



XXVII JIC III JIDTI

A XXVII Jornada de Iniciação
Científica e III Jornada
de Iniciação em
Desenvolvimento
Tecnológico e Inovação do
CETEM

CETEM
CENTRO DE TECNOLOGIA MINERAL

MINISTÉRIO DA
CIÊNCIA, TECNOLOGIA,
INOVAÇÕES E COMUNICAÇÕES

 **PÁTRIA AMADA
BRASIL**
GOVERNO FEDERAL





The "ReQuiz" Quiz Game on Waste Electrical and Electronic Equipment

by Matheus Avellar
advisor Lúcia Xavier

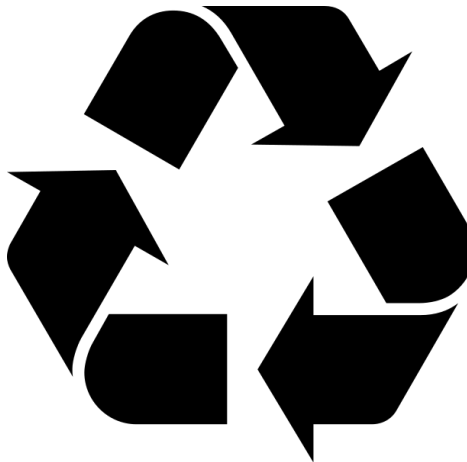
INTRODUCTION

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→ We at the R3MINARE team have been studying the importance of **recycling e-waste** (a.k.a. Waste Electrical and Electronic Equipment, WEEE for short)

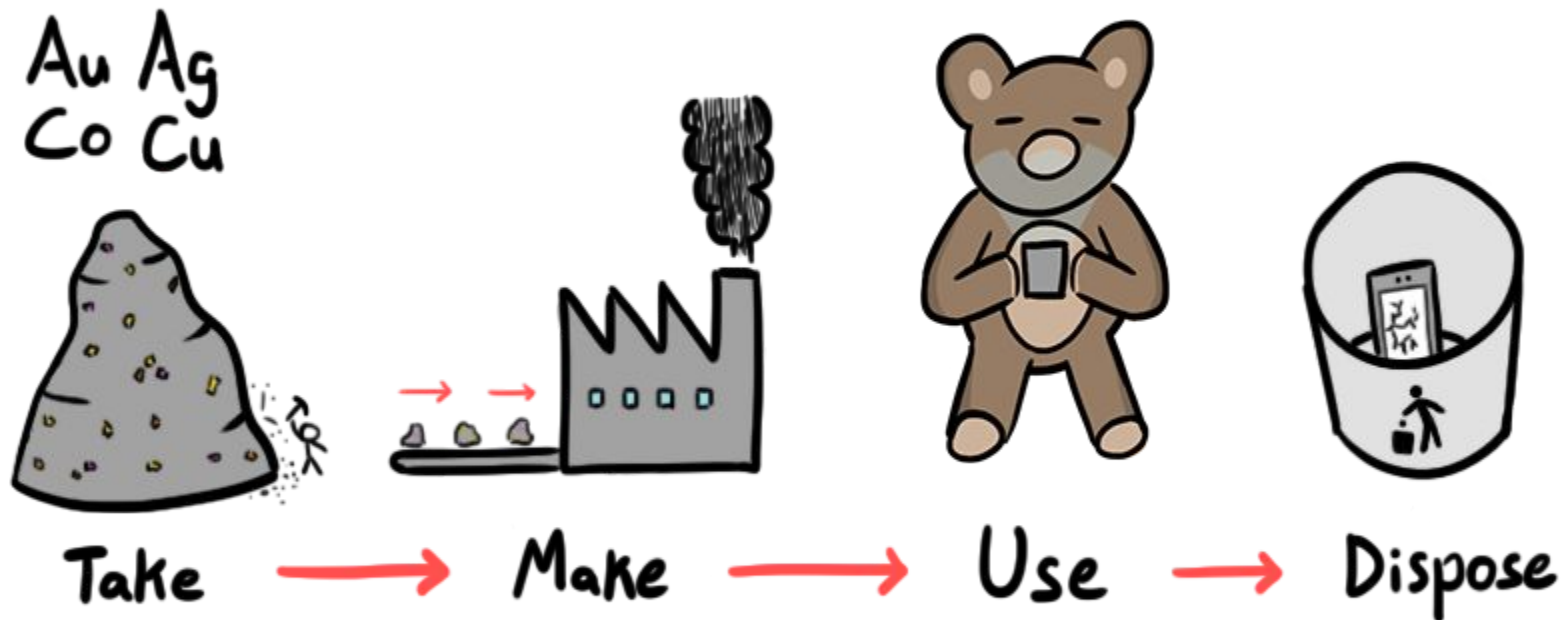
→ That ties in with the concept of a **circular economy**



