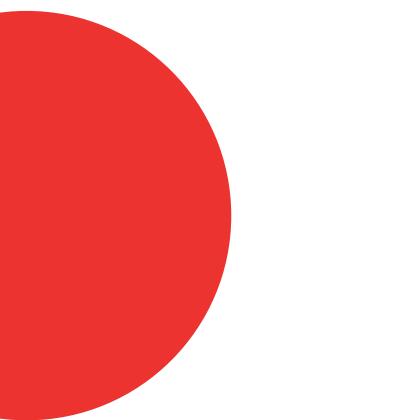
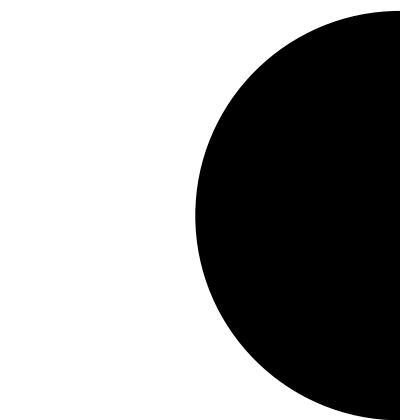




Readable Code

Laura Savino

@#%&

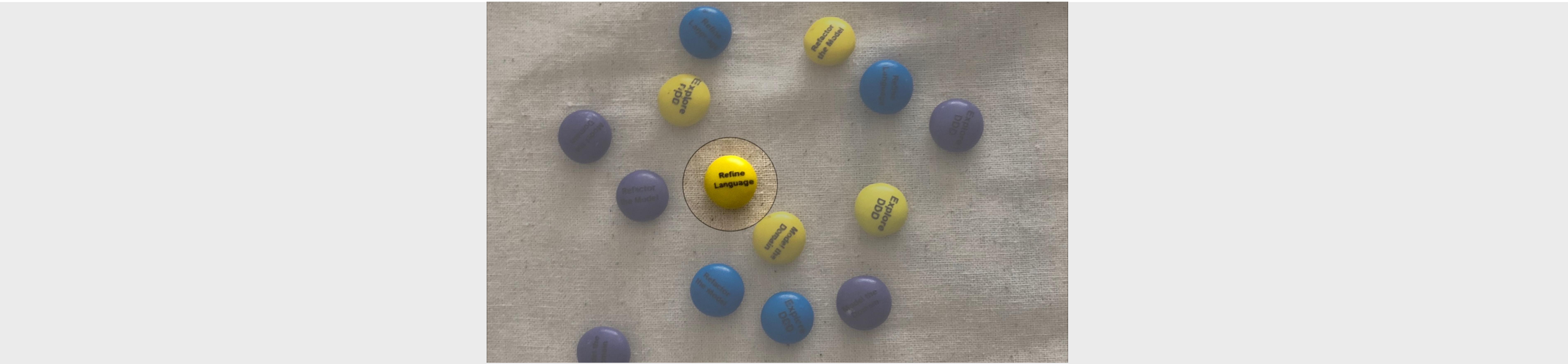




Readable Code

Laura Savino

REFINING LANGUAGE





CONTENTS



- 01** LANGUAGE && CODE
- 02** WHAT IS READING?
- 03** WHY TO WRITE READABLY

- 04** HOW TO WRITE READABLY
- 05** WHEN TO WRITE READABLY



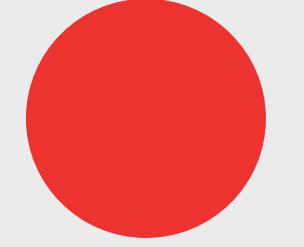
01 LANGUAGE & CODE

LANGUAGE & CODE



"Hello, world!"

LANGUAGE & CODE

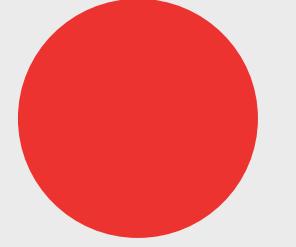


“Hello, world!”



“How have you been?”

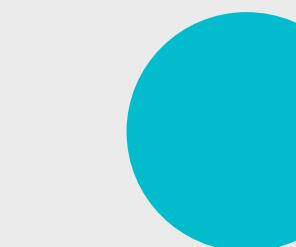
LANGUAGE & CODE



“Hello, world!”



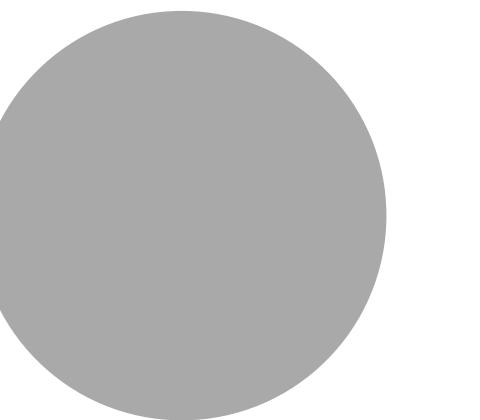
“How have you been?”



“Let’s talk values...”

LANGUAGE && CODE

Nuance, subtlety, & stereotypes

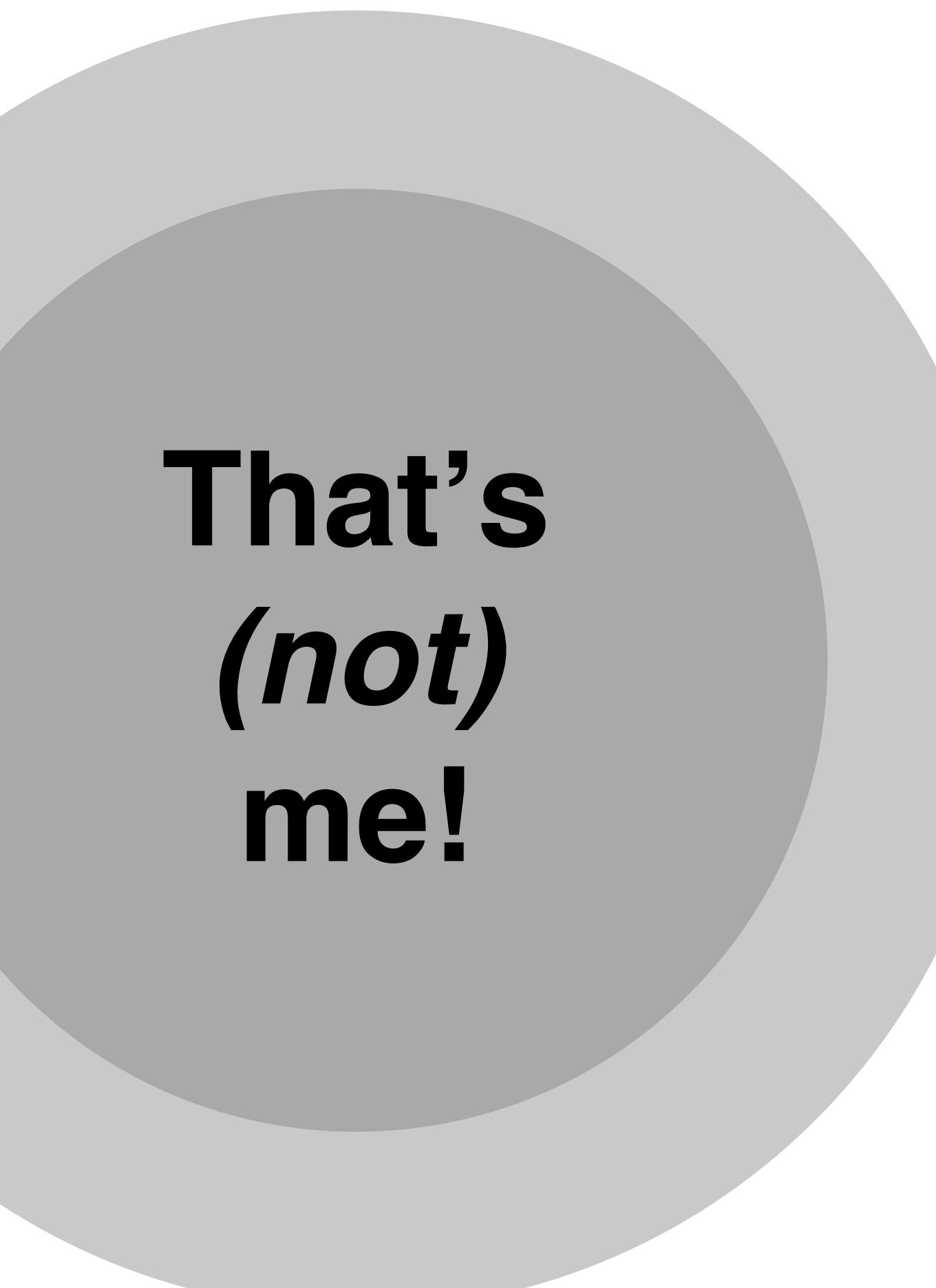


LANGUAGE && CODE



hi, y'all!

