

# Sugar: The sweet constructionist learning environment

>>> PyCon India '10

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Hola!

A little history...

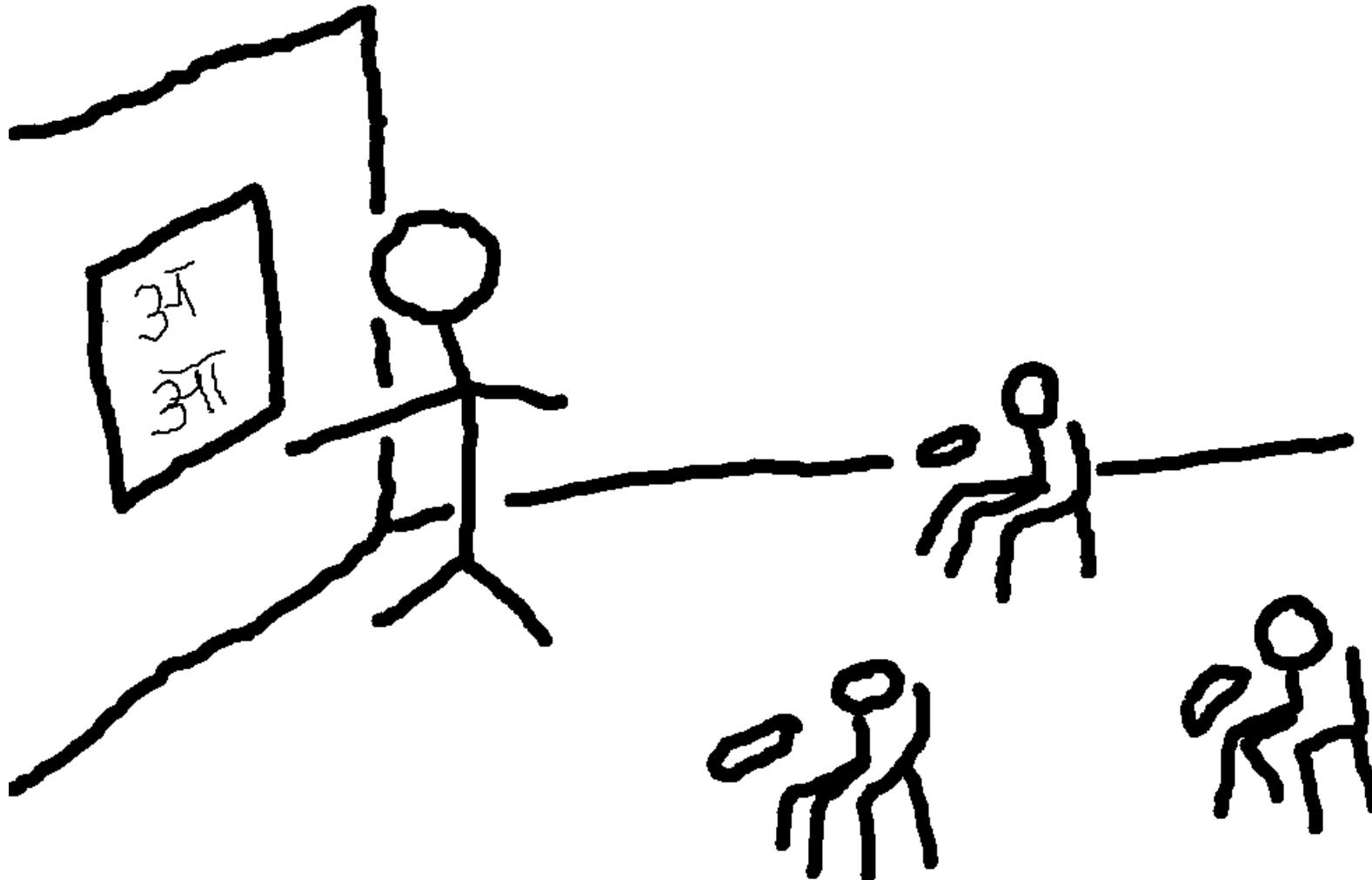
# Early efforts

Seymour Papert

- 1967 : Invents Logo
- Develops constructionism learning theory  
19601980.
- Children's machine – Learning in the digital age

Constructionism = "*Learning by Doing*"

