



Prize Winner

Programming, Apps & Robotics Year R-2

Charlotte Way

**Concordia College - St John's
Campus**





Charlotte Way, Year 2, Concordia St John's

The aim of the entry is to look at fish. It is used to see underwater.

The robot that uses my code has 4 motors, 4 propellers and 4 ESCs and 1 Arduino mega.

The battery connects to the controller, the controller connects to the ESCs, the motor battery connects to the ESC as well. The four motors connect to the ESCs and to the propeller.

You use the robot by loading the code and connecting the batteries. The robot's power is plugged in and the lid is shut to work.

My program works on an Arduino mega. My robot is an underwater robot. I use it to look at fish and underwater animals. I do my coding in Pictoblox.

The code can go forward, back, left, right, up and down.

External support:

- Coaching on design of robot for underwater movement and use.

- Prompting for working against the criteria and potential options.
- Specifying robot parts and building.
- Coaching coding including concept of PWM, brushless motors, and use with Arduino.
- Spell check Charlotte's section of the report.
- Add photo section.
- The concept is Charlotte's own and she has written all of the code.

References:

<https://howtomechatronics.com/tutorials/arduino/arduino-brushless-motor-control-tutorial-esc-bldc/>

Code

//This c++ code is generated by PictoBlox

//Included Libraries

#include <Servo.h>

//MACROS are defined here

Servo BLDC_13;

Servo BLDC_11;

Servo BLDC_6;

Servo BLDC_12;

void setup() {

 //put your setup code here, to run once:

 BLDC_13.attach(13, 1000, 2000);

 BLDC_11.attach(11, 1000, 2000);

 BLDC_6.attach(6, 1000, 2000);

 BLDC_12.attach(12, 1000, 2000);

 delay(10 * 1000);

 for(int i = 0; i < 10; i++) {

 BLDC_13.write(55 * 1.8);

 BLDC_11.write(55 * 1.8);

 delay(5 * 1000);

 BLDC_13.write(50 * 1.8);

 BLDC_11.write(50 * 1.8);

 BLDC_6.write(45 * 1.8);

 BLDC_12.write(45 * 1.8);

```

        delay(5 * 1000);

        BLDC_6.write(50 * 1.8);

        BLDC_12.write(50 * 1.8);

        BLDC_6.write(55 * 1.8);

        BLDC_12.write(55 * 1.8);

        delay(5 * 1000);

        BLDC_6.write(50 * 1.8);

        BLDC_12.write(50 * 1.8);

        for(int j = 0; j < 3; j++) {

            BLDC_6.write(55 * 1.8);

            BLDC_12.write(55 * 1.8);

            delay(5 * 1000);

            BLDC_6.write(50 * 1.8);

            BLDC_12.write(50 * 1.8);

            BLDC_13.write(55 * 1.8);

            BLDC_11.write(55 * 1.8);

            delay(5 * 1000);

            BLDC_13.write(50 * 1.8);

            BLDC_11.write(50 * 1.8);

        }

        delay(10 * 1000);

    }

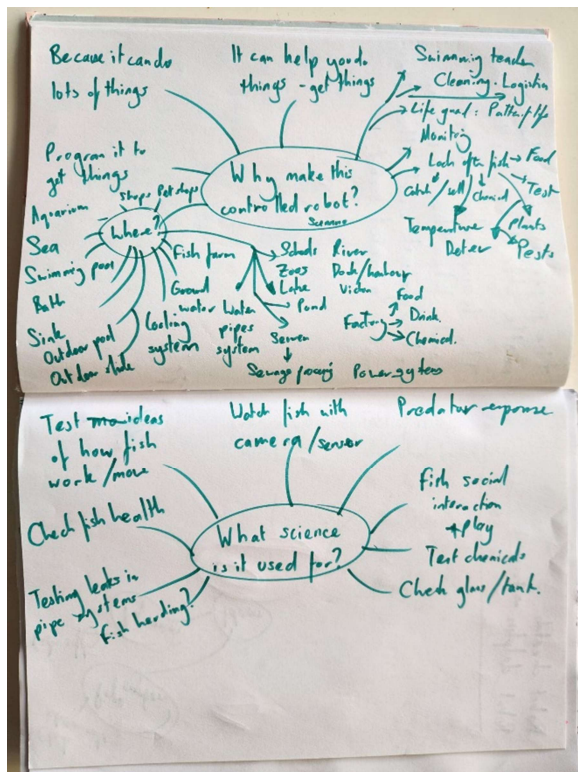
}

void loop() {

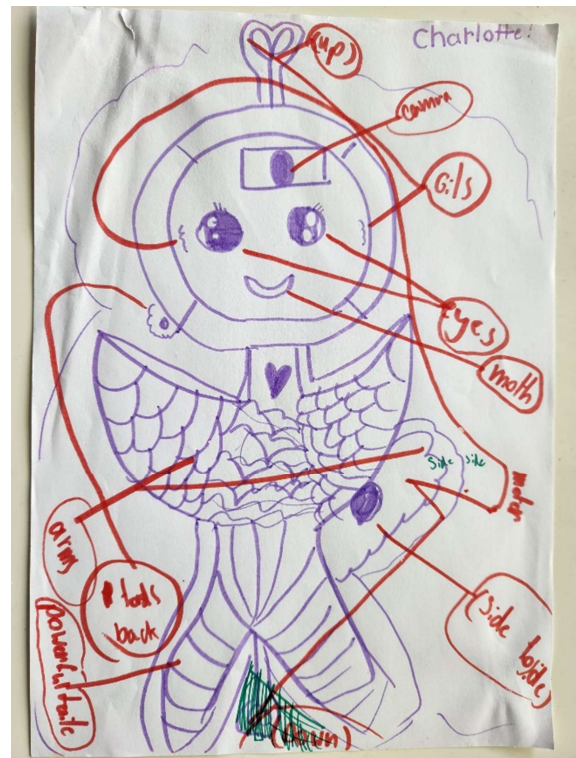
    //put your main code here, to run repeatedly:

}