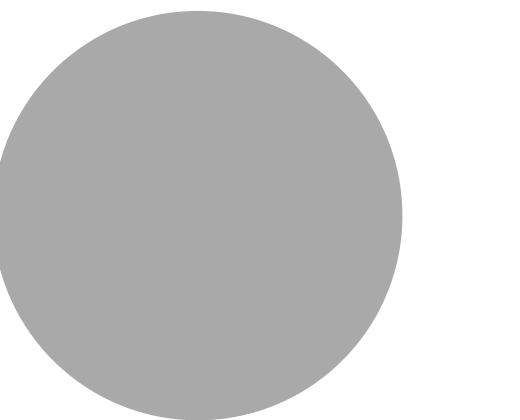
LANGUAGE && CODE



That's
(not)
me!

LANGUAGE && CODE

Breaking expectations



LANGUAGE && CODE



thank you

LANGUAGE && CODE

```
let baseCosts: [Double] = ...  
var totalCosts = [Double]()  
for cost in baseCosts {  
    totalCosts.append(cost * 1.15)  
}
```

LANGUAGE && CODE

```
let baseCosts: [Double] = ...  
let totalCosts = baseCosts.map() {  
    $0 * 1.15  
}
```

02

WHAT IS READING?



WHAT IS READING?



“I'm having trouble understanding this code.”

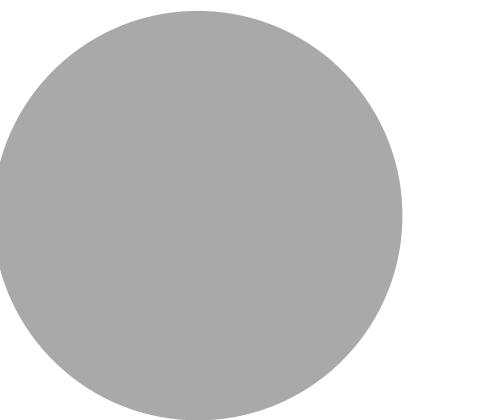


“But it's more readable this way!”

“**Readable**”

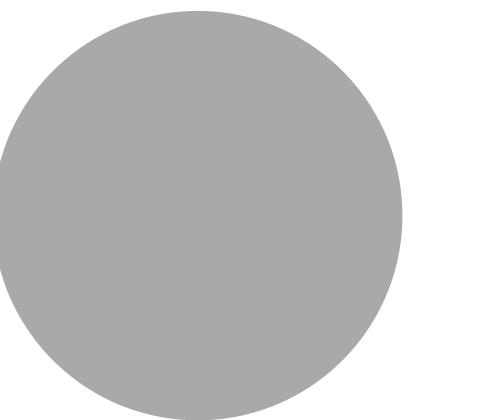
WHAT IS READING?

Readability needs a reader.



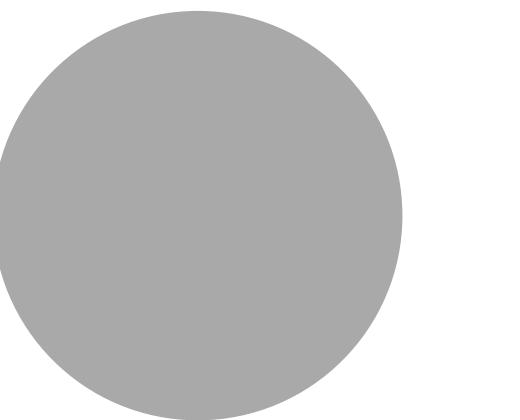
WHAT IS READING?

Fluency uses experience.



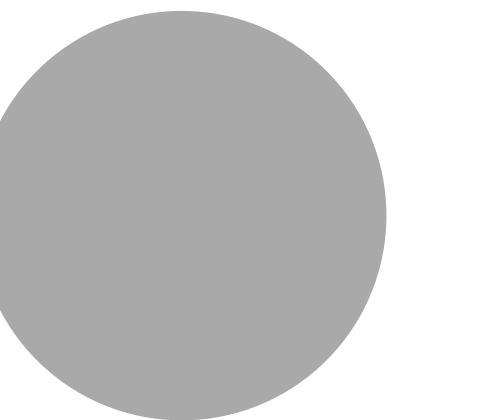
WHAT IS READING?

two very different readers...



WHAT IS READING?

What about
comments?



USE PATTERN MATCHING



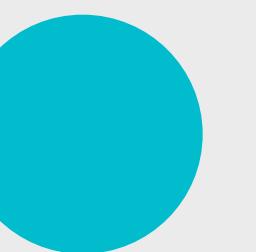
This makes some
sense

```
// NEVER CHANGE VARIABLES X AND Y  
perimeter = x * 2 + y * 2
```



Starting to diverge:

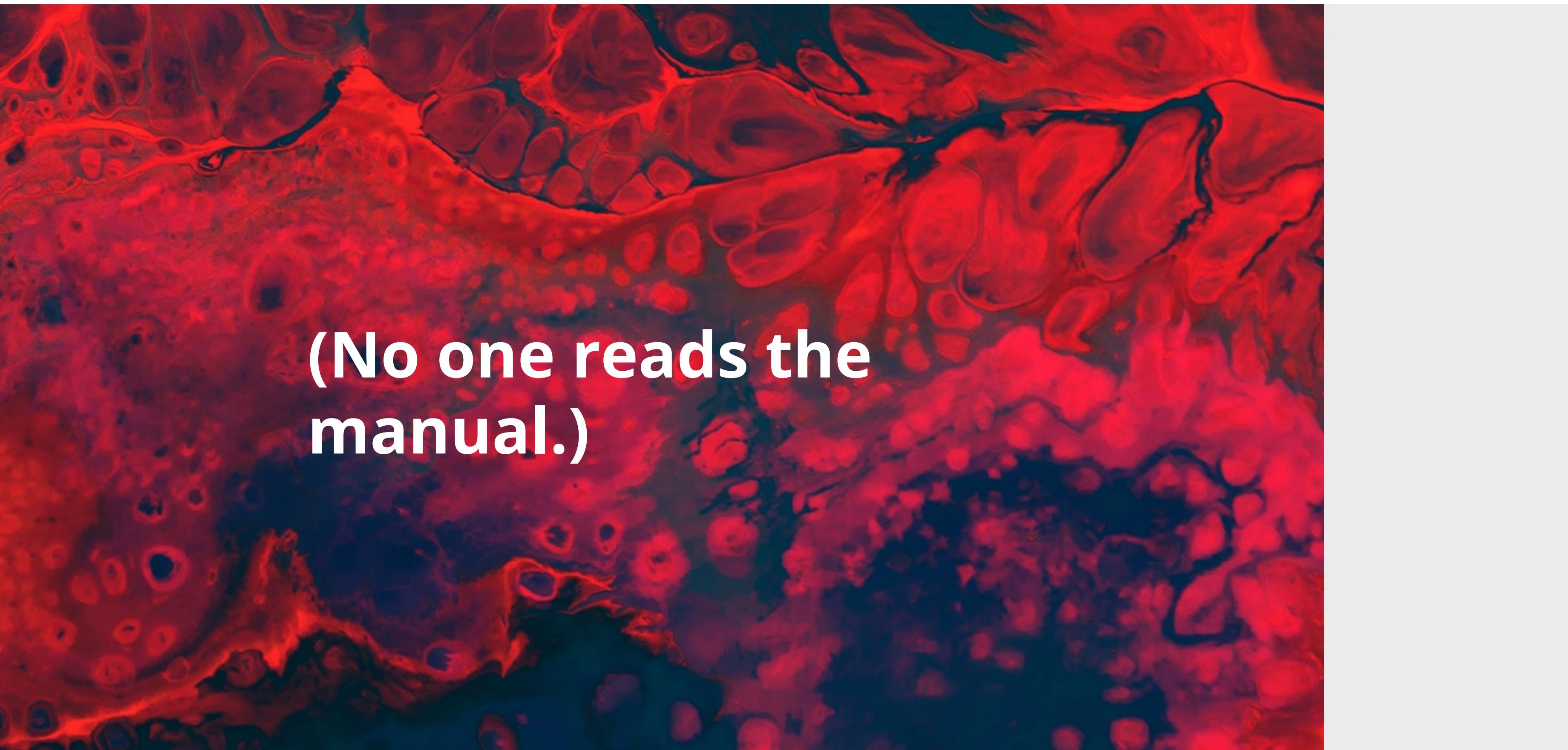
```
// NEVER CHANGE VARIABLES X AND Y  
perimeter = width * 2 + height * 2
```



Oh, dear.

```
// NEVER CHANGE VARIABLES X AND Y  
perimeter = radius * radius * pi
```

What about comments?



