



Stichting NIOC

Stichting NIOC en de NIOC kennisbank

Stichting NIOC (www.nioc.nl) stelt zich conform zijn statuten tot doel: het realiseren van congressen over informatica onderwijs en voorts al hetgeen met een en ander rechtstreeks of zijdelings verband houdt of daartoe bevorderlijk kan zijn, alles in de ruimste zin des woords.

De stichting NIOC neemt de archivering van de resultaten van de congressen voor zijn rekening. De website www.nioc.nl ontsluit onder "Eerdere congressen" de gearchiveerde websites van eerdere congressen. De vele afzonderlijke congresbijdragen zijn opgenomen in een kennisbank die via dezelfde website onder "NIOC kennisbank" ontsloten wordt.

Op dit moment bevat de NIOC kennisbank alle bijdragen, incl. die van het laatste congres (NIOC2025, gehouden op donderdag 27 maart 2025 jl. en georganiseerd door Hogeschool Windesheim). Bij elkaar zo'n 1500 bijdragen!

We roepen je op, na het lezen van het document dat door jou is gedownload, de auteur(s) feedback te geven. Dit kan door je te registreren als gebruiker van de NIOC kennisbank. Na registratie krijg je bericht hoe in te loggen op de NIOC kennisbank.

Het eerstvolgende NIOC vindt plaats in 2027 en wordt dan georganiseerd door HAN University of Applied Sciences. Zodra daarover meer informatie beschikbaar is, is deze hier te vinden.

Wil je op de hoogte blijven van de ontwikkeling rond Stichting NIOC en de NIOC kennisbank, schrijf je dan in op de nieuwsbrief via

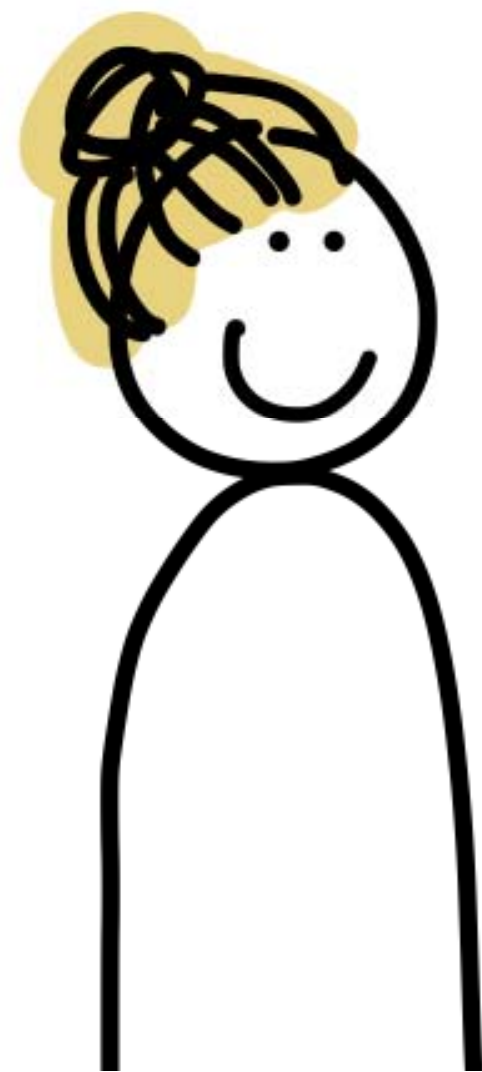
www.nioc.nl/nioc-kennisbank/aanmelden-nieuwsbrief

Reacties over de NIOC kennisbank en de inhoud daarvan kun je richten aan de beheerder:

R. Smedinga kennisbank@nioc.nl.

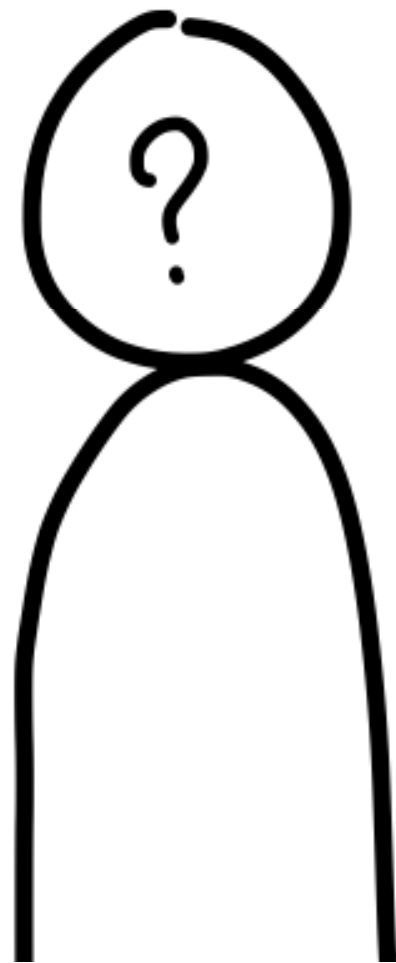
Vermeld bij reacties jouw naam en telefoonnummer voor nader contact.

What is programming?

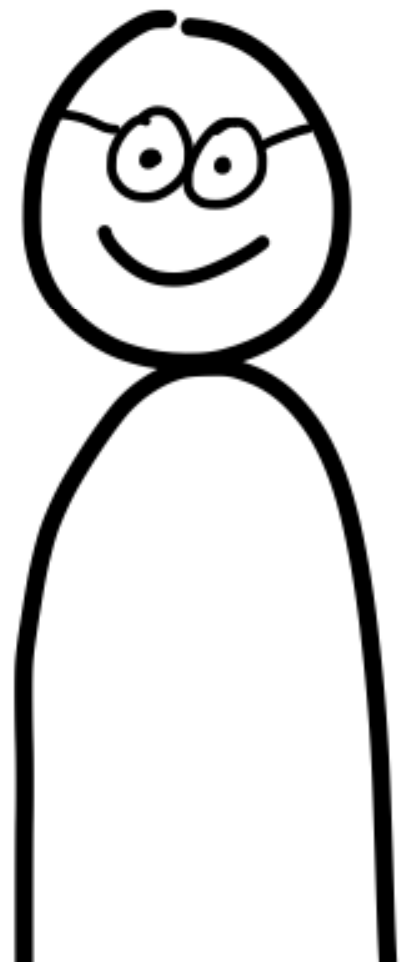


Felienne

"Everyone should
learn programming"

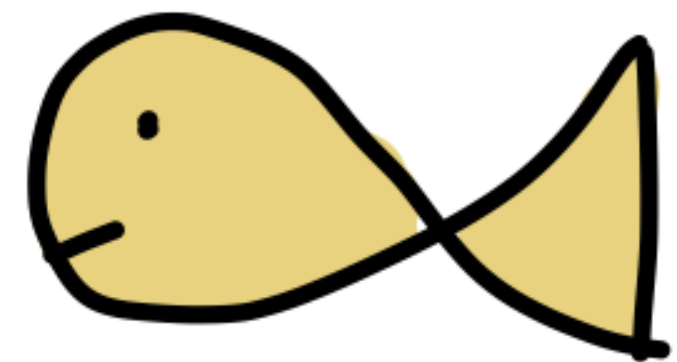
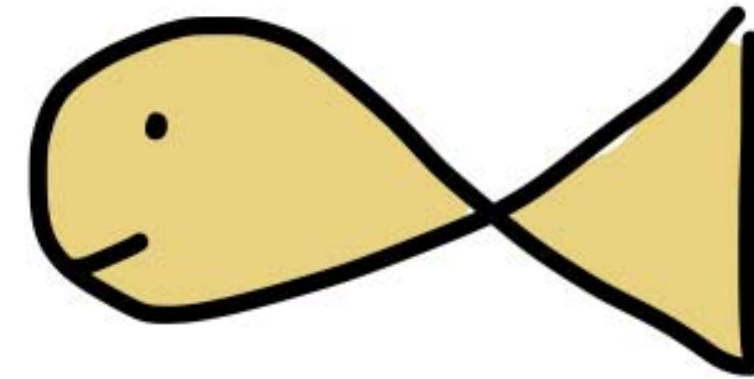
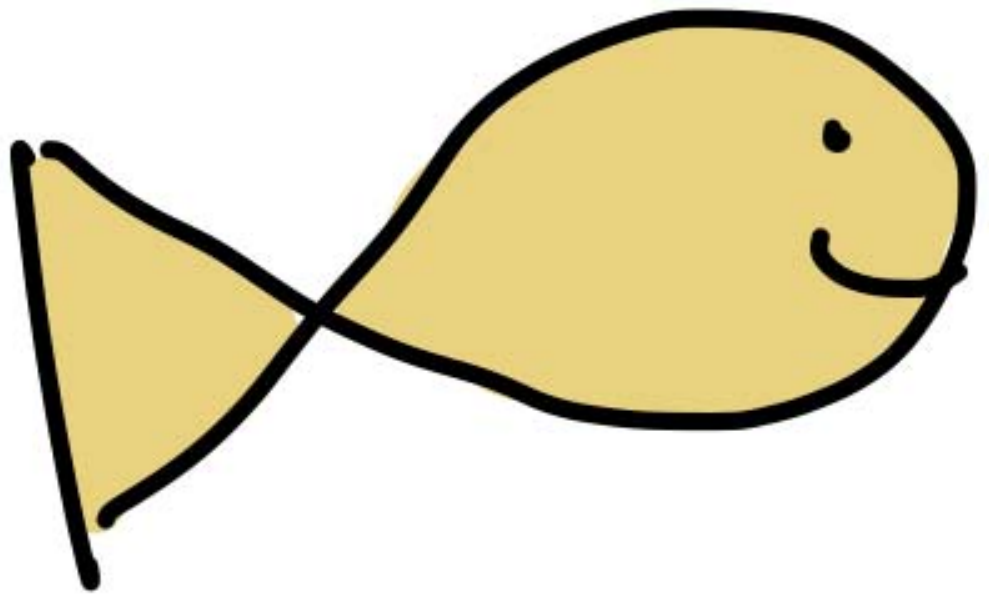


"Everyone should
learn programming"

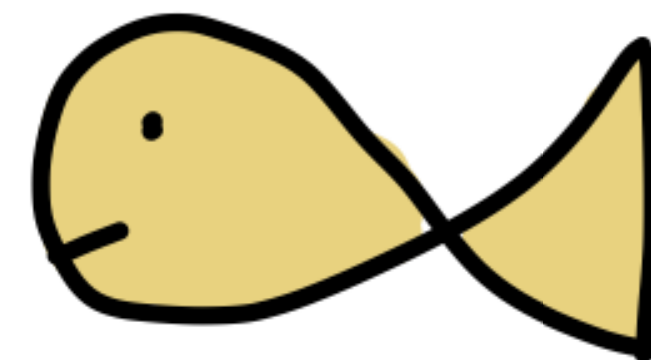
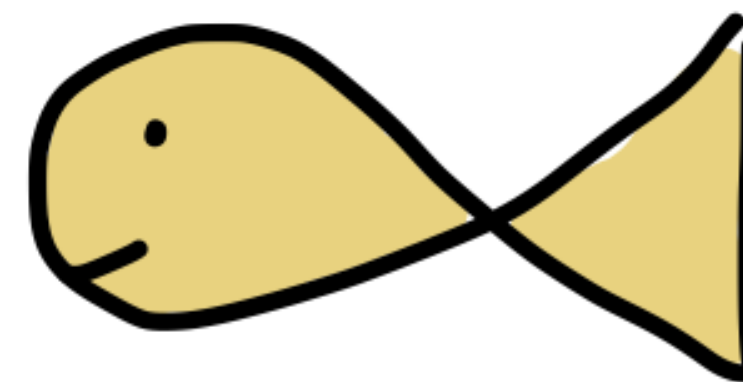
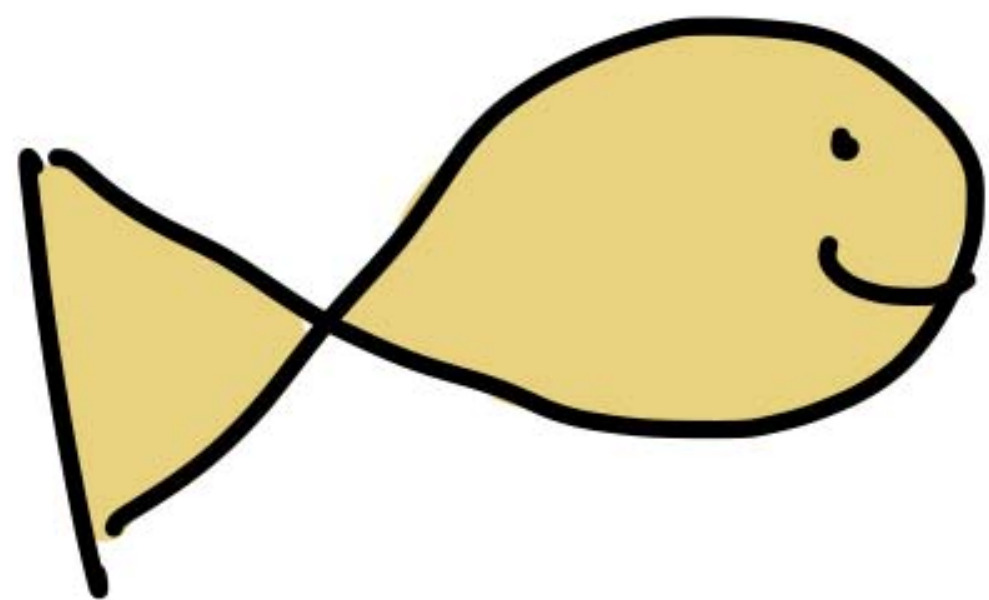


— Every programmer ever

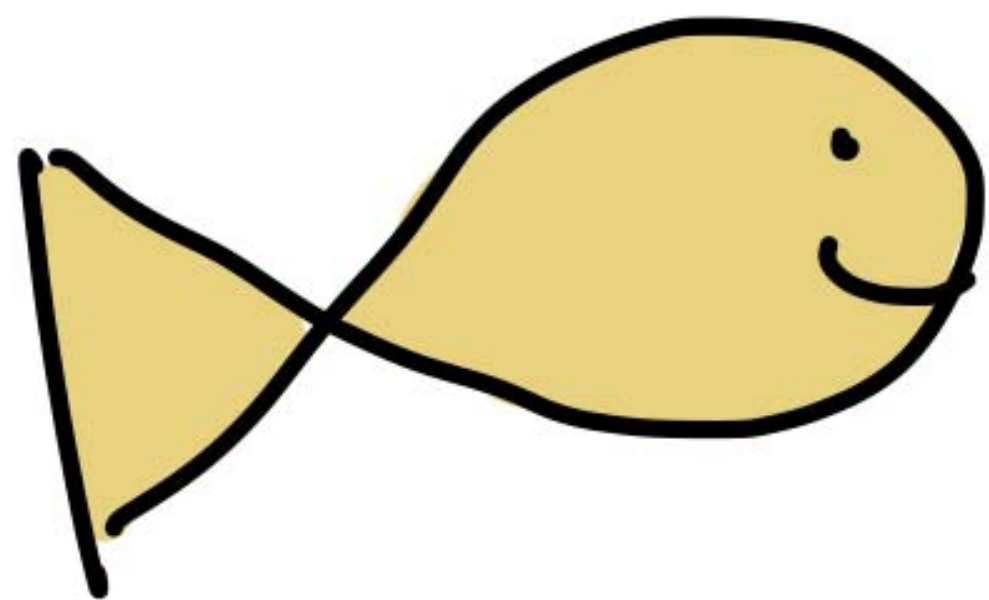
What is programming?



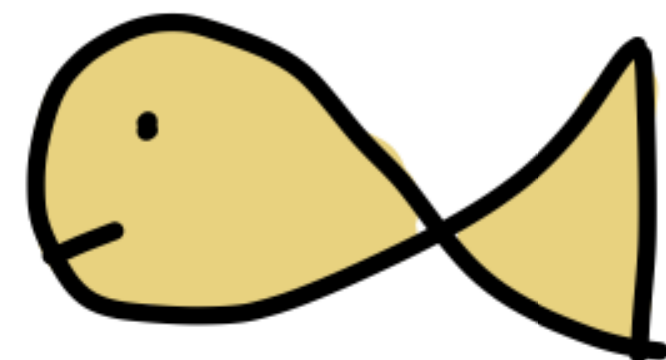
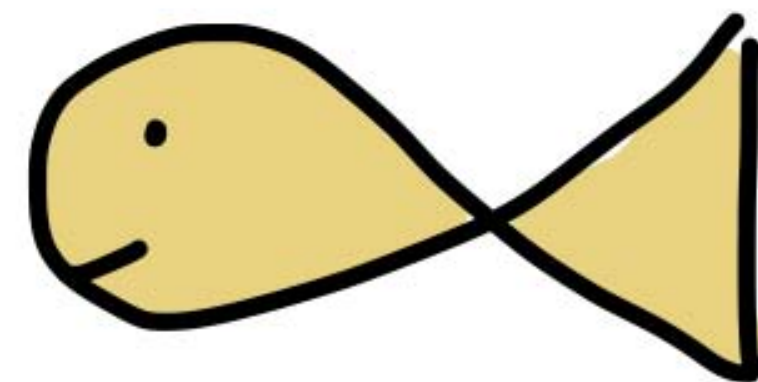
Hey folks!
How's the water?



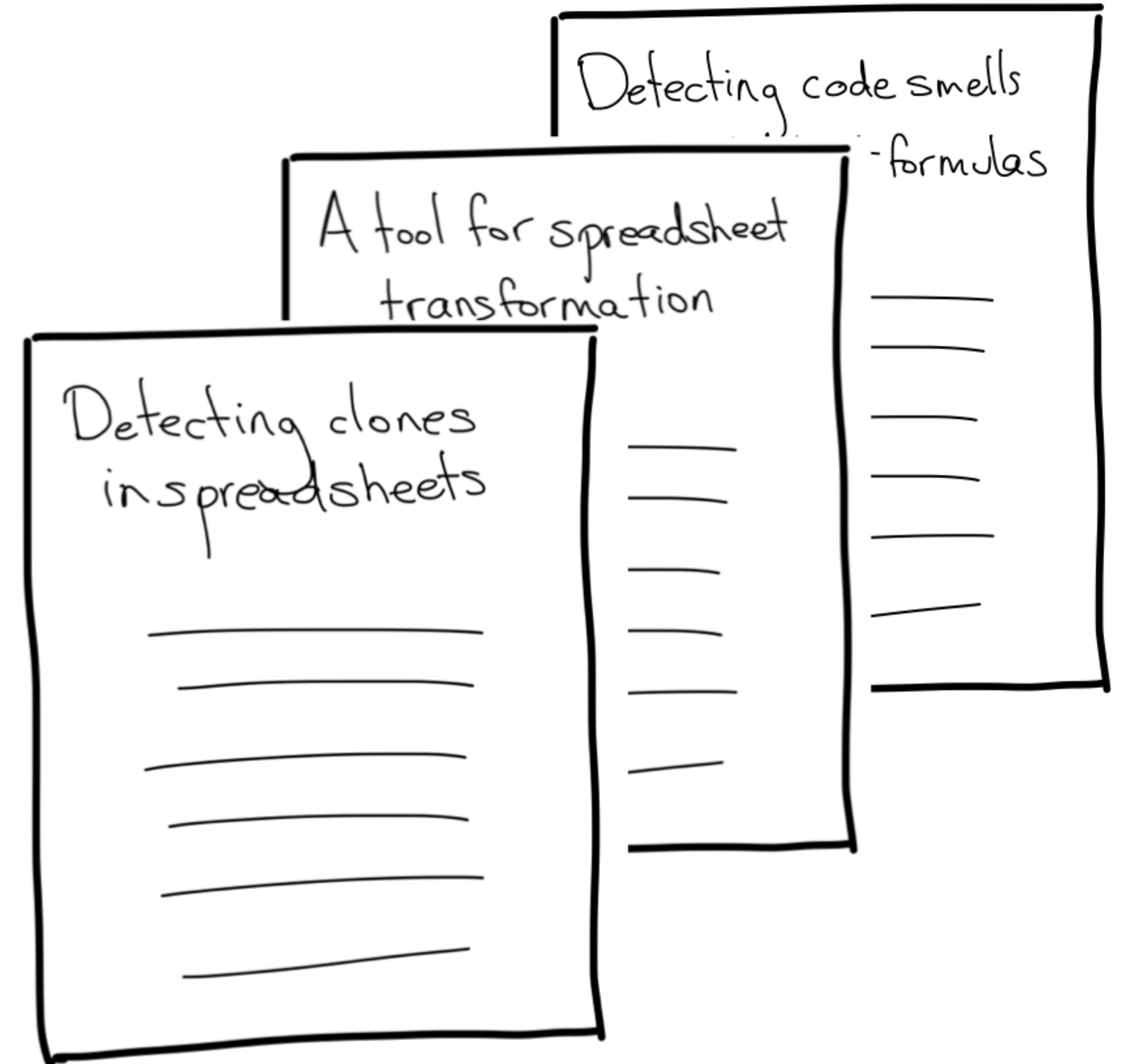
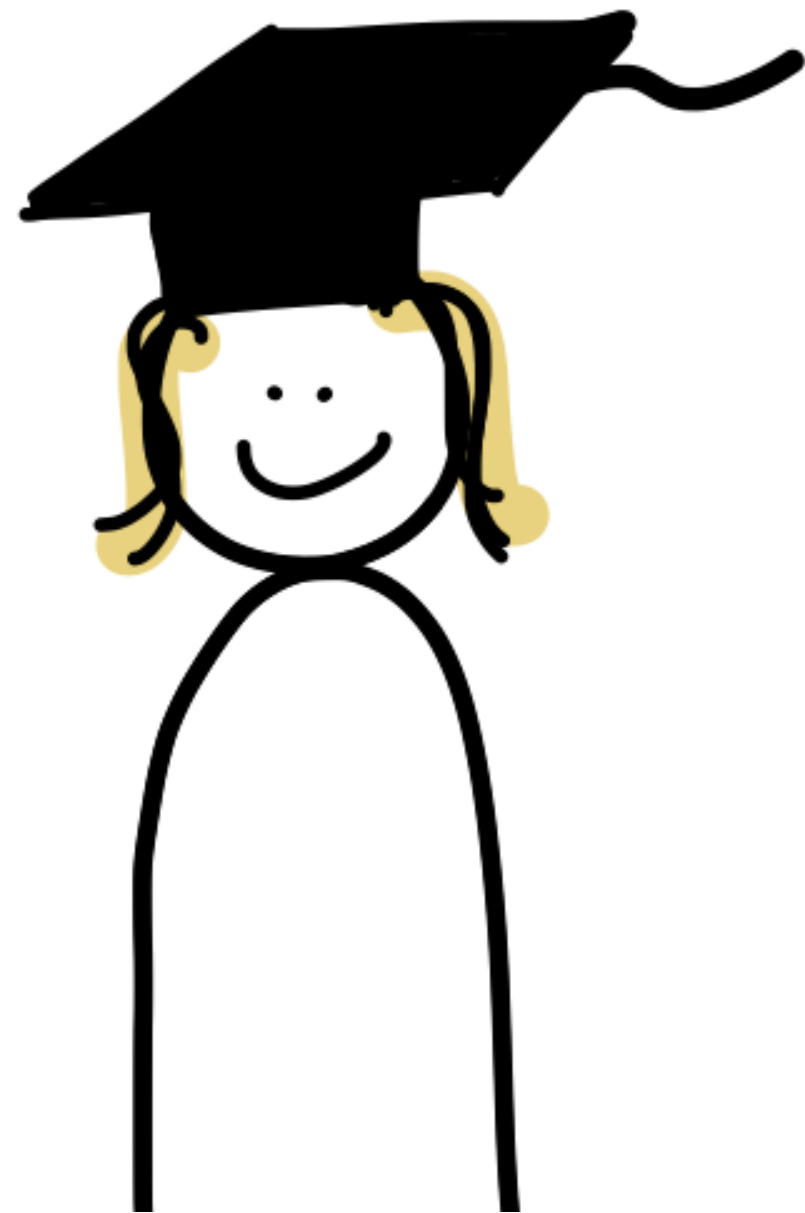
Hey folks!
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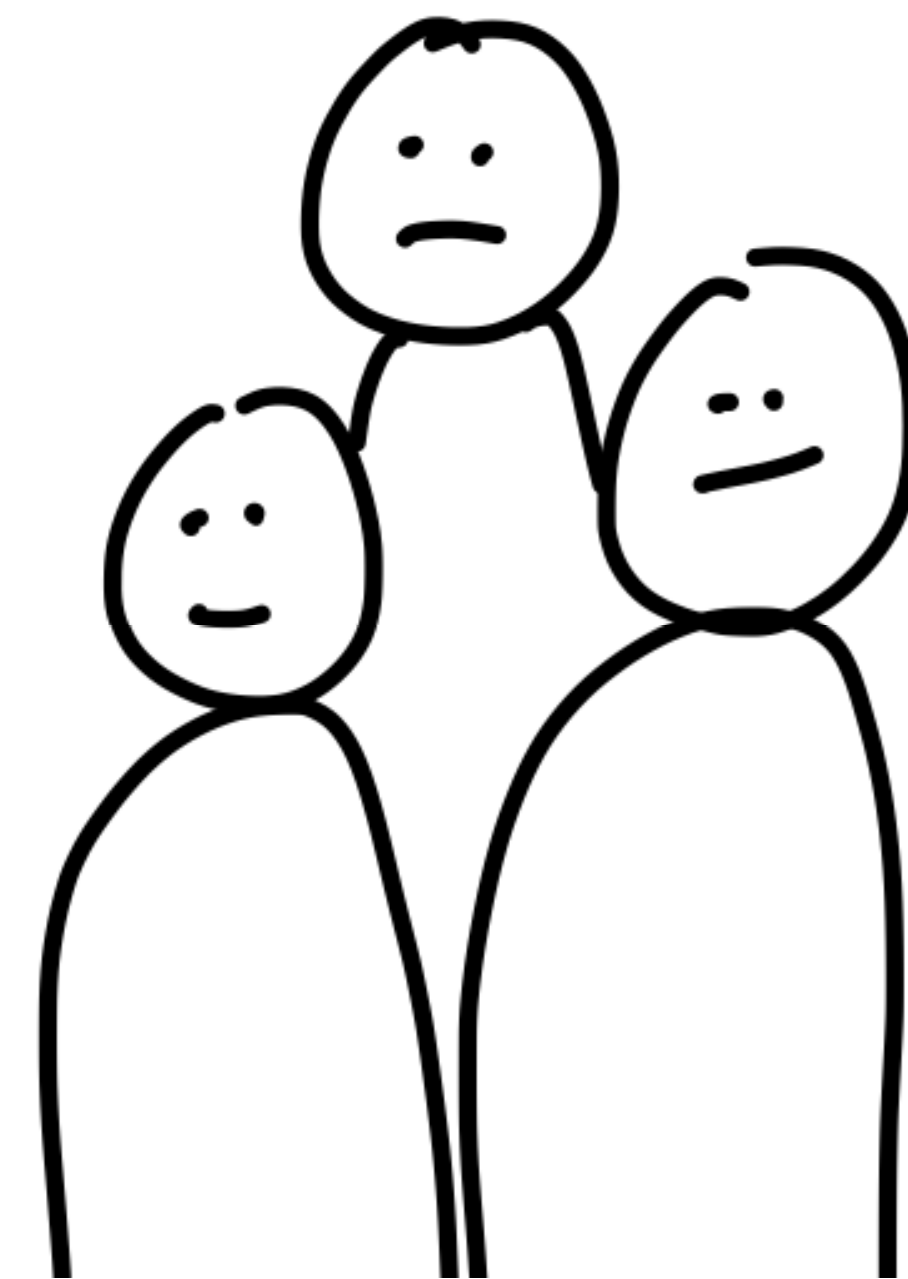
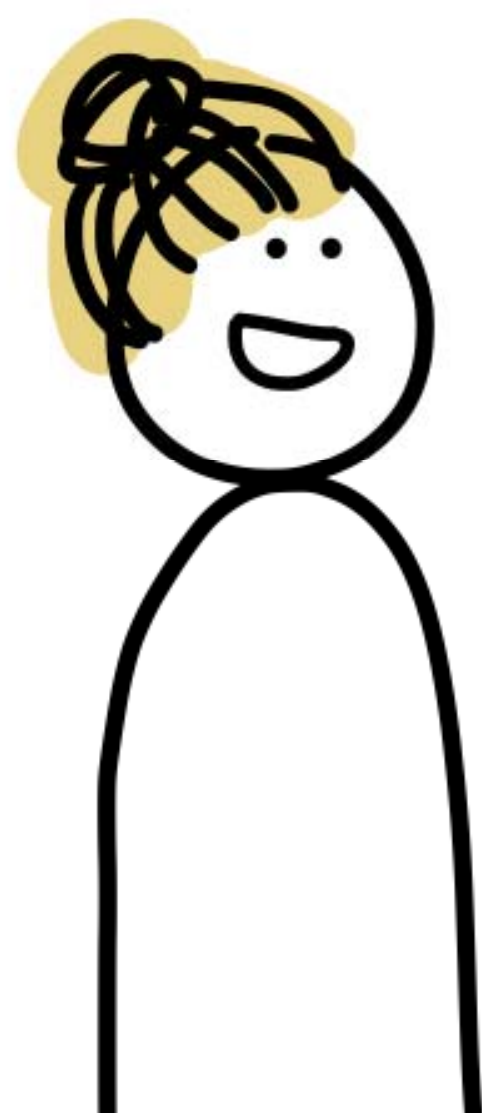
What's water?



