AquaBot Competition

Introduction

The AquaBoat Competition is an exciting event that brings together creative, enthusiastic, and innovative students to showcase their skills in programming, designing, and racing Bluetooth-controlled/ remote-controlled/SajiloBot-controlled boats on water to complete the given challenges. This unique competition combines elements of robotics, engineering, creativity, and precision control, creating a platform for participants to demonstrate their craftsmanship and problem-solving abilities.

Objectives

The primary objective of the Aqua Boat Competition is to challenge participating students to design, construct, program, and race boats across water. Participants have to complete the challenges first to win the competition, and they have to navigate their custom-built aqua boat through a series of challenges, emphasizing speed in precision.

Rules and Regulations

To ensure fair play and safety, Aqua Boat Competitions typically establish clear rules and regulations governing aspects such as boat dimensions, power sources, and safety measures. Compliance with these rules is crucial for the smooth execution of the event and to guarantee a level playing field for all participants.

Specifications

Size: 40 cm * 15cm * 20 cm

Weight: 0.5 kg (i.e.500 g)

Materials:

The following are the materials that can be used to build the remote-controlled boat:

- **SajiloBot**

- **DC motors and propellers**

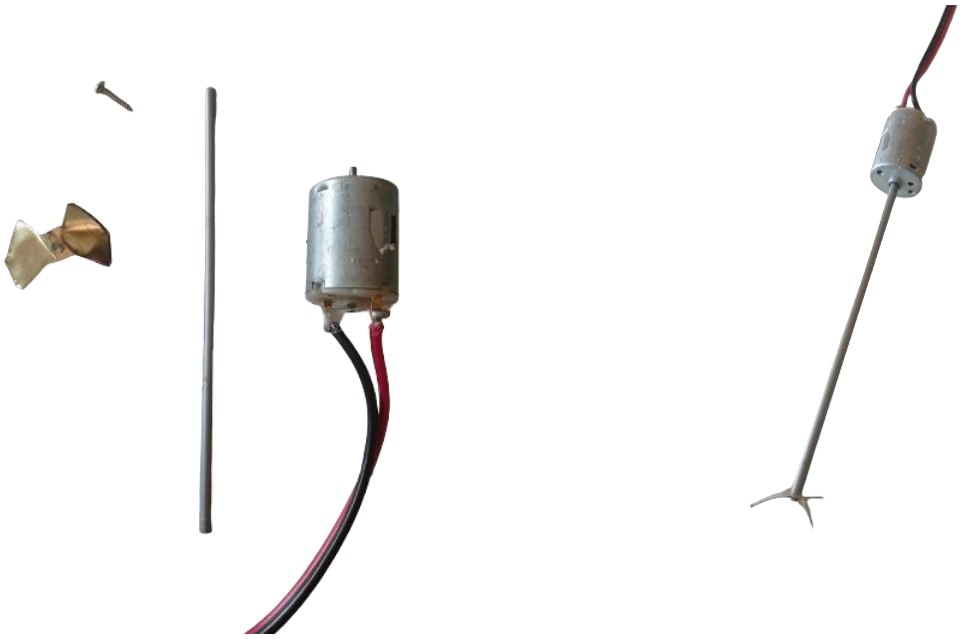


Fig. Propellor, Screw, Pen Refill (Techno-tip is preferred), DC motor (RF360 or RS360- 12V)

- **Servo Motor**

- **Bluetooth module (HC-05)**

- **Power source (battery or rechargeable battery pack)**

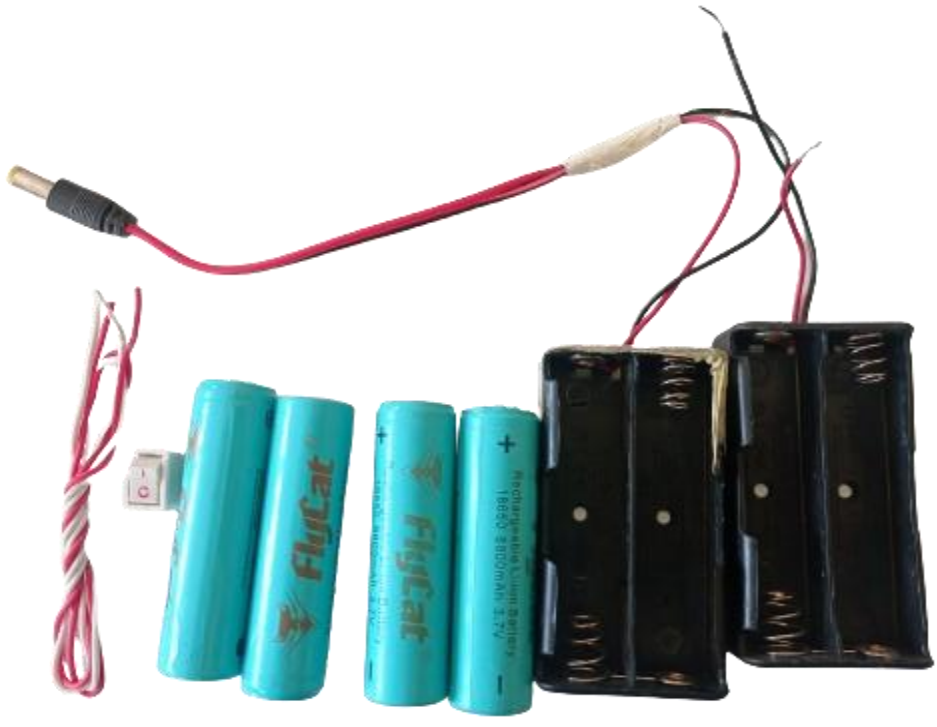


Fig. 4 Rechargeable Batteries, 2 Battery Holders, 1 Switch, 1 DC Jack

- **Sun Board**

  60 CM * 22 CM

Tools:

- Soldering iron and solder

- Screwdriver

- Hot glue gun

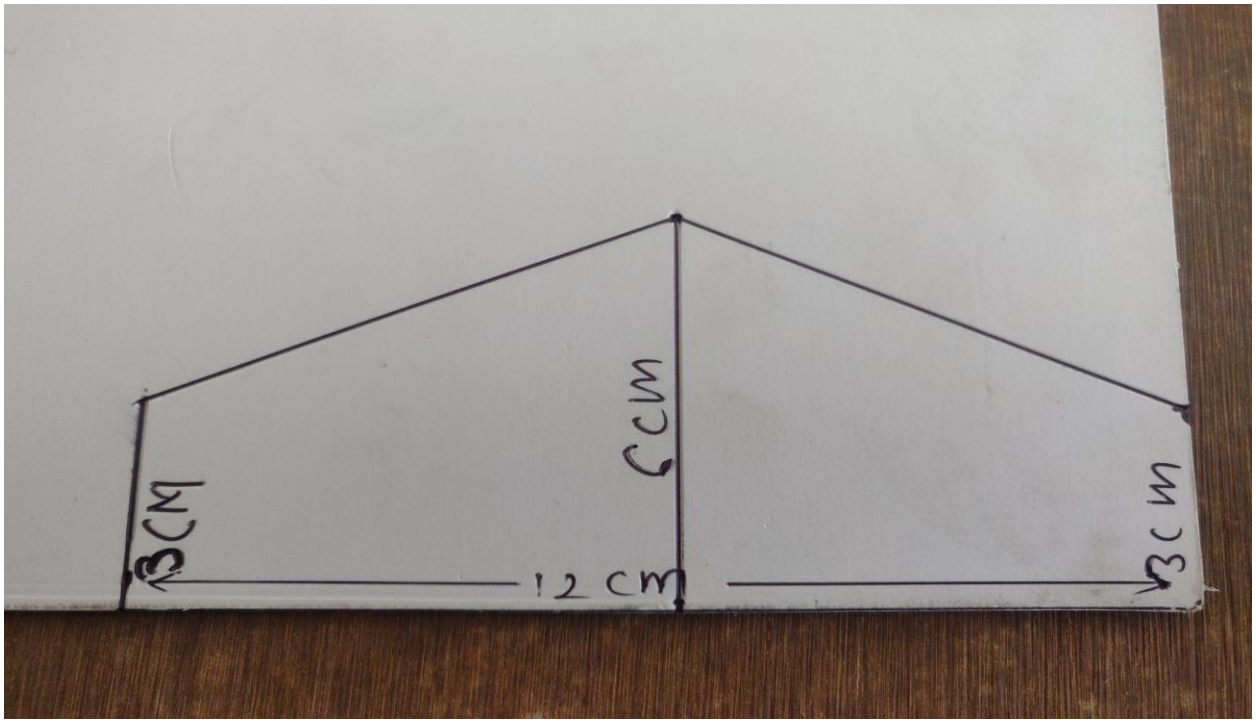
- Wire cutter

- Paper Cutter

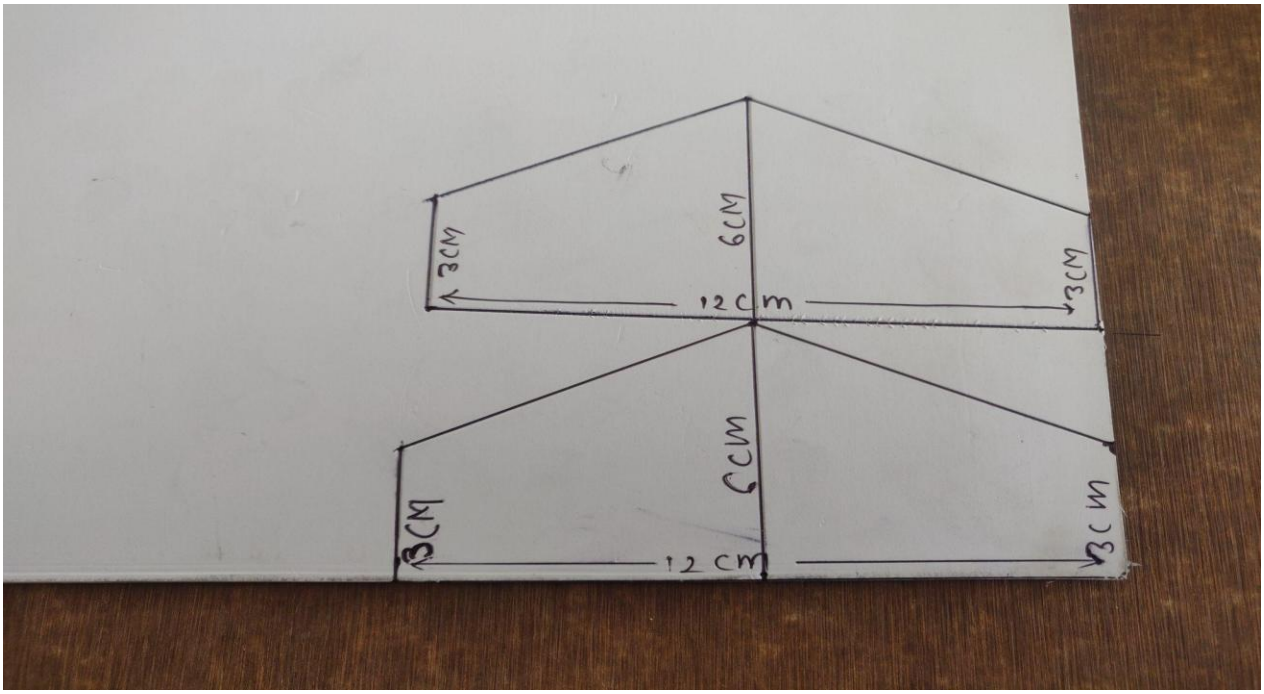
Process of making Aqua Boat

Step 1: Take 60 CM *22 CM Sun Board and draw lines as shown in the figures.

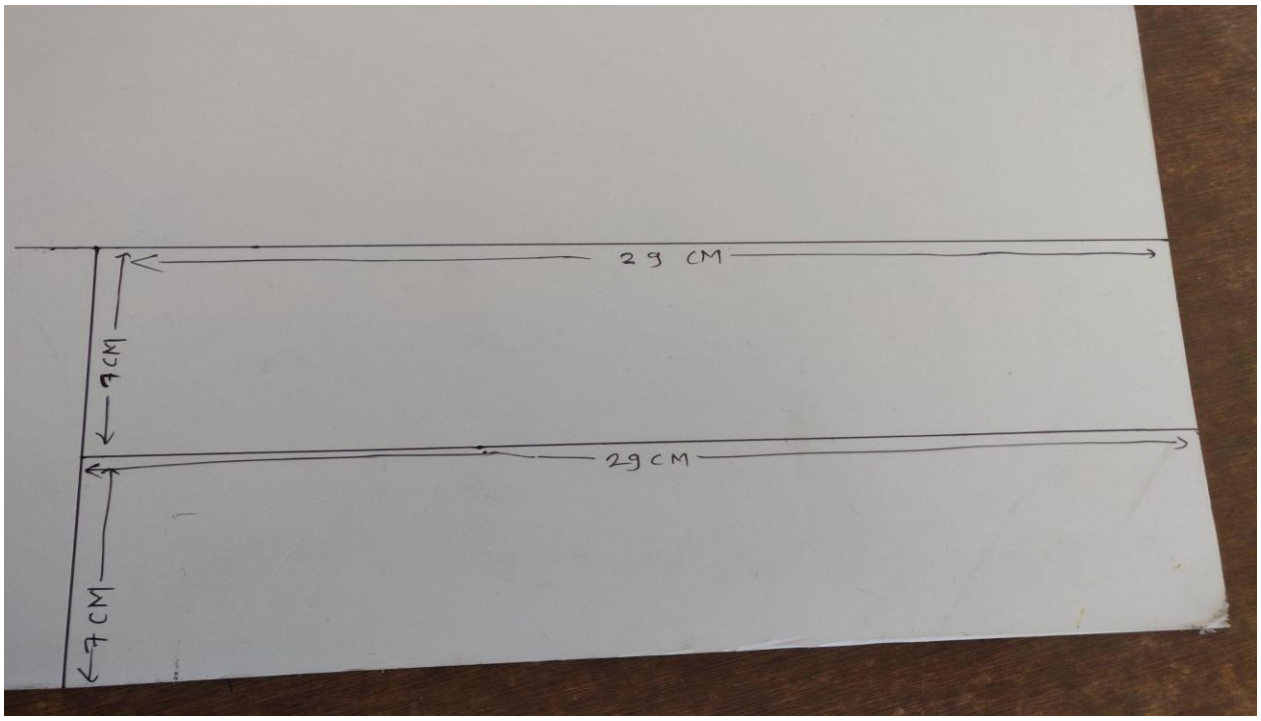
a. Draw Base-12CM, Height-6CM, 2 Side-3CM



