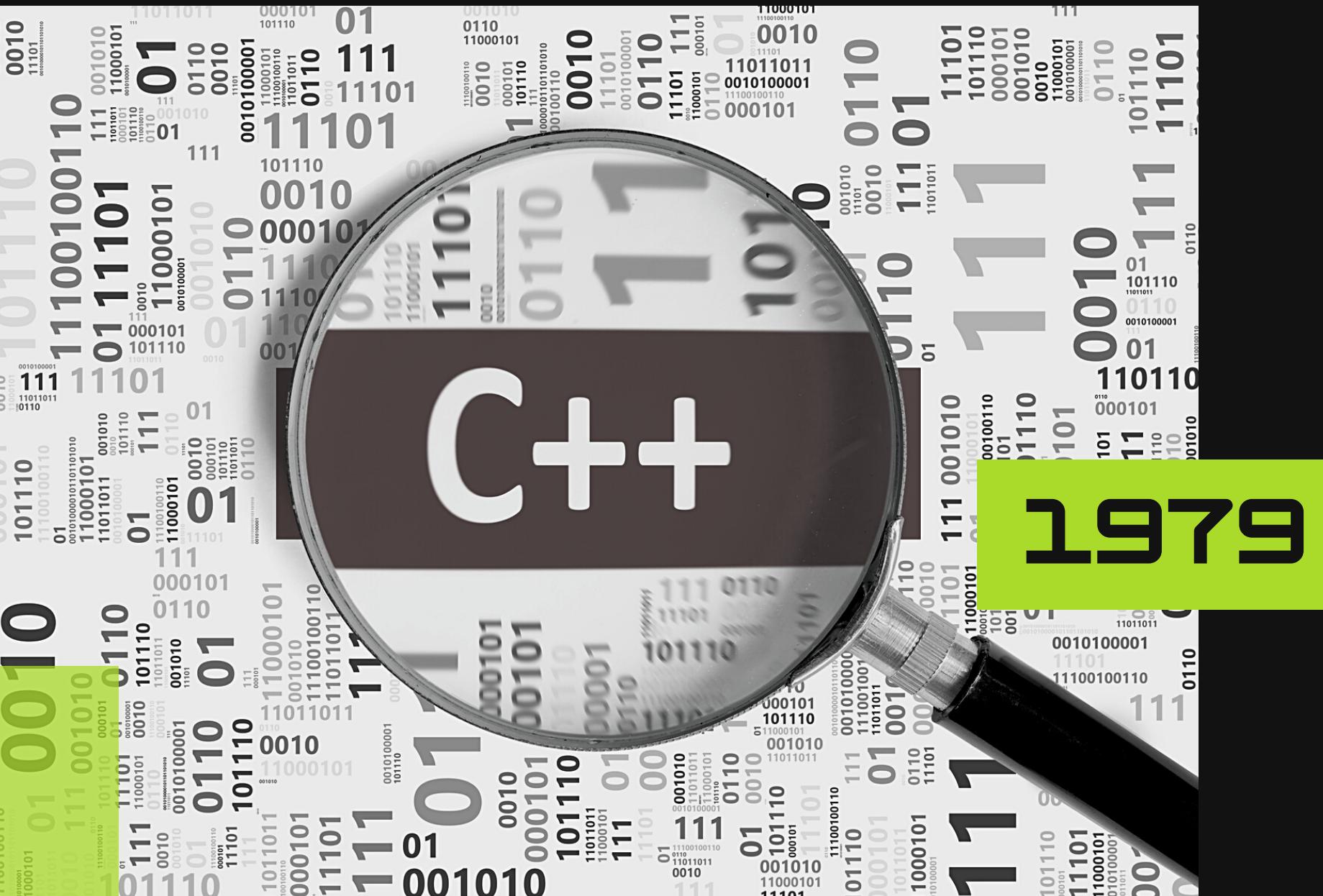




PROGRAMMING COURSE

"C++: WHERE THE CODE IS AS ELEGANT AS THE MATH BEHIND IT."

