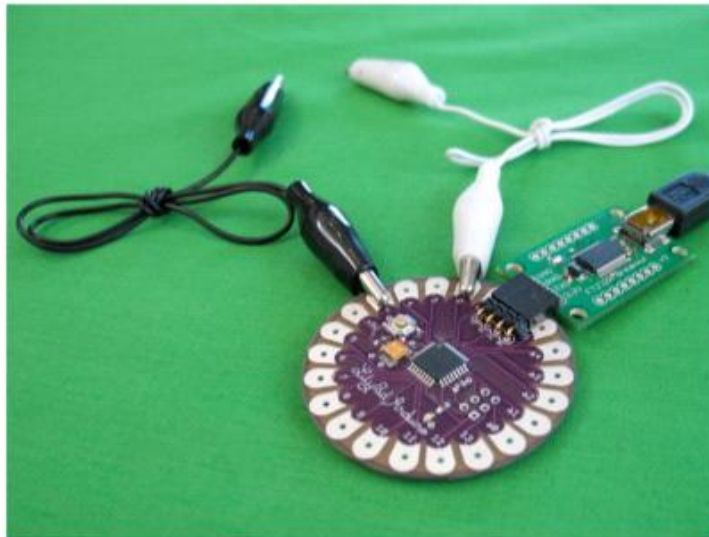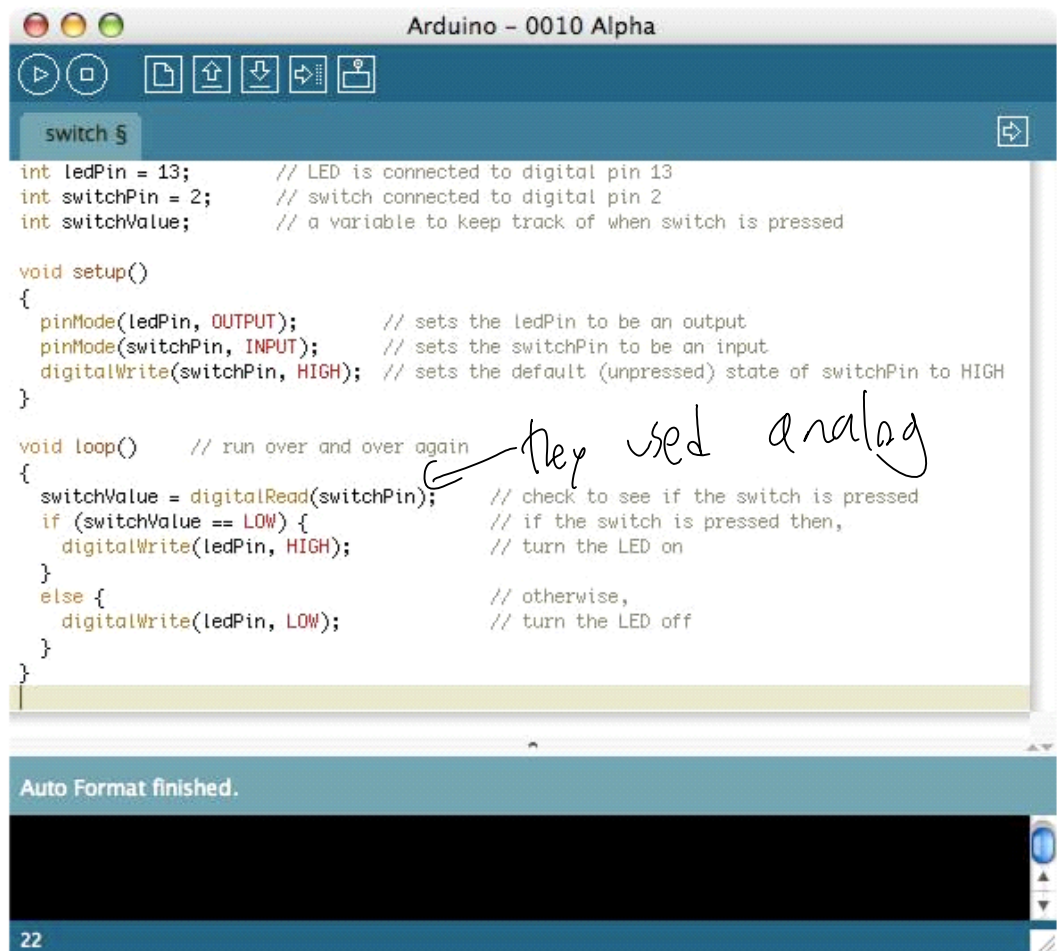
3. Attach the LilyPad to your computer and start the Arduino software

4. Copy this sample code into an Arduino window

Click here for switch sample code. Copy and paste this code into an empty Arduino window.

