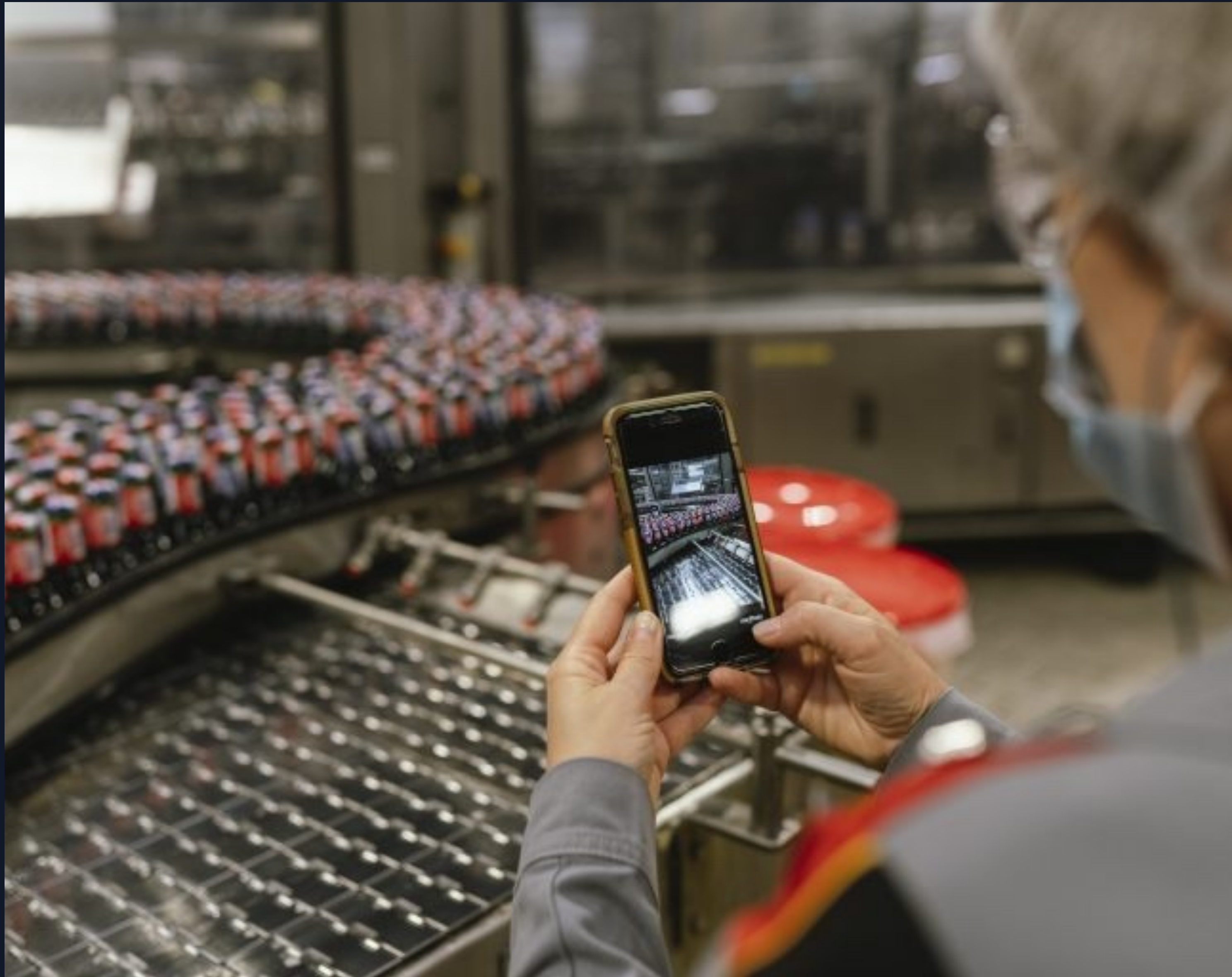


Debugging the mind

A programmers' guide to critical thinking

Mike Hall
Lead Engineer, Zaptic





9:41 RAISE A DEFECT Done

Describe the issue

Priority
You can select one option

High Medium Low

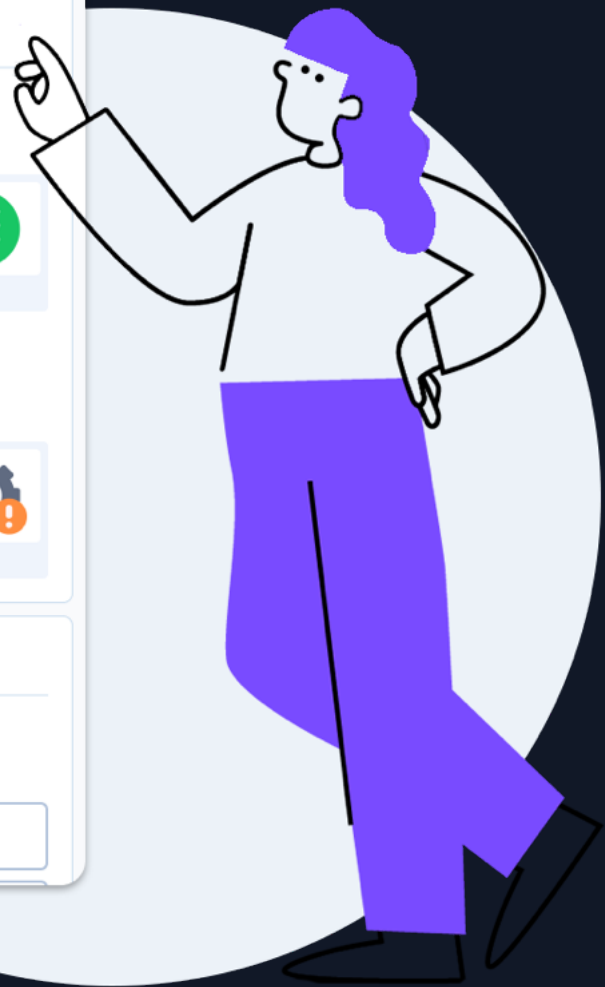
Type of safety issue
You can select one option

No time Machine down Other

Resolution

Can you solve this by yourself?
You can select one option

Yes



Skeptics

with a K

an **MSS** podcast

The **Merseyside Skeptics Society** 

QED! 