LET'S GO

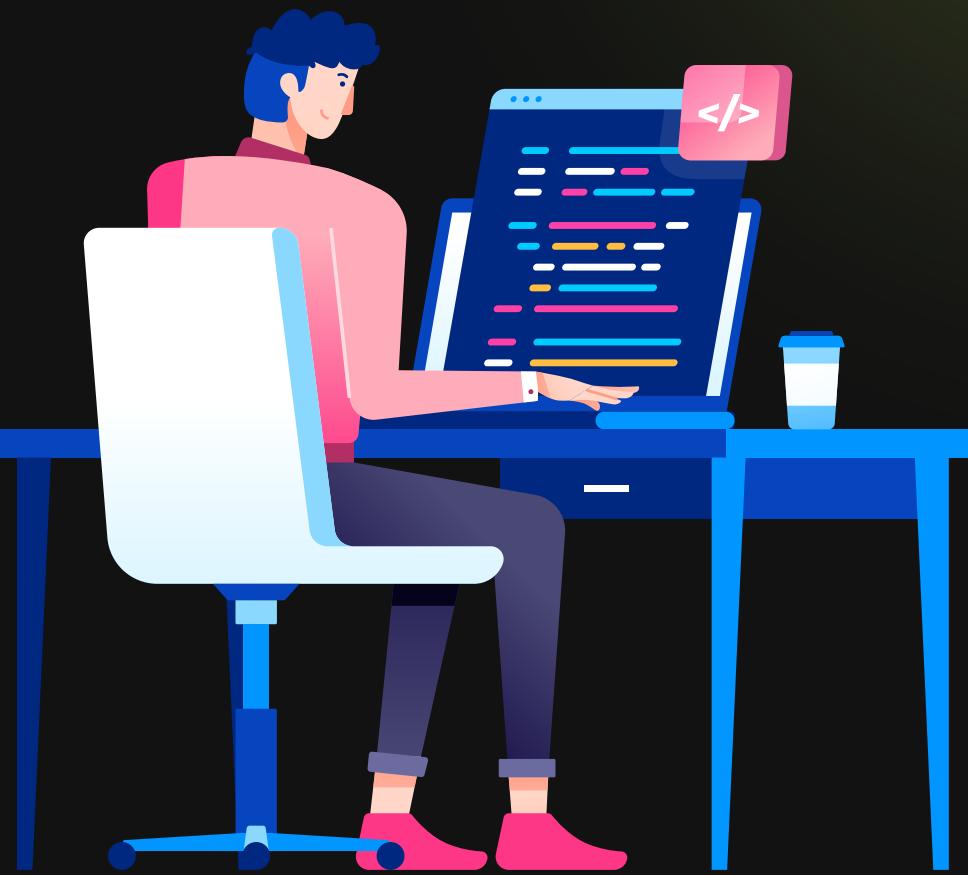


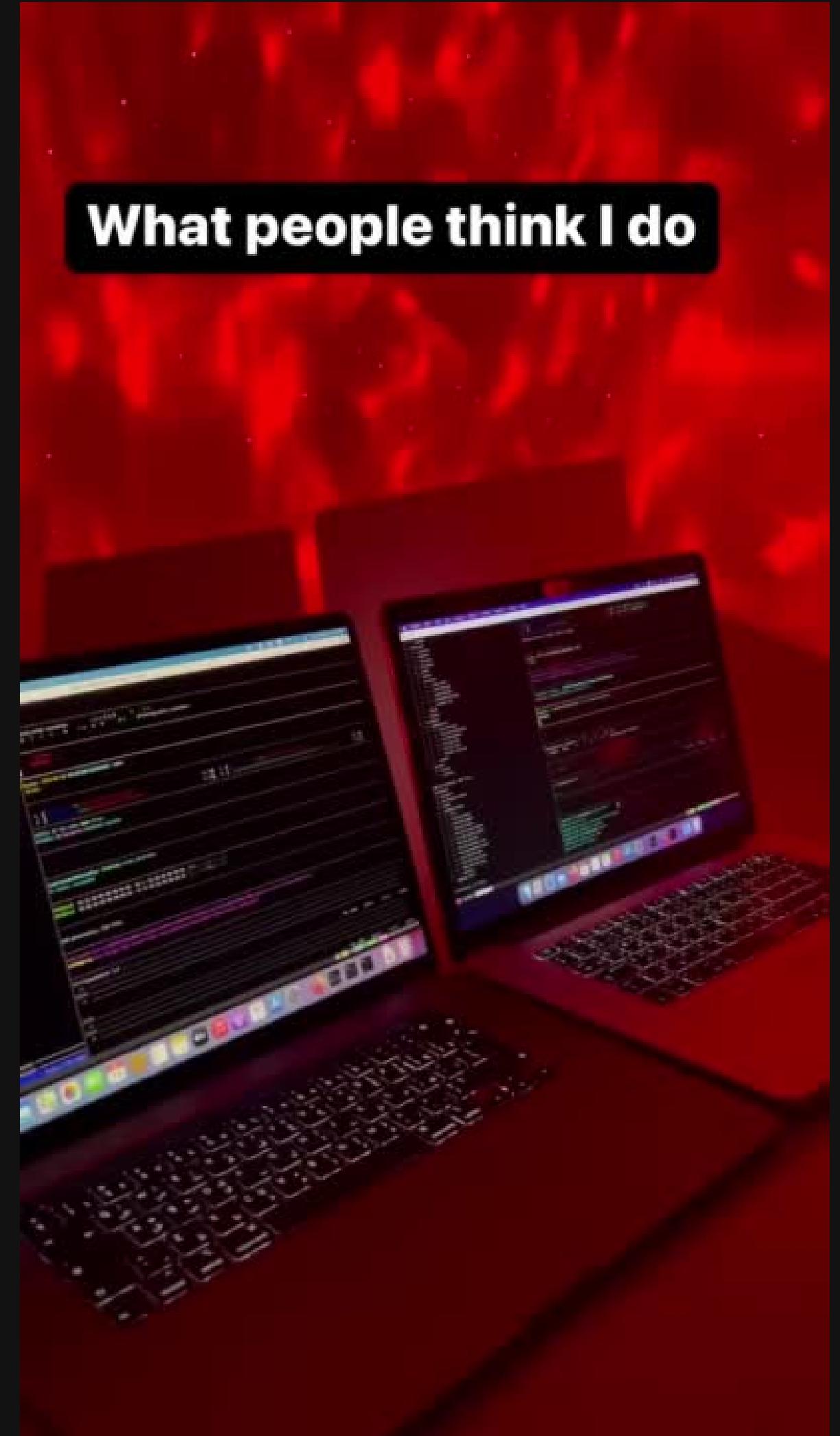
INTRODUCTION

- Welcome to the C++ course for mechanical engineers.
- Today we will cover coding and algorithms basics.
- You'll learn how to think like a computer and solve problems with algorithms.

WHAT IS CODING?

Coding is the process of writing instructions in a language that a computer can understand. This is important for mechanical engineers because it allows us to write programs to automate processes and solve complex problems.