INTRODUCTION

Thank you for purchasing our "Essentials" Hair dryer. Each unit has been manufactured to ensure safety, reliability, and ease of use. Before use, please read these instructions carefully and keep them for future reference.

IMPORTANT SAFEGUARDS

When using any electrical appliance, basic safety precautions should always be followed, including:

- The use of accessory attachments that are not recommended or supplied by the manufacturer may result in injuries, fire or electric shock.
- Do not let the cord hang over the edge of a table or counter. Ensure that the cord is not in a position where it can be pulled on inadvertently.
- Do not allow the cord to touch hot surfaces and do not place on or near a hot gas or electric burner or in a heated oven.
- Use of an extension cord with this appliance is not recommended. However, if it is necessary to use an extension lead, ensure that the lead is suited to the power consumption of the appliance to avoid overheating of the extension cord, appliance or plug point. Do not place the extension cord in a position where it can be pulled on by children or animals or tripped over.
- Children should be supervised to ensure that they do not play with the appliance.
- Always ensure that the voltage on the rating label corresponds to the voltage in your home.
- Check the power cord and plug regularly for any damage. If the cord or the plug is damaged, it must be replaced by the manufacturer or a qualified person in order to avoid an electrical hazard.
- This appliance is intended for household use only. Industrial or commercial use will void the warranty, and the supplier can not be held responsible for injury or damage caused when using the appliance for any other purpose than that intended.
- Incorrect operation and improper use can damage the appliance and cause injury to the user.
- Do not use the appliance if it has been dropped or damaged in any way. In case of damage, take the unit in for examination and/or repair by an authorized service agent.
- To reduce the risk of electric shock, do not immerse or expose the motor assembly, plug or the power cord to water or any other liquid.
- Never immerse the unit in water or any other liquid for cleaning purposes.
- Remove the plug from the socket by gripping the plug. Do not pull on the cord to disconnect the appliance. Always unplug the unit when not in use, before cleaning or when adding or removing parts.

SPECIFICATIONS

Voltage : AC 230V 50Hz
Wattage : 1200W
Cord : 2 round pins plug.

USING YOUR HAIR DRYER

READ ALL INSTRUCTIONS CAREFULLY BEFORE USING THIS APPLIANCE

WARNING-To reduce the risk of burns, electrocution, fire or injury to persons:

1. An appliance should never be left unattended when plugged in.

2. Close supervision is necessary when this appliance is used by, on, or near children or invalids.

3. Use this appliance only for its intended household use as described in this manual. Do not use attachments which are not recommended by the manufacturer.

4. Never operate this appliance if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged or dropped into water. Return the appliance to a Service Center for examination and repair.



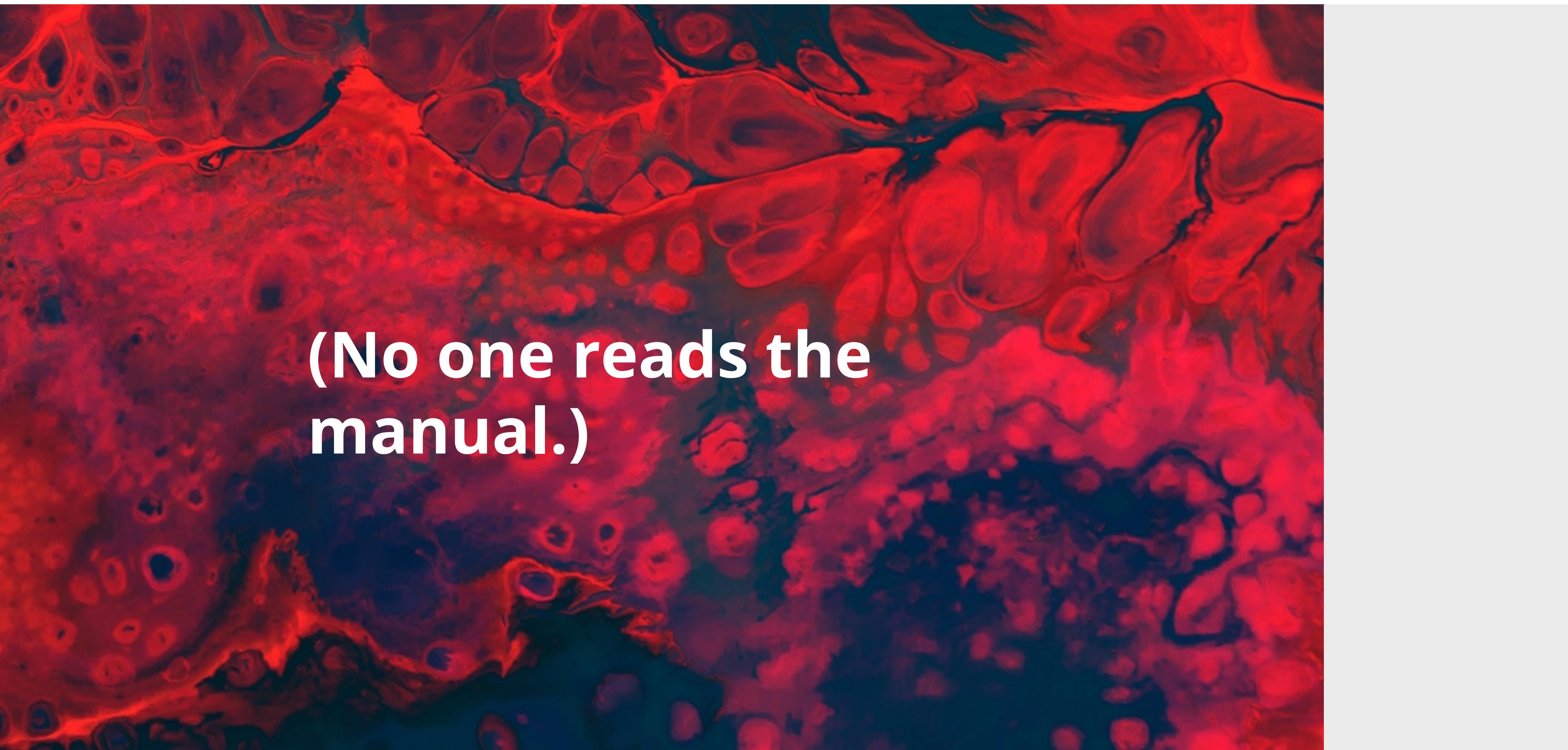
CARE AND CLEANING

- IMPORTANT:** Always ensure that hair dryer is disconnected from the electric outlet before cleaning. Use a damp cloth for cleaning and then wipe it dry. This will help preserve the original finish of your hair dryer. Abrasive cleaners should not be used.

- WARNING:** Never immerse the hair dryer in water and always ensure that the plug is kept dry.

Frequently clean out any hair or fluff that becomes stuck in the air intake filter. To clean the filter, vacuum or dry brush clean, never immerse the filter in water. Failure to keep filter clean may result in overheating.

What about comments?



(No one reads the manual.)

INTRODUCTION
Thank you for purchasing our "Essentials" Hair dryer. Each unit has been manufactured to ensure safety, reliability, and ease of use. Before use, please read these instructions carefully and keep them for future reference.

IMPORTANT SAFEGUARDS
When using any electrical appliance, basic safety precautions should always be followed, including:

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- Never immerse the unit in water or any other liquid for cleaning purposes.
- Remove the plug from the socket by gripping the plug. Do not pull on the cord to disconnect the appliance. Always unplug the unit when not in use, before cleaning or when adding or removing parts.

KNOW YOUR HAIR DRYER

A: Concentrator
B: Main body
C: Rear cover
D: 2 Speed / Heat setting
E: Hanging Loop

SPECIFICATIONS

Voltage : AC 230V 50Hz
Wattage : 1200W
Cord : 2 round pins plug.

USING YOUR HAIR DRYER

READ ALL INSTRUCTIONS CAREFULLY BEFORE USING THIS APPLIANCE
WARNING-To reduce the risk of burns, electrocution, fire or injury to persons:

- An appliance should never be left unattended when plugged in.
- Close supervision is necessary when this appliance is used by, on, or near children or invalids.
- Use this appliance only for its intended household use as described in this manual. Do not use attachments which are not recommended by the manufacturer.
- Never operate this appliance if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged or dropped into water. Return the appliance to a Service Center for examination and repair.