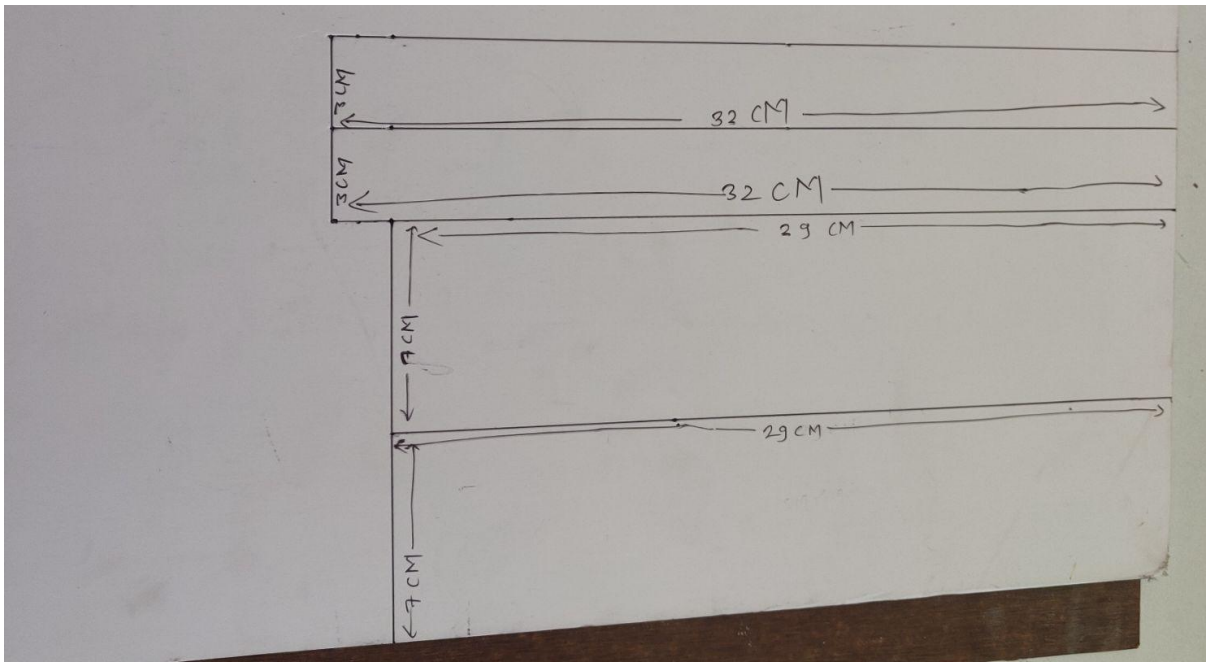
b. Draw two as shown in figure



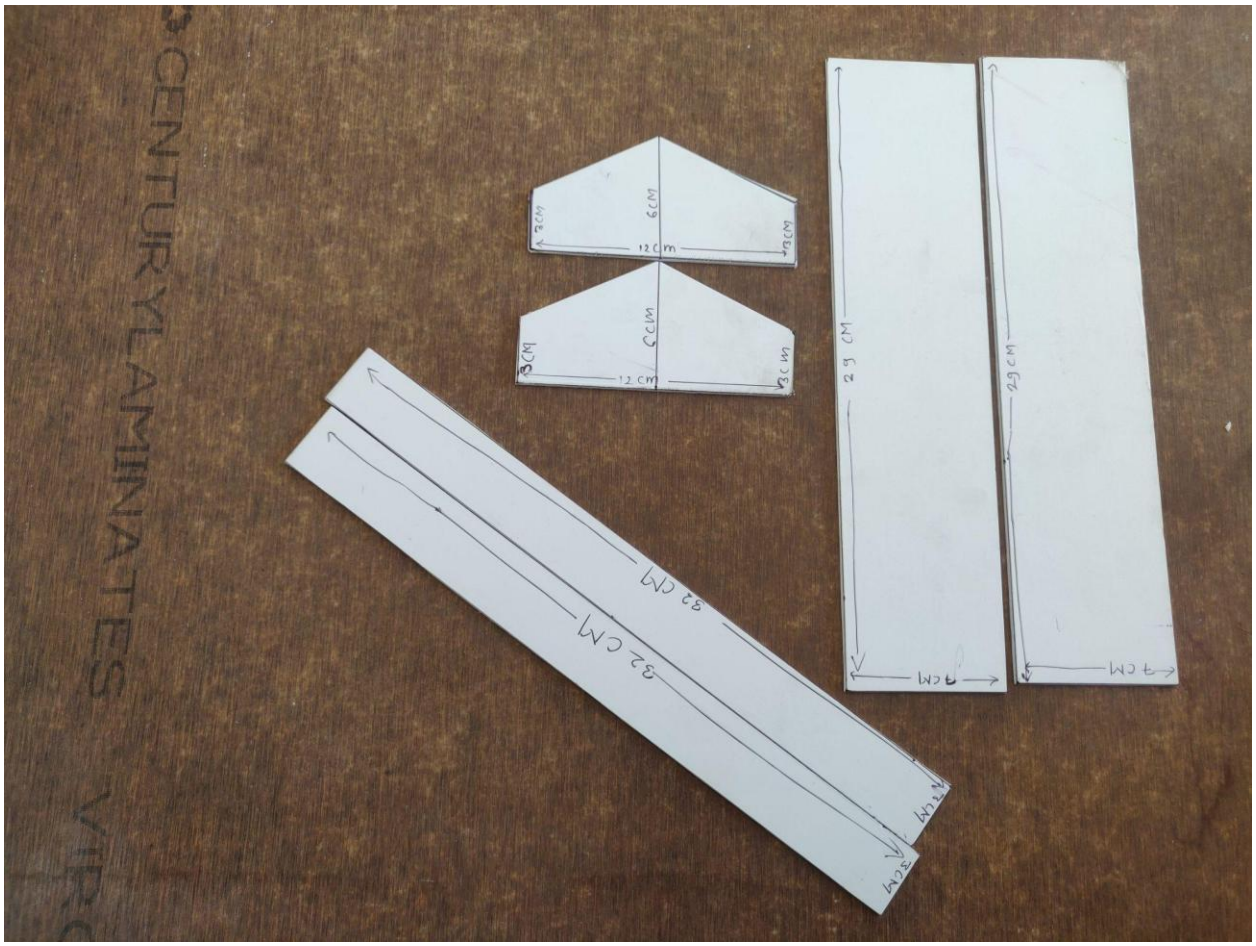
c. Draw two 29CM *7CM line



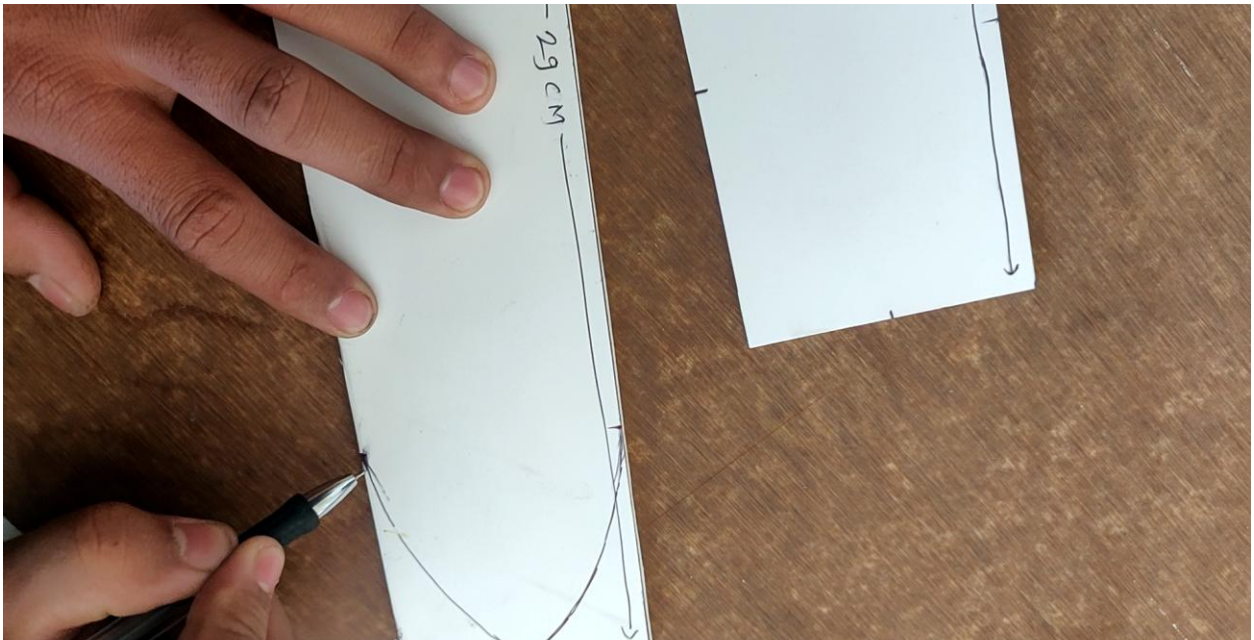