Spreadsheets are code

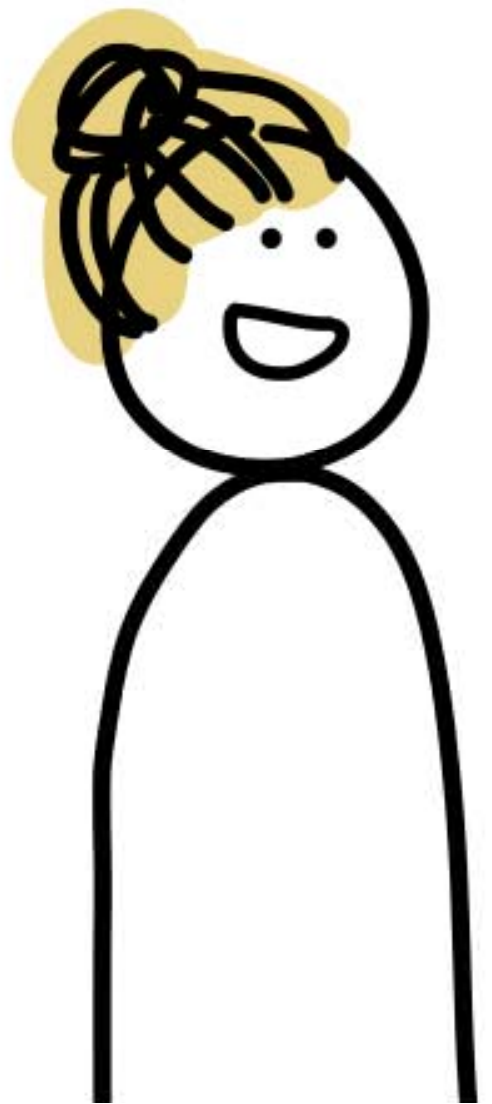


Spreadsheets are code

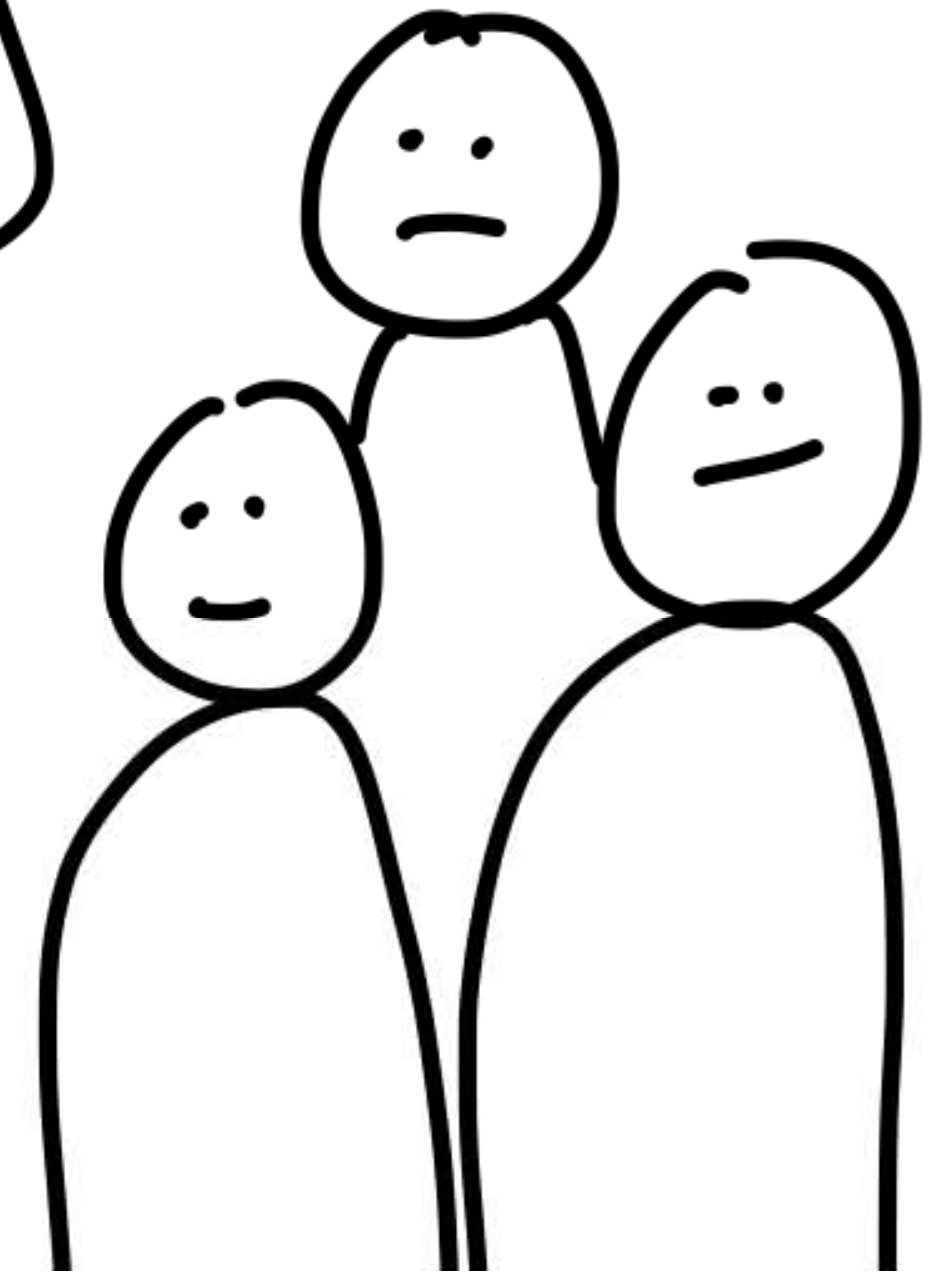


Spreadsheets are code

Not real
programming

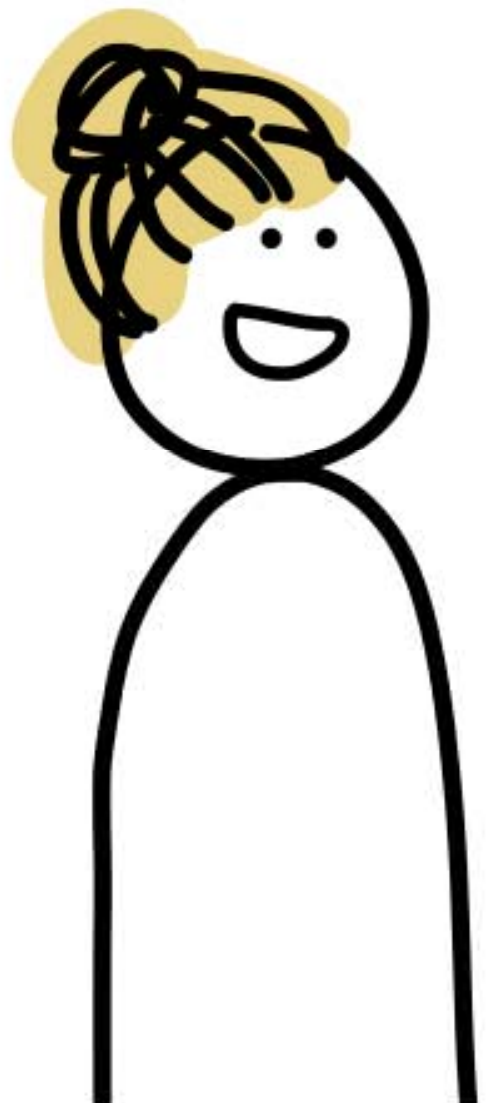


2010

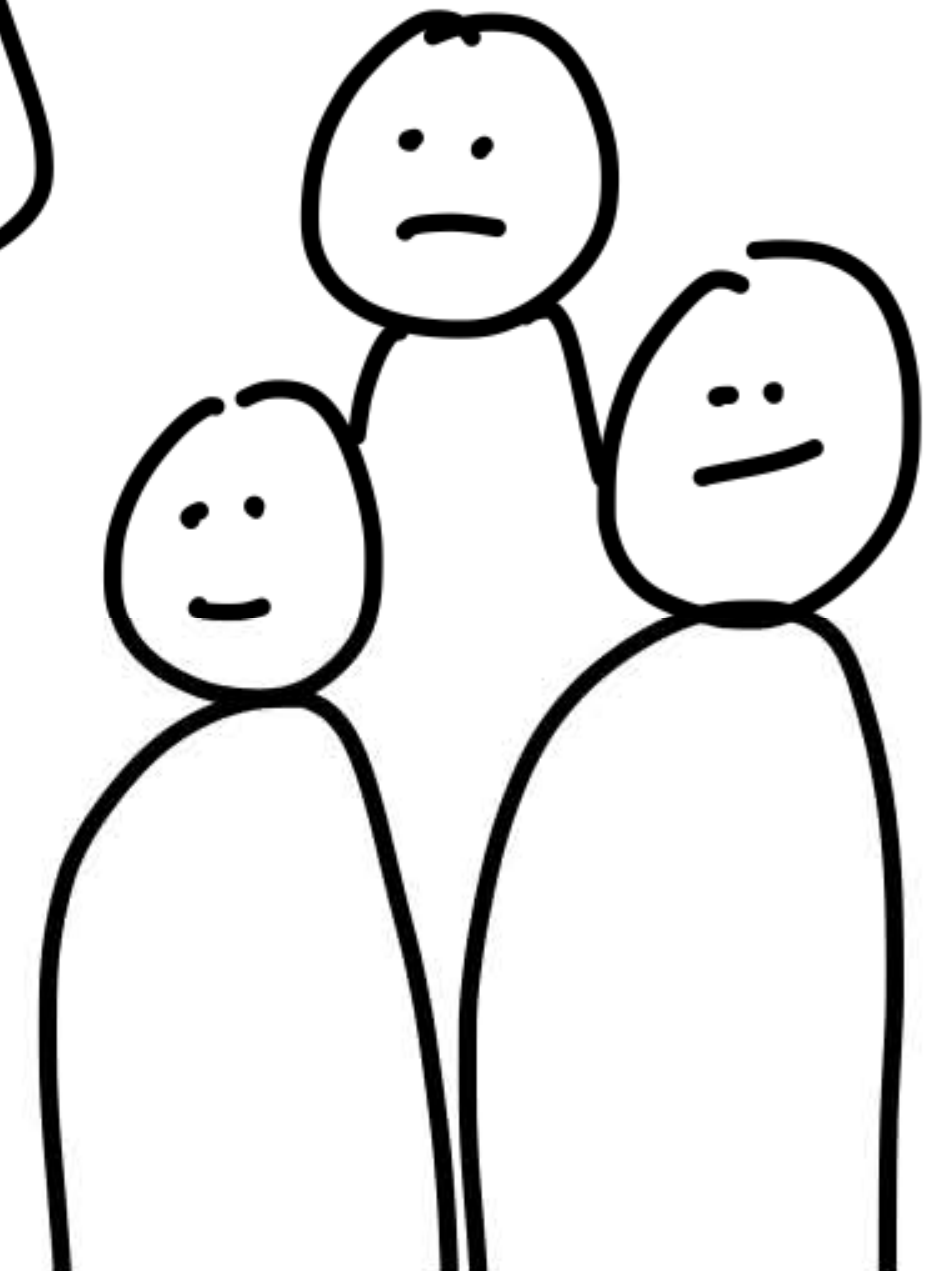


Spreadsheets are code

Not real
programming

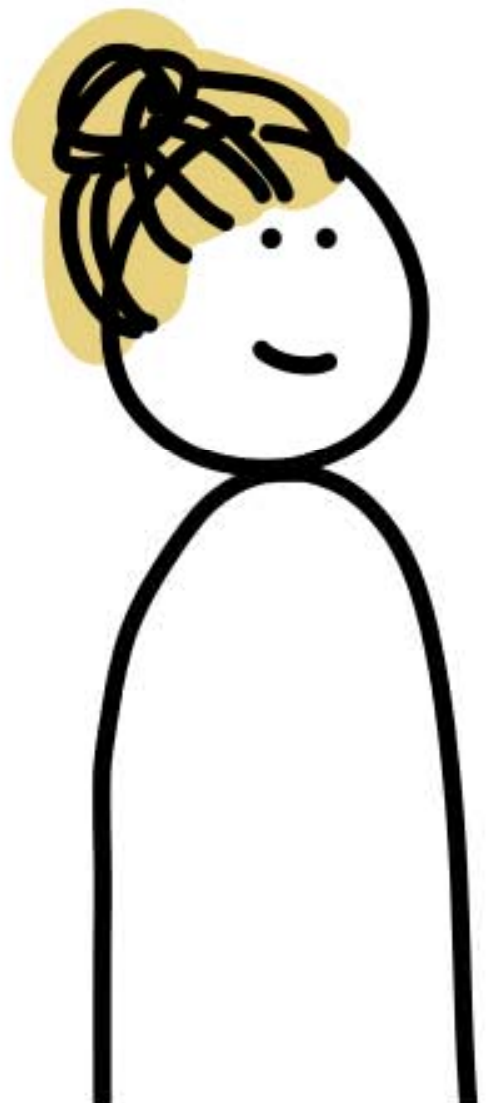


2010

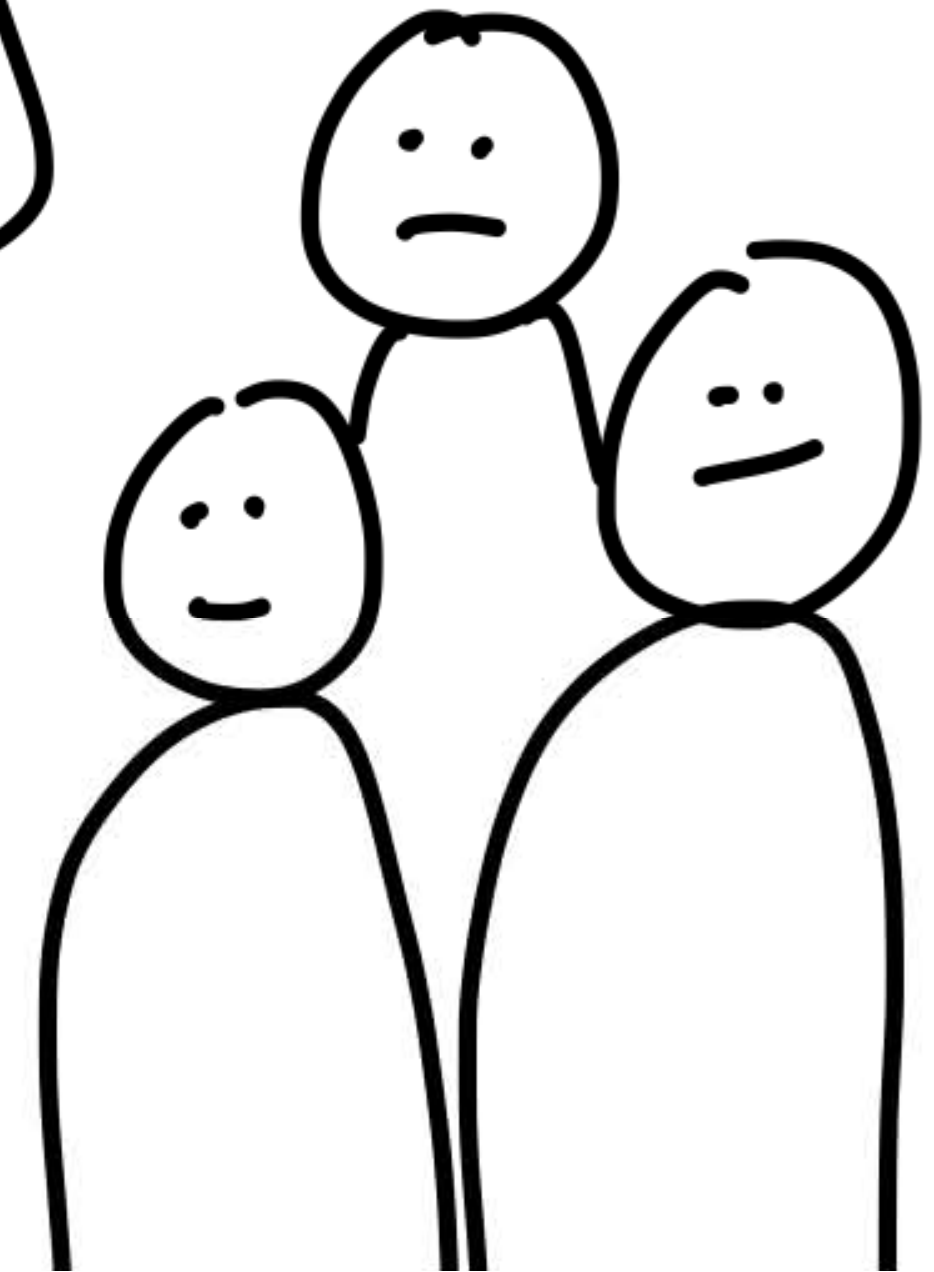


Spreadsheets are code

Not real
programming



2011

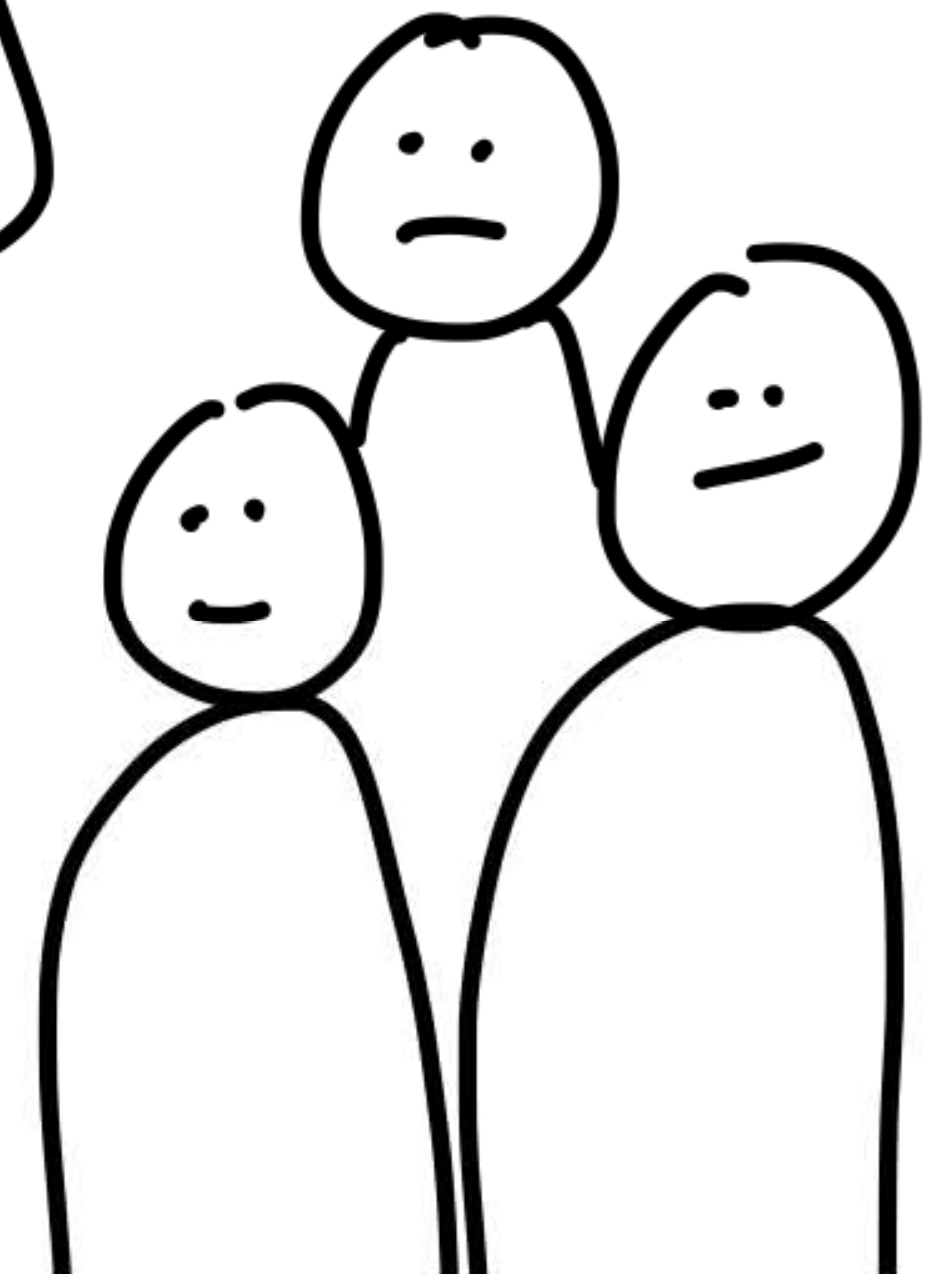


Spreadsheets are code

Not real
programming

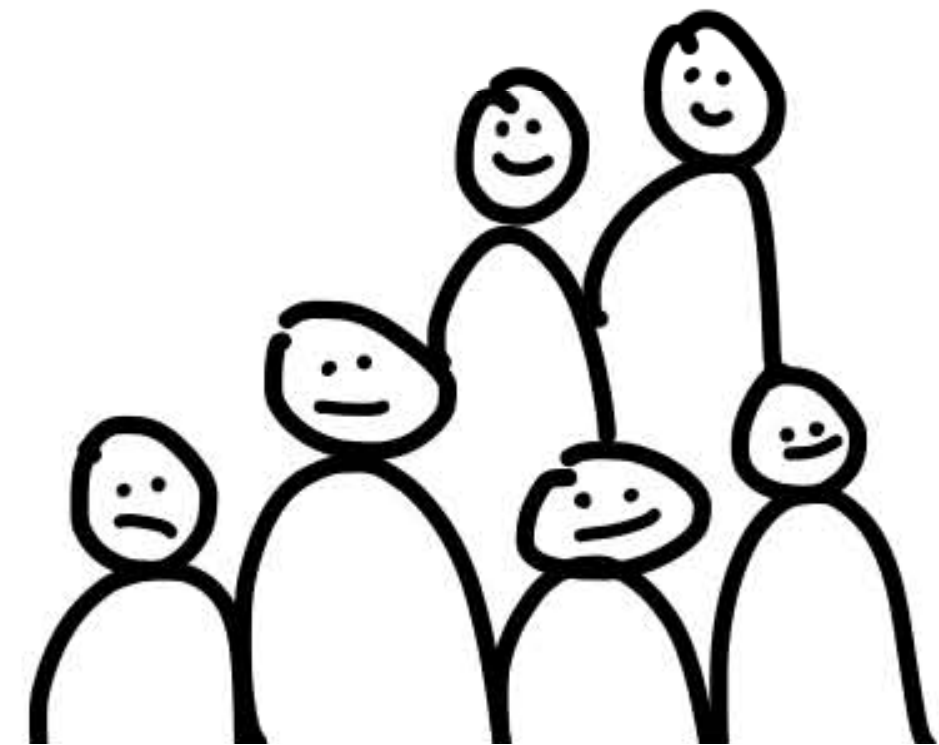
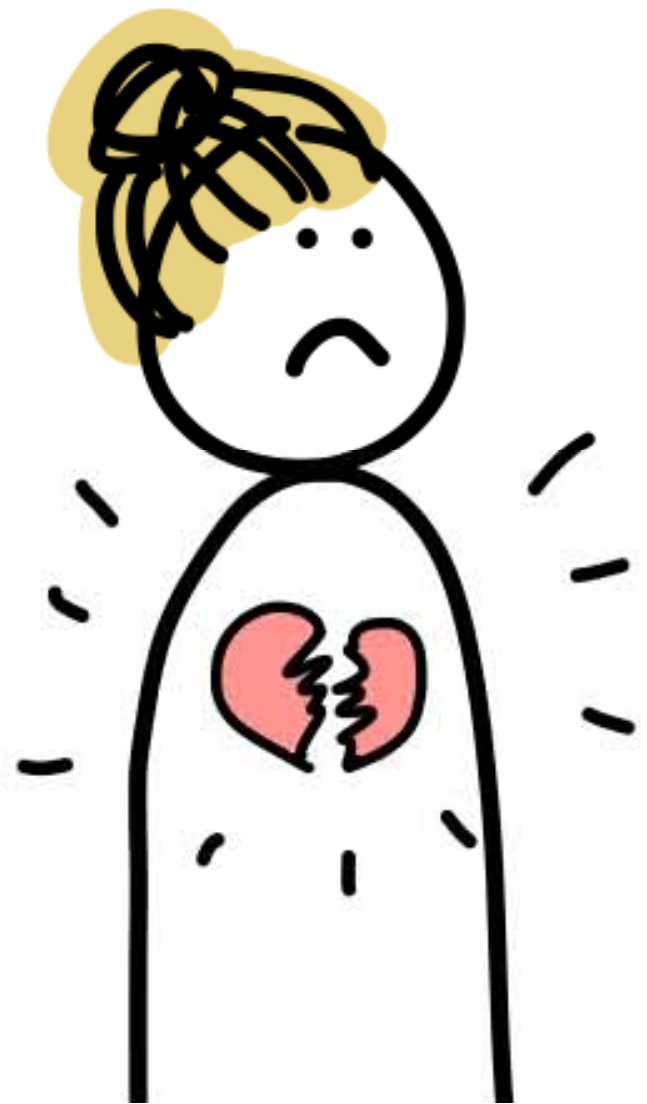


2012

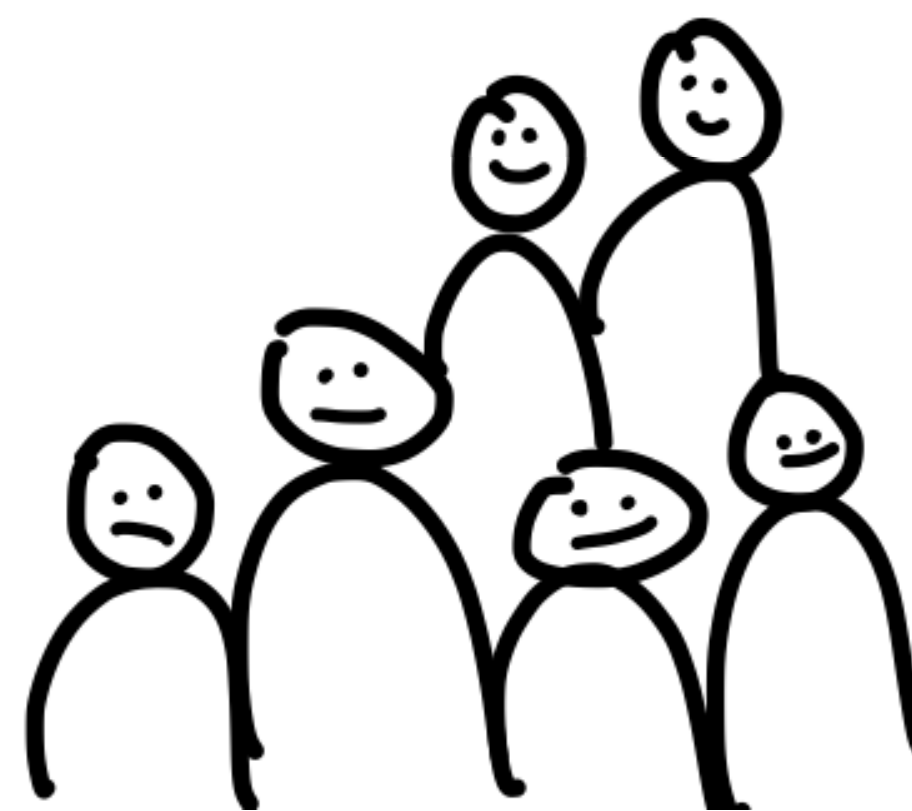




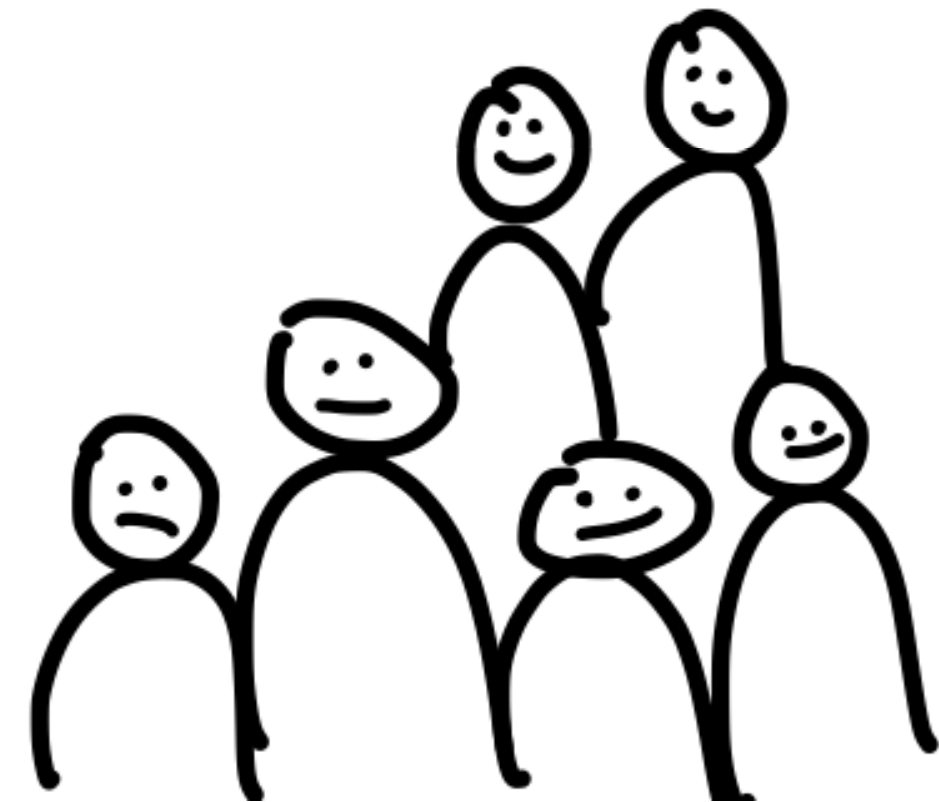
We'd love to
learn programming

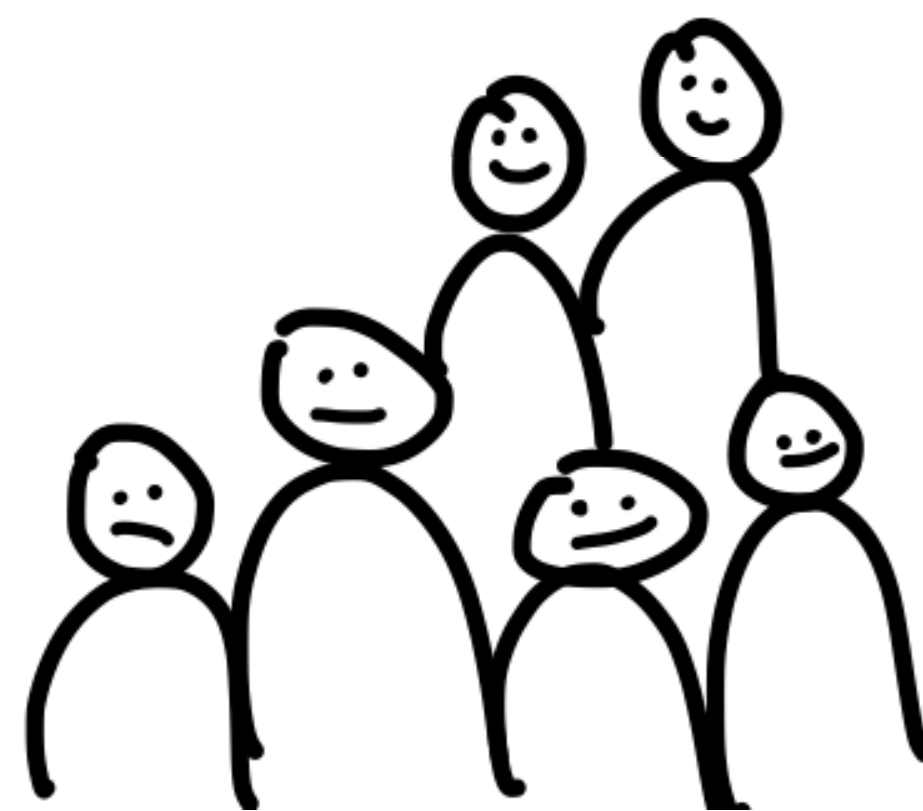
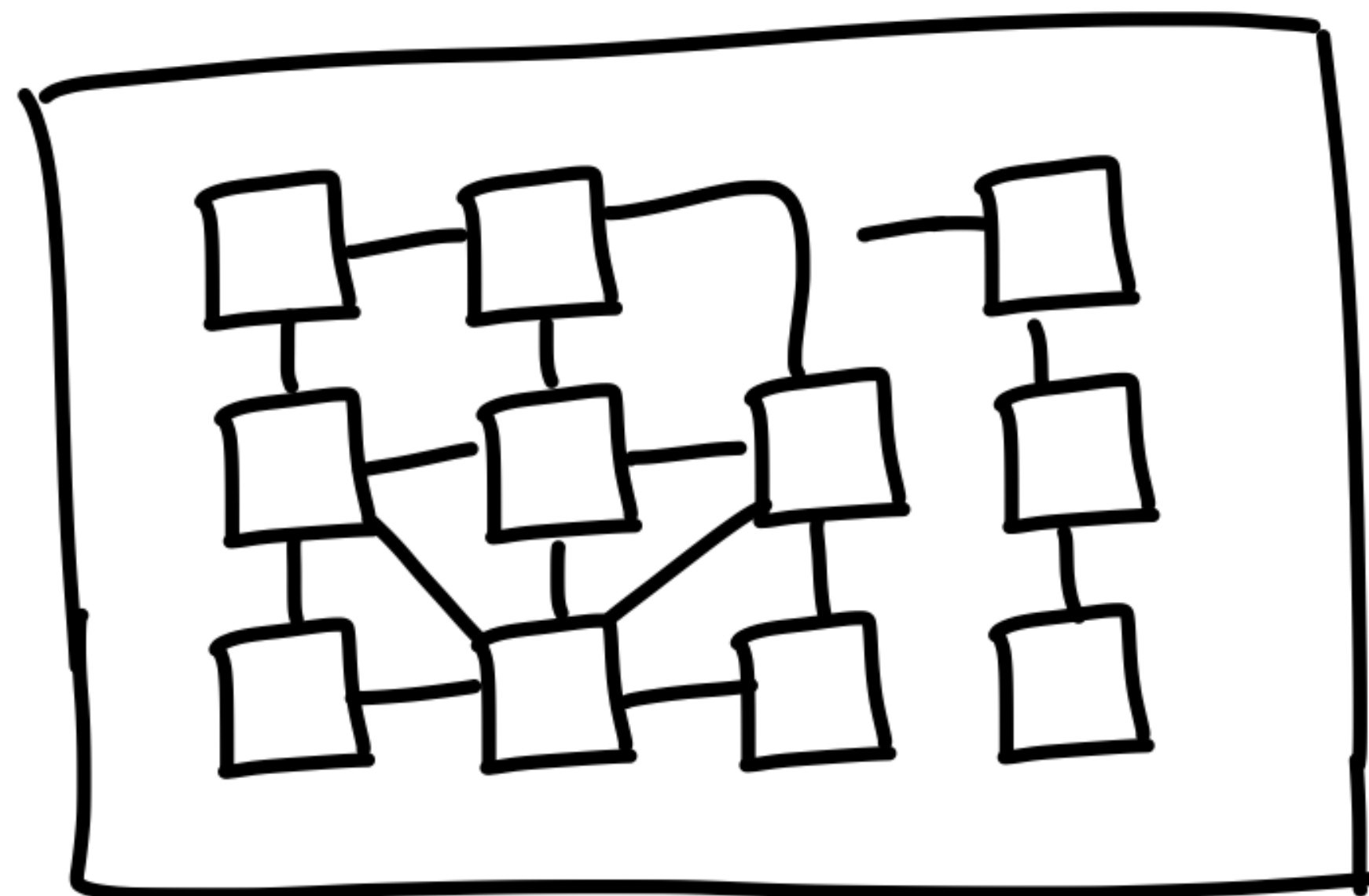
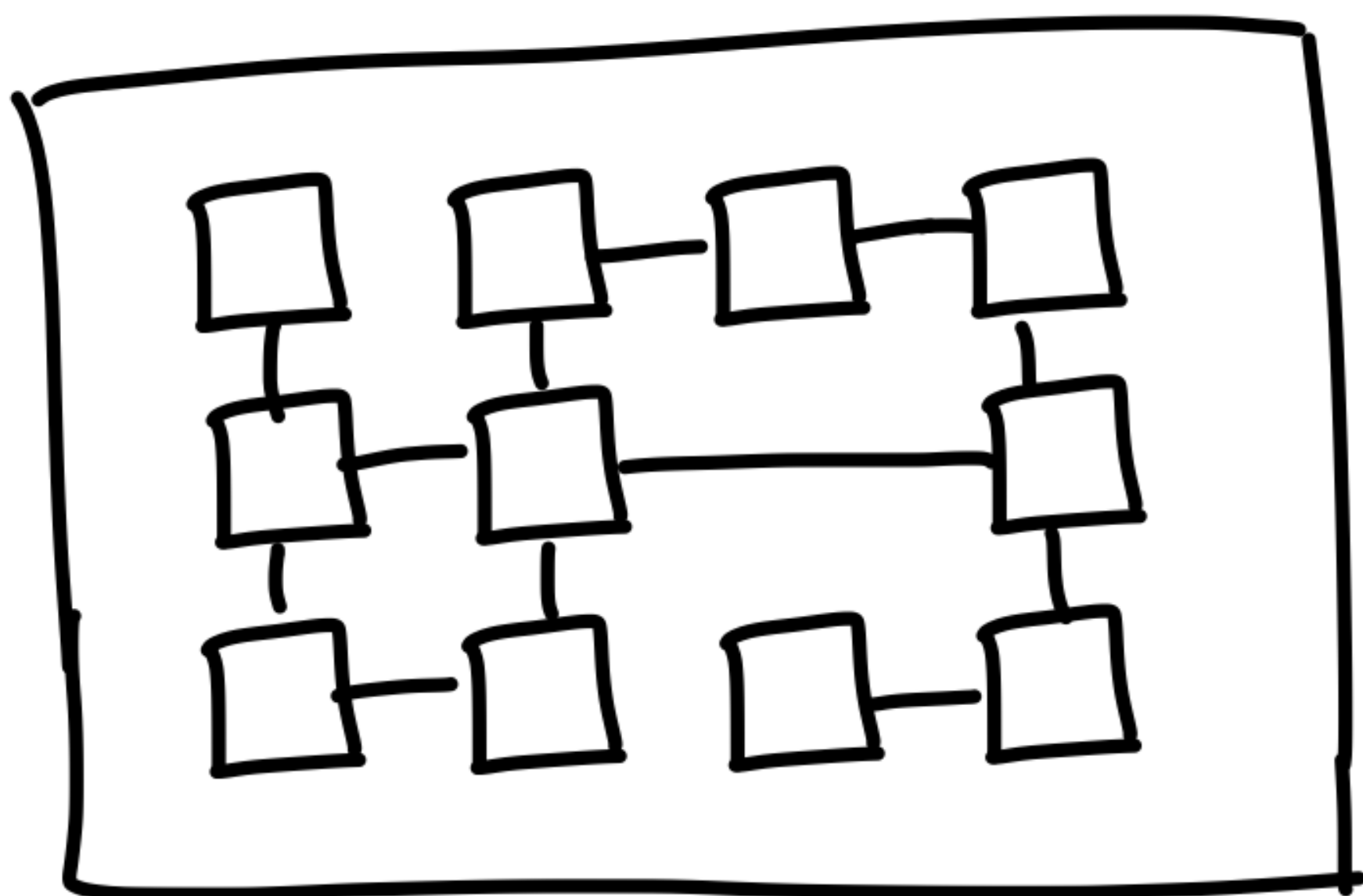


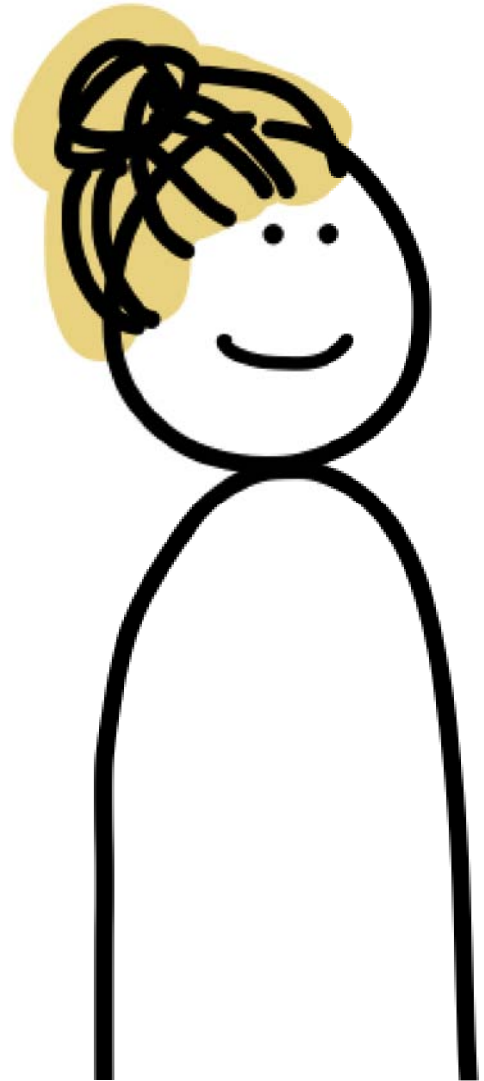
Yeah!



Let's program
a LEGO robot

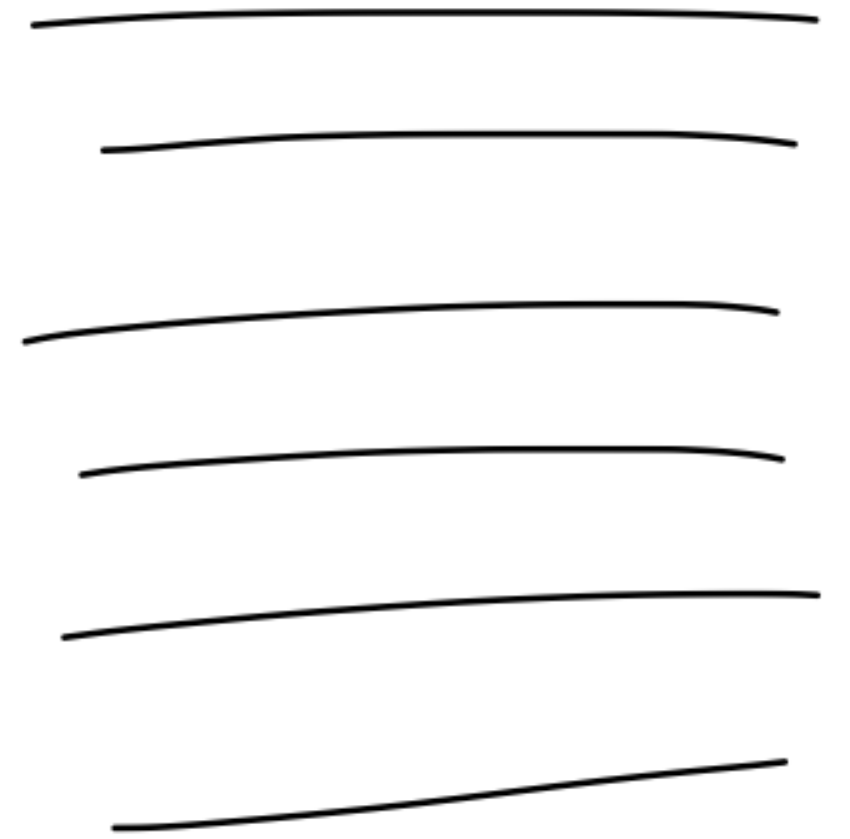


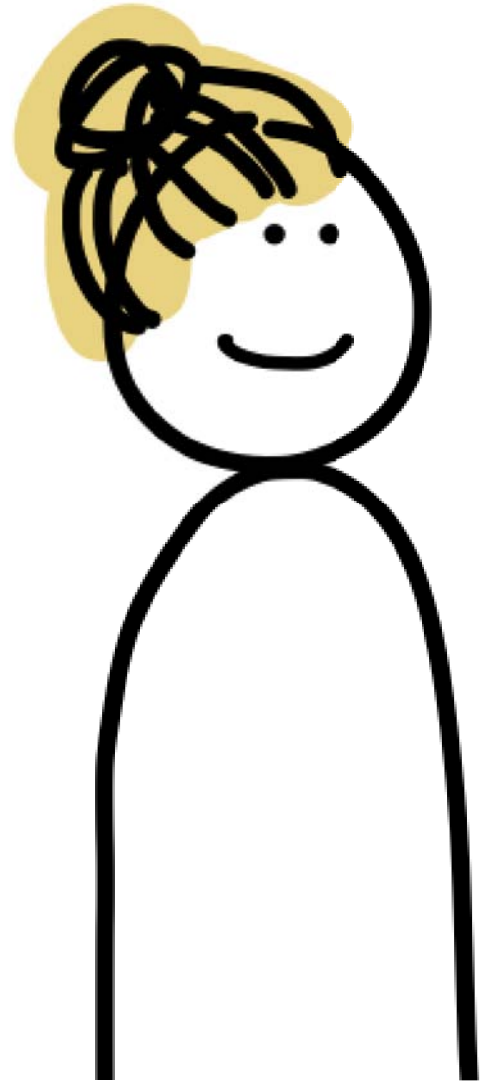




Just one
little paper

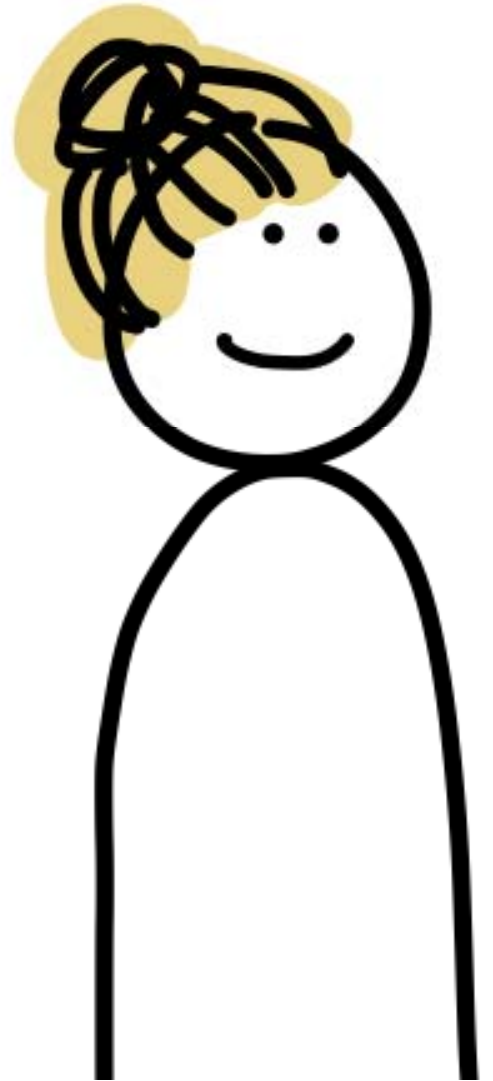
Smells in block-
based languages





Ok maybe
two papers

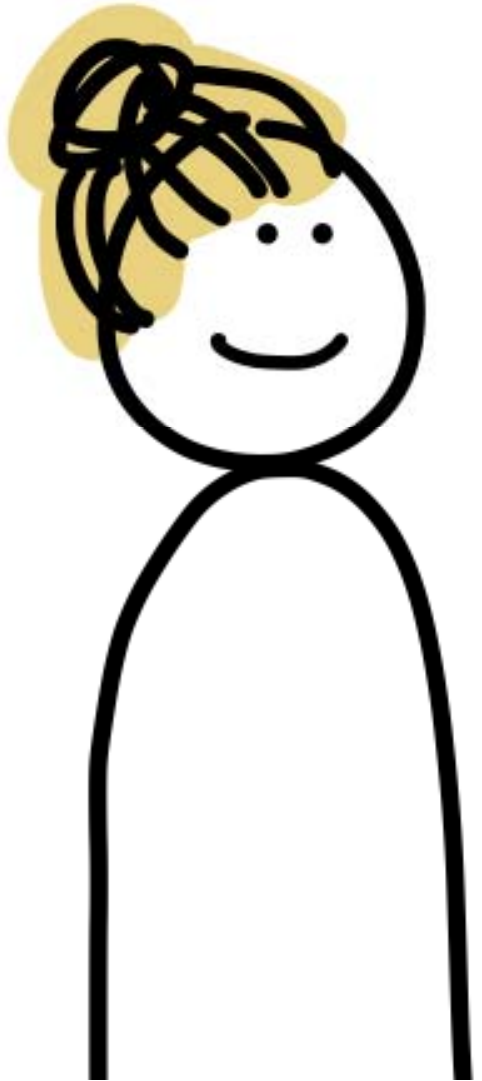
Do code smells hamper
novice programmers?



Maybe I am
on to
something...

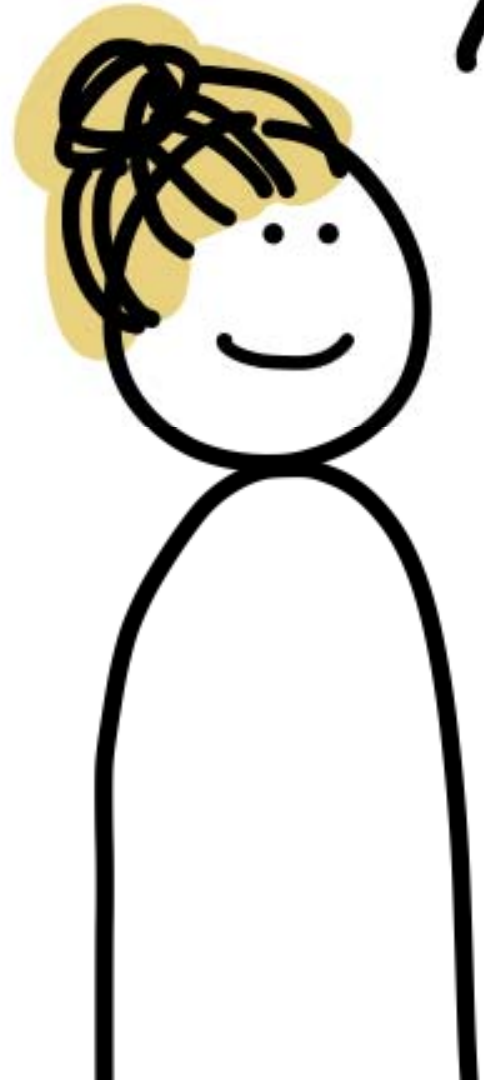
How kids code and
how we know

Maybe this is
my new topic?



Teaching SE principles
to K-12 students

Time to look back



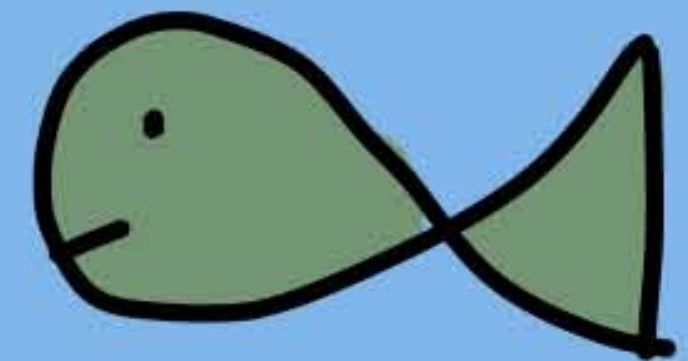
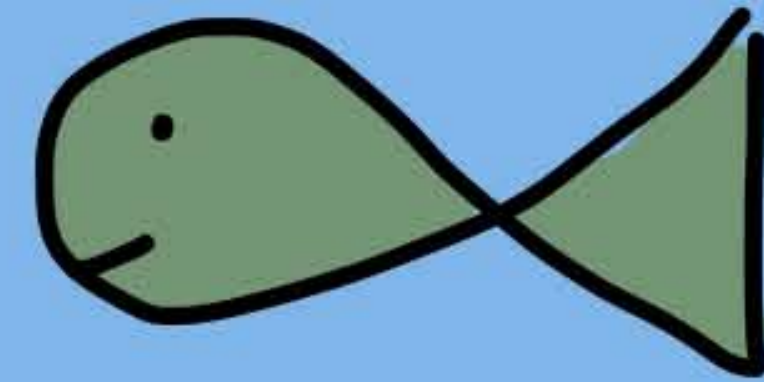
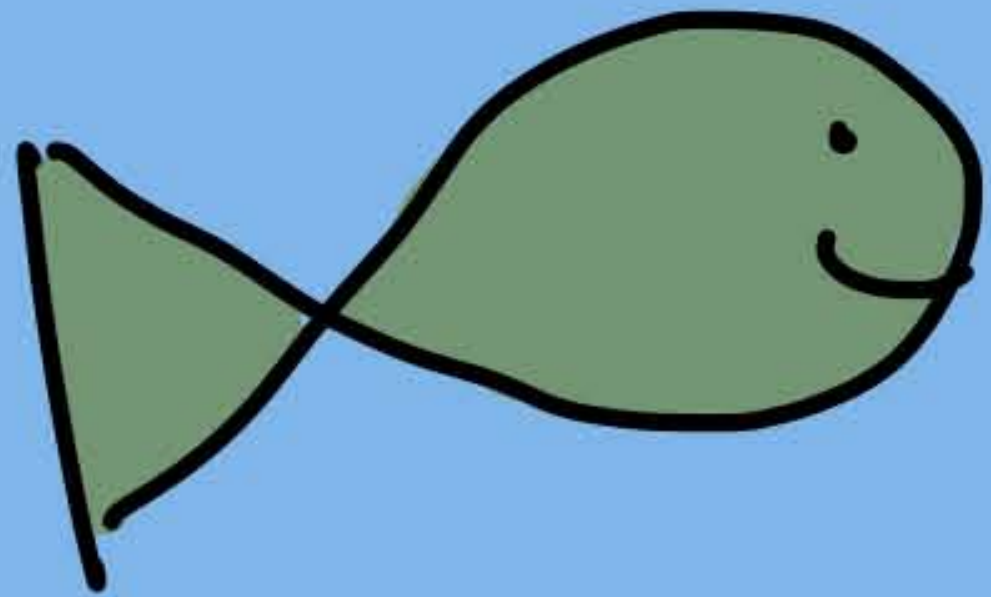
Smells in block-
based languages

Do code smells hamper
novice programmers?