# Drug-study Methodology



# Drug-study Methodology



# Until now, computers failed to transform school

*"If the role of the computer is so slight that the rest can be kept constant, it will also be too slight for much to come of it."*

— Seymour Papert

...Enter OLPC



*UN World Summit 2005*

# OLPC XO-1, 2007



- 433MHz AMD Geode
- 1200x900 LCD
- 256MB DRAM
- 1GB solid-state disk
- 802.11s mesh wifi
- 640x480 camera
- Low-power operation
- Open Firmware

# Ethiopia



Mongolia



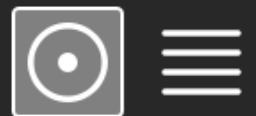
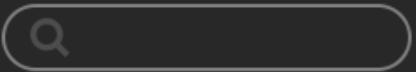
# India



## Collaborating and Learning

2,000,000 Laptops  
Over 40 Countries

*But you've only seen half of it...*



**Sugar reinvents the use of  
computers in education**

# Activities

*The heart of sugar...*

Duration:



4.0 s.

1

2

3

4

5

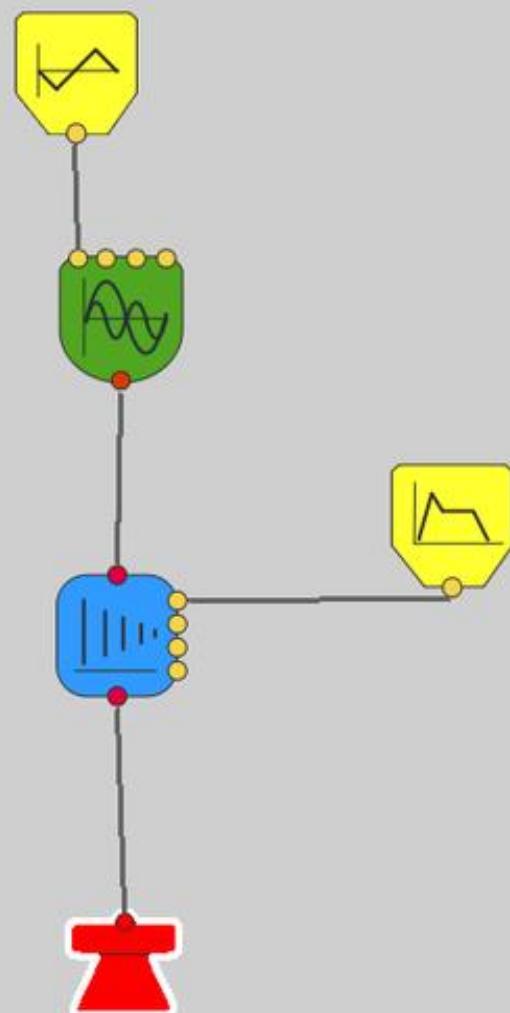
6



Activity

Main

Presets

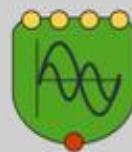


Envelope

0.01 0.05 0.90 0.05



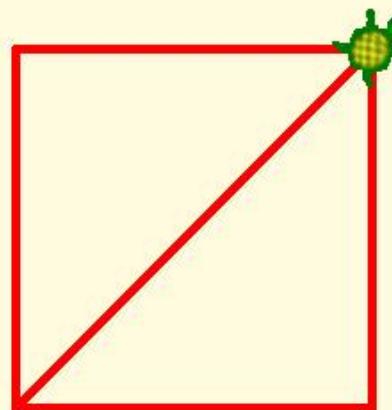
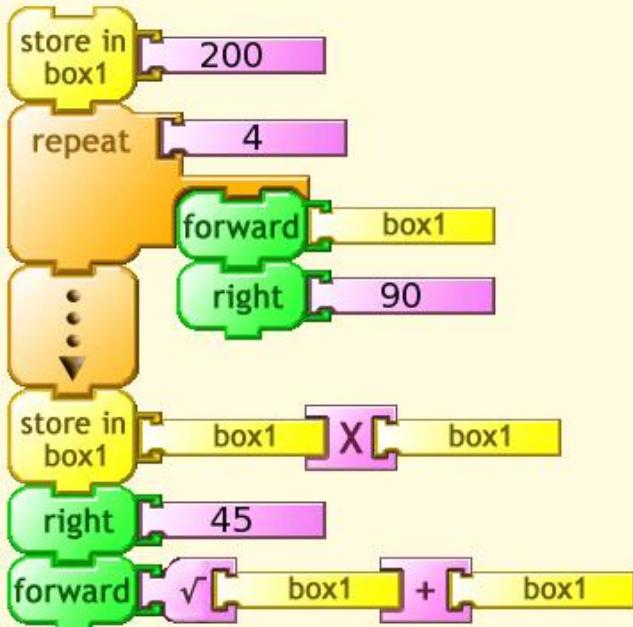
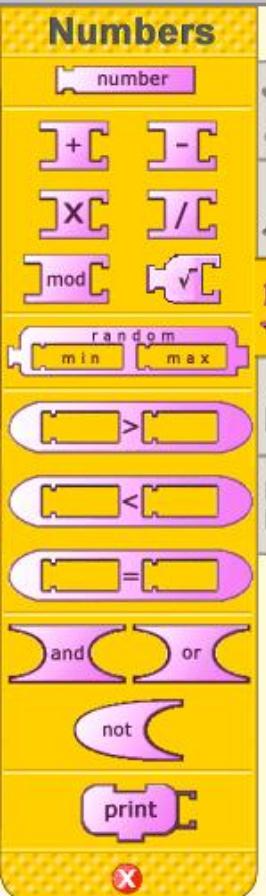
0.05

ADSR envelope apply  
on the overall signal



Activity

Project





## Examples

## math

apples

pascal

times1

times2

## graphics

jump

## python

function

if

## string

hello1

hello2

```
1 number = input("Enter a number: ")
2
3 if number > 5:
4     print "Greater than 5"
5 elif number < 5:
6     print "Less than 5"
7 else:
8     print "Number is 5!"
9
```

Run!