```



Capturing Charlotte's ideas

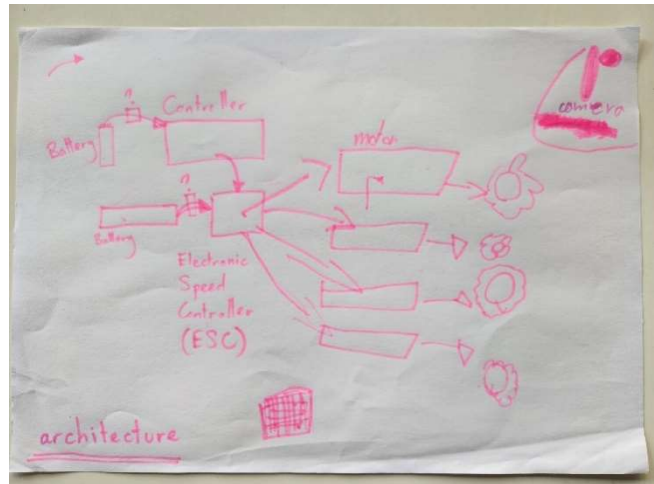


Concept ideas

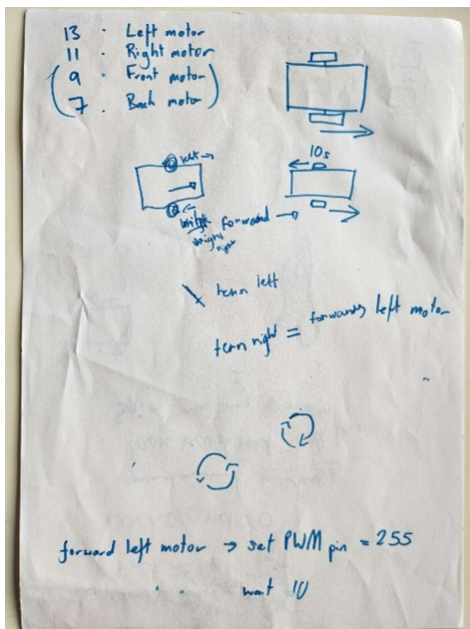


Developing understanding of parts

1. connect to mega
2. Mega use M 3 bulbs
3. Mega connect to ESC with pin to ~~ESC~~ connection
4. ~~battery~~ battery 3.5 mm bullet to ESC
5. ESC needs bullet connection in and out
6. bullet connection on motor
7. research motor ~~mounting~~ (mounting)
8. Switch
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

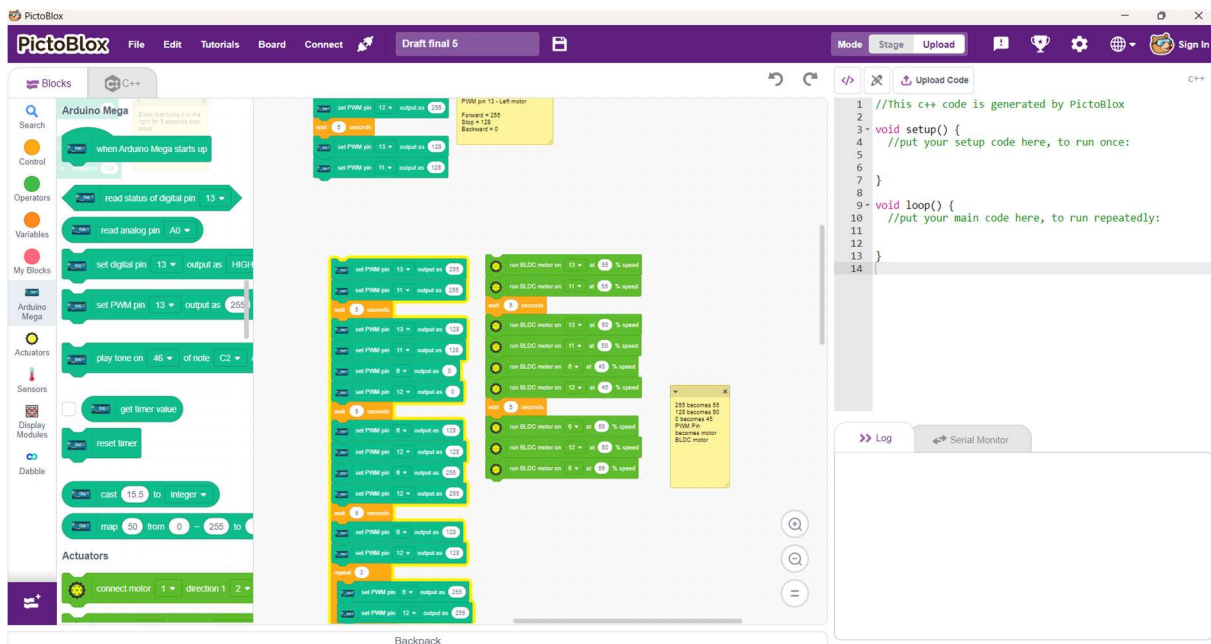


Working out what to do



Arranging the parts

Exploring how to turn



Developing the code in Pictoblox for Arduino



Charlotte coding with robot