



The Loop of Joy



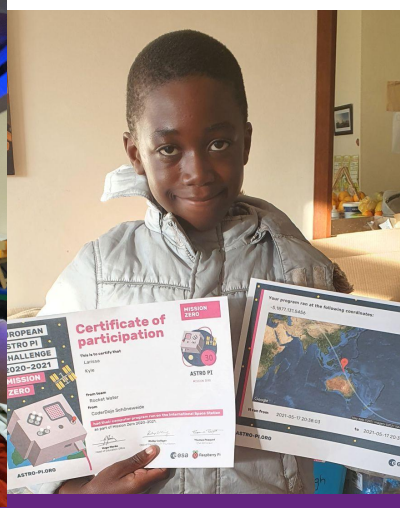
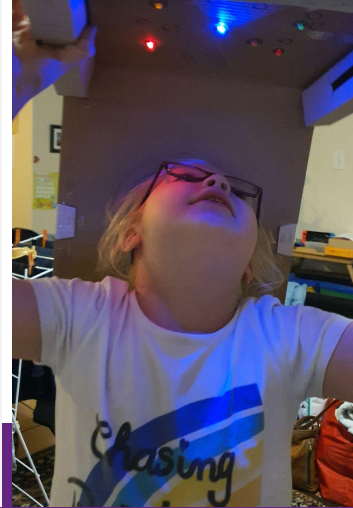
PyconZA'21

@DavidCampey

Intros & History

:David Campey - “enjoyineering”

- '80s & '90s code & school
- '04 started company => afrolabs
- '12 pycon za - met Sam
 - started club, CoderDojo
- '18 started Coder:LevelUp NPC
 - kids, pros, start-ups





Regional
Growth
Partner

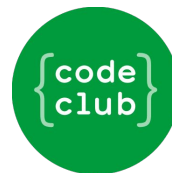
CoderLevelUp
Kids



Raspberry Pi
Foundation



2 378
Dojos



~30k
Clubs
... globally



12
Dojos

88
Clubs

...in South Africa



afrolabs

Google

+++ More sponsors
welcome....

What do we teach?



CoderDojo



The Loop of Joy

Idea...

Struggle

It works!





The Loop of Joy

Idea...



It works!



Scratch Jr



Struggle





CoderDojo

The Loop of Joy

Idea...



Sploder



It works!

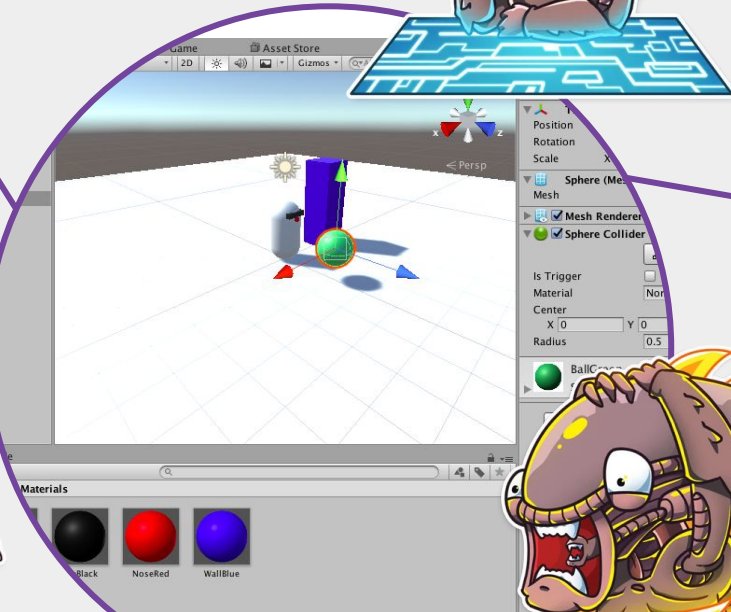
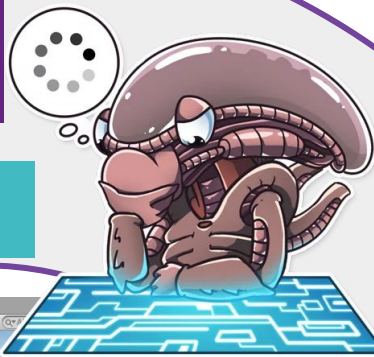
Struggle



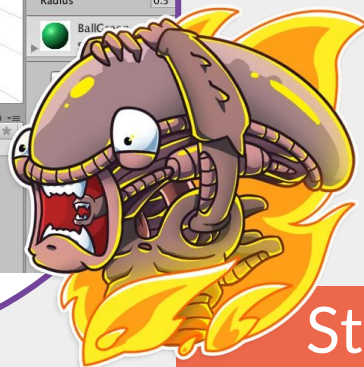


The Loop of Joy

Idea...



