Designed for Education: a Python Solution

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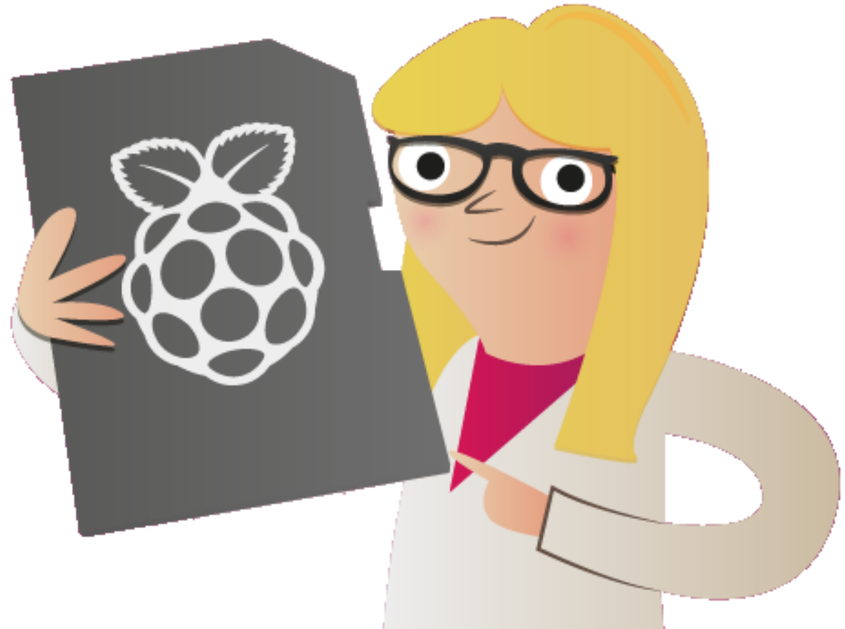
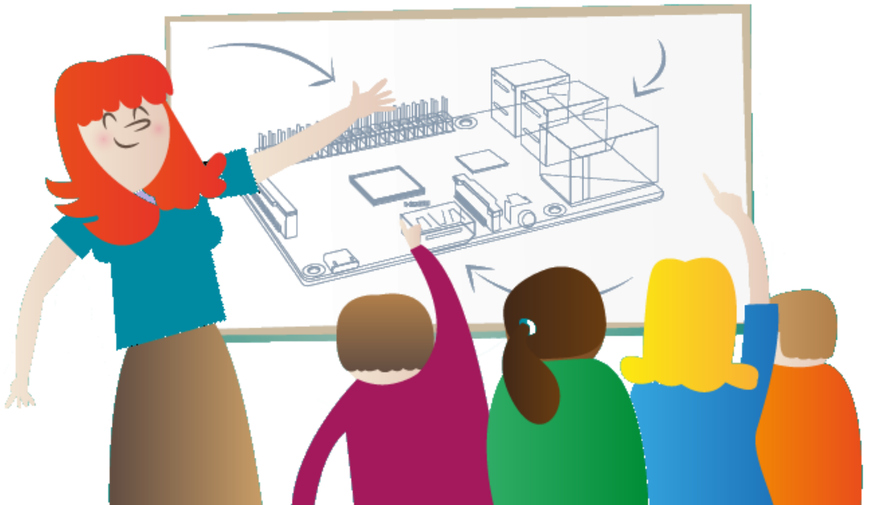


The Raspberry Pi Foundation

The Raspberry Pi Foundation is **a registered educational charity** (registration number 1129409) based in the UK.

Our Foundation's goal is to **advance the education of adults and children**, particularly in the field of **computers, computer science and related subjects**.



The new Computing Curriculum

"From **5**, children will **learn to code and program**, with algorithms, sequencing, selection and repetition;

from **11**, how to use at least **2 programming languages** **to solve computational problems**; to design … computational abstractions that model the state and behaviour of **real-world problems** and **physical systems**; and how instructions are stored and executed within a computer system."