d. Draw two rectangles of 3 CM and 32 CM

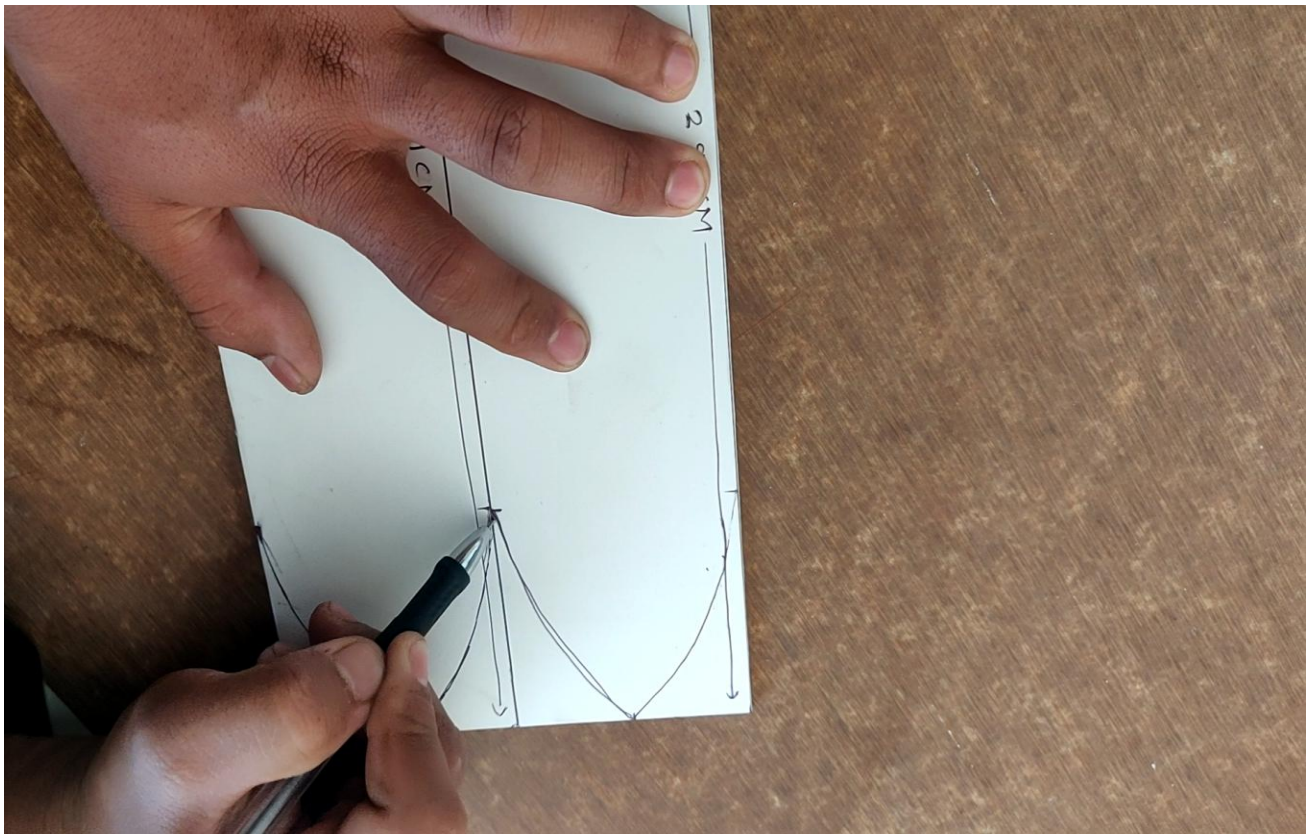


e. Cut all the sizes with the help of a metal scale and paper cutter.