 **The Skeptic**
Reason with Compassion

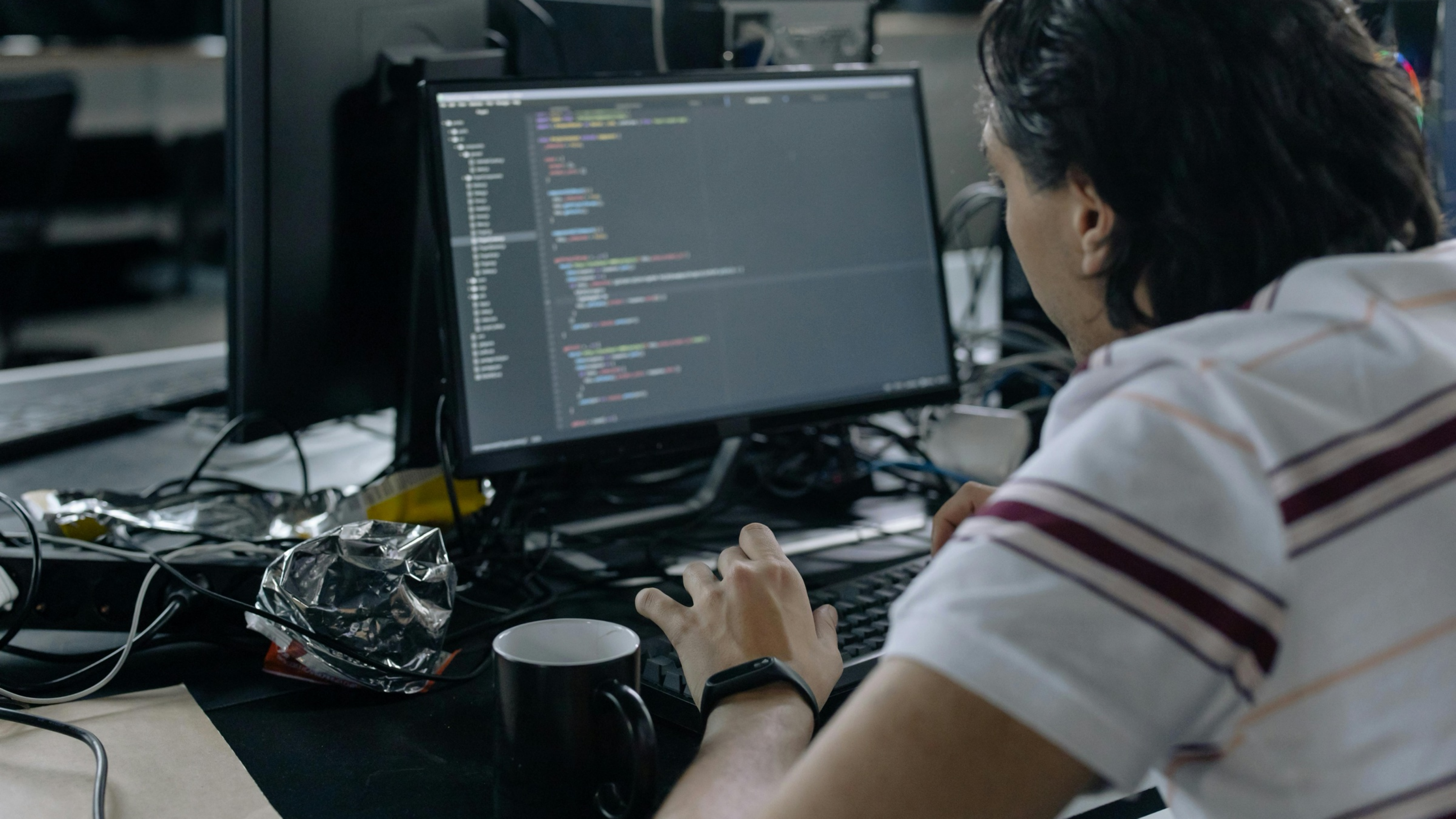
Skeptic

Scientific Skepticism

Questioning claims which are not supported by good evidence



Our brains are buggy



Cognitive Biases

Systematic errors in thinking

- Confirmation bias
- Bandwagon effect
- Sunk cost
- Recency effect
- Halo effect
- Gambler's fallacy
- Framing effect
- Priming
- Anchoring
- Availability heuristics
- Endowment effect
- Belief bias
- Zero risk bias
- Attentional bias
- Self-serving bias
- Survivorship bias
- Availability cascade
- Overconfidence bias

Confirmation Bias

Cottingley Fairies

Elsie Wright and Frances Griffiths, 1917







Confirmation bias

- Writing tests to pass
- Testing the happy path
- Testing trivial error cases
- Confirming our assumptions



‘Works on my machine!’