Michael Gove - ex UK Secretary for Education

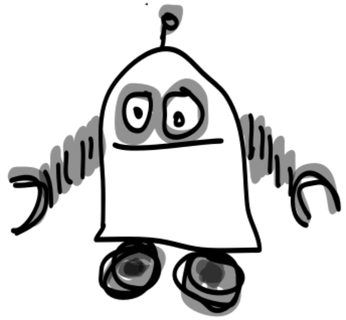
Where else?

Why teach computing?

children are creative, imaginative, and not afraid of failure

Social mobility

Diversity in tech

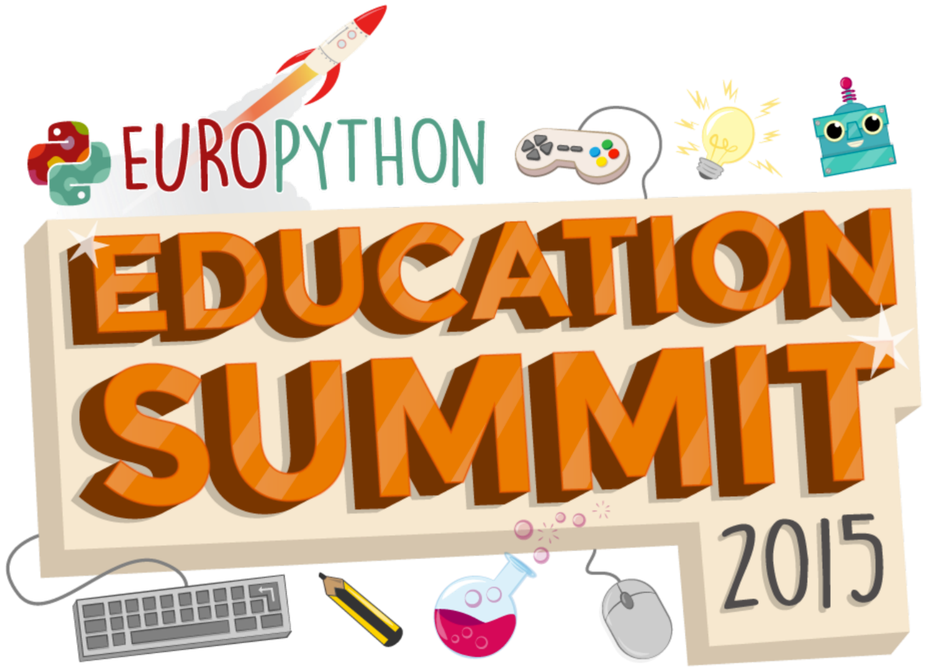


Humans need not apply

Why Python?

- Used all over the world
- Powerful enough to be used for real development
- Used in the real world
- Simple syntax
- Really strong & helpful community

Education at Conferences



PyCon 2015
Montréal • April 8-16

Barriers

- Transition from visual to text based programming
- ~~Python 2~~ vs. Python 3
- Syntax / function naming

Naming Problem

File Edit Format Run Options Windows Help

```
from mcpi.minecraft import Minecraft
mc = Minecraft.create()

x = 20
y = 25
z = 21

mc.player.setPos(x, y, z)
```

Naming Problem

File Edit Format Run Options Windows Help

```
mc.player.setPos(x, y, z)

mc_teleport 50, 50, 50


glass = block.GLASS.id
mc.setBlock(x, y, z, glass)

mc_set_block :glass, 40, 50, 60
```

Pygame Zero

Daniel Pope
@lordmauve

Pygame Zero, a zero-boilerplate game framework for education

Daniel Pope — 2015-05-29 07:30 — 3 Comments — Source

Pygame Zero (docs) is a library I'm releasing today. It's a remastering of Pygame's APIs, intended first and foremost for use in education. It gives teachers a way to teach programming concepts without having to explain things like game loops and event queues (until later).