Enter a number: 6  
Greater than 5

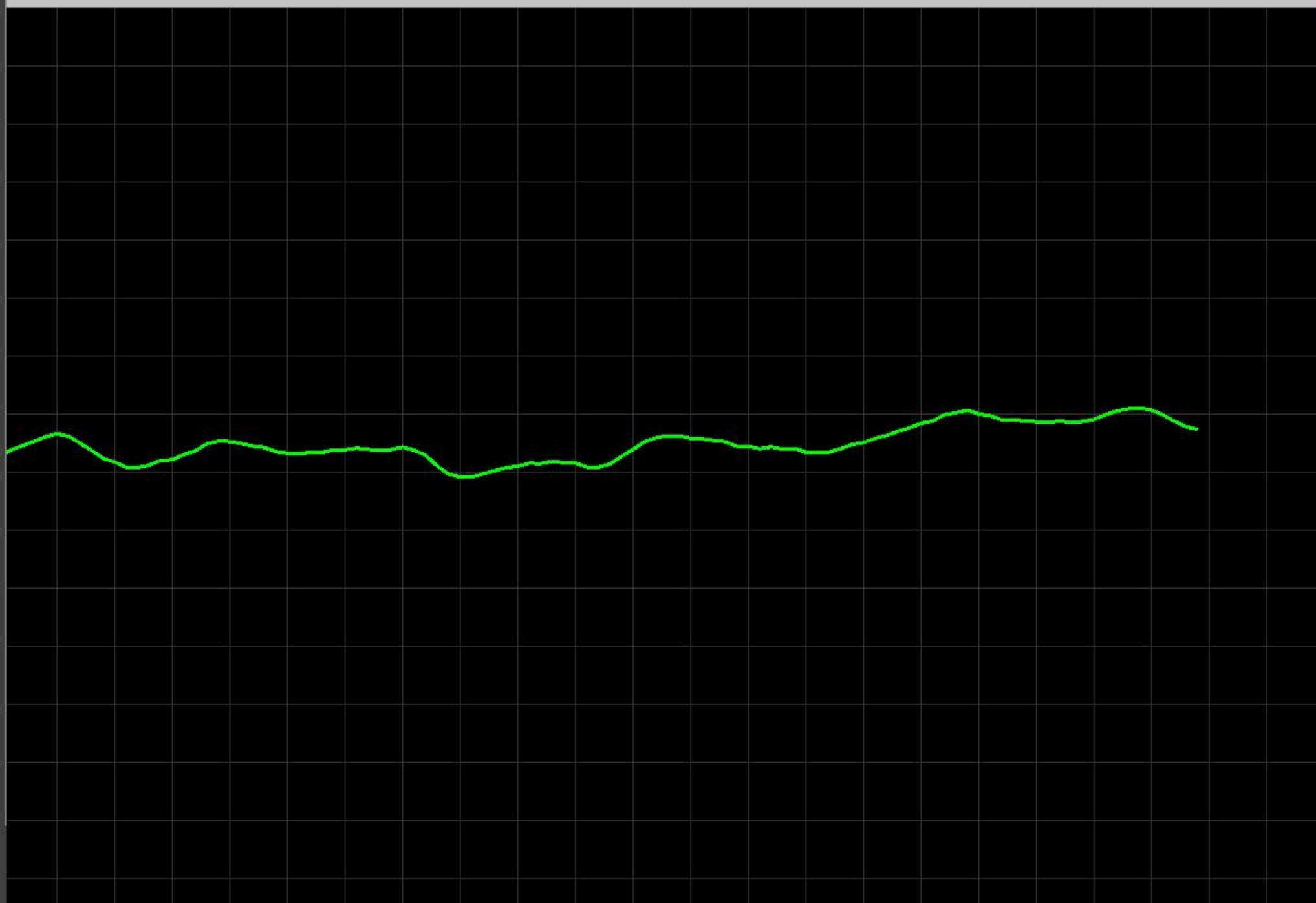




Activity

Measure

Log





Activity

Edit

Dup dor a'az Mubster!

\\_\_\_\_/

Bonjour, enfants du monde!

Ciao, bambini di tutto il mondo!

|| o ||

¡Hola, chicos del mundo!

