

Rock 'n' Code: Como criar música programando



MY WORD
I TOOK
YOUR WINE

Por Jerônimo Medina Madruga

Tchelinux Pelotas 2019



ADENTRO
DATA CENTER SOLUTIONS



Paulo Andrade

CURSOS ONLINE



BACIOTTI CURSOS

CONHECIMENTO AO ALCANCE DE TODOS

Contato

(quem mandar feedback ganha cursos gratuitos!)

<http://bit.ly/falecomonegao>

Quem é Jerônimo?



217 SCA 3584-5499
9906-5611

GRADUAÇÃO
A DISTÂNCIA EM

pedagogia

INSCREVA-SE JÁ!

0800 600 6360



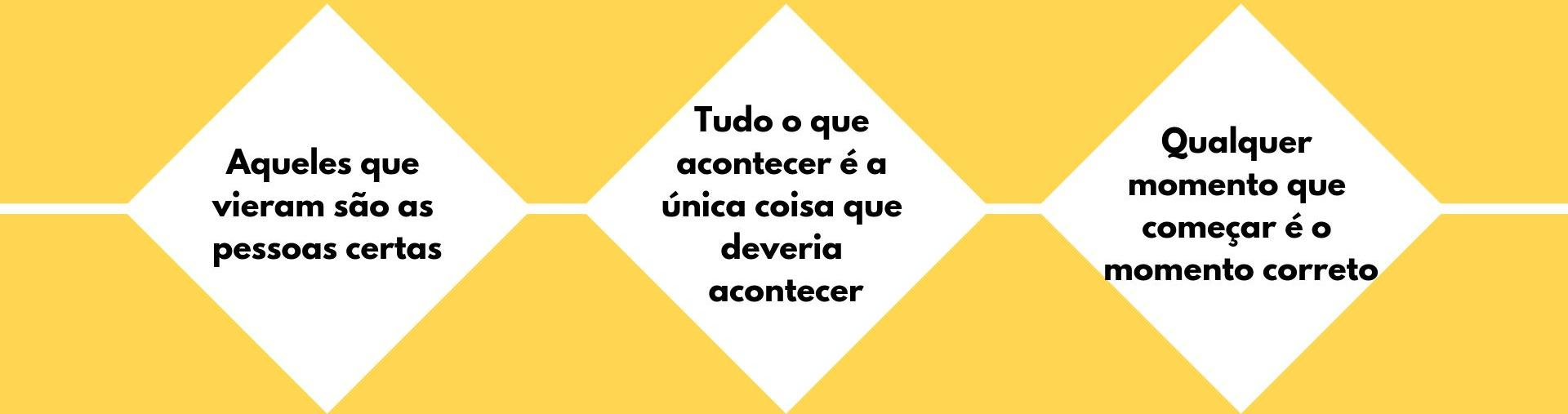
UniCesumar

EDUCAÇÃO A DISTÂNCIA

Do seu jeito em cada canto do Brasil.

KNOW THE
RULES





Aqueles que vieram são as pessoas certas

Tudo o que acontecer é a única coisa que deveria acontecer

Qualquer momento que começar é o momento correto

As (poucas) regras de uma desconferência

Todos tem ideias interessantes, não somente o palestrante!



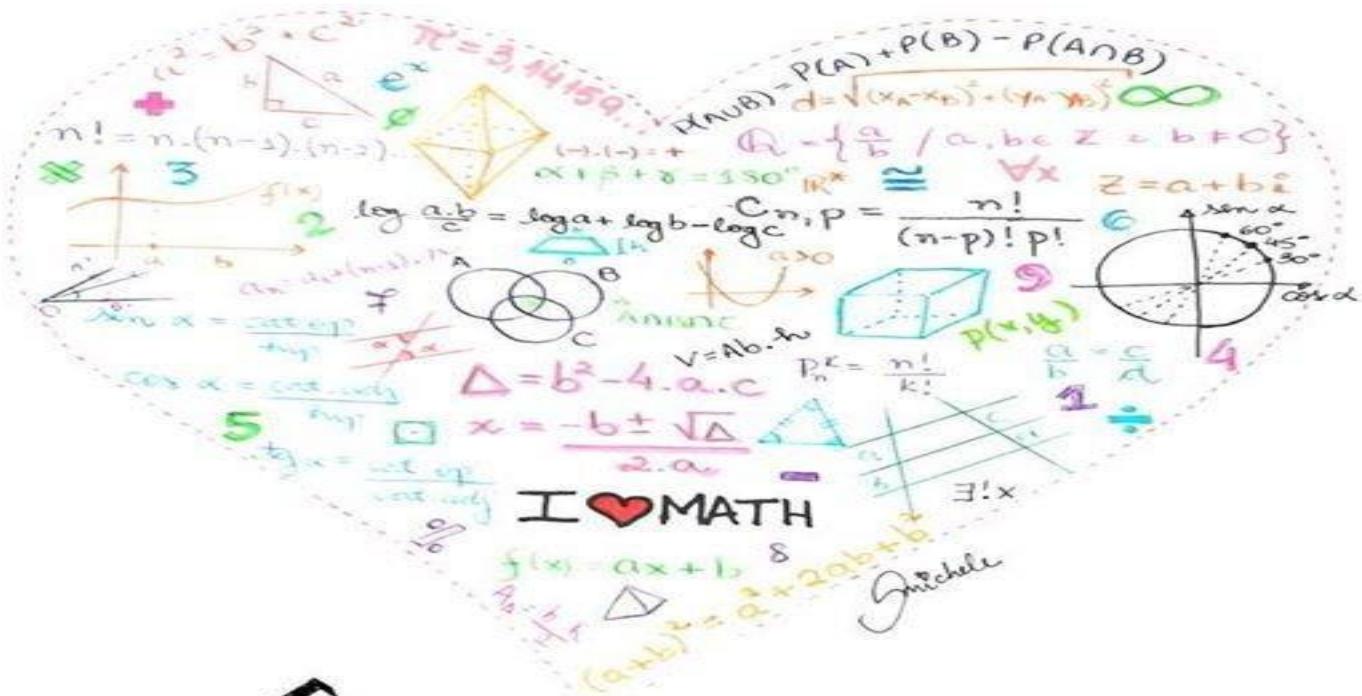


Sobre o que vamos falar hoje?

1. A matemática é linda!
2. Street Fighter também ensina
3. “Juntos e shallow now” é matematicamente lindo

3

A MATEMÁTICA



É LINDA

Virgin 1



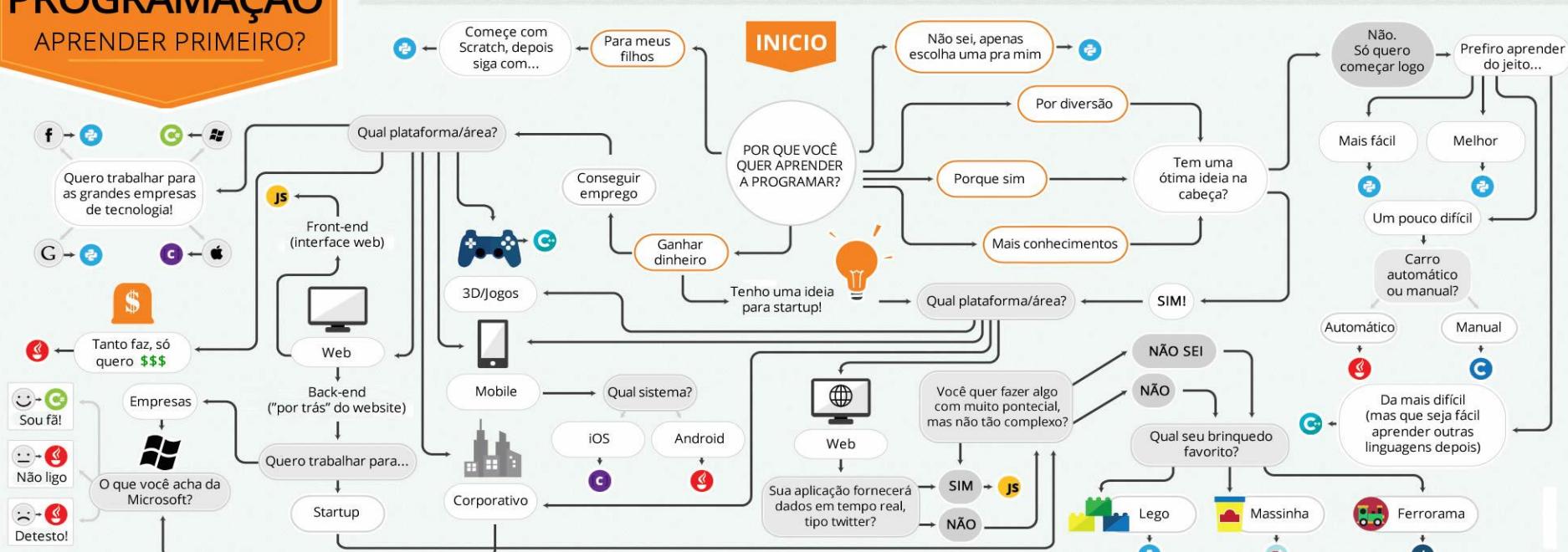
QUAL LINGUAGEM DE PROGRAMAÇÃO APRENDER PRIMEIRO?

O QUE É PROGRAMAR?

É escrever instruções bem específicas para uma máquina totalmente idiota, mas muito obediente.



LINGUAGENS



Está difícil começar a programar?

Ninguém falou que seria fácil, mas você precisa dar os primeiros passos. Depois que conseguir fazer algo se sentirá mais motivado a encarar o próximo desafio, e assim nunca mais irá parar.

Se precisar de uma ajuda, acesse:

WWW.TIAGOGOUVEA.COM.BR

Portugol Online

vinyanalista.github.io/portugol/applet.html

g Google

Portugol Online

Conheça

Veja

Execute

Cumprimente

Socialize

Arquivo Editar Localizar Exibir Ajuda

// Faça um algoritmo para mostrar o resultado da multiplicação de dois
// números.

algoritmo
declare n1, n2, m numérico
escreva "Digite dois números:"
leia n1, n2
m <- n1 * n2
escreva "Multiplicação = ", m
fim_algoritmo.