50,000,000 ELVIS FANS CAN'T BE WRONG

RCA
38 - 161
VICTOR
STEREO

ELVIS' GOLD RECORDS - Volume 2

A FOOL SUCH AS I
I NEED YOUR LOVE TONIGHT
WEAR MY RING AROUND YOUR NECK
DONCHA' THINK IT'S TIME
I BEG OF YOU
A BIG HUNK O' LOVE
DON'T
MY WISH CAME TRUE
ONE NIGHT
I GOT STUNG



Appeal to Popularity

50,000,000 ELVIS FANS CAN'T BE WRONG

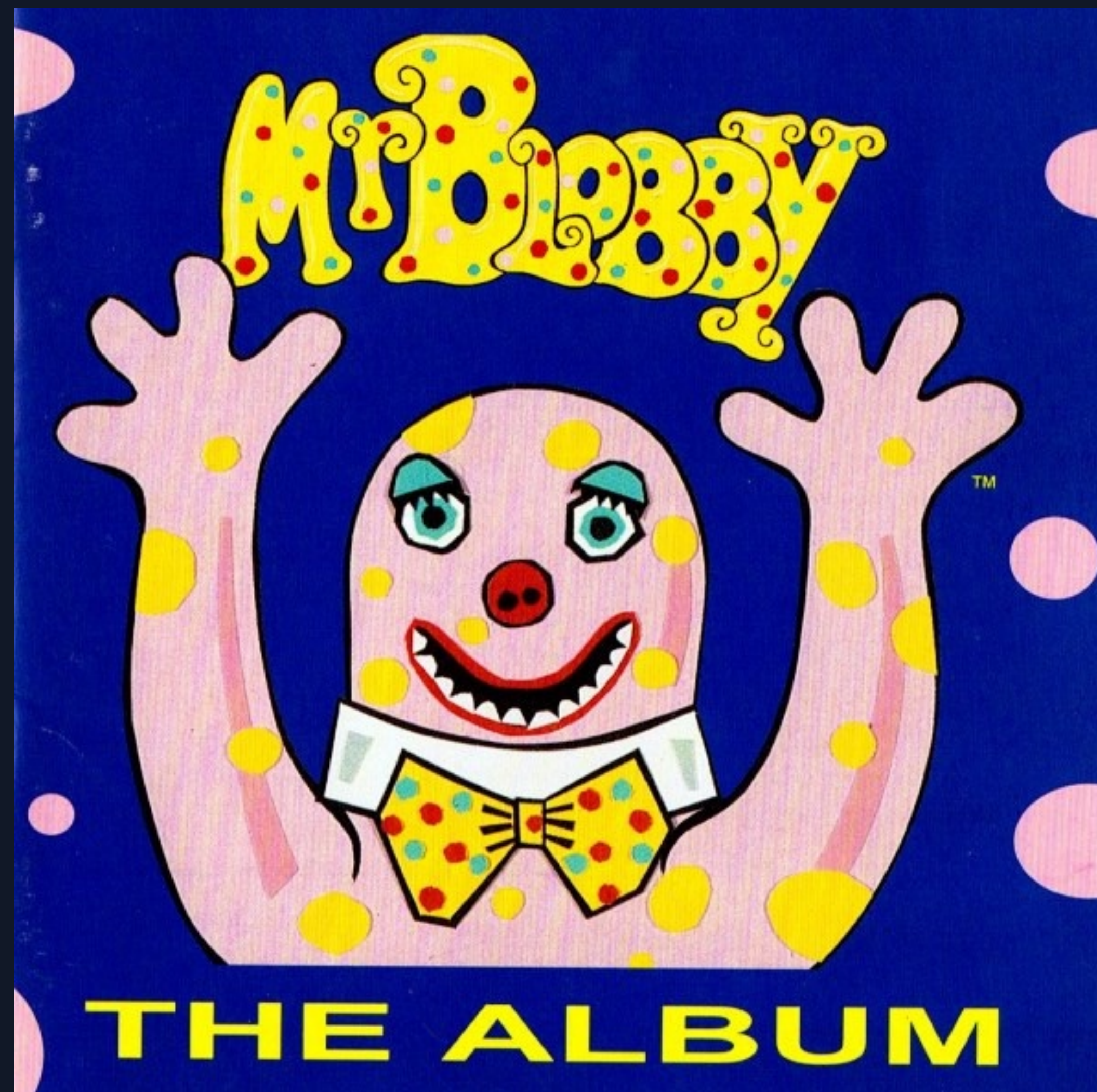
RCA
38 - 161
VICTOR
STEREO

ELVIS' GOLD RECORDS - Volume 2

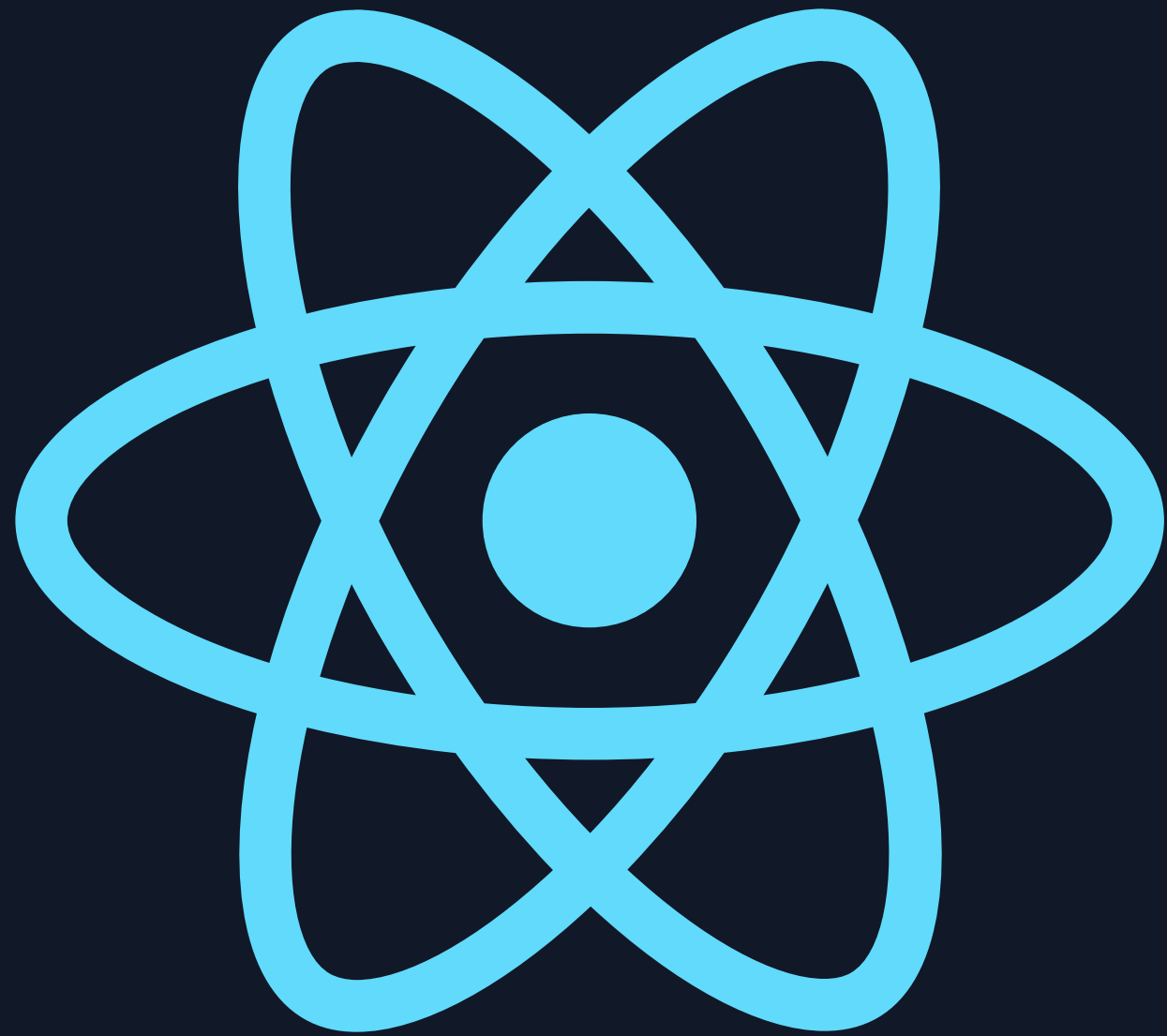
A FOOL SUCH AS I
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A BIG HUNK O' LOVE
DON'T
MY WISH CAME TRUE
ONE NIGHT
I GOT STUNG