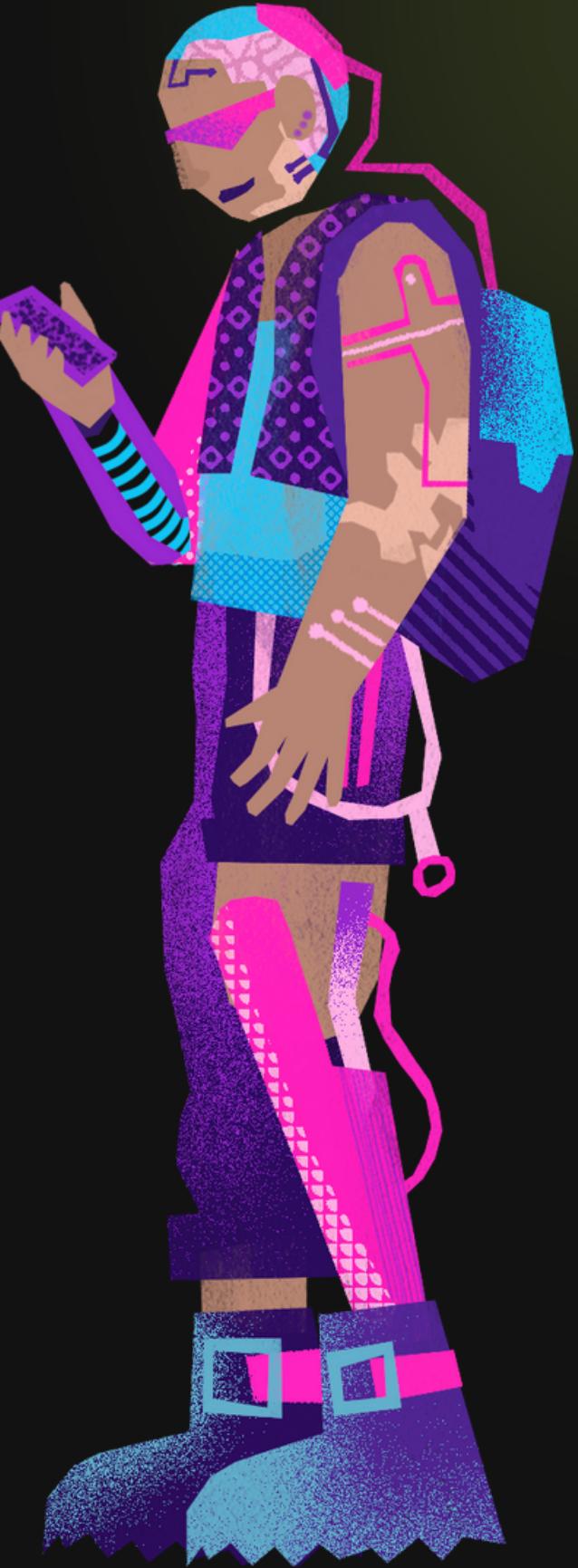




What people think I do

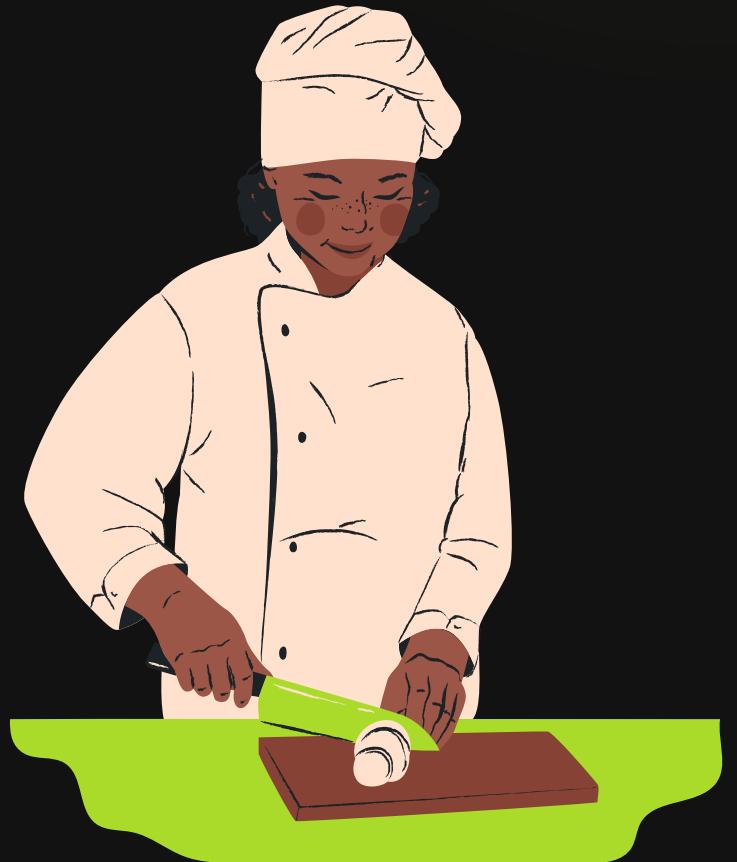
HOW TO THINK LIKE A COMPUTER

- Computers process information differently than humans.
- To write effective code, we need to learn how to think like a computer.
