BINAR ACADEMY

Computational Thinking

General Description

This is a concept of **thinking**. Thinking how do we **solve problems.**

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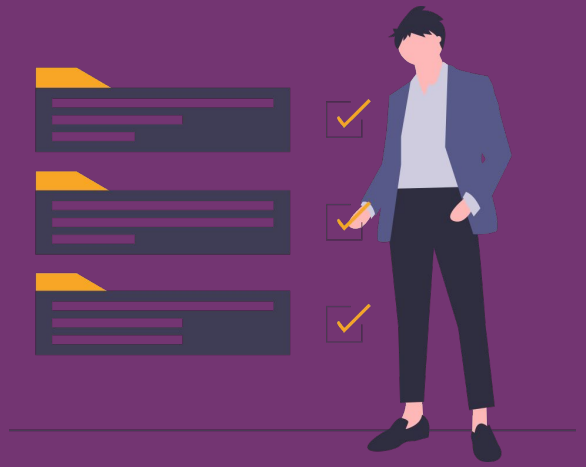
Goals

a. Participants know the definition of **Computational Thinking.**
b. Participants know the **element** of **Computational Thinking.**
c. Participants know what each **elements mean**.
d. Participants know how to **implement Computational Thinking** in their **daily life**.
e. Participants know how to become a **good computational thinker**.



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What is Computational Thinking?

Concept of thinking

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Computational Thinking

is a set of problem solving methods that involve expressing problems and their solutions in ways that a computer could execute. It involves the mental skills and practices for designing computations that get computers to do jobs for us, and explaining and interpreting the world as a complex of information process. Those ideas range from basic CT for beginners to advanced CT for experts..

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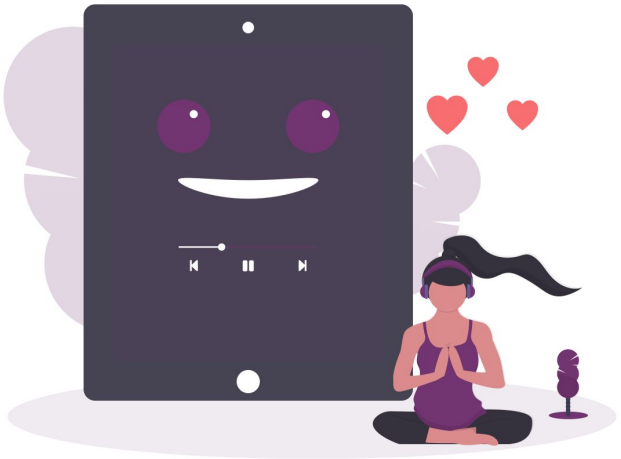
In General

The way we **think** in order to **solve a problem**.

In computational thinking, there's 4 elements:

1. Decomposition
2. Abstraction
3. Algorithmic Thinking
4. Pattern Recognition



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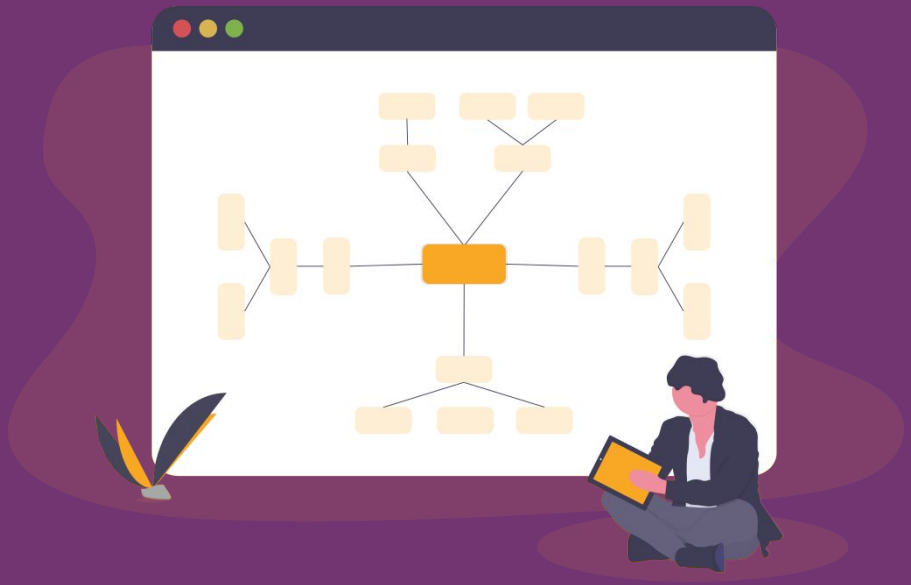
Decomposition

We've **seen the problem**, in order to **solve the problem**, we need to **destruct** the **problem** into a **smaller pieces**. So it will **relieve** the way you see the problem.