INTRODUCTION:

Linear Economy (simplified)

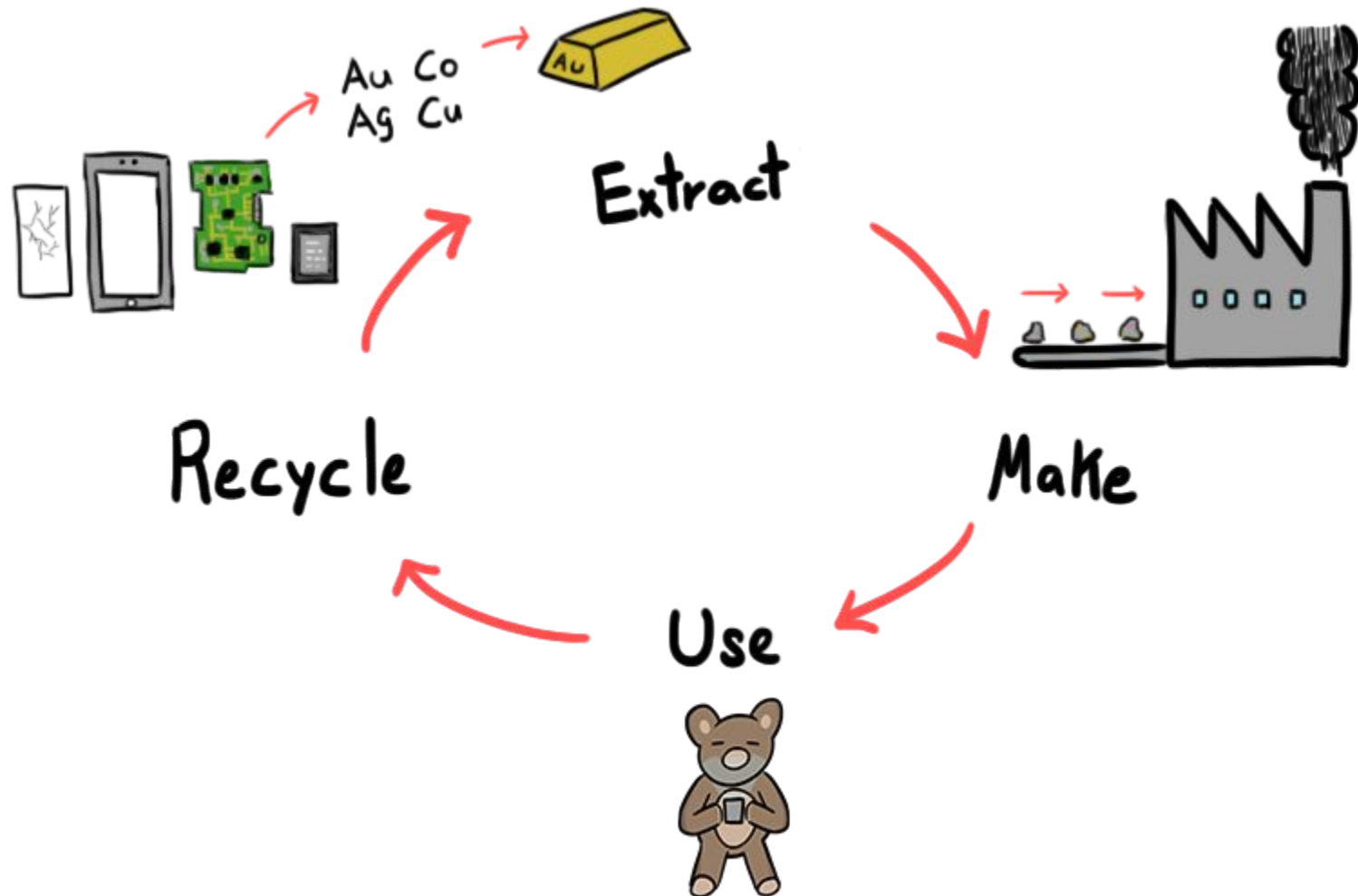
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INTRODUCTION:

Circular Economy (simplified)

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INTRODUCTION

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→ We wanted to quantify **how much** people **actually know** about WEEE recycling and the concept of circular economy

INTRODUCTION

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→ We wanted to quantify **how much** people **actually know** about WEEE recycling and the concept of circular economy

→ Answering forms is boring

INTRODUCTION



- We wanted to quantify **how much** people **actually know** about WEEE recycling and the concept of circular economy
- Answering forms is boring
- What do people *like* to do?

INTRODUCTION

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People like to play G A M E S !



OBJECTIVES

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→ Idea: making a **game** about recycling WEEE

Teste seus
conhecimentos sobre
ECONOMIA CIRCULAR
NA MINERAÇÃO



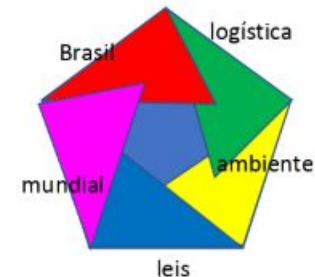
R3MINARE

Grupo de pesquisa
em mineração
urbana de resíduos
eletroeletrônicos

Créditos

Lúcia Helena Xavier
Marianna Ottoni
Matheus Avelar
Breno Coll

Escolha a categoria





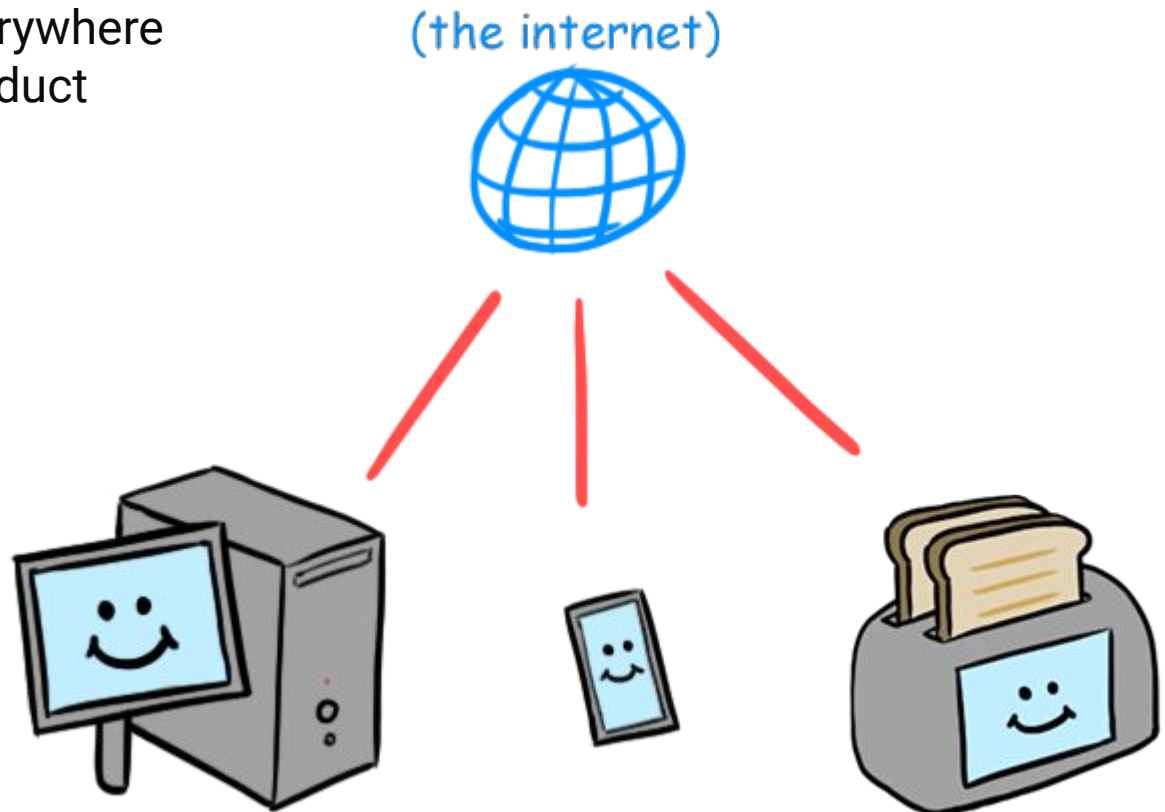
MATERIAL & METHODS

MATERIAL & METHODS



We should build it as a website!