Pygame Zero was inspired by conversations with teachers at the Pycon UK Education Track. Teachers told us that they need to be able to break course material down into tiny steps that can be spoon-fed to their students: our simplest working Pygame programs might be too complicated for their weakest students to grasp in a single lesson.

They also told us to make it Python 3 - so this is Python 3 only. Pygame on Python 3 works [1] already, though there has been no official release as yet.

A Quick Tour

The idea is that rather than asking kids to write a complete Pygame program including an event loop and resource loading, we give them a runtime (`pgzrun`) that is the game framework, and let them plug handlers into it.

So your first program might be:

```
def draw():
    screen.fill('pink')
```

That's the complete program: `screen` is a built-in and doesn't have to be imported from anywhere. Then you run it with:

```
pgzrun my_script.py
```

Image loading is similarly boilerplate-free; there are a couple of ways to do it but the one we recommend:

```
# Load images/panda.png (or .jpg) and position its center at (300, 200)
panda = Actor('panda', pos=(300, 200))

def draw():
    screen.clear()
    panda.draw()
```

Barriers

- Transition from visual to text based programming
- ~~Python 2~~ vs. Python 3
- Syntax / function naming
- Installing extra libraries

Education Bundle

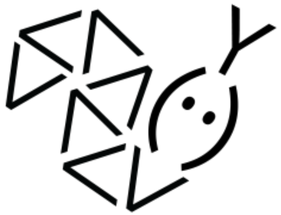
Barriers

- Transition from visual to text based programming
- ~~Python 2~~ vs. Python 3
- Syntax / function naming
- Installing extra libraries
- Python IDE