Example:

When your **tire** got **flattened** and your **fuel** is **empty**. What will you do?



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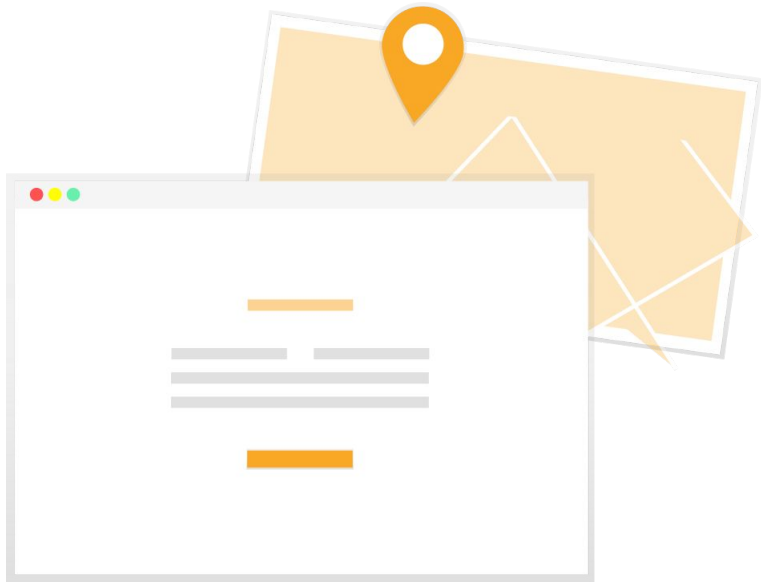
Abstraction

Even tho, the **problem** has **already been splitted** into **smaller pieces**, it is still **complex**. With abstraction, we will figure out how do we make use of that pieces.

Example:

Now, you've remembered that you have a **spare tire** in your **car trunk** and the **closest pump** is **200 m** away. Then what?



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Algorithmic Thinking

Now, we're talking about the **process**. **Process** that will lead us to **solve the problem**. When I said **process**, it means there must be **step by step**. Let's think about it.

Example:

The easiest way to get to the pump, is obviously you need a decent tire, so you can easily push your car. When you change the tire, there's **step by step** or the **how-to** change a tire.

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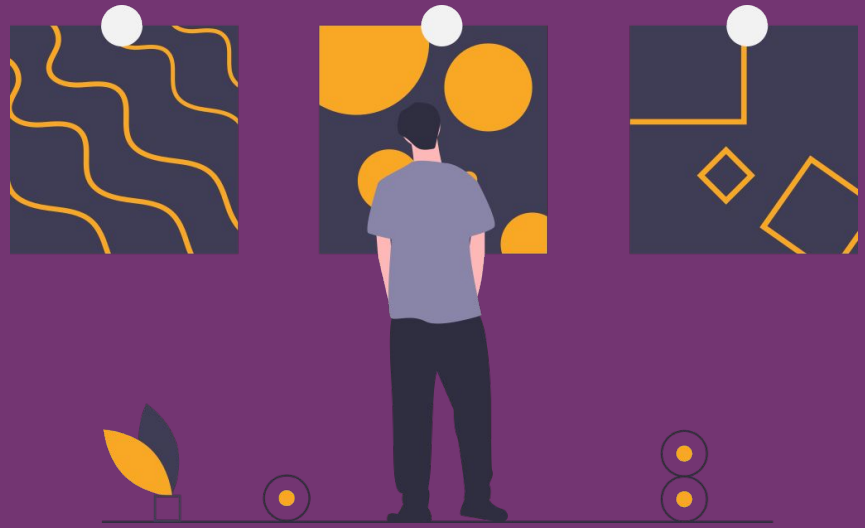

Pattern Recognition

Universe were **never kind** to us, **sometimes** they **gave** us a **bigger problem** that might be **similar**. By seeing the **pattern of the problems**, based on your experience, you'll be able to **solve** a **problem faster** than before. Or when you're **facing** the **same problem**, you **must be able** to **solve that problem faster** than the **first time** you **encounter** it.

Example:

Someday, you'll get your tire flattened again, but on that time you've prepared another spare and predict the your emission.

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Thank you

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