Programming ABC -

Combining Nordic Legacy of Technology & Education

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www.helloruby.com

(Programmer)

(Illustrator)

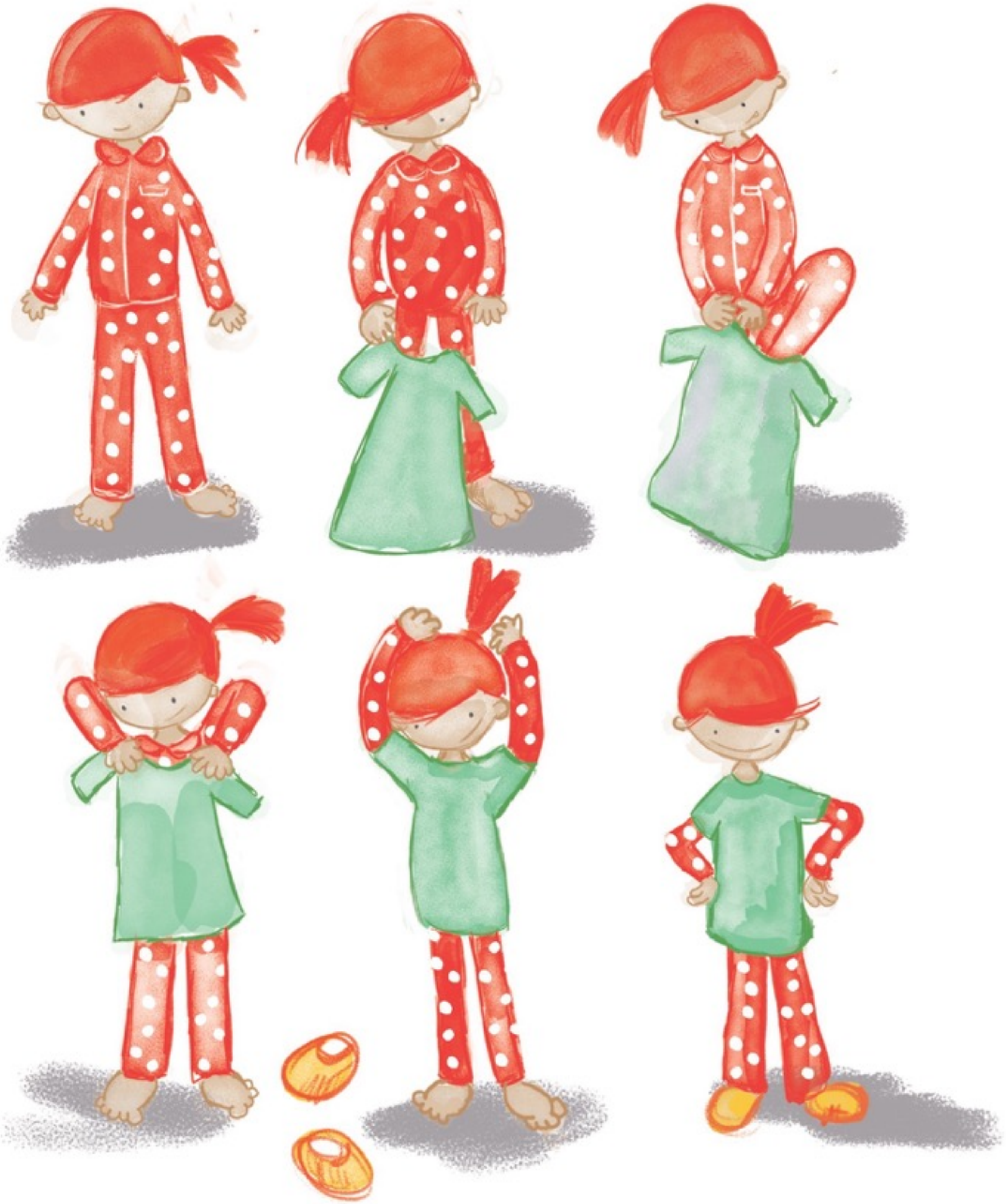
(Author)

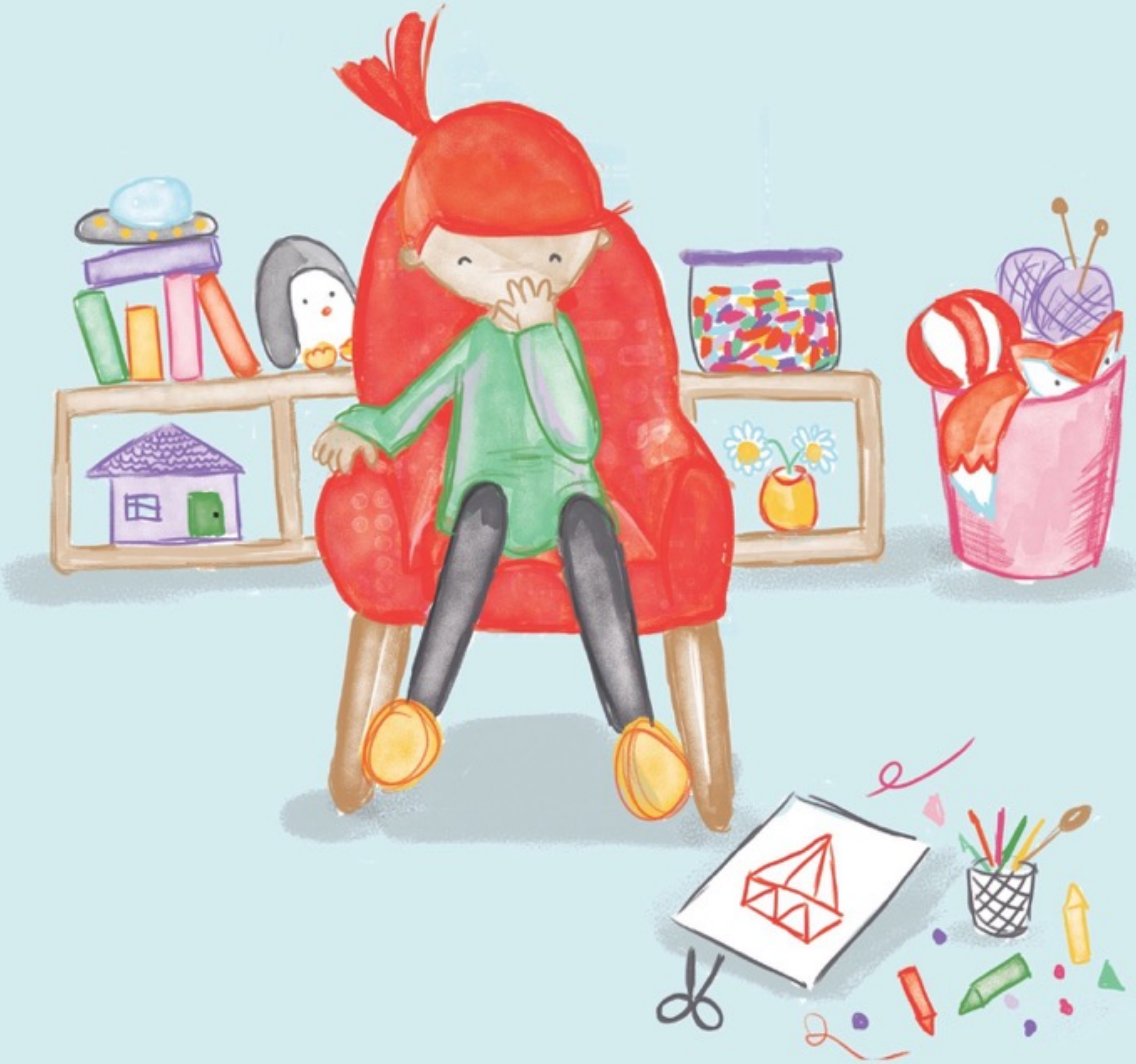
Business school dropout

www.helloruby.com

If code is the new lingua franca, instead of grammar classes, we need poetry lessons.

Hi





what did we learn?

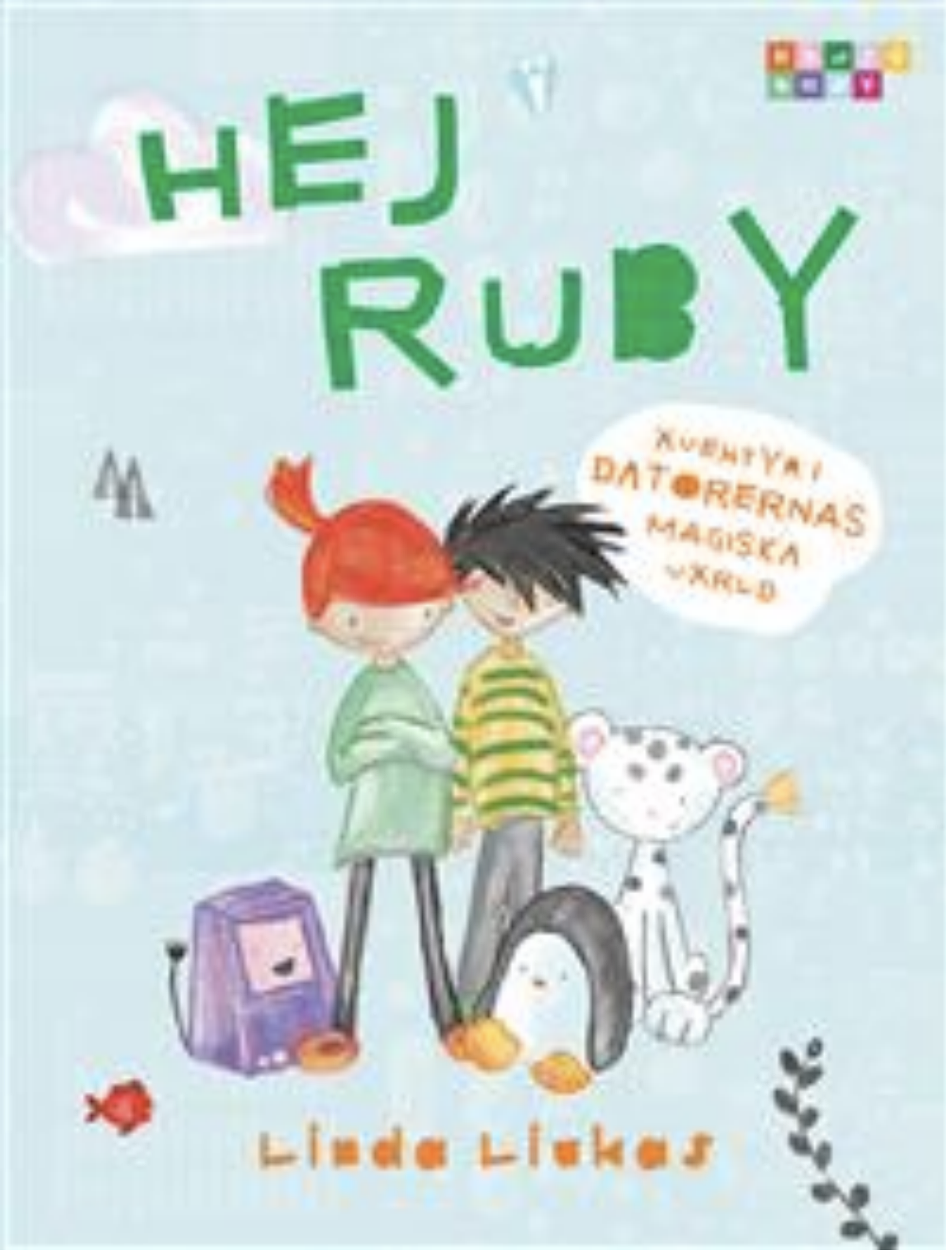
1. Exact commands.
2. In the right order.
3. Naming things is important (and you can’t make spelling mistakes)
4. Instructions should cover all scenarios and be modifiable.
5. **Even the biggest problems in the world are just tiny problems stuck together.**

HELLO RUBY
헬로 루비: 코딩이랑 놀자!
린다 리우카스

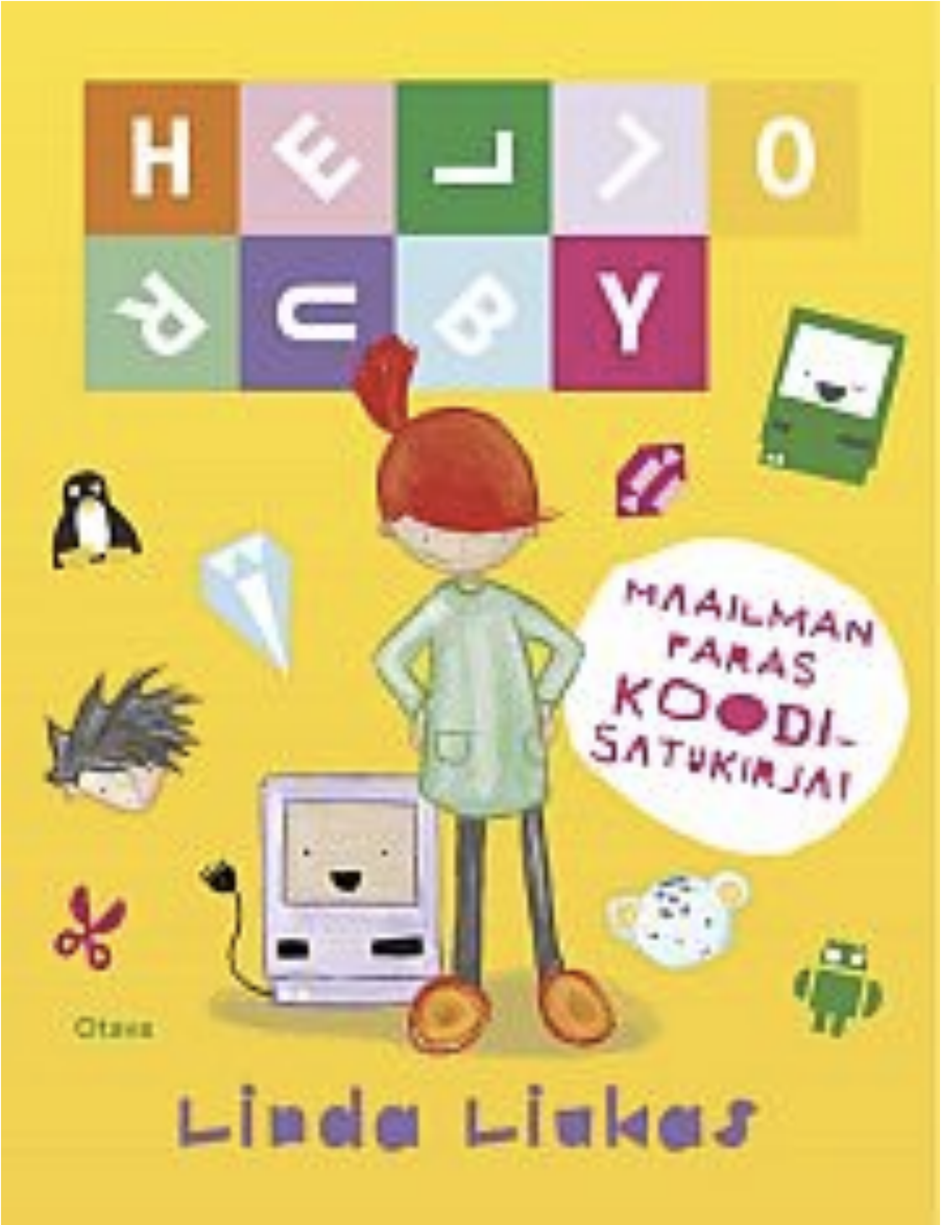
ルビィのぼうけん
こんにちは！プログラミング
リンダ・リウカス 作
鳥井雪 訳
世界中で大反響！
親子で楽しむ！
プログラマー的思考法を育む知育絵本
プログラマーである作者が、初めてプログラミングに触れる子どもたちのために作り上げた10のストーリー＆アクティビティ
リンダ・リウカス
SE