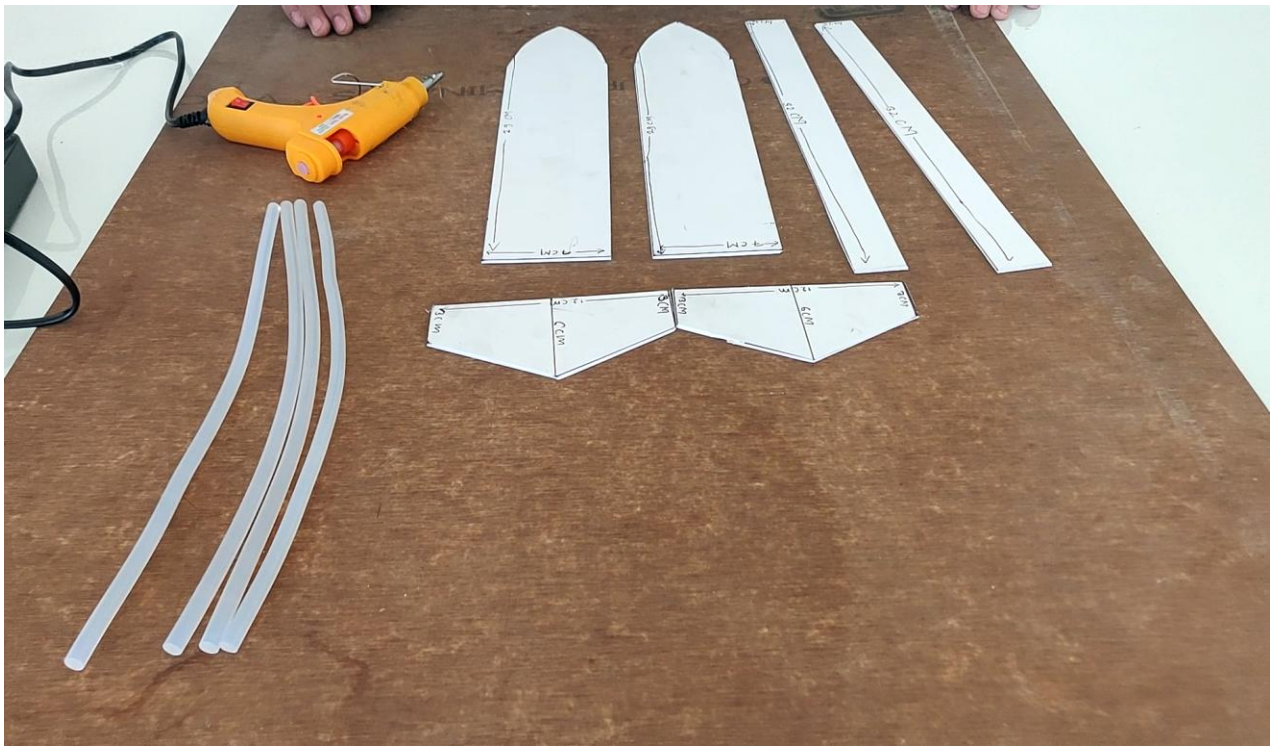


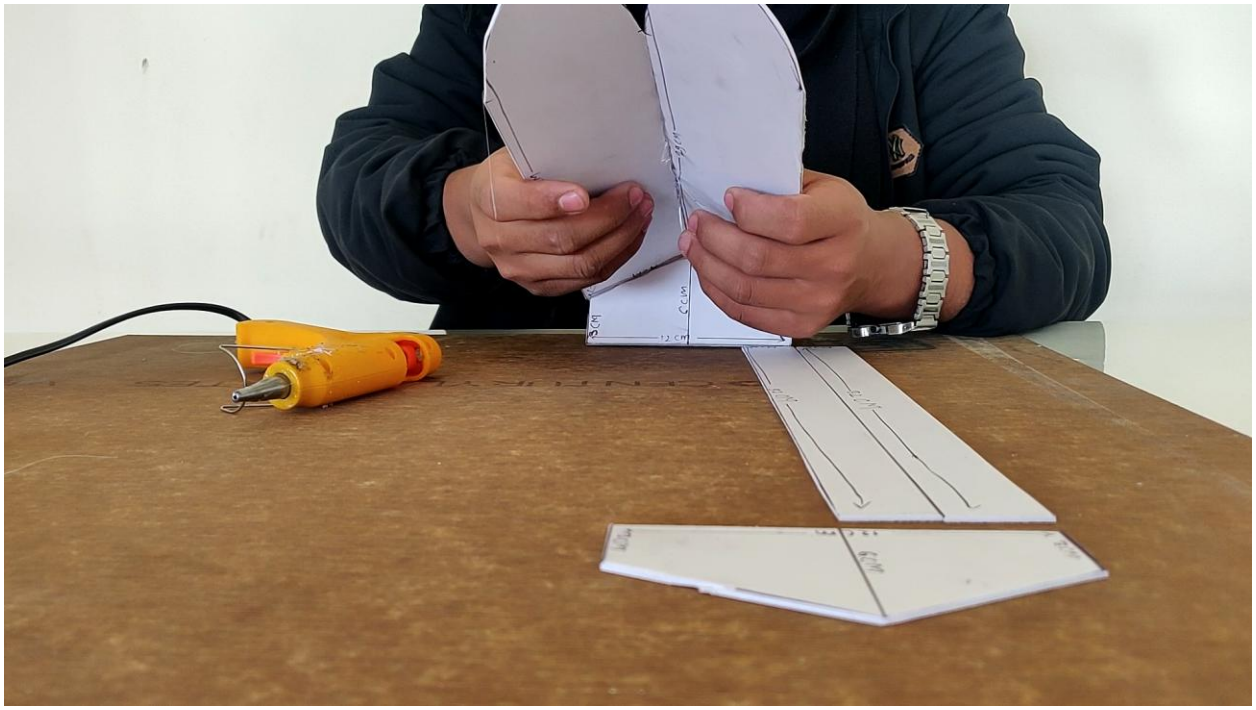
f. Draw oval line to the 29CM * 7CM rectangle as shown in figure and cut with paper cutter