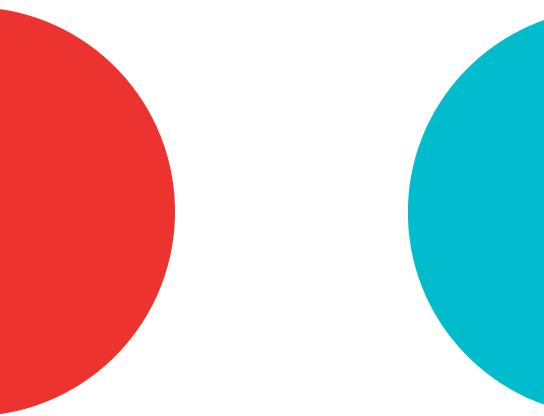
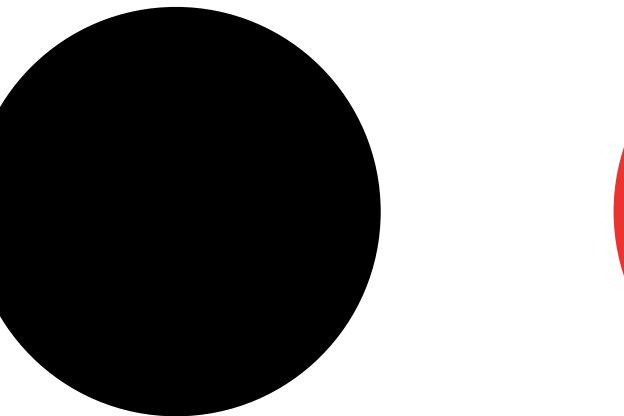
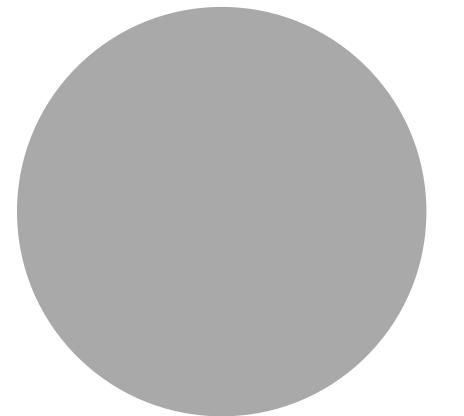
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WARNING: Never immerse the hair dryer in water and always ensure that the plug is kept dry. Frequently clean out any hair or fluff that becomes stuck in the air intake filter. To clean the filter, vacuum or dry brush clean, never immerse the filter in water. Failure to keep filter clean may result in overheating.

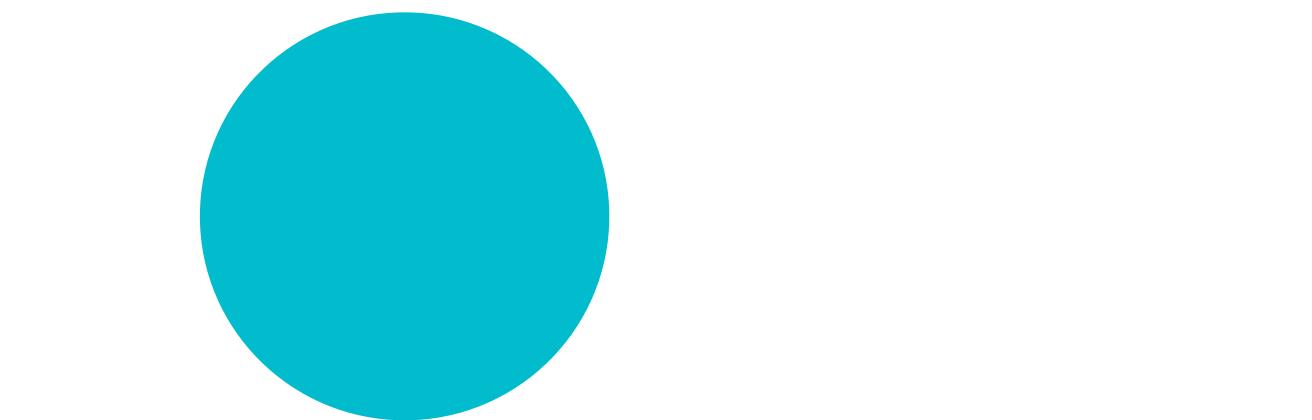
WHAT IS READING?

Working memory



WHAT IS READING?

Working memory



supercalifragilisticexpialidocious

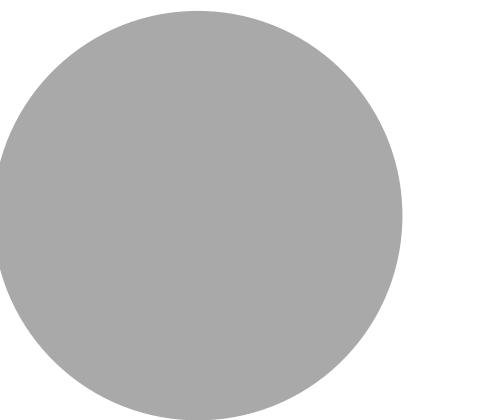
NSURLRedirectToNonExistentLocation

WHAT IS READING?



WHAT IS READING?

A moment
for poetry



e. e. cummings

when serpents bargain for the right to squirm
and the sun strikes to gain a living wage -
when thorns regard their roses with alarm
and rainbows are insured against old age

...

then we'll believe in that incredible
unanimal mankind (and not until)

e. e. cummings

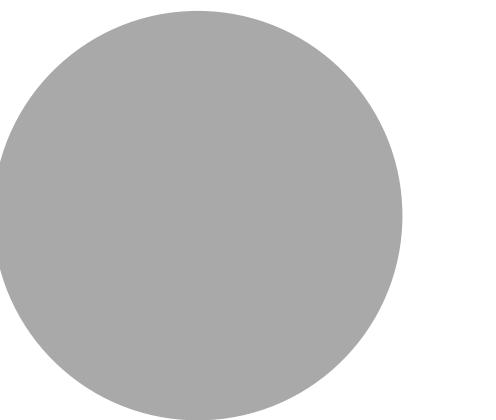
when serpents bargain for the right to squirm
and the sun strikes to gain a living wage -
when thorns regard their roses with alarm
and rainbows are insured against old age

...

then we'll believe in that incredible
unanimal mankind (and not until)

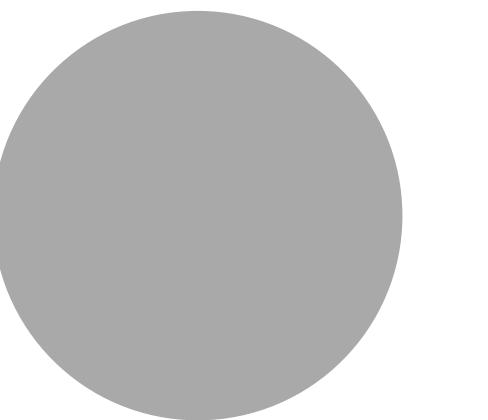
WHAT IS READING?

You can decipher,
with tools



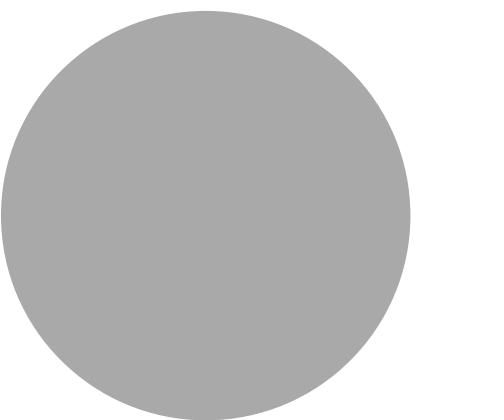
WHAT IS READING?

Deciphering is not reading



WHAT IS READING?

Cerebral poetry has no place
in production software.



WHAT IS READING?

blue

black

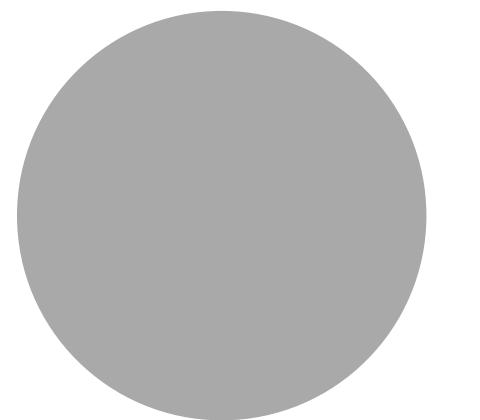
red



青
黒
赤

WHAT IS READING?