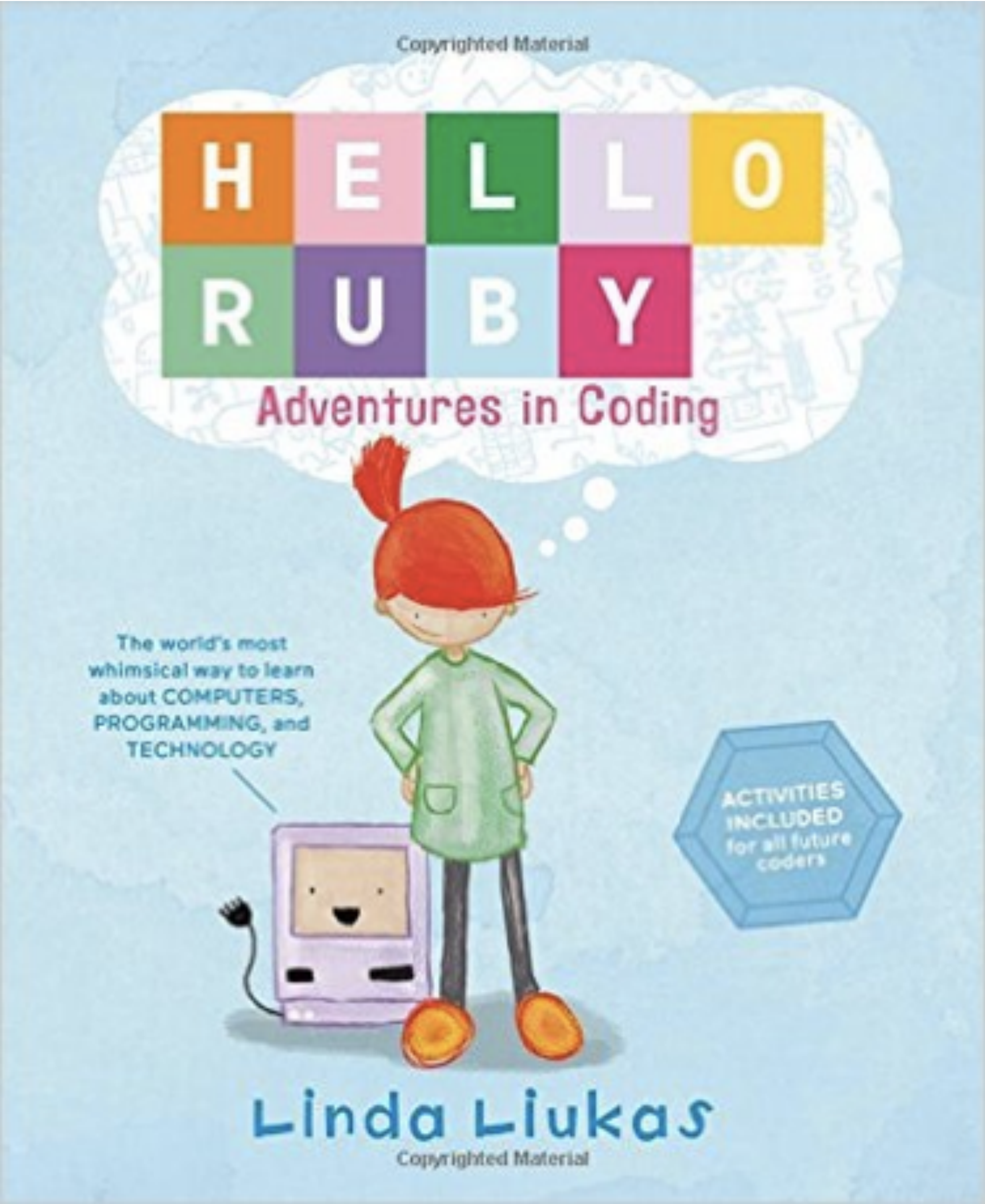
HELLO RUBY
Linda Liukas
À la découverte du codage !
1re approche dès 5 ans
Glénat jeunesse

HELLO RUBY
SVEIKA, RŪBIJ!
AIZRAUJOŠI UZDEVUMI VISIEM TOPOŠAJIEM PROGRAMMĒTĀJIEM
Linda Liukasa


HEJ RUBY
ÄVENTYR I DATORERNAS MAGISKA VÄRLD
Linda Liukas

HELLO RUBY
Een avontuurlijk sprookje over programmeren
Linda Liukas


HELLO RUBY
MAAILMAN PARAS KOODISATUKIRJA!
Otava
Linda Liukas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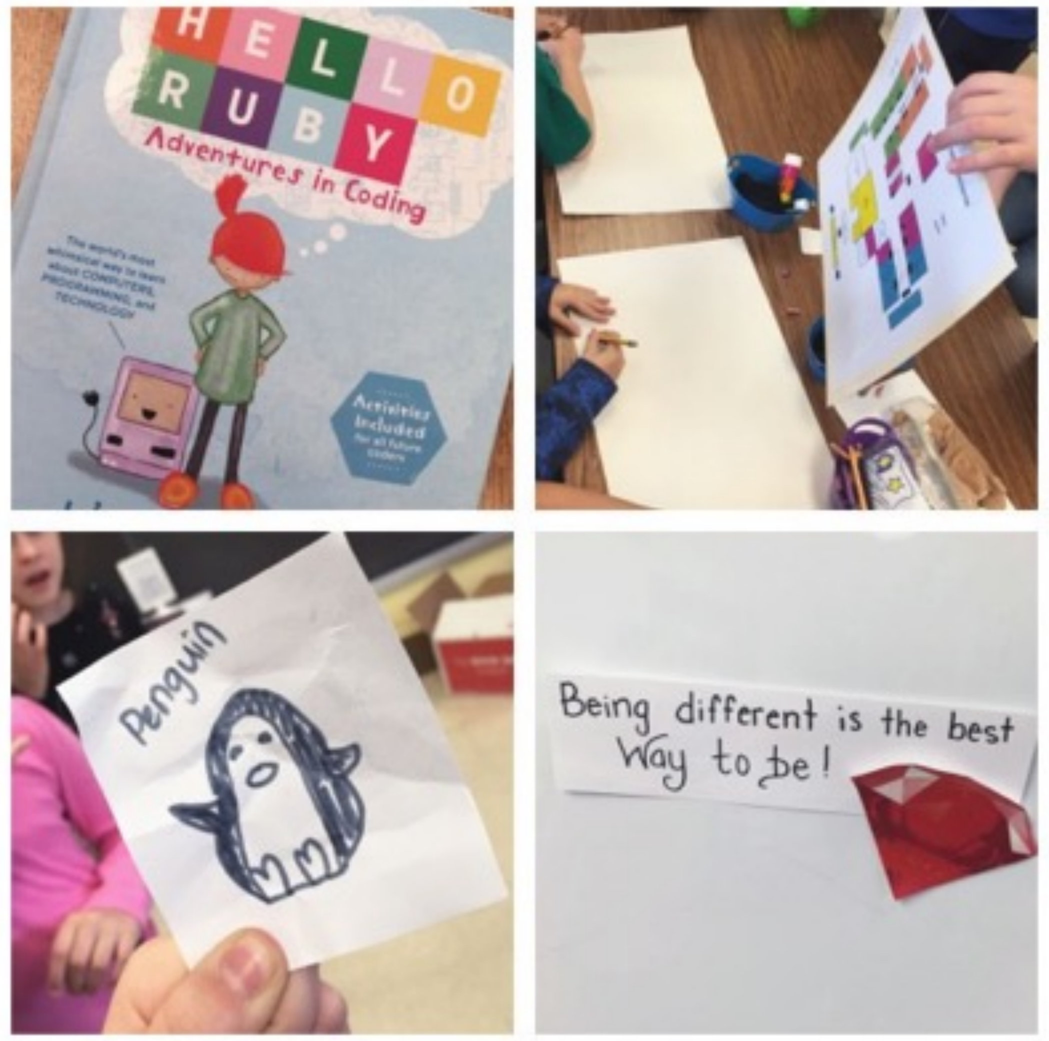
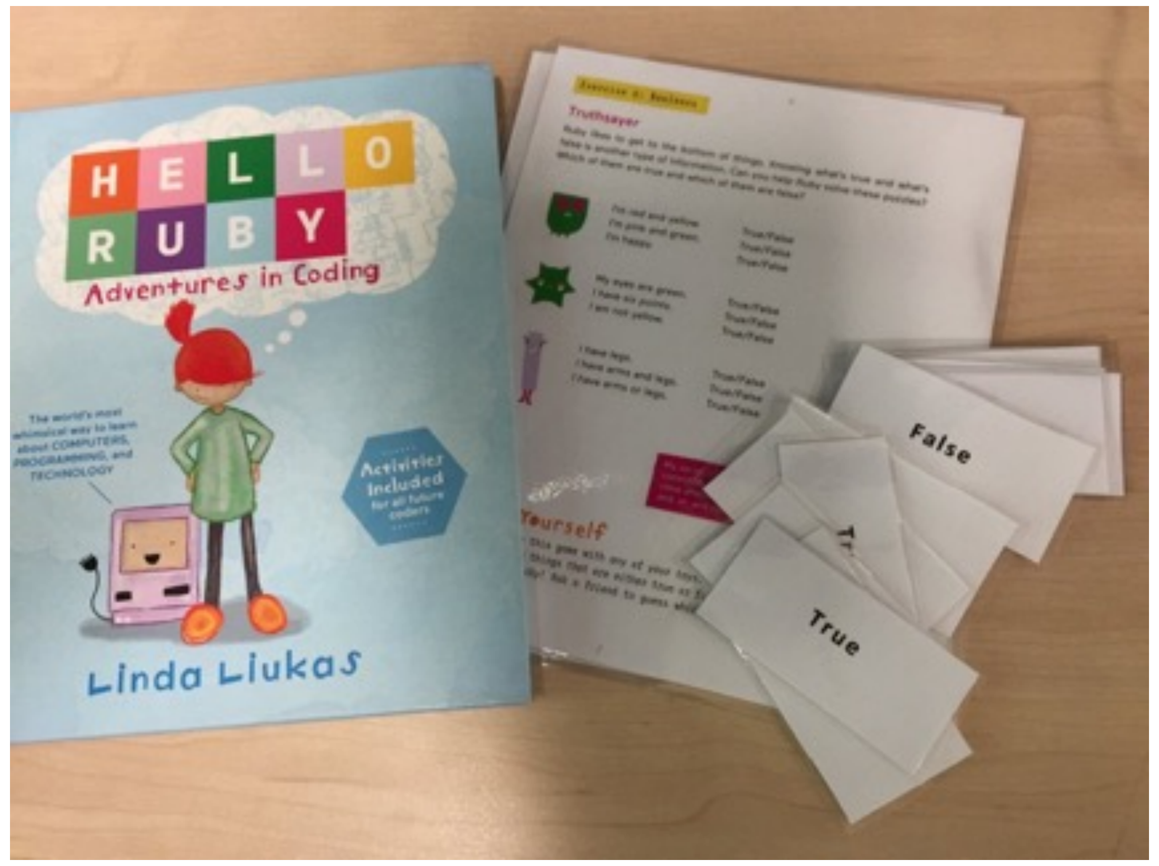
HELLO RUBY
Adventures in Coding
The world's most whimsical way to learn about COMPUTERS, PROGRAMMING, and TECHNOLOGY
ACTIVITIES INCLUDED for all future coders
Linda Liukas
Copyrighted Material

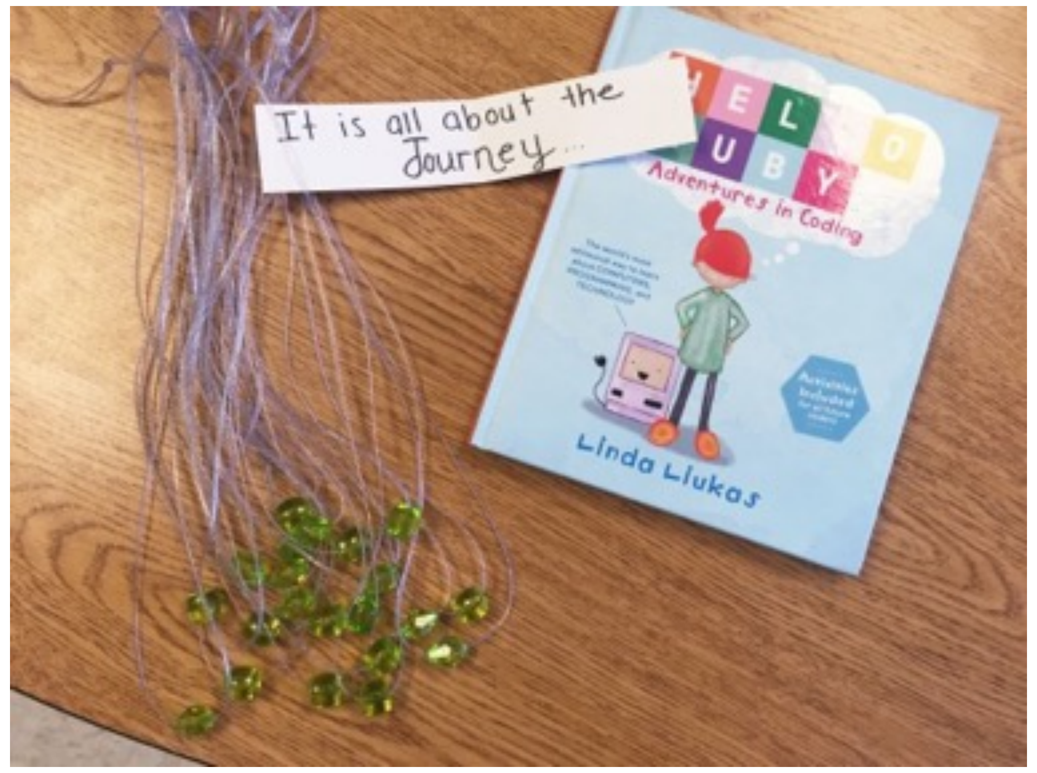
HELLO RUBY
MATKA TIETOKONEESEEN
Mukana askarreltava tietokone!
Otava
Linda Liukas