Unity 3D



Struggle

It works!





CoderDojo

The Loop of Joy

Idea...



It works!

INTRODUCTION TO COMPUTER SCIENCE
13. HACK AND DASH

Chest

COMPLETE

attack(t
distanceTo
findNearestE
findNearestE
moveDown()
moveLeft()
moveRight()
moveUp()
while true loop
isReady(action)
time

PROGRAMMING LANGUAGE: Python

```
1 # You can write code before a loop.  
2 hero.moveRight()  
3 # Break open the "Chest" before using the loop to escape the maze!  
4  
5 # Return back back into the main hallway.  
6  
7 while True:  
8     # Move 3 times.  
9     hero.moveRight(3)  
10    # Move 3 times more.
```

CodeCombat



Struggle

The Loop of Joy

Idea...

...

Struggle

It works!

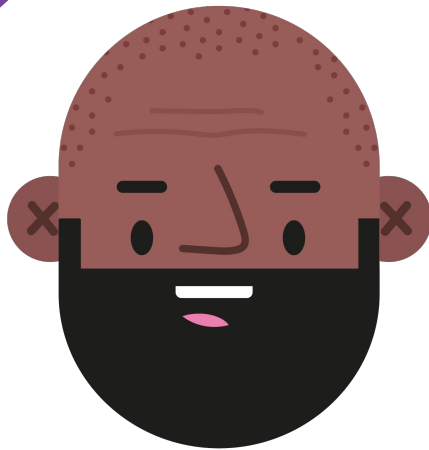




Loop of Joy @ Work

Make a decision

- imagine
- explore
- decision process



- analytics
- observability
- customer time

- make it
- check it
- ship it

Make a thing

Make it visible





CoderDojo

So META

Show,
don't tell



Python Shell

Fun place to start

Errors are great!
→ amplify “the struggle”

Wow, it works!

[illegible]

CoderDojo





CoderDojo

Demo

Turtle





The Loop of Joy

Idea...



turtle

```
Python Turtle Graphics
Window Help
4 (tags/v3.7.4:e09359112e
2019, 19:29:22) [MSC v.1916
ntel]] on win32
ip", "copyright", "credits"
ense()" for more information.
ort turtle
= turtle.Screen()
n = turtle.Turtle()
n.forward(100)
n.left(90)
n.forward(100)
n.left(90)
Forward(100)
left(90)
forward(100)
```



Struggle

It works!



Demo

Turtley amazing





The Loop of Joy

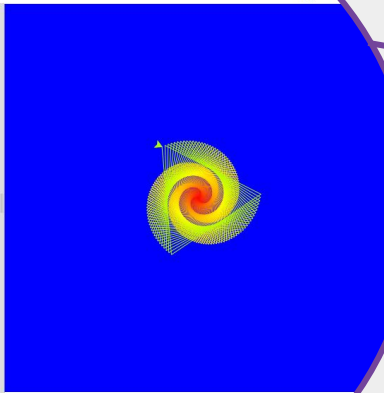
Idea...



turtley

```
main.py
G = 0
B = 0

11 screen.bgcolor((0, 0, 255))
12
13 turtle.speed(0)
14
15 colours = []
16
17 while G <= 255:
18     colours.append((R, G, B))
19     G += 1
20
21 while R >= 0:
22     colours.append((R, G, B))
23     R -= 1
24
25 while B < 255:
26     colours.append((R, G, B))
27     B += 1
28
29 while G > 0:
30     colours.append((R, G, B))
31     G -= 1
32
33 while R < 255:
34     colours.append((R, G, B))
35     R += 1
36
37
38 for i in range(3000):
39     # The line below keeps changing the
40     # is bigger than the list of colours
41     turtle.color(colours[i % len(colours)])
42     turtle.forward(i/3)
43     turtle.right(119)
```



Struggle

It works!