- This means breaking down a problem into smaller steps.
- These steps need to be designed in a way that a computer can understand and execute.



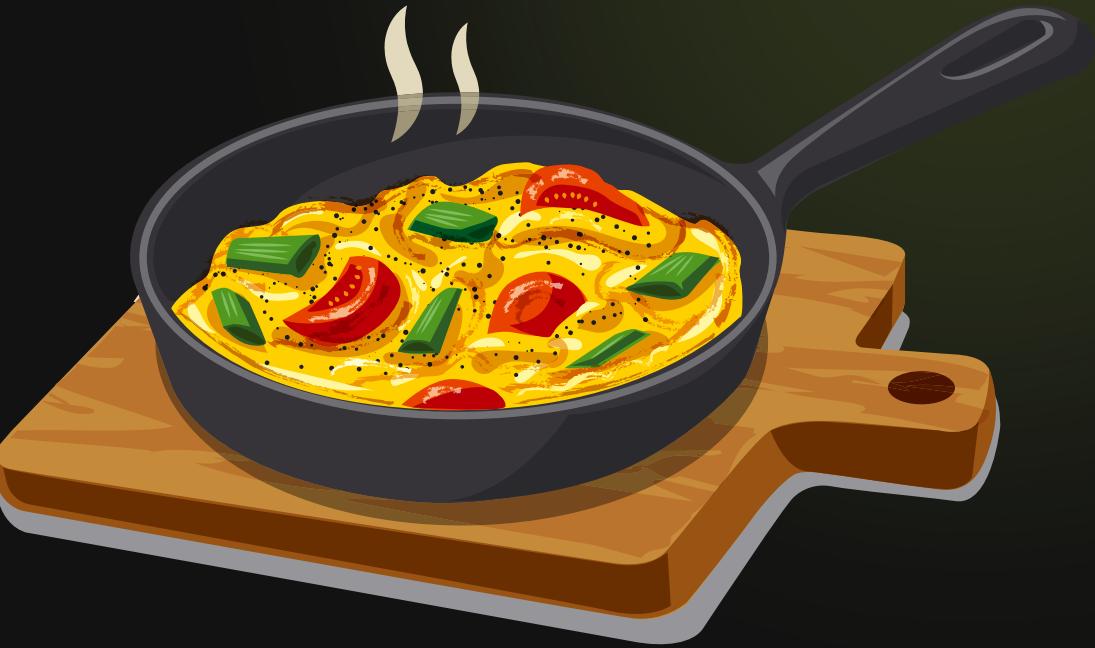
WHAT IS AN ALGORITHM?