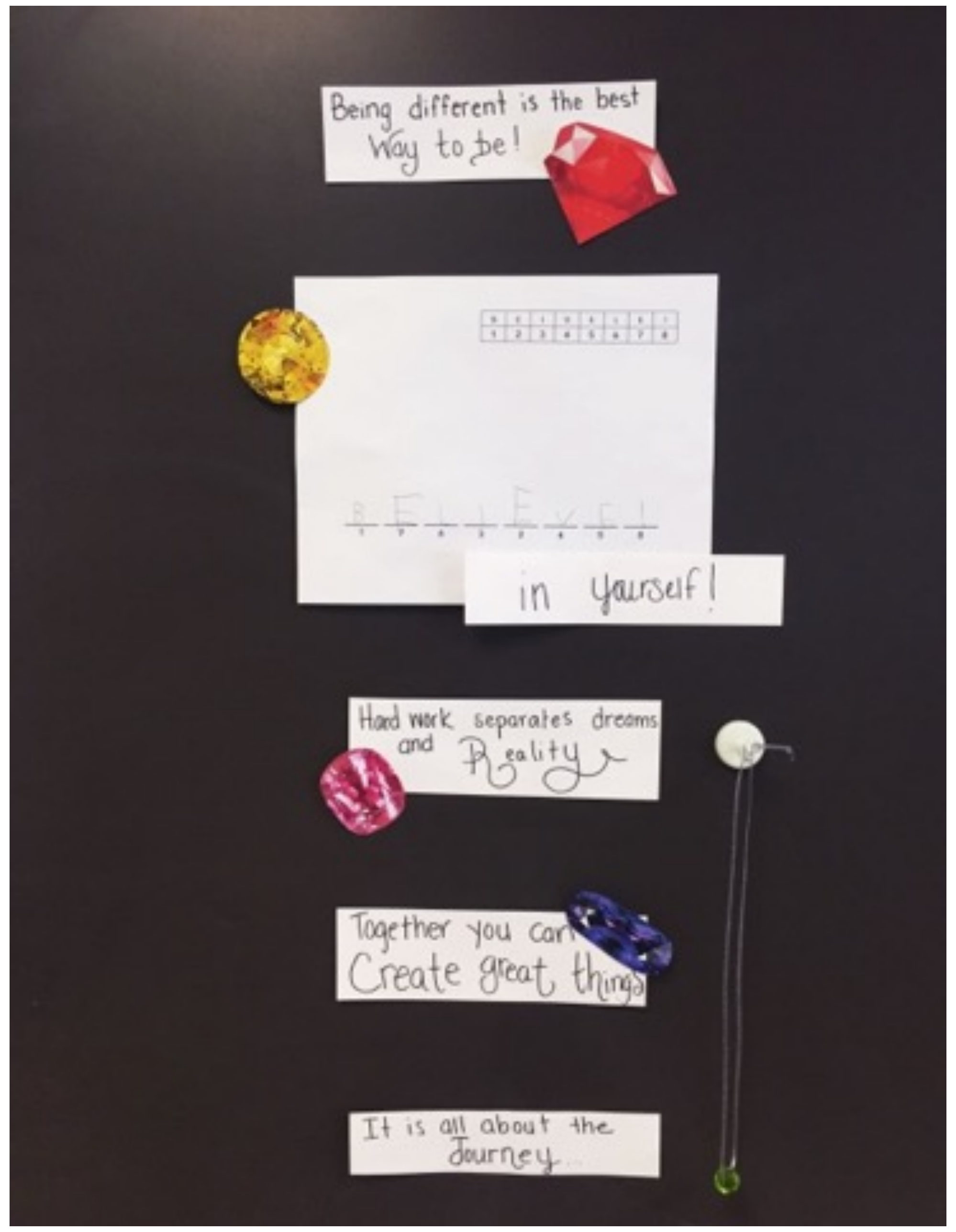
HELLO RUBY
TERE, RUBY!
Programmeerimis-seiklused
Sisaldab ülesandeid!
Linda Liukas

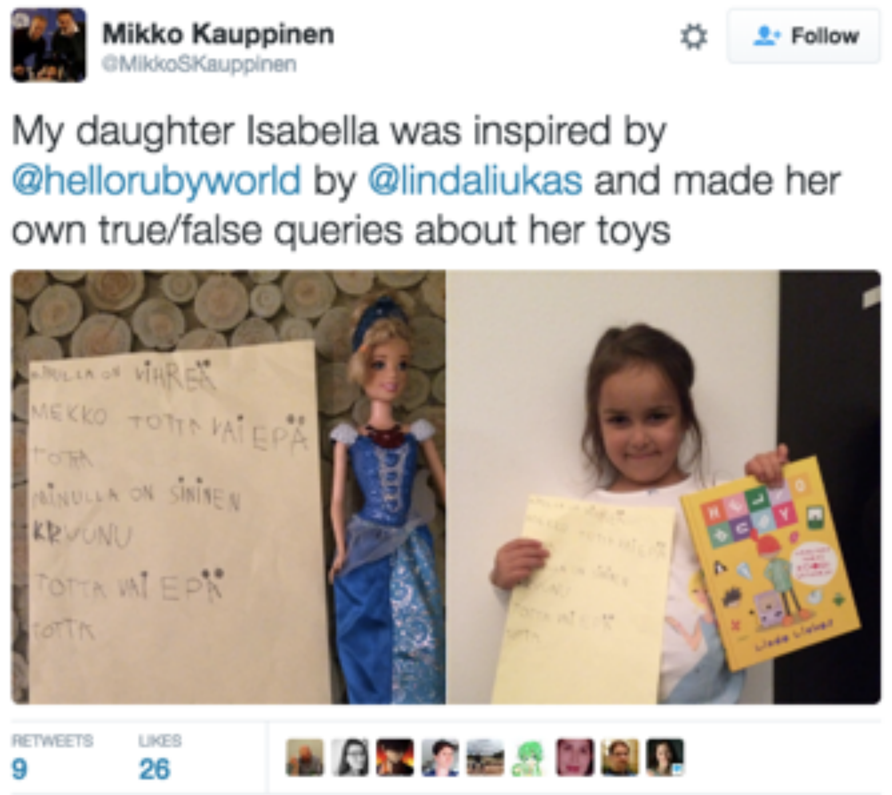

HELLO RUBY
Adventures in Coding
Penguin
Being different is the best Way to be!

I'm RUBY!
MY PETS!


HELLO RUBY
Adventures in Coding
Linda Liukas
False
True


It is all about the Journey
HELLO RUBY
Adventures in Coding
Linda Liukas

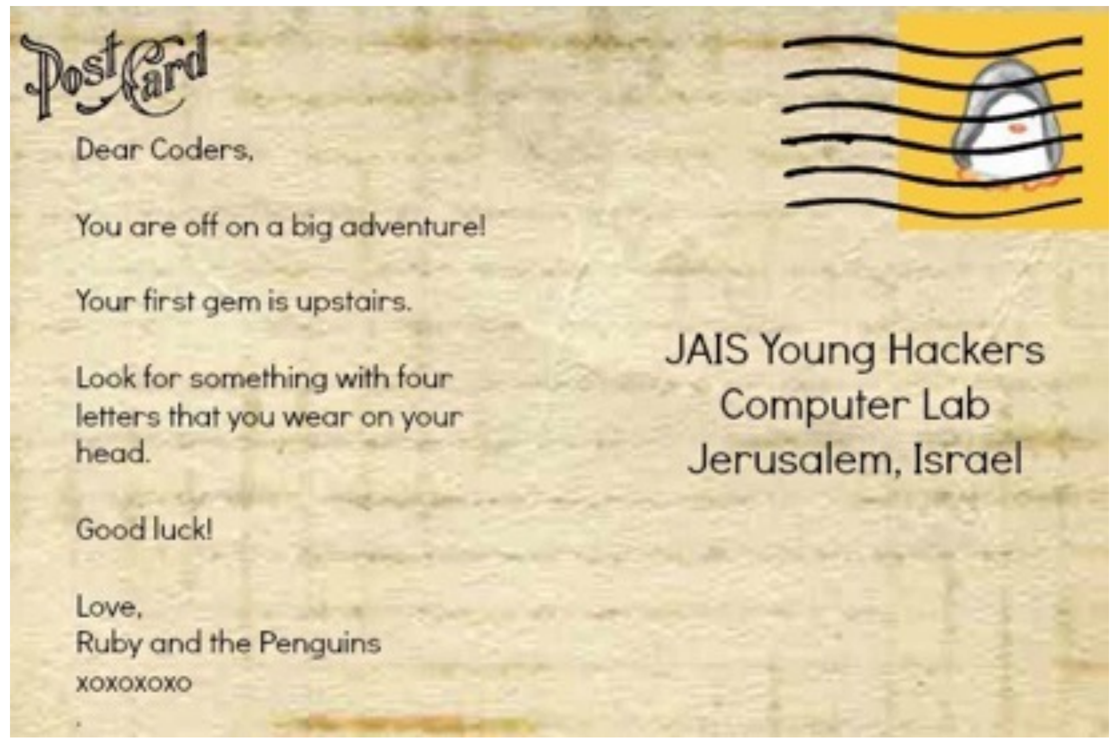

Being different is the best Way to be!
in yourself!
Hard work separates dreams and Reality
Together you can Create great things
It is all about the Journey



Mikko Kauppinen
@MikkoSKauppinen

My daughter Isabella was inspired by @hellorubyworld by @lindaliukas and made her own true/false queries about her toys

RETWEETS 9
LIKES 26



Post Card

Dear Coders,

You are off on a big adventure!

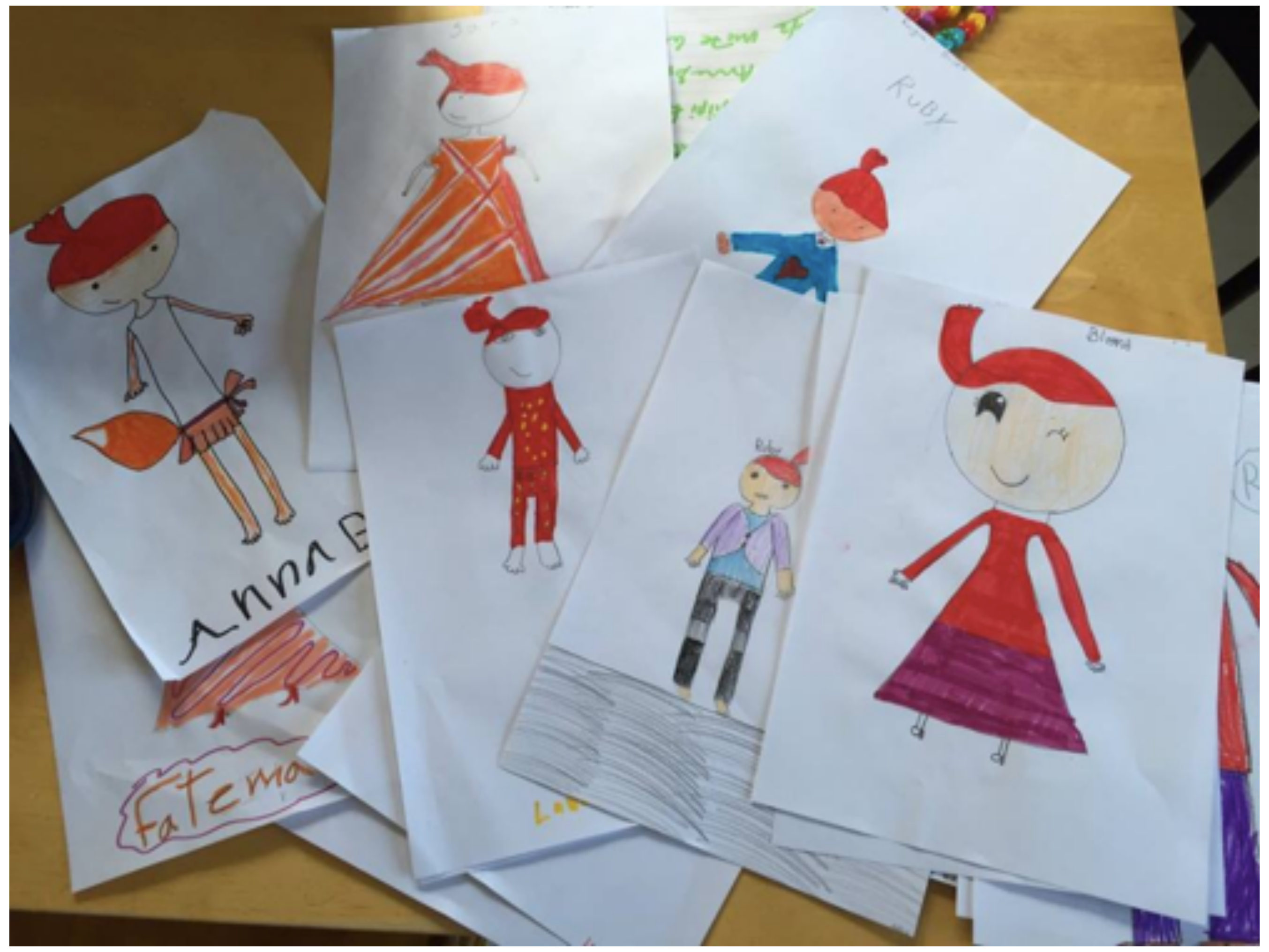
Your first gem is upstairs.

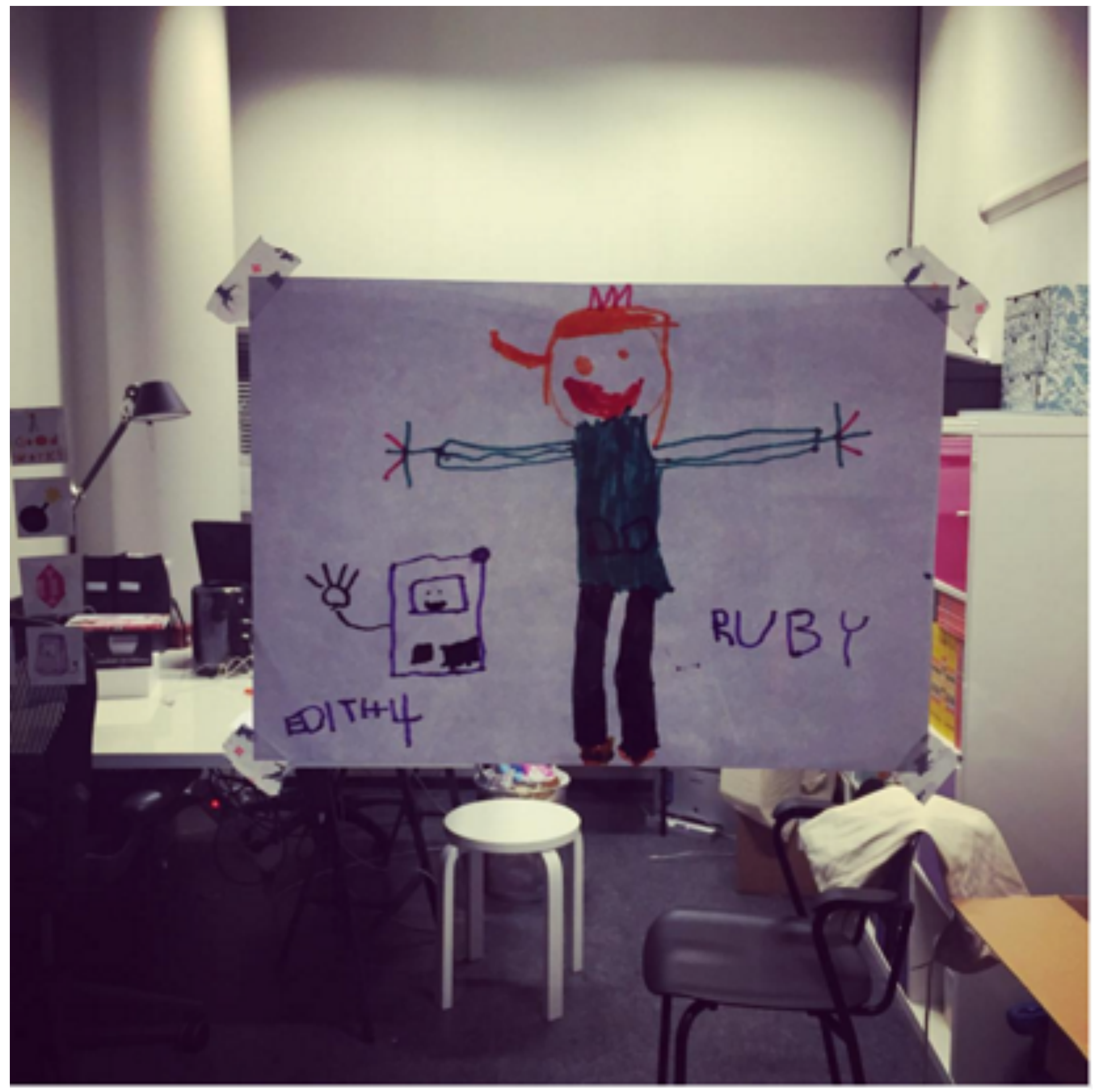
Look for something with four letters that you wear on your head.