Hallo, Kinder der Welt!

|. X .|

Hallo, kinderen van de wereld!

Hello, children of the world!

//\_=\_=\\

Olá, crianças do mundo!

[olpc@xo-AE-EC-97 ~]\$ █

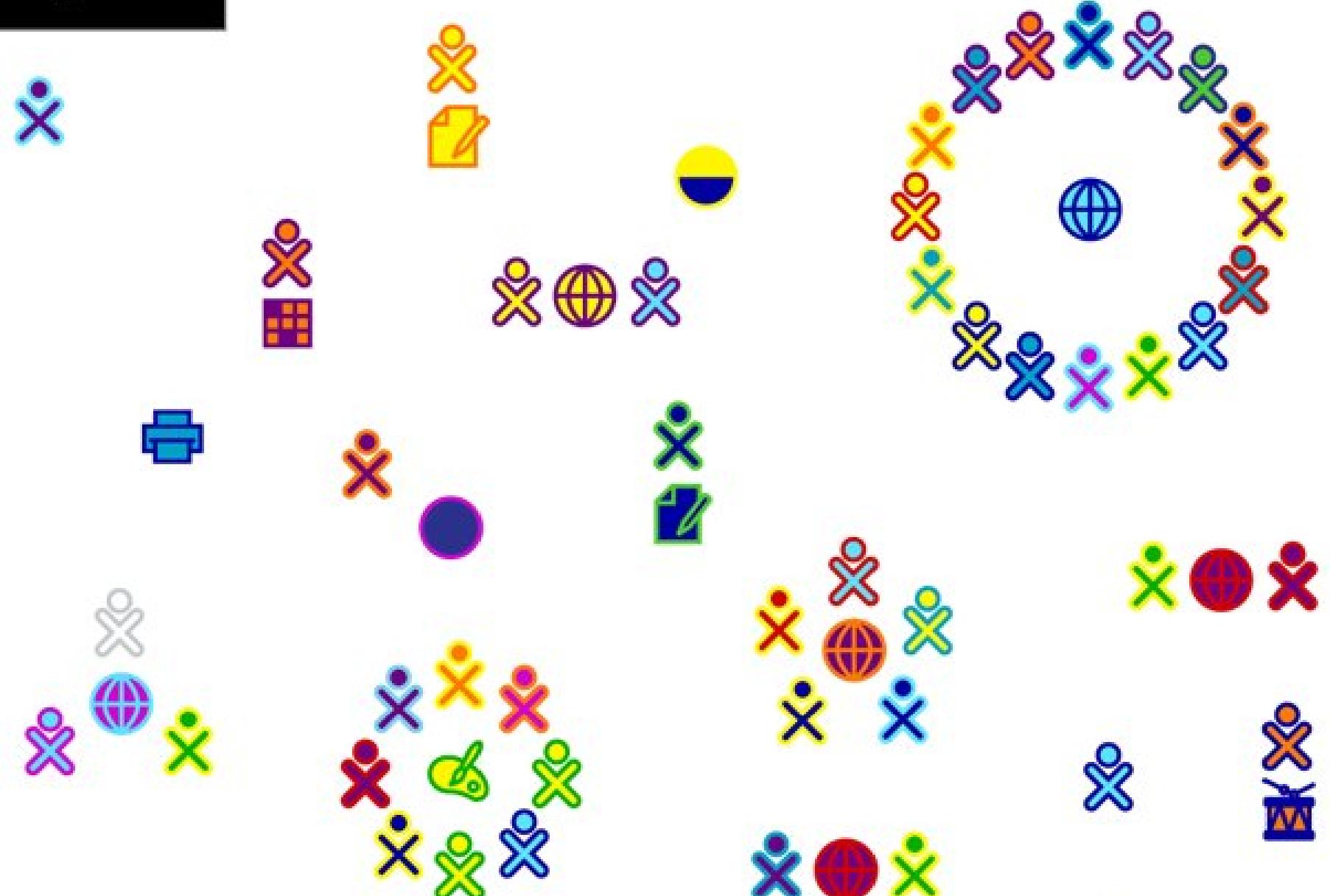
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# Core Ideas