5. Format the code

Under the Tools menu, select Auto Format. After you do this, align all of your comments (the statements in grey following "//" on each line) so that they are in readable columns on the right hand side of the screen. This will he read through the code. Here's what my Arduino window looked like after I formatted everything:

```
                              Arduino – 0010 Alpha

  switch §

int ledPin = 13;        // LED is connected to digital pin 13
int switchPin = 2;      // switch connected to digital pin 2
int switchValue;        // a variable to keep track of when switch is pressed

void setup()
{
  pinMode(ledPin, OUTPUT);        // sets the ledPin to be an output
  pinMode(switchPin, INPUT);      // sets the switchPin to be an input
  digitalWrite(switchPin, HIGH);  // sets the default (unpressed) state of switchPin to HIGH
}

void loop()     // run over and over again
{
  switchValue = digitalRead(switchPin);    // check to see if the switch is pressed
  if (switchValue == LOW) {                // if the switch is pressed then,
    digitalWrite(ledPin, HIGH);            // turn the LED on
  }
  else {                                   // otherwise,
    digitalWrite(ledPin, LOW);             // turn the LED off
  }
}

Auto Format finished.

22
```

*(handwritten annotation pointing to the digitalRead line: "they used analog")*

Read through the code to get a sense of what it is doing. The comments at the end of each line should help you understand what's happening. Note that in the code we are listening for a LOW signal on the switchPin. We turn LED when the switchPin is attached to ground. As was mentioned earlier, when we put the two alligator clips to this is exactly what is happening: the switchPin is attached to ground via the clips. So, let's test it out in the real world...

6. Load the code onto the LilyPad

Compile the code and load it onto the LilyPad. Do this by hitting the upload button in the Arduino window (that's right pointing arrow at the top of the Arduino window) and then quickly pressing the reset switch on the LilyPad. you're new to this process, or if you have any problems uploading, see the previous LilyPad tutorial: 4. light (LE

7. See what happens when you close the switch!

The LED should come on. If it doesn't, check to make sure your alligator clip connections are good. Here's wha switch triggered board looks like. Look closely to see the light ;-):
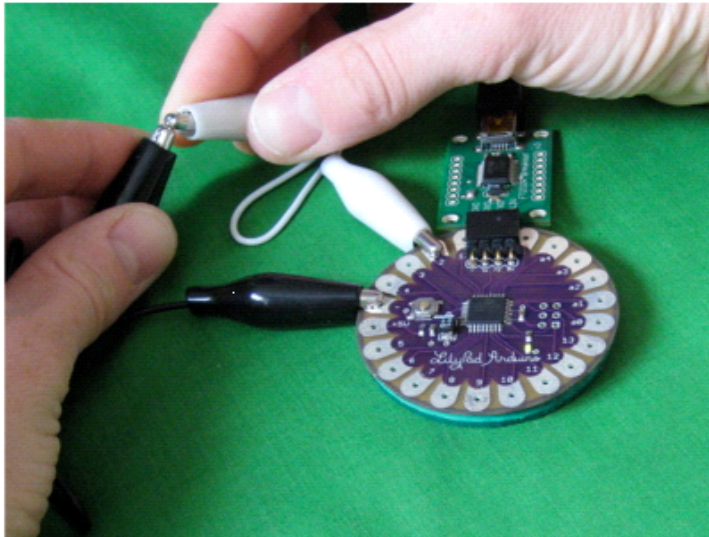
7. Play with modifying the code to get different behavior

- Can you get the LED to turn on when the switch is open and off when the switch is closed? (Basically sw the behavior of the sample code.)
- Can you get the LED to blink quickly while the switch is closed and turn off when the switch is open?
- Something a little more challenging... can you get the LED to toggle on and off with each press of the sw That is, the first time you press the switch, the LED turns on, the second time you press the switch it tur and so on?

8. Build your own switch

As you can see from the alligator clip example, it's easy to build a switch. Play with different materials to make own switches. Some of the interesting conductive materials that you can use to make switches are conductive conductive fabric, conductive thread, aluminum foil, metal springs and metal beads. Use your imagination and whatever is lying around the house!