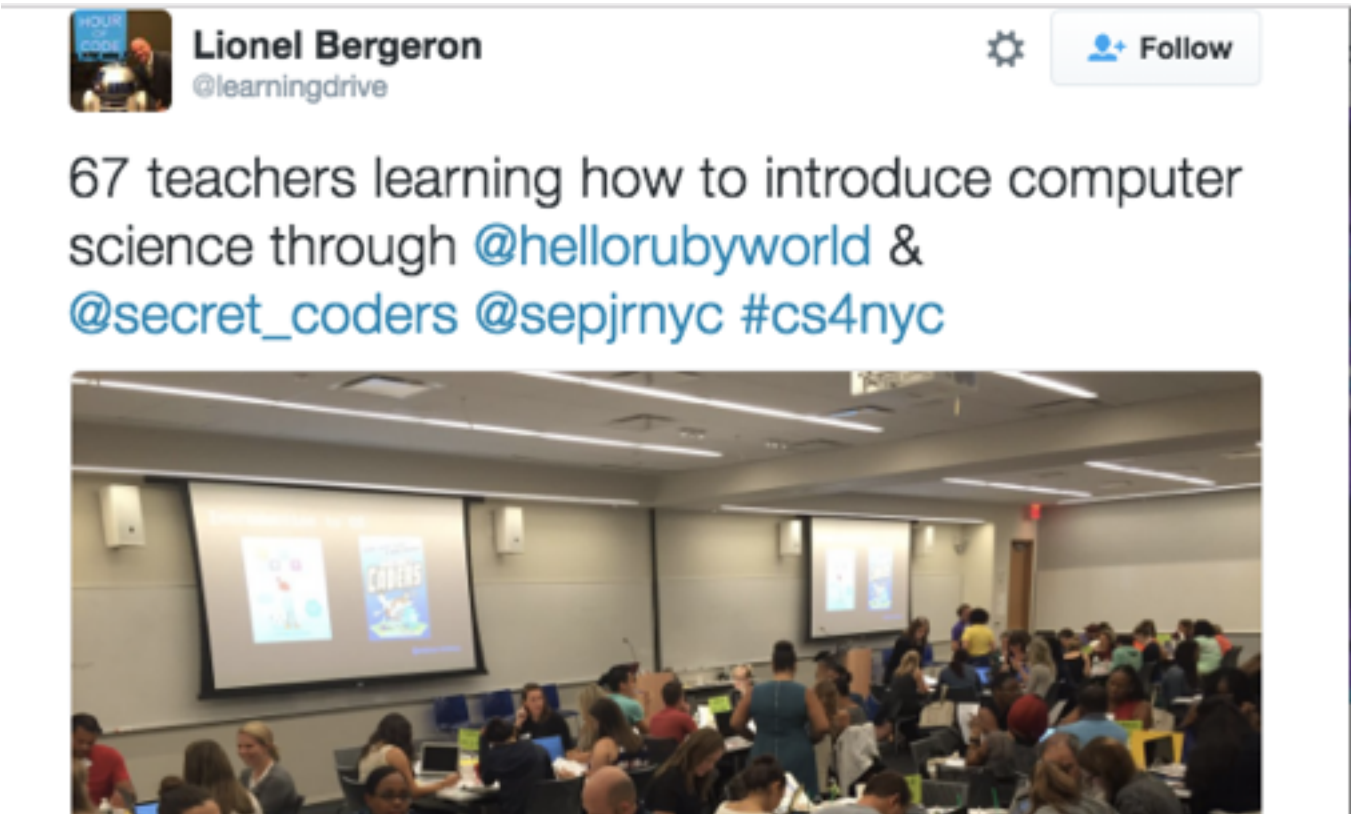
Good luck!

Love,
Ruby and the Penguins
xoxoxoxo

JAIS Young Hackers
Computer Lab
Jerusalem, Israel


Anna
Fatema





Lionel Bergeron
@learningdrive

67 teachers learning how to introduce computer science through @hellorubyworld & @secret_coders @sepjrnyc #cs4nyc

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E-SKILLS

DIGITAL LITERACY

PROGRAMMING

DIGITALISATION

ICT SKILLS

SOCIAL MEDIA SKILLS

CODING

Preparing kids for a world where every problem is a computer problem.

Finnish core curriculum includes programming in 2016

- In with coding, out with calligraphy?!
- **Kids can’t do normal math,** why should the hours be taken from math to have them idle with computers?
- Don’t these **skills get outdated very fast?**
- I studied programming in the 70’s in the University of Technology and **I’ve never needed the skills!**

Finnish core curriculum?

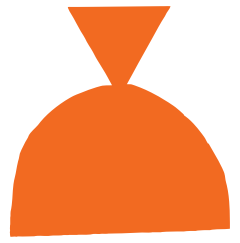
1-2 grade programming is taught through play.

- Students share and experience working with digital media and age appropriate programming (OPS 2016 / ICT skills, 101).
- Getting to know the basics of programming by forming and testing sequential instructions(OPS 2016 / Math, 129).

3-6 grade students get to know a visual programming language and learn to give commands to a computer without being afraid of making mistakes.

- By trying out programming students experience how technology works based on the instructions given by humans.(OPS 2016 / ICT skills, 157).
- Encourage students to form instructions and programs in a visual programming environment.(OPS 2016 / Math, 235)
- Plan and execute programs in a visual programming environment (OPS 2016 / Math, 235).
- Student knows how to code a functioning program in a visual programming environment (OPS 2016 / Math, 239).
- Practice physical programming, with automation and robots. (OPS 2016 / Crafts, 271).

How does a loop feel?

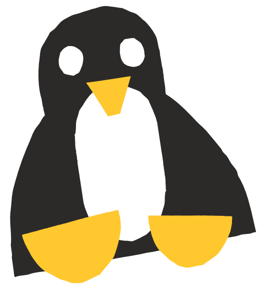


This is one of Ruby's favorite dance routines. Can you dance it to the beat of your favorite song?

- Clap
- Clap
- Stomp
- Stomp
- Clap
- Clap

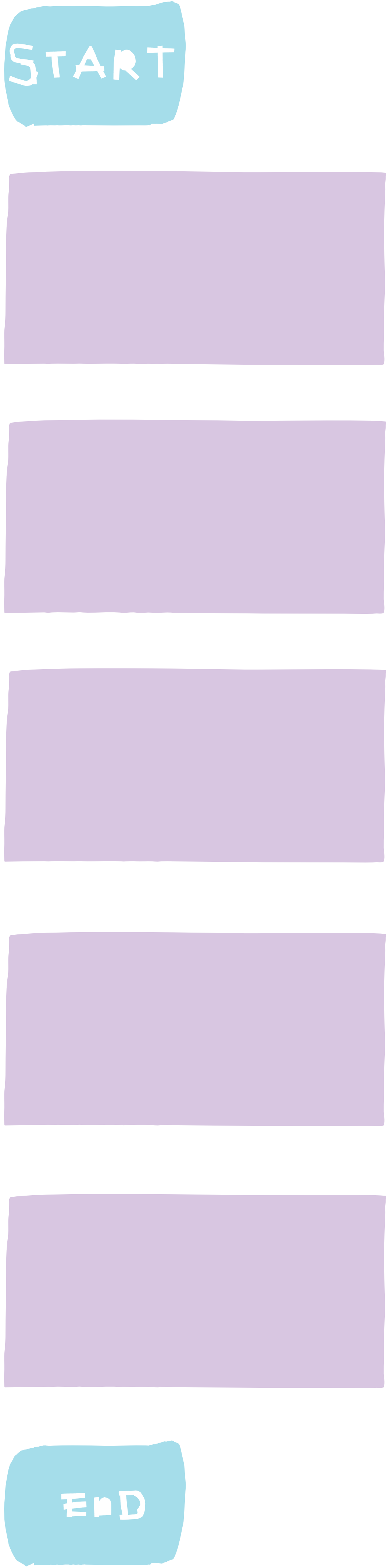
This is how Snowleopard loves to waltz.

- Swirl
- Jump
- Jump
- Clap
- Clap
- Clap



And this is how the penguins like to boogie.

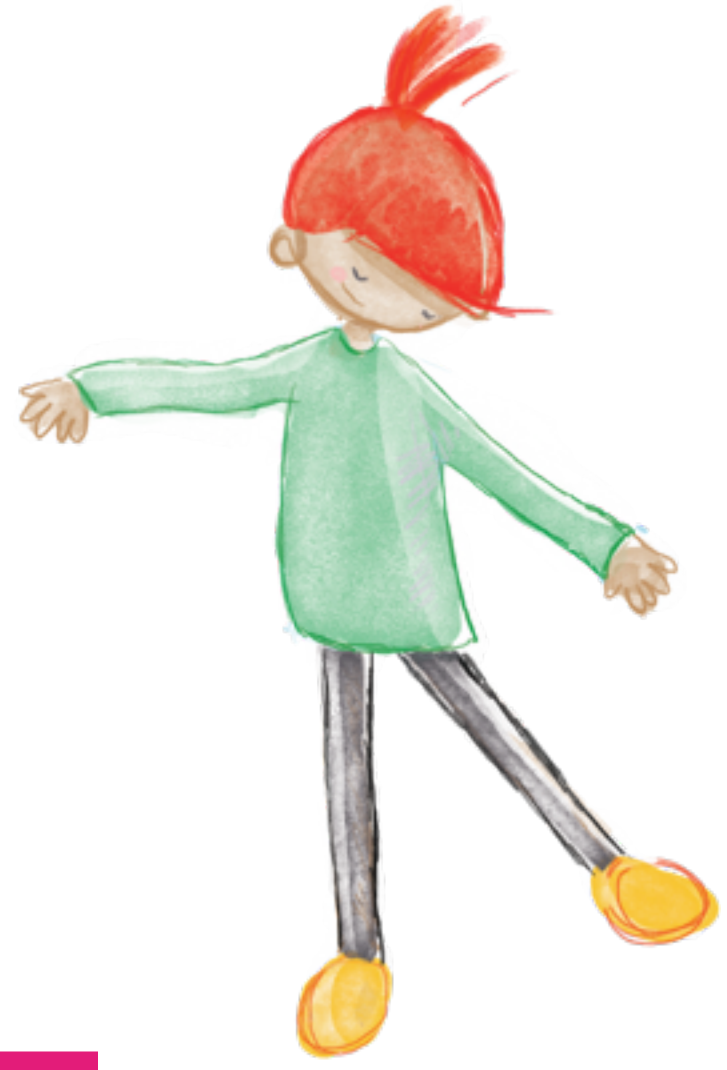
- Clap
- Kick
- Stomp
- Stomp
- Jump



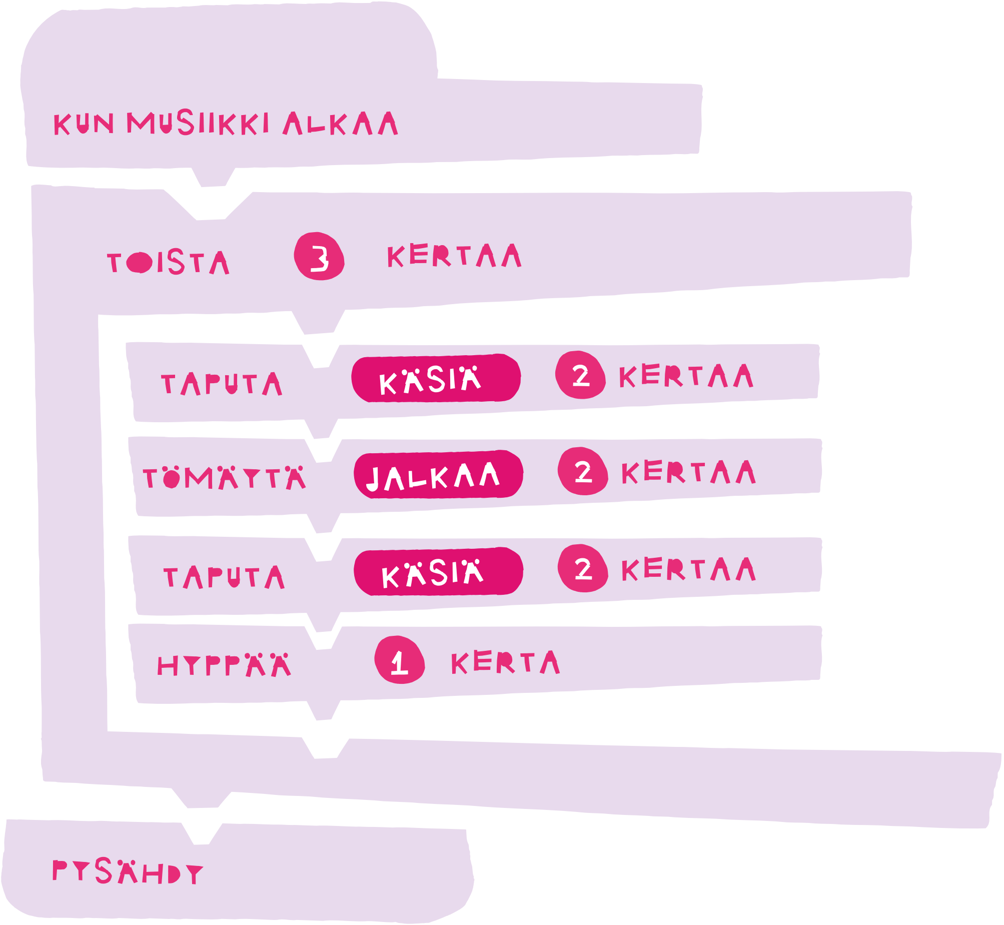
For loop!
While loop!
Until loop!