// Adaptado de:
// ASCENCIO, A. F. G.; CAMPOS, E. A. V. Fundamentos da programação de
// computadores. 2a. ed. São Paulo: Pearson Prentice Hall, 2007. p. 4-5.

Linha: 1 Coluna: 1

This screenshot shows a web-based programming environment for the Portugol language. At the top, there's a navigation bar with links for 'Portugol Online', 'Conheça', 'Veja', 'Execute' (which is highlighted in blue), 'Cumprimente', and 'Socialize'. Below the navigation is a toolbar with various icons for file operations like new, open, save, print, and cut/paste. The main area is a code editor containing a Portugol program. The code is as follows:

```
// Faça um algoritmo para mostrar o resultado da multiplicação de dois
// números.

algoritmo
declare n1, n2, m numérico
escreva "Digite dois números:"
leia n1, n2
m <- n1 * n2
escreva "Multiplicação = ", m
fim_algoritmo.

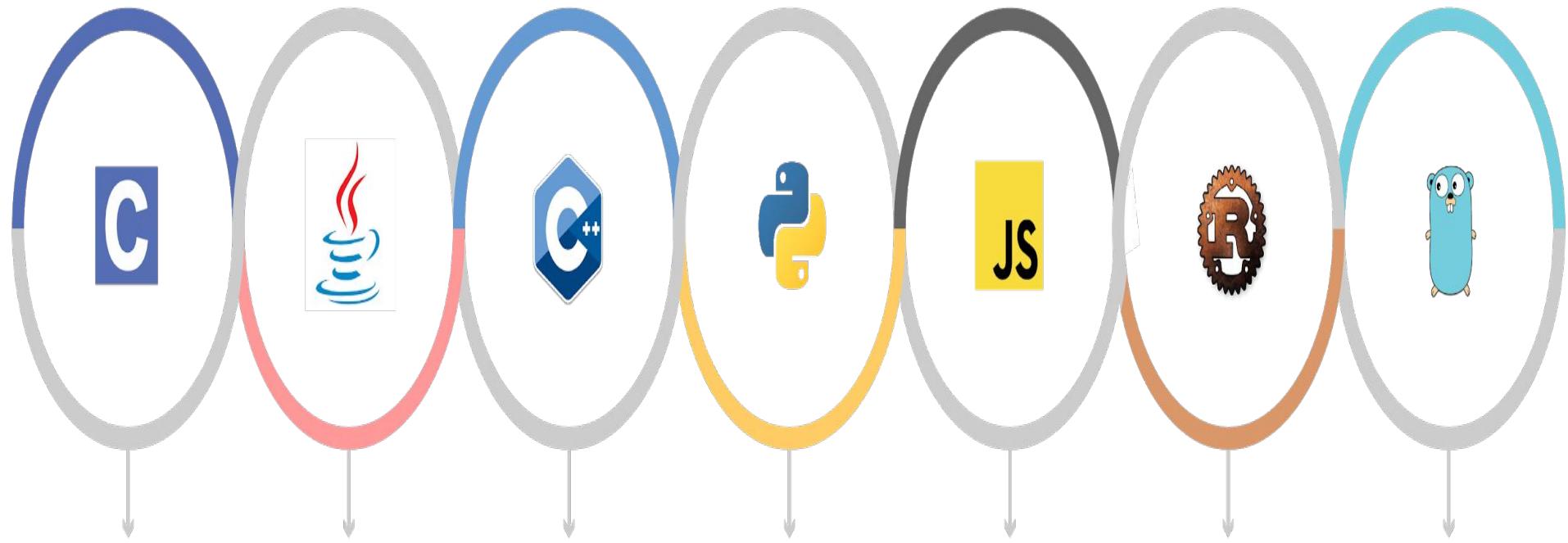
// Adaptado de:
// ASCENCIO, A. F. G.; CAMPOS, E. A. V. Fundamentos da programação de
// computadores. 2a. ed. São Paulo: Pearson Prentice Hall, 2007. p. 4-5.
```

The code is written in Portuguese and performs a simple multiplication of two numbers input by the user. A note at the bottom credits Ascencio and Campos from their 2007 book. The status bar at the bottom left indicates 'Linha: 1 Coluna: 1'.

4

Sintaxes diferentes de portugol foram encontradas numa rápida pesquisa no google...

DA FUQ?



C

JAVA

C++

PYTHON

JAVASCRIPT

RUST

GOLANG



www.sony.com

SONY

EMI

SONY

www.sony.com

VISA

www.visa.com

Mal equipe pray very naice
Di farest taime

Hello, world (Java)

```
public class Hello
{
    public static void main (String args[ ])
    {
        System.out.println("Hello, world!");
    }
}
```

```
> javac Hello.java
> java Hello
> Hello, world!
```



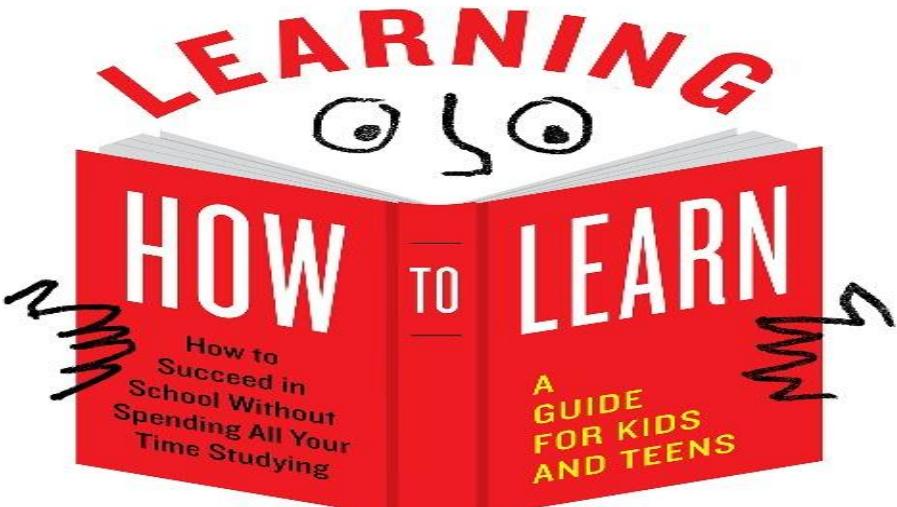
NOOOOOOOO!!!

ULTRALEARNING

Master Hard Skills,
Outsmart the Competition, and
Accelerate Your Career

Scott H. Young

Foreword by JAMES CLEAR, author of *Atomic Habits*



"Lots of books promise to change your life. This one actually will."
—SETH GODIN, author of *The Icarus Deception*

THE FIRST 20 HOURS

How to Learn Anything ...
Fast



APRENDENDO A+ APRENDER



COMO TER SUCESSO EM MATEMÁTICA,
CIÊNCIAS E QUALQUER OUTRA MATERIA
(MESMO SE VOCÊ FOI REPROVADO EM ÁLGEBRA)

BARBARA OAKLEY

Book 10 A mind for numbers; How to excel at math and science
by Barbara Oakley

Pg 263

The Patient ability to keep working away, a little bit at a time is important
We learn a great deal from our failures. With each mistake, we are making progress towards a deeper understanding

Law of Serendipity: Lady Luck favors the one who tries.

Learn to focus on process, not product
Calmly put forth your best effort for the period

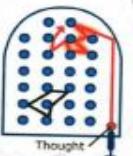
The flow of time and the habit's and actions associated with that flow

an outcome

Pomodoro technique

Metaphors are powerful tools for learning in Math and Science

The key to learning is the balance of the modes of thought



Focused

Highly attentive



Diffuse

Resting state

Einstellung effect

an idea you have in your mind already or the simple initial thought prevents a better idea or solution from being found. You must unlearn your erroneous older ideas even while you're learning new ones

Procrastination can mean only leaving enough time to do superficial focused mode learning. Along with additional stress, the result is a faint and fragmented neural pattern that will soon disappear due to its shaky foundation

You may think you're learning in between checking your phone messages, but in reality, your brain is not focusing long enough to form the solid neural chunks that are imperative to repeat what you want to remember. Strong neural representation (your "metabolic dump sites") can suck away the neural patterns related to that memory

Use it or lose it!



Transform distant deadlines into daily ones
Beware of the illusions of competence!

The best language programs incorporate structured practice that includes plenty of spaced repetition and rote, focused mode learning of the language along with more diffuse-like free speech with native speakers.

The goal is to embed the basic words and patterns so you can speak as freely and creatively in your new language as you do in English.

Imagine how your calf muscles would scream if you are forced for a long race by waiting till midnight before your first marathon to do your first practice run. That is the same as cramming. You cannot compete if you just cram at the last minute.

Generating (recall) the material helps you learn it much more effectively than simply rereading it.

Testing effect: → testing is a powerful learning experience.

It changes neurons you know. And, improves retention of material.



Change Your thoughts, Change Your life

When learning a new concept, do not let it go untouched for longer than a day further, trying to learn everything in a few cram sessions doesn't allow time for neural structures to become consolidated in the warehouse (long-term memory).

One significant mistake students sometimes make in learning Maths & Science is jumping into the water before they learn to swim.

Avoid **einstellung**, accepting the first idea that comes to mind when you are working on an assignment or test can prevent you from finding a better solution.

a (MIND) =
for
NUMBERS



HOW TO EXCEL AT
MATH AND SCIENCE
(Even If You Flunked Algebra)

BARBARA OAKLEY, PH.D.

We procrastinate about things that make us feel uncomfortable

But it is only the anticipation

EAT the Frog: Start!