Fluent reading is
quick, correct understanding.

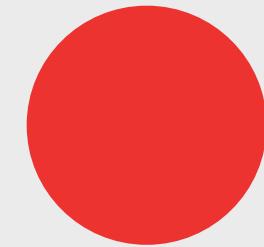




03 WHY TO WRITE READABLY



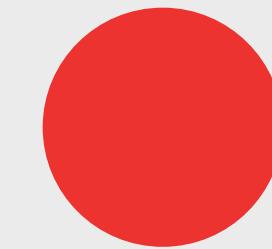
OBJECTIONS TO READABILITY



"You're a professional – figure it out!"

Part of a programmer's job is to understand code written by their colleagues.

OBJECTIONS TO READABILITY



“You’re a professional – figure it out!”

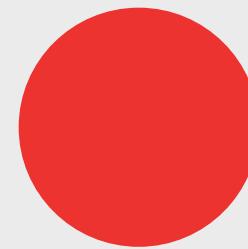
Part of a programmer’s job is to understand code written by their colleagues.



“Fluent people write faster.”

People who know a language well use it more quickly than beginners.

OBJECTIONS TO READABILITY



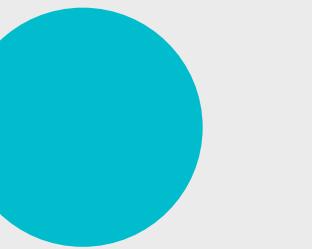
"You're a professional – figure it out!"

Part of a programmer's job is to understand code written by their colleagues.



"Fluent people write faster."

People who know a language well use it more quickly than beginners.



"Our vocabulary keeps changing."

Programmers constantly define new terms in a codebase – it's not possible to instantly learn every new symbol.

OBJECTIONS TO READABILITY

But.

WHY WRITE READABLE CODE?

Willpower:
You vs. Radishes

WHY WRITE READABLE CODE?

Fluency & focus



WILLPOWER

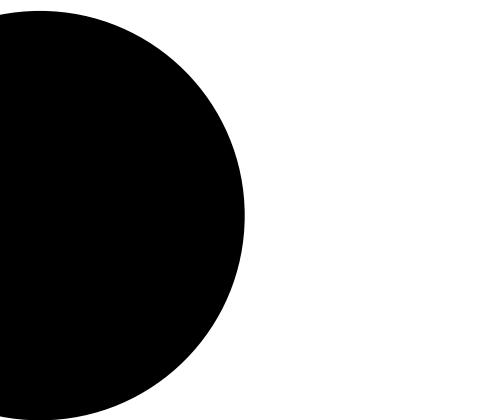
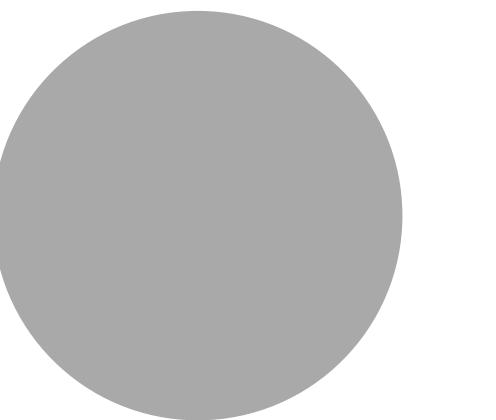
Save your teammates' energy.



04 HOW TO WRITE READABLY

HOW TO WRITE READABLY

Make allowances
for non-fluent speakers



AVOID SLANG

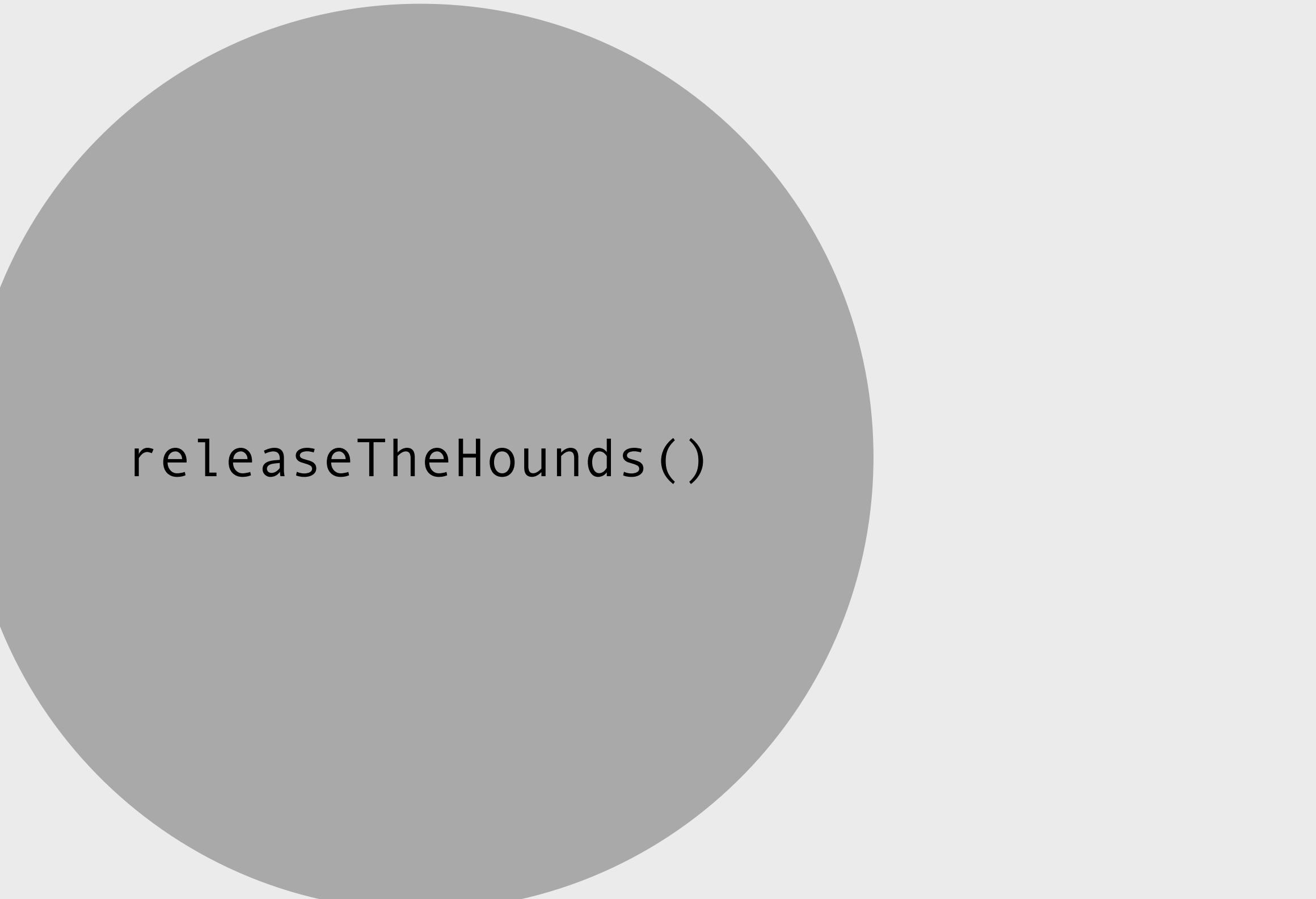
A large gray circle is positioned on the left side of the slide. Inside the circle, the text "You rock my socks." is written in a black, sans-serif font.

"You rock my
socks."

A large red circle is positioned on the right side of the slide. Inside the circle, the text "You are really great." is written in a black, sans-serif font.

"You are really great."

AVOID SLANG



releaseTheHounds()



beginAppSetupNetworkRequests()

ENUNCIATE CLEARLY



"Jeetcheet?"



"Did you eat yet?"