A LOOP

Kinetic



Visual



KUN MUSIIKKI ALKAA

TOISTA 3 KERTAA

TAPUTA KÄSIÄ 2 KERTAA

TÖMÄYTÄ JALKAA 2 KERTAA

TAPUTA KÄSIÄ 2 KERTAA

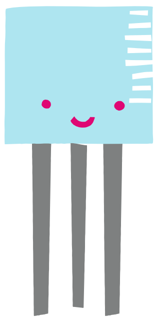
HYPPÄÄ 1 KERTA

PYSÄHDY

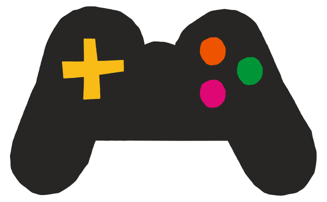
Code

```
for i in 0..1
    puts "Clap"
end

for i in 0..1
    puts "Stomp
end

for i in 0..1
    puts "Clap"
end

puts "Jump"
```

Practice



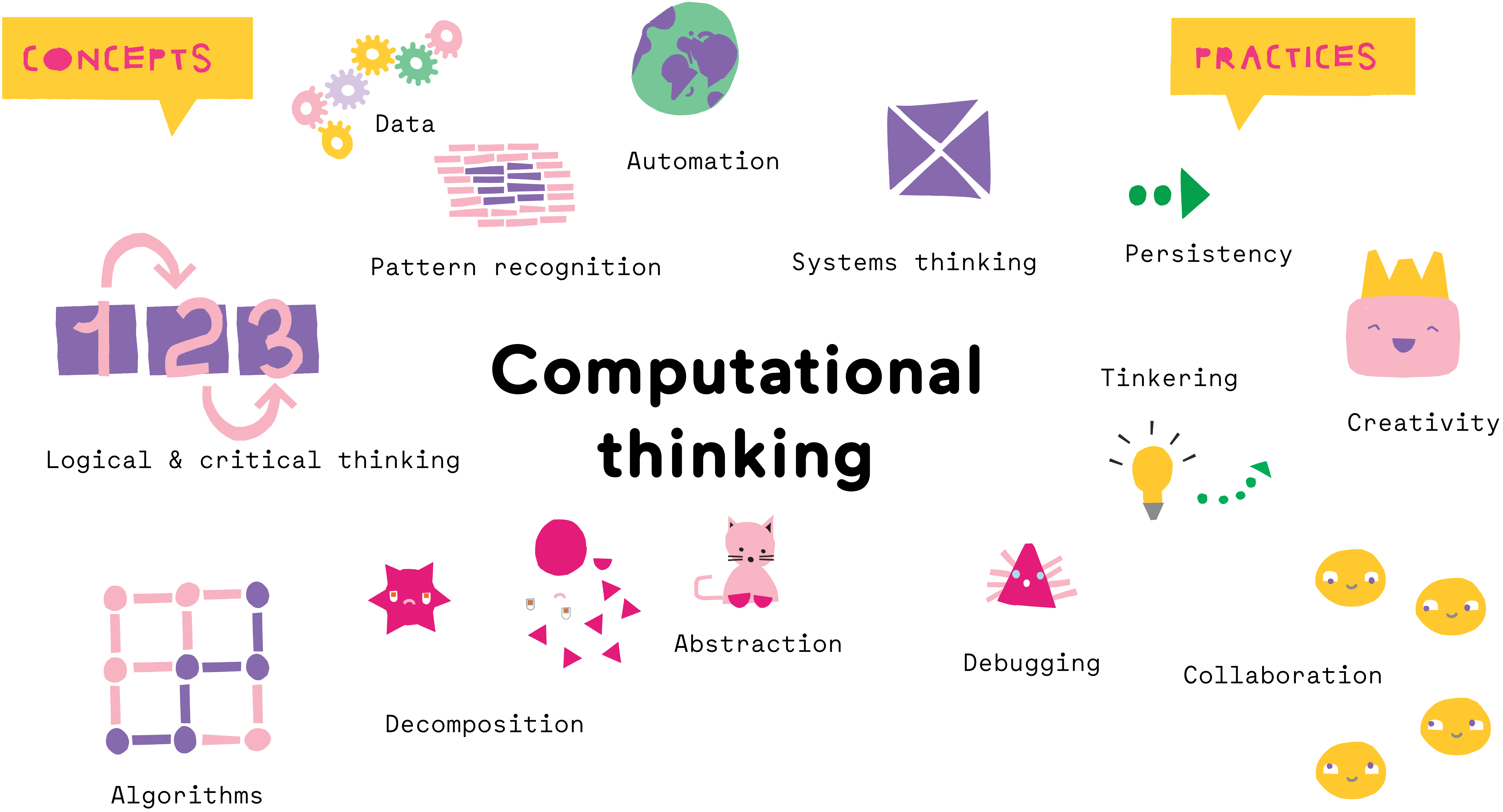
A thermometer.



A game.

A website.

Computational thinking



CONCEPTS

Data

Automation

Pattern recognition

Systems thinking

Logical & critical thinking

Algorithms

Decomposition

Abstraction

PRACTICES

Persistency

Tinkering

Creativity

Debugging

Collaboration

HELLO RUBY

START

END

wash your teeth!

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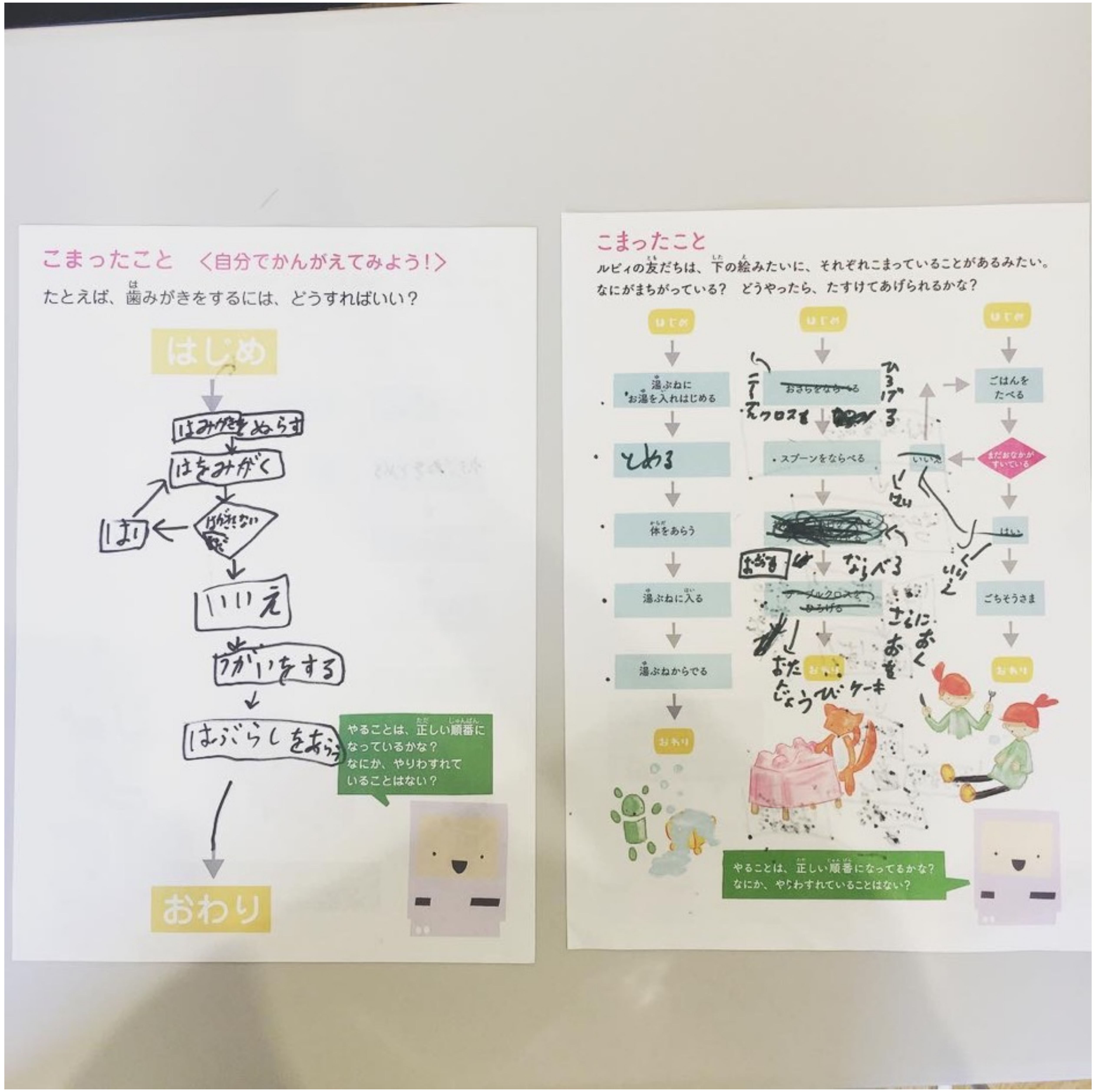


こまったこと　＜自分でかんがえてみよう！＞

たとえば、歯（は）みがきをするには、どうすればいい？

はじめ
はみがきをぬらす
はをみがく
けがれてない？
はい
いいえ
うがいをする
はぶらしをあらう
おわり

やることは、正（ただ）しい順番（じゅんばん）になっているかな？なにか、やりわすれていることはない？

こまったこと

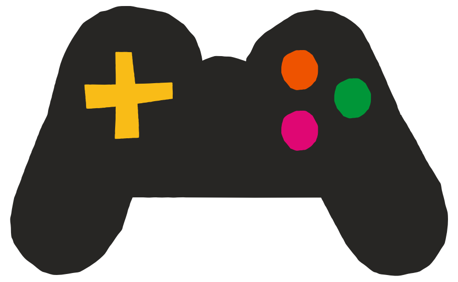
ルビィの友（とも）だちは、下（した）の絵（え）みたいに、それぞれこまっていることがあるみたい。なにがまちがっている？　どうやったら、たすけてあげられるかな？

はじめ
湯ぶねにお湯を入れはじめる
とめる
体をあらう
湯ぶねに入る
湯ぶねからでる
おわり
はじめ
~~おさらをならべる~~
テーブルクロスを
ひろげる
スプーンをならべる
おさら
ならべる
~~テーブルクロスをひろげる~~
さらにおく
おをおく
おたんじょうびケーキ
おわり
はじめ
ごはんをたべる
まだおなかがすいている
いいえ
はい
ごちそうさま
おわり

やることは、正しい順番になってるかな？
なにか、やりわすれていることはない？

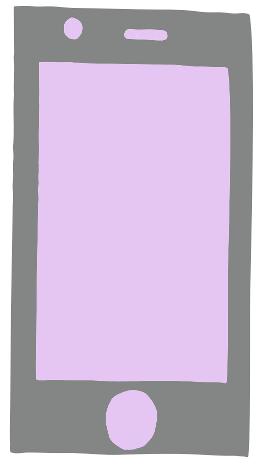
HOW DO I CHOOSE A PROGRAMMING LANGUAGE?

GAME



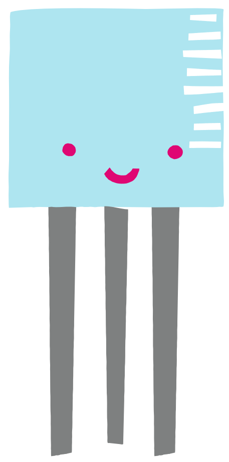
For example JavaScript, C#, C++, Unity

APP



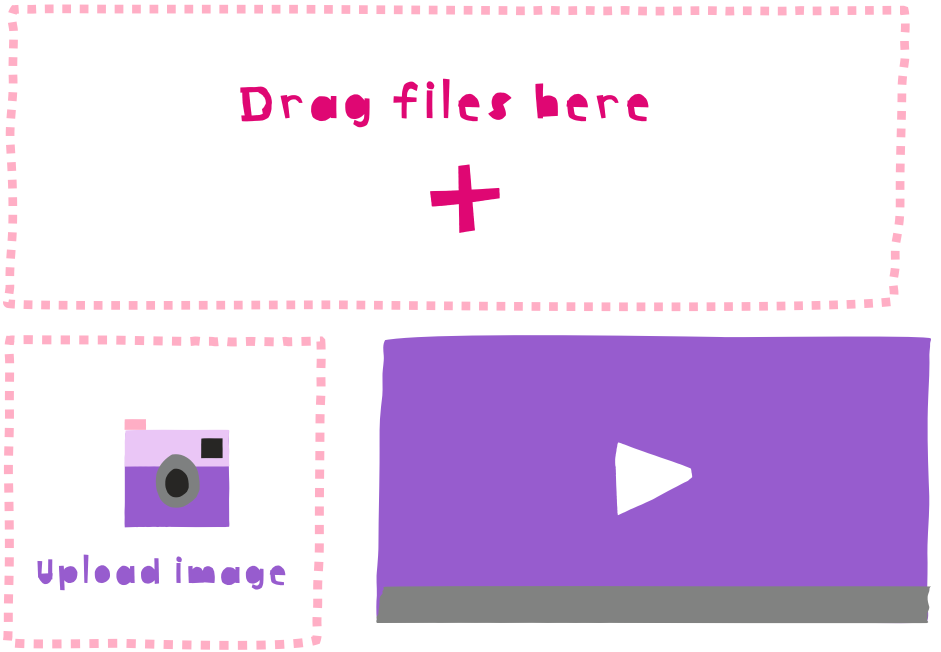
For example . Java, Swift, Objective C,

PHYSICAL PRODUCT



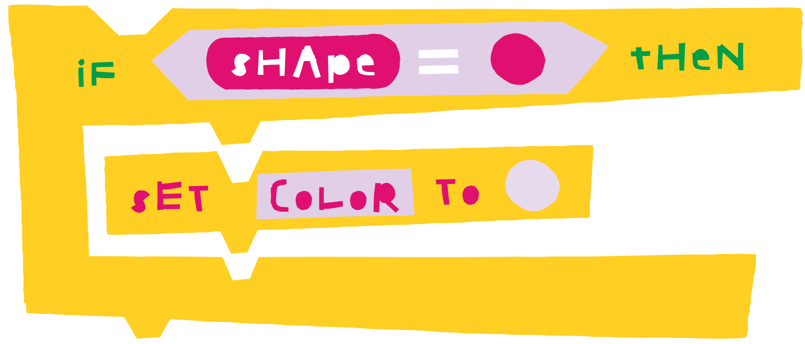
For example Python, C, Assembly

WEBSITE


Drag files here
+
Upload image

For example JavaScript, Ruby on Rails, PHP, HTML, CSS

TEACHING


iF
sHApe
=
tHeN
sET
CoLoR
To

For example Scratch, Logo, Python

RUBY

```
puts ['apple', 'orange'].length
```

PYTHON

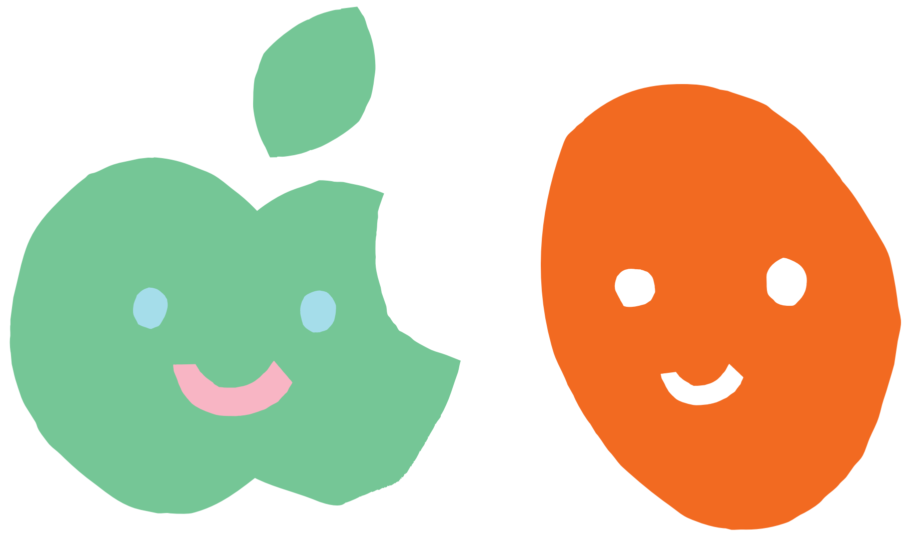
```
print(len(['apple', 'orange']))
```

JAVASCRIPT

```
console.log(['apple', 'orange'].length);
```

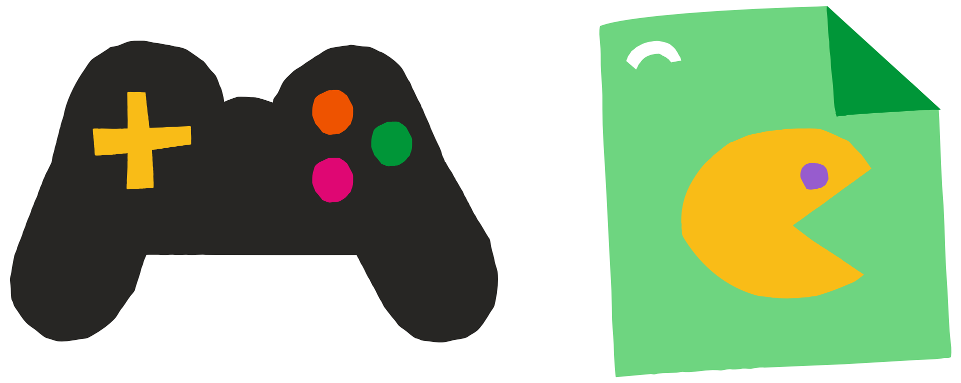
JAVA

```
public class ArrayLength {
    public static void main(String[] args) {
        System.out.println(new String[]{"apple", "orange"}.length);
    }
}
```