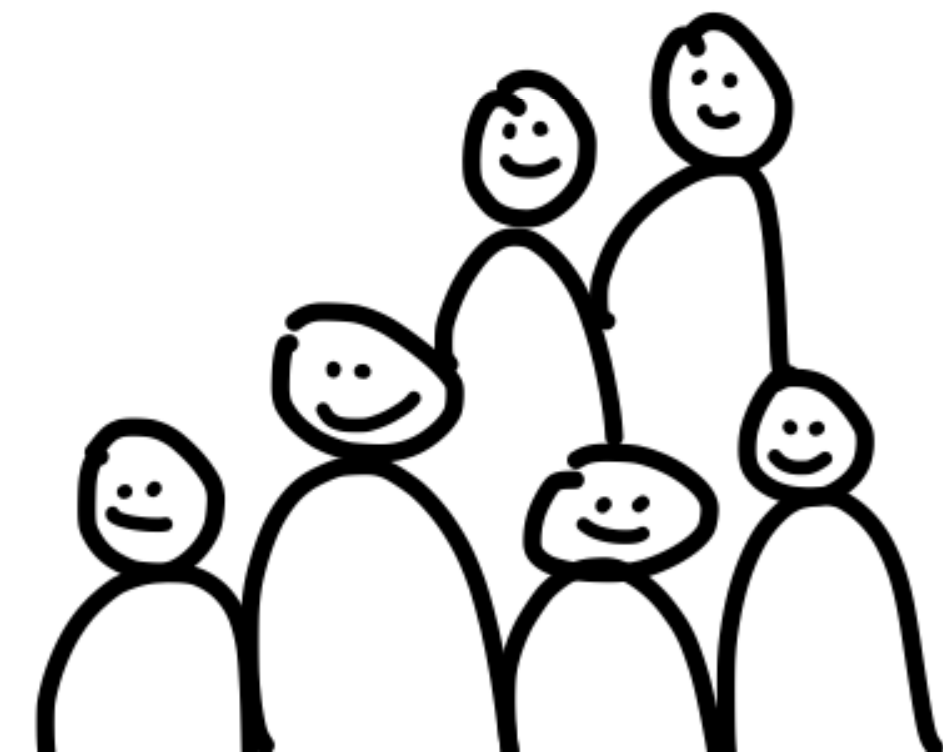
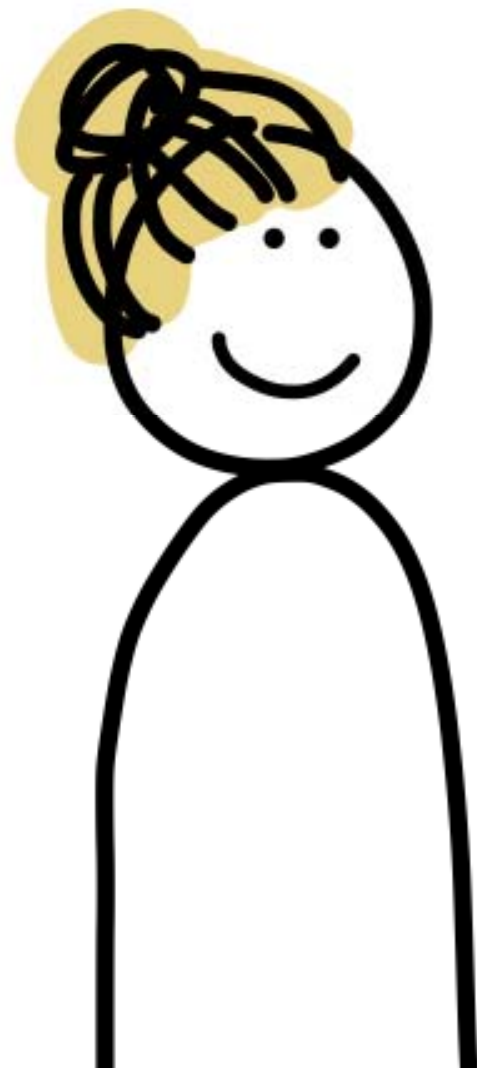
How kids code and
how we know

Teaching SE principles
to K-12 students

The water of programming



What I taught kids

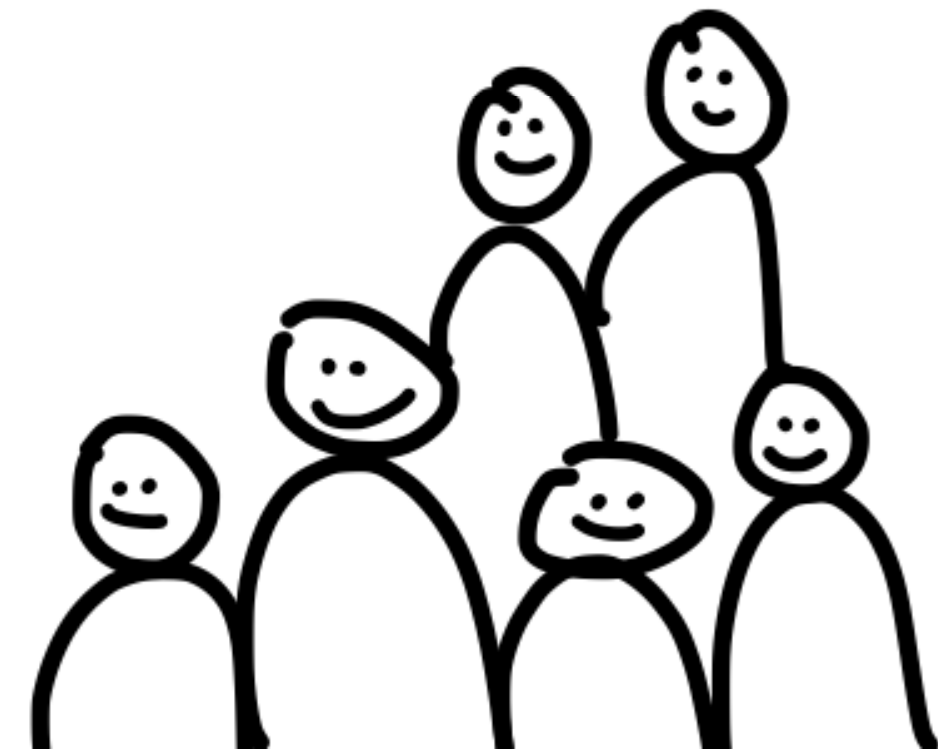
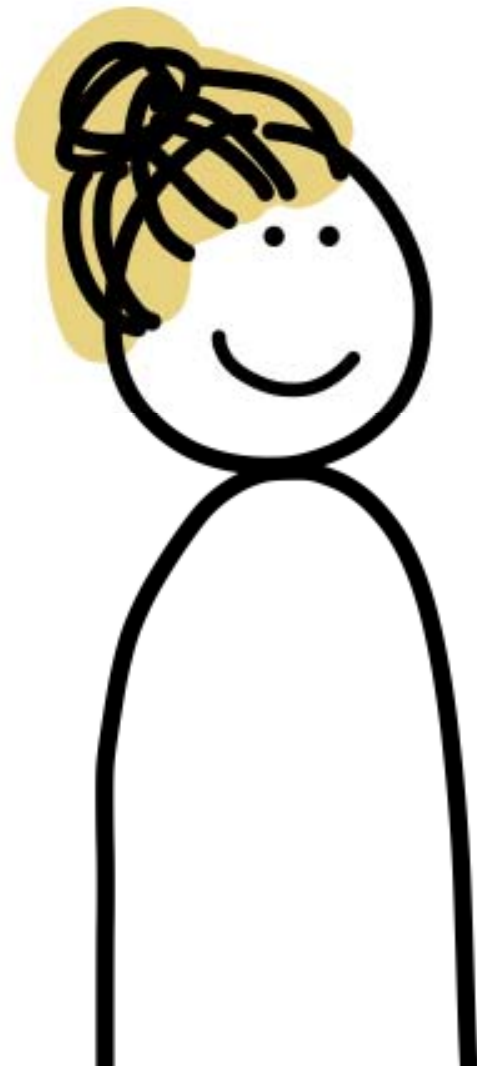


What I taught kids

programming is...

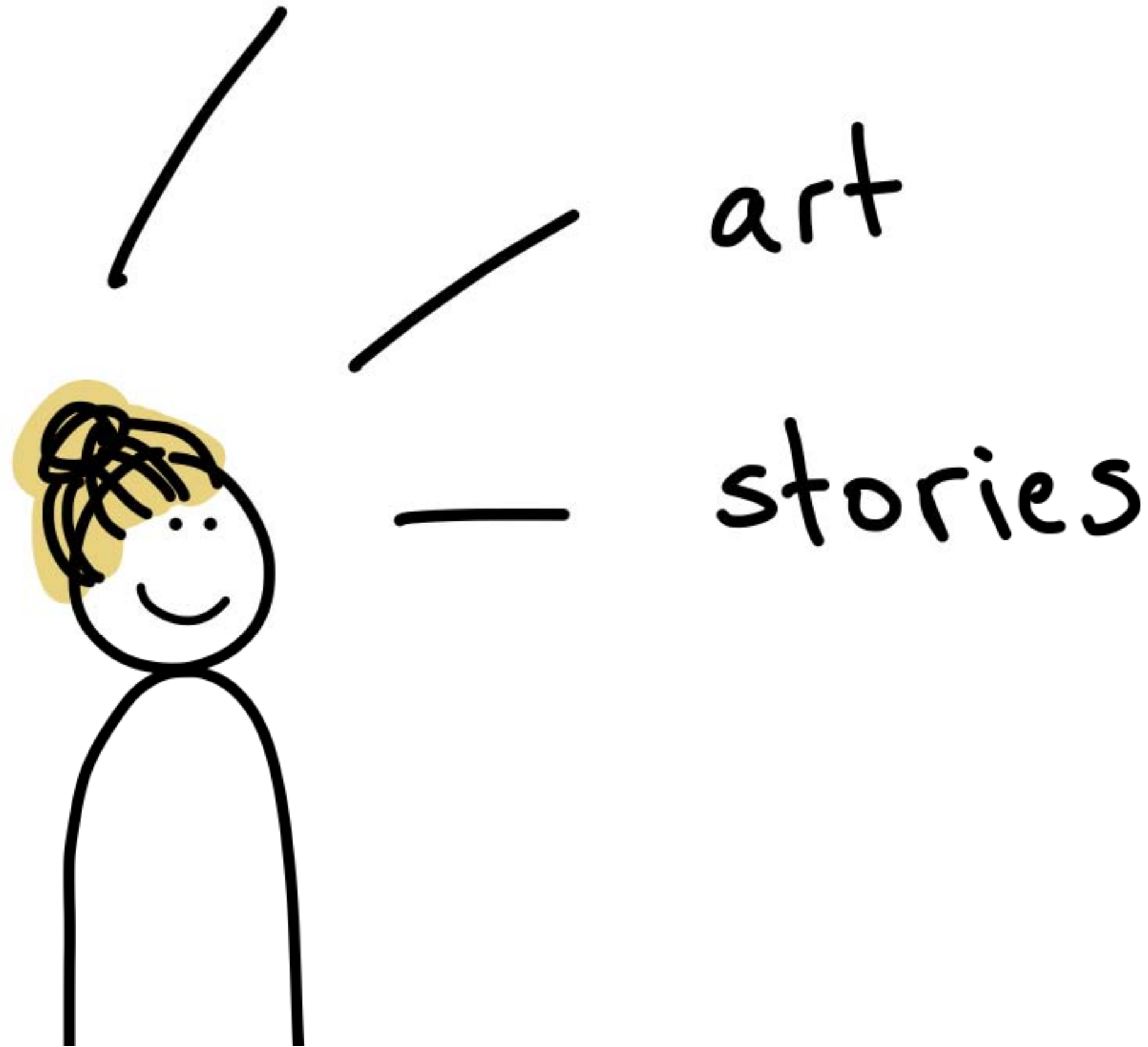
technology

— games



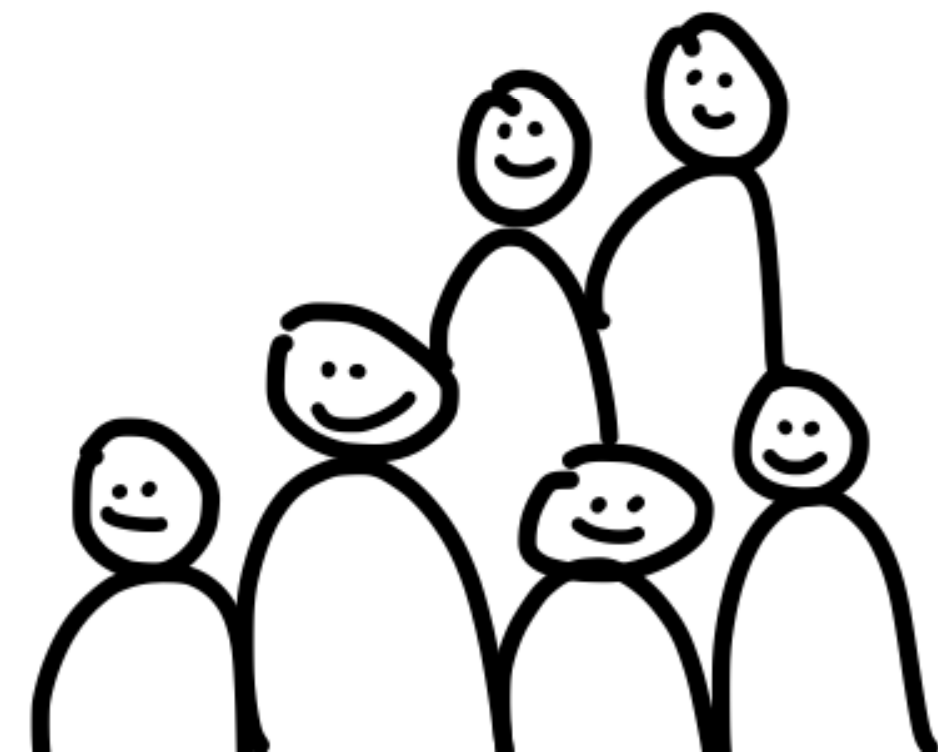
What I taught kids

programming is not...

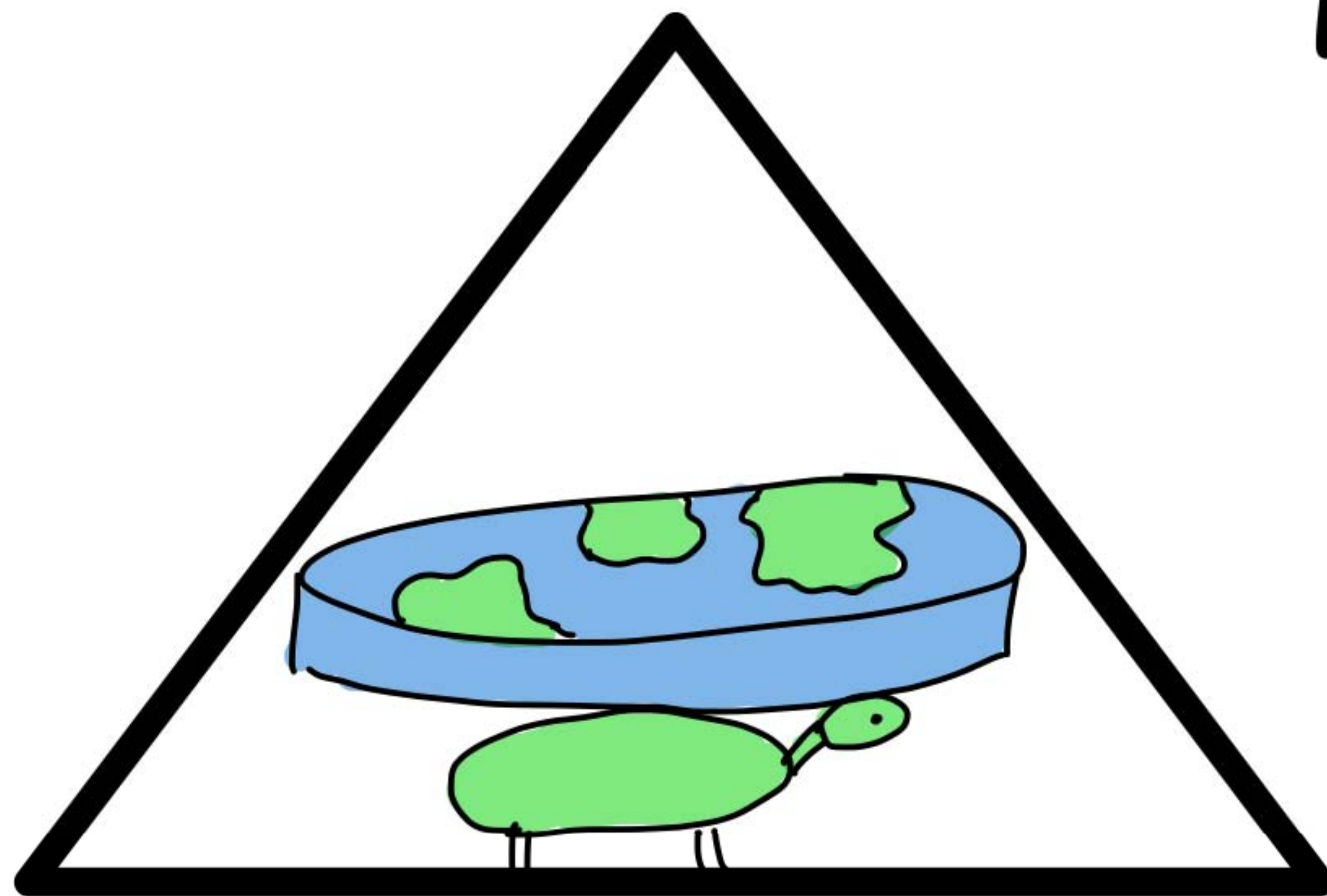


art

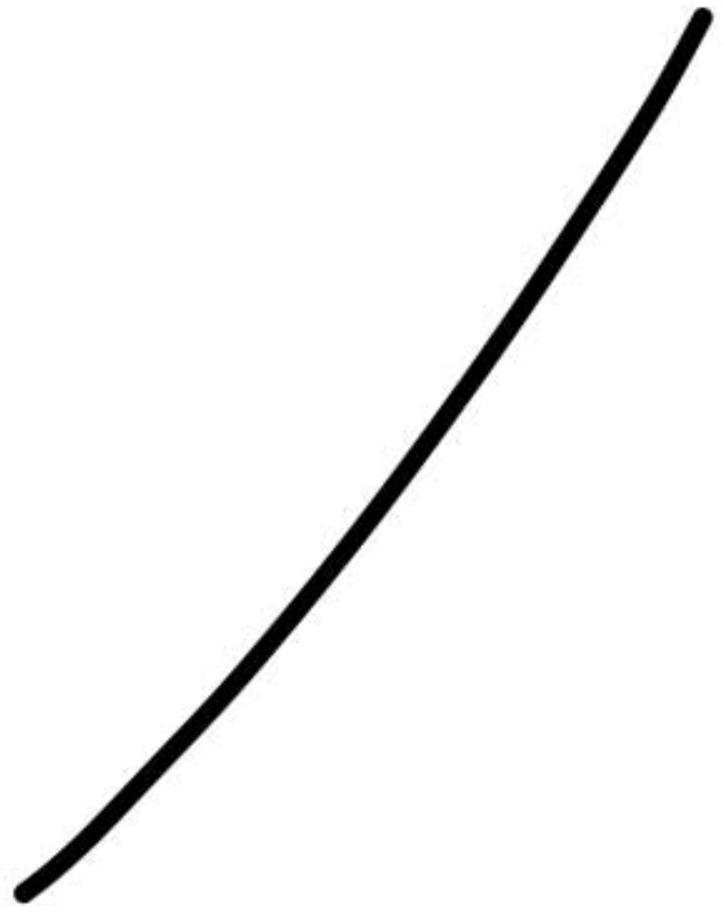
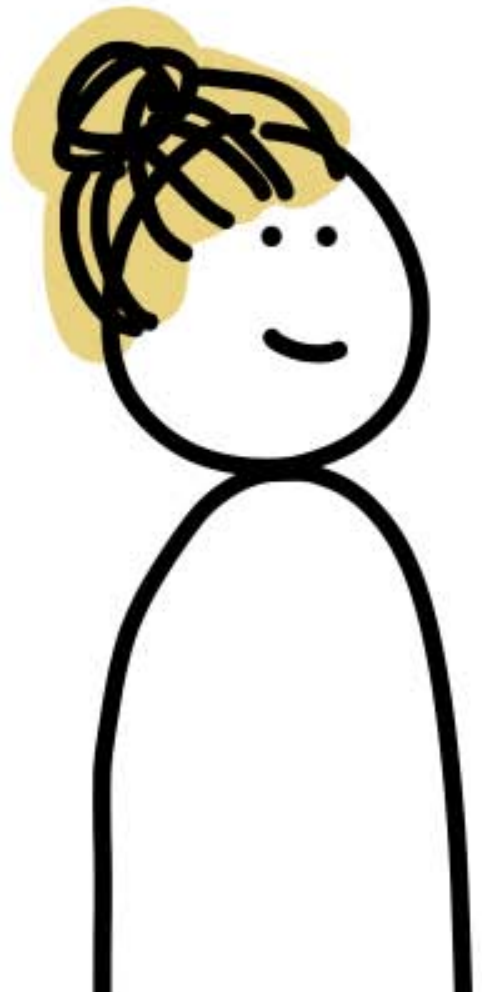
— stories



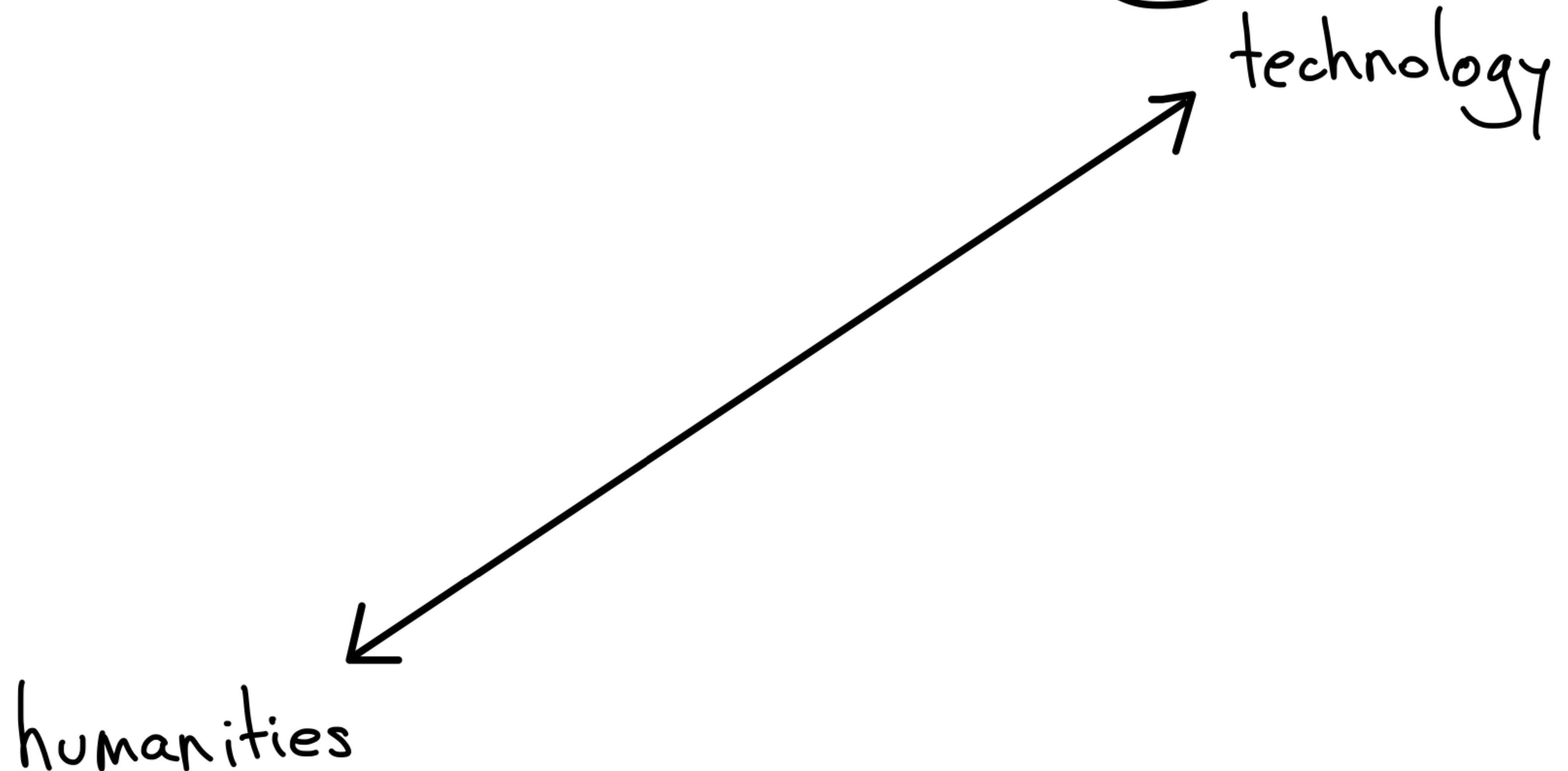
Beware Controversy ahead



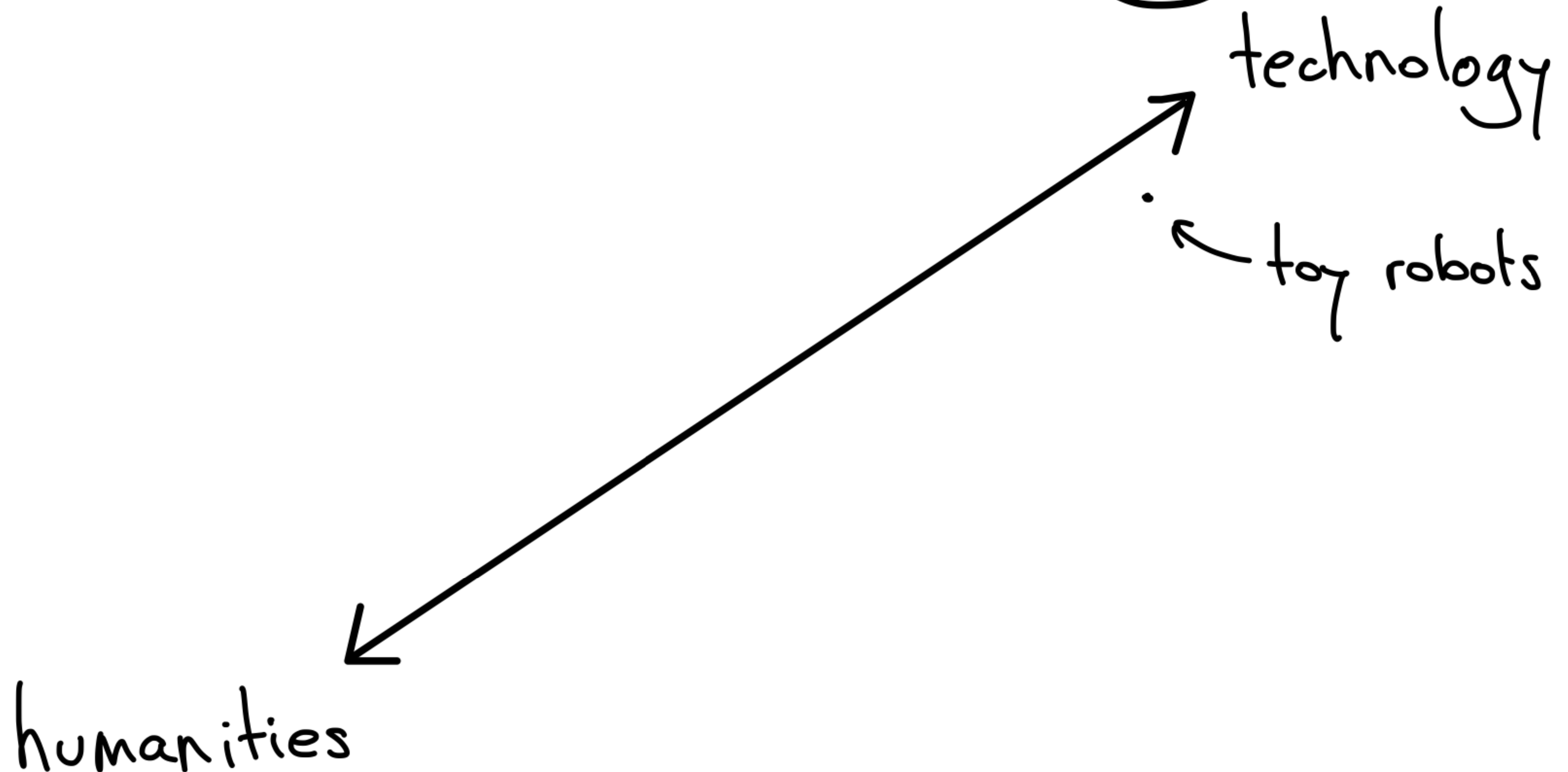
What is programming?



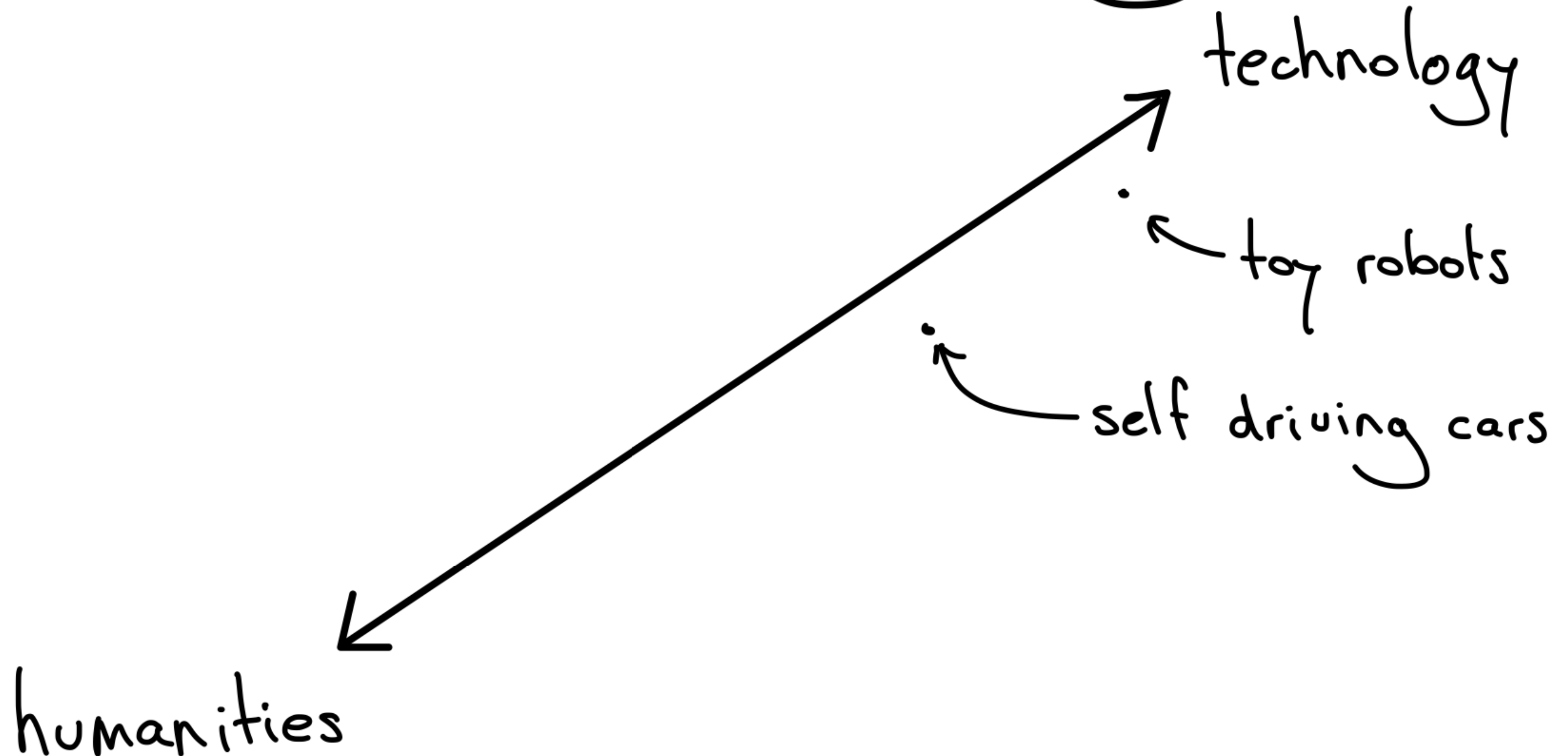
What is programming about?



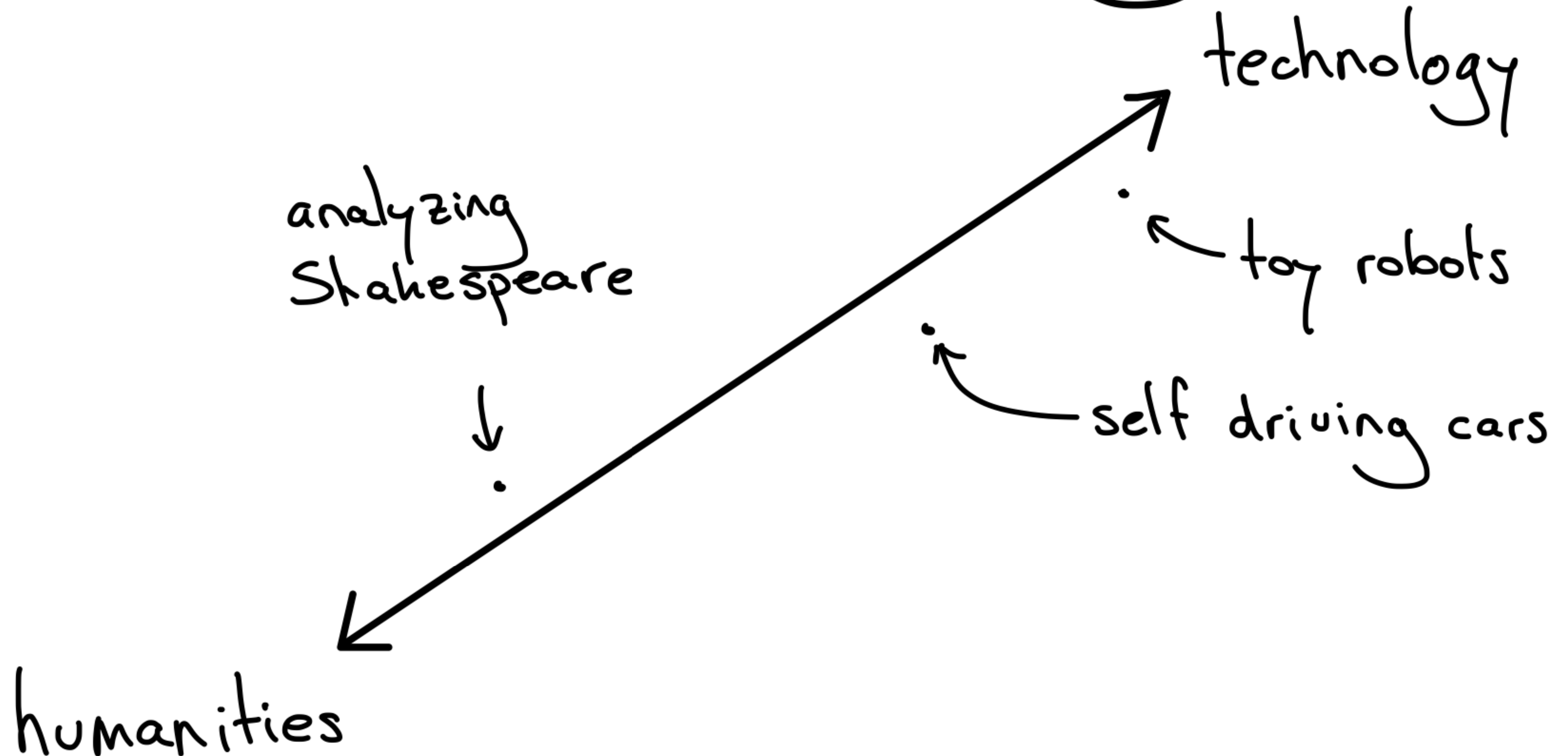
What is programming about?



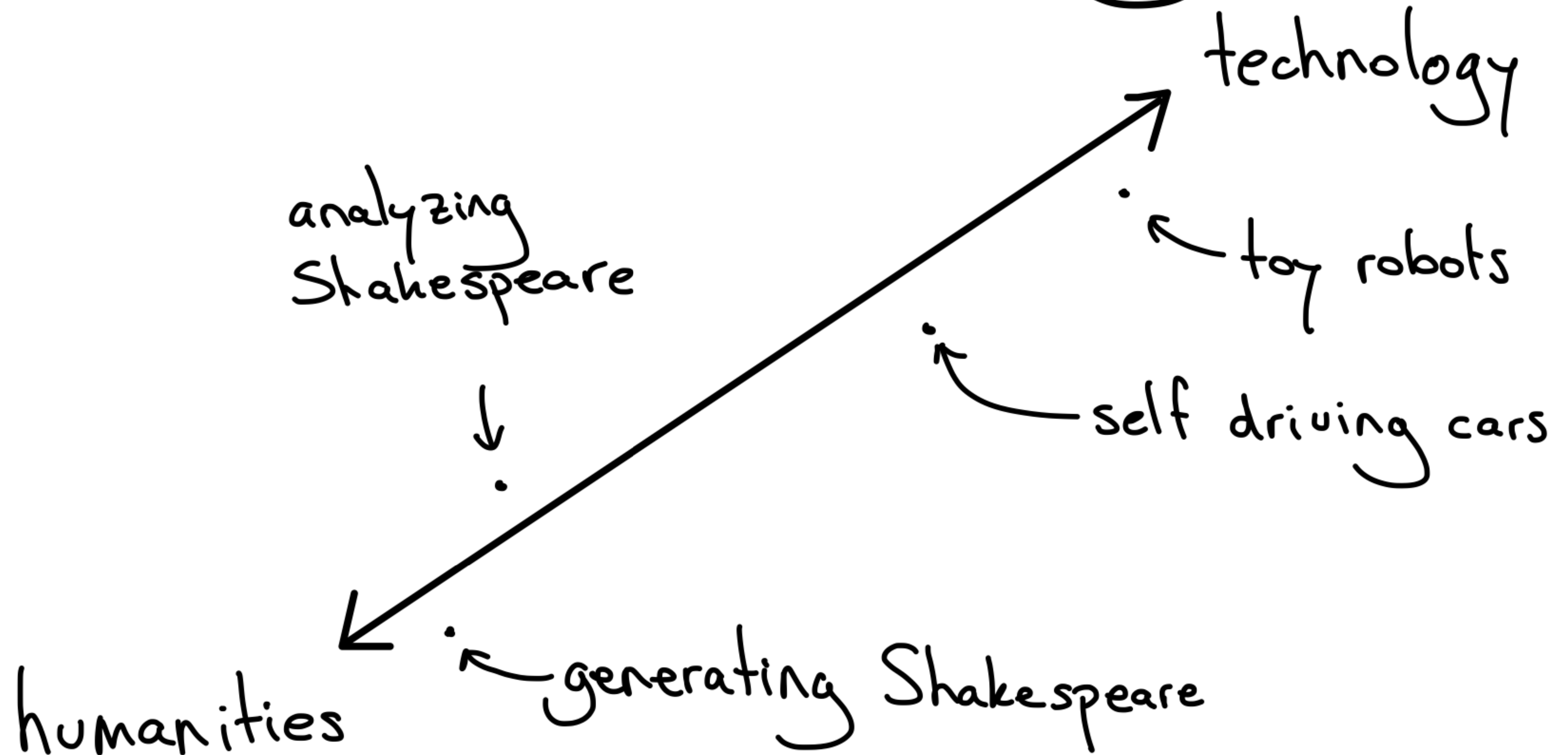
What is programming about?



What is programming about?



What is programming about?



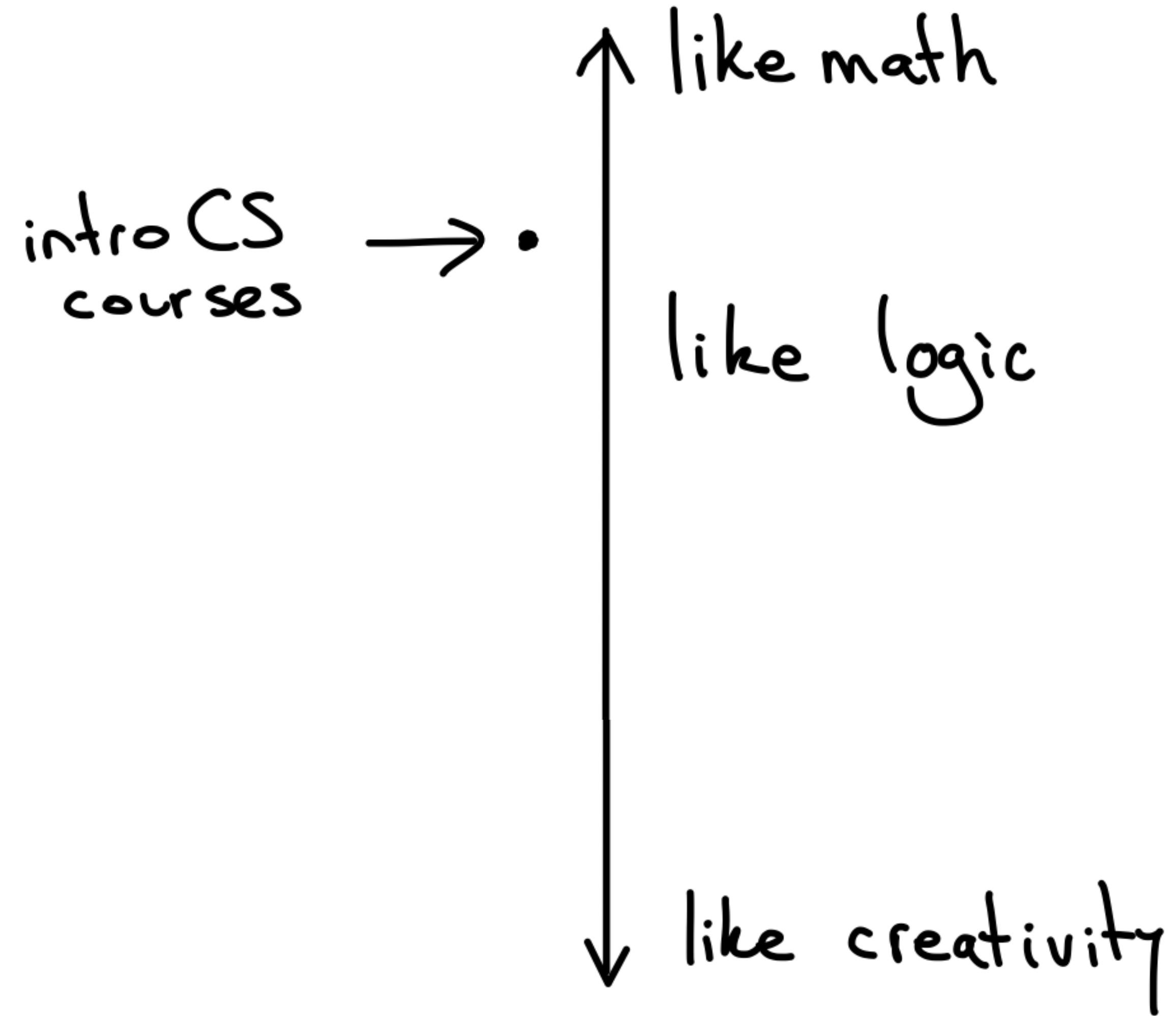
What is programming like?