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Pippy Serial

Install pyserial

Now getting message no such port

Conners: /dev/tty.usbserial-A6007z03
My xo: /dev/ttyUSB0

Need to
Su -
chmod 666 /dev/ttyUSB0

Mac: /dev/tty.usbserial-A6007ziP

Multimeter

Room 505

XO Mesh

One person starts activity
Goes to neighborhood and picks invite to
    Unless perhaps have to do it on the other computer
So they use the other person's instance of the activity
    Does not create their own
    And only seems to work sometimes

Input

Can you input data in to the arguino
Don't think so
There goes our recieiving idea

Sending

How will I do???
Chat program no API

Unless build own chat program

Or some piping unix thing

No chat is XMPP
So just need a python xmpp protocol

Chat

Home Wiki Download   R

Activities

sugar

Categories

Search & Discovery	33
Documents	10
News	4
Chat, mail and talk	5
Media creation	18
Programming	9
Maths & Science	67
Maps & Geography	8
Media players	1
Games	49
Teacher tools	98
Collections	

search for activities   within   all activities

Chat 66
by **morgs**, **Activity Team**

See All Chat, mail and talk Activities

See All Teacher tools Activities

Other activities by these authors

Chat

Tags

Register o Log in to add tags

Related Collections

Fructose

JUAN IGNACIO 5B ESCUELA 101 CANELONES-URUGUAY

Luciana4a2009

Chat provides a simple interface for collaborative discussion, be it between two individuals or among a group as large as an entire classroom. Use Neighborhood View to invite particular people to Chat, or share for a public conversation.

⬇ **Download Now**

Share th Activity

Version	66
Works with	Sugar: 0.86 – 0.86
Updated	September 9, 2009
Developers	morgs, Activity Team
Homepage	**http://wiki.laptop.org /go/Chat**
Rating	Not yet rated
Downloads	3,636

More about this activity

Chat uses the XMPP protocol which powers Sugar's collaboration, s⋅ interoperates to some extent with conventional Jabber IM clients. Reg Jabber client on the Jabber server you are using, or use Bonjour, to s user, and send them an IM to display an invitation to Chat.

Support

Support for this activity is provided by the developer at http://sugarlat sending an e-mail to sugar-devel@lists.sugarlabs.org

What do you think?

Please log in to submit a review

Final Project Page 87

Review

Please do not post bug reports in reviews. We do not make your email address available to activity developers and they may need to contact you to help resolve your issue.

See the support section to find out where to get assistance for this activity.

Rating

Post Review

Review Guidelines

Detailed Review

Release Notes

Version 66 — September 9, 2009 — 156 KB
* Utilize new toolbars design
* Add new translations: mg, sq, ta

Source Code License What's this?
GNU General Public License, version 2.0

View Older Versions
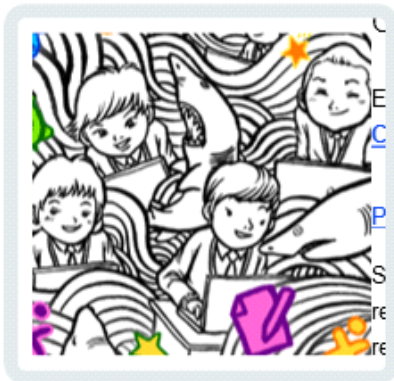
Other languages: English (US)

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Privacy Policy   Legal Notices   Credits   About   FAQ   Blog

Sugar Labs is providing links to these applications as a courtesy, and makes no re[...] regarding the applications or any information related there to. Any questions, comp[...] regarding the applications must be directed to the appropriate software vendor.

Chat

From OLPC

Vandal magnet page Created and protected
to block anonymous vandalism.

HowTo [**ID# 219141**] +/− (http://wiki.laptop.org
/index.php?title=Chat/translations&action=edit)

Chat	
🗨	This activity was core
TST	Chat
🐾	Tickets **all** (https://dev.laptop.org /query?component=chat-activity& order=priority) - **active** (https://dev.laptop.org /query?component=chat-activity& status=new&status=reopened& order=priority) - **new** (https://dev.laptop.org /query?component=chat-activity& status=new&order=priority)
	Morgan Collett

see more templates or propose new

Contents

- 1 Description & Goals
  - 1.1 Summary
  - 1.2 Goals
    - 1.2.1 Text & Image
    - 1.2.2 Interactive Chat
    - 1.2.3 File Sharing
    - 1.2.4 Searching
  - 1.3 Collaboration
- 2 Visual Design
  - 2.1 Media
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- 3 Development
  - 3.1 Feature Requests
  - 3.2 Implementation Discussion
  - 3.3 Version History
  - 3.4 Source
  - 3.5 RPMs
  - 3.6 Resources
- 4 Functional Test