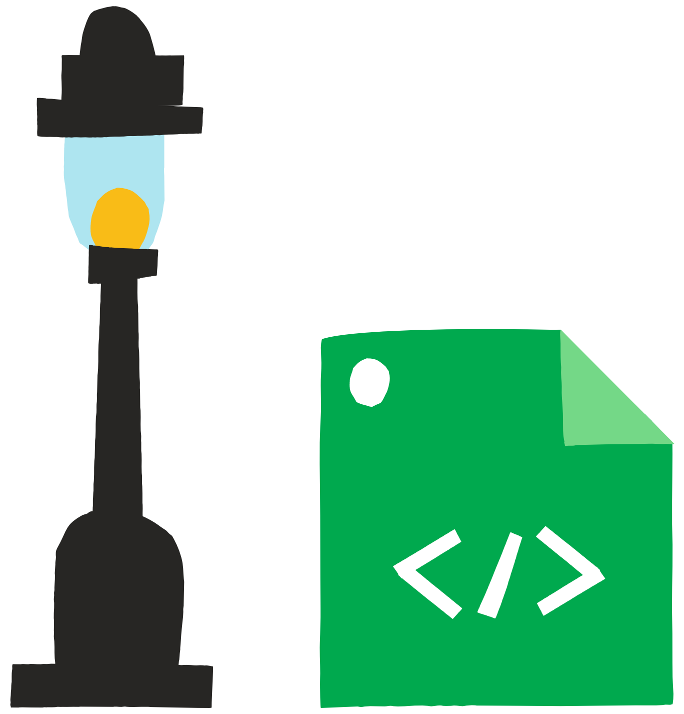


Ruby has an apple and an orange in her bag. How many fruit she has altogether?

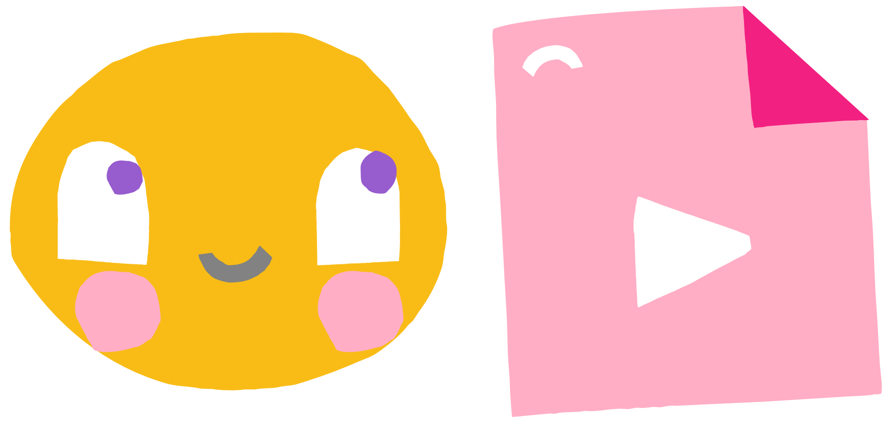
WHERE CAN YOU SEE PROGRAMMING?