↑ like math

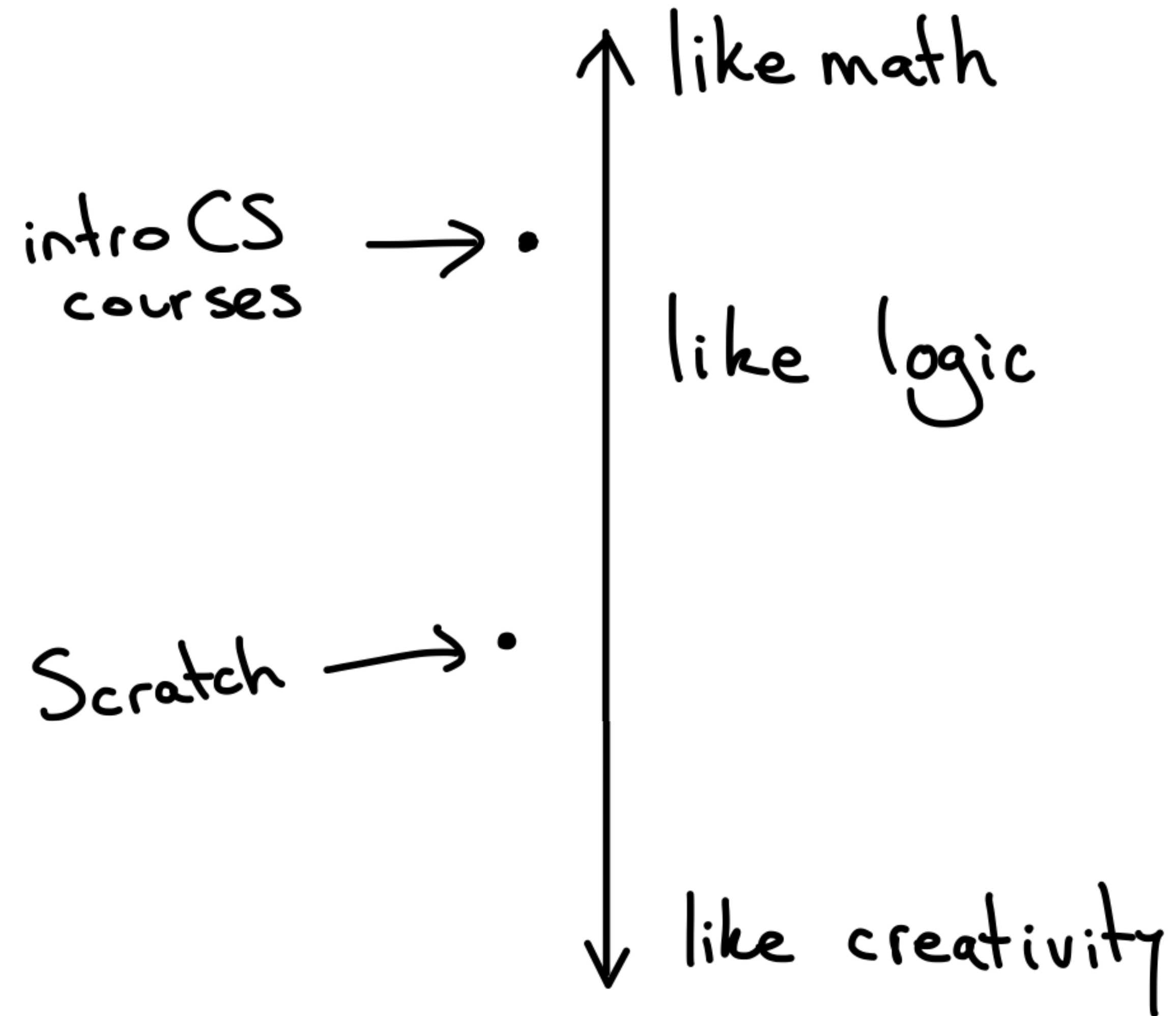
like logic

↓ like creativity

What is programming like?



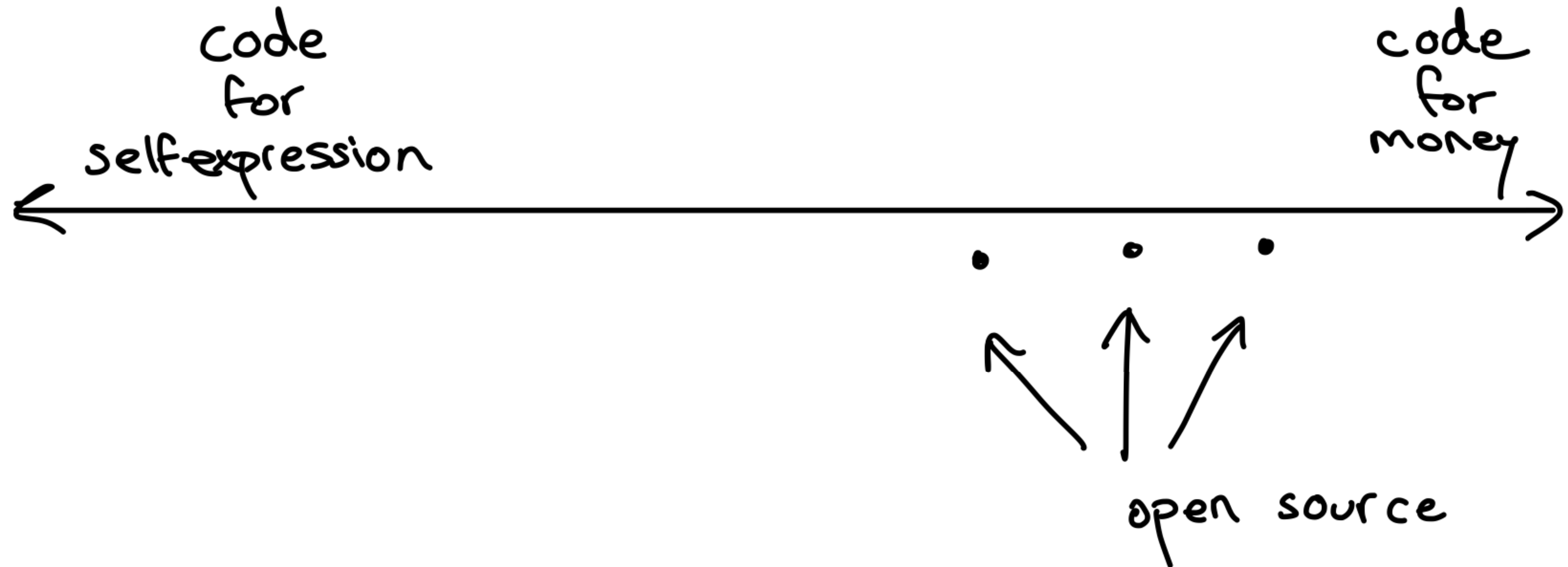
What is programming like?



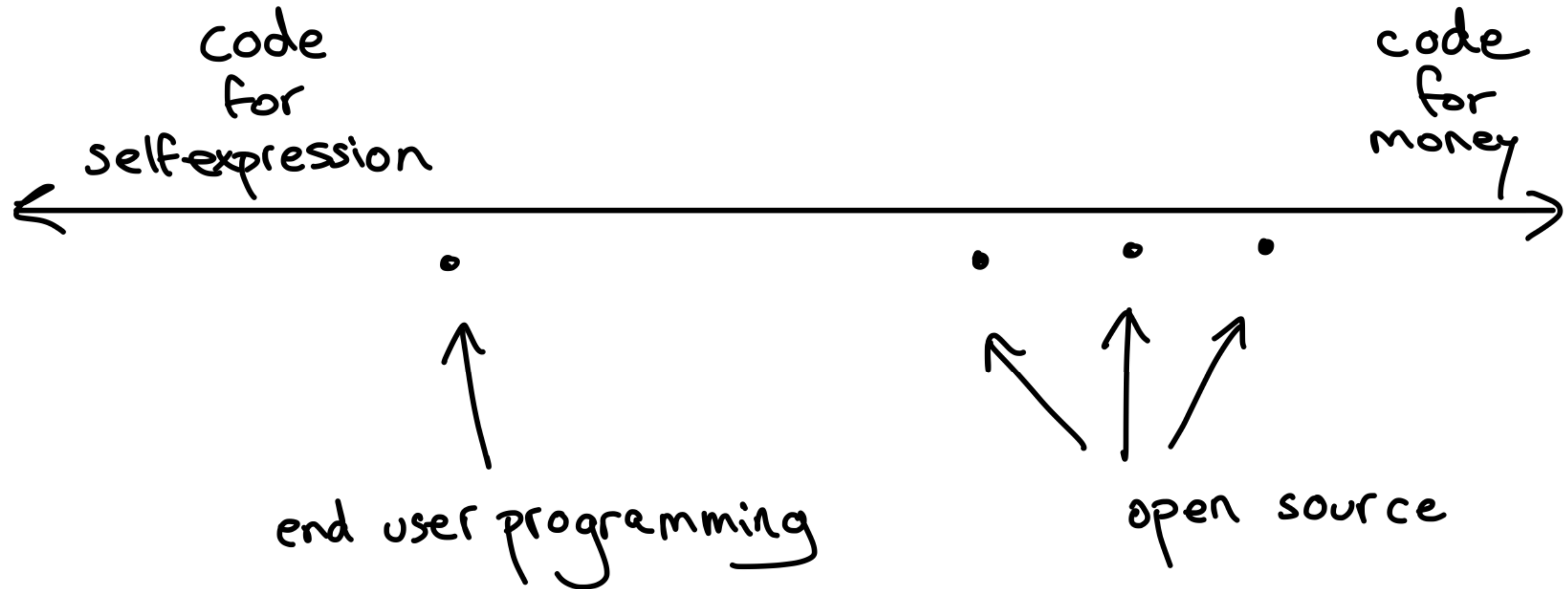
What is programming for?



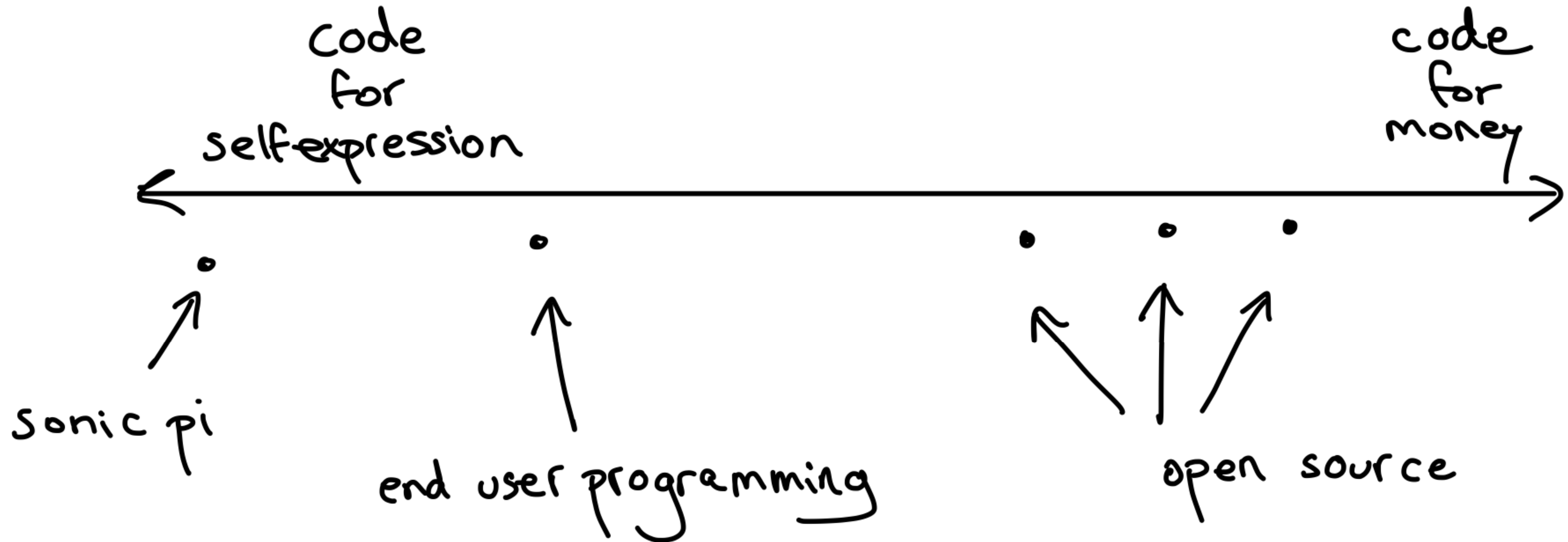
What is programming for?



What is programming for?

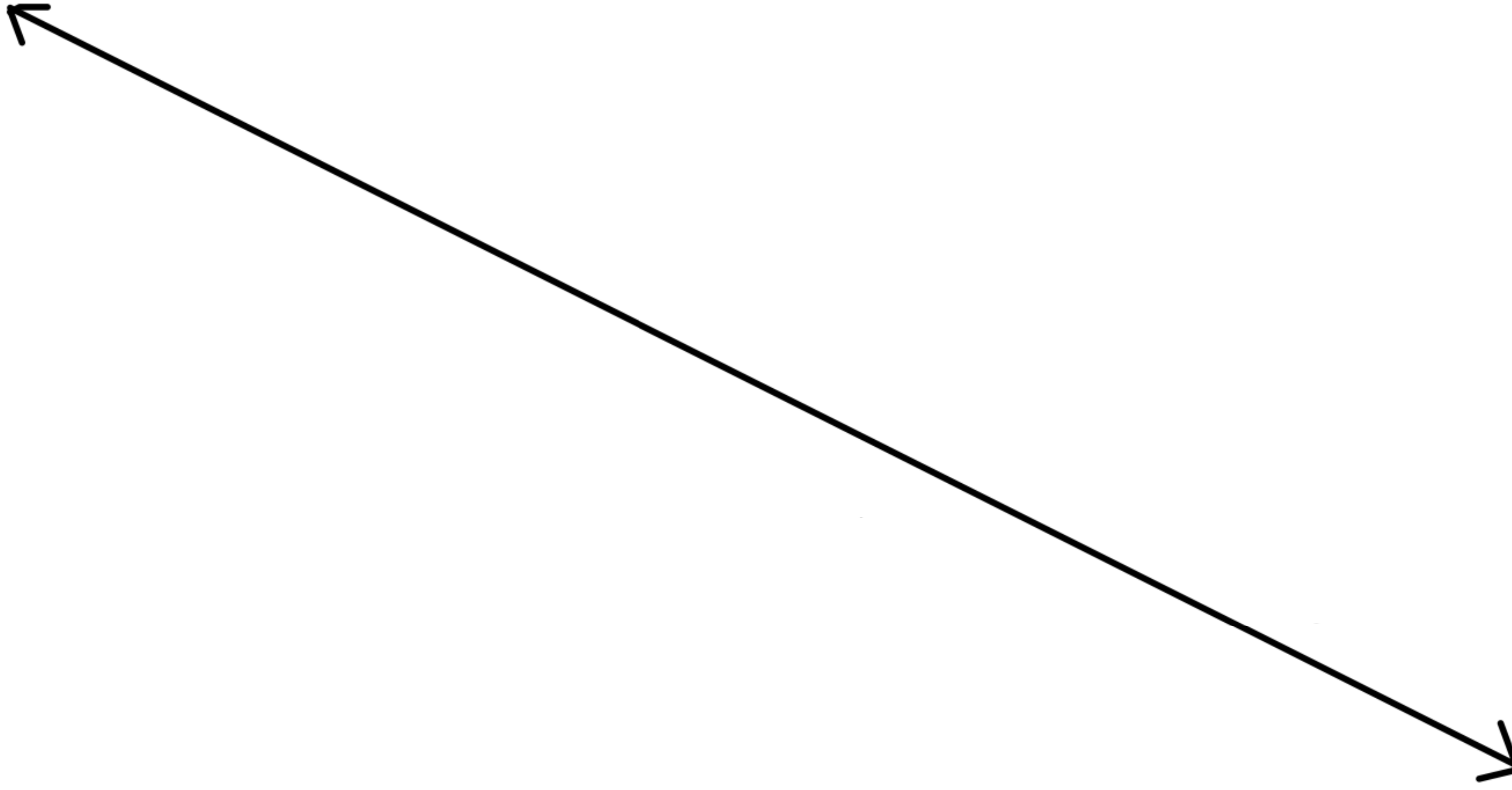


What is programming for?



Who is programming for?

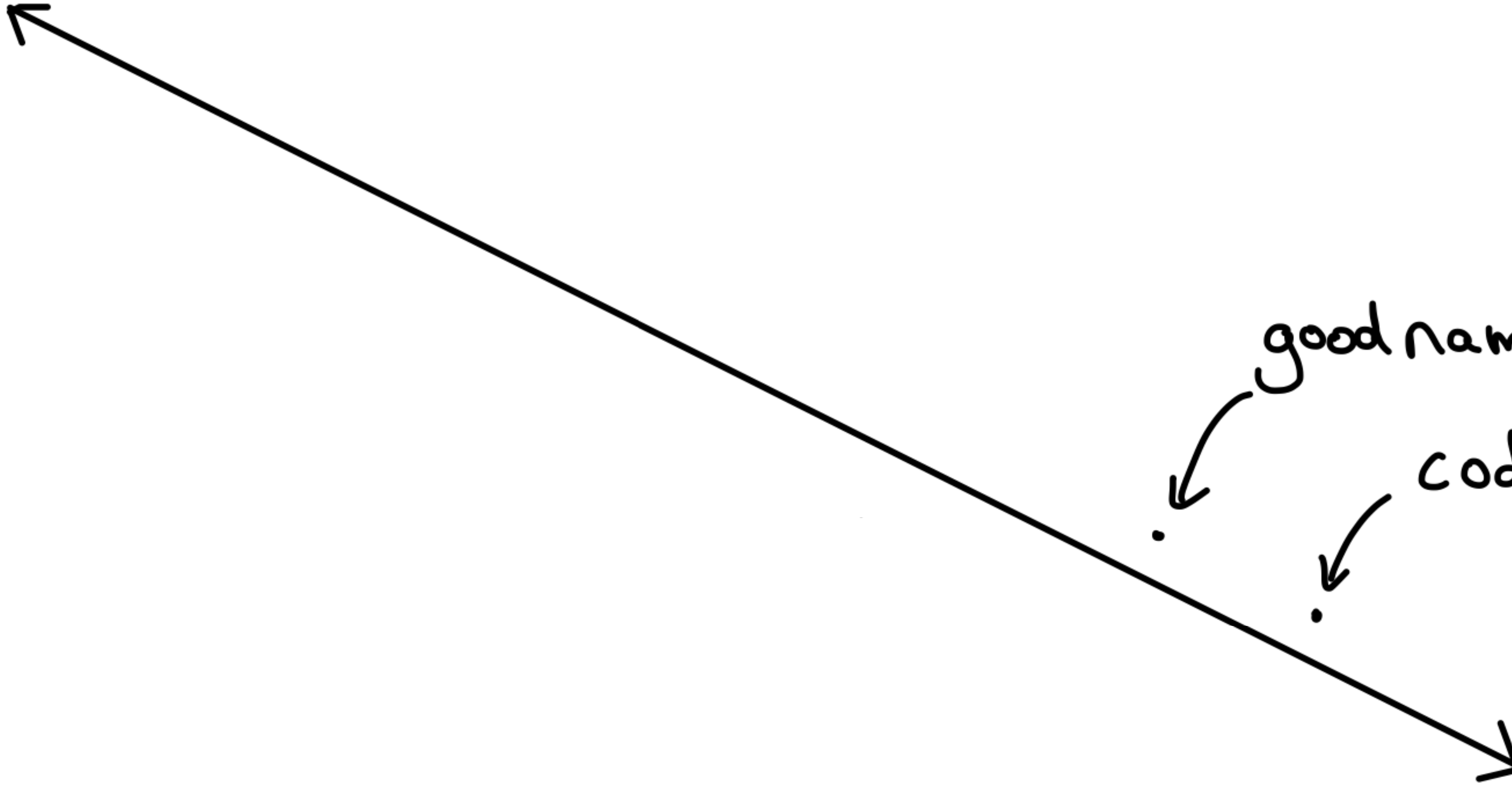
humans



compilers

Who is programming for?

humans

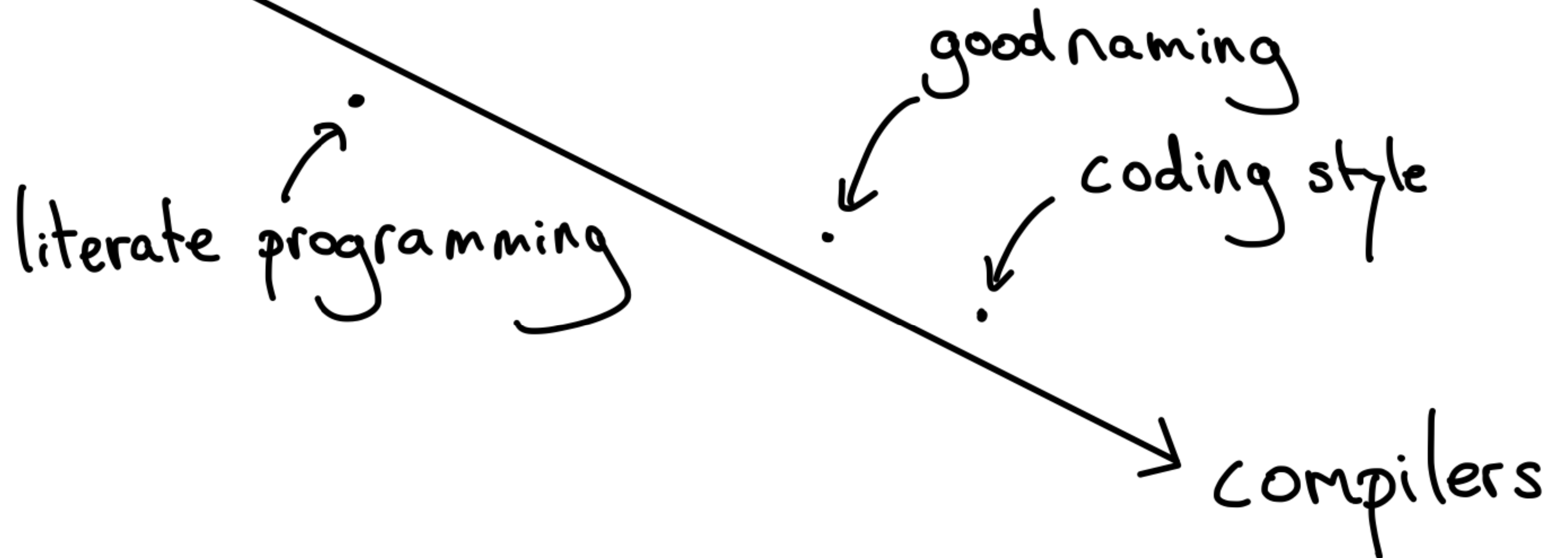


good naming
coding style

compilers

Who is programming for?

humans



Who is programming for?

humans

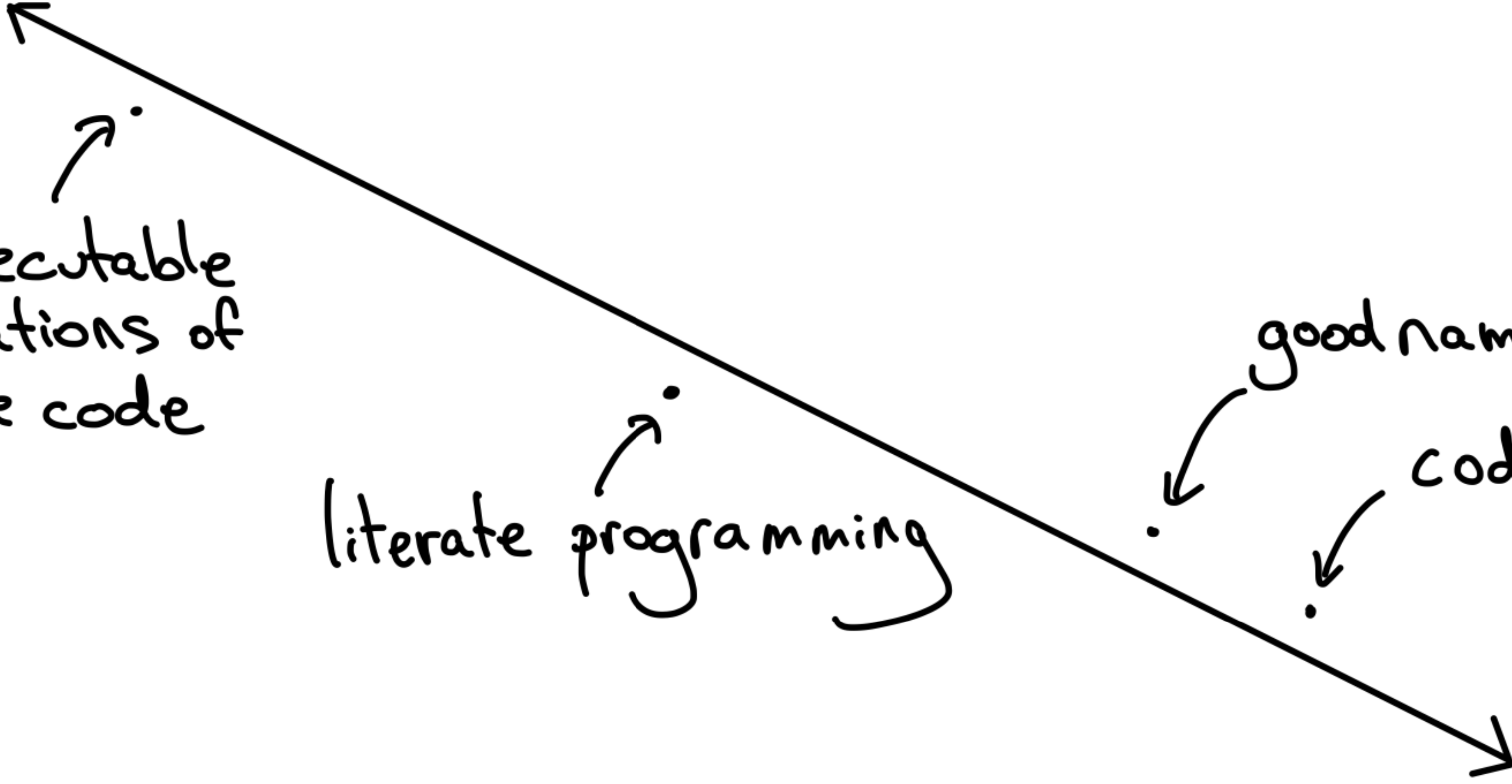
non executable
explorations of
source code

iterate programming

good naming

coding style

compilers

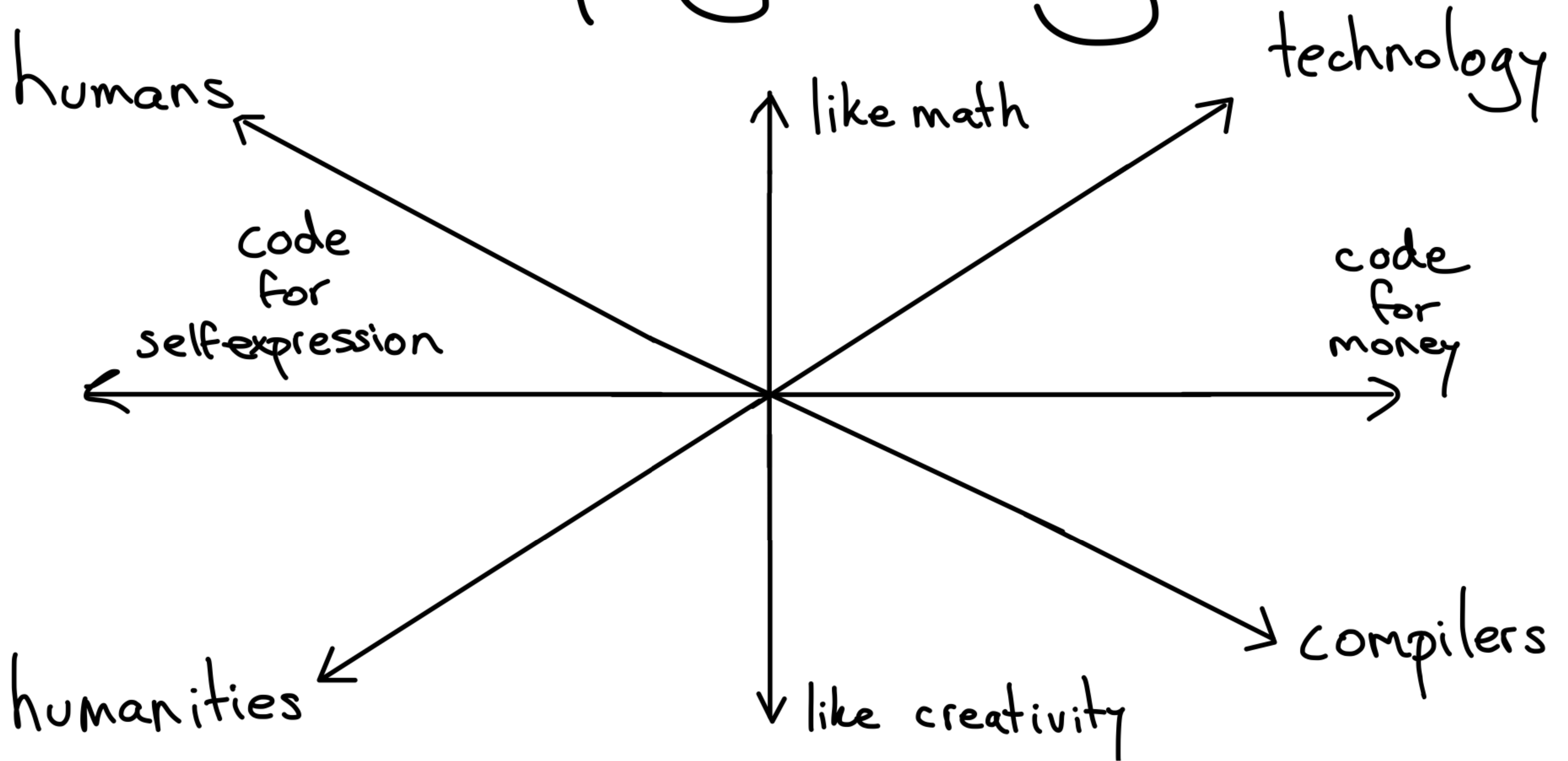


Who is programming for?

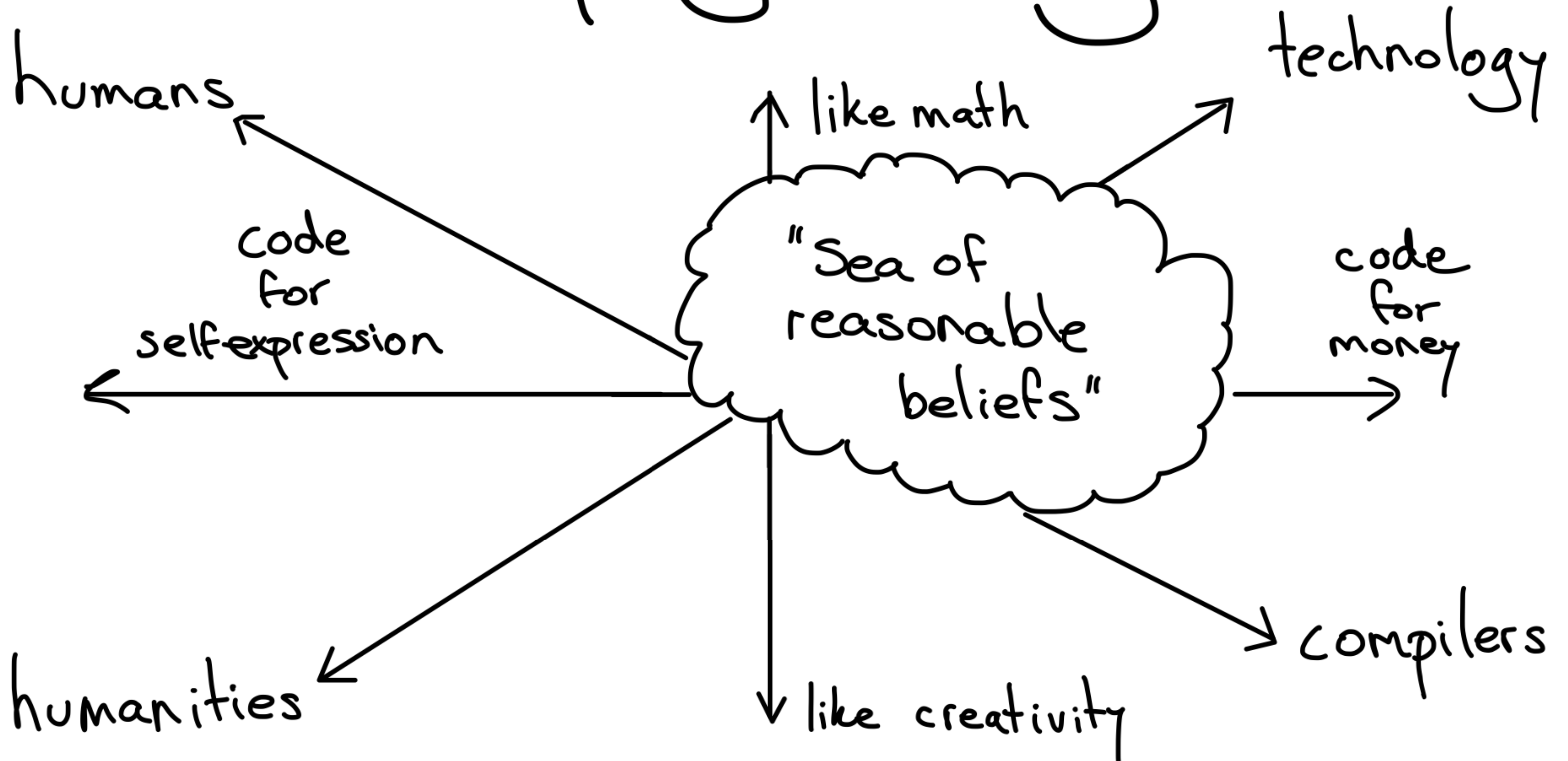
non executable
explorations of
source code

```
__{__ atomic_noexcept, atomic_commit,  
  
crumble; public:_ corpse; char covering, crushed;_ carbon()  
{switch (2);_ chickens, combining, carrots, corn, caesium,  
caramalised, calluses;} protected:_ cerebellum, cells,  
corporal, cast, captures, cooling, cripples,  
cupids;_ charcoal(){static_cast<_>(1);_ clutches,cute,clouds;  
  
}explicit __(){_ calculations;}};class collateral{_ capture,  
comic, cretins, carry, synchronized, cancers,  
call, central, cabin;_ cue(){C( cello,4){ continue;  
  
}}_ atomic_cancel;};_
```

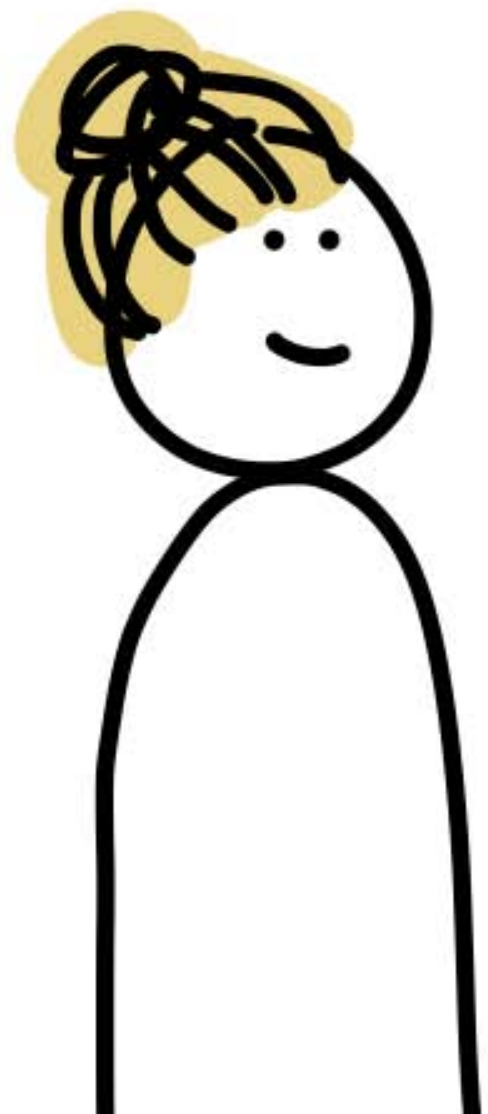
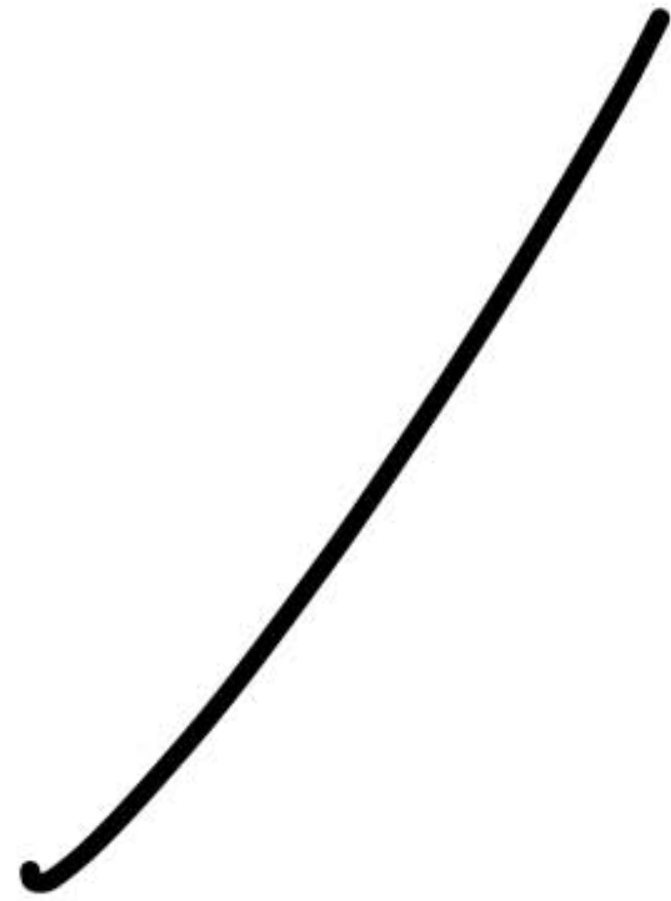
What is programming?



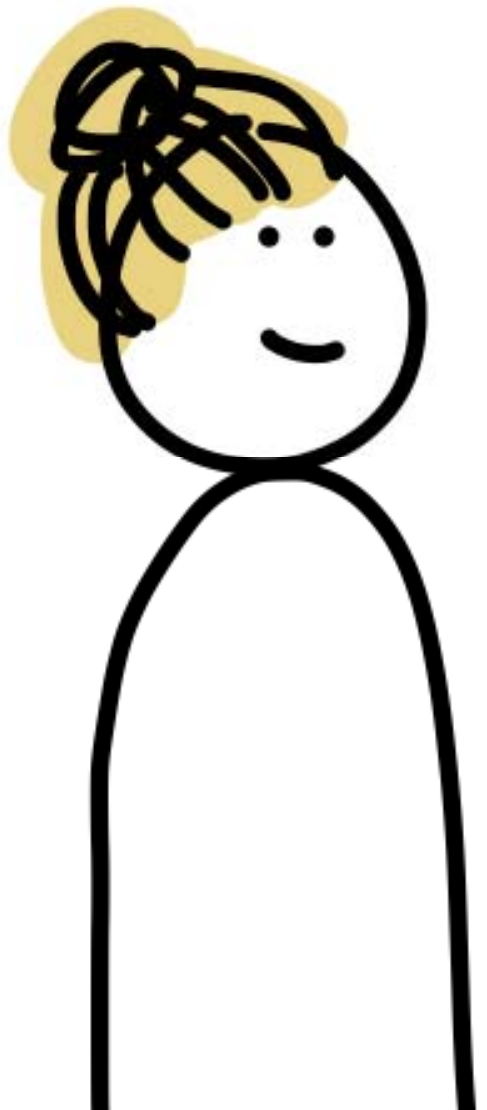
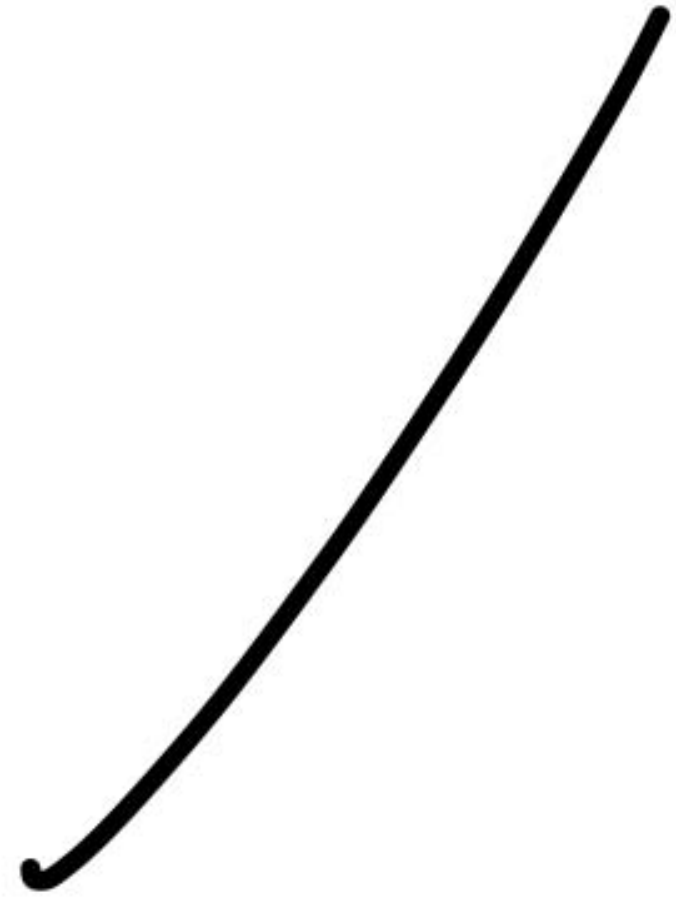
What is programming?