META-moment

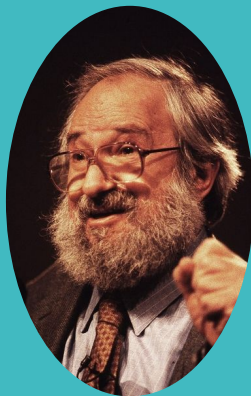


CoderDojo

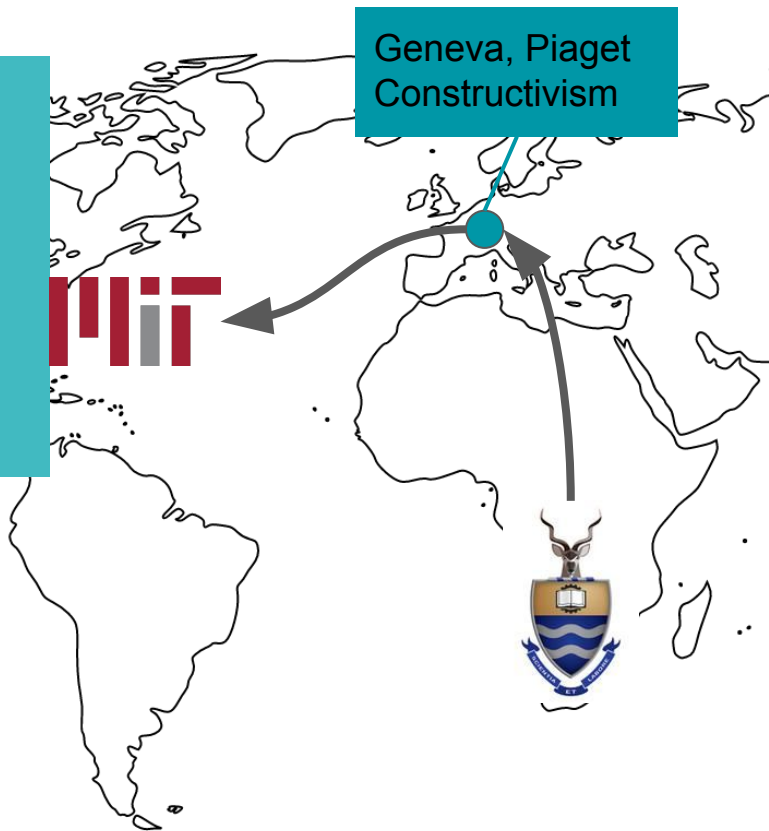
Seymour Papert
a South African

Constructionism
“We learn by making”

Turtle



Geneva, Piaget
Constructivism



META-moment



CoderDojo

Mitch Reznick
Lego Papert Prof

Life-long kindergarten
Learning Creative Learning

Scratch



<https://lcl.media.mit.edu/>

META-moment

Mitch Reznick
Lego Papert Prof

Life-long kindergarten
Learning Creative Learning

Scratch



META-moment

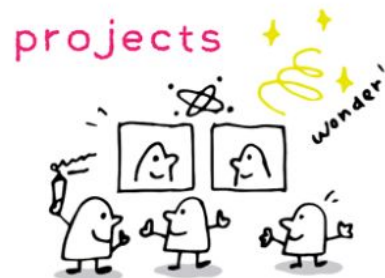


CoderDojo

Mitch Reznick
Lego Papert Prof

Life-long kindergarten
Learning Creative Learning

Scratch





CoderDojo

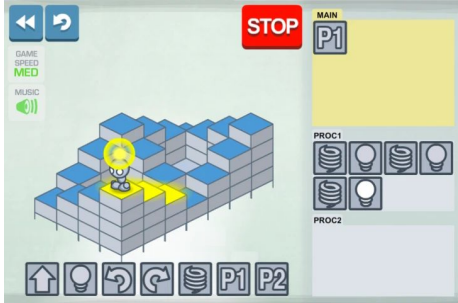
Demo

Some scratch...

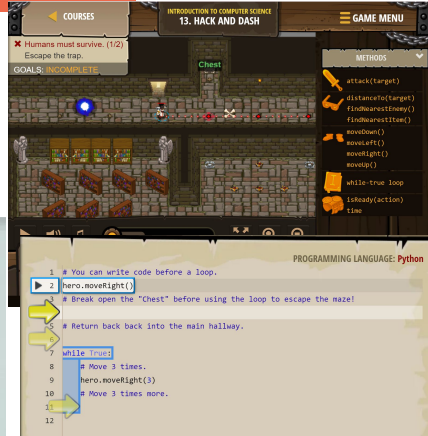


Start where they are...