An algorithm is like a recipe for a computer. Just like a recipe tells you how to cook a meal, an algorithm tells a computer how to perform a task. But unlike a recipe, an algorithm needs to be very precise and step-by-step. Think of it like giving directions to someone who has never been to your house before - you need to be very specific about every turn and landmark, or they might get lost! In the same way, an algorithm needs to be precise so that the computer can follow it correctly and efficiently. So the next time you're writing code, think of yourself as a master chef creating a recipe for your computer to follow!



**LET'S WRITE SOME
ALGORITHMS!**

MAKING A PERSIAN-STYLE OMELETTE



1. Check that you have all necessary ingredients: eggs, tomatoes, onion, salt, pepper, turmeric, and oil.
2. Get a frying pan out of the cabinet and place it on the stove.
3. Pour enough oil into the pan to coat the bottom and heat it over medium heat.
4. While the oil is heating up, dice the tomatoes and onions into small pieces.
5. Once the oil is hot, add the onions to the pan and cook until they become translucent.
6. Add the tomatoes to the pan and cook until they become soft and start to release their juices.

7. Season the mixture with salt, pepper, and a generous amount of turmeric.
8. In a separate bowl, beat the eggs until they are well mixed.
9. Pour the beaten eggs into the pan over the tomato and onion mixture.
10. Cook the omelette over medium-low heat until the eggs are set and the bottom is golden brown.
11. Carefully flip the omelette over and cook the other side until it is golden brown.
12. Slide the omelette onto a plate and enjoy your delicious Persian-style omelette!
13. Turn off the stove and let the pan cool down before washing it.
14. Store any remaining ingredients back in the cabinet and fridge.

Our Faculty

ALGORITHM FOR HAIR STYLING WITH A COMB



1. Determine the desired hairstyle and any necessary styling products.
2. Gather all necessary equipment: a comb or brush, hair tie, and any styling products you wish to use.
3. Starting from the top of your head, use the comb to section off the hair into manageable sections.
4. Comb each section of hair to smooth out any tangles or knots.
Our Rule:
5. Use the comb to create the desired shape and volume, directing the hair in the desired direction.

6. If using styling products, apply them as needed to hold the hair in place or provide texture.
7. Repeat steps 3-6 for each section of hair until the entire head of hair has been styled.
8. If necessary, use a hair tie or other accessory to secure any sections of hair that need to be held in place.
9. Check the hair for any stray strands or uneven areas, and use the comb to make any necessary adjustments.
10. Finish by applying any final touches, such as hairspray or shine serum, to complete the hairstyle.



Comment: Depending on the desired hairstyle and the texture of your hair, you may need to adjust the combing technique or use different equipment to achieve the desired result.



CALCULATE THE TOTAL POINTS
OF REAL MADRID FOOTBALL TEAM

Variable declaration: We need to declare the variables that will be used to store the number of wins, draws, and losses for the team.

User input: We need to take user input for the number of wins, draws, and losses. We can use the cin function to do this.

Calculation: To calculate the total points of the team, you need to multiply the number of wins by 3, the number of draws by 1, and the number of losses by 0.

This calculates the total points of the team and stores it in a variable named totalPoints.

Our Faculty

Display output: Finally, you can display the total points of the team using the cout function.

HOMEWORK 1

Our Faculty

Homework: Calculate the area of a triangle

Write a C++ program to calculate the area of a triangle. The program should prompt the user to enter the length of the base and the height of the triangle, and then calculate and output the area of the triangle.

Instructions

- Use the following formula to calculate the area of the triangle: $\text{Area} = (1/2) * \text{base} * \text{height}$
- Use the `cin` statement to get input from the user and the `cout` statement to display output on the screen.
- Test your program with different values for the base and height to make sure it's working correctly.

Example Output

```
Enter the length of the base: 5
Enter the height of the triangle: 3
The area of the triangle is: 7.5
```



THANK YOU