Working memory has only so many things it can hold at once

Working memory is the part of memory that has to do with what is immediately and consciously processing in your mind

We must CHUNK

1. Focus your attention on the information you want to chunk
2. Understand the basic idea you are trying to chunk (this is like the superglue that holds the memory together)
3. Gain context so you can see not just how, but also when to use this chunk





THE FIRST 20 HOURS: HOW TO LEARN ANYTHING... FAST

A visual book review by Sacha Chua (@sachac) · <http://sach.ac/first20> · July 5, 2013 | JOSH KAUFMAN

Rapid Skill Acquisition

1. Choose a lovable project. 😊 excited!
2. Focus your energy on 1 skill 📝 someday/maybe at a time.

3. Define your target performance level. 🌙

4. Deconstruct the skill into SUBSKILLS

5. Obtain critical Tools. 🛠️ →

6. Eliminate barriers to practice. ✎ pre-practice effort
resources
distractions
emotional blocks

7. Make dedicated time for practice. 🕒 Keep a time log

8. Create fast feedback loops 🏃 coaches/mentors
VIDEO video training aides

9. Practice by the clock in short bursts 20:00 × 3-5 must finish!

10. Emphasize quantity and speed 📊 # + 80-90% good

Not:
Training
Education
Credentialing

DE CONSTRUCT



LEARN

- Practice intelligently
- self-correct

REMOVE

- mental
- physical
- emotional
- barriers

PRACTICE

- the most important subskills for at least 20 hours

Effective Learning

1. Research the skill and related topics.

2. Jump in over your head.



3. Identify mental models and mental hooks.



4. Imagine the opposite of what you want.



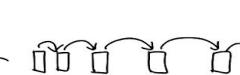
5. Talk to practitioners to set expectations



6. Eliminate distractions in your environment.



7. Use spaced repetition and reinforcement for memorization.



8. Create scaffolds and checklists



9. Make and test predictions.



10. Honor your biology.

60-90 min → then break! 😊 or 20 min 10 min 20 min 10 min

Practical examples:

yoga
programming

touch-typing

Go

ukulele

wind-surfing

first20hours.com

sachaChua
sach.ac

$B_n + a_1 B_{n-1} + \dots + a_0 = 0$ minimal equation of non-zero elements $B \in R$ for $\alpha_i \in R$ for all i , hence $a_i \in P = \text{prime}$
 $D(N) \supseteq S$ $B(u,v) = t_{LK}(uv)$ $D(N) \supseteq D(S)$ trace integral elements lie in R , and hence $D(S) \supseteq S$
 This group free on the non-zero prime ideals P . $\frac{S}{P} \cong \frac{R}{P}$

$J_P(I) = \inf_{x \in I} J_P(x)$ $I = \prod_P P^{v_P(I)}$ $R_P = (PR_P) V_P(I)$
 It's a non-empty subset of $S \cap K$ \therefore can be reduced to P prime ideals P generate $S(R)$ in subrings $\frac{S}{P} \cap R$

$f_P : \mathcal{F}(R) \rightarrow \mathcal{F}(R_P)$ $I = \prod_P P^{v_P(I)}$ $I_0 = V_P(IR_P) = V_P(R_P) = J_P(I)$

$J_P(I_1 I_2) = J_P(I_1) + J_P(I_2)$ $\mathcal{F}(R) \cong \bigsqcup_P \mathcal{F}(R_P)$ The means S_P induce as isomorphism
 $J_P(I_1^{-1}) = -J_P(I_1)$ $\text{is a C.E.K. then } v_P(\alpha) = 0 \text{ for almost all } P$ $\mathcal{F}(R_P) \cong S(\bar{R}_P) (\cong \mathbb{Z}!)$
 $J_P(I_1 + I_2) = \inf_{x \in I_1, y \in I_2} J_P(x, y)$ $S(R) \cong \bigsqcup_P S(\bar{R}_P)$ R is valuation ring of completion $K \otimes_R S$
 $J_P(I_1 \cap I_2) = \sup_{x \in I_1, y \in I_2} J_P(x, y)$ $D(R[\alpha]) = \frac{1}{g'(\alpha)} R[\alpha]$ not equal on them 5

$J_K(D) \geq (e-1)S$, $\frac{\partial}{\partial \alpha} J_K(D) = N_{L/K}(J) \bar{R}_P = \prod_{\alpha \in L} N_{K/F}(\bar{J}\bar{\alpha})$ $D(R[\alpha]) = \frac{1}{g'(\alpha)} R[\alpha]$
 $N_{L/K(\alpha)} = N_{K/F}(\alpha)^e \quad (e = \text{ord}_K(\alpha)) \geq (e-1)S$

$E_{L/K}(x; x_j) \in \mathbb{Q} \quad [D(R[\alpha]) : R[\alpha]] = N_{L/K}(g'(\alpha)) R[\frac{1}{g'(\alpha)} R[\alpha] : R[\alpha]]$ Glycylate twice

$J_K(D) = \sum_{\alpha \in L} J_K(N_{L/K} D) = \sum_{\alpha \in L} J_K(\alpha) \geq e-1 \quad S \geq \frac{e}{J(L/F)} > S-1$
 $\alpha = \sum_{i=1}^e \alpha_i \prod_{j=1}^i \alpha_j$
 $g := \text{ord}_K(\alpha), D = g^e \alpha R_{\infty}$
 $P_{\alpha}(L/F) = \alpha P_{\alpha}(K/F) \cdot \sqrt{g} R_{\infty}$
 $J_K(D) = \sum_{y \in L} J_K(y) = \sum_{i=1}^e (g_i - 1) \quad e(L/F) i_{F/K}(\omega) = \sum_{y \in L} i_{L/K}(y)$
 $\text{Lemma now follows by observing } g_i \text{ divide } g_1 \dots g_e$

$x = \sum_{m=1}^{\infty} [g_0 y + mg_{m+1} - (g_1 + \dots + g_m)]$
 $\phi(\alpha) = 1 = \inf((ig_0)x + 1) \geq g \in \Gamma_{\text{min}}$ $(\alpha H)^n (\alpha L) / (\alpha H) =$
 $\text{not work. } (F \in \mathbb{C}[m, m]) \quad y \in \mathbb{Z}_{\text{min}}, \text{ then.}$
 $0 \leq l < a$ $\text{On putting } b = c^l \text{ and } n \rightarrow \infty = e^{-a}$

$\lambda = \lambda(n, m, b, m, a, c, m-1, \dots, b) \quad l(b) \leq M \left(\frac{\log b}{\log a} + 1 \right) \max \left\{ 1, |Q| \frac{\log b}{\log a} \right\}$
 $M = \max_{1 \leq d \leq a} \left| \frac{1}{d} \right| \quad (c^l)^{\frac{1}{\log a}} = 10^{\frac{1}{\log a}}$

$S(a) = |\mathbb{E}| \quad |\mathbb{E} - \alpha| < d$
 $|\mathbb{E}| \leq 1 \quad |\mathbb{E}| < 1 \quad (2 \leq n \leq N)$
 $\frac{\log |\mathbb{E}|}{\log (b)} = \frac{\log |\mathbb{E}|}{\log (10)}$
 $\frac{\log |\mathbb{E}|}{\log (10)} = \frac{\log |\mathbb{E}|}{m \log (10) + n \log (a)}$
 $m \log (10) + n \log (a) \geq 0$
 $\frac{1}{(\alpha + b)(\beta - \alpha) - \alpha \beta} \leq |\mathbb{E}| |\mathbb{D}| + |\alpha| |\mathbb{D}| + |\beta| |\mathbb{D}|$

A photograph of a person with short brown hair sitting at a desk. They are wearing a dark t-shirt and a light-colored, textured bracelet on their right wrist. Their hands are resting on a keyboard. To the left of the person is a computer monitor displaying a blue glowing logo consisting of a stylized 'E' or 'G' shape made of horizontal segments. The background is a plain, light-colored wall.

7:40:21 PM
MAY 21 2006

Qual a alternativa a tudo isto?