Description & Goals

For the general public

Summary

The Chat activity will provide a simple interface for collaborative discussion, be it between two individuals or among a group as large as an entire classroom. While a lightweight and "impermanent" chat will be provided in a layer above all activities and the various mesh levels,

Chat activity

this activity devoted to textual communication will keep detailed records of the conversation within the journal and provide a means of searching through the conversation to locate important comments.

Goals

Many of these goals have not yet been implemented

Text & Image

The Chat activity will take advantage of both the keyboard and the resistive trackpad technology on the laptops, allowing the conversation to evolve with both text and image.

Interactive Chat

In addition to supporting both text and drawing, the Chat activity will encourage conversation and iterative process by providing a "pull" button for each entry. When a child clicks this button the content of the chat bubble - both image and text - get pulled into the input region, allowing her to alter or append both text and image. When the modified drawing or text becomes part of the conversation, it enters the stream as a new bubble, preserving the previous comments and drawing iterations.

When pulling text into the editing region, it is "pasted" into the region in the normal fashion: over a selection or at the cursor location. Images, on the other hand, will be pasted in place above any currently existing drawing.
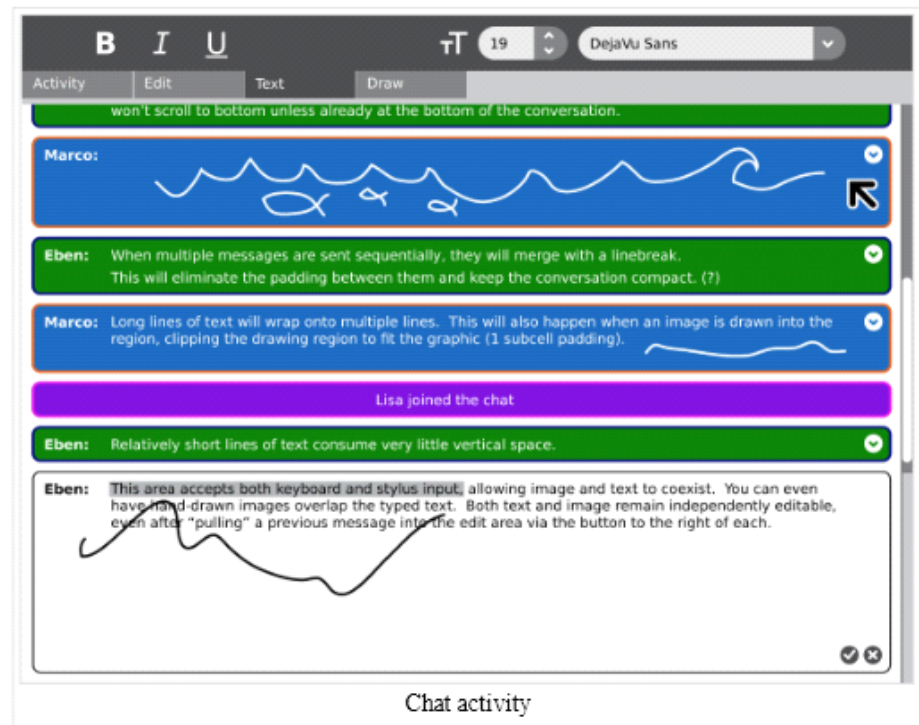
File Sharing

The Chat activity doesn't explicitly expose a means for file sharing. This results from the fact that the entire Sugar UI is designed around the idea of collaboration, providing a layer above every activity for sharing images, links, and documents. This layer can be used in Chat, or in any activity, to share documents with the activity participants.

Searching

The edit toolbar should provide an easy method to search for a string of text within the conversation, quickly jumping to chat bubbles that pertain to the search. Optionally we could have a filtering system which allows one to view only bubbles containing images, or all bubbles for a specific individual.

Collaboration

Chat is a naturally collaborative activity. As such, no specific discussion is really needed beyond the overall goals for the activity.