Bandwagon Effect



Bandwagon Effect



Anchoring



£3



£6



£6.50

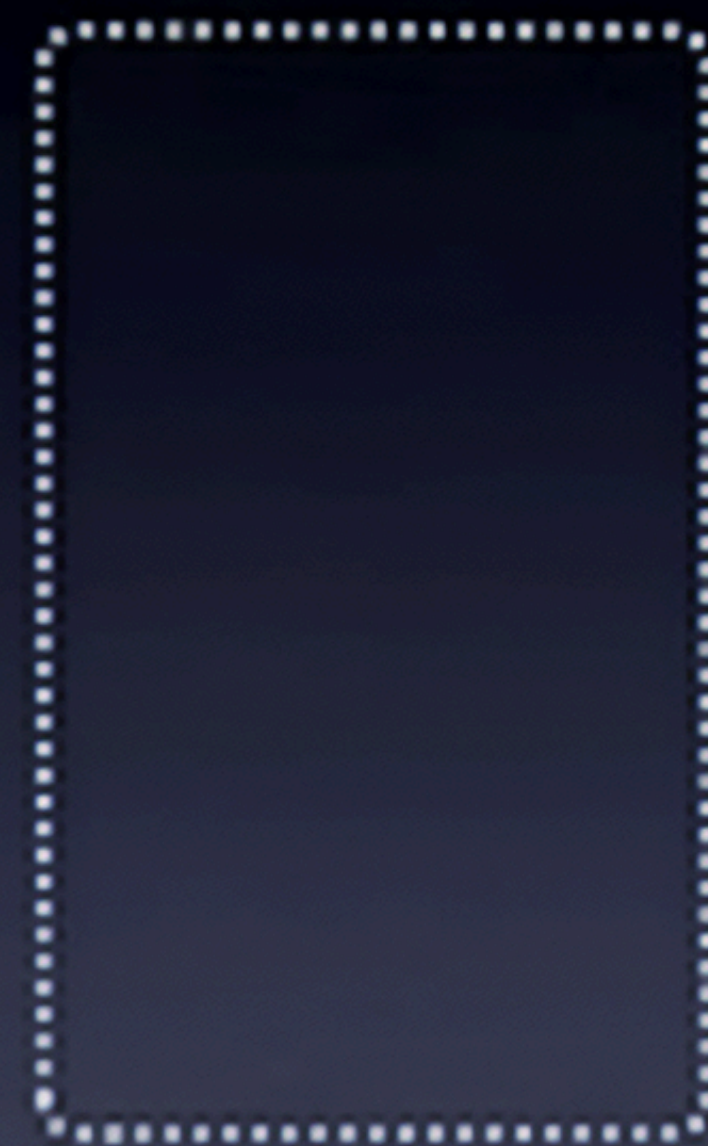




\$499

2 year contract

Video
Widescreen
Multi-Touch
Wi-Fi
Safari
HTML email
Cover Flow

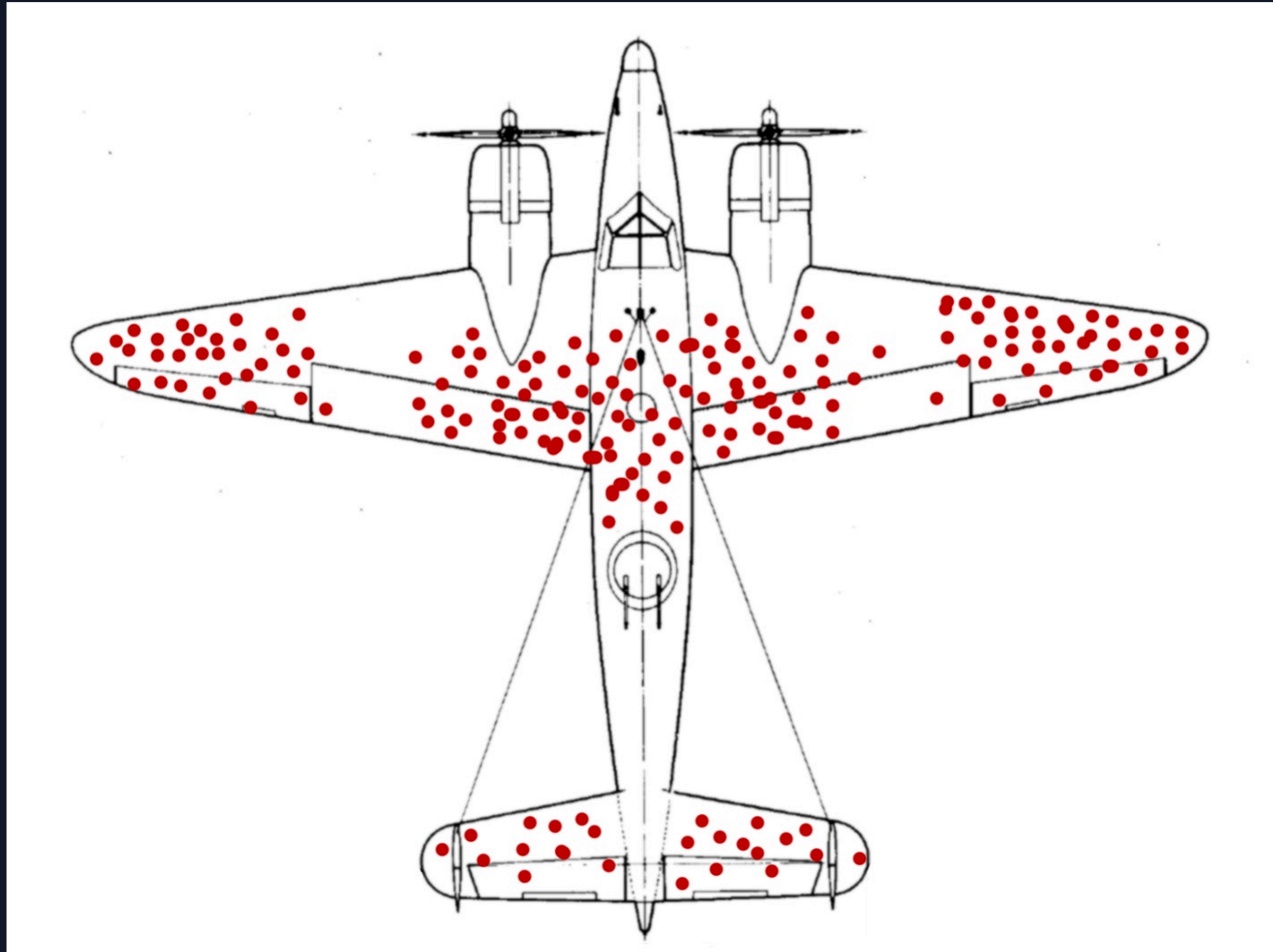


\$\$\$



THON
Bugra

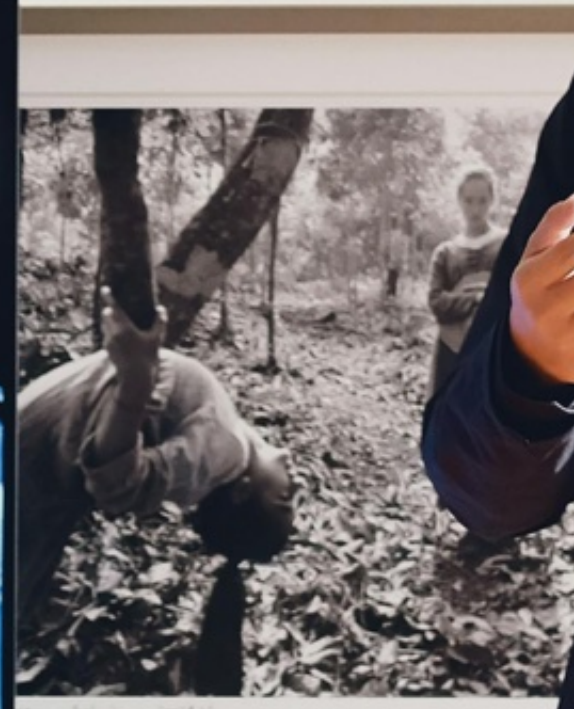
Colours
USKJR
Jennie
Styles
Colours Show 1