Arkham | Musashi

Pools

1 VICTORIA

0

0

64

AKUMA

COUNTER



SB
SONICBOOM

MILAN GAMES WEEK

DAY TWO

C DAVMSTILLDADDY

BST DAIGO C

PLAYER 1

GUILE

1

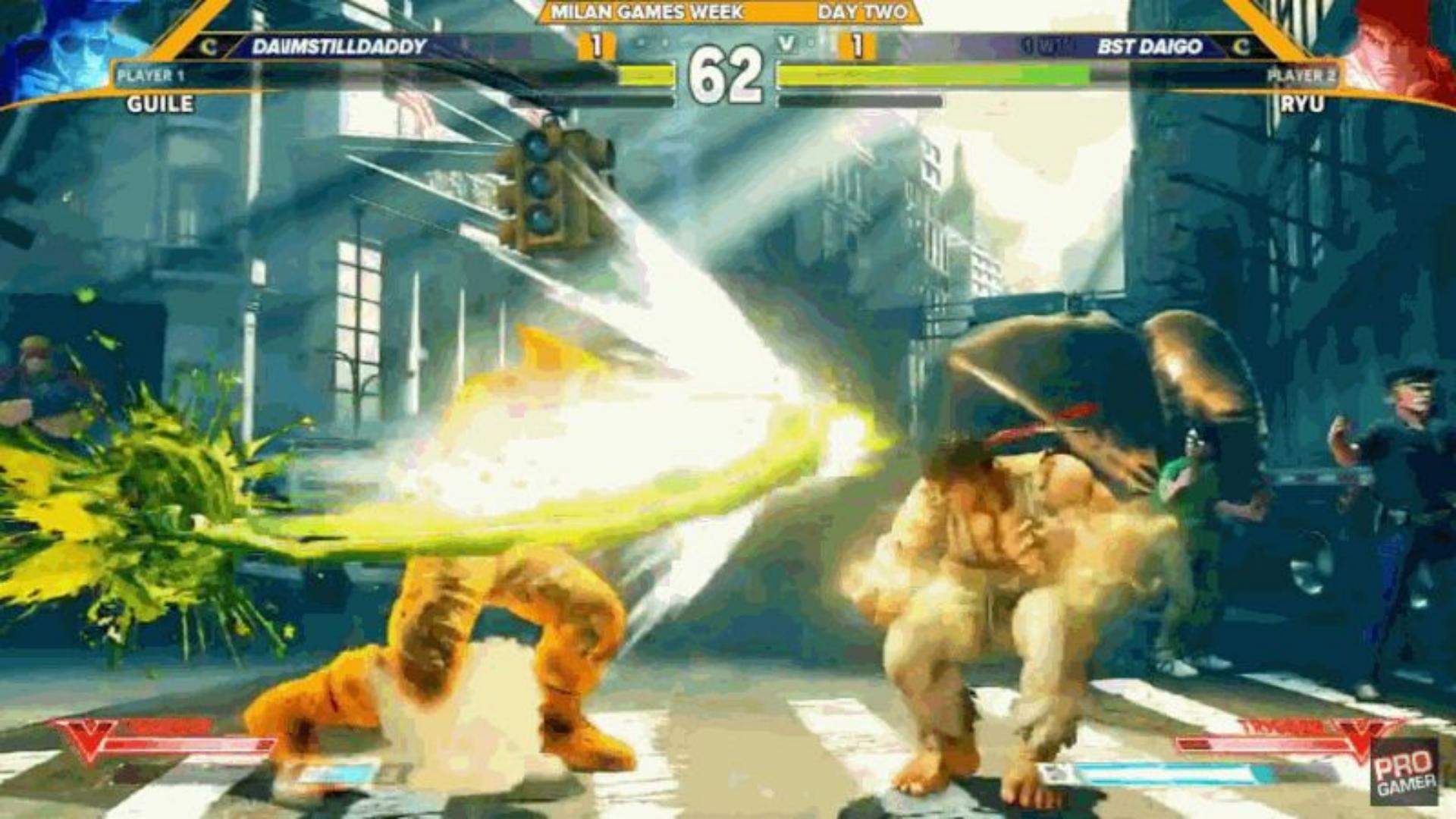
1

62

1W

PLAYER 2

RYU



PRO
GAMER

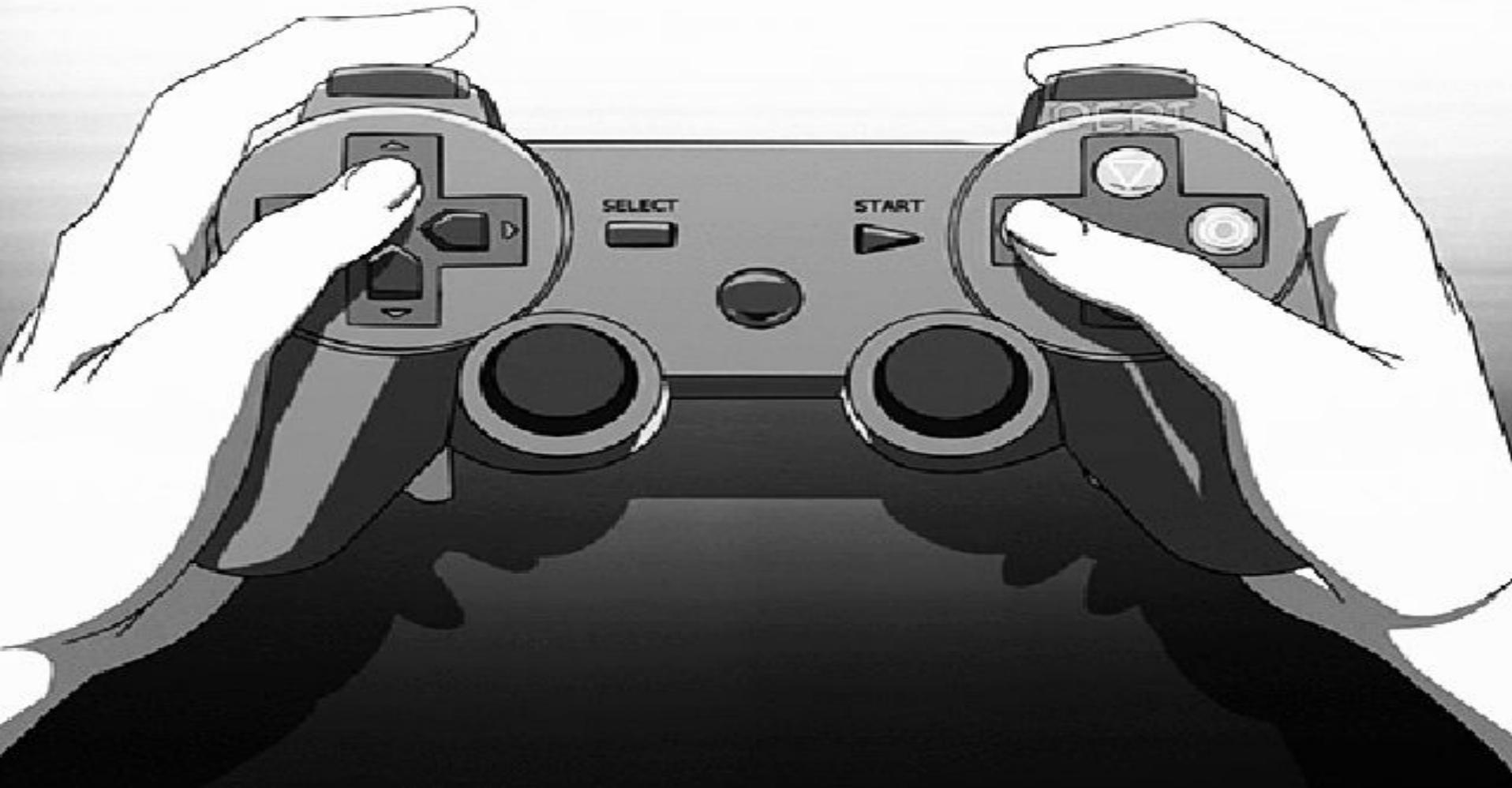
MARIO
001300

0x01

WORLD
1-1

TIME
365





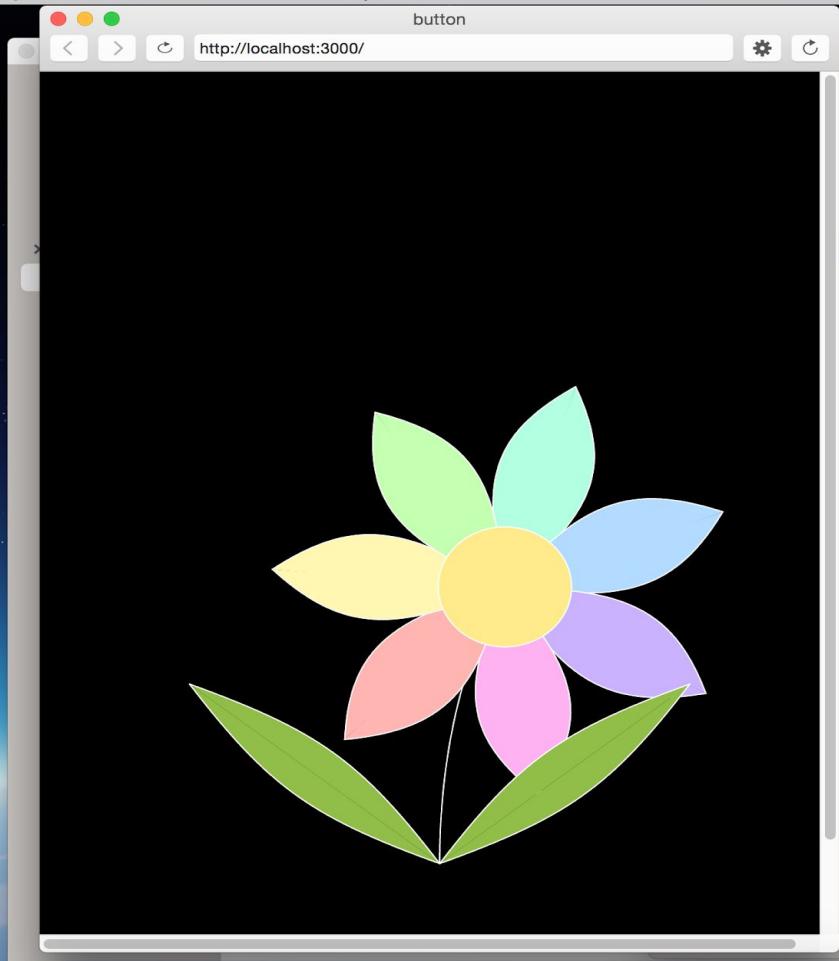


FEEDBACK

pew@Eleusis:~/Programming/Final Term/finalterm

x

[pew@Eleusis ~]\$ cd Programming/Final\ Term/finalterm/
[pew@Eleusis finalterm]\$ █



sketch.js

flower_animate

```
sketchjs x +  
178 |   hTrue = hTrue + 255;  
179 }  
180 h = floor(hTrue);  
181 }  
182  
183 //scroll over and the flower it either grow taller or shorter  
184 function mouseWheel(event) {  
185 if (bBack <= 100 && bBack >= 0) {  
186 bBack += event.delta * 3;  
187 if (bBack > 100) {  
| bBack = 100;  
188 } else if (bBack < 0) {  
189 bBack = 0;  
190 }  
191 }  
192 if (bBack <= 35) {  
193 bStroke = 255;  
194 hBack = 260;  
195 sBack = 100 - bBack;  
196 } else if (bBack <= 80) {  
197 bStroke = 255;  
198 hBack = 220;  
199 sBack = 100 - bBack;  
200 } else if (bBack <= 100) {  
201 hBack = 23;  
202 sBack = 20 + 3*(bBack - 80);  
203 bStroke = 0;  
204 }  
205 console.log(hBack + "/" + sBack + "/" + bBack);  
206 return false;  
207 }  
208 }  
260/100/0  
260/100/0  
260/100/0  
260/100/0
```