Visual Design

Media

Document	Description
Activity Mockup (216KB) history	Adobe Illustrator file containing mockups for each toolbar

Screenshots

| Text input | Drawing input |

Development

Feature Requests

- Video/Audio conversations - User:Atodorov
- Some way for children to be able to connect to remote buddies (Internet), not only ones in their Mesh network - User:Atodorov

Implementation Discussion

Version History

Source

```
http://dev.laptop.org/git.do?p=chat-activity
```

RPMs

- none available

Resources

Functional Test

Open the Chat activity.

Ensure that you can send and receive text messages with another XO in the local mesh.

Close the activity; ensure that it closes properly.

Activity Summary

Icon:	Image:Chat-icon.jpg
Genre:	Chat, Mail, Talk
Activity group:	Activities/G1G1
Short description:	A chat program.
Description:	A program that allows multiple XO's to communicate with each other via a mesh network or jabber server.
Maintainers:	User:Morgs
Repository URL:	http://git.sugarlabs.org/projects/chat/repos/mainline
Available languages:	Afrikaans, Arabic, Bengali, Chinese, (Taiwan), Dutch, French, German, Greek, Italian, Japanese, Kinyarwanda, Kreyol, Mongolian, Nepali, Papiamento, Sinhala, Slovenian, Spanish, Telugu, Turkish, Urdu, Vietnamese
Available languages (codes):	af, am, ar, ay, bg, bn, ca, de, dz, el, en, es, fa, ff, fr, gu, ha, hi, ht, ig, is, it, ja, km, ko, mk, ml, mn, mr, ne, ps, pt, qu, ro, ru, rw, sd, si, sl, te, th, tr, ur, vi, yo, zh
Pootle URL:	https://dev.laptop.org/translate/projects/fructose82/
Related projects:	
Contributors:	
URL from which to download the latest .xo bundle	http://dev.laptop.org/~morgan/bundles/Chat-60.xo (http://dev.laptop.org/%7Emorgan/bundles/Chat-60.xo)
Last tested version number:	60

The releases with which this
version of the activity has been
tested.

Development status: 3. Alpha

Ready for testing (development
has progressed to the point
where testers should try it out):

smoke tested :

test plan available :

test plan executed :

developer response to testing :

URL from which to download the last .xo bundle that works with old releases	http://dev.laptop.org/~morgan/bundles/Chat-40.xo (http://dev.laptop.org/%7Emorgan/bundles/Chat-40.xo)
Activity version number:	40
The releases with which this version of the activity has been tested.	8.1.1 (708)
Development status:	5. Production-stable

URL from which to download the last .xo bundle that works with old releases	http://dev.laptop.org/~morgan/bundles/Chat-48.xo (http://dev.laptop.org/%7Emorgan/bundles/Chat-48.xo)
Activity version number:	48
The releases with which this version of the activity has been tested.	8.2.0 (767)
Development status:	5. Production-stable

Facts about ChatRDF feed

Activity bundle	http://dev.laptop.org/~morgan/bundles/Chat-60.xo (http://dev.laptop.org/%7Emorgan/bundles/Chat-60.xo) +, http://dev.laptop.org/~morgan/bundles/Chat-40.xo (http://dev.laptop.org/%7Emorgan/bundles/Chat-40.xo) +, and http://dev.laptop.org/~morgan/bundles/Chat-48.xo (http://dev.laptop.org/%7Emorgan/bundles/Chat-48.xo) +
Activity genre	Chat, Mail, Talk +
Activity group	Activities/G1G1 +
Activity version	60 +, 40 +, and 48 +
Available languages	Afrikaans +, Arabic +, Bengali +, Chinese +, (Taiwan) +, Dutch +, French +, German +, Greek +, Italian +, Japanese +, Kinyarwanda +, Kreyol +, Mongolian +, Nepali +, Papiamento +, Sinhala +, Slovenian +, Spanish +, Telugu +, Turkish +, Urdu +, and Vietnamese +
Contact person	Morgs +

Description	A program that allows multiple XO's to communicate with each other via a mesh network or jabber server.
Devel status	3. Alpha +, and 5. Production-stable +
Language code	af +, am +, ar +, ay +, bg +, bn +, ca +, de +, dz +, el +, en +, es +, fa +, ff +, fr +, gu +, ha +, hi +, ht +, ig +, is +, it +, ja +, km +, ko +, mk +, ml +, mn +, mr +, ne +, ps +, pt +, qu +, ro +, ru +, rw +, sd +, si +, sl +, te +, th +, tr +, ur +, vi +, yo +, and zh +
Localization URL	https://dev.laptop.org/translate/projects/fructose82/ +
Short description	A chat program.
Software release	8.1.1 (708) +, and 8.2.0 (767) +
Source code	http://git.sugarlabs.org/projects/chat/repos/mainline +
Sugar icon	+