# Collaboration

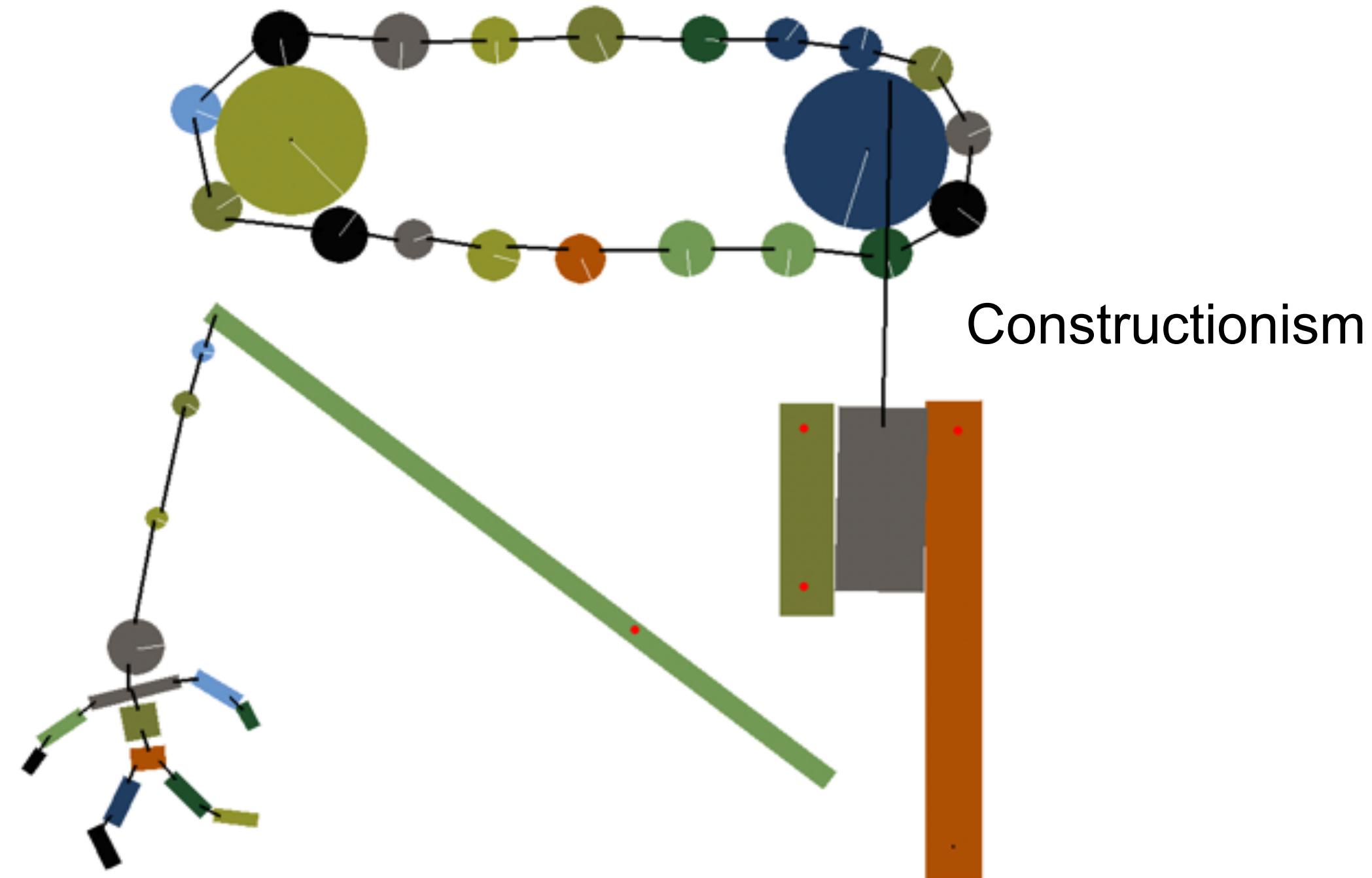
Neighborhood





Activity

Create





es

phics

Bounce

Camera

Jump

Lines

Physics

Pong

Slideshow

Snow

Tree

Xolympics

th

Fibonacci

Guess

Pascal

Sierpinski

1

Pippy

Pippy Activity



Resume



View Source

Shift+Alt+V



Stop