sketch.js





when green flag clicked

for each Scratcher following sayamindu

If country of Scratcher = Spain then

say username of Scratcher for 2 secs





TCHELINUX PELOTAS 2019

Rock & Code & Juntos & Shallow Now

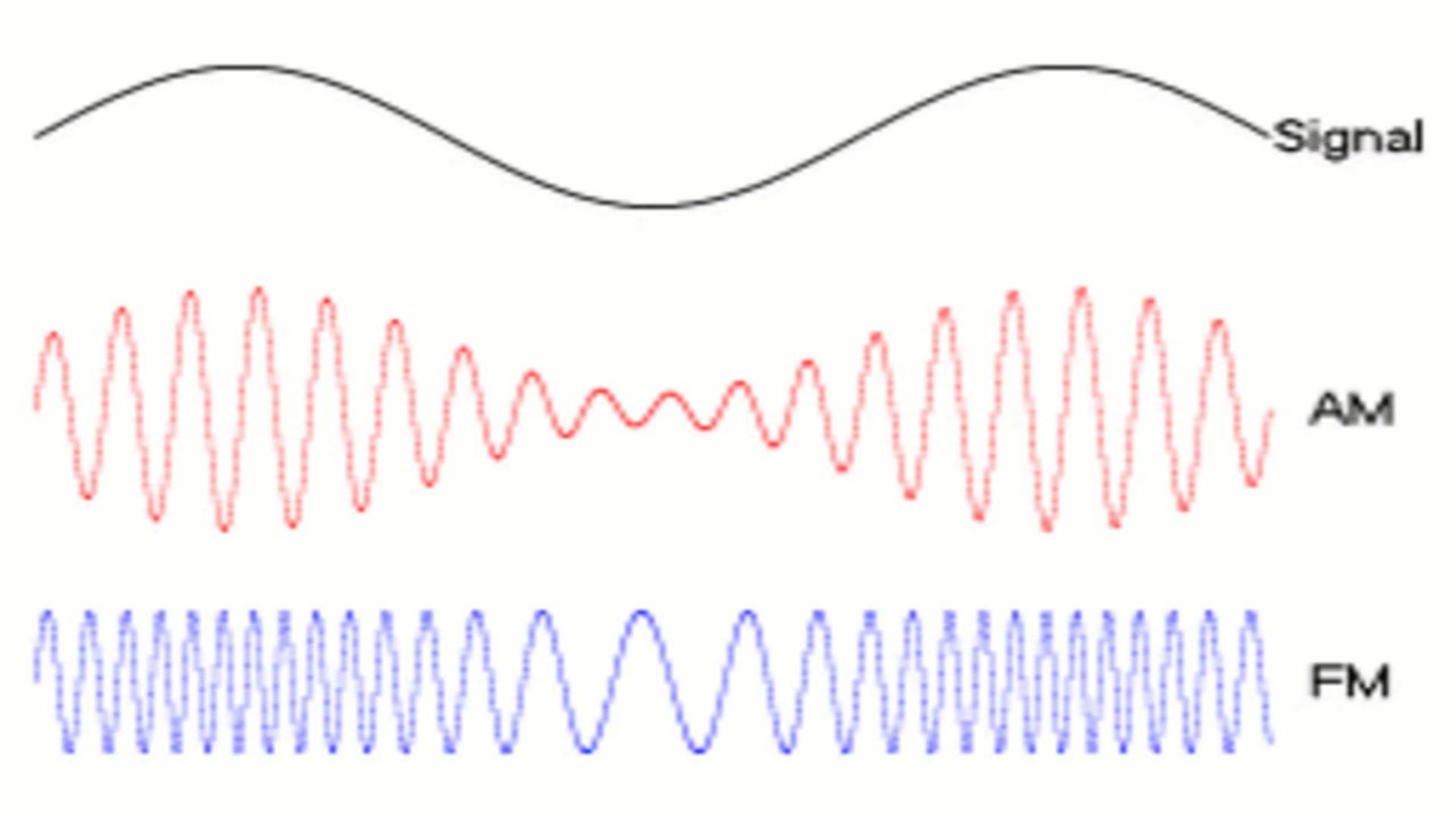
FEITO POR JERÔNIMO MEDINA MADRUGA

WHOMARIOAZ



"Meu Deus...o que eu consigo
rimar com Shallow?"

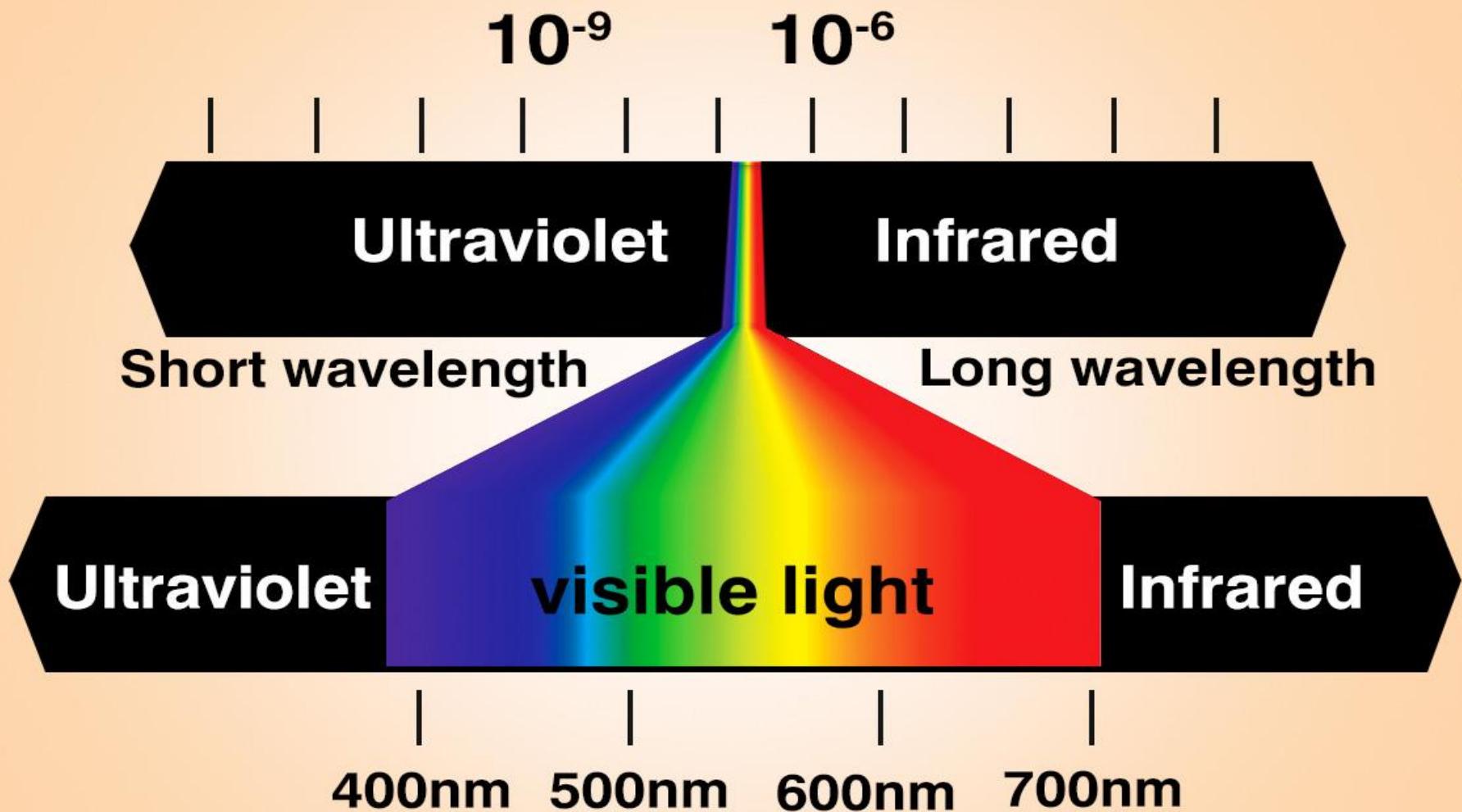
E como a música se relaciona com
matemática?