Retrieved from "http://wiki.laptop.org/go/Chat"
Categories: Translated Pages | Activities | Core | General Public

---

General Public
Language support > Translated Pages
Sugar > Activities
Sugar > Activities > Bundled > Core

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- Last edited on 15:25, 29 September 2009.
- [5 watching users]
- Creative Commons Attribution 2.5

Jabber

http://xmpppy-guide.berlios.de/html/

Server ship2.jabber.laptop.org

I wish I had a packet sniffer so I could see their usernames, etc

Friday, December 28, 2007

Expand your Neighborhood and Chat

My thanks to Tom Hoffman who has created a virtual machine to test the internet share services of the XO laptop and Sugar interface. Thanks also to the good folks at OLPCNews for pointing me to the instructions below. They really make me wish I had jumped on board the XO bandwagon a year ago. I'm not sure I understand how it all works yet but the result is a great demo of the power of the XO laptop. Even though I have two XO's myself it's great to chat with other new supporters of the OLPC project.
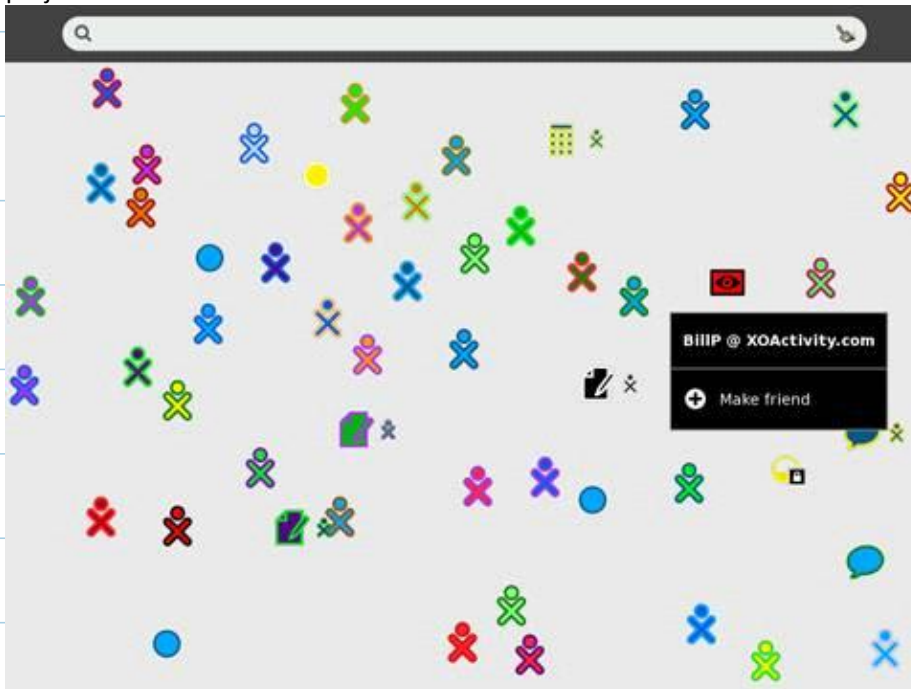
My new XO Neighborhood

I've only run into the nicest people but obviously I don't recommend this for unsupervised kids. To expand your neighborhood use the following steps:

- Step 1: Launch the Terminal Activity and enter the following commands.
- Step 2: **sugar-control-panel -g jabber**
- Step 3: **sugar-control-panel -s jabber xochat.org**
- Step 4: Reboot Sugar with CTRL-ALT-ERASE

If you see an open Activity, just click to join. There is still one problem with the chat activity. The default build has a bug so soon after you start to enjoy your chat the screen scrolls all the way up each time a new chat message is sent. If you want to see everyones chat you'll need to keep scrolling up. Very annoying but worth it for now. I have already had some experience rebuilding my XO so when a new build is available I'll provide instructions.