Survivorship Bias







Cognitive Biases

Systematic errors in thinking

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- Survivorship bias
- Availability cascade
- Overconfidence bias

Critical Thinking

The debugger for your brain

April

1



Critical Thinking

The debugger for your brain

- Question assumptions
- Check your sources
- Prioritise evidence over opinions
- Practice open-mindedness
- Think systematically

Critical Thinking

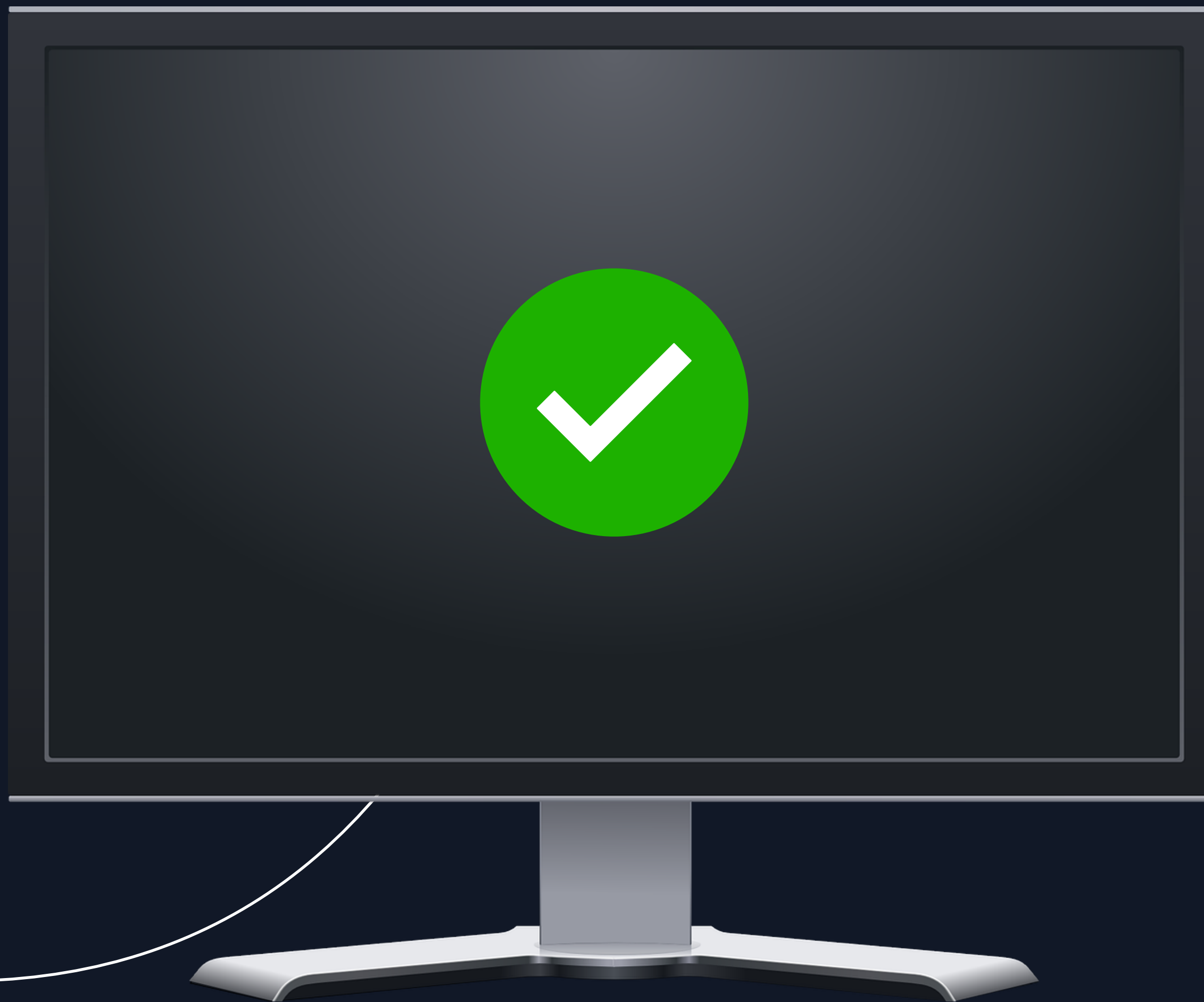
The debugger for your brain

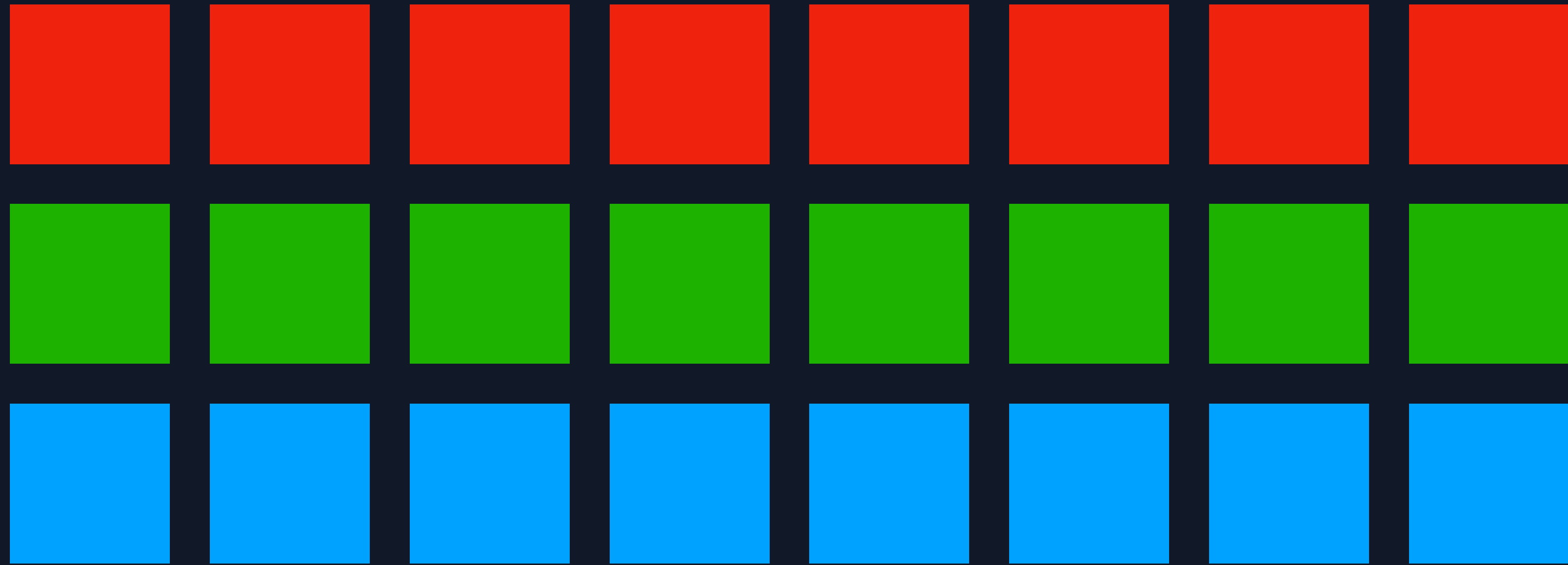
```
for (let tries = 10; tries > 0; tries -= 1) {  
    await pollForChanges()  
}
```



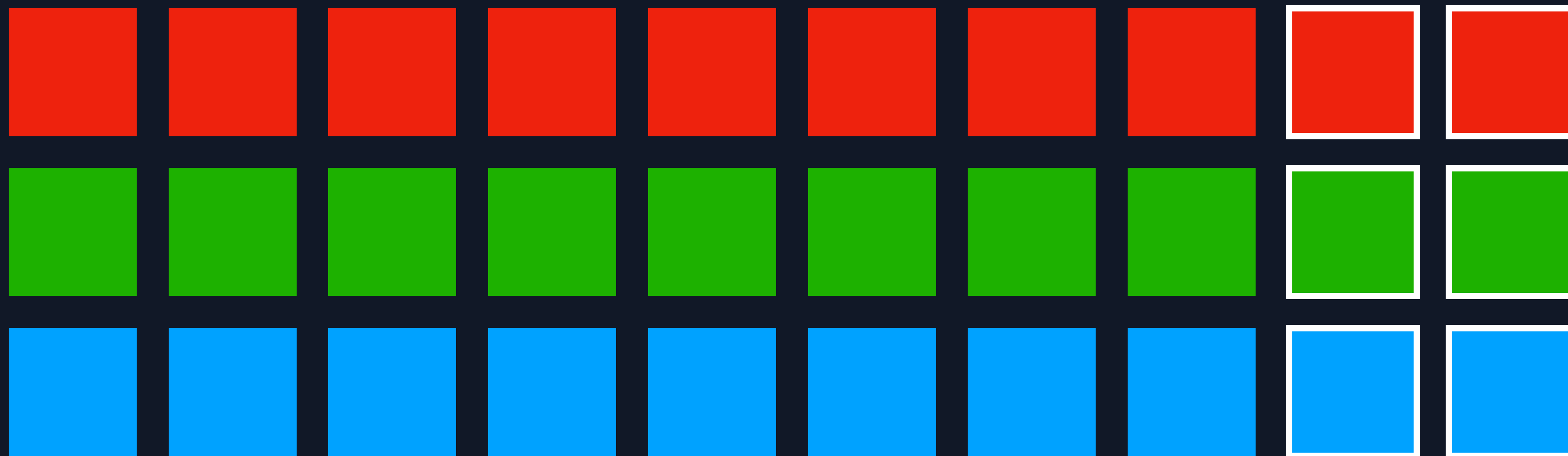

ARM64







24-bit Colour



30-bit Colour

“The `colorDepth` and `pixelDepth` attributes should return the number of bits allocated to colors for a pixel in the output device, excluding the alpha channel.”

| Data Element/ Field Name | Description | Source | Length/Format/ Values |
|--|--|-------------------|--|
| <p>Browser Screen Color Depth</p> <p>Field Name: browserColorDepth</p> | <p>Value representing the bit depth of the colour palette for displaying images, in bits per pixel.</p> <p>Obtained from Cardholder browser using the screen.colorDepth property.</p> <p>Refer to Section A.5.2 for additional detail.</p> | <p>3DS Server</p> | <p>Length: 1–2 characters</p> <p>Format: Number:</p> <p>Values:</p> <p>1 = 1 bit</p> <p>4 = 4 bits</p> <p>8 = 8 bits</p> <p>15 = 15 bits</p> <p>16 = 16 bits</p> <p>24 = 24 bits</p> <p>32 = 32 bits</p> <p>48 = 48 bits</p> |