GAMES



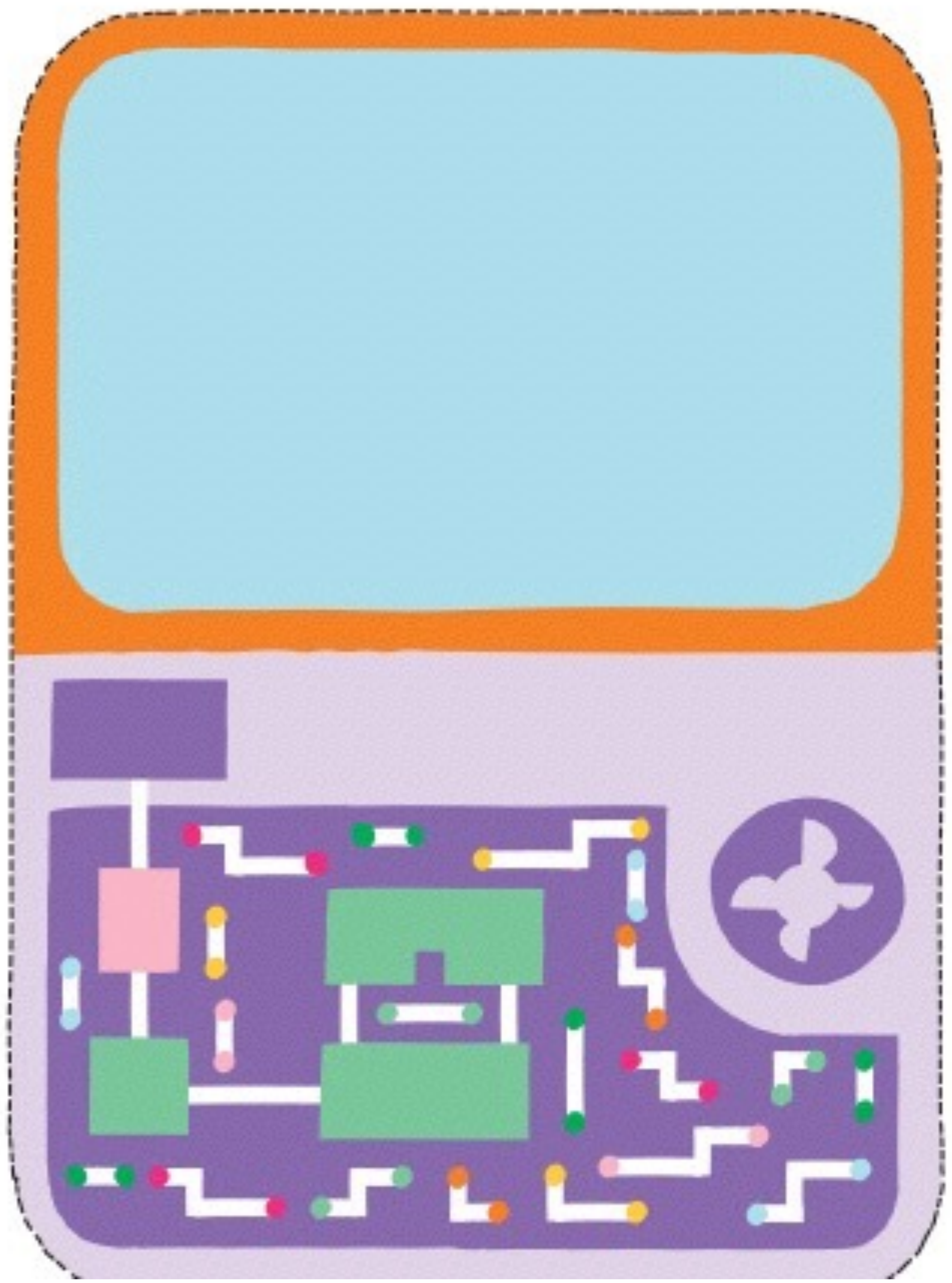
CITY PLANNING



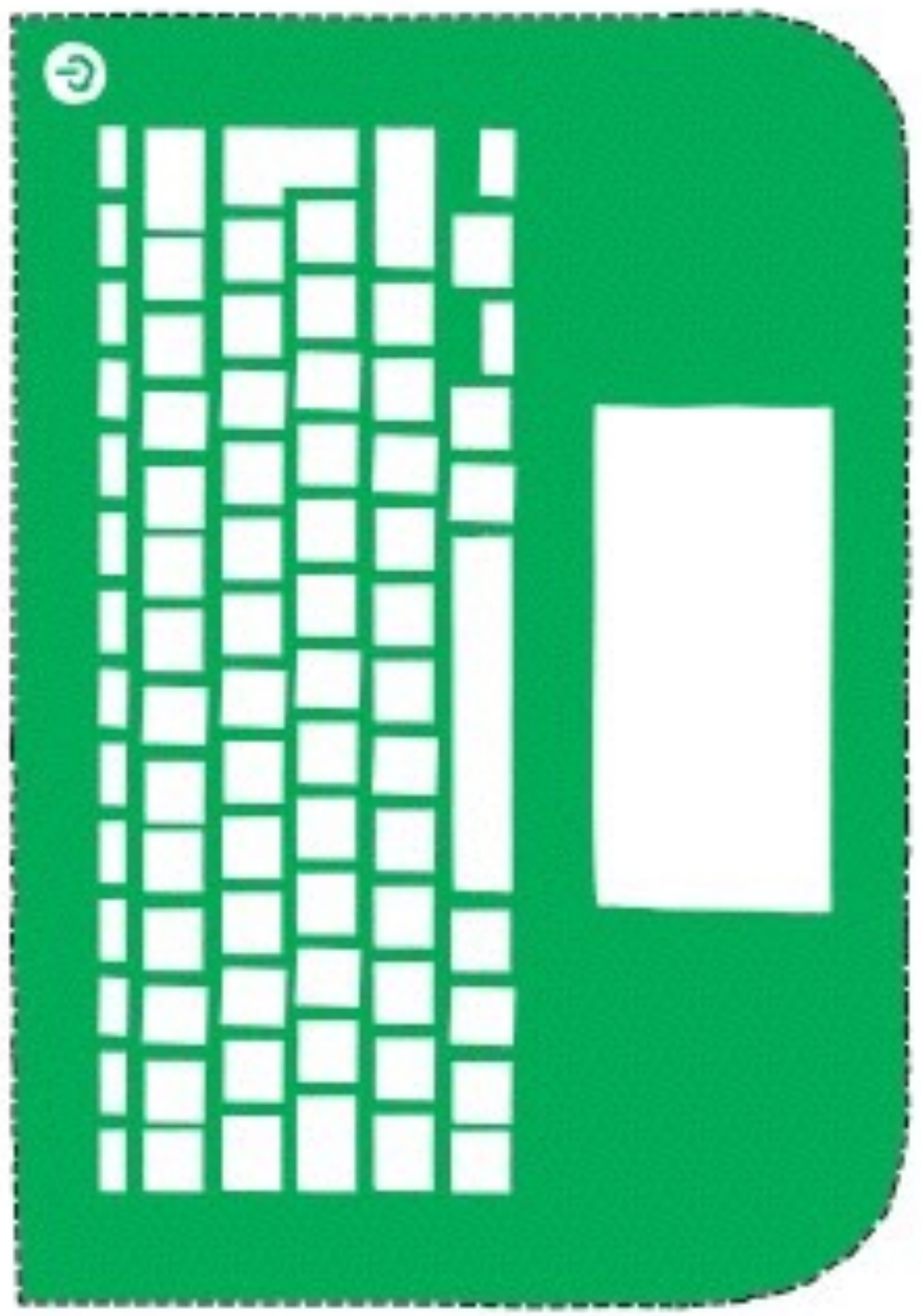
NEURO SCIENCES

MUSIC

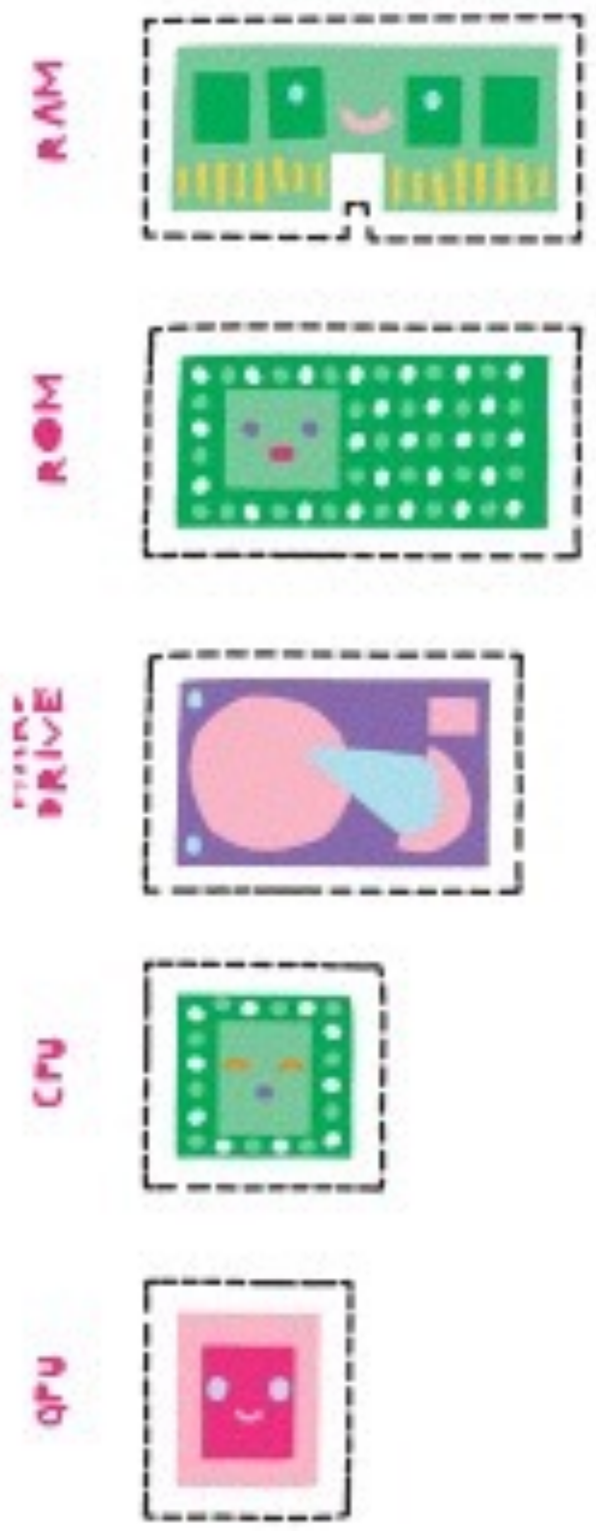
COMPUTER CASE



KEYBOARD



COMPONENTS


RAM
ROM
HARD DRIVE
CPU
GPU

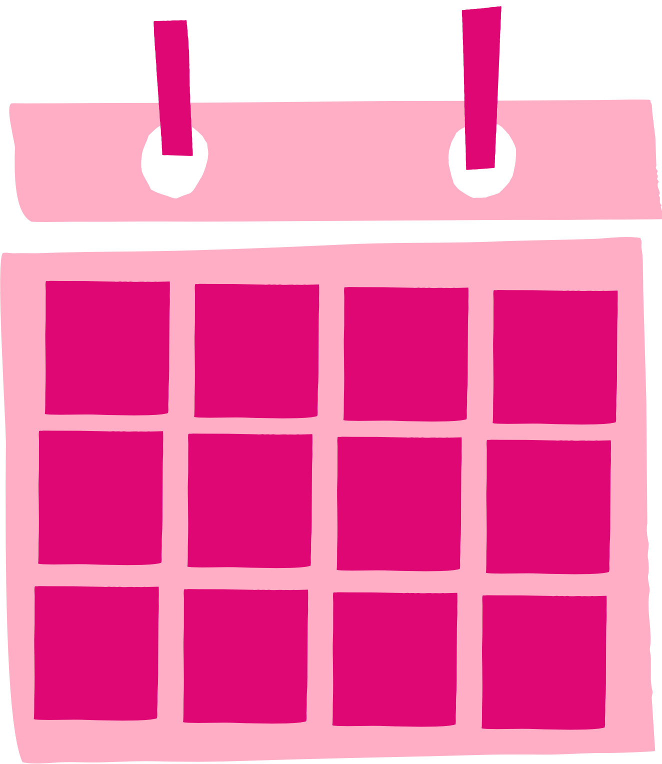
OPERATING SYSTEM

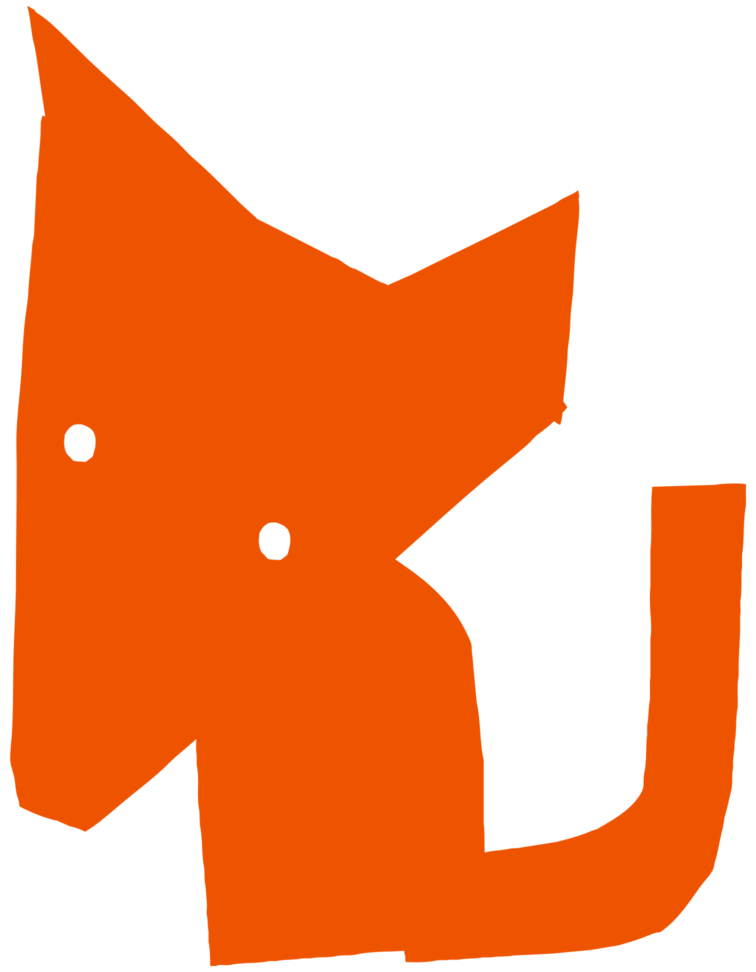
FILES

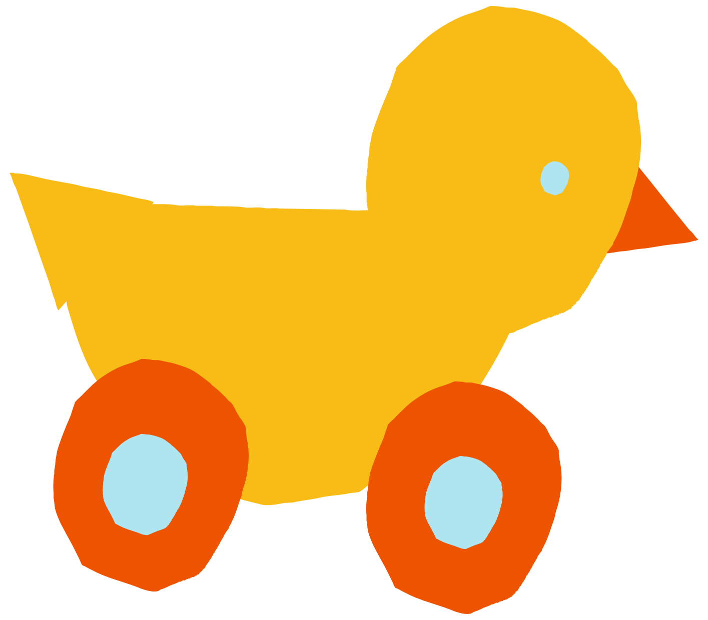
WEBSITE

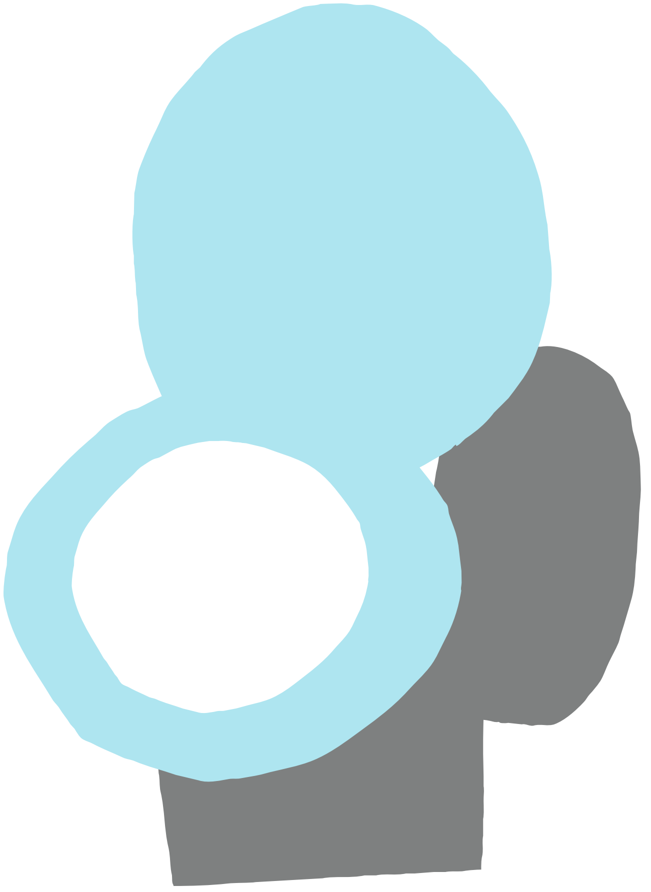
STICKERS

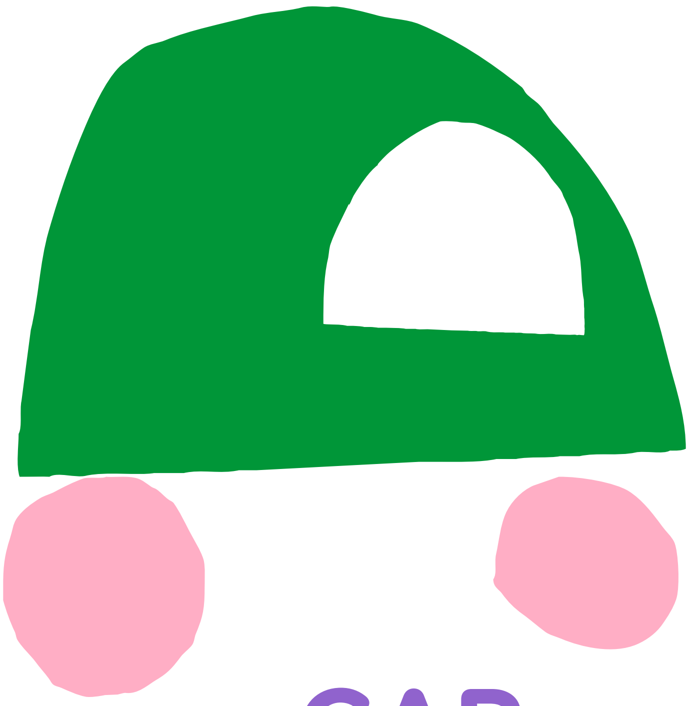
WHICH ONE OF THESE IS A COMPUTER?

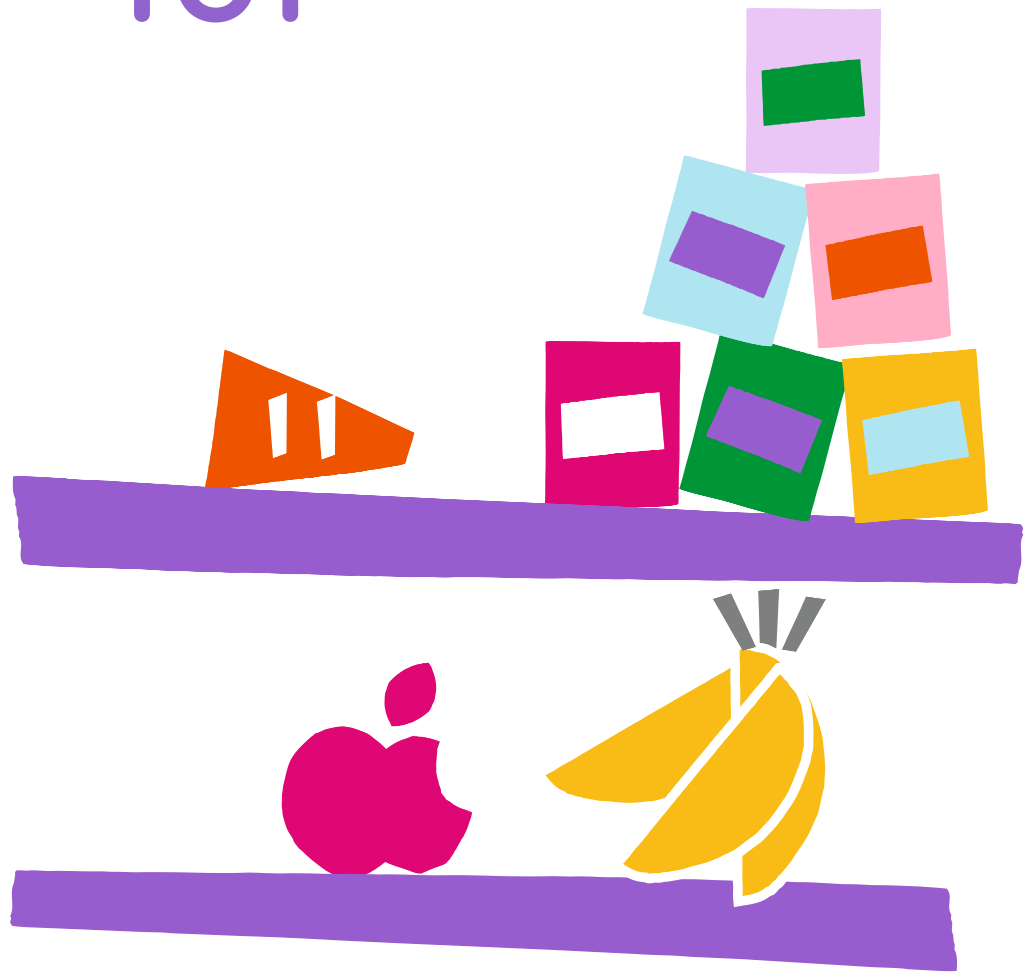

CALENDAR


DOG

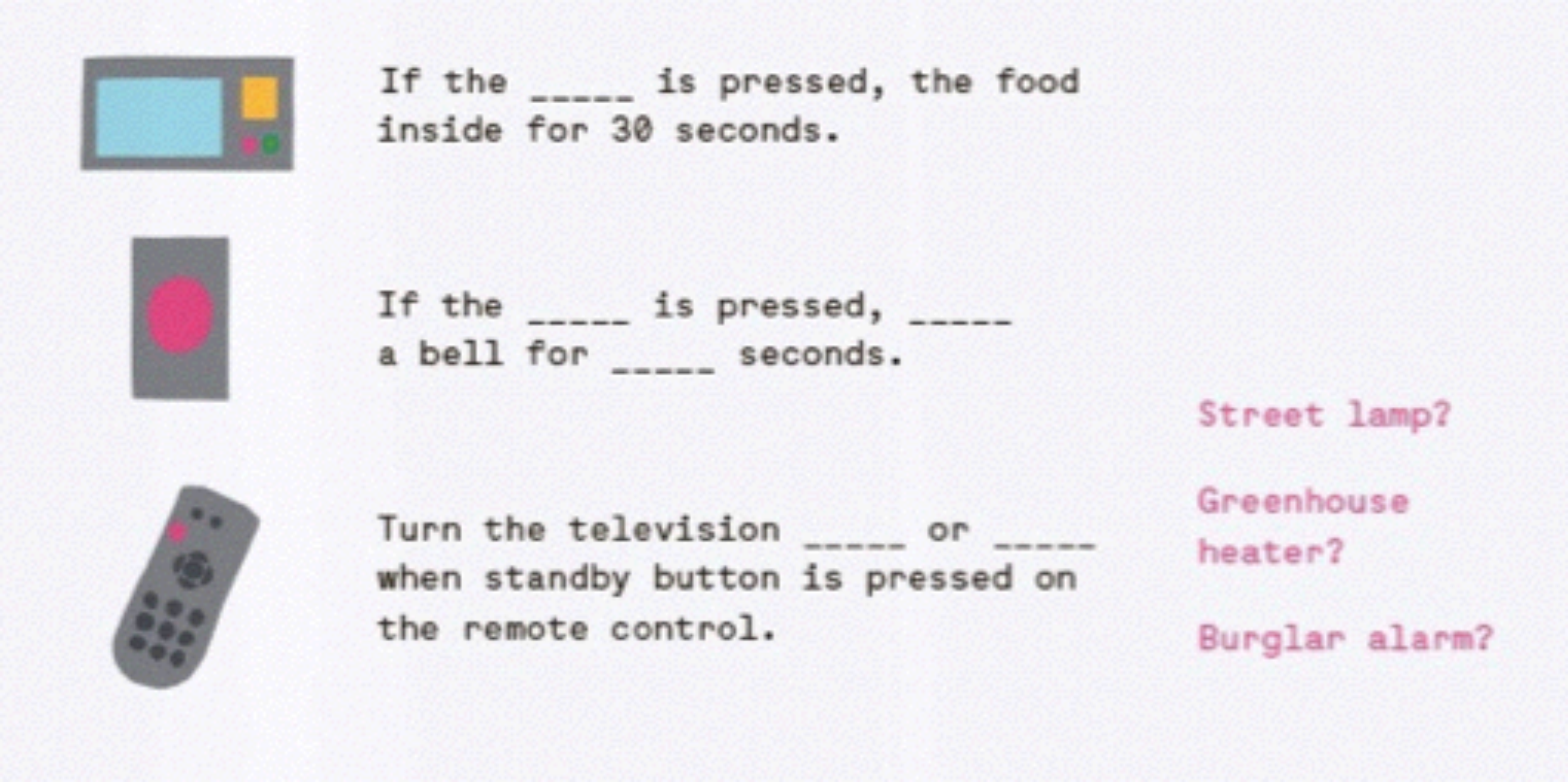

TOY


TOILET


CAR


STORE

There's hundreds of computers in every home.



If the _____ is pressed, the food
inside for 30 seconds.

If the _____ is pressed, _____
a bell for _____ seconds.