[handwritten: ← got × sp × key]
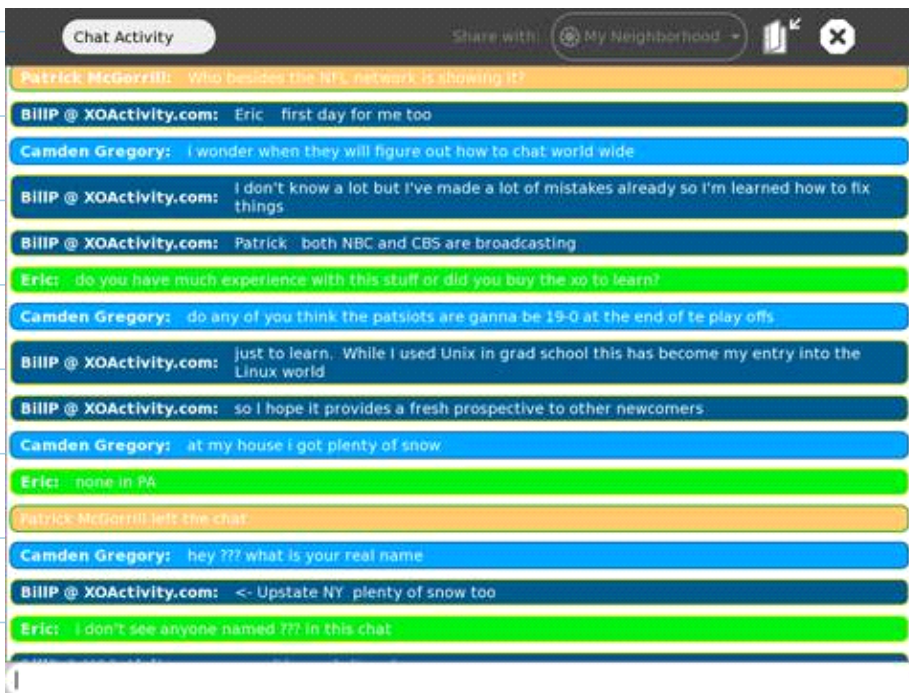
My first XO Chat Experience

A tip to those who haven't received their XO laptops yet. When you first boot you'll be asked for a user name. The name will be displayed in the neighborhood so pick something that you want others to see. I like folks who included their location, but if your child will be using it, don't include their last name.

UPDATE: The following comment was posted on January 7th

> *Please be aware that the xochat.org server is now very overloaded - I see lots of networking retransmits and people are often not visible. The load is proportional to the product of the number of registrees times the current number of users, for the reasons documented at XMPP_Extensions. So don't connect (and thus automatically register) unless you will really be contributing, and/or set up your own ejabberd server. -Neal McBurnett*

Posted by Bill Pytlovany at 12:53 PM

Tags: Chat, jabber, OLPCNews, Sugar, Tom Hoffman

1 comments:

Anonymous said...

> Please be aware that the xochat.org server is now very overloaded - I see lots of networking retransmits and people are often not visible. The load is proportional to the product of the number of registrees times the current number of users, for the reasons documented at XMPP_Extensions.
>
> So don't connect (and thus automatically register) unless you will really be contributing, and/or set up your own ejabberd server.
>
> -Neal McBurnett
> January 7, 2008 4:07 PM

Pasted from <http://xoactivity.blogspot.com/2007/12/expand-your-neighborhood-and-chat.html>

So I need a public jabber server
    Xochat.org down

Which to use????
        No way starting own server

        Can change in the control panel under network in 8.2

Oh and I think I forgot to be su

    Oh this makes mesh work around the world!!!!!!
    So don't need to be in mesh network range

    But still need to open shared chatroom

Now it needs authentication

Going to install a mac os x jabber client

They have weird ids

And I tried im all of them and nothing happened

Set up username
User: mac
Password: test

No I sent a message from mac to xo
        It does not show up
        Unless in title bar of the xo
        Icon is same color as the current xo
        Need to click on it

        Shows up on right as a normal notification

                                        4 hrs
                                        4 hrs
                                        4 hrs
                                        2 hrs

c9dcdd473a2817adf24ff26430f657c981857134@jabber.laptop.org
 plaz

182f647d0a622b2fbc0a7bfbb35aba6f927b1b53@jabber.laptop.org
 kbaum

Community Jabber Servers

Community Jabber Servers

From OLPC

Jabber: | **Community Jabber Servers** | Run a Jabber Server | Category:Jabber

What is a Jabber Server

A (specially configured) jabber server is used to allow multiple XOs/Sugar instances to connect and collaborate remotely. Imagine that a school in Peru and a school in Canada wanted to collaborate via their XOs. The mesh network doesn't stretch that far, but the two schools could use a Jabber server to communicate.