ENUNCIATE CLEARLY

```
a = ks.filter{...}.map{...}
```

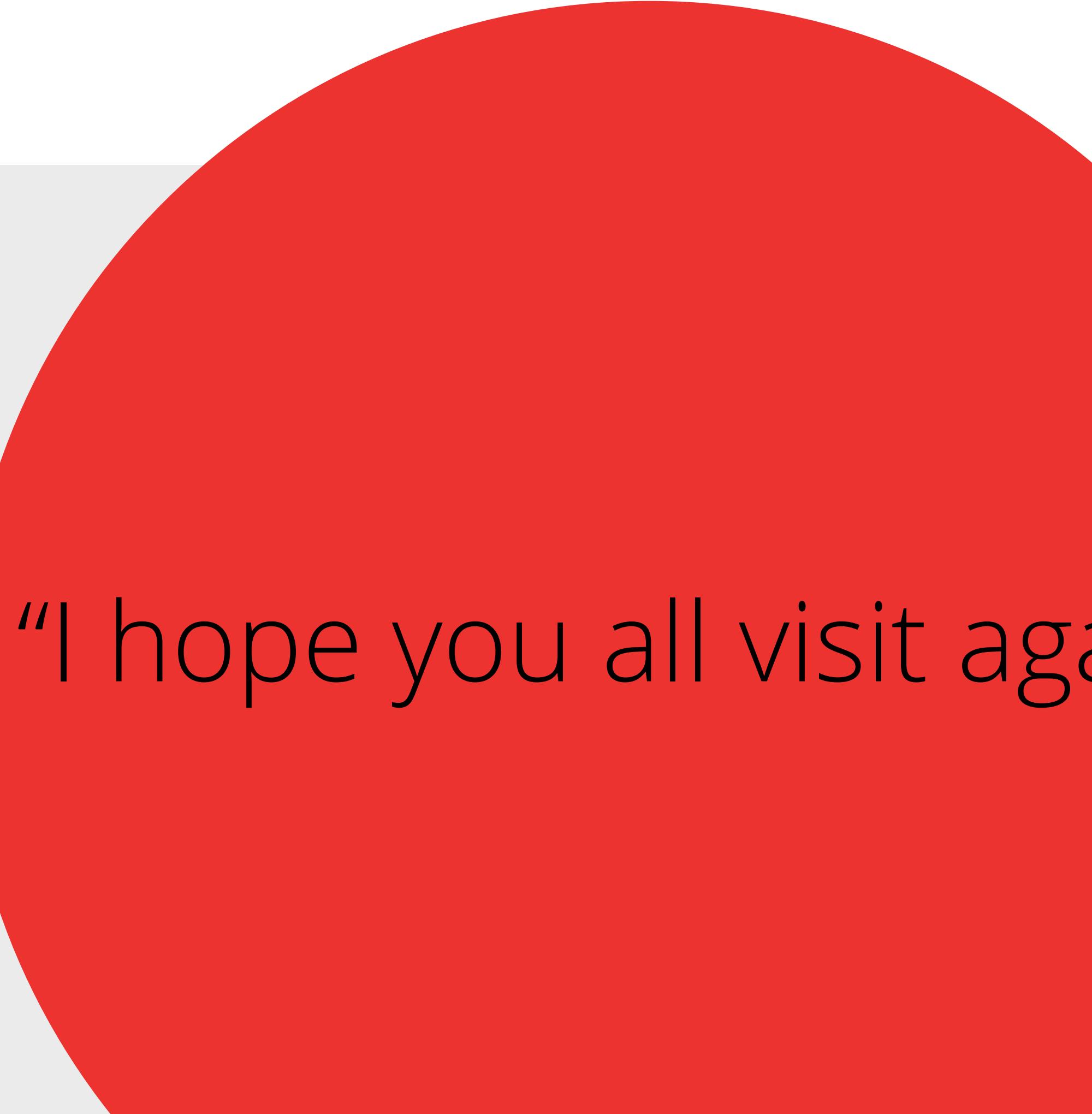
```
newOrders = items.filter{...})
```

```
newAddresses = newOrders.map({...})
```

INTRODUCE REGIONALISMS SLOWLY

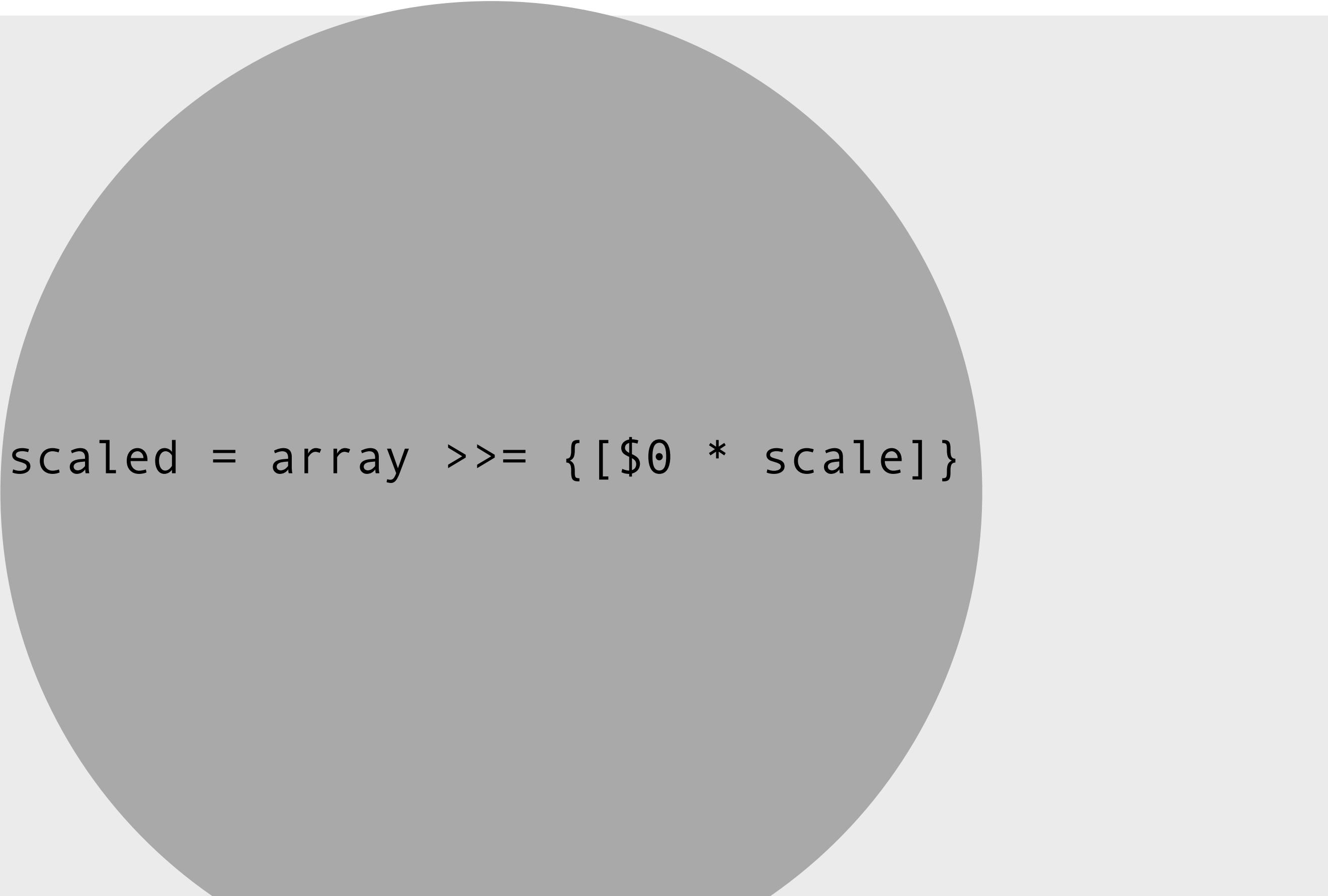


“Y'all come
back now!”