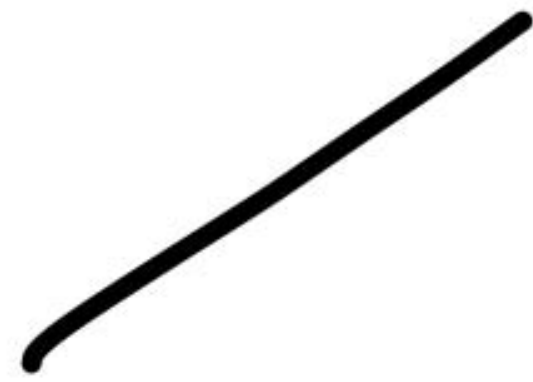
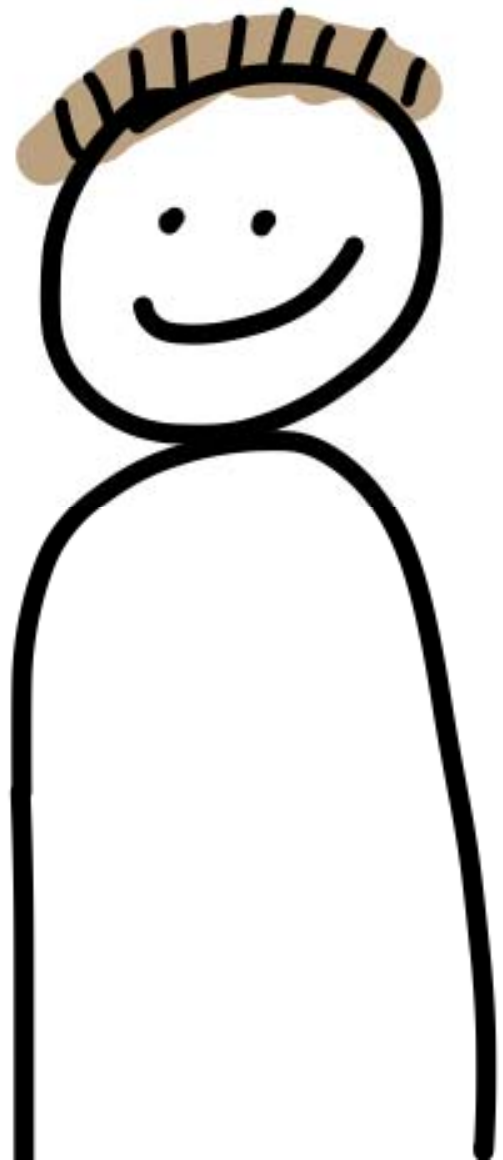
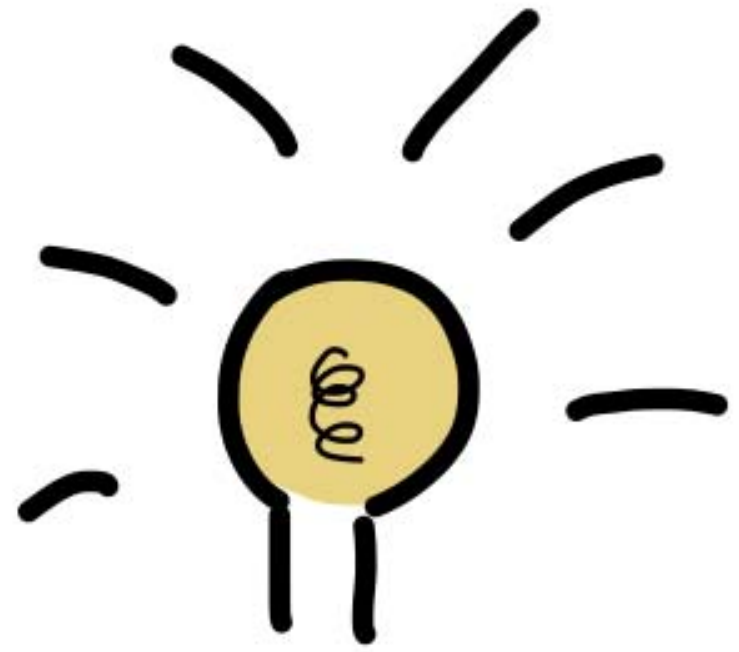
What is programming?



Programming is Writing

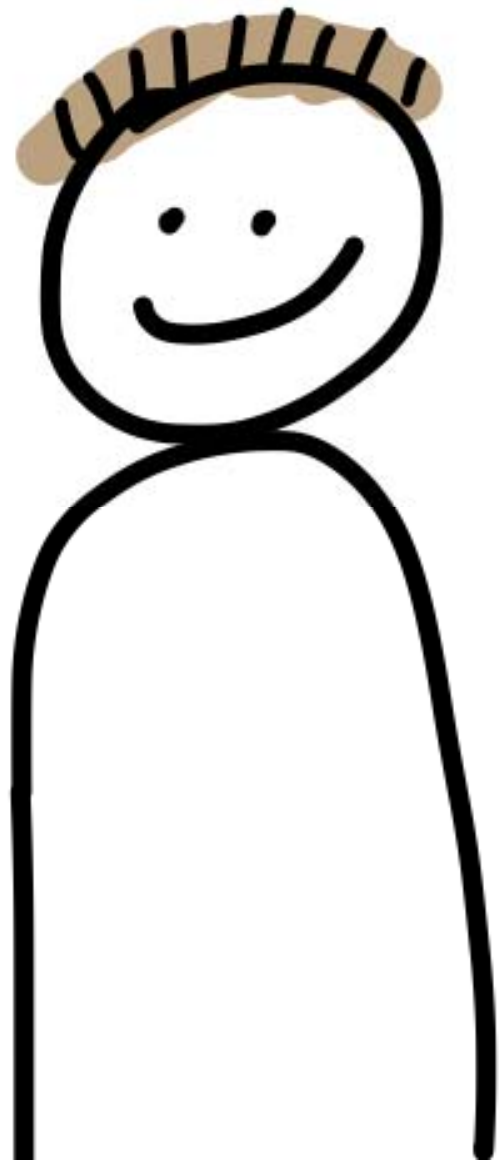
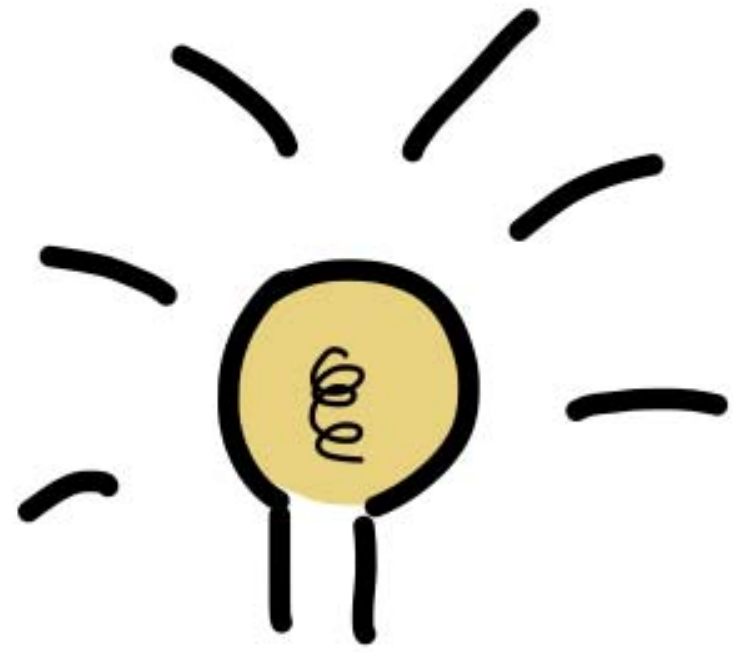


Programming is Writing



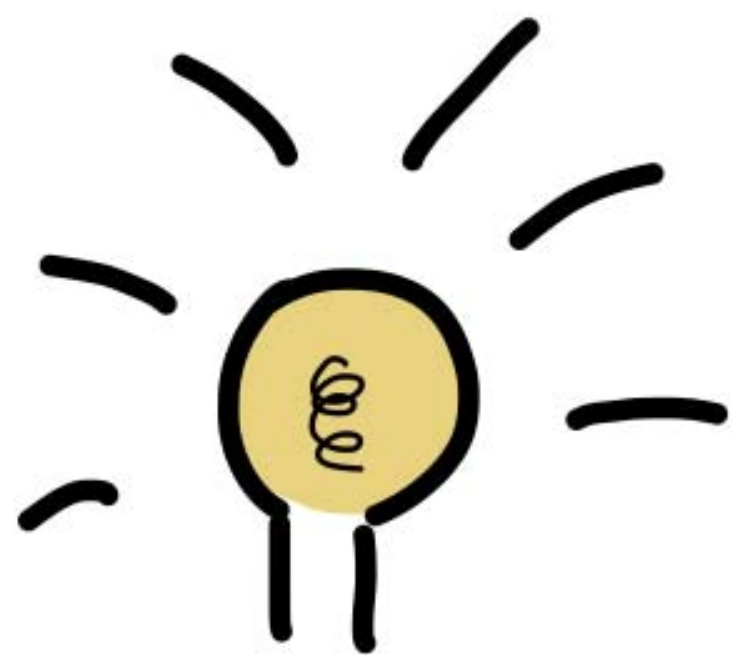
An app that
tracks compliments

Programming is Writing

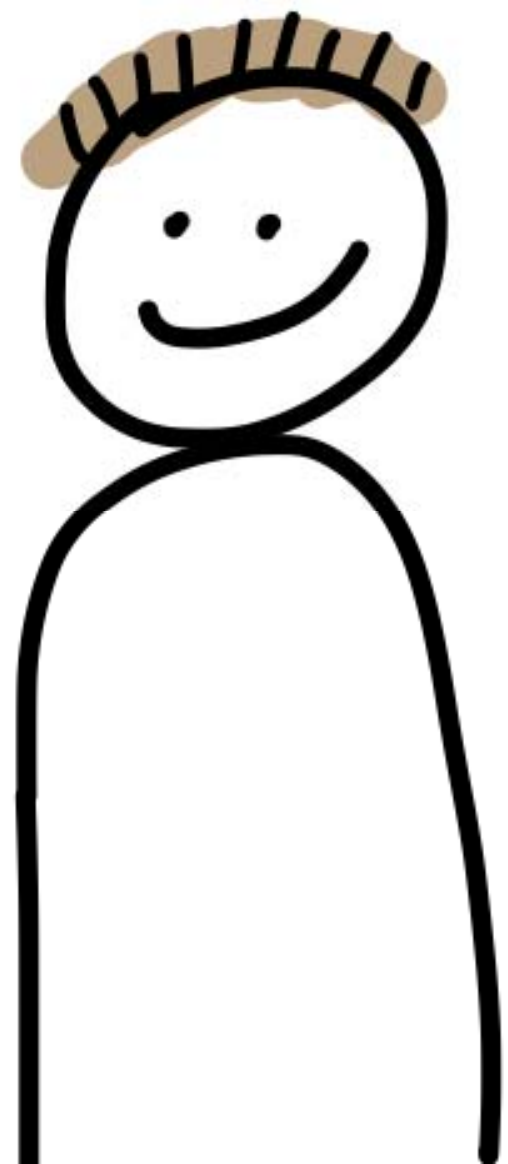


```
if compl.count  
> 5  
    print "Hooray"  
else  
    print "So sad"
```

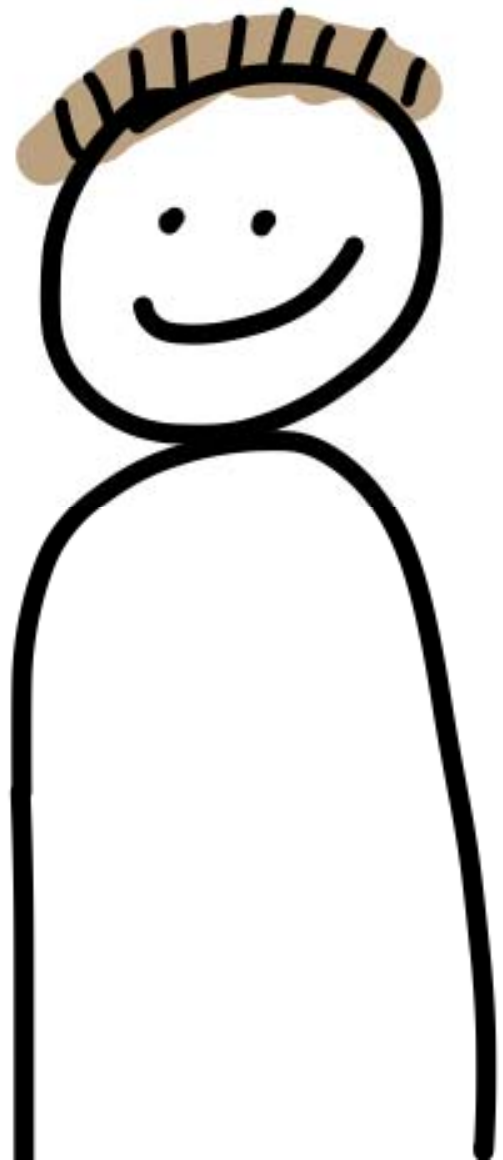
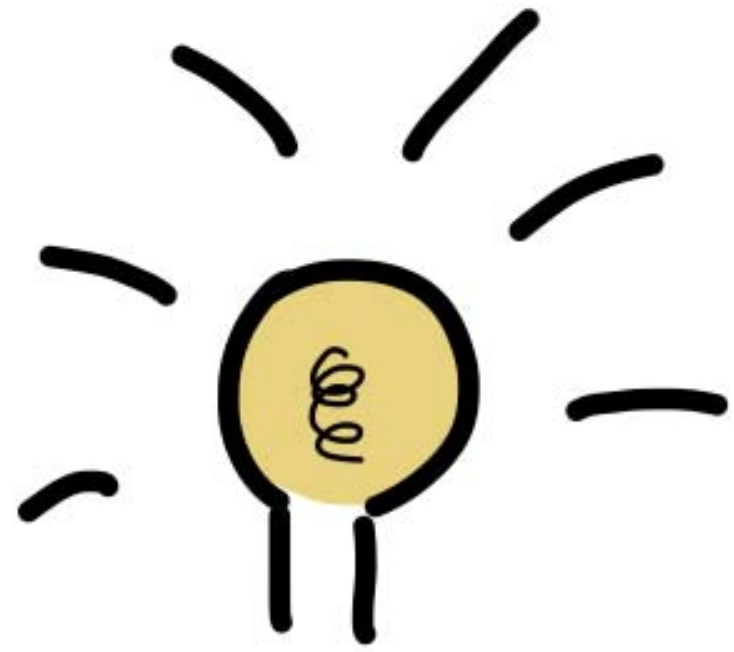
Programming is Writing



A frog murders
foreign diplomats



Programming is Writing



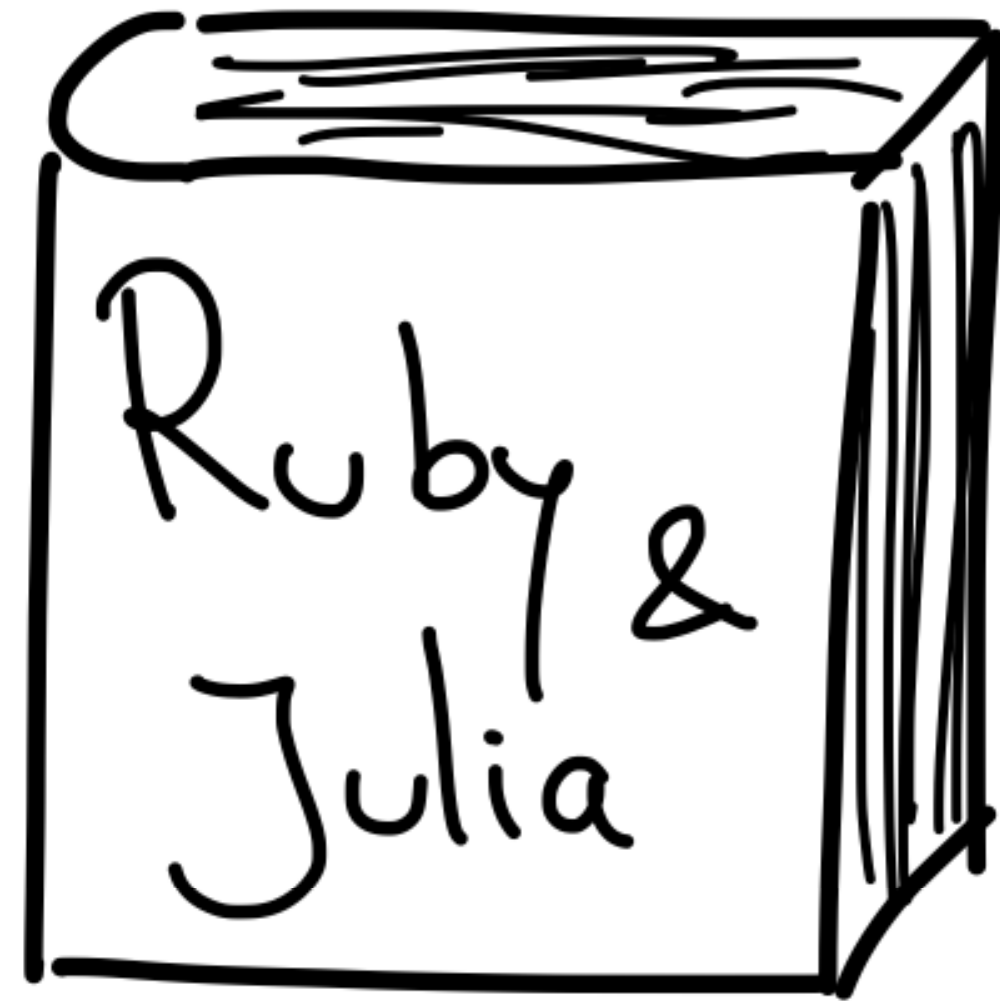
That was the
day that Frits
the frog decided
to leave the pond

What is writing?

What is writing?



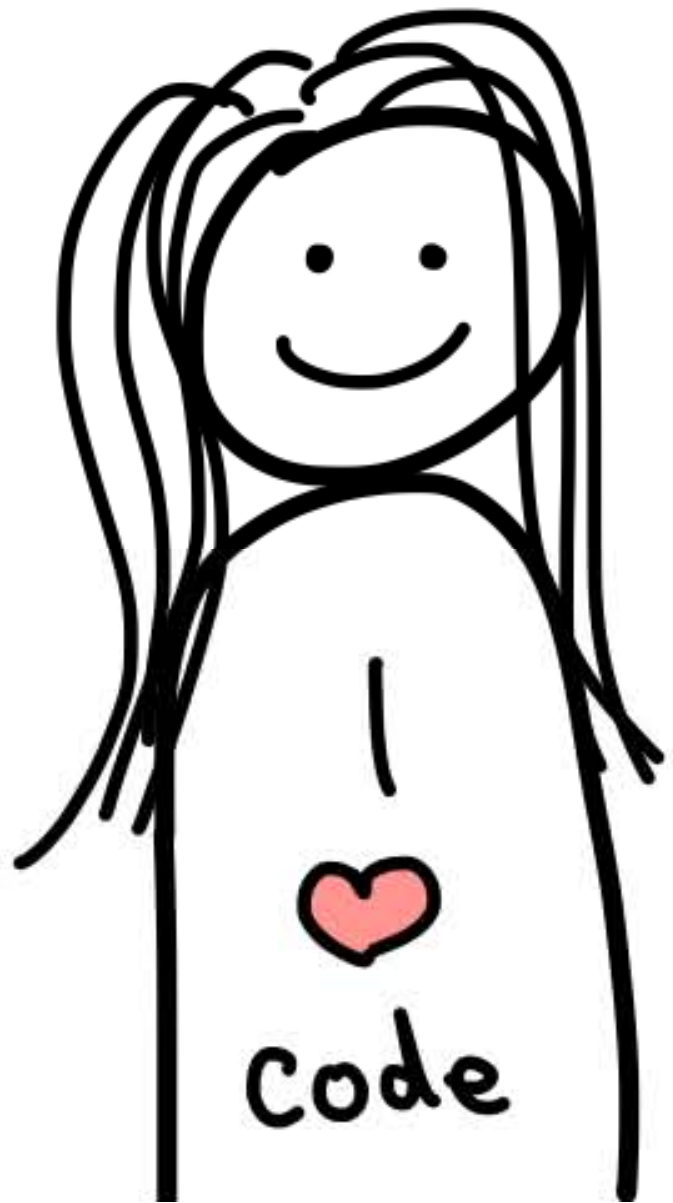
Language metaphor helps



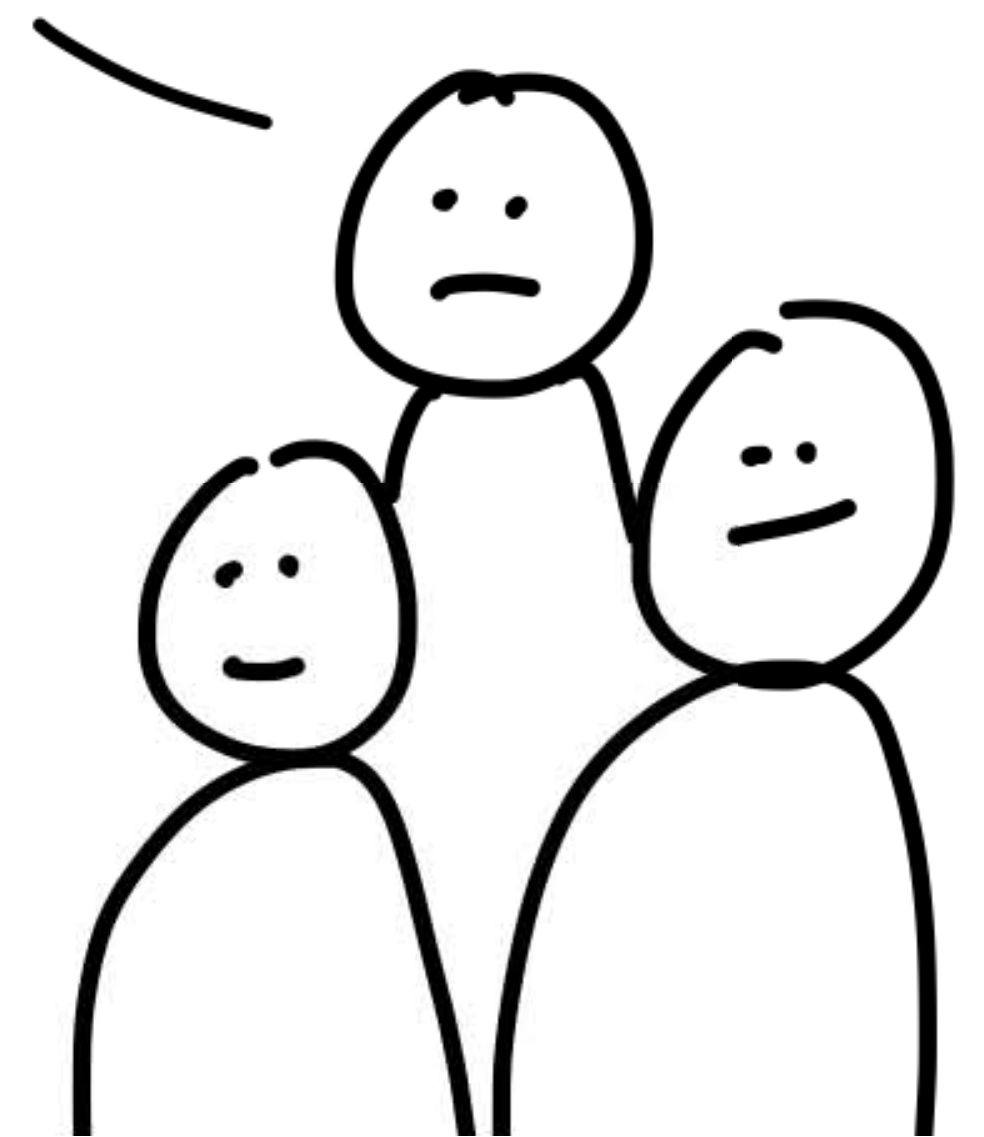
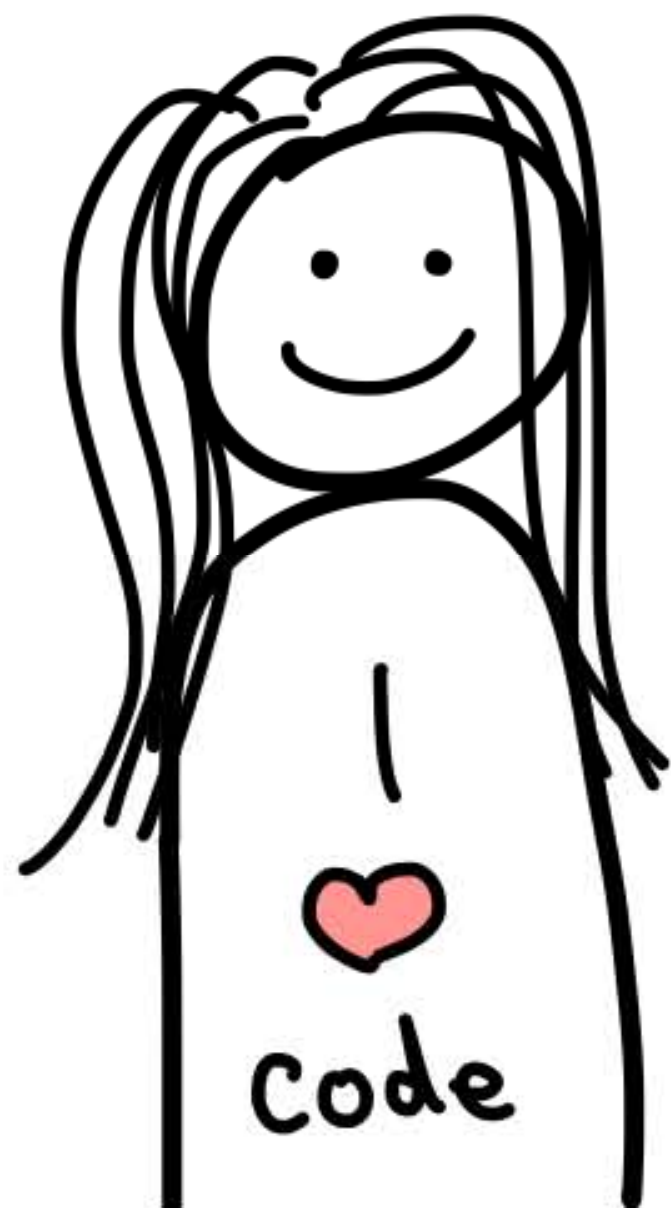
=



Everyone can learn it

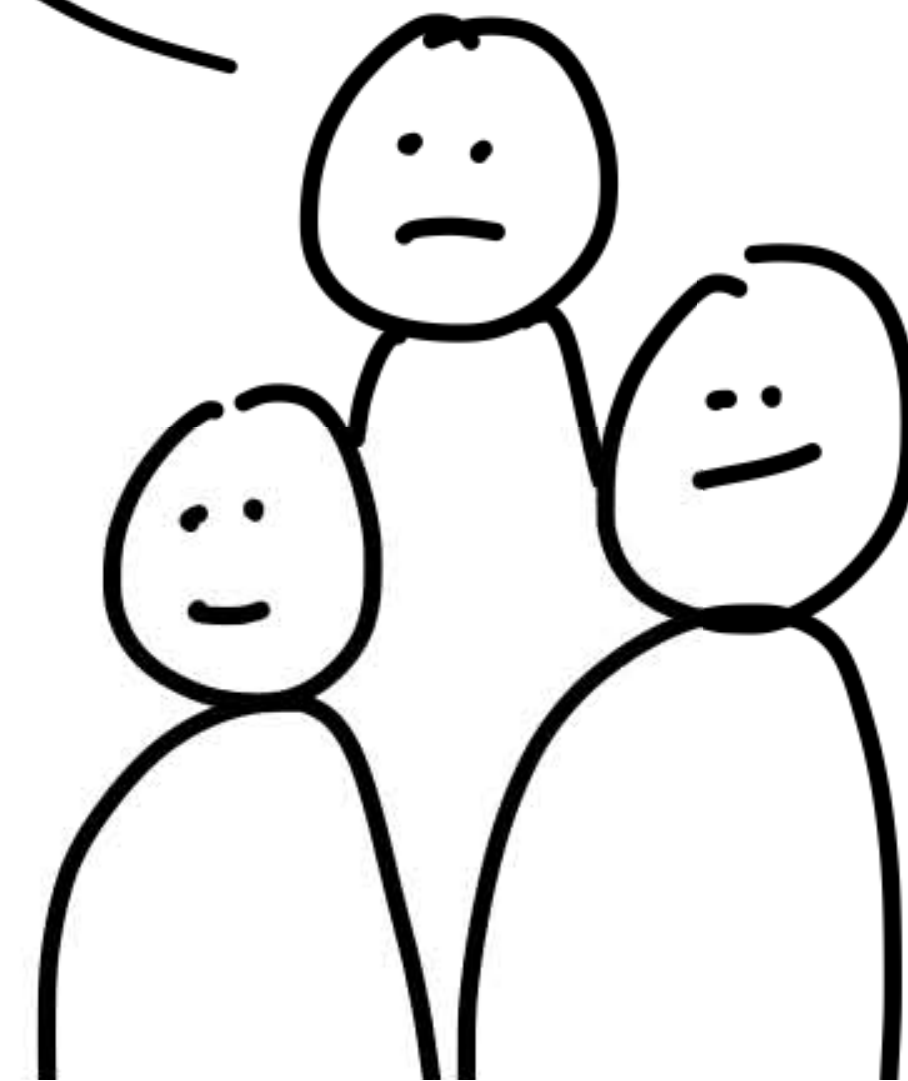
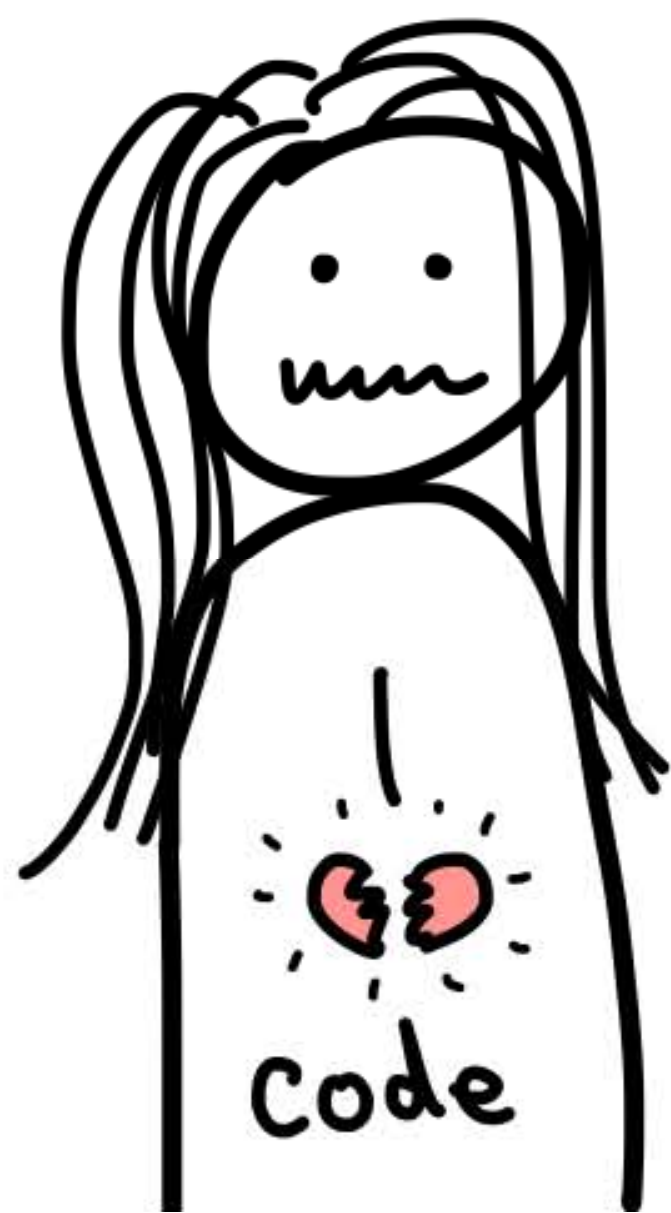


Programming
is
math



Programming
is
math

not for me



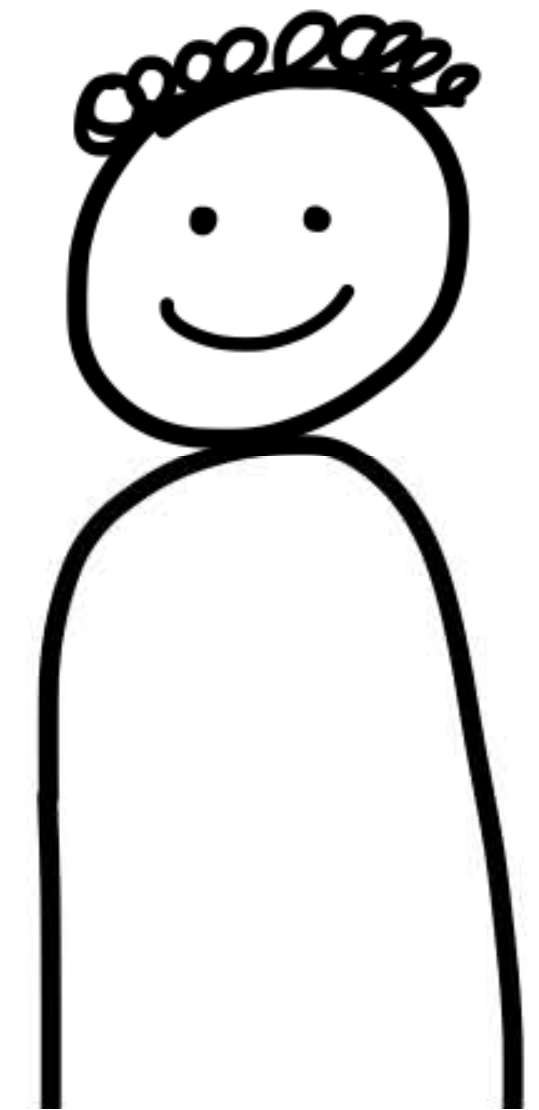
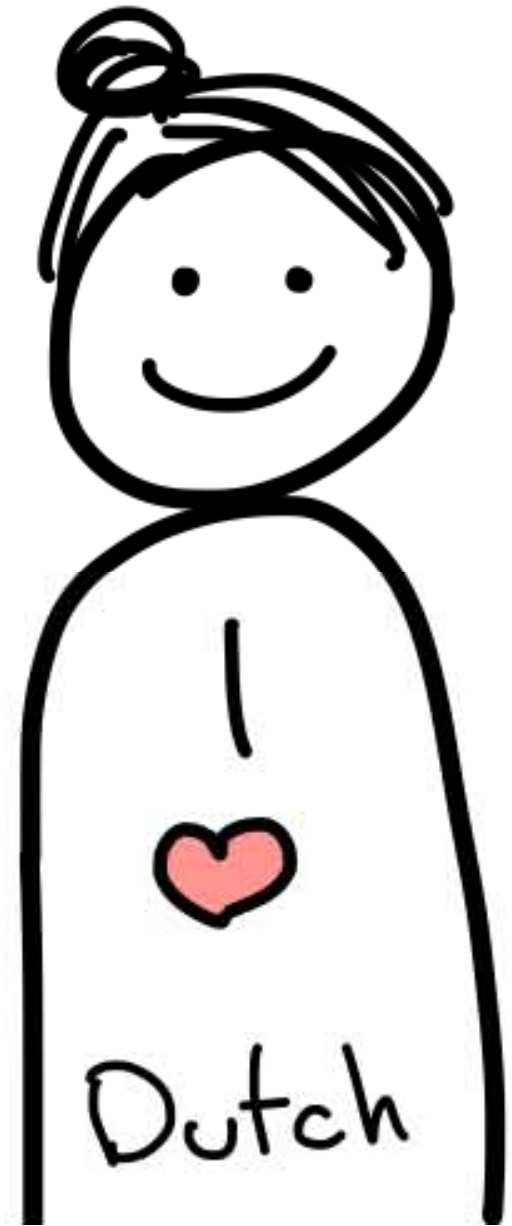
Some stuff makes no sense

"I read a book"

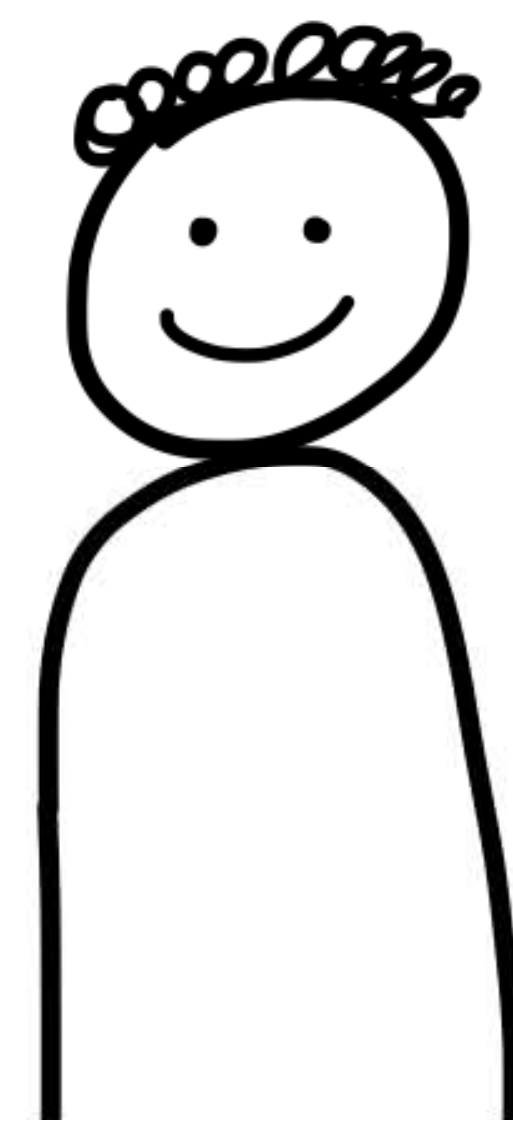


"I read a book"

well done!