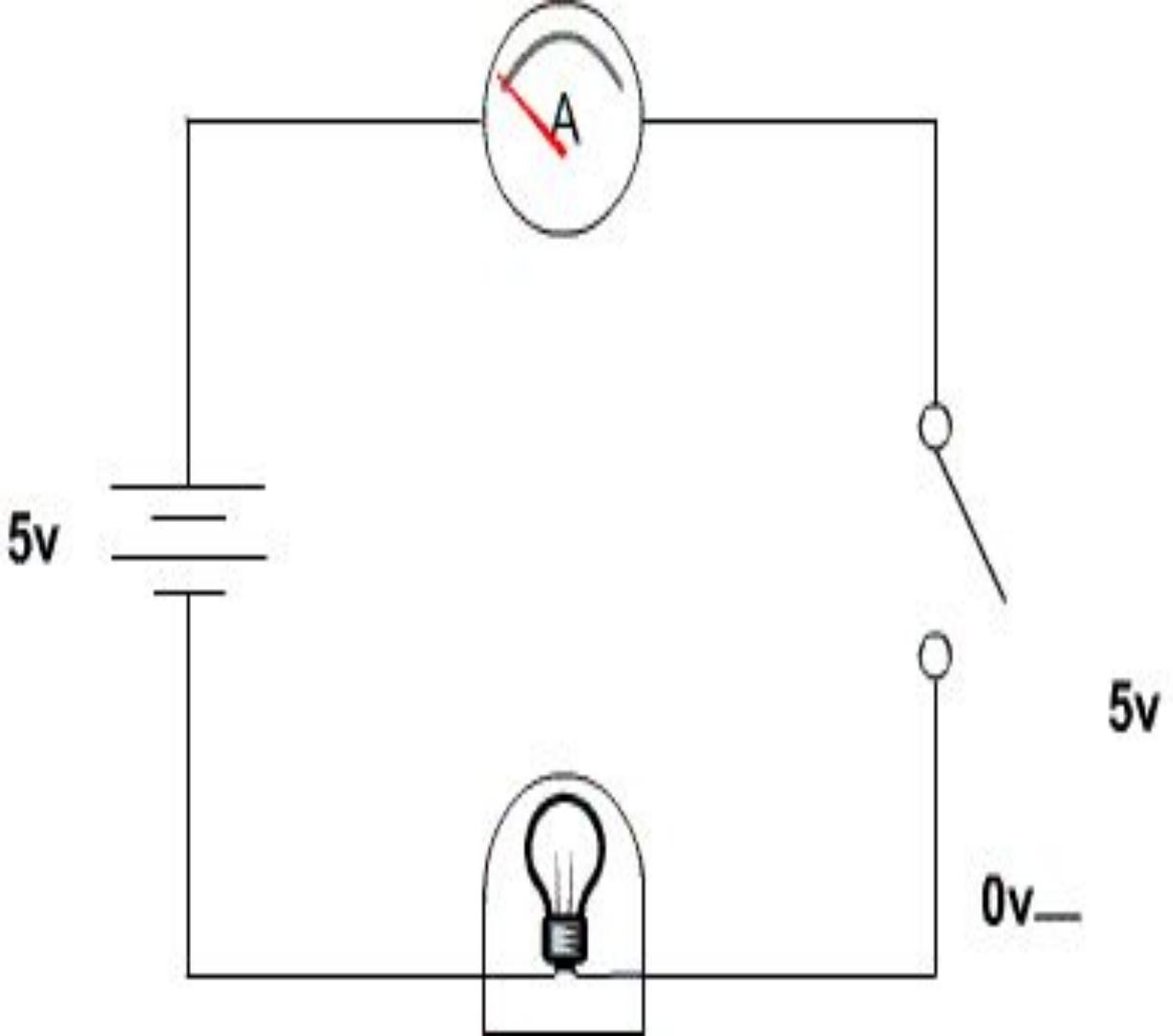


Signal

AM

FM





MP3 Audio

Recording

ADC

00000
00000

DSP

00000

DAC

00000
00000

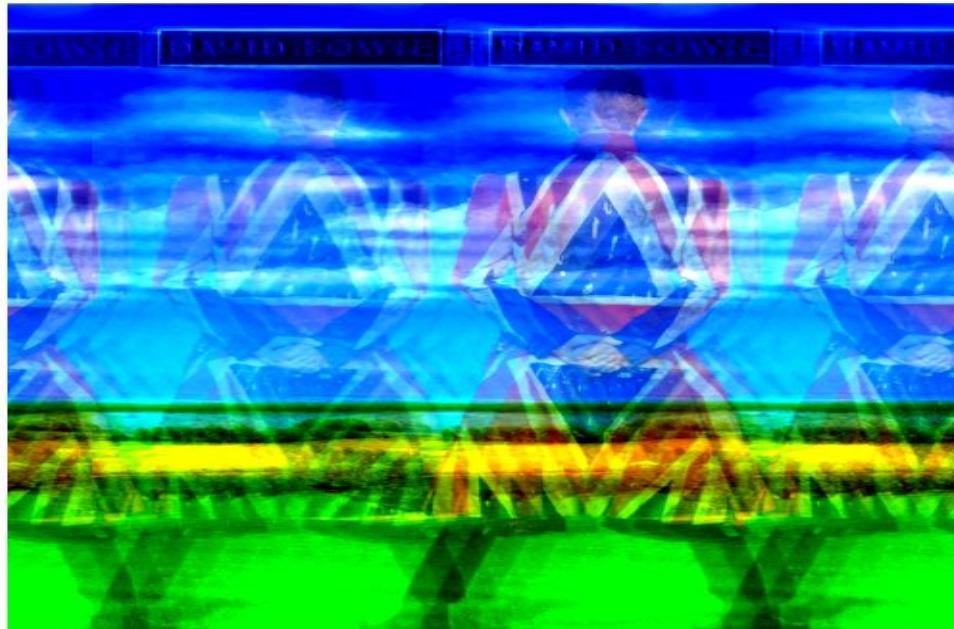
MEMORY

Playback

Rafael Specht da Silva

- Graduado em Telecomunicações
- Entusiasta JS
- Vivendo o sexto BrazilJS
- Enciclopédia de Choque de Cultura





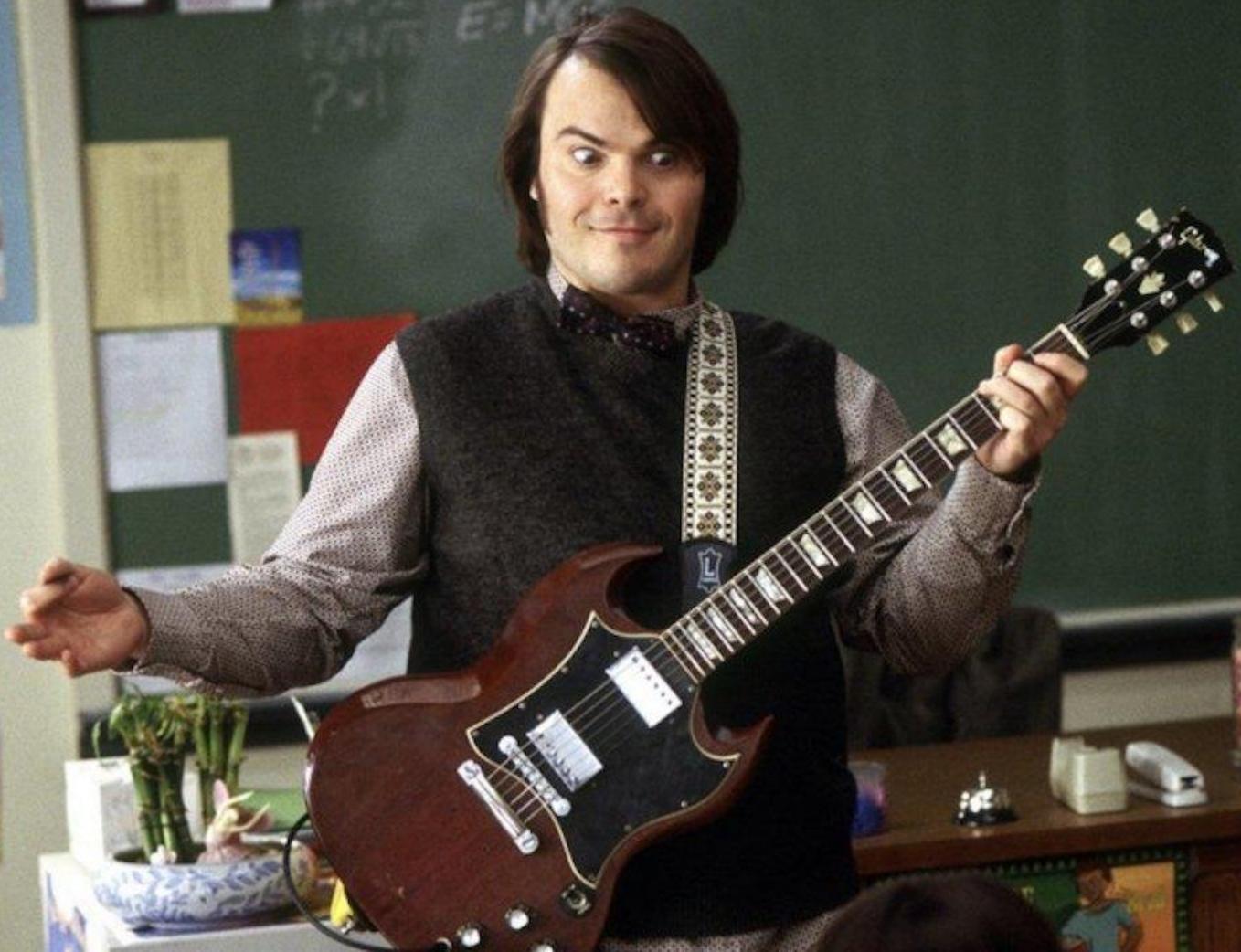
Earthling cover affected by a retro feeded delay

A Gift of Sound and Vision — Affecting images using the Web Audio API

What happens when you pass an image through a guitar pedal?



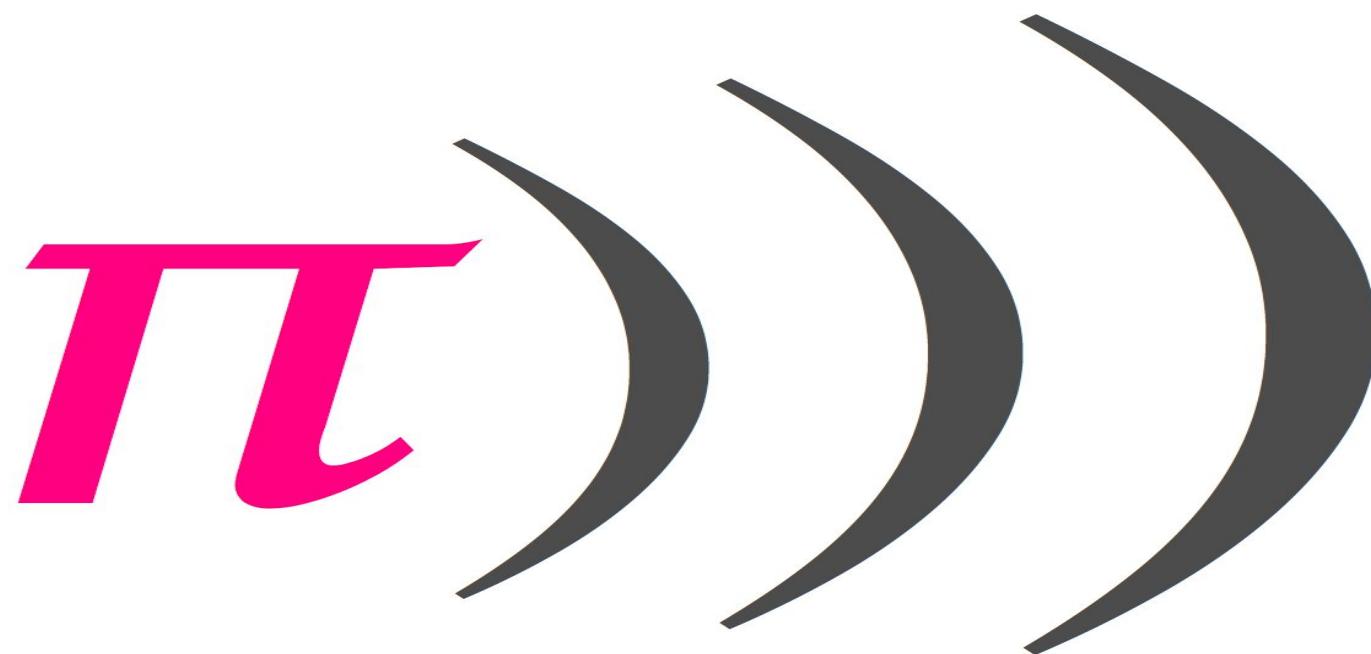
Rafael Specht da Silva Following
Dec 3, 2018 · 7 min read



A photograph of a band performing in a studio. In the foreground, a person with long, light-colored hair is singing into a microphone. Behind them, another person is playing drums. In the background, there is a large sign that reads "FOO FIGHTERS" in a stylized, blocky font. The letters are partially obscured by the band members. The studio has wooden paneling and warm lighting.

