TD 3
Motors

Hardware (not exhaustive) :
- 1 Arduino (UNO)
- 1 Arduino USB power cable
- 1 Breadboard
- 2 Push buttons
- 1 DC Motor
- 1 Servomotor
- Resistors
- 1 Buzzer
- 1 Potentiometer
- About 10 Dupont cables male/male
- About 10 Dupont cables male/female

1. DC Motor Control ⚙️

🎯 **Goal**: Control the speed of a DC motor

📚 **Rules**:
1. The motor must be properly wired, we use a transistor to control the motor circuit. **This time only,** we will use the 5V power from the Arduino, but in a real-life scenario the motor's circuit power source should be external.
2. A push button will be used to accelerate the motor
3. Another push button will be used to decelerate the motor

❓ **Reference**: https://www.tutorialspoint.com/arduino/arduino_dc_motor.htm section "Motor Speed Control"

👍 Call the teacher for verification once the setup is complete

📝 Keep the setup for later

2. Servomotor 🔄

🎯 **Goal**: Control a servomotor position with a potentiometer

📚 **Rules**:
1. The potentiometer is used to adjust the servomotor position
2. The servo holds the position, if you change the position manually (physically) it should come back to its original position

❓ **Reference**: https://docs.arduino.cc/learn/electronics/servo-motors

👍 Call the teacher for verification once the setup is complete

📝 Keep the setup for later

3. Become a carmaker ! 🏍️

🎯 **Goal**: You will now simulate a car, by merging steps 1 and 2 above

📚 **Rules**:

1. A buzzer will act as the car horn
2. Reuse the 2 previous buttons:
    1. One will activate the horn while pressed
    2. The other will trigger (on/off) the windshield wipers (servomotor moves back and forth until stopped)
3. The potentiometer will act as an accelerator pedal and make the wheels (the DC motor) turn faster or slower

👍 Call the teacher for verification once the setup is complete