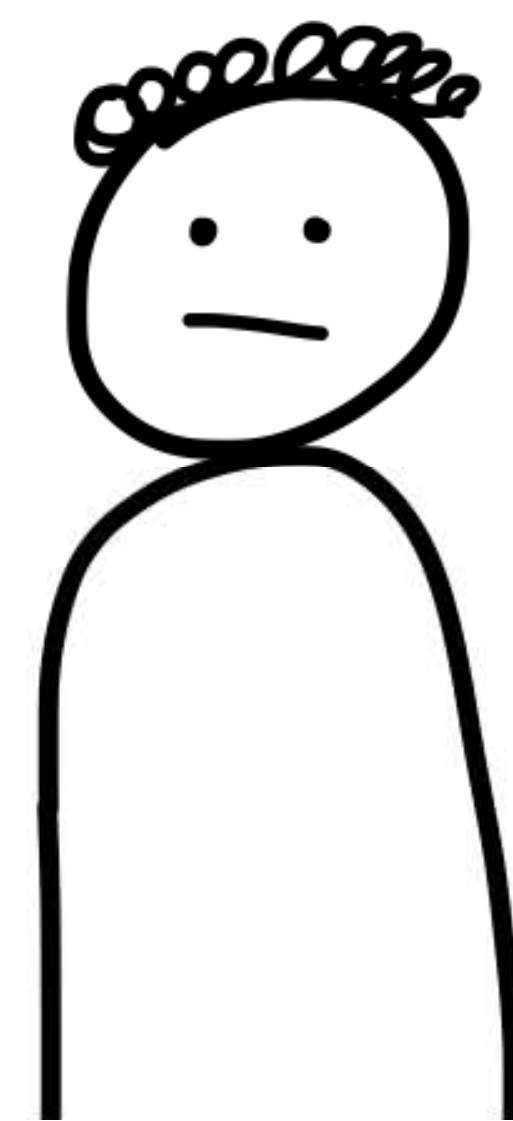
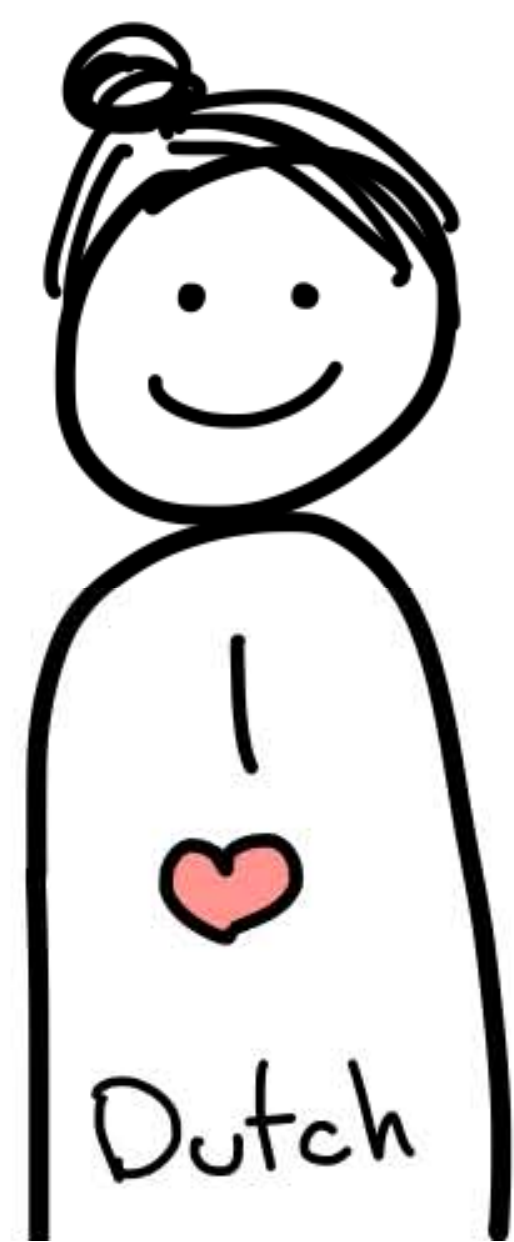


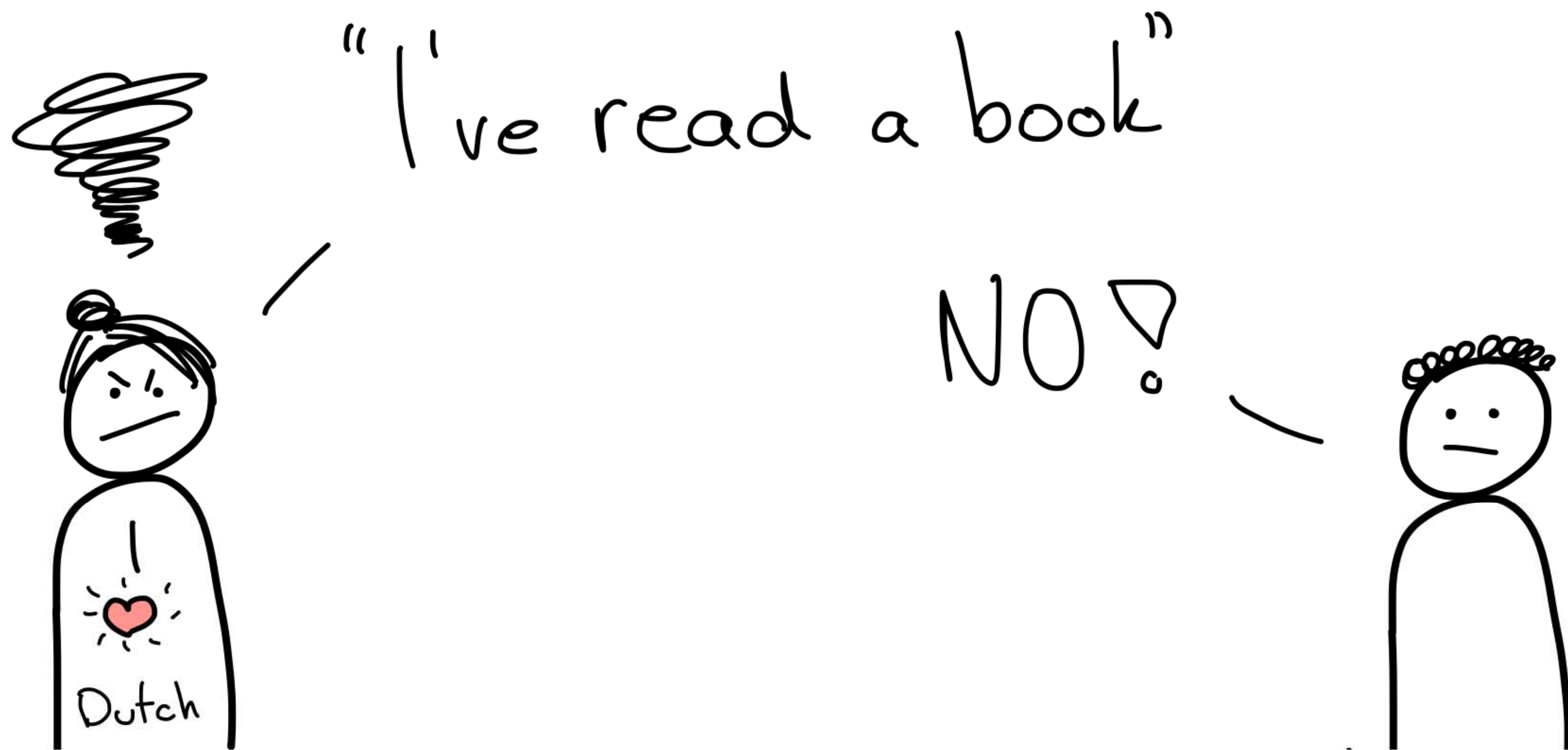
"I've read a book"



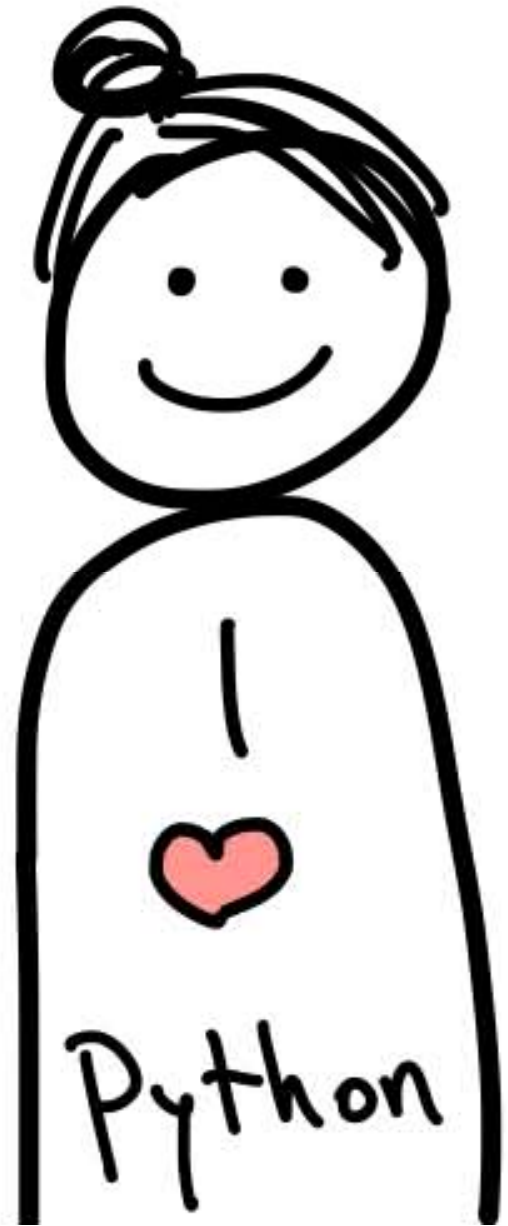
"I've read a book"

NO!



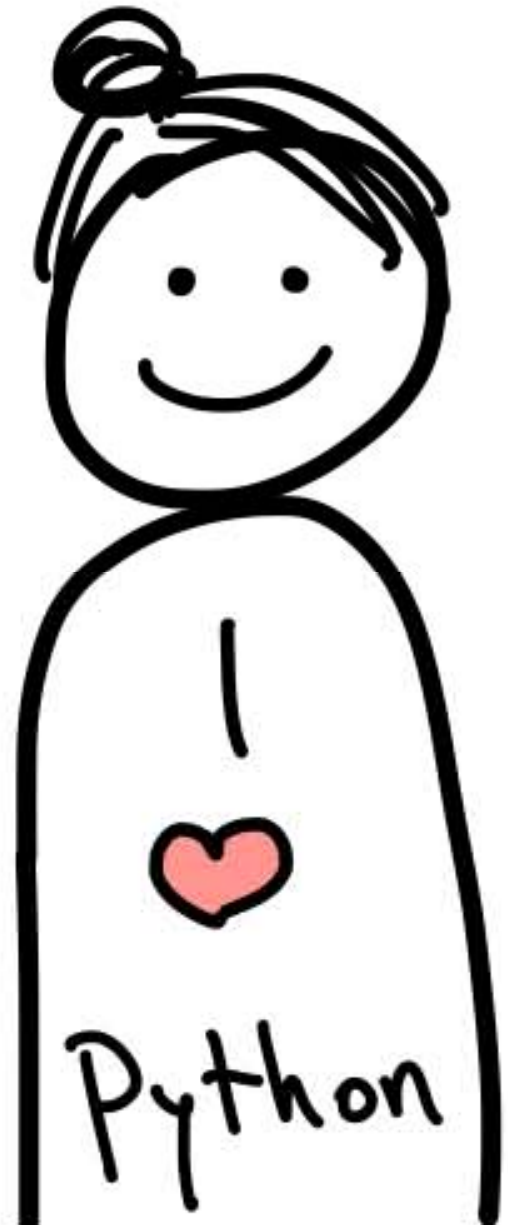


Some stuff makes no sense



```
squares = []  
for i in range(5):  
    squares.append(i*i)  
  
also_squares = [i*i for i in range(5)]
```


Some stuff makes no sense



```
squares = []  
for i in range(5):  
    squares.append(i*i)
```

```
also_squares = [i*i for i in range(5)]
```


Some stuff makes no sense

WHY??