FOO FIGHTERS

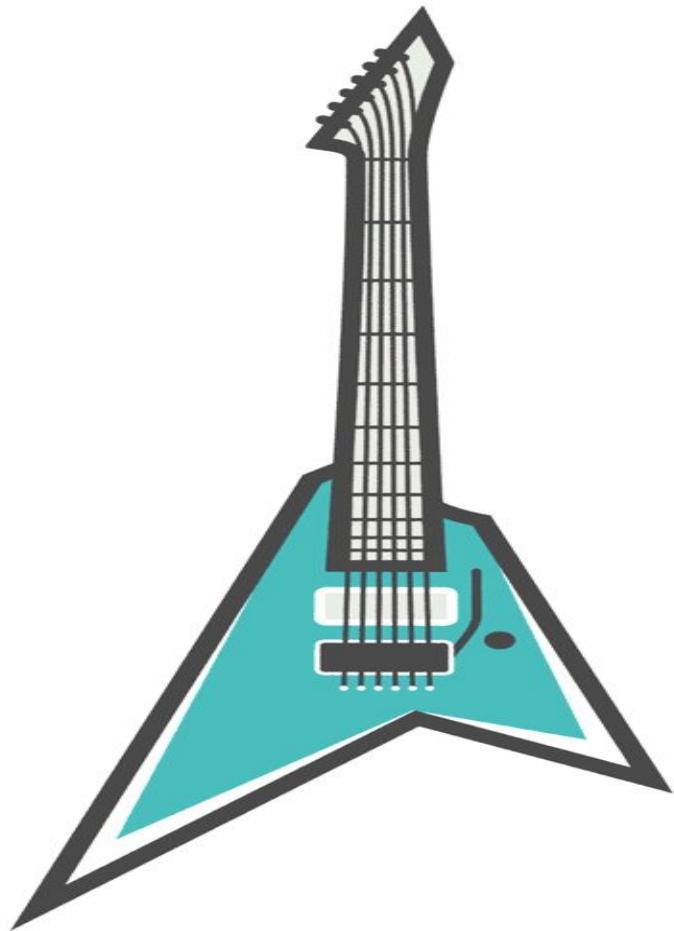
#FOOFIGHTERSRUN



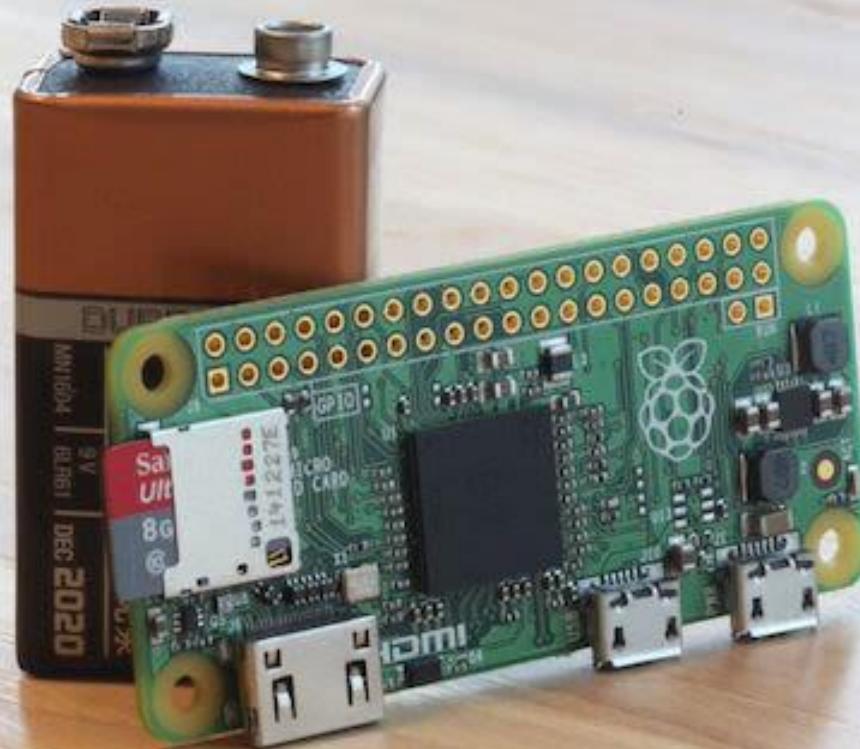


PAPER
SCISSORS
ROCK









PROGRAMMER

Sam
Aron





Ruby in 20 minutes

John Pinney

j.pinney@imperial.ac.uk

Ruby On Rails In 60 Minutes



RUBY



RAILS

60

MIN

Site oficial:

<https://sonic-pi.net/>



Sonic Pi

The Live Coding Music Synth for Everyone.

Welcome to the **future of music**.

Simple enough for computing and music lessons.

Powerful enough for professional musicians.

Free to download with a friendly **tutorial**.

Diverse community of over one million live coders.

Learn to code creatively by composing or performing music in an incredible range of styles from Classical & Jazz to Grime & EDM.

Brought to you by [Sam Aaron](#) and the Sonic Pi Core Team

Sonic Pi is currently free
(please support us on [Patreon](#) to help keep it free)

[Windows](#)

[macOS](#)

[Raspberry Pi](#)

Created at the [University of Cambridge Computer Laboratory](#).

Currently developed with kind support from [Norfolk & Norwich Festival Bridge](#),

[Arts Council England](#) and generous [Patreon](#) supporters.

Sonic Pi is an [Open Source Project](#) released under the MIT Licence.

Sonic Pi in the Computing Classroom

Sonic Pi was specifically designed for and built in collaboration with teachers for use in the classroom.



Music Live Coding

Sonic Pi is a new kind of musical instrument which enables exciting new learning pathways in the classroom.

[Scheme of Work for Music Lessons](#)



Classroom Ready

Sonic Pi was designed, implemented and developed with extensive classroom trials in close collaboration with teachers.

[Introduction for Teachers](#)

```
with_fx :reverb do
  sample :elec_pop
  sleep 1
  use_synth :saw
  play :Eb2
  sleep 1
end
```

Creative Computing

Sonic Pi comes with a scheme of work targetted for KS3 Computing developed in harmony with the new UK curriculum.

[Scheme of Work for Computing Lessons](#)

Engage your students by coding music in your classroom today.

Free Sonic Pi Book

Sam Aaron, creator of Sonic Pi, has written this book to
complement the built-in documentation.

Master live loops, code drum breaks, compose your own melodies make random riffs and
loops, learn to shape and sculpt sounds and much, much more...



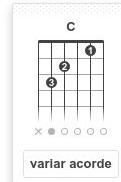
Download "Code Music with Sonic Pi" Now!

página inicial ▶ rock and roll ▶ foo fighters ▶ breakout



Breakout Foo Fighters

Cifra: Principal (violão e guitarra) ▾



exibições
121.890



Tom: D ▾

Intro

(B) (E) (C#m) C
 E|-0-----|0-----|0-----|0-----|
 B|-0-----|0-----|0-----|0-----|
 G|-4-----|9-----|6-----|5-----|
 D|-4-----|9-----|6-----|5-----|
 A|-2-----|7-----|4-----|3-----|
 E|-----|-----|-----|-----|
 play twice

simplificar cifra

auto rolagem

A- texto A+

- | ½ tom | +

afinação

capotaste

exibir

adicionar à lista...

metrônomo

dicionário

corrigir

imprimir

baixar cifra

(B) (E) (C#m) (C)
 V V ^ V ^ V ^ V V ^ V V ^ V V ^ V V ^ V V ^
 E|-0---0-0---0-0-0-|0---0-0---0-0-0-|0---0-0---0-0-0-|0---0-0---0-0-0-|
 B|-0---0-0---0-0-0-|0---0-0---0-0-0-|0---0-0---0-0-0-|0---0-0---0-0-0-|
 G|-4---4-4---4-4-4-|9---9-9---9-9-|6---6-6---6-6-|5---5-5---5-5-5---|
 D|-4---4-4---4-4-4-|9---9-9---9-9-|6---6-6---6-6-|5---5-5---5-5-5---|
 A|-2---2-2---2-2-2-|7---7-7---7-7-|4---4-4---4-4-4-|3---3-3---3-3-3---|
 E|-----|-----|-----|-----|