Contents

- 1 What is a Jabber Server
- 2 Community Server Directory
    - 2.1 Connecting to a community jabber server
        - 2.1.1 Latest version (8.2)
        - 2.1.2 Older versions (Pre-8.2)
    - 2.2 Previously-up servers

Currently, jabber servers can handle up to about 150 users due to scalability issues. So it makes more sense for there to be several community run servers, for specific or general purposes. The existing community servers are organized - by geographic region, by special interest, kids or parents or whatever their users like.

To set up your own community or private server, see: Run your own jabber server.

Community Server Directory

If you want to publicize your server, please list it below. In "community", specify who should use this server - be as specific as possible. Please add a sysadmin contact email address so we can bug you when it's down...

Community Servers

server name	community	comments	sysadmin contact
jabber.laptop.org	all	Jabber server for OLPC	olpc-sysadmin@lists.laptop.org
jabber.sugarlabs.org	latest Sugar version users	Jabber server for people using the latest Sugar version	systems@lists.sugarlabs.org

chatmask.com	anyone	Gateway to MSN, GTalk, AIM, Yahoo, ICQ, IRC, GaduGadu	xboxnorm@chatmask.com
chw.no-ip.org	Open to all	Location: Romania	chw_server@yahoo.com
dc.olpc.obscure.org	Washington, DC area (any)	OLPC D.C. Jabber Server	
jabber-hispano.org	Hispana	Servidor jabber de la Comunidad Hispana (http://www.jabber-hispano.org)	
jabber.buddycloud.com	Open to all	Jabber server including location based API (http://blog.buddycloud.com/node/1)	
jabber.olpchacks.org	Chicago, IL (any)	OLPC Chicago Jabber Server	
potter-pod.no-ip.biz	Richmond, VA. (any)		
schoolserver.laptop.org	developers	Jabber server for OLPC/Sugar developers	
schoolserver.rit.edu	Anyone	Group project of students at RIT. Running School Server XS .6	schoolserver.rit.edu@gmail.com
xochat.lympago.com	G1G1 (any) Focus: Australia	Jabber server for Australians and others. Not affilitated with xochat.org.	rdm at lympago com
xochat.de			
xo1share.org	G1G1 (any) Focus: Great Lakes Region.	Location: Michigan / Site status: http://xoshare.org/mi	xo1@scishare.com
lowballking.net	Open to all	spark IM Client for [Red5 Audio, Video Services]	admin@lowballing.net
jb.tr3.ru	Open to all	Russian server, cp1251 coding in icq transport	azmar@jb.tr3.ru
letinet.ru (http://letinet.ru)	Open to All	Russian server of «LETI» (http://www.eltech.ru/english/index.htm) students.	postmaster at mail dot xost||ame

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shesha.ru	Open to all	Shesha's XMPP Service	art@shesha.ru

Connecting to a community jabber server

Latest version (8.2)

Use the graphical Control Panel (http://wiki.laptop.org/go/Sugar-control-panel#Network) to set the Mesh (aka Jabber) server to one from the *server name* column in the table above.

Older versions (Pre-8.2)

1. Open Terminal

2. Type the following command:

```
sugar-control-panel -s jabber jabber.laptop.org
```

replace jabber.laptop.org with the jabber server you with to use

3. Restart Sugar (**warning: first close your activities to save them!**) by pressing ctrl+alt+erase

4. Go to the neighborhood view and have fun!

Previously-up servers

These servers were down as of last check (2009-03-18).

Community Servers

server name	community	comments
jabber.xo-quebec.org	Montreal, Qc (any)	Québec Area Jabber Server(fr) (http://www.xo-quebec.org/configuration-xo-quebec)

Retrieved from "http://wiki.laptop.org/go/Community_Jabber_Servers"
Categories: Jabber | Community | SchoolServer

Participate > Community
Projects > Hardware
Projects > Software
Projects > Software > SchoolServer
Features > Software features > Collaboration > Jabber

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- Last edited on 07:31, 10 November 2009.
- [16 watching users]
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Todo

Get conner's code working from serial out

Send over Jabber to chat
        Got the jabber ids

                        Not going to display on LED

                        Know just enough to try this and make progress
                        Not to do it fast

An error occurred while looking up _xmpp-client._tcp.jabber.laptop.org

        SO the libraries are not working
        Works fine on the mac
        Right username and password

Now my xo has that problem where the ctrl key is stuck down
Can't type right

And the mac is not sending anything to conner
        Did jabber get blocked?

I give up