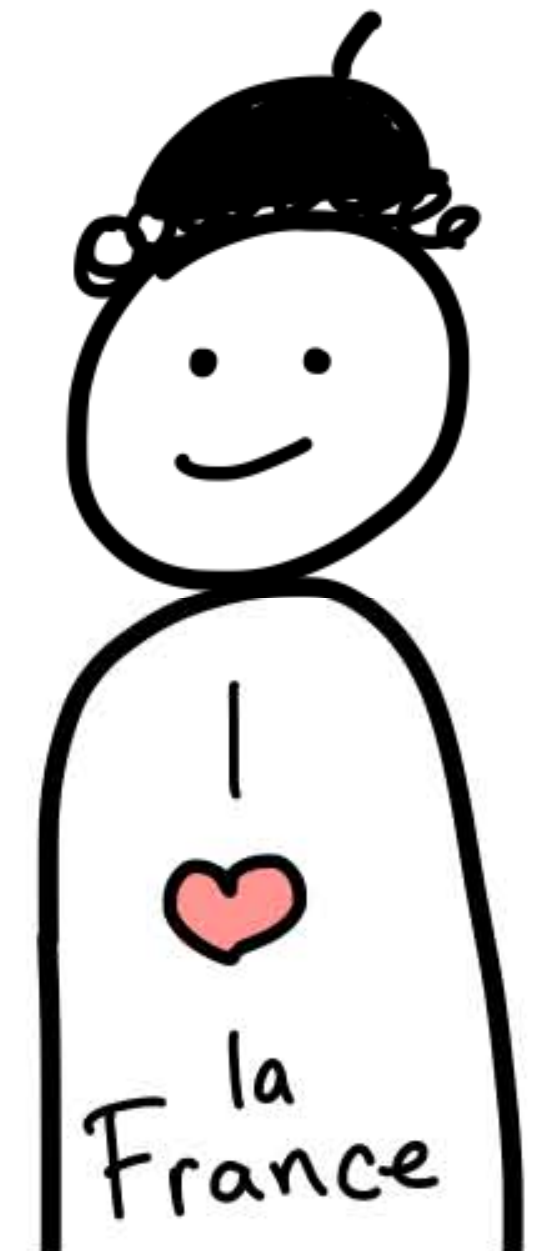
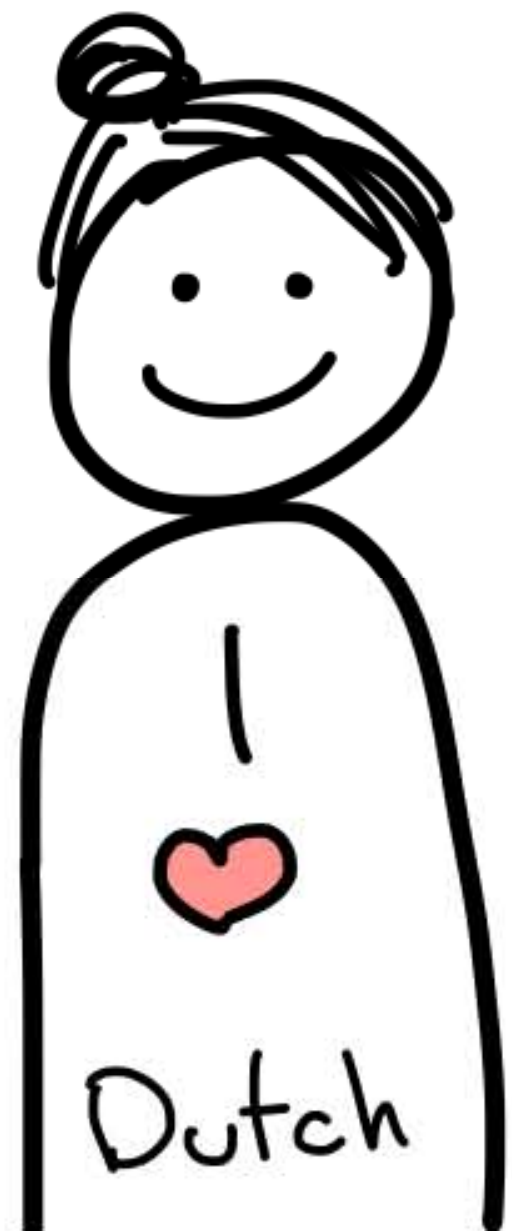


```
squares = []  
for i in range(5):  
    squares.append(i*i)
```

```
also_squares = [i*i for i in range(5)]
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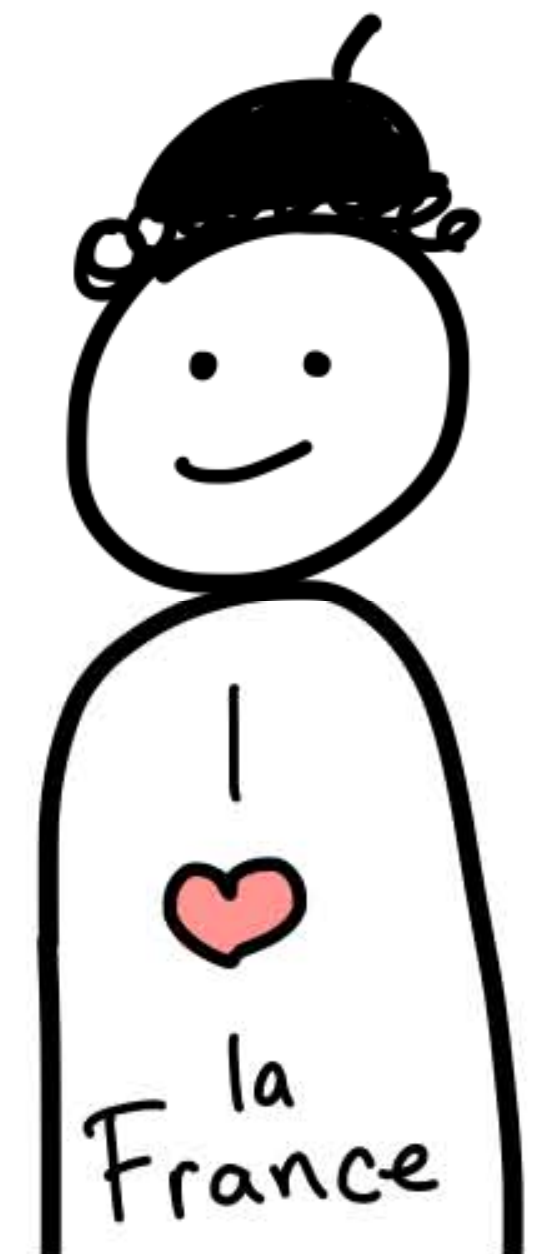
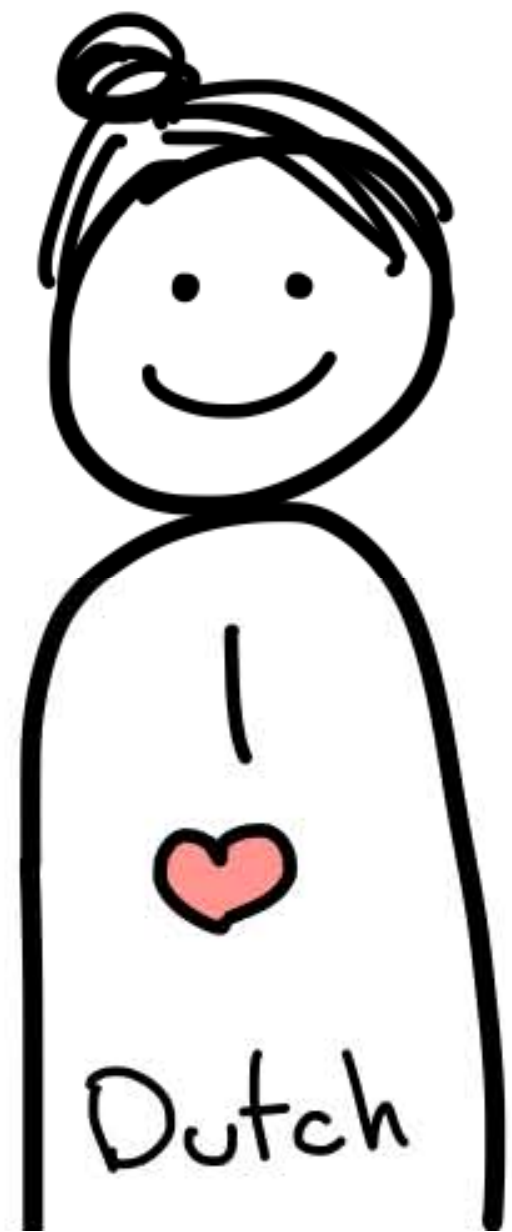
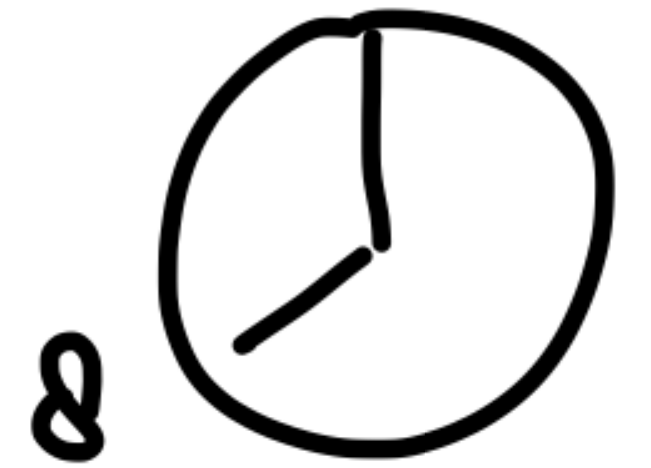
Some stuff is cultural

Want to come for
coffee at 7 pm?



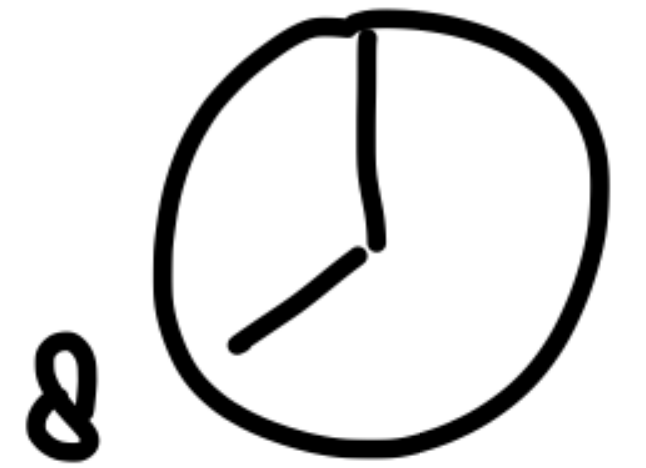
Some stuff is cultural

Want to come for
coffee at 7 pm?

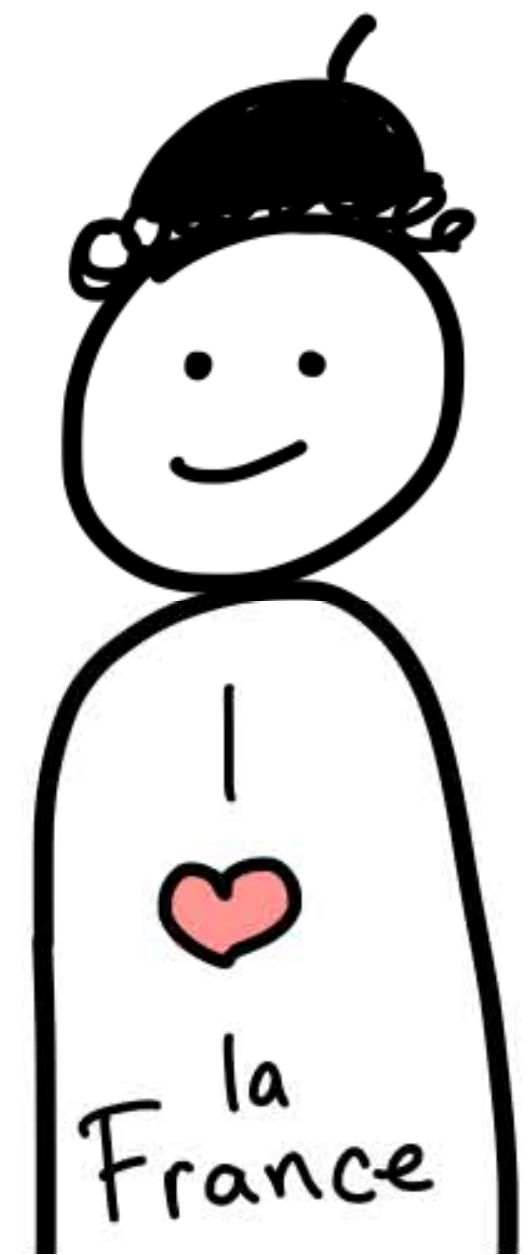
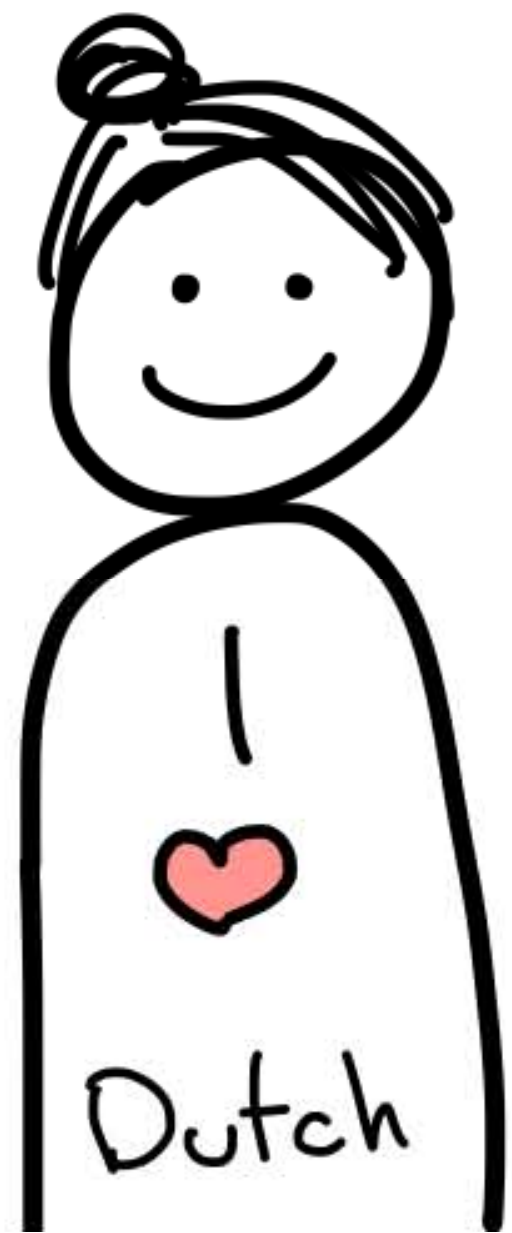


Some stuff is cultural

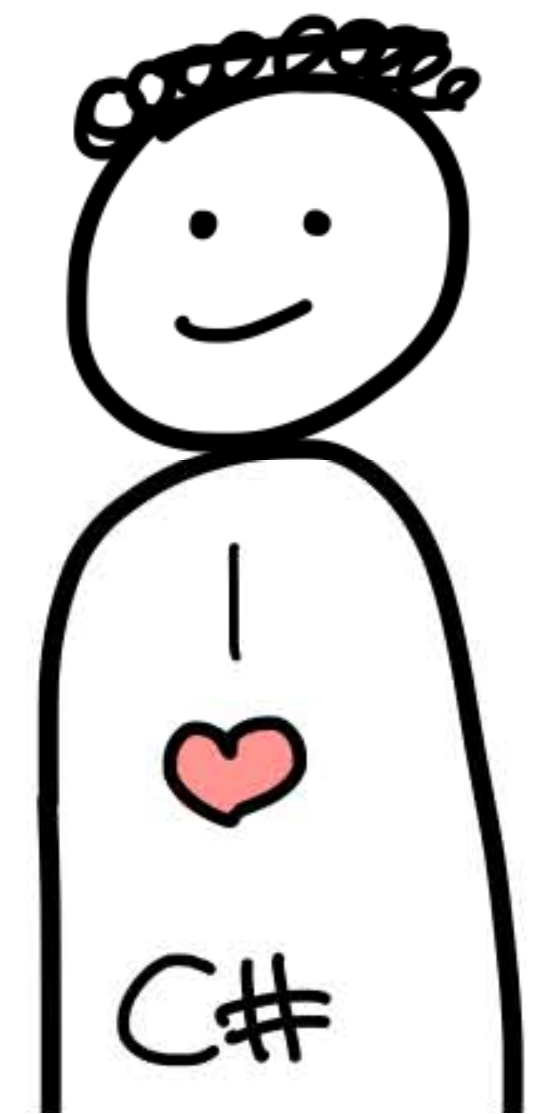
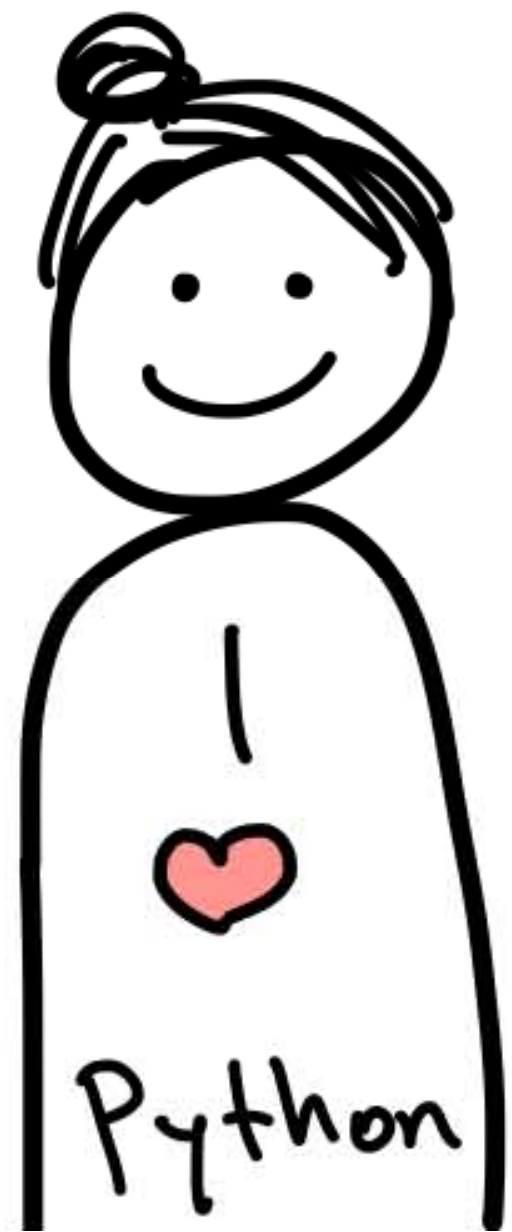
Want to come for
coffee at 7 pm?



I am here —
Where is the food?

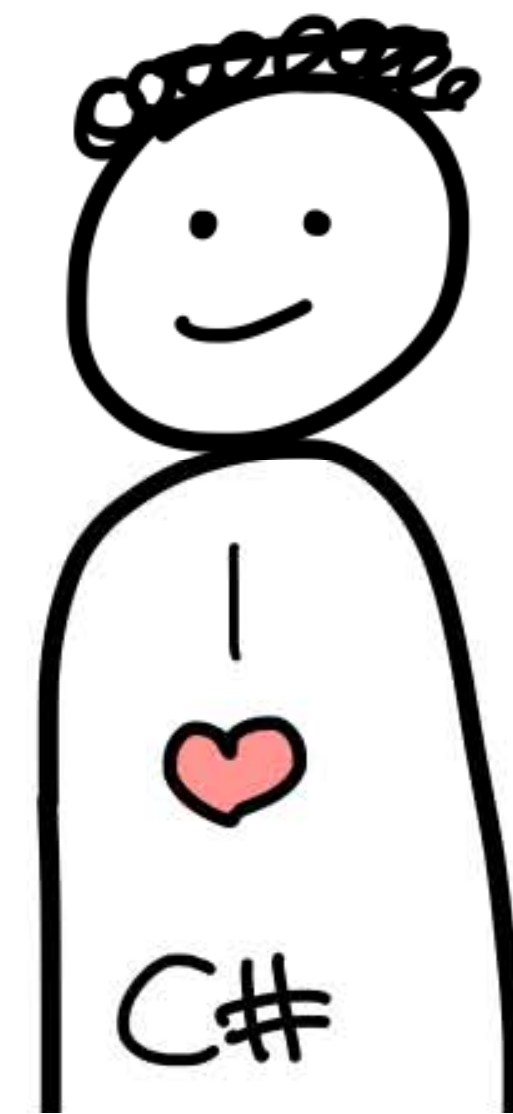
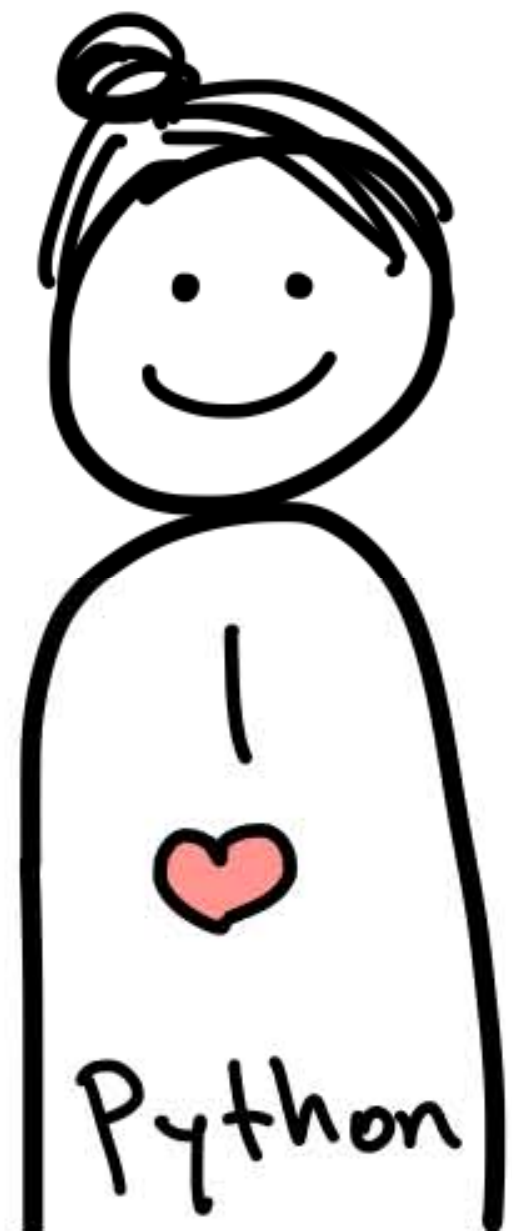


Some stuff is cultural



Some stuff is cultural

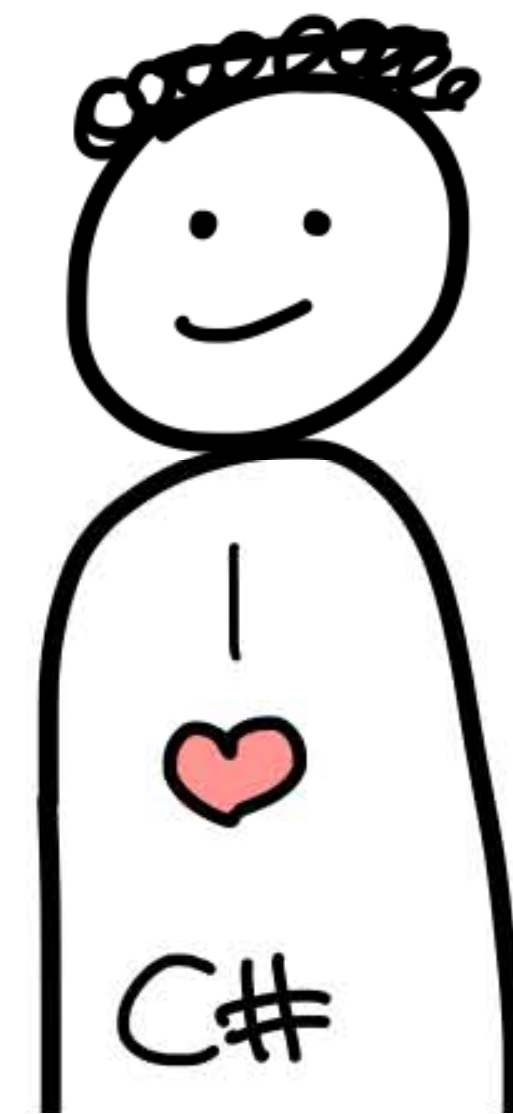
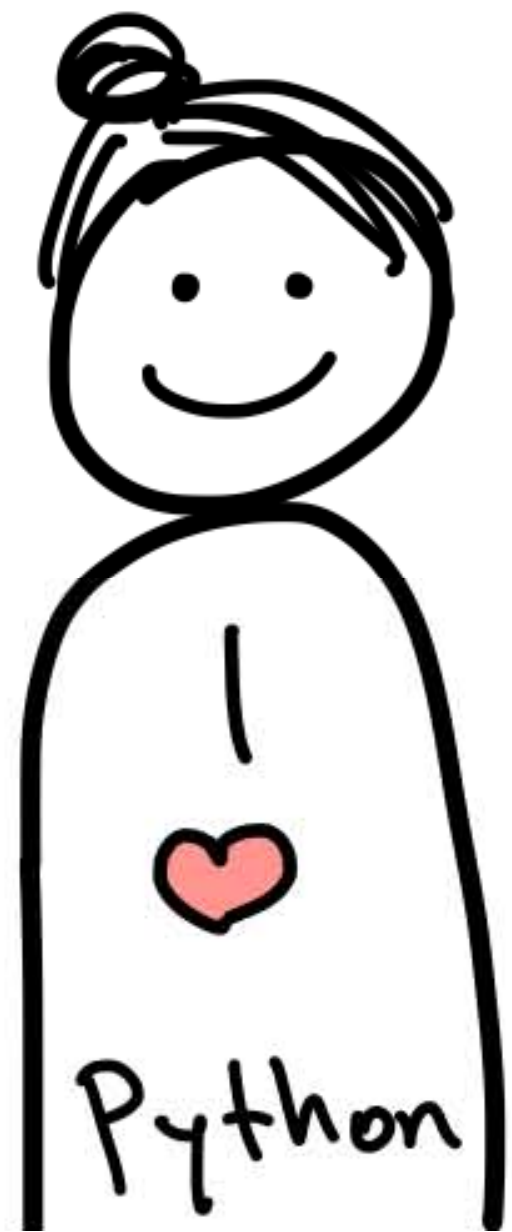
number_of_hearts = 12



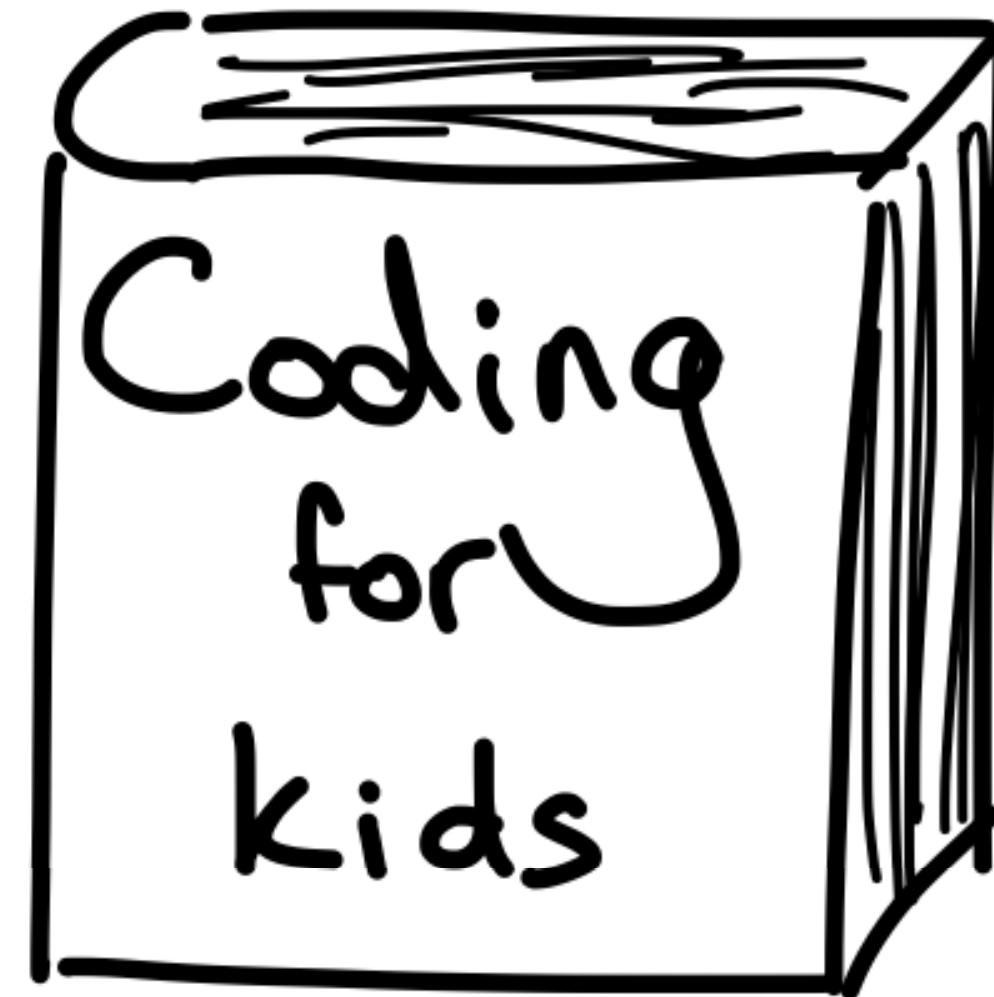
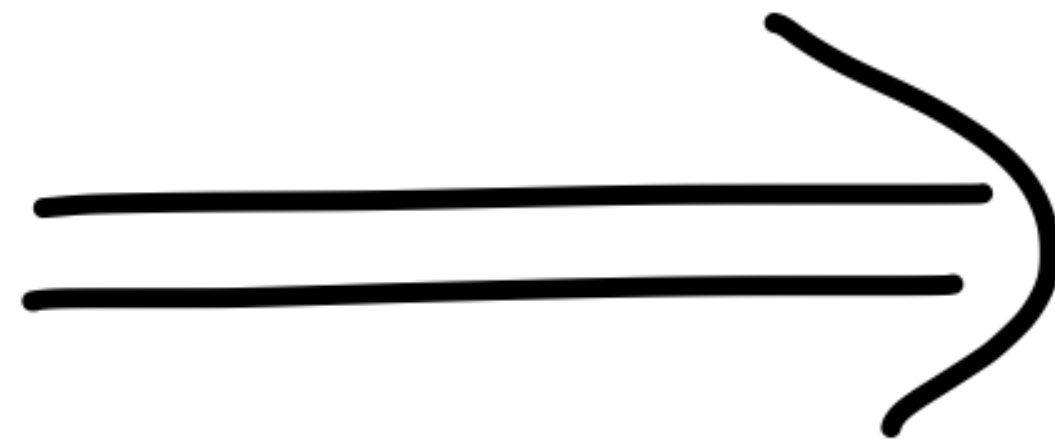
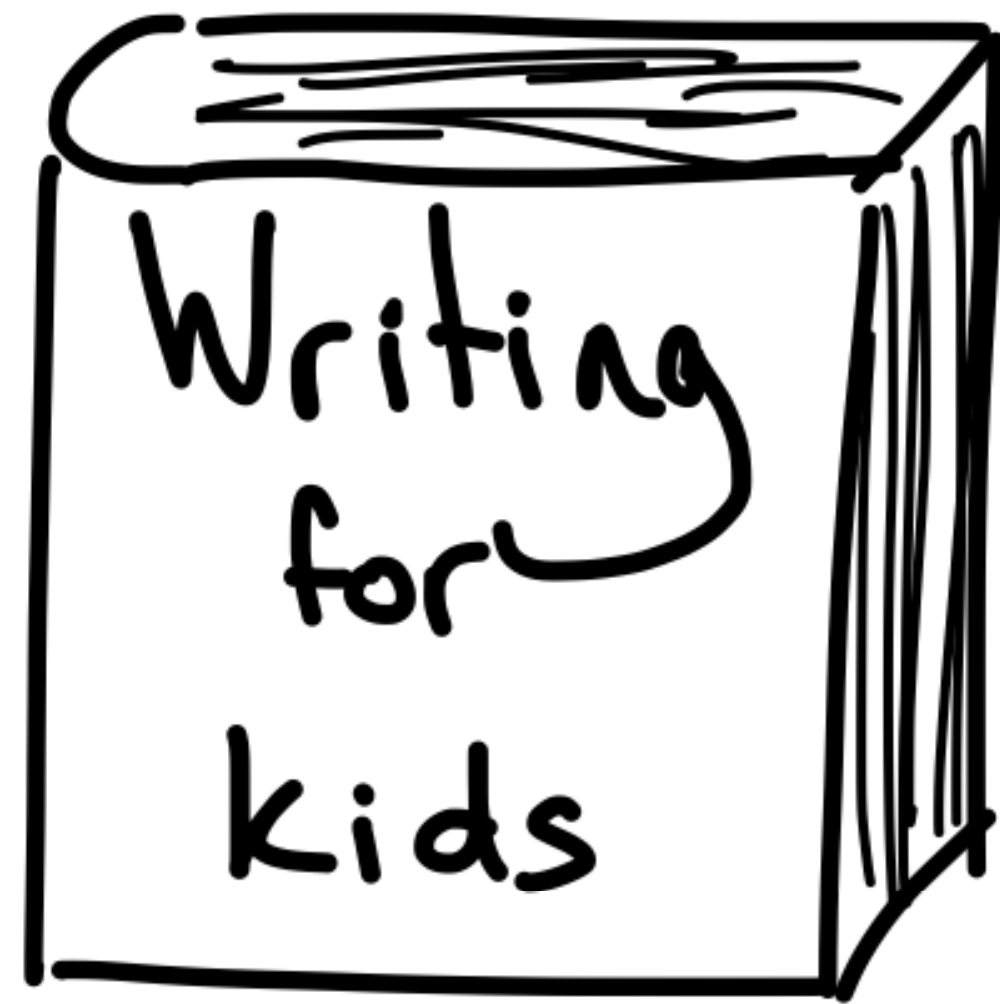
Some stuff is cultural

number_of_hearts = 12

nHearts = 12



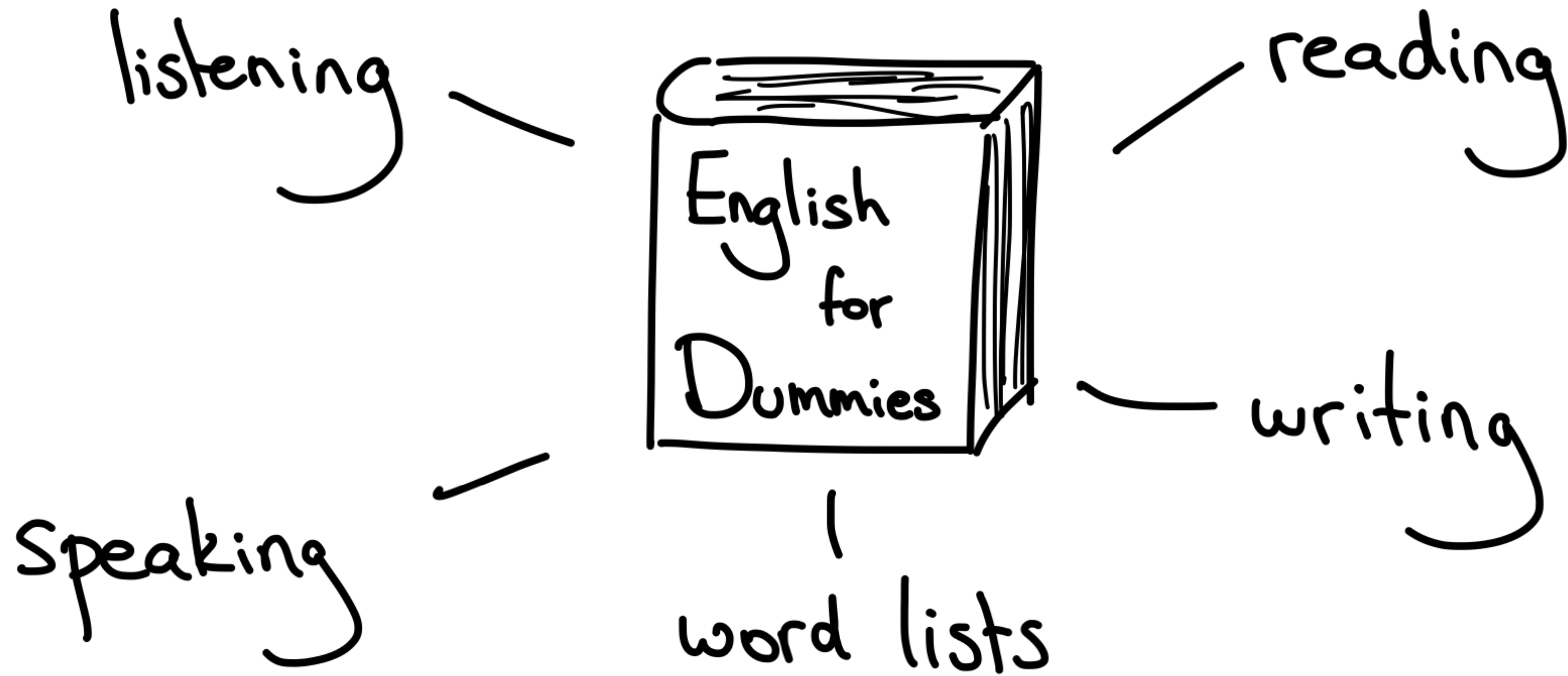
Teach programming like language



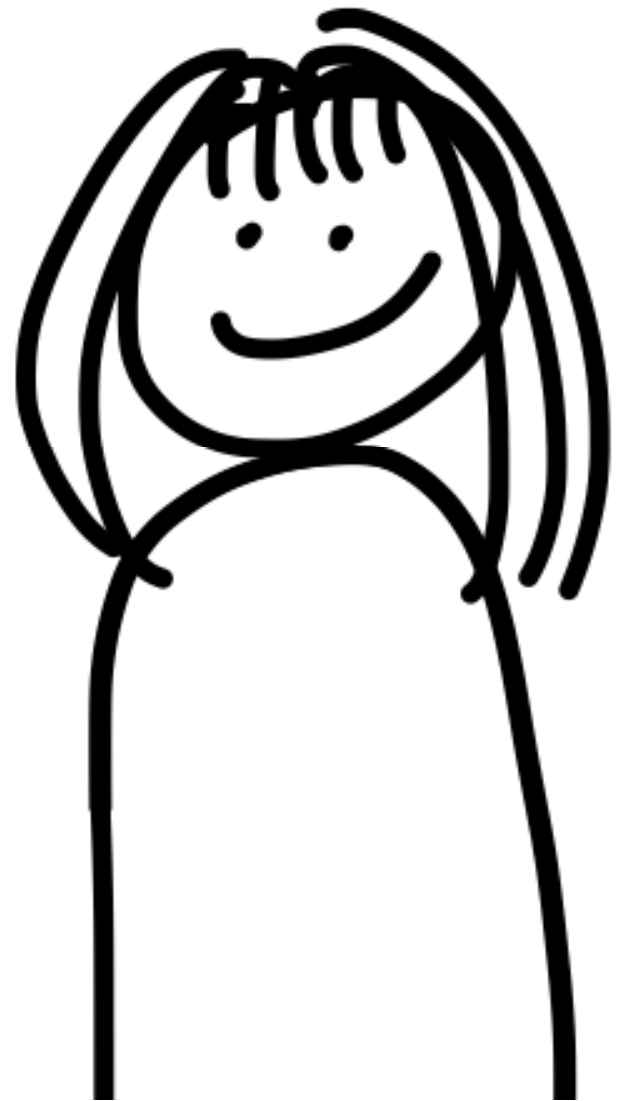
What do we know

about teaching language?

Teach programming like language

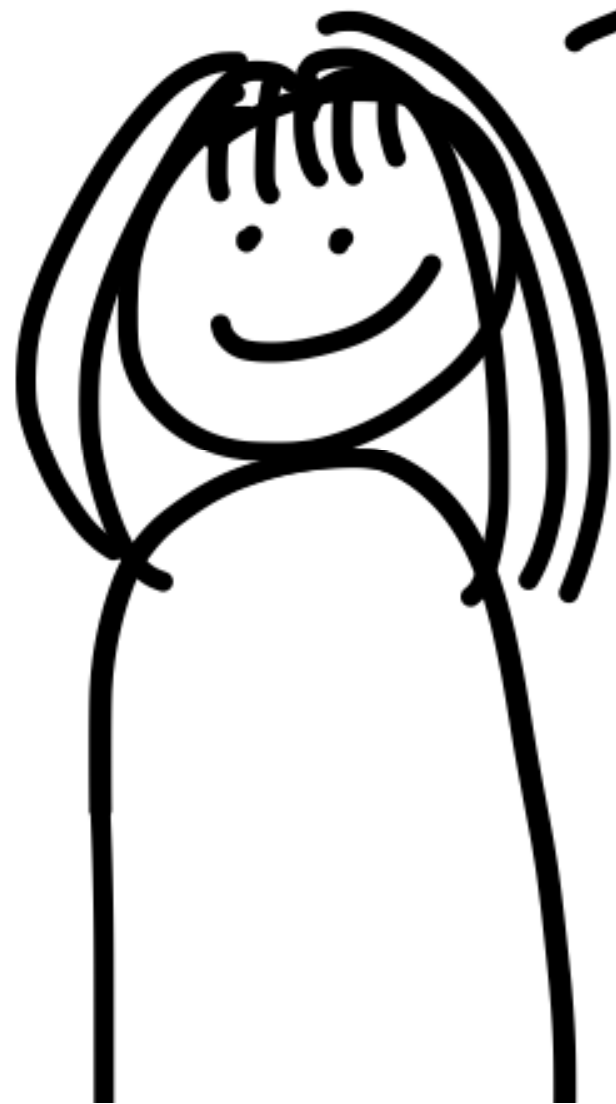


Phonics vs. Whole Language



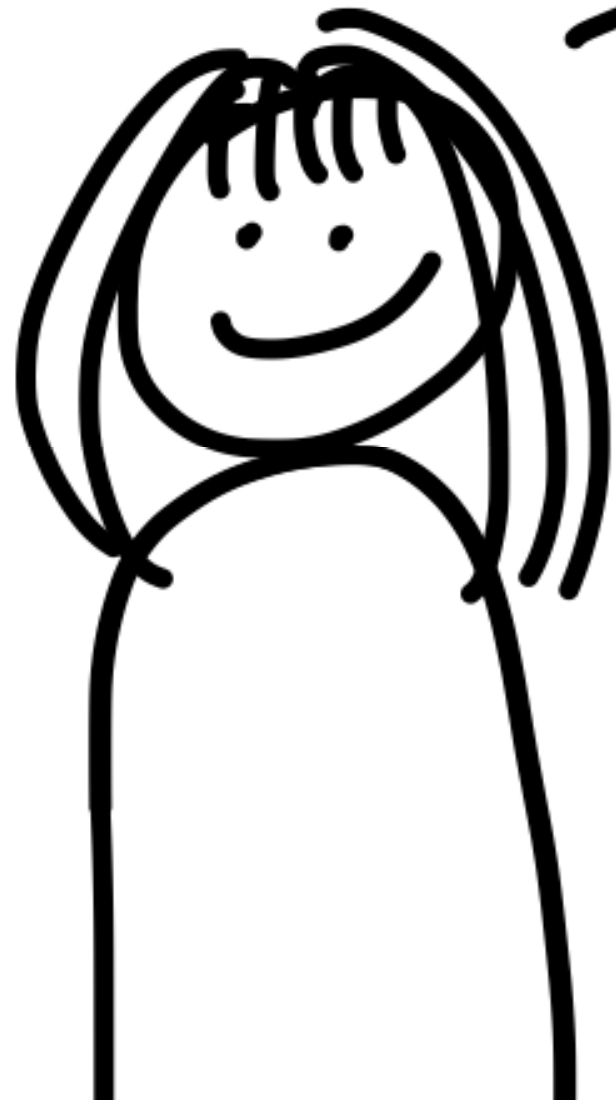
Phonics vs. Whole Language

r . e a . d



Phonics vs. Whole Language

I read a book



Phonics vs. Whole Language

this is a loop

now go reverse a string



Phonics vs. Whole Language

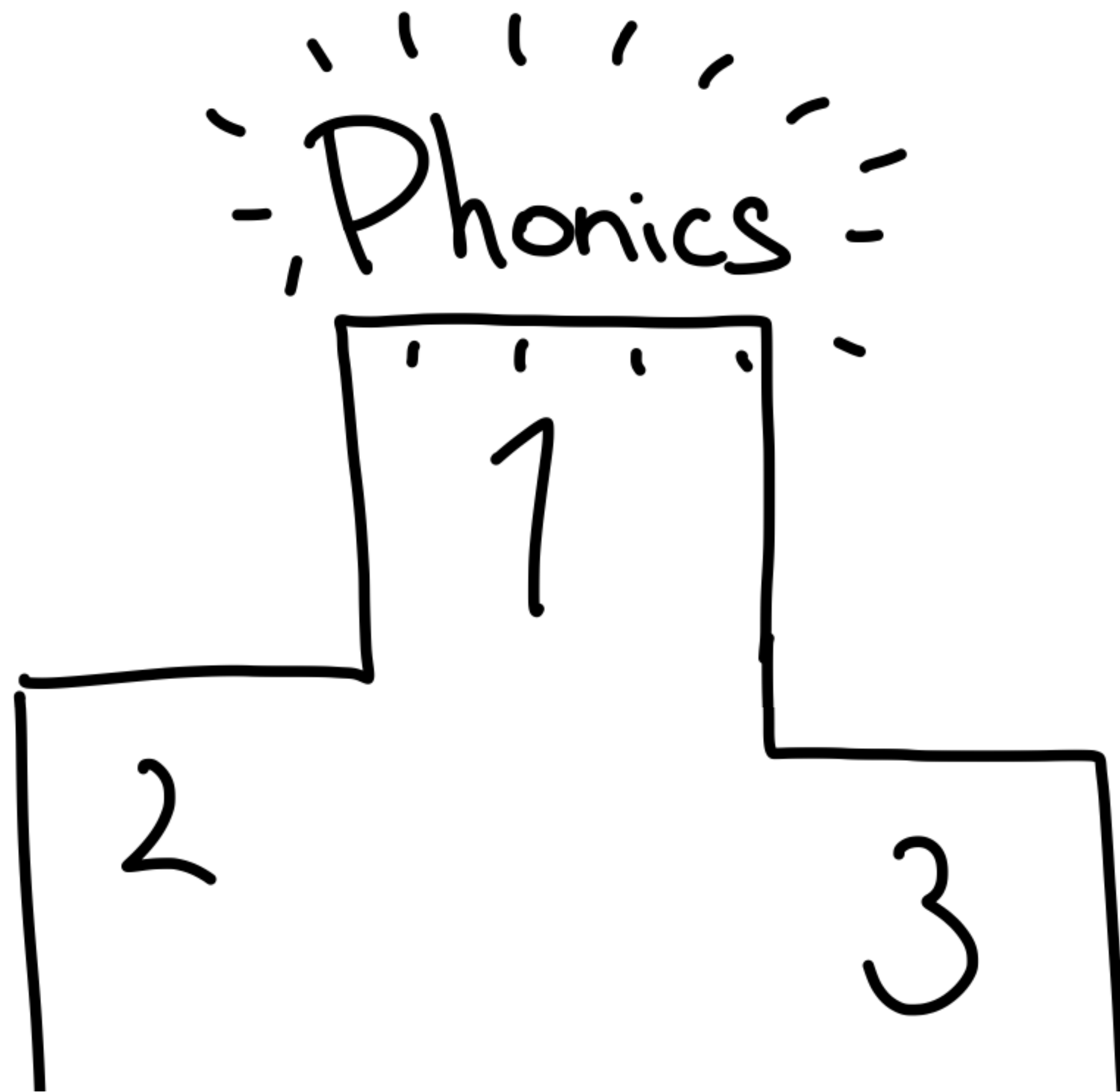
• if.

• { .

• $x = 5$.



Phonics vs. Whole Language



Phonics vs. Whole Language

🏠 > Education

Headteachers who resist teaching phonics are failing students, minister warns



8



Sommen stampen terug van weggeweest

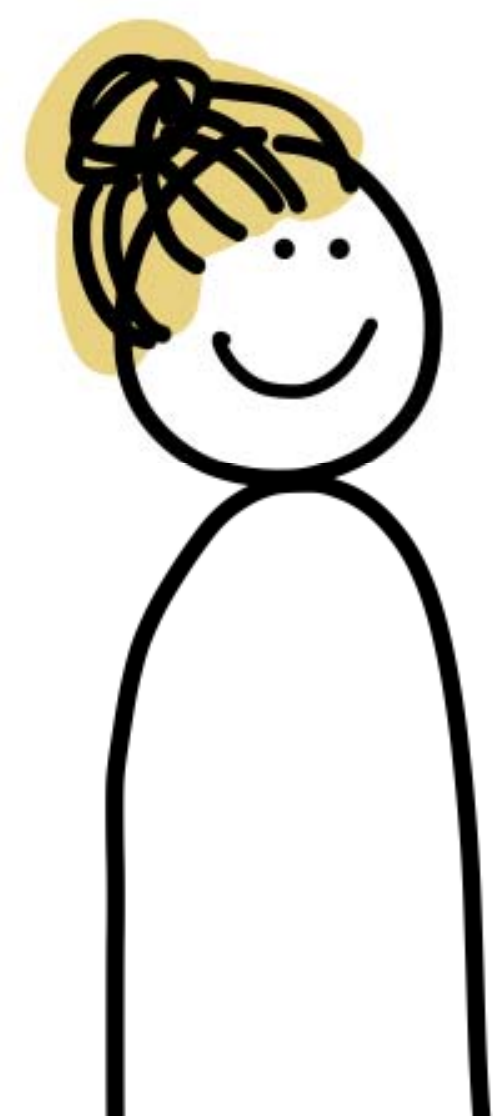
SAMENLEVING

Petra Vissers – 18:21, 3 november 2017

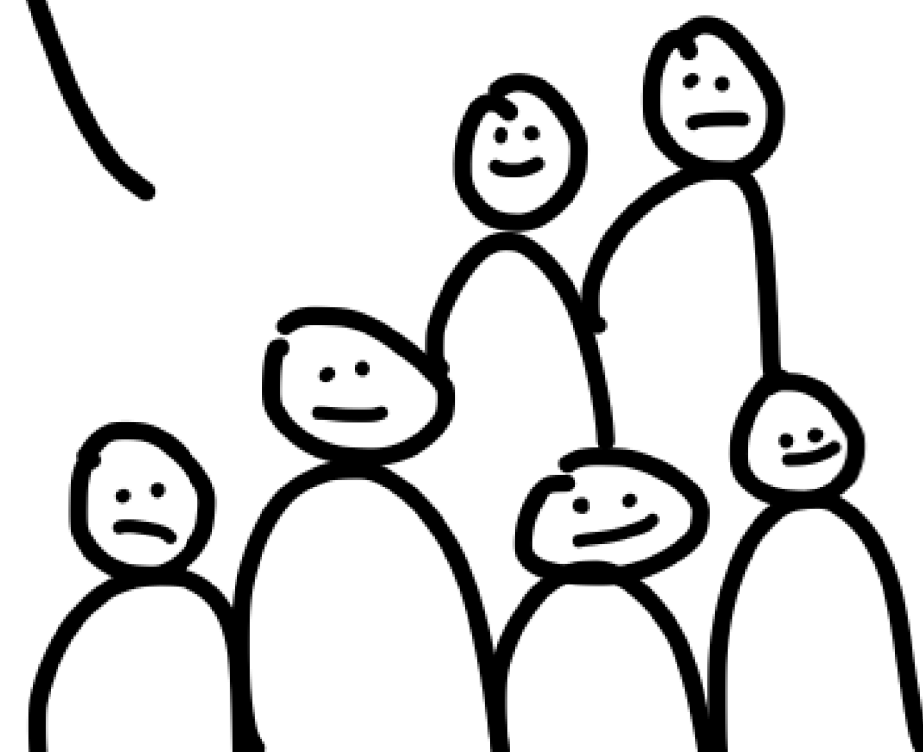