Chorus

(B) (G) (B) (E)
 E|-3-3-3-3-3-3-|-----|0-0-0-0-0-0-0-|
 B|-4-4-4-4-x-|3-3-3-3-3-3-|4-x|0-0-0-0-0-0-0-|
 G|4-4-4-4-4-4-x-|4-4-4-4-4-4-4-|4-4-4-4-4-4-x|1-1-1-1-1-1-1-1-|
 D|4-4-4-4-4-4-x-|5-5-5-5-5-x-|4-4-4-4-4-4-4-x|2-2-2-2-2-2-2-2-|
 A|-2-2-2-2-2-x-|5-5-5-5-5-x-|2-2-2-2-2-2-x|2-2-2-2-2-2-2-2-|
 E|-3-3-3-3-3-3-x-|-----|0-0-0-0-0-0-0-|

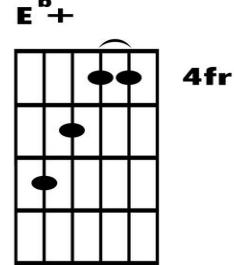
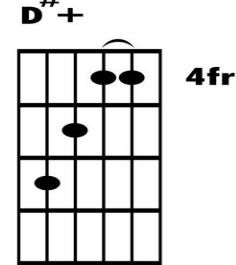
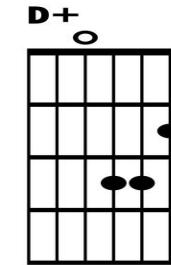
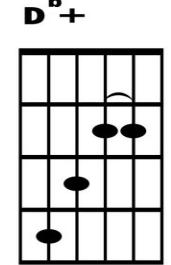
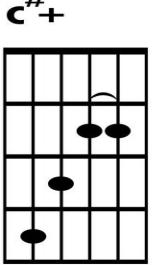
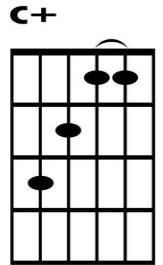
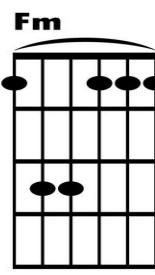
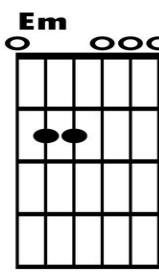
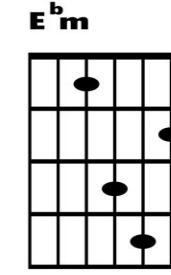
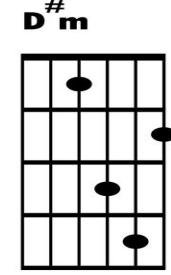
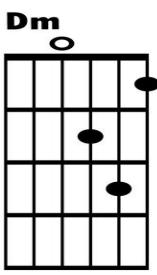
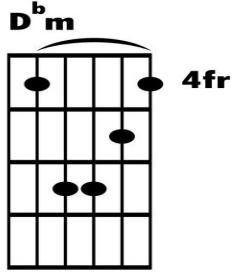
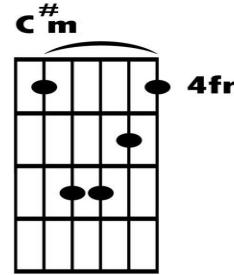
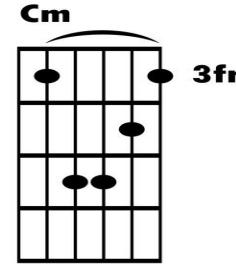
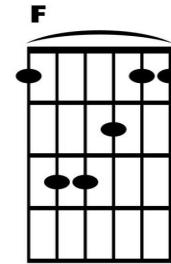
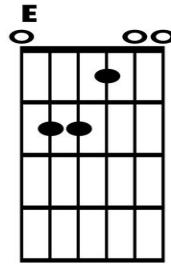
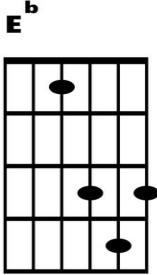
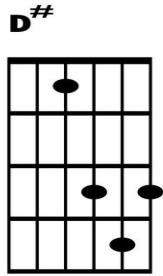
(G) (Emsus4) (G) (Emsus4)
 E|-----|-----|-----||
 B|-----|-----|-----||

acordes ▾



Note	Octave										
	-1	0	1	2	3	4	5	6	7	8	9
C	0	12	24	36	48	60	72	84	96	108	120
C#	1	13	25	37	49	61	73	85	97	109	121
D	2	14	26	38	50	62	74	86	98	110	122
D#	3	15	27	39	51	63	75	87	99	111	123
E	4	16	28	40	52	64	76	88	100	112	124
F	5	17	29	41	53	65	77	89	101	113	125
F#	6	18	30	42	54	66	78	90	102	114	126
G	7	19	31	43	55	67	79	91	103	115	127
G#	8	20	32	44	56	68	80	92	104	116	
A	9	21	33	45	57	69	81	93	105	117	
A#	10	22	34	46	58	70	82	94	106	118	
B	11	23	35	47	59	71	83	95	107	119	

GUITAR CHORD CHART



3fr

4fr

4fr

Pitch translation

C	Do
D	Re
E	Mi
F	Fa
G	Sol
A	La
B	Si

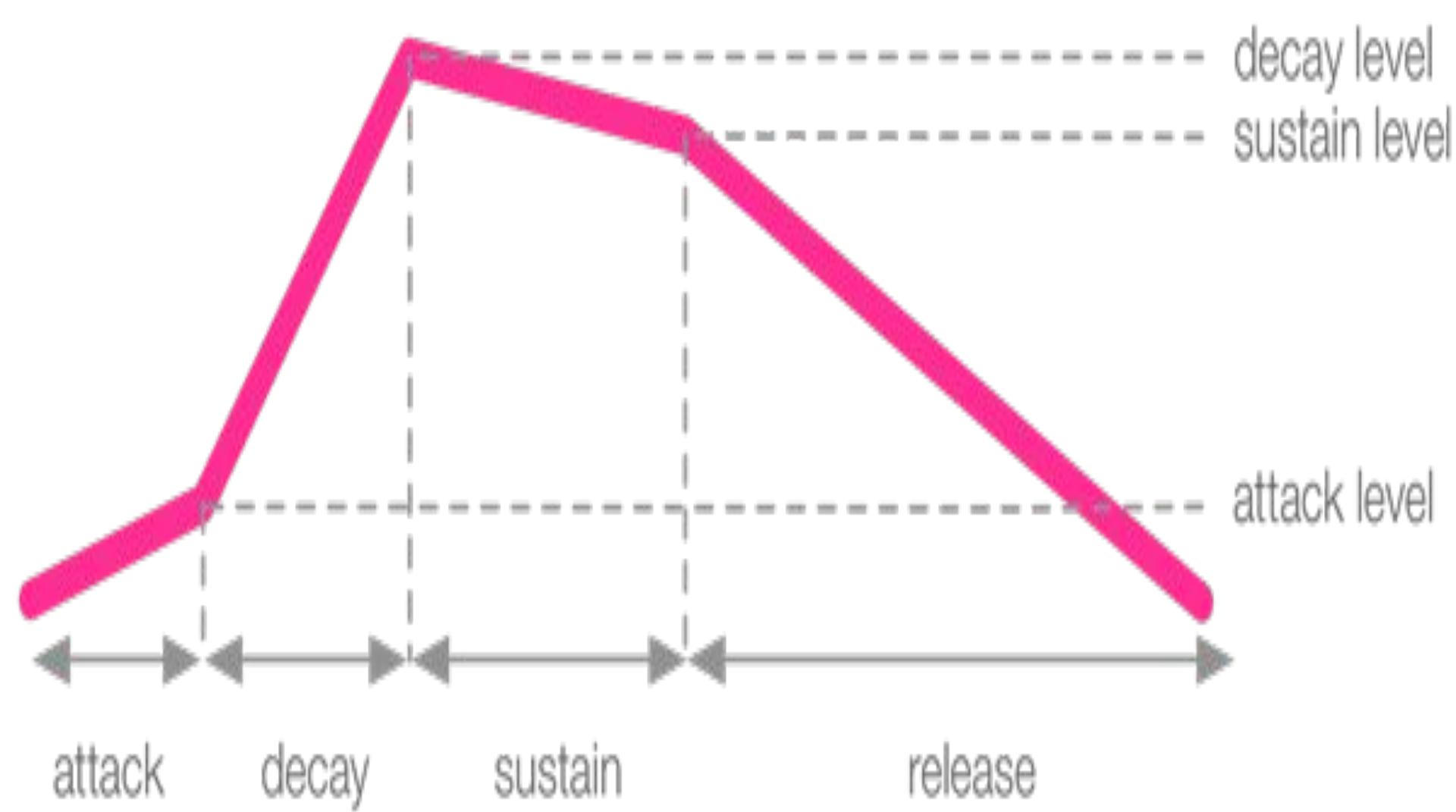


: Sharp : Diesis
b : Flat : Bemolle

Alphabetic system
Solmization system

- | | |
|--|--|
| English: {C, D, E, F, G, A, B}
German: {C, D, E, F, G, A, H}
Dutch: {C, D, E, F, G, A, B}
Japanese: {変ハ,ニ,ホ,ヘ,ト,イ,ロ}
Korean: {다,라,마,바,사,가,나} | Italian: {Do, Re, Mi, Fa, Sol, La, Si}
French: {Do, Ré, Mi, Fa, Sol, La, Si}
Spanish: {Do, Re, Mi, Fa, Sol, La, Si}
Portuguese: {Dó, Ré, Mi, Fá, Sol, Lá, Si}
Russian: {До, Ре, Ми, Фа, Соль, Ля, Си}
Romanian: {Do, Re, Mi, Fa, Sol, La, Si}
Dutch: {Do, Re, Mi, Fa, Sol, La, Si} |
|--|--|





Rock & Roll



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<https://baciotticursos.com.br/>

<https://www.abductionweb.com.br/>

Referências:

- Um breve vídeo meu sobre sonic-pi:
<https://www.youtube.com/watch?v=esfTE0XvZJc>

Referências:

- <https://sonic-pi.net/>
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- <https://github.com/gj/sonic-pi>
- <https://www.youtube.com/watch?v=9vJRopau0g0&t=9s>
- <https://www.youtube.com/watch?v=jiZTGKFHCP8>
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