Everyone's a hacker





Anything



Anytime

**Pippy Activity**

1 hour, 41 minutes ago

**Physics Activity**

1 hour, 44 minutes ago

**Labyrinth Activity**

1 hour, 47 minutes ago

**Labyrinth Activity**

1 hour, 48 minutes ago

**Terminal Activity**

1 week, 5 days ago

**Record Activity**

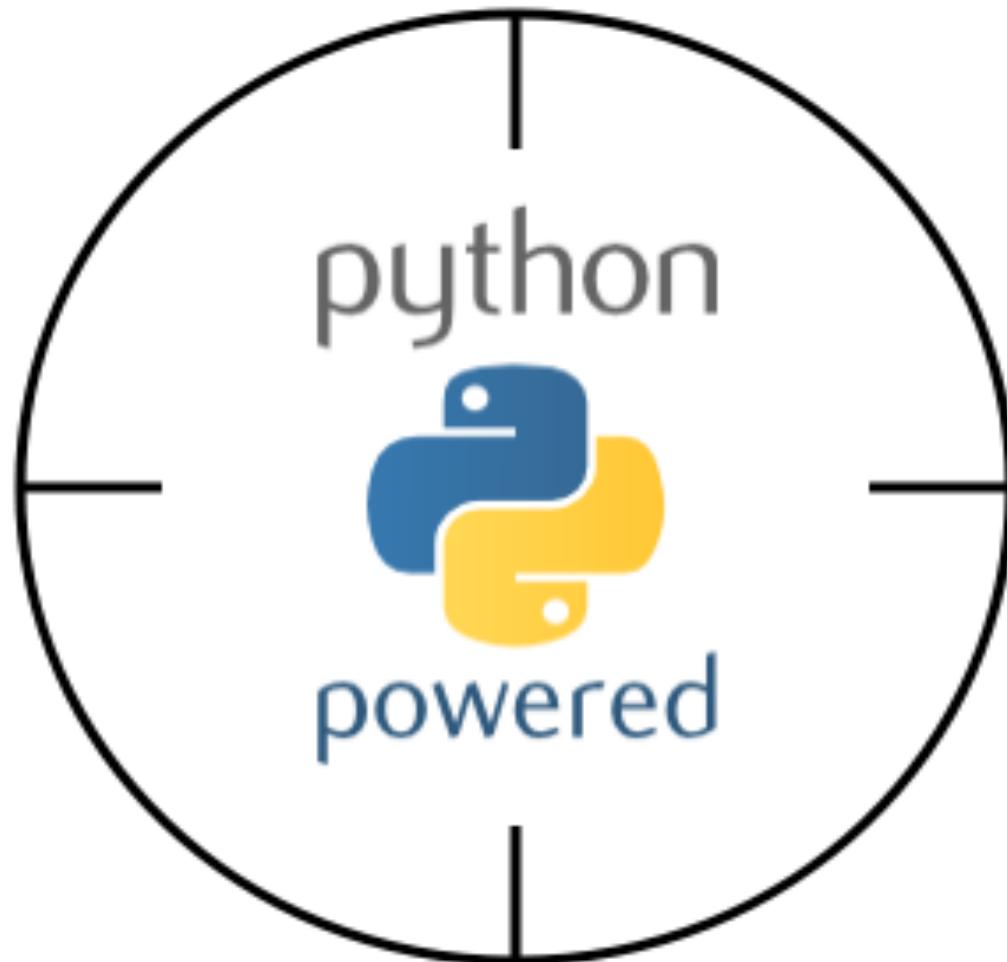
1 week, 5 days ago

**Log Activity**

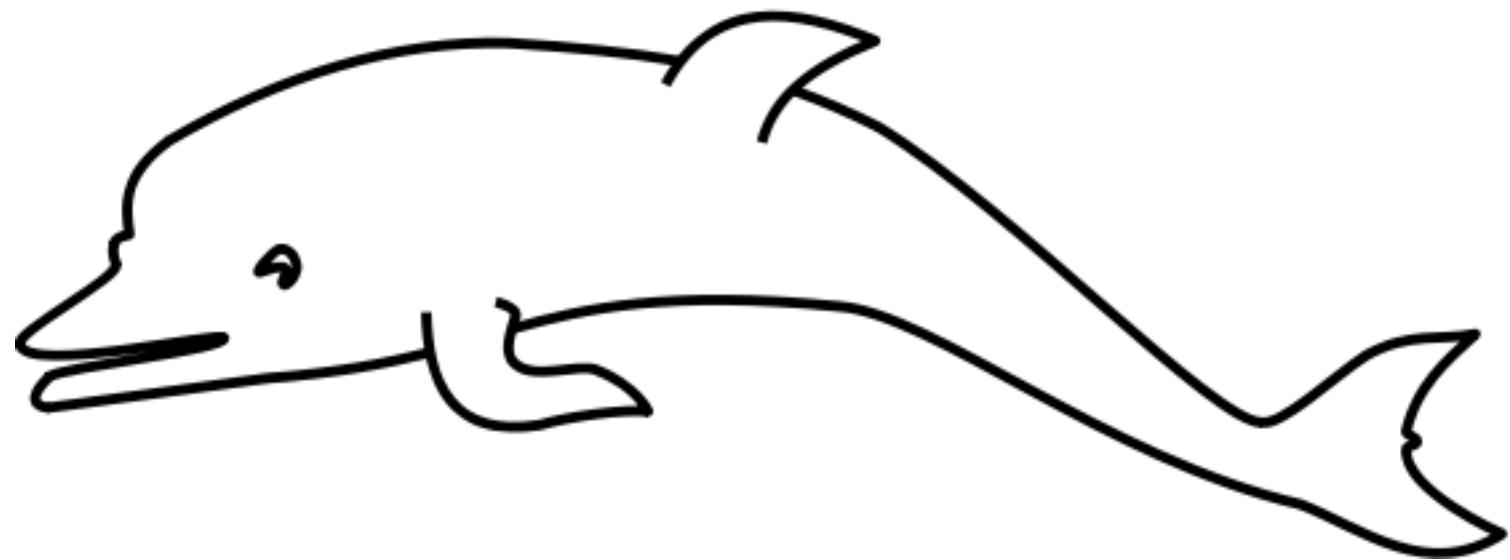
2 weeks, 1 day ago



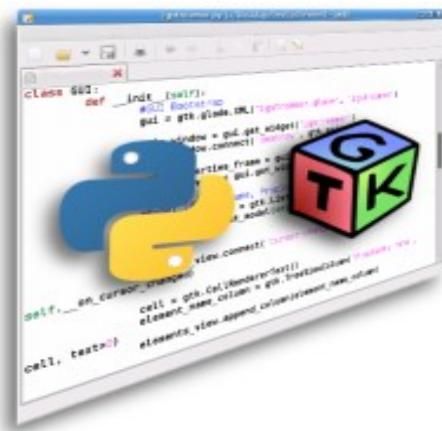
# Journal



*Lets dive deeper*

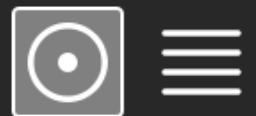
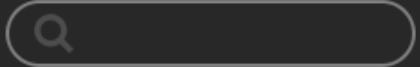