Towards a phonics approach

repeat after me: $x = 5$



"x is 5"



Towards a phonics approach

Homework

Fill in the blanks:

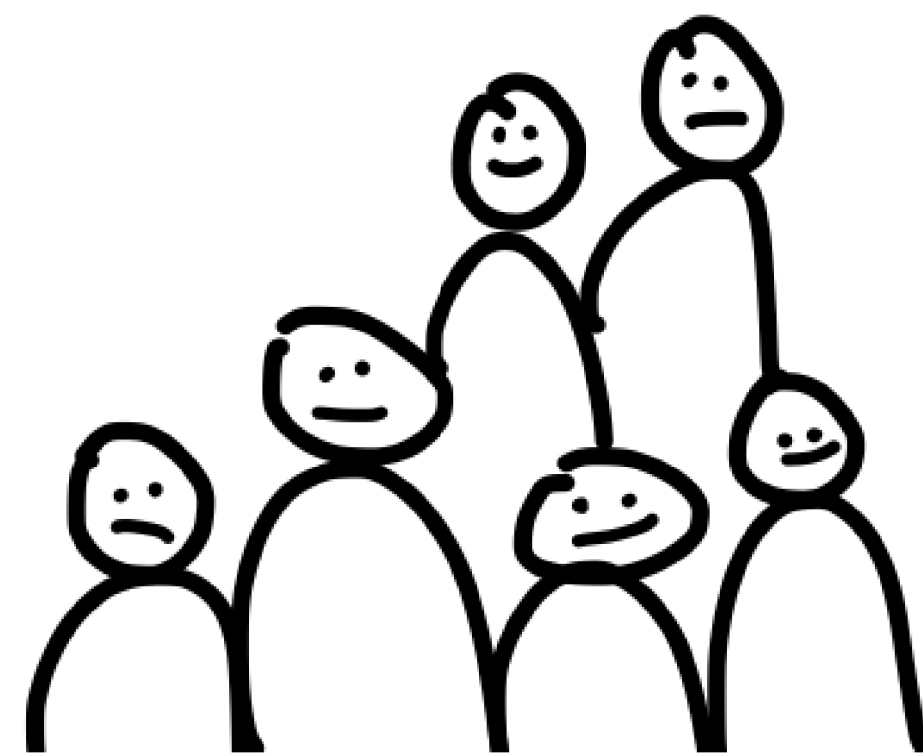
$$x = 5$$

$$x _ 5$$

$$x = _$$

$$_ = 12$$

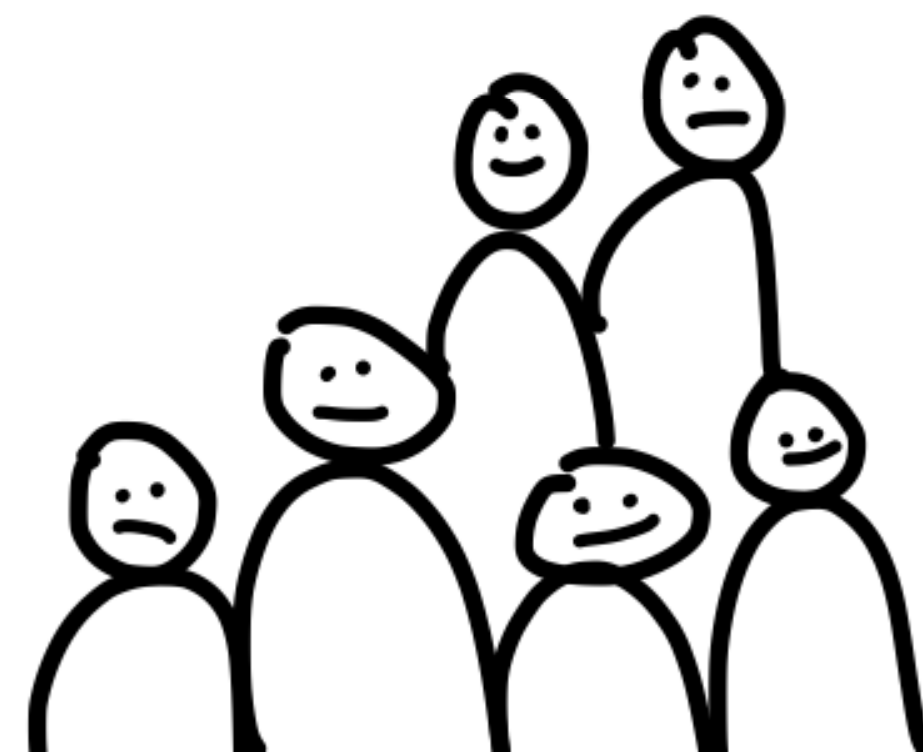
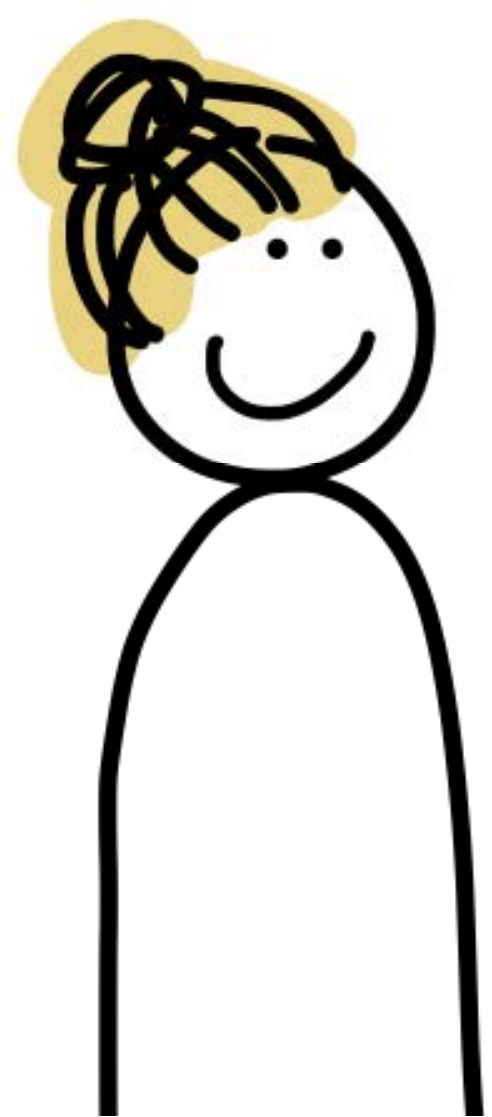
$$_ = _$$



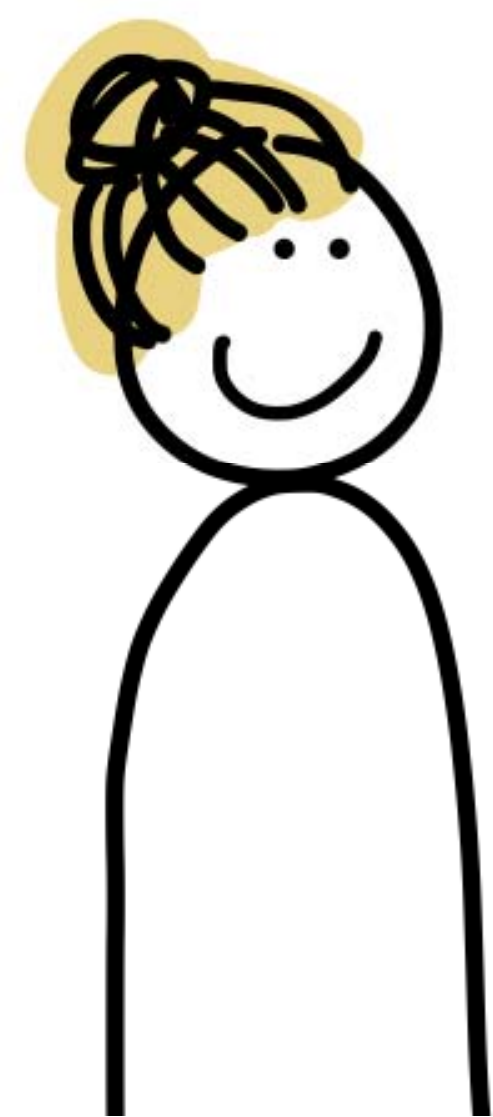
Towards a phonics approach

Now you know assignment.

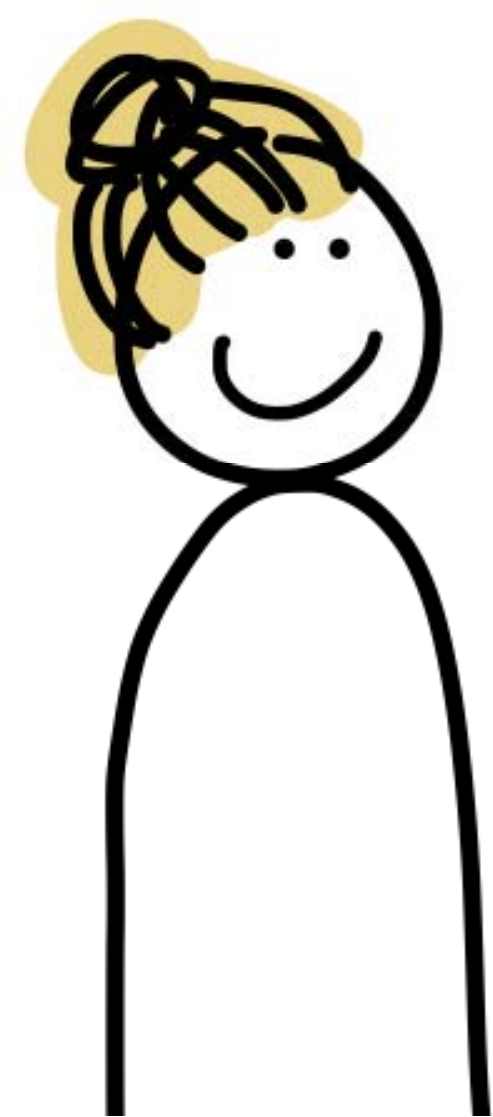
What will you build?



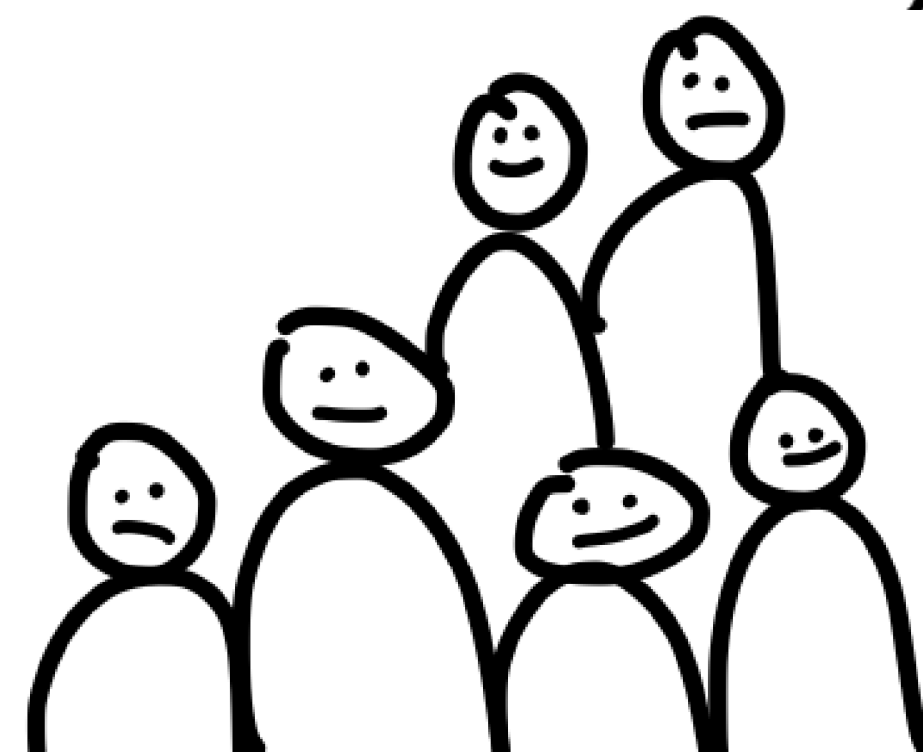
Towards a phonics approach



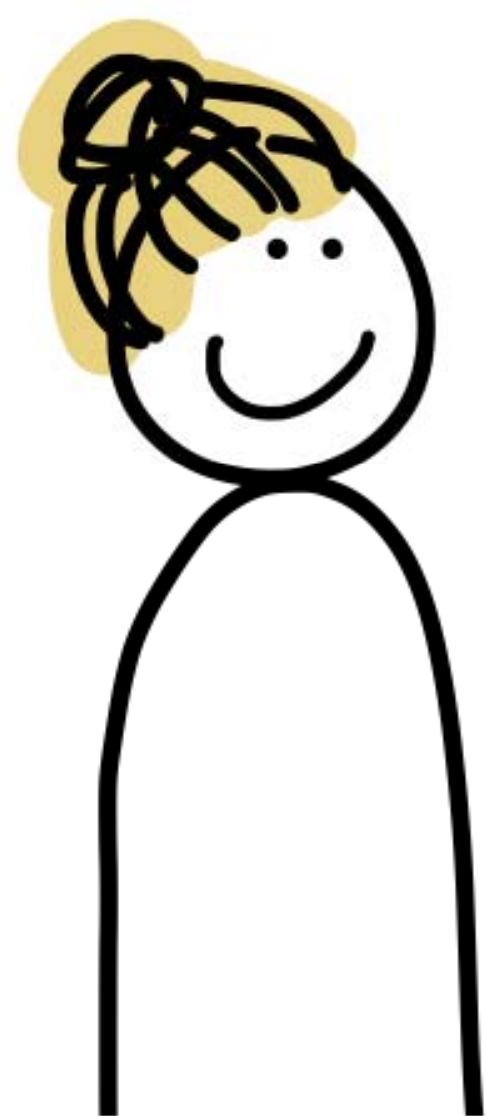
Towards a phonics approach



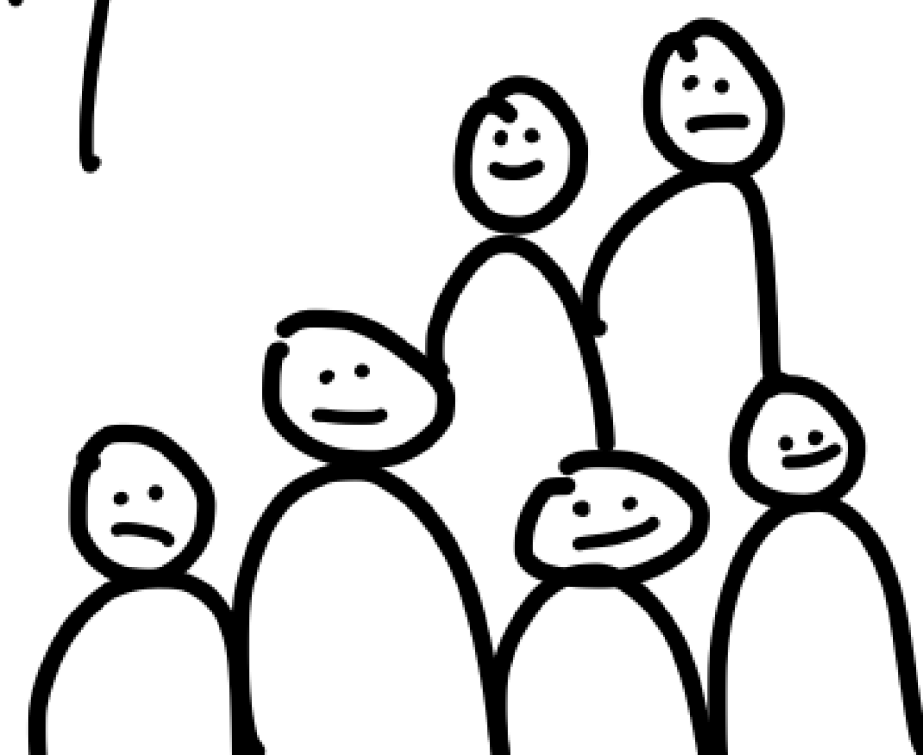
Supermarket
Site



Towards a phonics approach



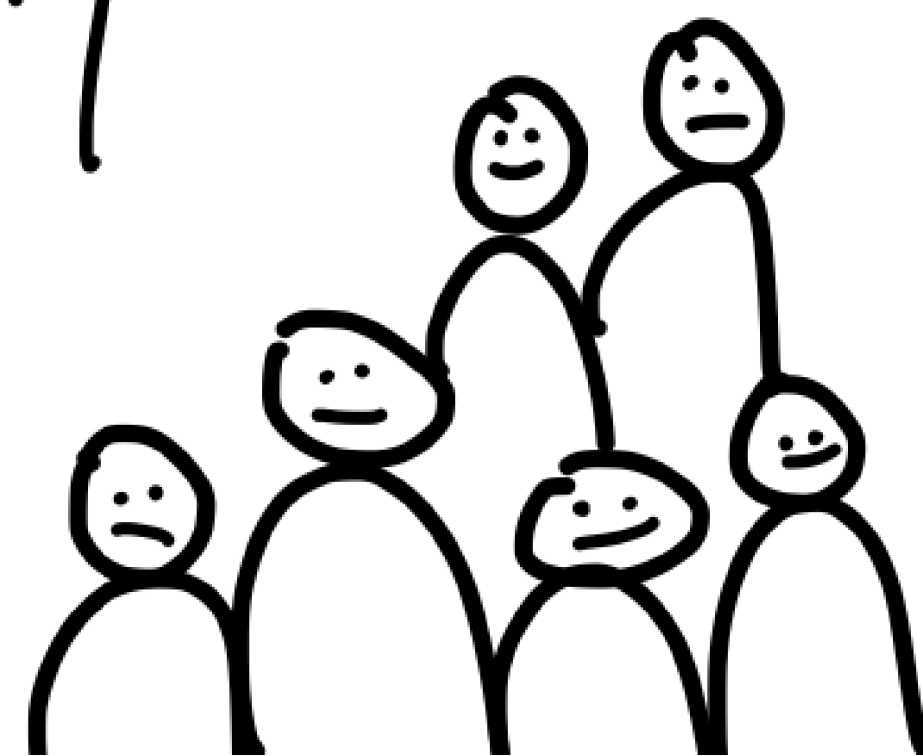
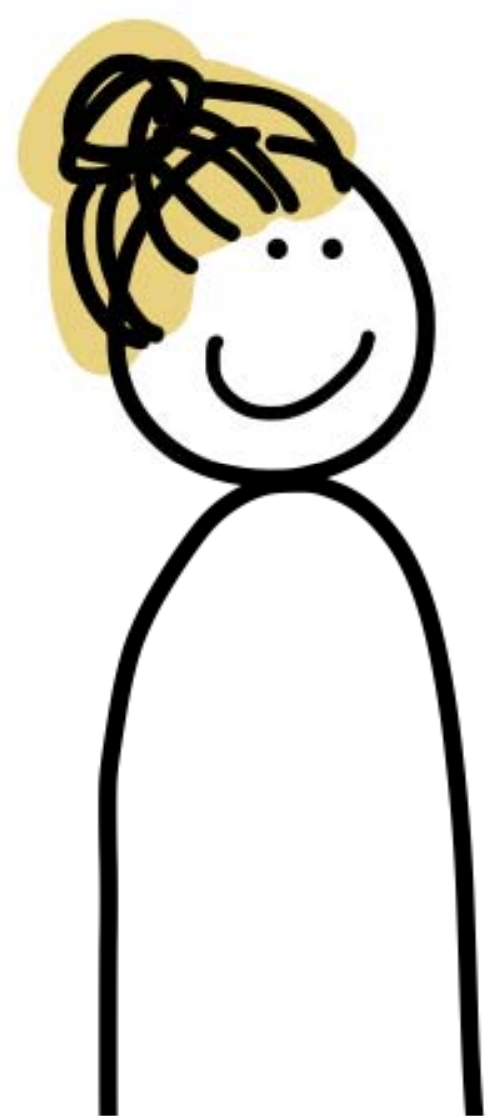
Narwhal story



Towards a phonics approach



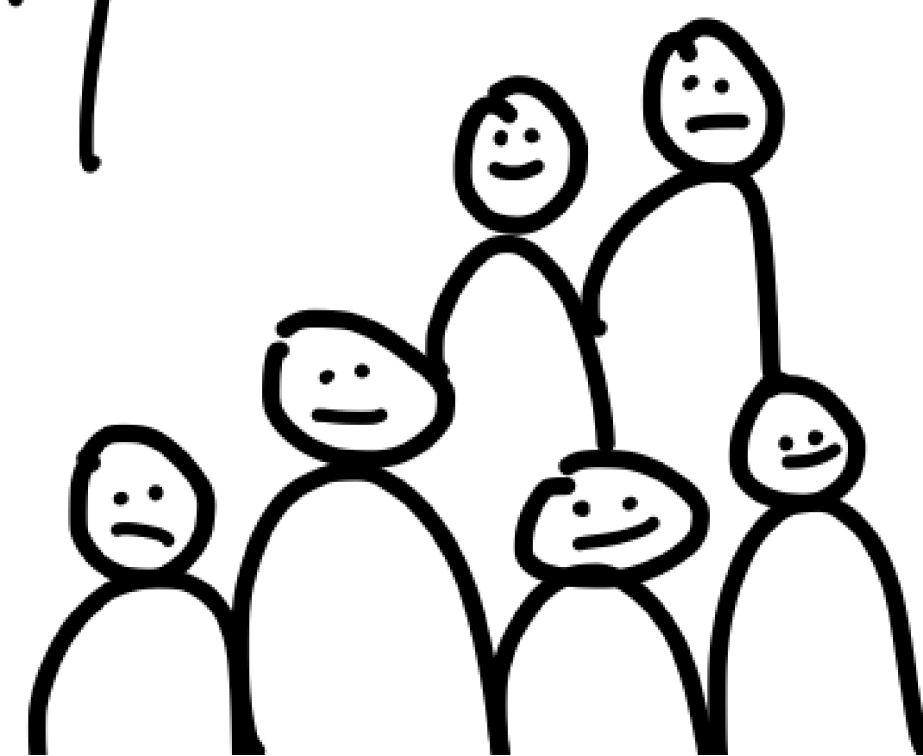
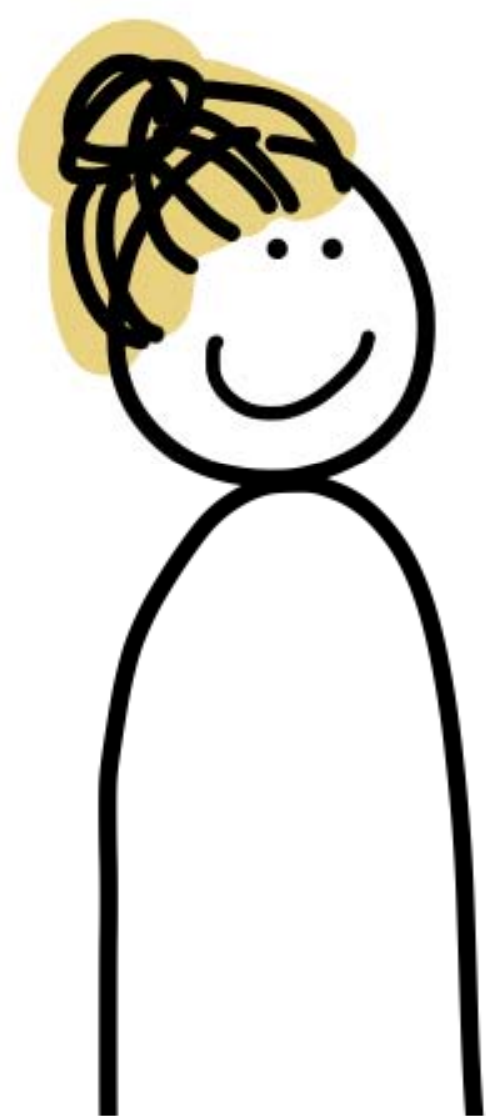
Narwhal story



Towards a phonics approach

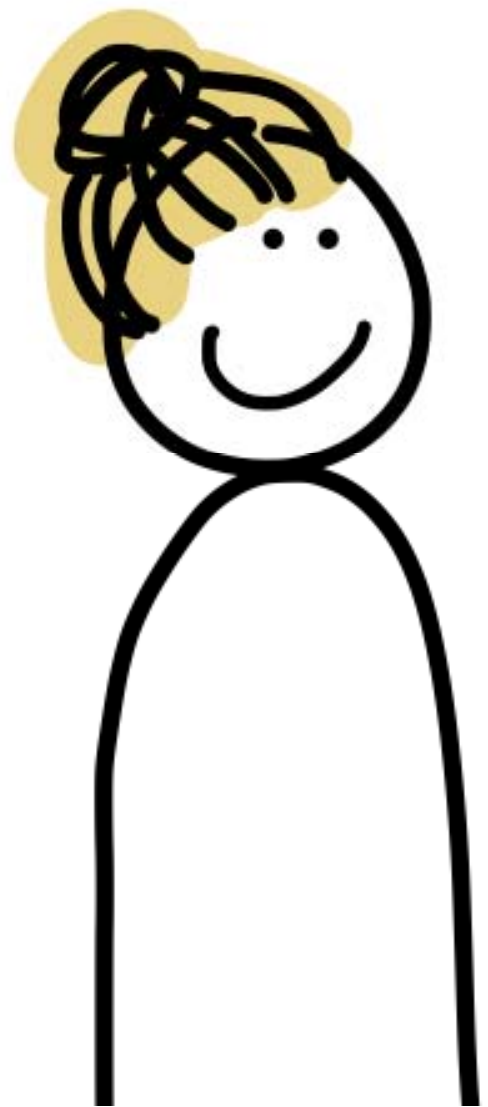
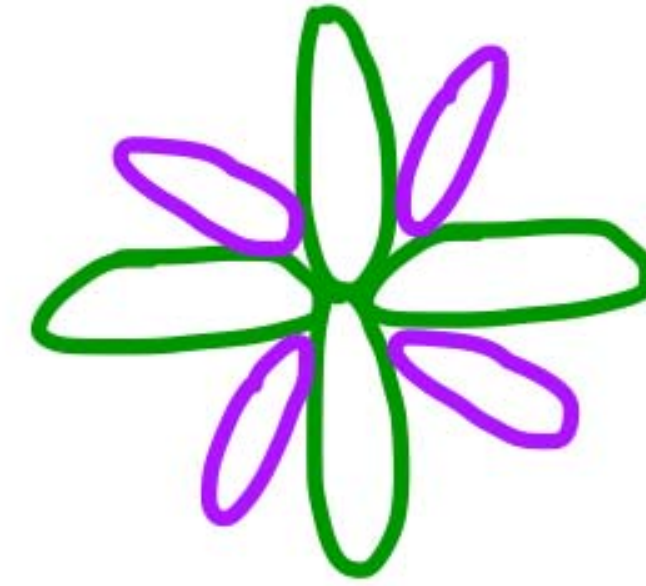


Narwhal story



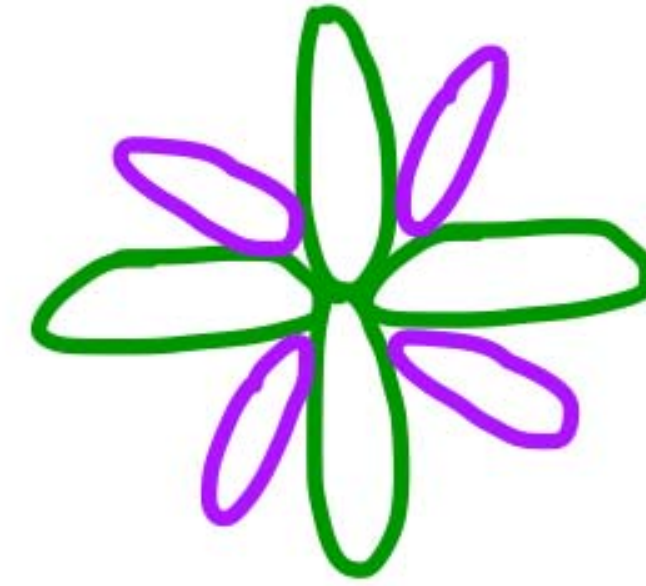
More diverse lessons

Spirograph



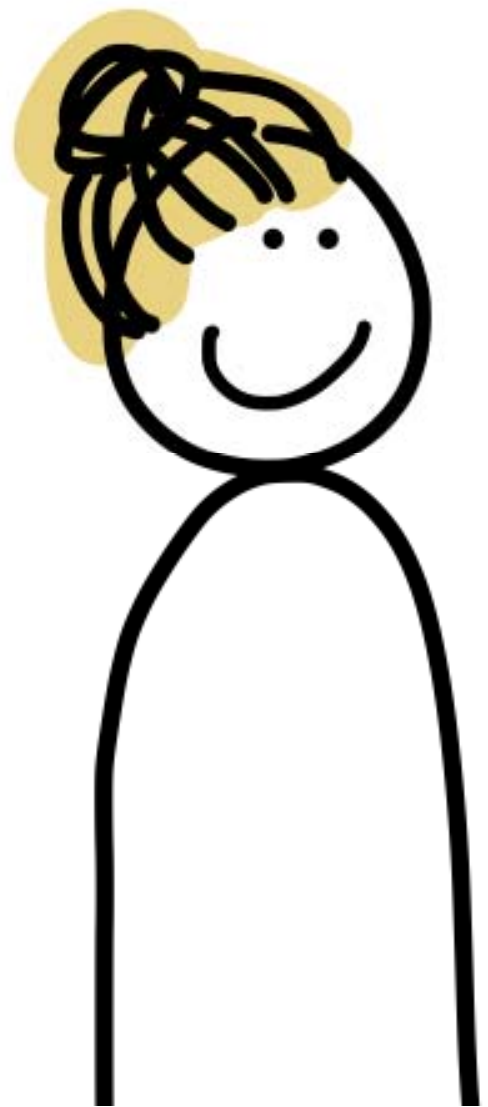
More diverse lessons

Spirograph



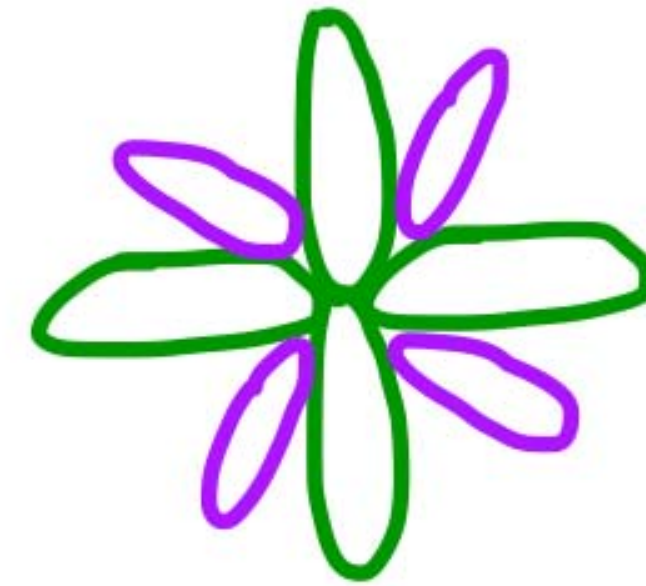
Poems

There once
was a
variable
called x ...



More diverse lessons

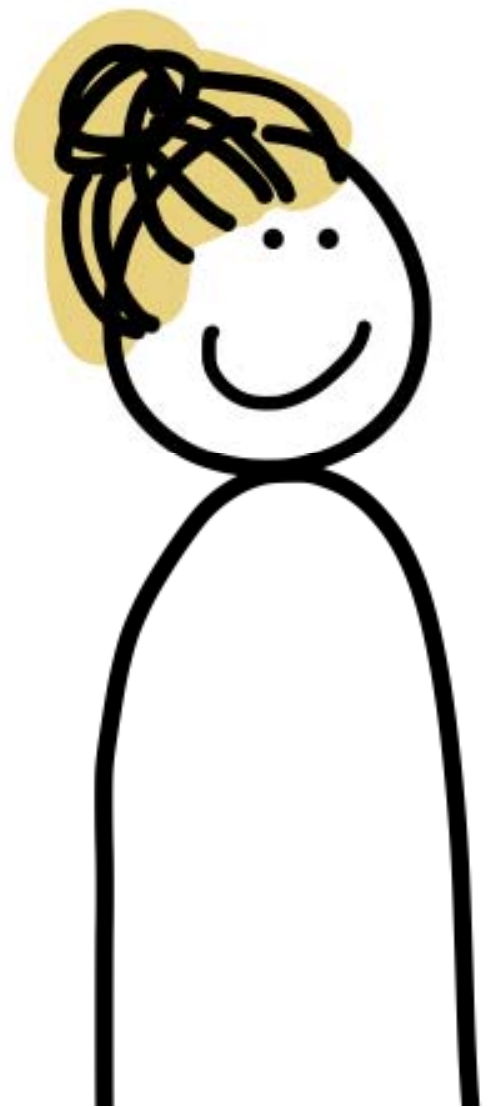
Spirograph

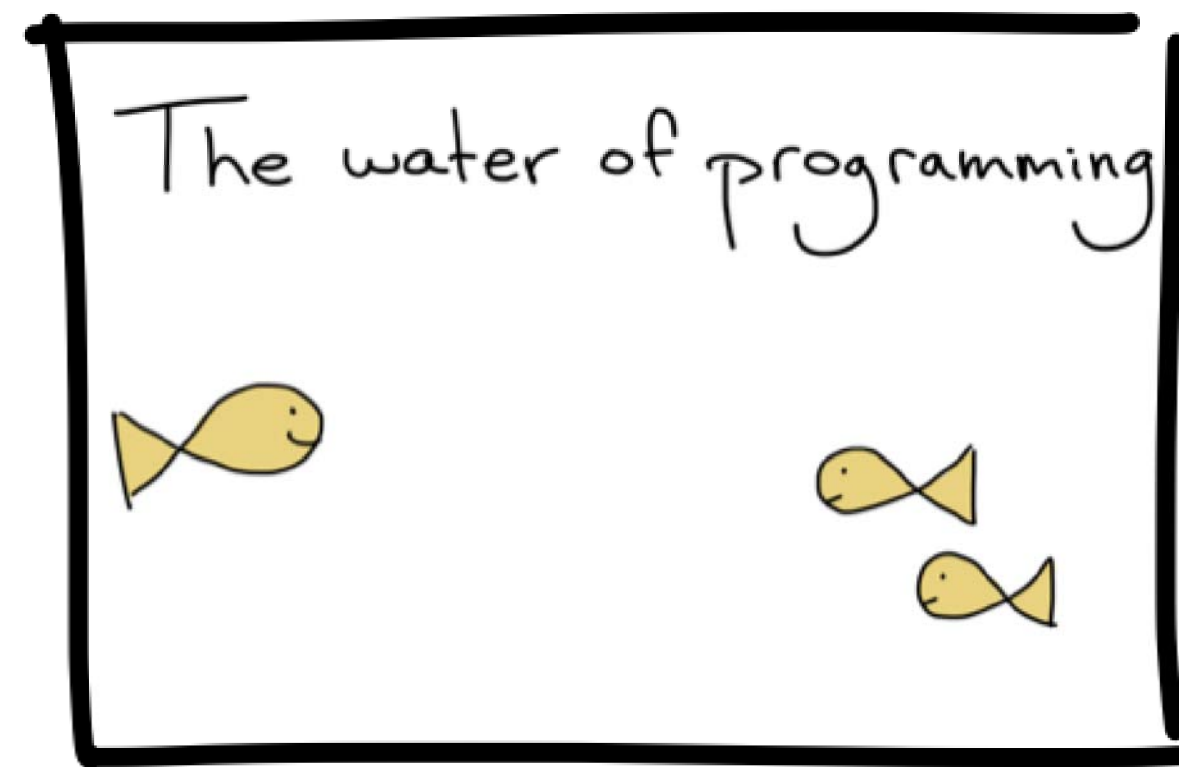


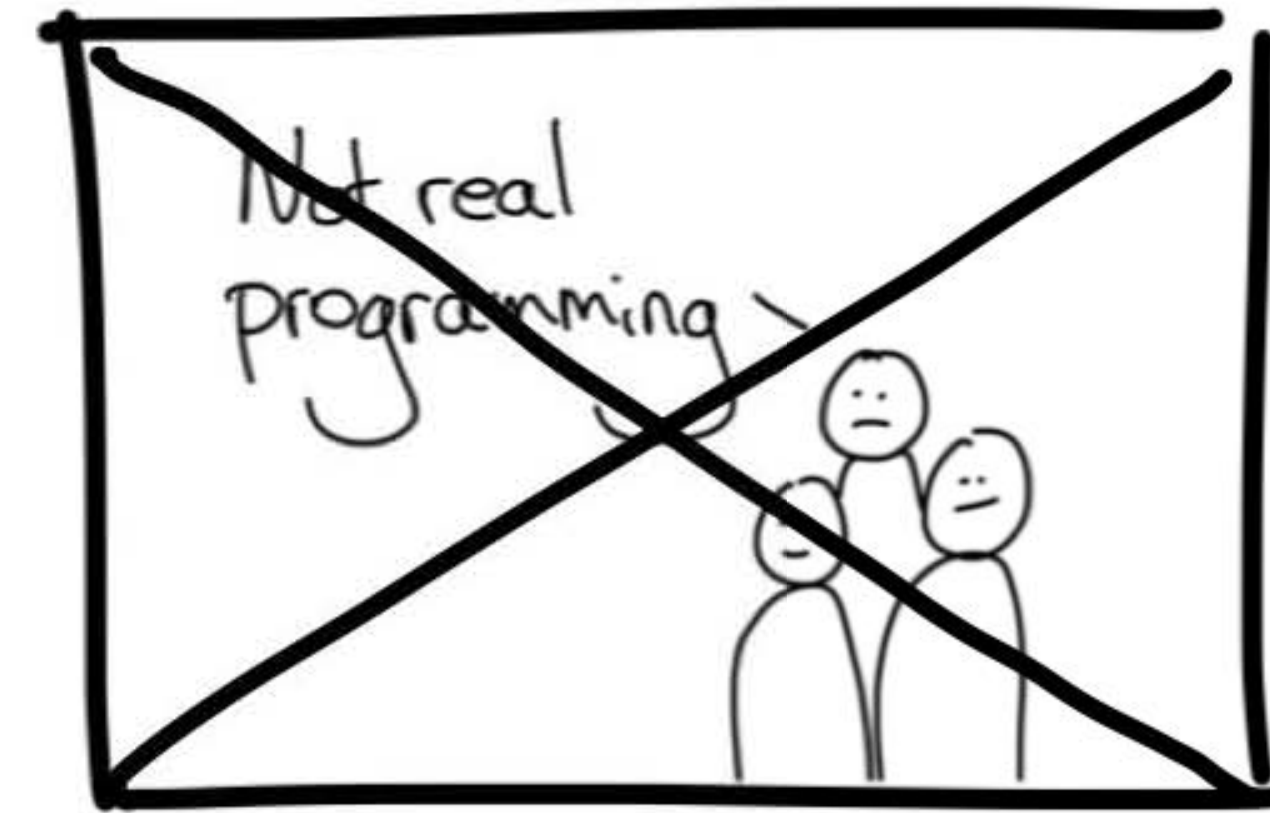
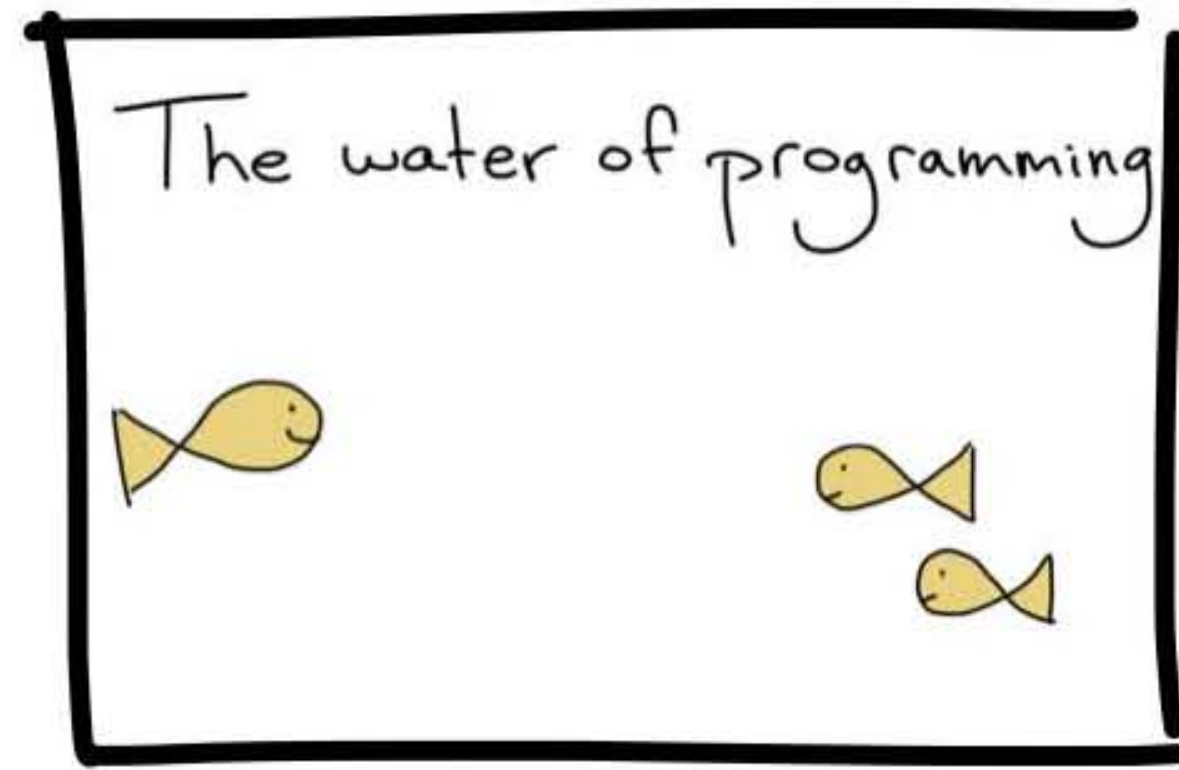
Poems

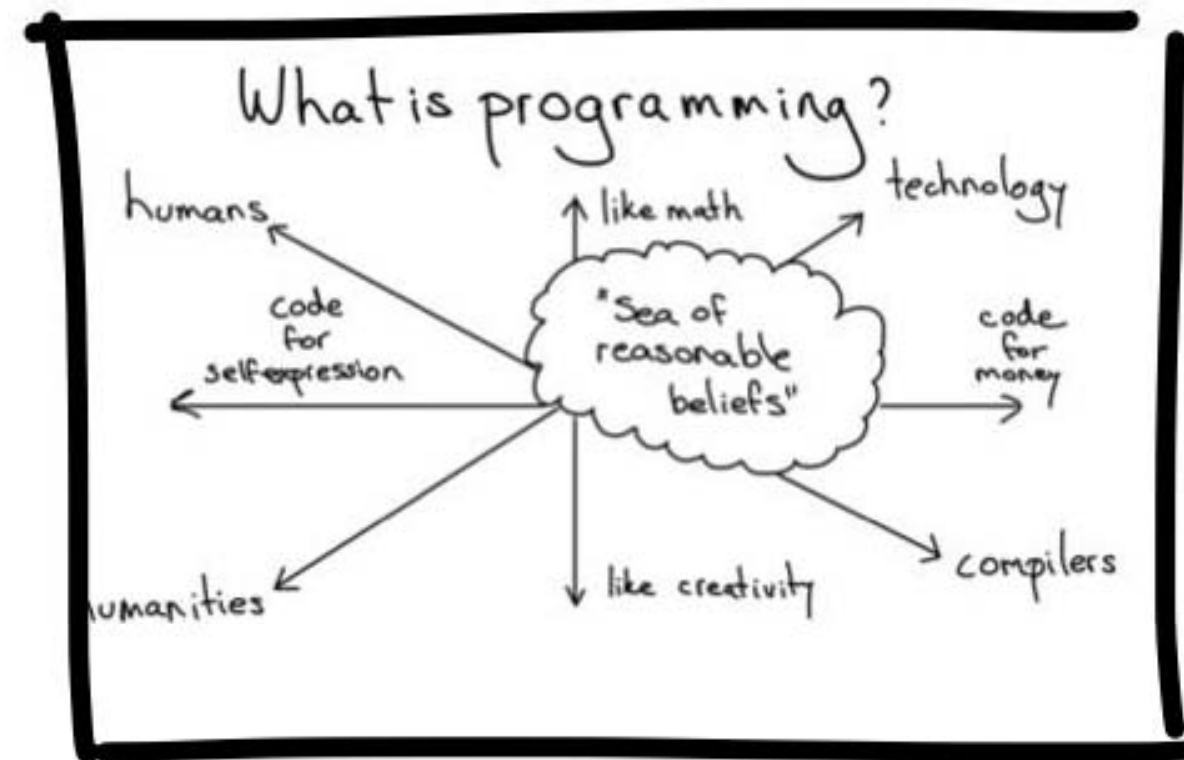
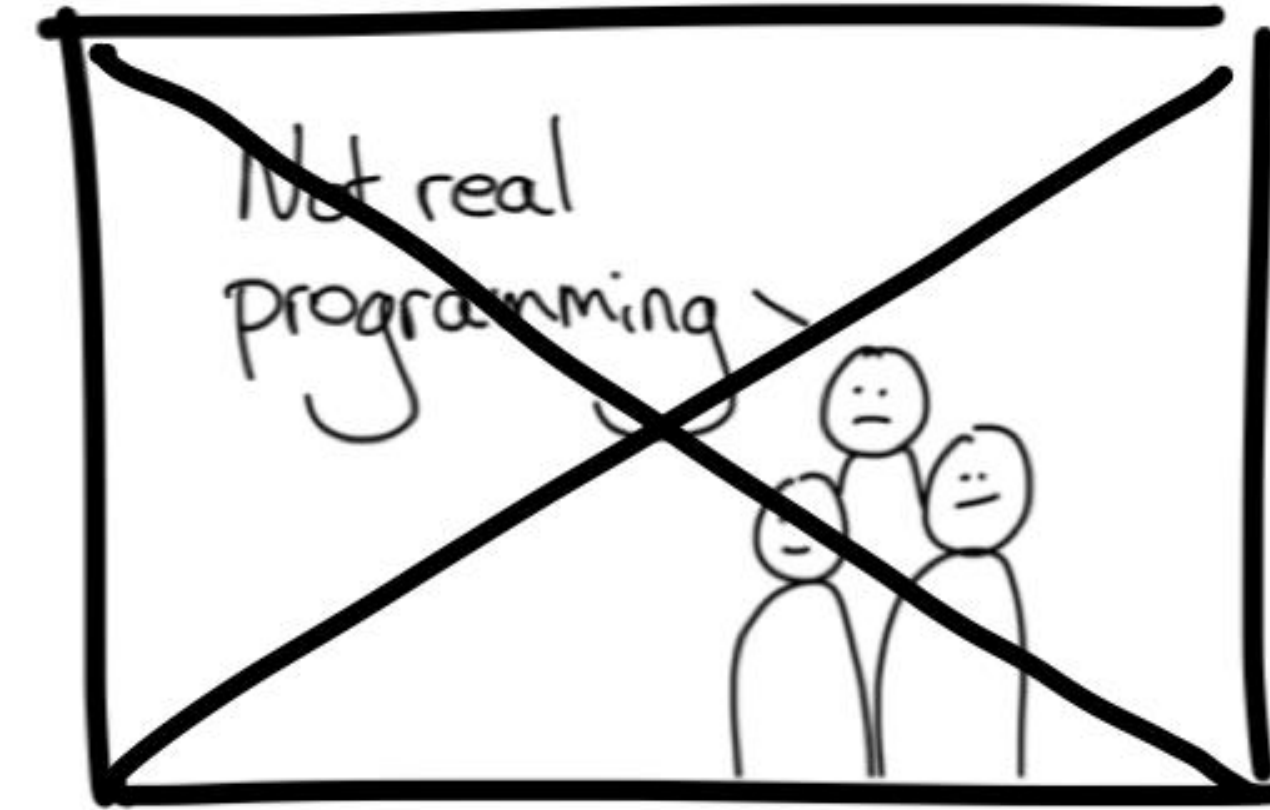
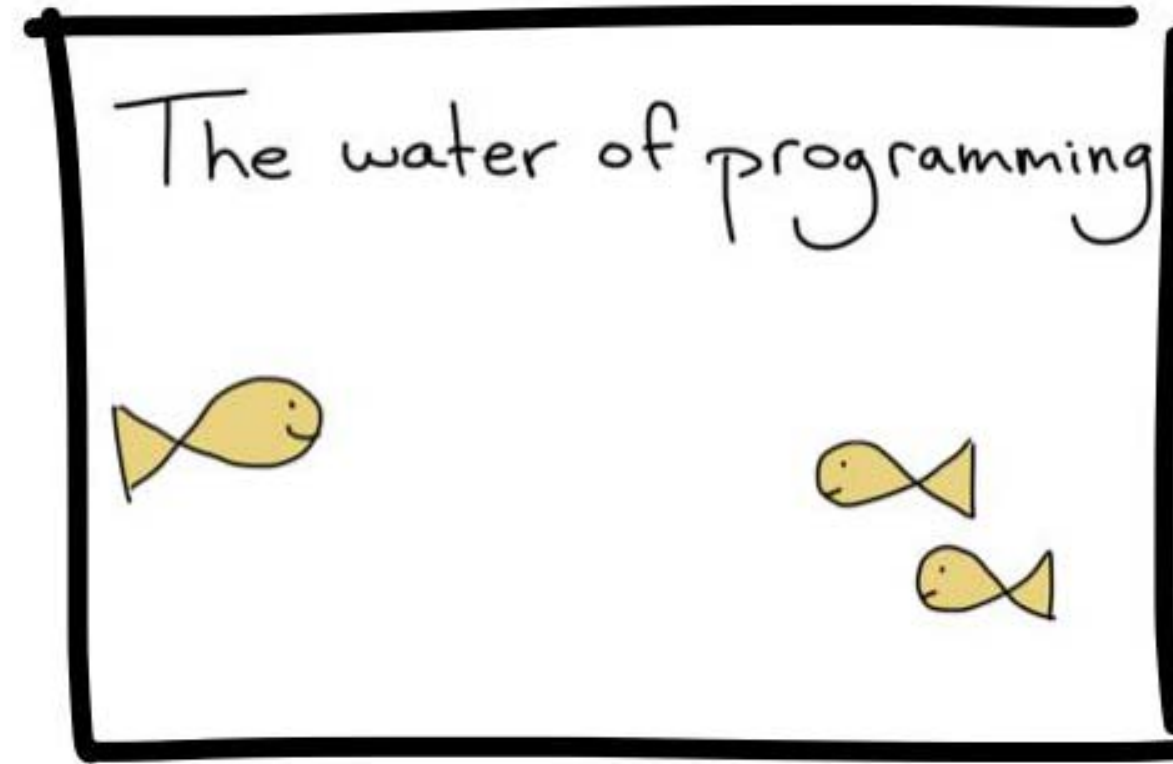
There once
was a
variable
called x ...

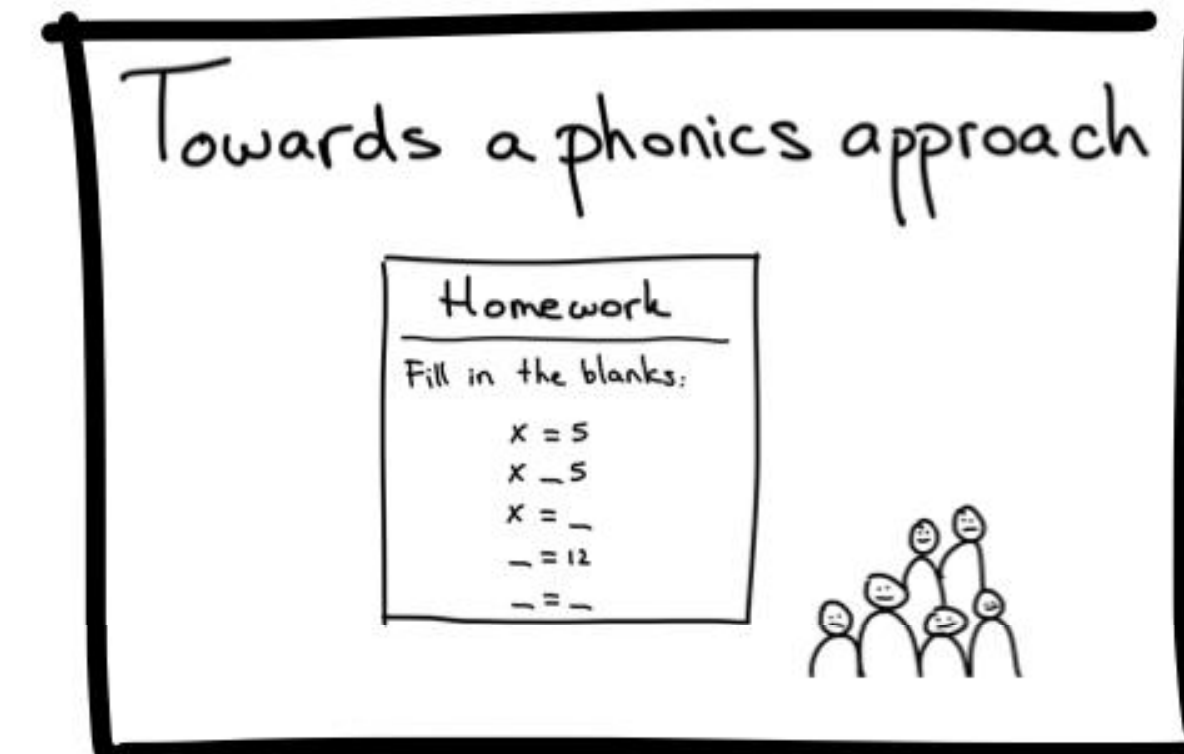
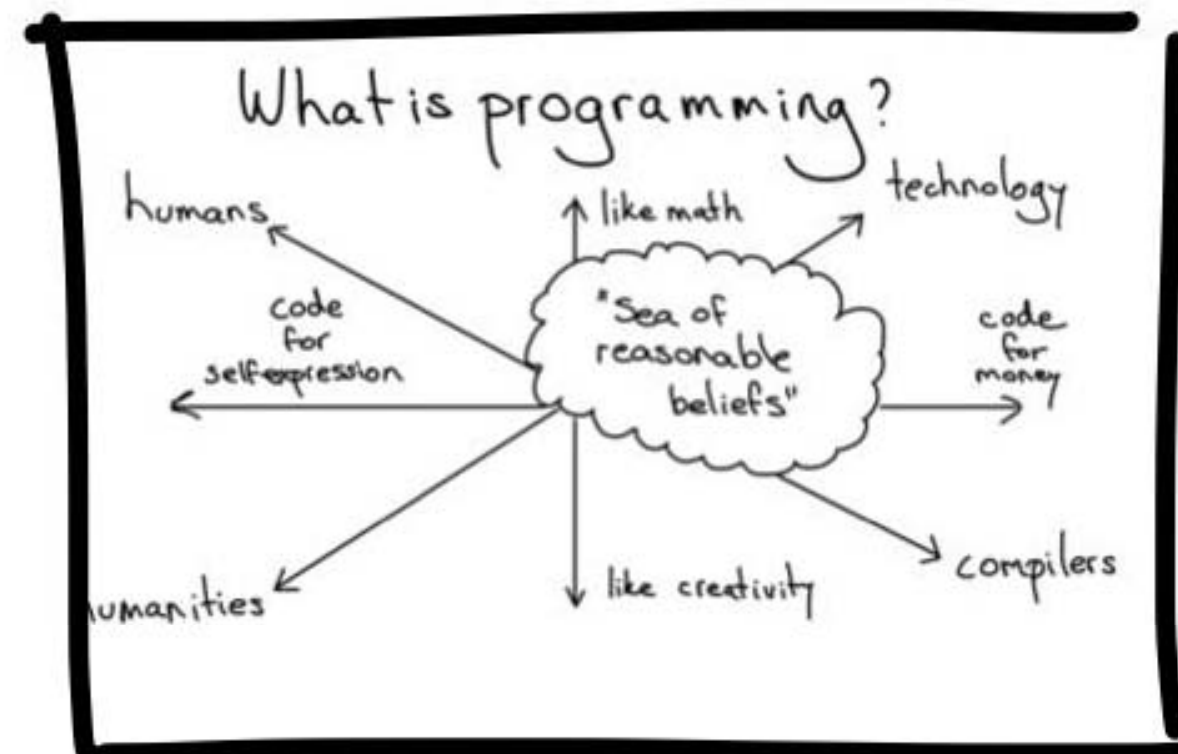
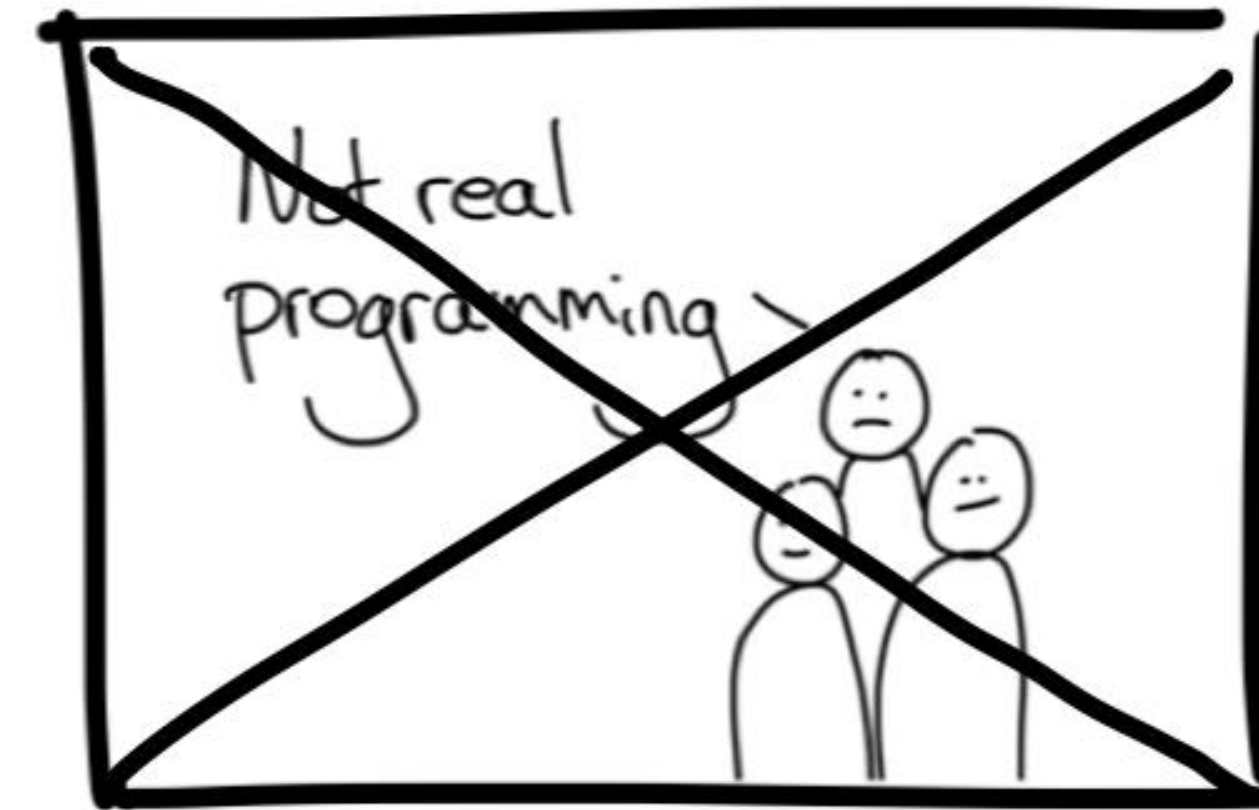
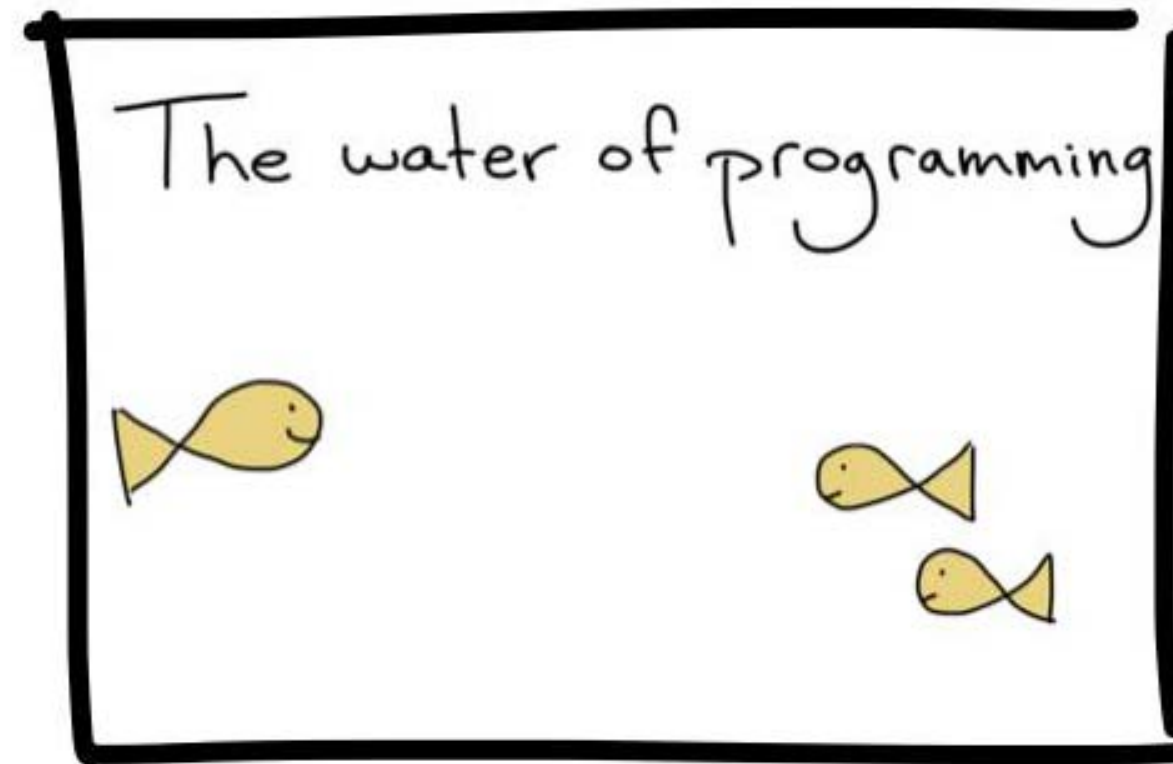
Tomorrow 11:00
in Neushoorn
Grote Danszaal





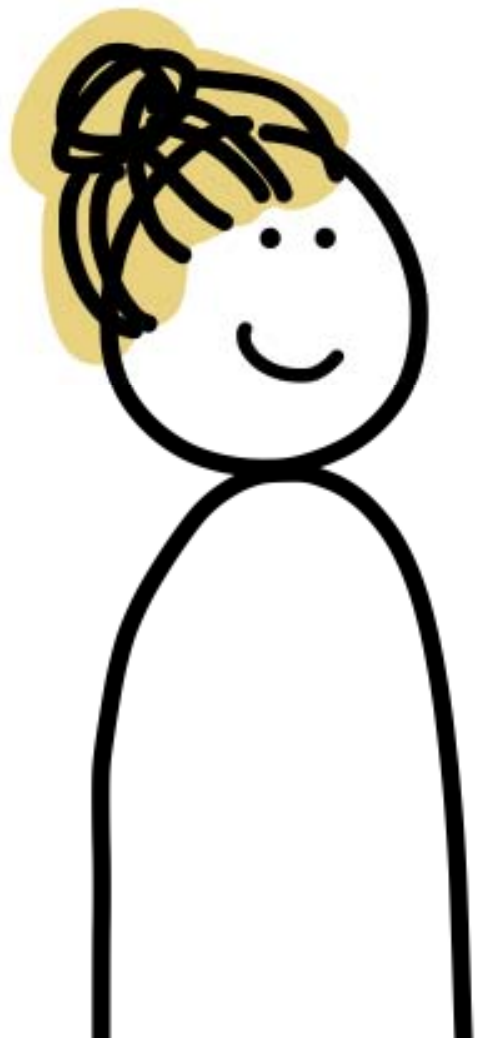






THE END

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THE END

Slides made with
Goodnotes & Pencil

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