Syntax

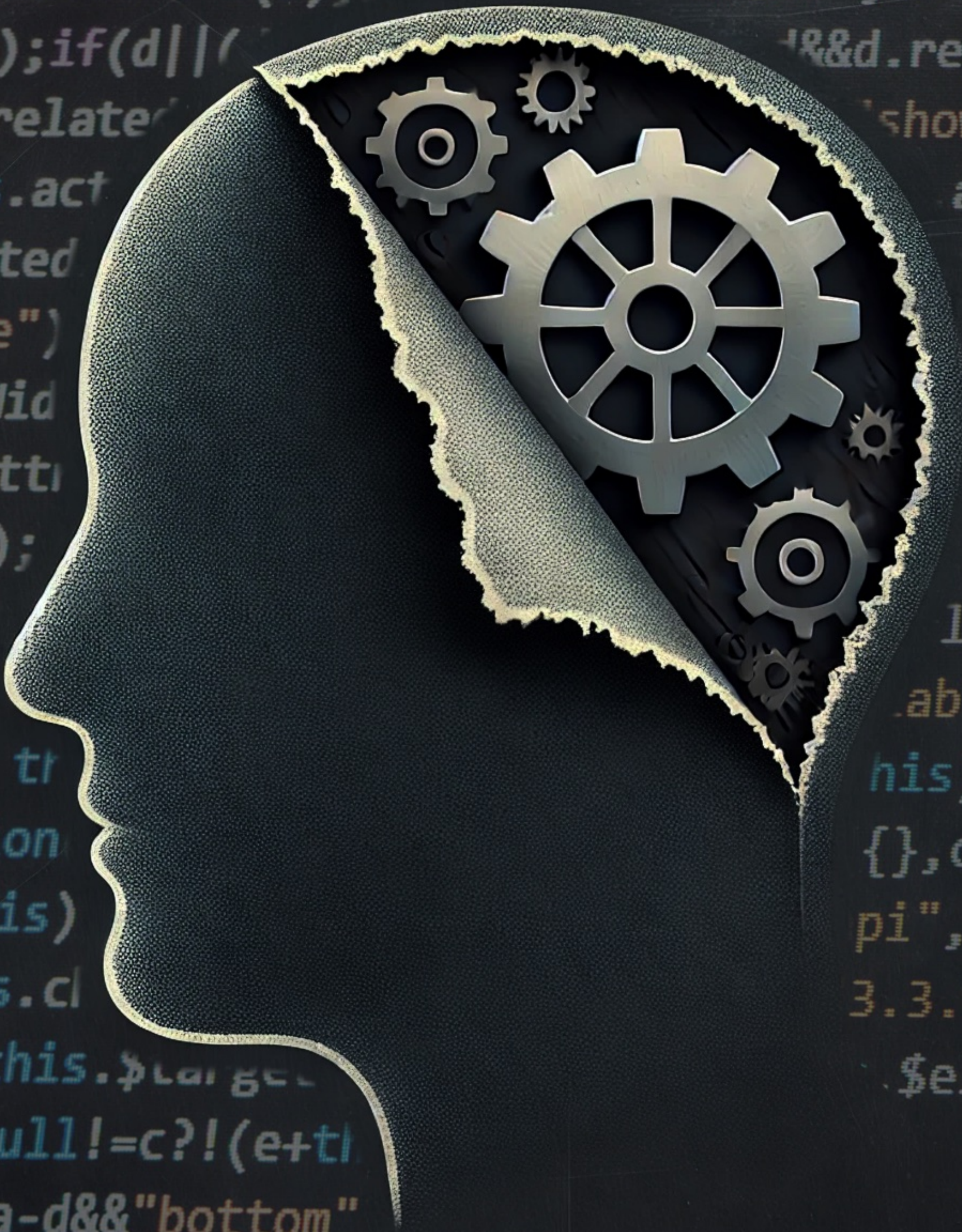
```
screen.colorDepth
```

Return Value

| Type | Description |
|----------|--|
| A number | The depth of the screen's color palette in bits per pixel: 1, 4, 8, 15, 16, 24, 32, or 48. |

Check your sources


```
function(a){ use strict ,function b(b){return this.each(function( ) {  
( )})}var c=function(b){this.element=a(b)}:c VERSION="3.3.7",c.TRANSITION_DURATION=150,c.p  
m-menu"),d=b.data("target");if(d||/  
,f=a.Event("hide.bs.tab",{relatedTarget:e}),b.trigger(f),f.isDefaultPrevented()){var h=a(d);this.activate  
r({type:"shown.bs.tab",relatedTarget:h}),h.addClass("active").attr("aria-expanded",!0),h?(b[0].offsetWid  
nd('[data-toggle="tab"]').attr("aria-expanded",!d.find("> .fade").length);  
d=a.fn.tab;a.fn.tab=b,a.fn.tab.activate=function(a,b,c,d){var e=this.$targetElement;this.activate(e,b,c,d)  
om"==this.affixed)return null!=c?!(e+top<=c?"top":null!=d&&i+j>=a-d&&"bottom"):  
&e<=c?"top":null!=d&&i+j>=a-d&&"bottom"):  
set=function(){if(t
```



Question one assumption

Skeptics
with a K
an **MSS** podcast

 **The Skeptic**
Reason with Compassion

<https://skeptic.org.uk>



mikehall314.bsky.social