- Accessible from everywhere
- Develop a single product



MATERIAL & METHODS



Plan A: HTML / CSS / Javascript

MATERIAL & METHODS

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Plan A: HTML / CSS / Javascript

huh?

MATERIAL & METHODS:

What is HTML?



→ HTML defines the **structure** of a page

```
<h1> This is a title! </h1>  
<p> This is a paragraph! </p>  
<strong> This is BOLD! </strong>  
<button> This is a button! </button>
```



MATERIAL & METHODS:

What is HTML?

→ HTML defines the **structure** of a page

```
<h1> This is a title! </h1>  
<p> This is a paragraph! </p>  
<strong> This is BOLD! </strong>  
<button> This is a button! </button>
```

This is a title!

This is a paragraph!

This is BOLD!

This is a button!



MATERIAL & METHODS:

What is HTML?

→ HTML defines the **structure** of a page

```
<h1> This is a title! </h1>  
<p> This is a paragraph! </p>  
<strong> This is BOLD! </strong>  
<button> This is a button! </button>
```

This is a title!

This is a paragraph!

This is BOLD!

This is a button!

but that looks kinda ugly!

MATERIAL & METHODS:

What is CSS?



→ CSS defines the **style** of a page

```
h1 {  
  color: red;  
  font-family: "Comic Sans MS";  
}
```



MATERIAL & METHODS:

What is CSS?

→ CSS defines the **style** of a page

```
h1 {  
  color: red;  
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```

This is a title!

This is a paragraph!

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This is a button!



MATERIAL & METHODS:

What is CSS?

→ CSS defines the **style** of a page

```
h1 {  
  color: red;  
  font-family: "Comic Sans MS";  
}
```

This is a title!

This is a paragraph!

This is BOLD!

This is a button!

but I want it to move and stuff!

MATERIAL & METHODS:

What is JS?



→ Javascript defines the **interactivity** of a page

```
button.onclick = () => {  
    document.write("bananas!");  
}
```



MATERIAL & METHODS:

What is JS?

→ Javascript defines the **interactivity** of a page

```
button.onclick = () => {  
    document.write("bananas!");  
}
```

bananas!

MATERIAL & METHODS



Plan A: HTML / CSS / Javascript

Pros: Those are things I can do! :)

MATERIAL & METHODS



Plan A: HTML / CSS / Javascript

Pros: Those are things I can do! :)

Cons: It scales poorly :(

MATERIAL & METHODS



Plan A: HTML / CSS / Javascript

Pros: Those are things I can do! :)

Cons: It scales poorly :(

```
h1 {  
  color: red;  
  font-family: "Comic Sans MS";  
}
```

```
<h1> Fun section! </h1>
```

```
<p>...</p>
```

```
<h1> Serious section. </h1>
```

```
<p>...</p>
```

MATERIAL & METHODS



Plan A: HTML / CSS / Javascript

Pros: Those are things I can do

Cons: It scales poorly :(