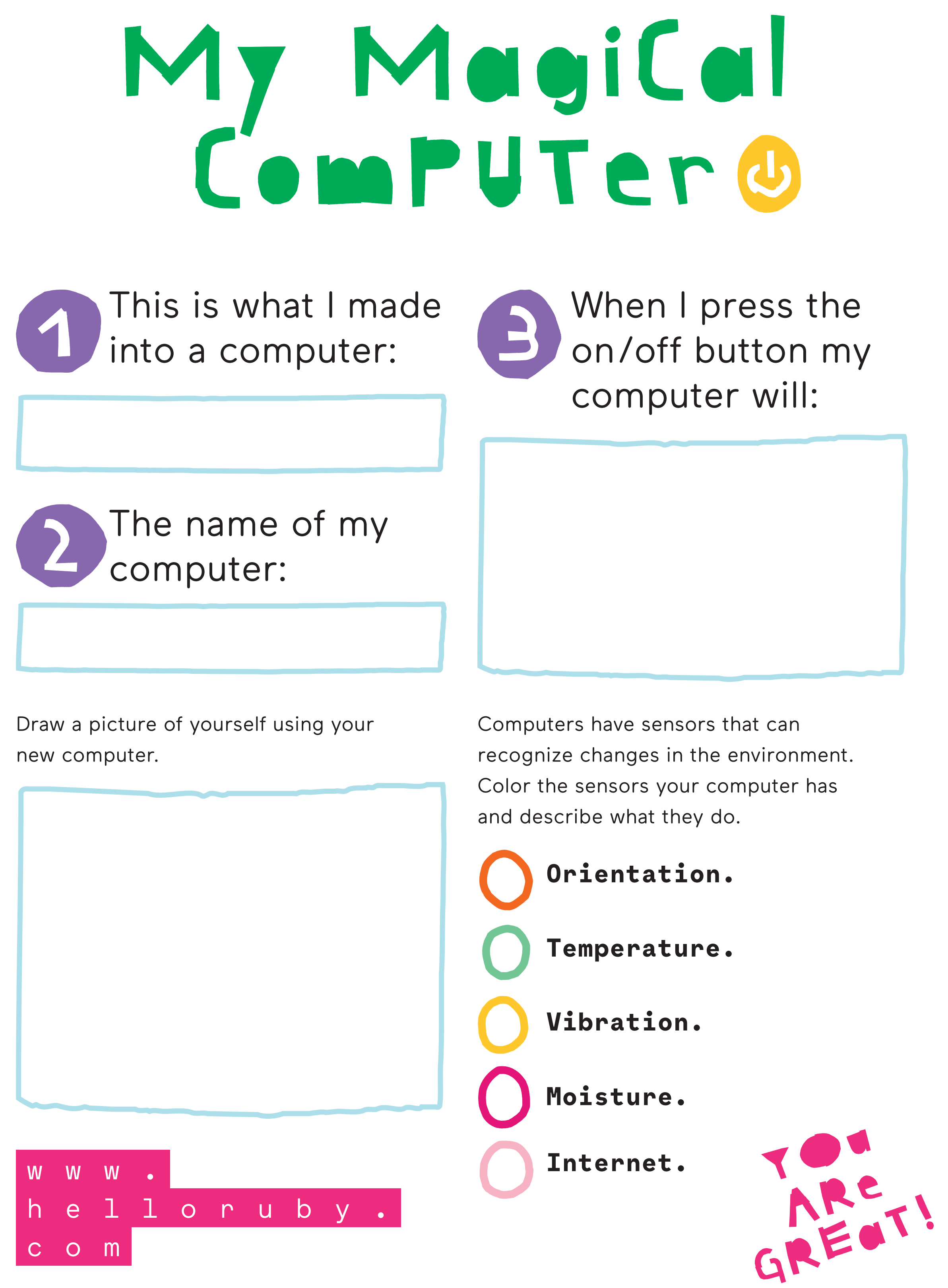
Turn the television _____ or _____
when standby button is pressed on
the remote control.

Street lamp?

Greenhouse heater?

Burglar alarm?

Kristiina Louhi
Ainon
HUONE
PÄÄSY KIELLETTY



My Magical Computer

1. This is what I made into a computer:
2. The name of my computer:
3. When I press the on/off button my computer will:

Draw a picture of yourself using your new computer.

Computers have sensors that can recognize changes in the environment. Color the sensors your computer has and describe what they do.

○ **Orientation.**
○ **Temperature.**
○ **Vibration.**
○ **Moisture.**
○ **Internet.**

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You are great!

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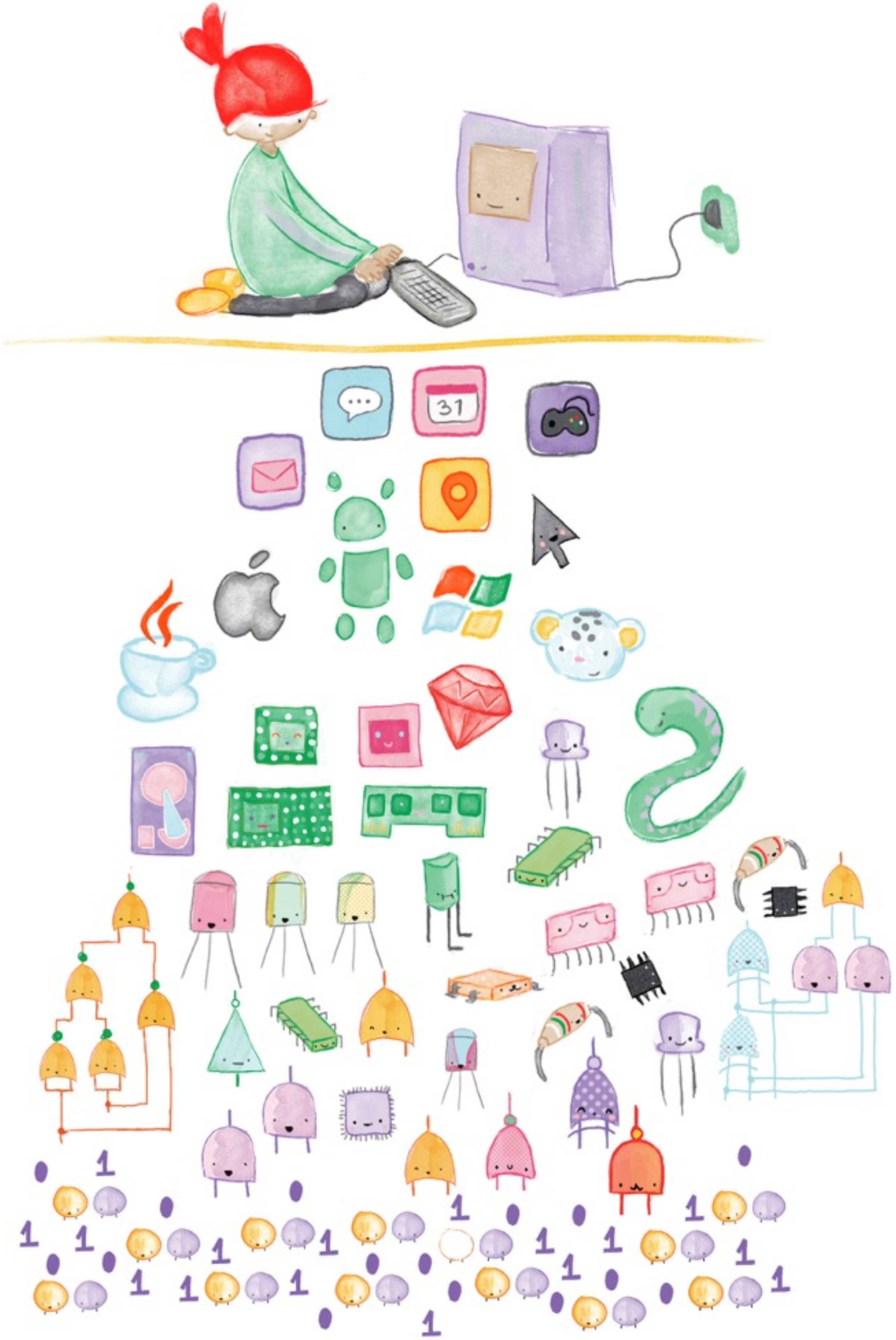
Notional machine

“An abstraction of the computer that one can use for thinking about what a computer can and will do.”
- Benedict DuBoulay

“We want students to understand what a computer can do, what a human can do, and why that’s different. To understand computing is to have a robust mental model of a notional machine.”
- Mark Guzdial

	Completely disagree	Disagree.	Not sure.	Agree	Strongly agree	I don’t understan
Computer is the same thing as Internet.	☹	🙁	😐	🙂	😀	?
Computer is the same thing as machine.	☹	🙁	😐	🙂	😀	?
Computer is the same thing as technology.	☹	🙁	😐	🙂	😀	?
Computers have feelings.	☹	🙁	😐	🙂	😀	?
Computers can sense things.	☹	🙁	😐	🙂	😀	?
Computers have sensors.	☹	🙁	😐	🙂	😀	?
Computers can make art.	☹	🙁	😐	🙂	😀	?
Computers think.	☹	🙁	😐	🙂	😀	?
Computer know about me.	☹	🙁	😐	🙂	😀	?


31
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Computers are abstraction machines.

The two joys of programming.

Achievement	Social	Immersion
Advancement: Progress, power, accumulation, status	**Socialising:** Casual chat, helping others, making friends	**Discovery:** Exploration, lore, finding hidden things
Mechanics: Numbers, optimisation, templating, analysis	**Relationships:** Personal, self-disclosure, finding and giving support	**Role playing:** Story line, character history, roles, fantasy
Competition: Challenging others, provocation, domination	**Teamwork:** Collaboration, groups, group achievements	**Customisation:** appearances, accessories, style, color schemes
		Escapism: Relaxation, escape from real life, avoid real life problems

Lego Foundation: Systematic Creativity in the Digital Realm (2012)

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Lego Foundation: Systematic Creativity in the Digital Realm (2012)

Finland

Education - equity over excellence. Play & recess time. Minimal testing.

Cooperation
Creativity
Trust-based responsibility
Professionalisation
Equity

"The Finnish Way" - Pasi Sahlberg

Competition
Standardisation
Test-based accountability
Deprofessonialisation
Privatisation

Global Educational Reform Movement

Finland

From a country of 5 million people unproportionate amount of the software that runs the world. Open source.

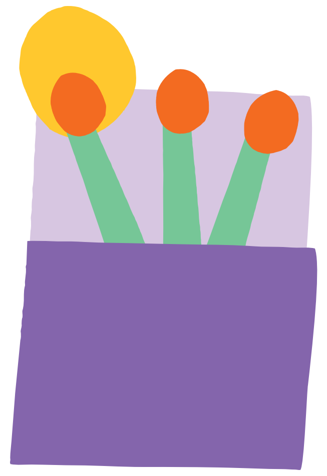
Nokia
Linux
Git
IRC
SSH
MySQL

..and the Scandinavian / Baltic region (30 M people):

- *Rails*
- *PHP*
- *Skype*
- *Spotify*

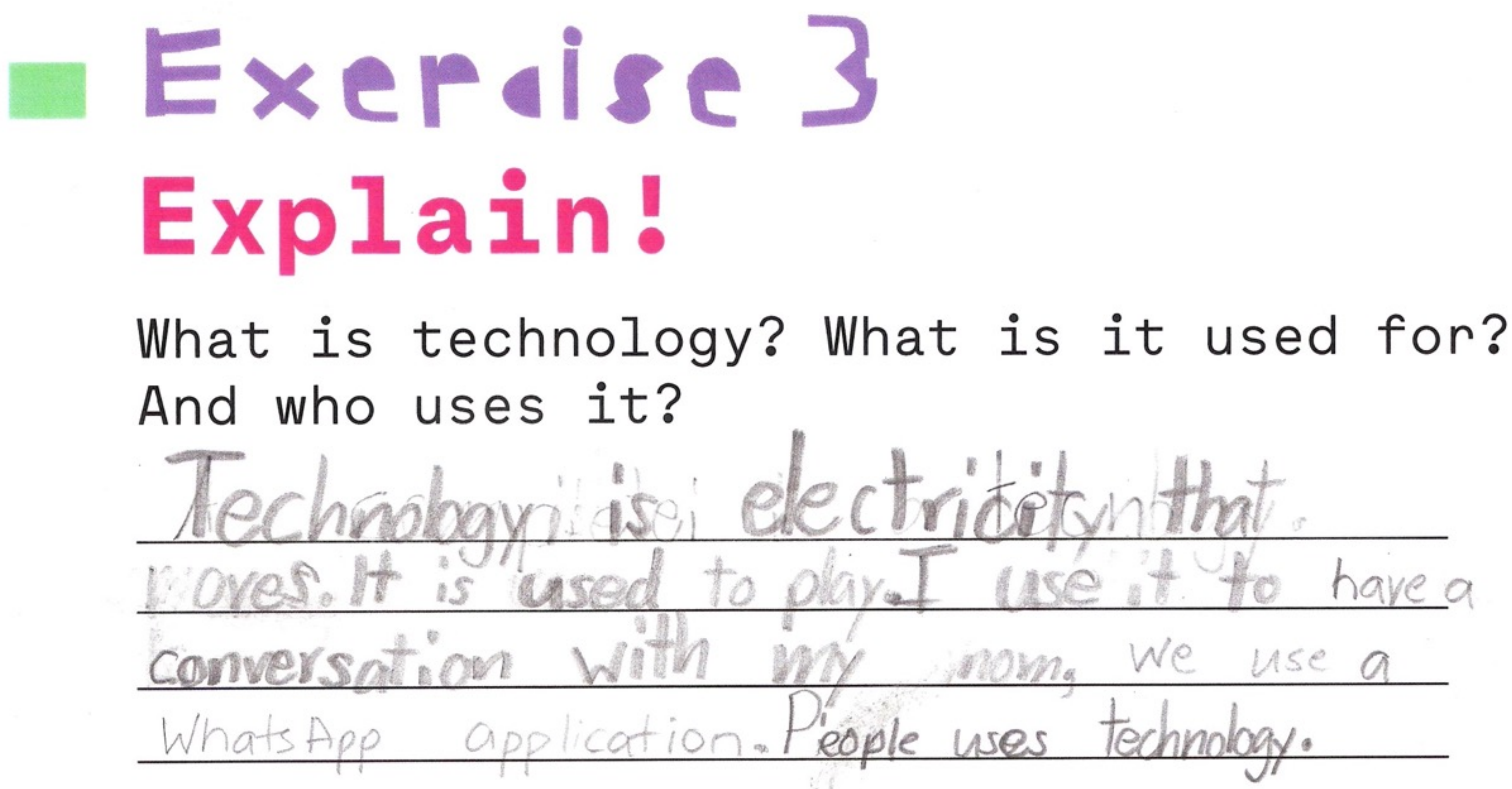
Finally

Technology is built on humanity.



Computer ***(km-pytr)***
n.
person who makes calculations or computations; a calculator, a reckoner; spec. a person employed to make calculations in an observatory, in surveying.

Technology (from Greek τέχνη)
Techne, "art, skill, cunning of hand"; and -λογία, -logia[1]. Techniques, skills and competencies alongside the tools needed to do the job. Agriculture is a technology; democracy is a technology.



🟩 Exercise 3

Explain!

What is technology? What is it used for?
And who uses it?

Technology is electricity that moves. It is used to play. I use it to have a conversation with my mom, we use a WhatsApp application. People uses technology.

else
if
else
else
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THANK YOU!

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