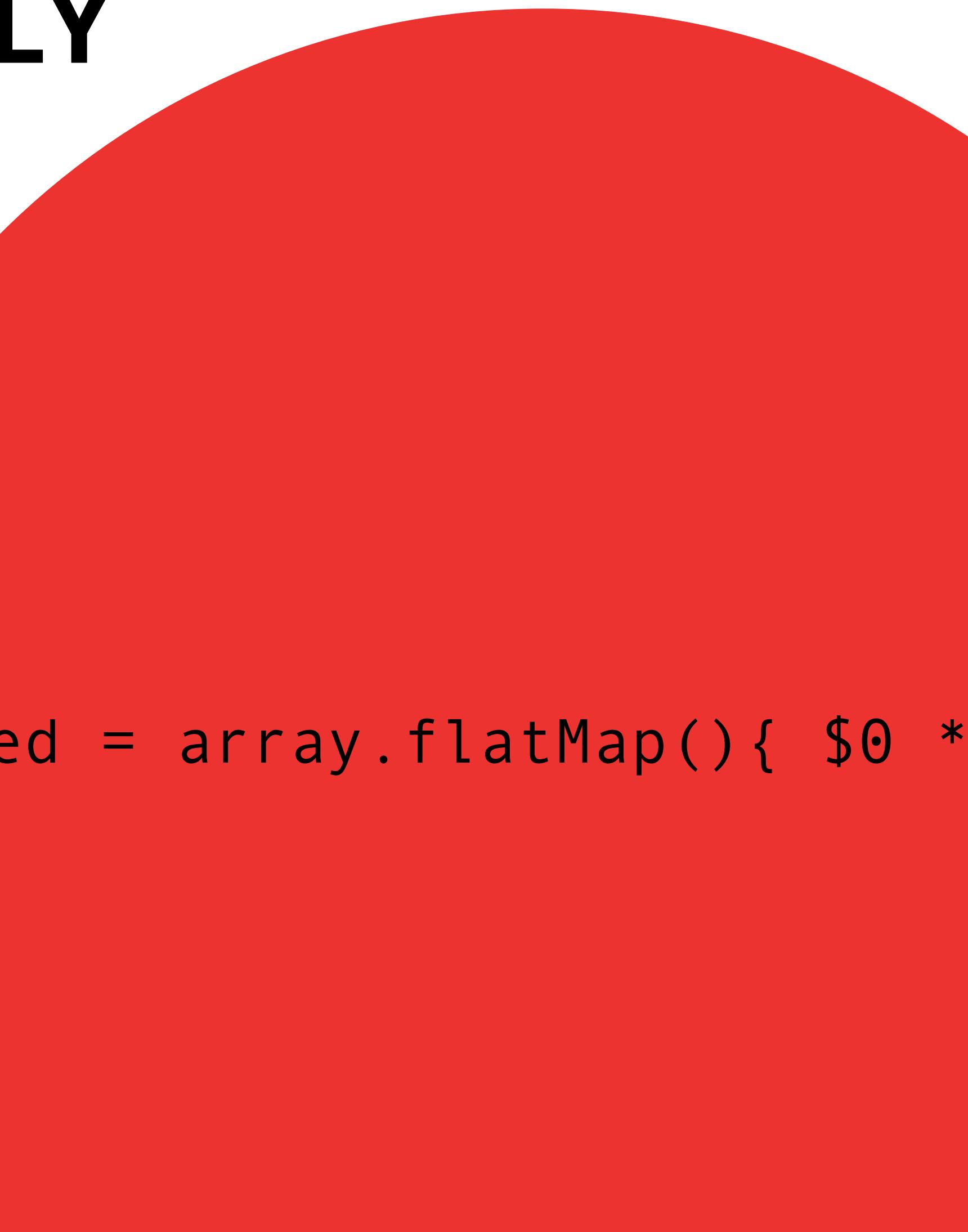


“I hope you all visit again!”

INTRODUCE REGIONALISMS SLOWLY



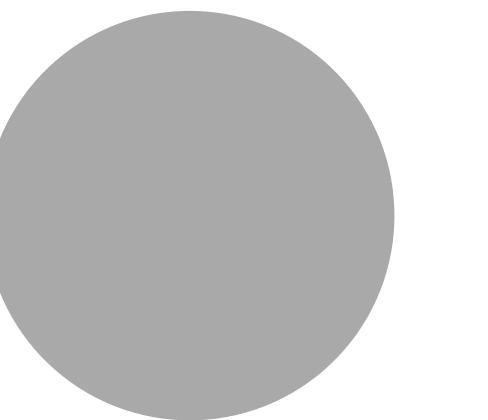
```
scaled = array >>= {[$0 * scale]}
```



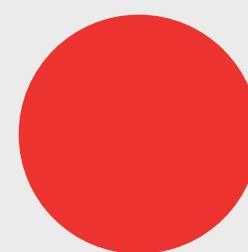
```
scaled = array.flatMap({ $0 * scale })
```

HOW TO WRITE READABLY

Use pattern matching



USE PATTERN MATCHING



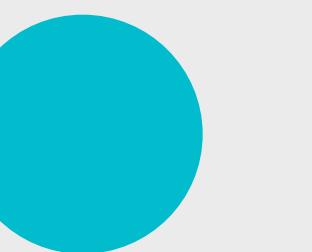
Are these related?

```
goodIdeaText = "An ideal choice"  
detailsOfBadIdea = "Oh no."
```



Ah yes, here's a group:

```
ideaTextGood = "An ideal choice"  
ideaTextAwful = "Oh no."  
ideaTextImpish = "Fun!"  
ideaTextDull = "Pedestrian."
```

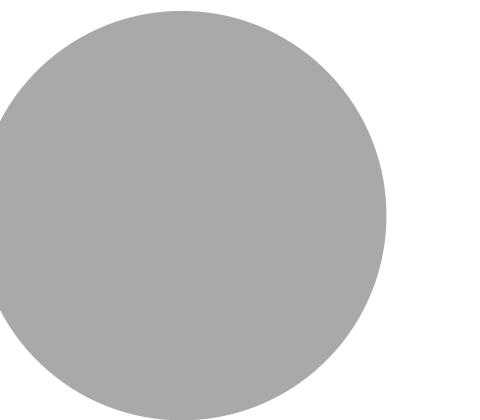


This is scannable!

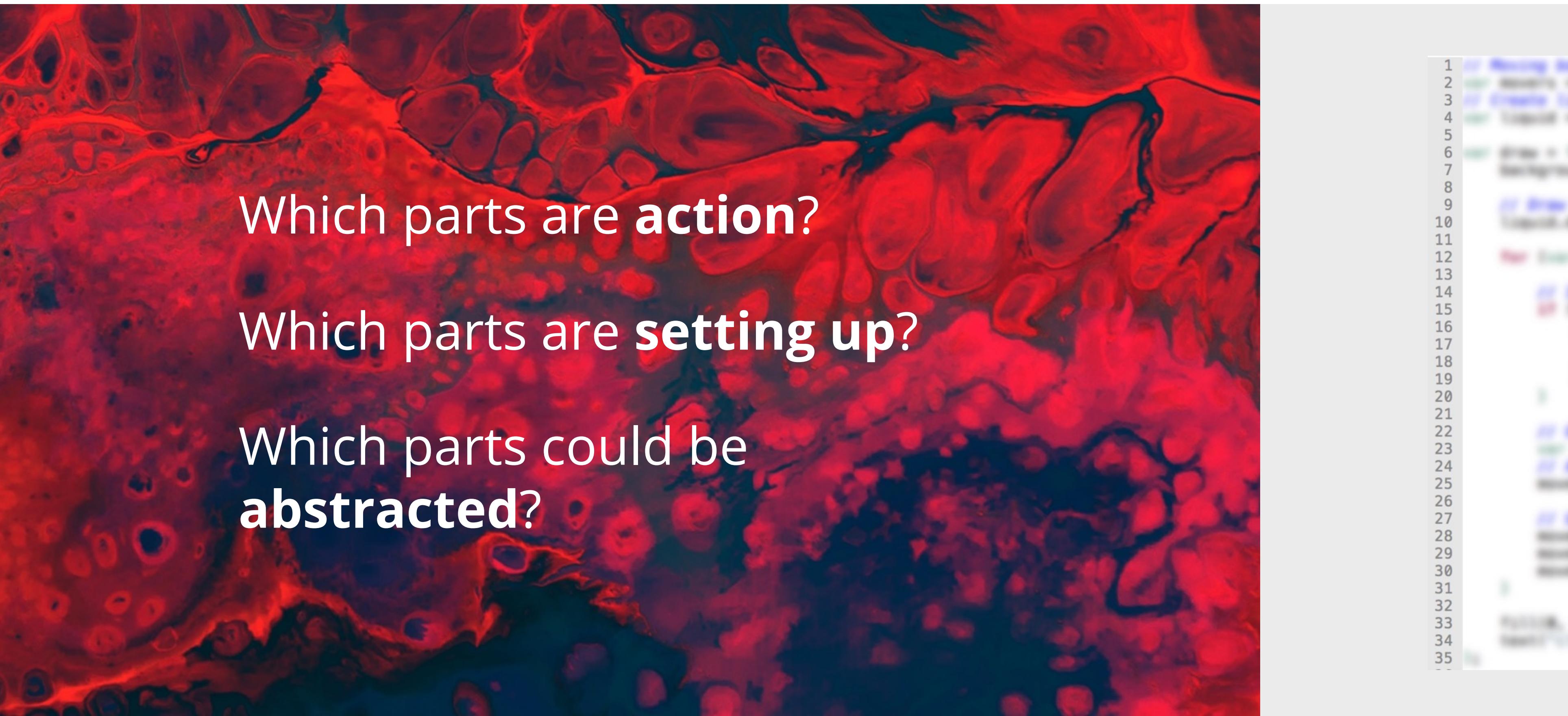
```
ideaTextGood      = "An ideal choice"  
ideaTextAwful    = "Not on my watch"  
ideaTextImpish   = "Fun!"  
ideaTextDull     = "Pedestrian."
```

HOW TO WRITE READABLY

Squint Test



SQUINT TEST



Which parts are **action**?