# Core technologies



# Main components

- Sugar
  - Control Panel
  - Frame
  - Journal
  - Desktop
- Sugar-toolkit
- Sugar-artwork
- Sugar-datastore





About Me



About my Computer



Date & Time



Frame

E

K



Language



Modem Configuration



Network



Software update

Control Panel





Frame





Anything



Anytime

**Pippy Activity**

1 hour, 41 minutes ago

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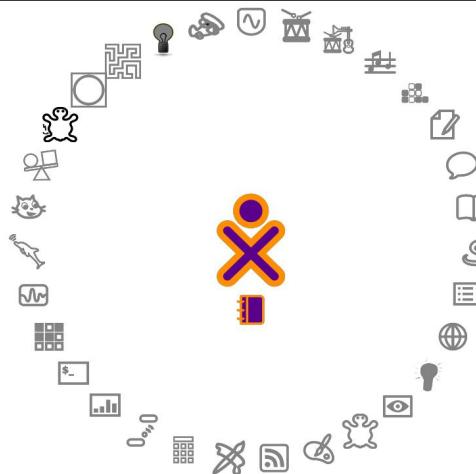
1 week, 5 days ago

**Log Activity**

2 weeks, 1 day ago

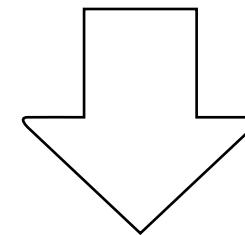


# Journal



```
def _calculate_position(self, radius, icon_size, index, count):
    width, height = self.box.get_allocation()
    angle = index * (2 * math.pi / count) - math.pi / 2
    x = radius * math.cos(angle) + (width - icon_size) / 2
    y = radius * math.sin(angle) + (height - icon_size -
                                    style.GRID_CELL_SIZE) / 2
    return x, y
```

## Easy to Change



```
def _calculate_position(self, radius, icon_size, index, count):
    width, height = self.box.get_allocation()
    angle = index * (math.pi / (6 + index / 12)) - math.pi / 2
    radius = ((radius - _MIN_RADIUS) * (index * 1.1) / count) +
             _MIN_RADIUS
    x = radius * math.cos(angle) + (width - icon_size) / 2
    y = radius * math.sin(angle) + (height - icon_size -
                                    style.GRID_CELL_SIZE) / 2
    return x, y
```

# API Components

- sugar.bundle
- sugar.activity
- sugar.datastore
- sugar.graphics
- sugar.presence

START A PROJECT THAT WILL CHANGE KIDS' LIVES WORLDWIDE!



contribute



# Developer resources

- Wiki:
  - [wiki.sugarlabs.org](http://wiki.sugarlabs.org)
  - [wiki.laptop.org](http://wiki.laptop.org)
- IRC (on network irc.freenode.net):
  - `#sugar`
  - `#sugar-newbies`
  - `#olpc-devel`
- Mailing lists:
  - [sugar-devel@lists.sugarlabs.org](mailto:sugar-devel@lists.sugarlabs.org)
  - [devel@lists.laptop.org](mailto:devel@lists.laptop.org)
  - [grassroots@lists.laptop.org](mailto:grassroots@lists.laptop.org)

# Try sugar...

- Head to <http://wiki.sugarlabs.org/go/Downloads> to find out the many ways to install sugar.
- Looking to hack sugar-core: try the sugar-jhbuild setup
- Most Linux distributions have sugar-\* packages

# FLOSS Manuals

- Learning Sugar: [flossmanuals.net/Sugar](http://flossmanuals.net/Sugar)
- Making Sugar Activities: [flossmanuals.net/ActivitiesGuideSugar](http://flossmanuals.net/ActivitiesGuideSugar)

Get cracking today

- Install sugar
- Subscribe to mailing lists
- Start fixing tickets marked sugar-love ;-)

Danke!