Online vs. Offline

GROK LEARNING

KHAN ACADEMY



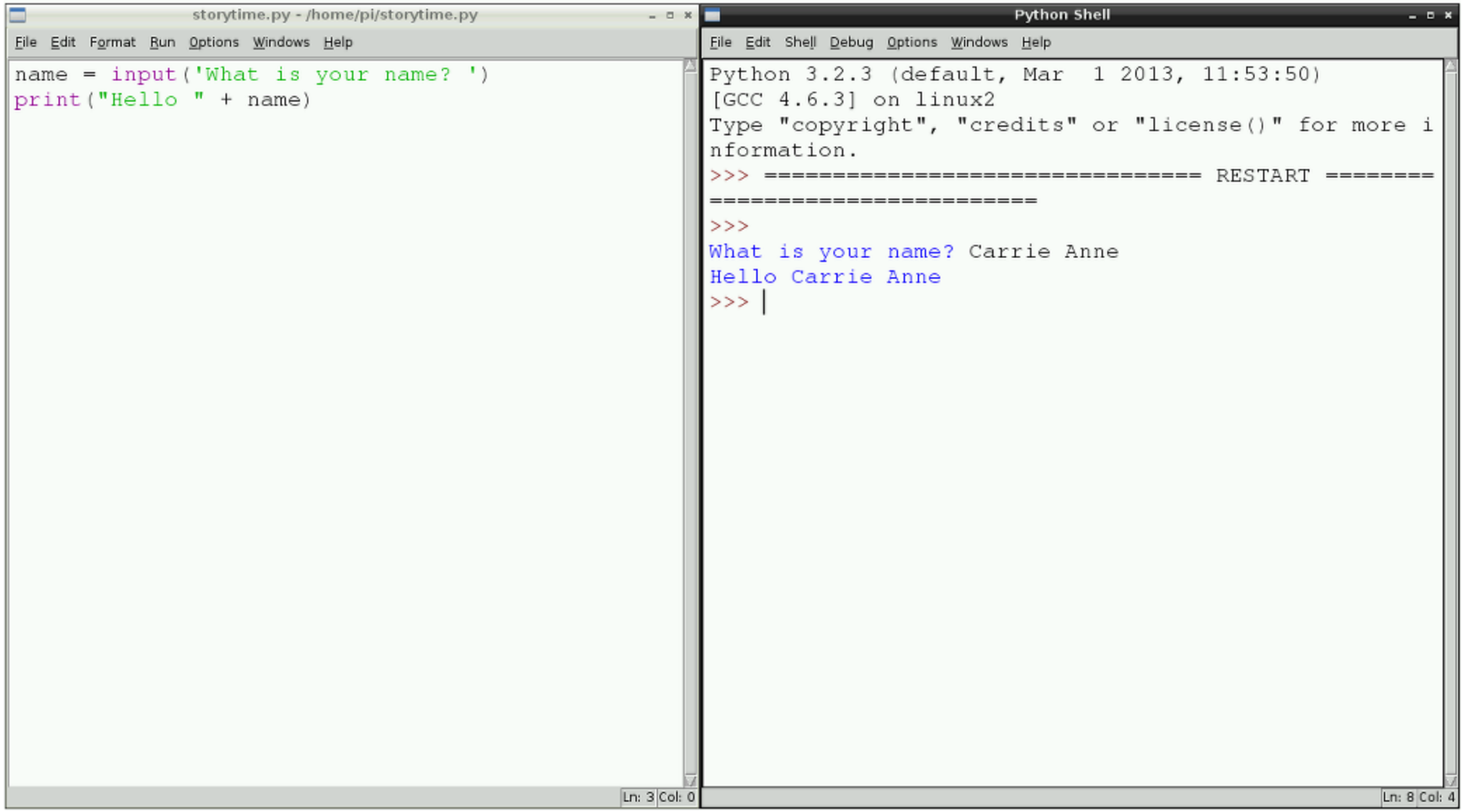
pythonanywhere

trinket

Online vs. Offline

PyCharm Educational Edition

Online vs. Offline

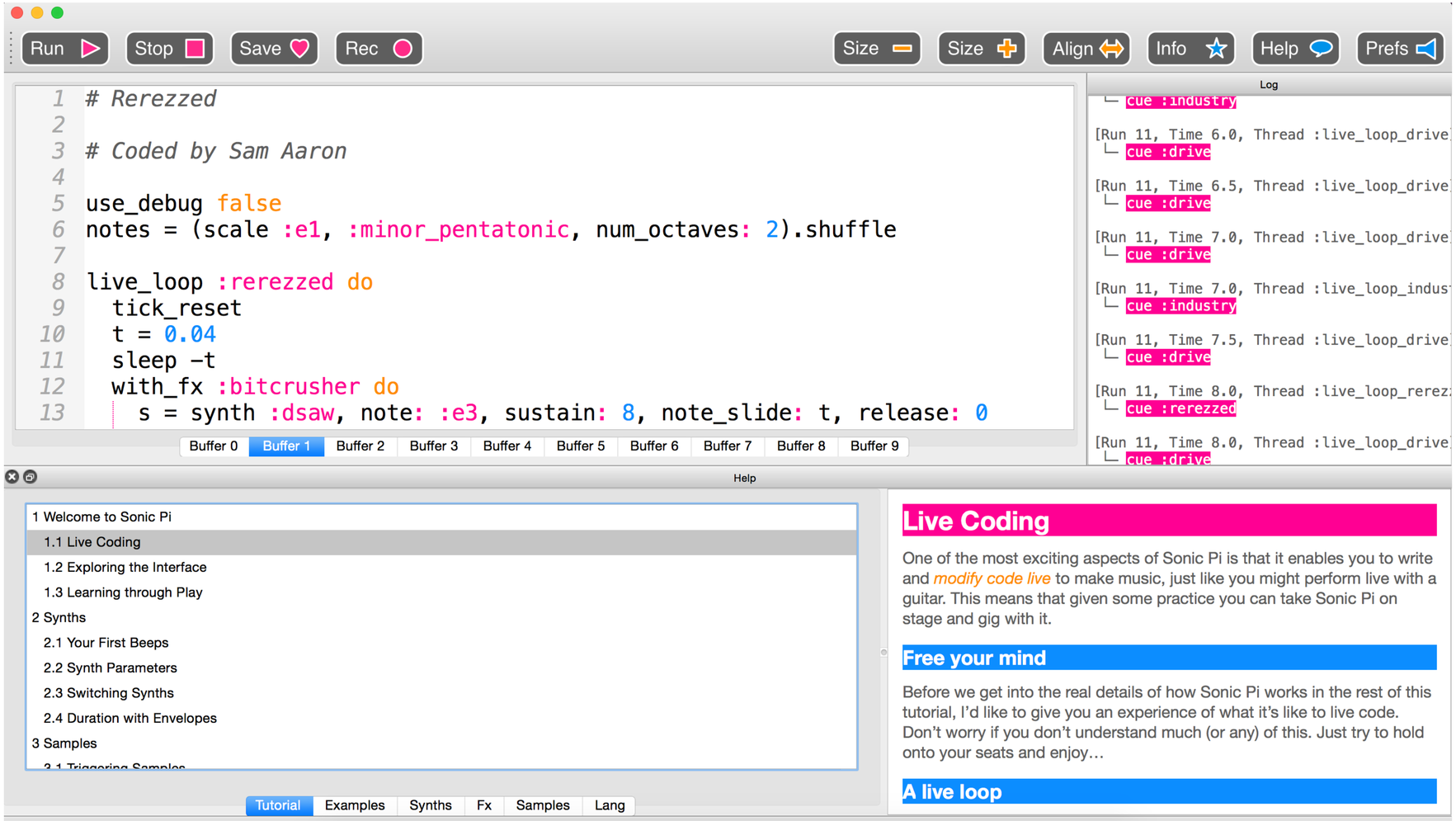


Sonic Pi

Dr Sam Aaron

@samaaron

@sonic_pi



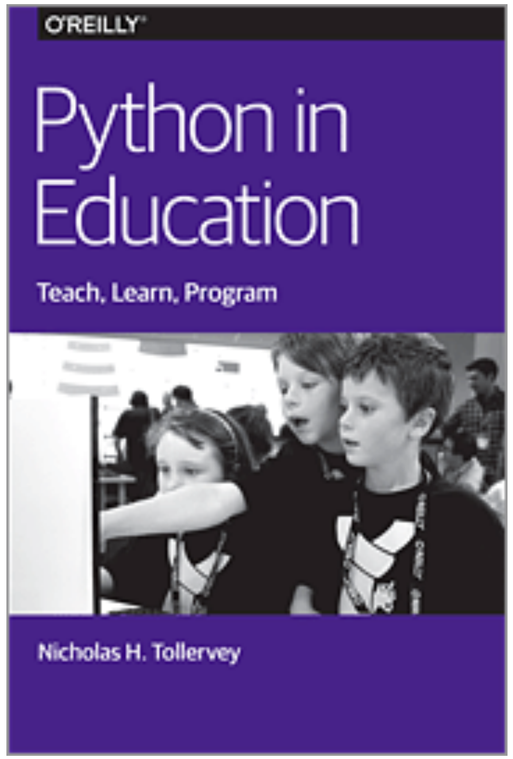
How you can help

- Meet educators
- Add education tracks to your conferences
- Run special education sessions at local user groups
- Mentor a teacher
- Create and contribute some awesome libraries

Python Edu WG

- Join **mail.python.org/mailman/listinfo/pythonedu-wg**
- a meeting point for people who want to make **practical contributions** to Python in education.
- to identify and coordinate **projects** that deliver **specific and measurable results** that support our aims.