Which parts are **setting up**?

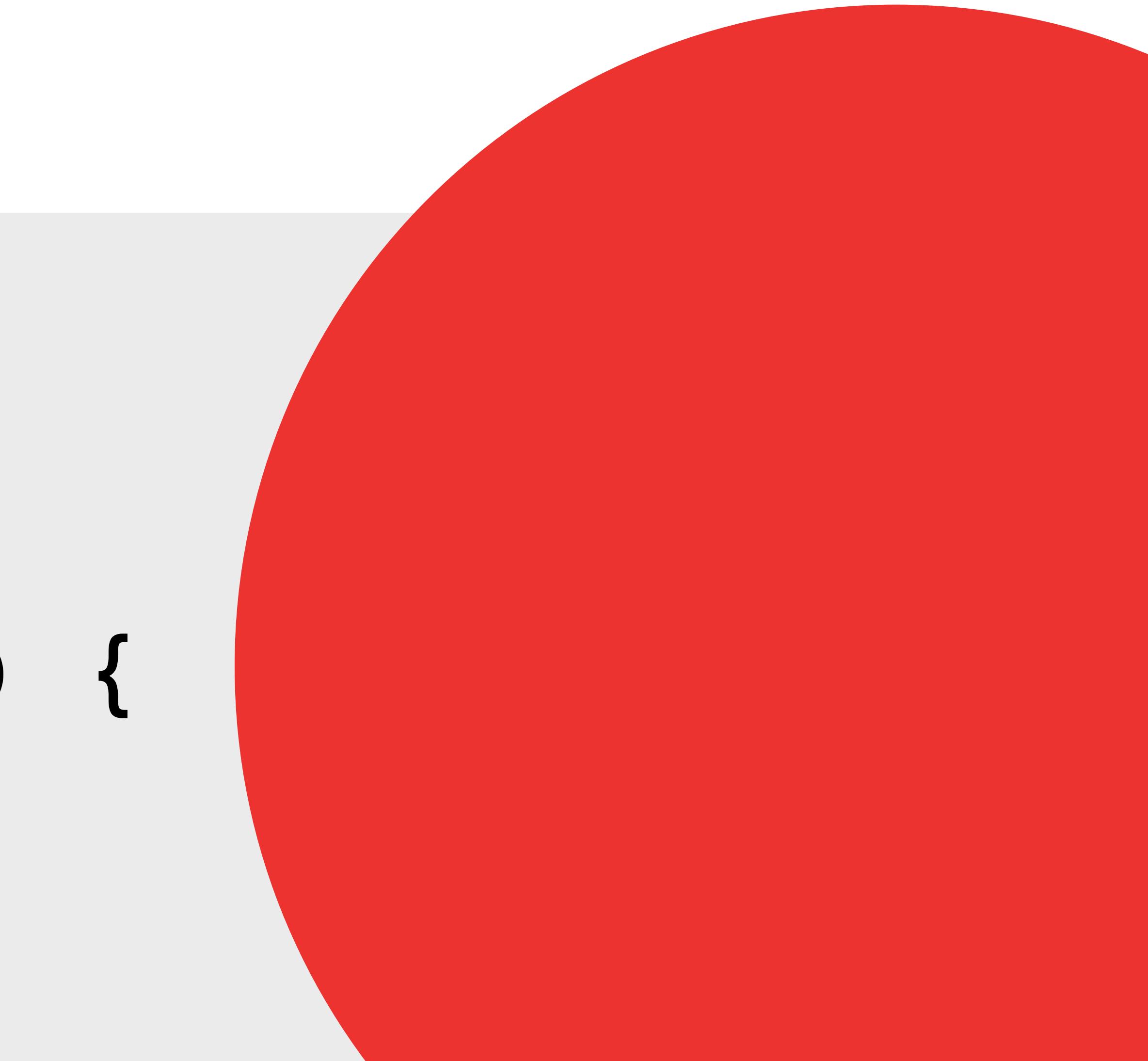
Which parts could be
abstracted?

```
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35
```

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

anti-pattern matching

!



```
if isOurLoveTrue &&
!IllFatedStar.willShine(tonight) {
```

! I l l



if portentsOfIllWill! [yourSign]

11! [

check for camouflage

Help us pattern match.

know your readers

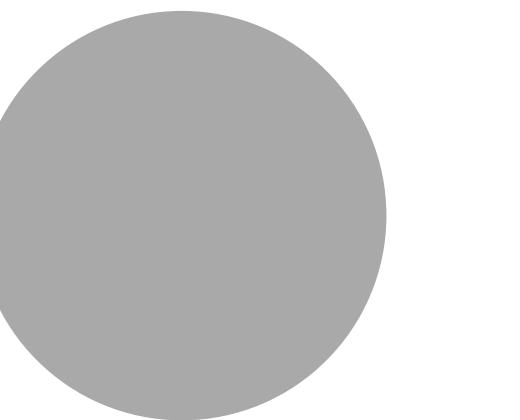
believe your readers

```
var settingsInteractor: SectionSettingsInteractor?
```

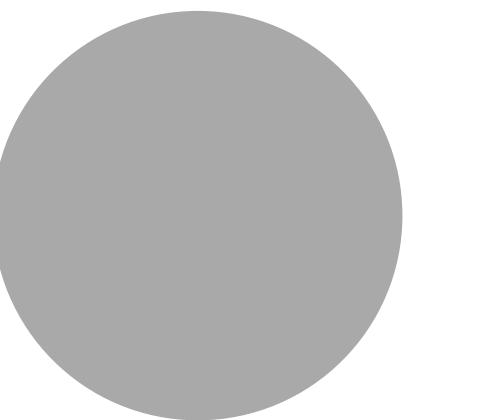
```
// Keep a reference to this interactor as long
// as the tab bar controller's alive
var settingsInteractor: SectionSettingsInteractor?
```

```
// Keep a strong reference to this interactor
// so it doesn't get deallocated while the tab
// bar controller's alive
var settingsInteractor: SectionSettingsInteractor?
```

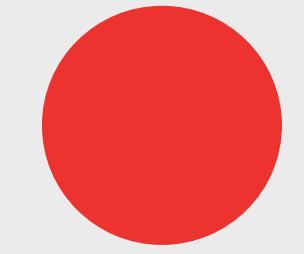
**“What's wrong with them?
Why can't they read this code?**



**“What information are they missing
that’s making it hard to read this code?**



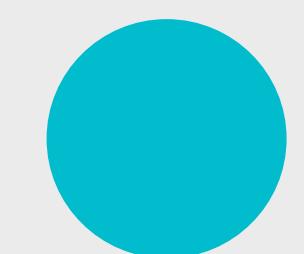
HOW TO WRITE READABLE CODE?



Treat confusion as data.



Be predictable.

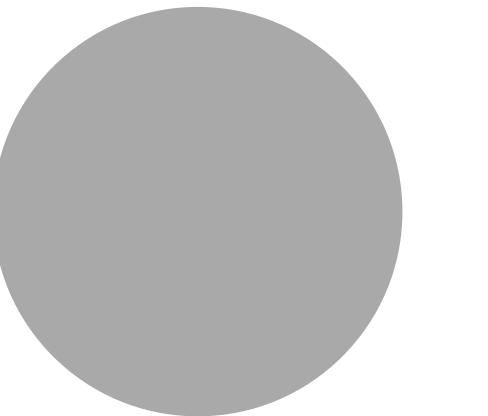


Empathize.



05 WHEN TO WRITE READABLY

**“I’m sorry for the long letter...
I didn’t have time to write a short one.”**

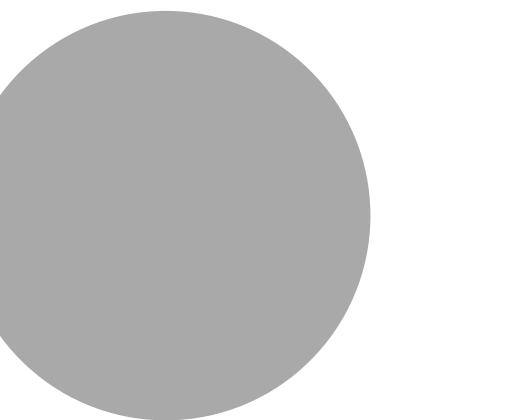


**“Mission critical code
should not just be *arguably*,
but *trivially correct*.”**



JPL Institutional Coding Standard for the C Programming Language

Blocked fire escapes



TALK IT OUT

- cognitive overhead ● working memory
- tools for deciphering ● patterns & intuition
- critical code paths

A large, solid red circle is positioned in the center-right area of the image, partially overlapping the white background.

Decipher less.
Create more.



THANK YOU