```
h1 {  
  color: red;  
  font-family: "Comic Sans MS";  
}
```

```
<h1> Fun section! </h1>  
<p>...</p>  
<h1> Serious section. </h1>  
<p>...</p>
```

Fun section!

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Serious section.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

MATERIAL & METHODS

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Plan A: HTML / CSS / Javascript

Pros: Those are things I can do! :)

Cons: It scales poorly :(

 [form.css](#)

 [game.css](#)

 [home.css](#)

 [main.css](#)

 [outdated.css](#)

MATERIAL & METHODS



Plan A: HTML / CSS / Javascript

Pros: Those are things I can do! :)

Cons: It scales poorly :(







form.css

game.css

home.css

main.css

outdated.css

Name	Status	Type	Initiator	Size	Time
 form	200	document	Other	2.1 KB	146 ms
 main.css	200	stylesheet	<u>form</u>	923 B	147 ms
 form.css	200	stylesheet	<u>form</u>	848 B	141 ms
 css?family=Roboto:400,500	200	stylesheet	<u>form</u>	(disk cache)	3 ms
 outdated.css	200	stylesheet	<u>form</u>	342 B	147 ms
 KFOICnqEu92Fr1MmEU9fBBc4.woff2	200	font	<u>form</u>	(disk cache)	1 ms

MATERIAL & METHODS



Plan A: HTML / CSS / Javascript

Pros: Those are things I can do! :)

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form.css







game.css

home.css

main.css

outdated.css

It's better to use a **single** file, than it is multiple files!

Name	Status	Type	Initiator	Size	Time
 form	200	document	Other	2.1 KB	146 ms
 main.css	200	stylesheet	<u>form</u>	923 B	147 ms
 form.css	200	stylesheet	<u>form</u>	848 B	141 ms
 css?family=Roboto:400,500	200	stylesheet	<u>form</u>	(disk cache)	3 ms
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 KFOICnqEu92Fr1MmEU9fBBc4.woff2	200	font	<u>form</u>	(disk cache)	1 ms

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Plan B: "Svelte"

MATERIAL & METHODS

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Plan B: Svelte



on Apr 21

v3.0.0



7382a9f



zip



tar.gz



Jesse Skinner @JesseSkinner · Jun 29

I fell in love with [@sveltejs](#) today.



Svelte is the most beautiful web framework I've ever seen
I tried out Svelte for the first time and it blew me away
[dev.to](#)



7



44



205





svelte

/svelt,sfelt/

adjective

(of a person) slender and elegant.
"she was svelte and sophisticated"

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Google

svelte



Google Search

I'm Feeling Lucky



woman



body



male



lily aldrige



person

waist



figure



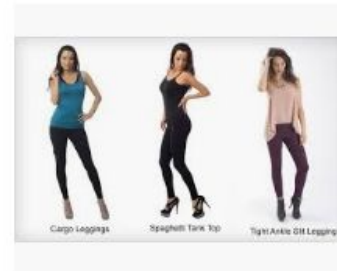
Svelte Leggings | Black W...
lucashugh.com



Discounts, Coupons & Deals on Hotels ...
wagjag.com



Svelte Poses for Elijah 7 an...
daz3d.com



Pair of Cargo Leggings from Svelte ...
wagjag.com



The Svelte System: how our s...
shopsvelte.com



Svelte | Crossback Bralette — A...
artemis-diciero.com



Svelte Poses for Elijah 7 and Micha...
daz3d.com



Matt Ben Stone - Svelte
mattbenstone.com



Svelte stock photo. Image of...



Svelte Cycles launches Lon...



Svelte • Cybernetically enhanced we...



svelte: Cybernetically enhanced web ...





Q All

Images

Videos

News

Shopping

: More

Settings

Tools

Collections

S



woman



body



male



lily aldrige

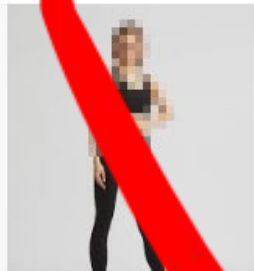
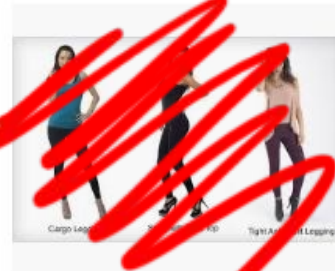
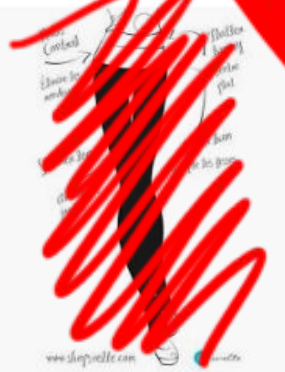
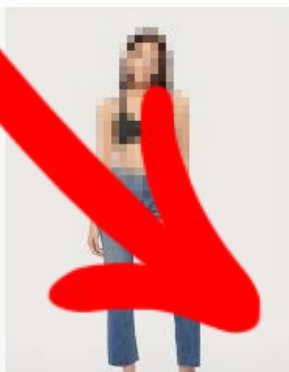


person

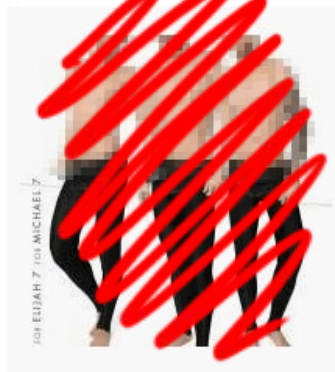
waist



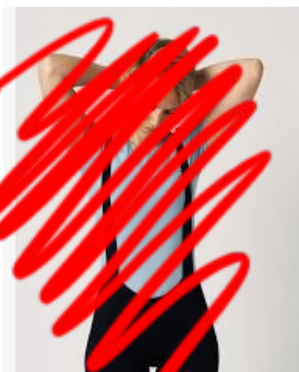
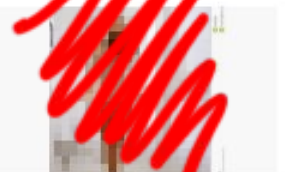
figure

Svelte Leggings | Black |
lucashugh.comDiscounts, Coupons & Deals on Hotels ...
wagjag.comSvelte Poses for Elijah 7 and Michael 7
daz3d.comPair of Cargo Leggings from Svelte ...
wagjag.comThe Svelte System: how our s...
shopsvelte.com

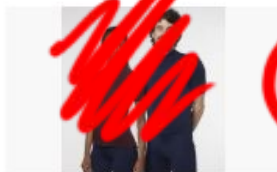
Svelte | Crossback Bralette — Artemis-Diciero.com



Svelte Poses for Elijah 7 and Michael 7

Matt Ben Stone Svelte
mattbenstone.com

Svelte stock photo. Image of...



Svelte Cycles launches London...



Svelte • Cybernetically enhanced web...



svelte: Cybernetically enhanced web...

MATERIAL & METHODS



Plan B: Svelte

Pros: Scalability, modularity! :)





MATERIAL & METHODS

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Plan B: Svelte

Pros: Scalability, modularity! :)

-  App.svelte
-  FunTitle.svelte
-  main.js
-  SeriousTitle.svelte