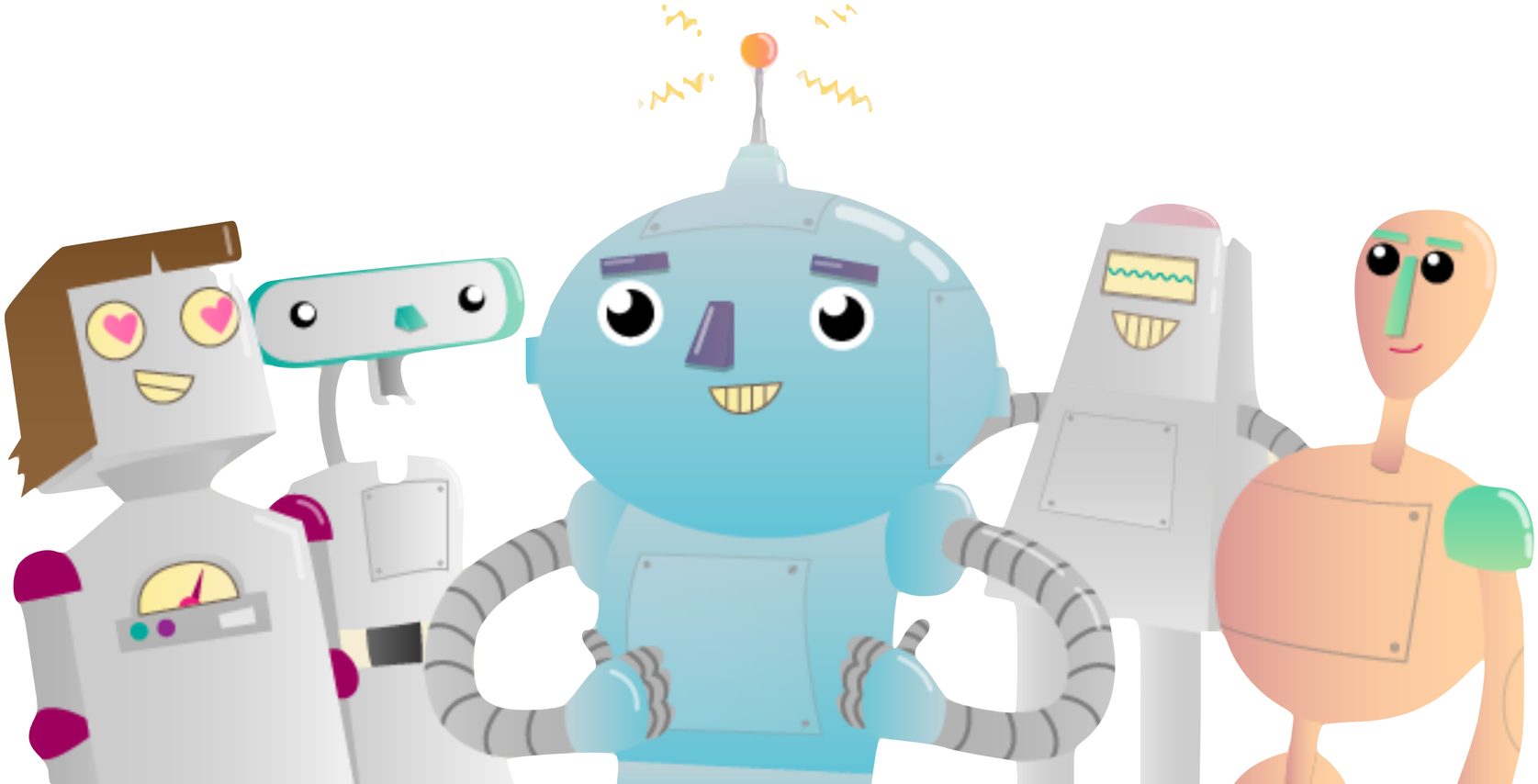
Your homework



1. Join **pythonedu-wg** mailing list.
2. Read and contribute to **idle reimagined** by Al Sweigart **github.com/asweigart/idle-reimagined**
3. Read **Python in Education** by Nicolas H. Tollervey

Due: Euro Python 2016

The future?



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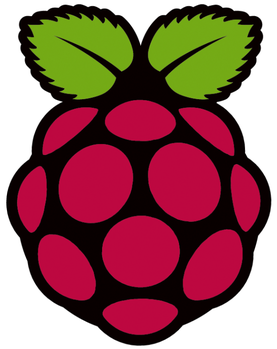

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