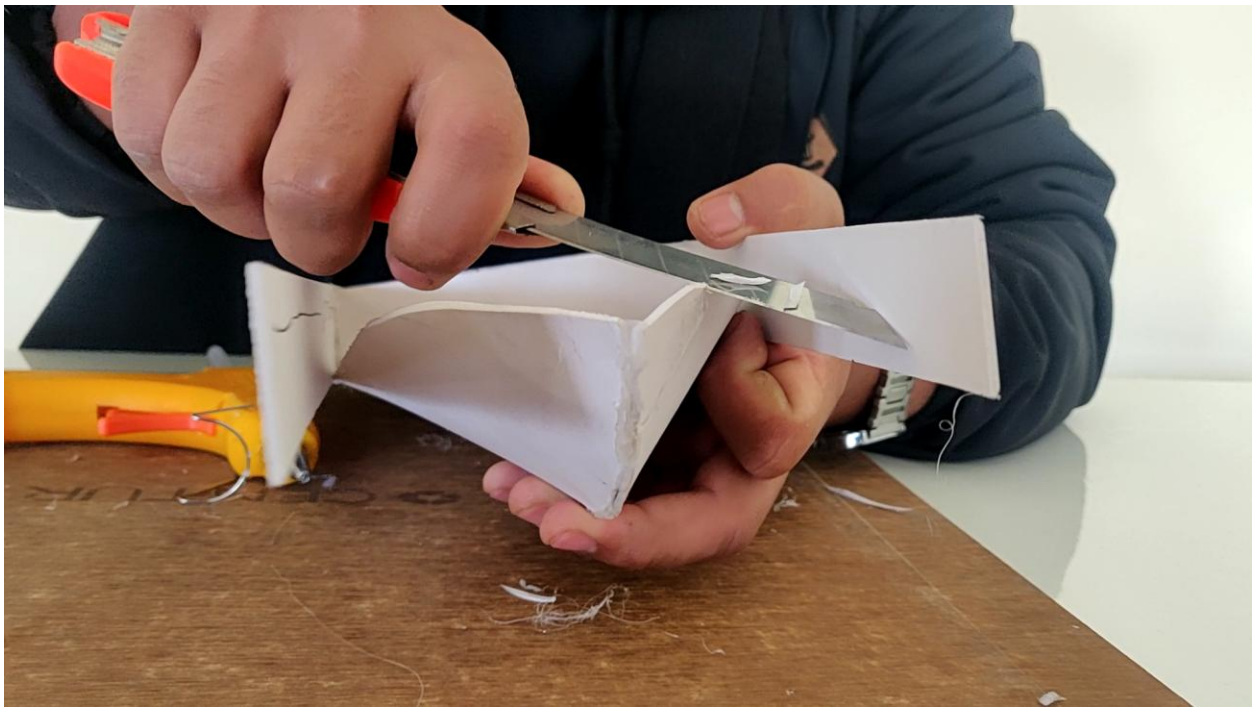


Now take one glue gun and let’s glue them together as shown below

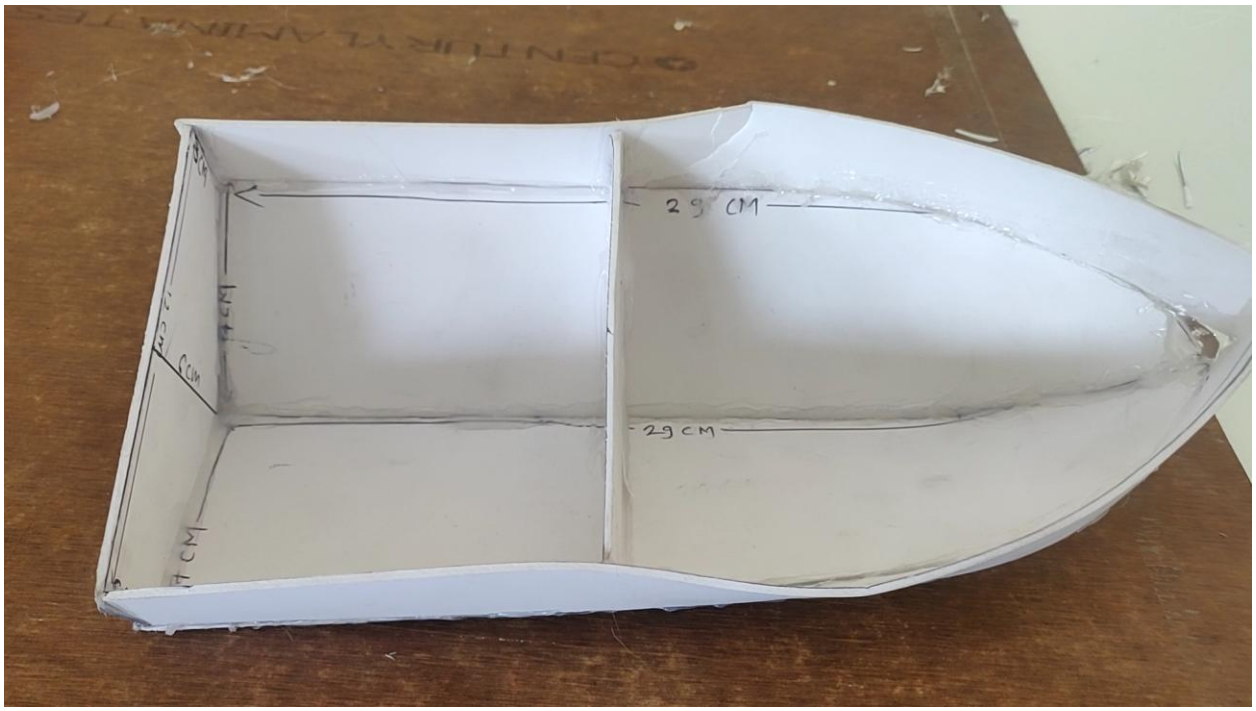




Cut the front edges of the boat to fix the upper part