```
<h1>
  <slot>
    (vazio)
  </slot>
</h1>

<style>
  h1 {
    color: red;
    font-family: "Comic Sans MS";
  }
</style>
```


MATERIAL & METHODS

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Plan B: Svelte

Pros: Scalability, modularity! :)

- App.svelte
- FunTitle.svelte
- main.js

```
<FunTitle>
  This is fun!
</FunTitle>
```

```
<h1>
  <slot>
    (vazio)
  </slot>
</h1>

<style>
  h1 {
    color: red;
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  }
</style>
```

MATERIAL & METHODS

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Plan B: Svelte

Pros: Scalability, modularity! :)

Cons: I don't know how to
use it :(

- App.svelte
- FunTitle.svelte
- main.js

```
<FunTitle>
  This is fun!
</FunTitle>
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<h1>
  <slot>
    (vazio)
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</h1>

<style>
  h1 {
    color: red;
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  }
</style>
```


MATERIAL & METHODS

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Plan B: Svelte

Pros: Scalability, modularity! :)

Cons: ~~I don't know how to use it :(~~



[Tutorial](#) [API](#) [Examples](#) [REPL](#) [Blog](#)

Logic

HTML doesn't have a way of expressing *logic*, like conditionals and loops. Svelte does.

To conditionally render some markup, we wrap it in an `if` block:

```
{#if user.loggedIn}
  <button on:click={toggle}>
    Log out
  </button>
{/if}
```

```
{#if !user.loggedIn}
  <button on:click={toggle}>
    Log in
  </button>
{/if}
```

```
App.svelte +
1  <script>
2    let user = { logged
3
4    function toggle() {
5      user.loggedIn = !
6    }
7  </script>
8
9  {#if user.loggedIn}
10   <button on:click={t
11     Log out
12   </button>
13 {/if}
14
15 {#if !user.loggedIn}
16   <button on:click={toggle}>
17     Log in
18   </button>
19 {/if}
```

npm

Your application is ready~! ☐ ☐

- Local: http://localhost:5000

LOGS