Play to discover...



LightBot



CodeCombat



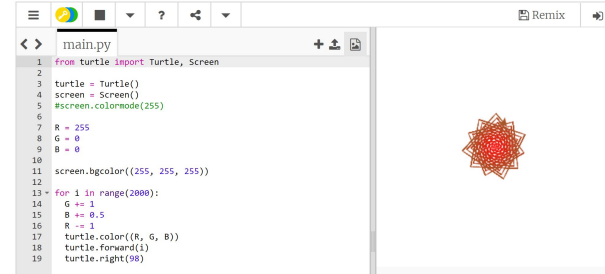
Dance Party

Featuring Katy Perry, Madonna, J. Balvin, Sia, Keith Urban, Ciara, and 25 more!



Minecraft

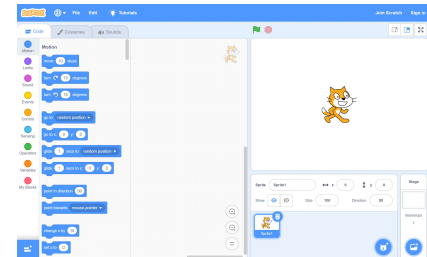
Use your creativity and problem solving skills to explore and build underwater worlds with code!



Python Turtle

HTML + CSS

code.org



Scratch

Pathways...



Protect our planet

Use Scratch to learn about our planet and how to protect the environment for future generations

Green goals

Program an animation and learn about the United Nations five environment-focused Sustainable Development Goals

Scratch



Save the shark

Create a game to save the shark from plastic pollution and improve its health

Scratch



Tree life simulator

Create a simulation that shows the impact of land management and deforestation on trees, wildlife, and the environment

Scratch



Count the creatures

Create a wildlife camera that can count the number of animals of different colours that pass in front of the camera

Scratch



Electricity generation



<https://projects.raspberrypi.org/en/pathways/protect-our-planet>



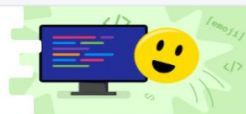
Introduction to Python: Variables, functions, and loops

In this introduction to coding in Python for beginners, you will learn how to use variables, loops, and functions to create visual and interactive artwork, animations, simulations, games, and more.

Hello

Write an interactive Python project that uses emoji

Python



Target practice

Use Python to draw a target and score points by hitting it with arrows

Python



Rocket launch

Make an animation of a rocket propelling a satellite into orbit

Python



Make a face

Design and draw a face or mask using geometric shapes

Python



Don't collide!



<https://projects.raspberrypi.org/en/pathways/python-intro>

Where are they, physically?

[Find a Dojo](#)[Volunteer](#)[Start a Dojo](#)[Resources](#)[Login](#)

Thank you for your interest in CoderDojo! The coronavirus pandemic continues to impact all our lives, including how Dojos can run. See [our resources and guidance on the creative ways Dojos are running](#).

The community of 2378 free, open and local programming clubs for young people

58,000 young people are being creative with technology with the help of 12,000 volunteers in 116 countries. Join us!

[Find a Dojo](#)[Start a Dojo](#)

[CoderDojo Anvil, Indiana, USA](#)



What is CoderDojo?



[CoderDojo Nürnberg, Germany](#)

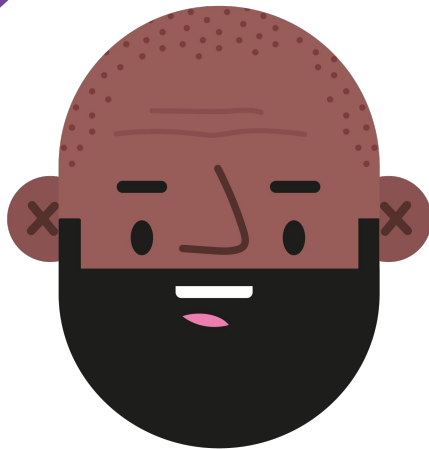
coderdojo.com



Your Loop of Joy

Make a decision

- try a project
- help kids
- learn creative learning



- pathways
- certificates
- coolest proj
- astro-pi

- Dream Big
- Start Small
- Start

Make it visible

Make a thing