```
rollup v1.16.2
bundles src/main.js → public\bundle.js...
LiveReload enabled
created public\bundle.js in 361ms
```

```
[2019-06-23 18:28:47] waiting for changes...
[18:30:20] 200 - 5.13ms - /
[18:30:20] 200 - 1.15ms - /global.css
[18:30:20] 200 - 1.87ms - /bundle.css
[18:30:20] 200 - 2.05ms - /bundle.js
```



RESULTS & DISCUSSION

RESULTS & DISCUSSION

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Teste seus
conhecimentos sobre
**ECONOMIA CIRCULAR
NA MINERAÇÃO**



Teste seus conhecimentos
sobre **ECONOMIA
CIRCULAR NA
MINERAÇÃO**

JOGAR!

INFORMAÇÕES

CRÉDITOS



v1.0

R3MINARE

Grupo de pesquisa
em mineração
urbana de resíduos
eletroeletrônicos

Créditos

Lúcia Helena Xavier
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R3MINARE

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resíduos eletroeletrônicos

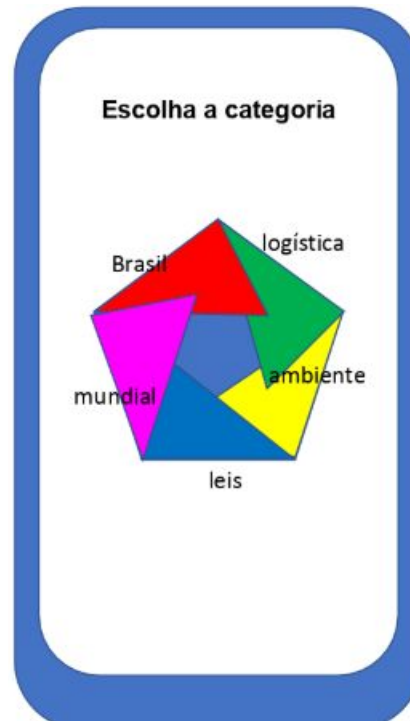
Créditos

Lúcia Helena Xavier
Marianna Ottoni
Matheus Avellar
Breno Coll

VOLTAR



RESULTS & DISCUSSION



Escolha a Categoria

Tema selecionado: **Mundial**



ESCOLHA POR MIM

VOLTAR

JOGAR!



Pergunta 4 de 21

**Qual país é o maior
gerador de e-waste no
mundo?**

a) Rússia

b) China

c) Estados Unidos

Pergunta 4 de 21

Qual país é o maior gerador de e-waste no mundo?

✗ Rússia

✓ China

✗ Estados Unidos

Correto! Você tem 4 pontos!

PRÓXIMA

Pergunta 5 de 21

Qual o minério é produzido em maior quantidade no Brasil?

✗ Bauxita

✓ Minério de ferro

✗ Manganês

Incorreto! Você tem 4 pontos!

PRÓXIMA



Fim de jogo!

Você terminou com 9 pontos, e respondeu um total de 21 perguntas! Pode melhorar!

CRÉDITOS

VOLTAR

CONCLUSIONS



- Don't be afraid to **try something new!** It might make your life easier :)
- Perhaps **research** a bit **before starting** a potentially big project

THANKS!

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- To my advisor, Lúcia Xavier, and all other members of the R3MINARE team;
- To CETEM and CNPq for the opportunity and scholarship received;
- To you for coming to my presentation!



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matheusavellar@dcc.ufrj.br

REFERENCES

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Krdan [Public domain], via Wikimedia Commons. "Recycling symbol". Available at https://commons.wikimedia.org/wiki/File:Recycling_symbol.svg. Retrieved July 29, 2019.

Subway photo courtesy of "Línea del metro de la CDMX ya cuenta con Internet gratis". Mientras Tanto en México. December 4, 2017. Available at <https://www.mientrastantoenmexico.mx/linea-de-metro-de-la-cdmx-ya-cuenta-con-internet-gratis/>. Retrieved July 30, 2019.

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