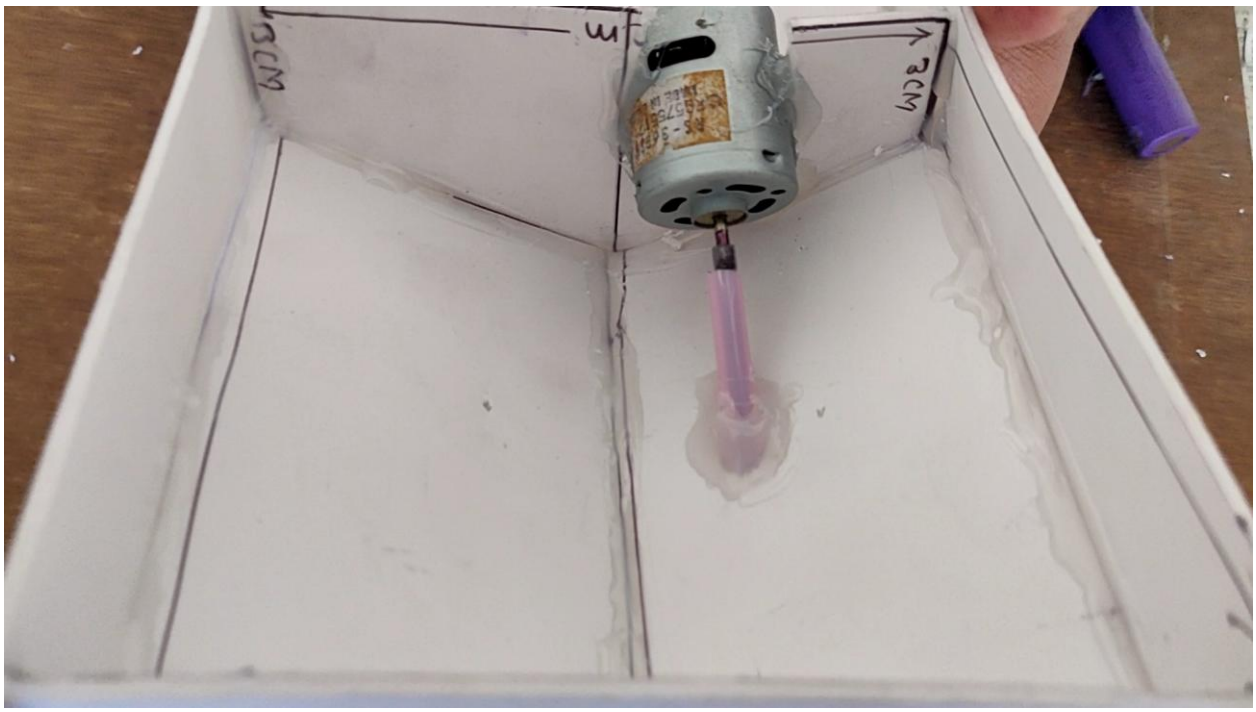


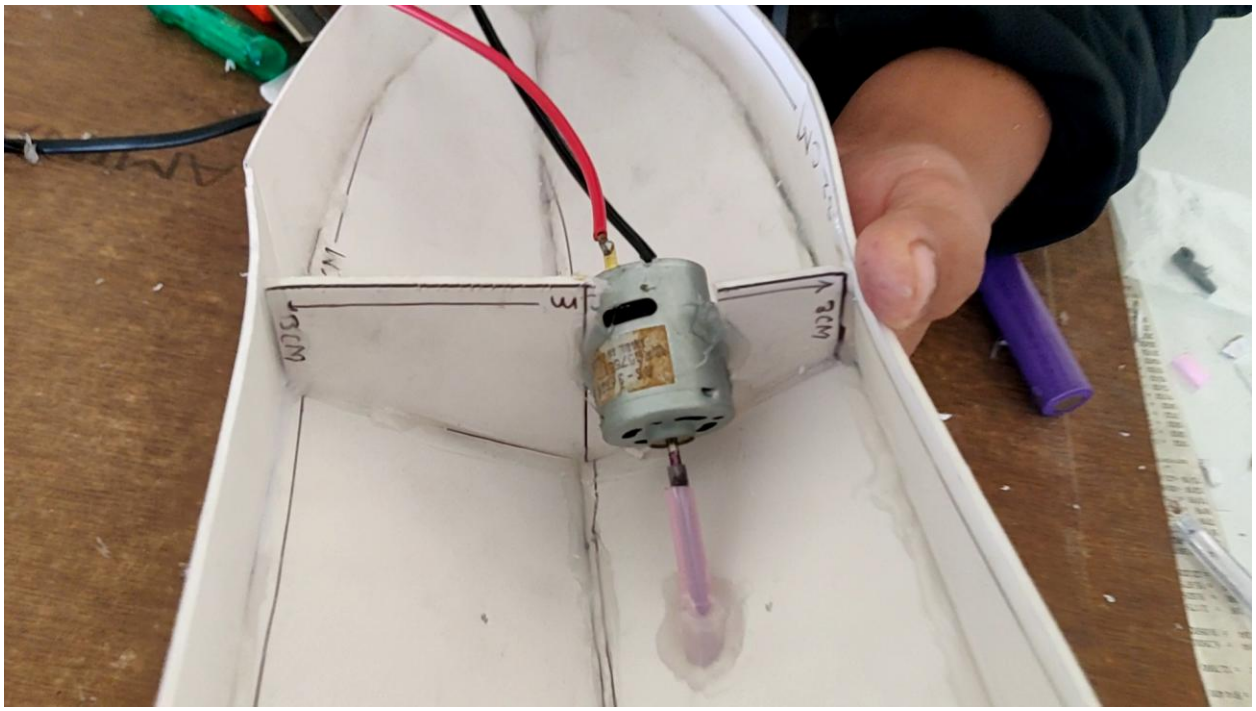
Now boat is complete

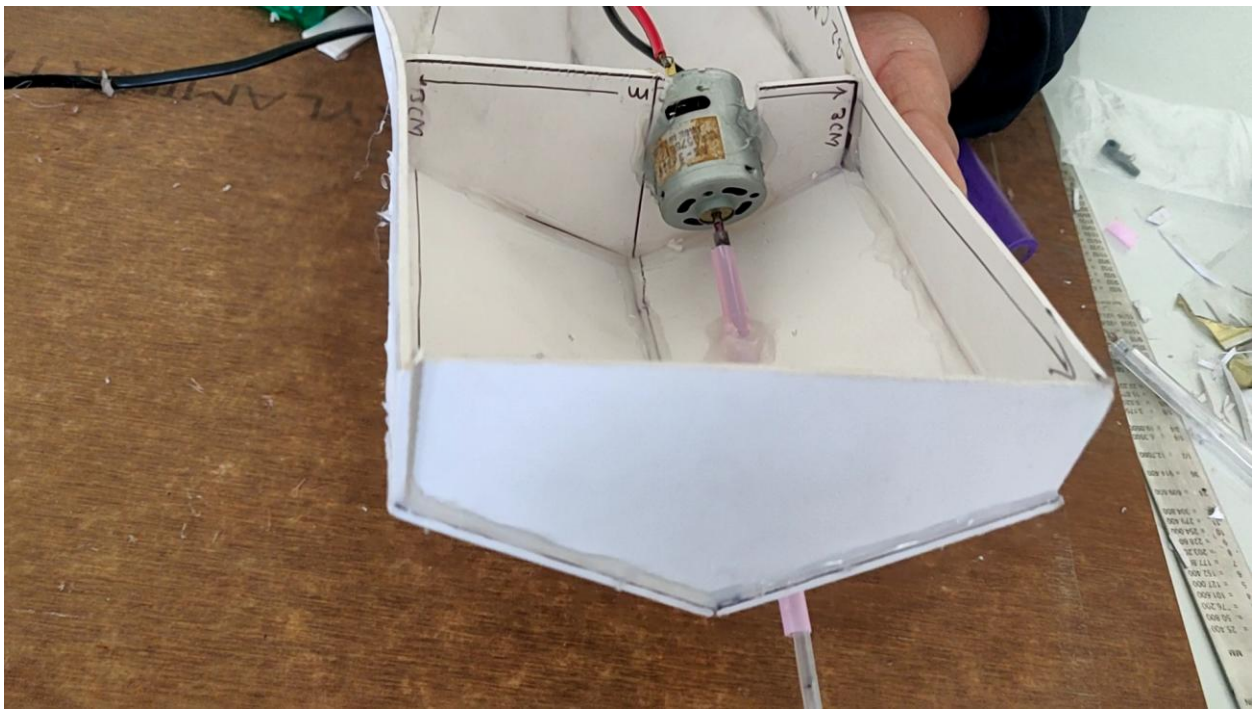


Step 2:

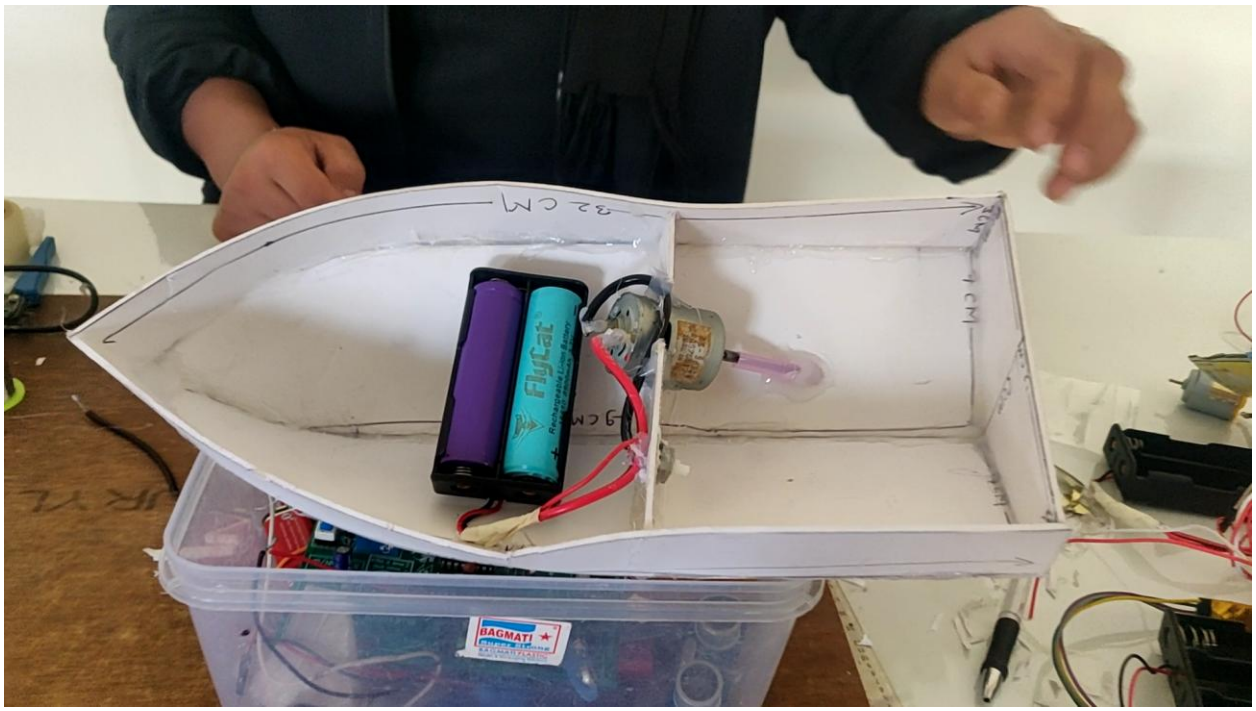
a. Now cut the inside wall of the boat to make place for the DC motor and make a hole at the base to put the propeller (Note: 1. Motor and propeller should be 40-45 degrees with Base, 2. Put one straw to make the boat waterproof as shown in figure.)

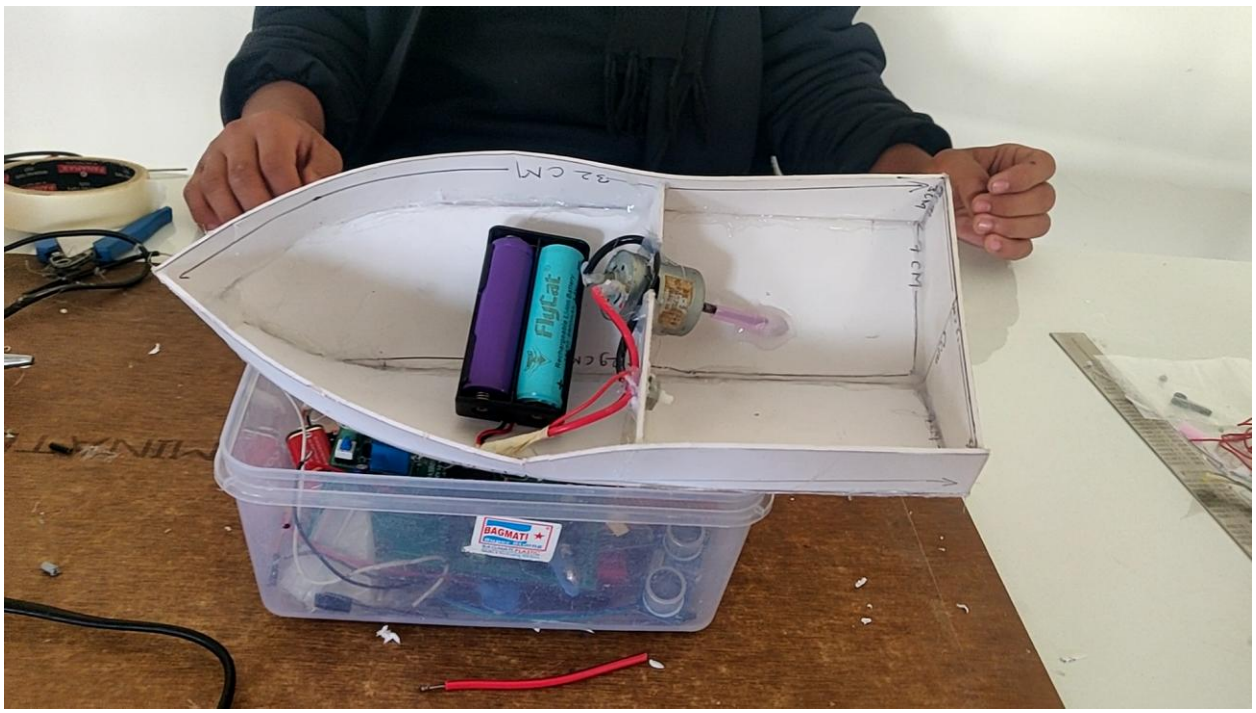



3CM
3CM


3CM
3CM

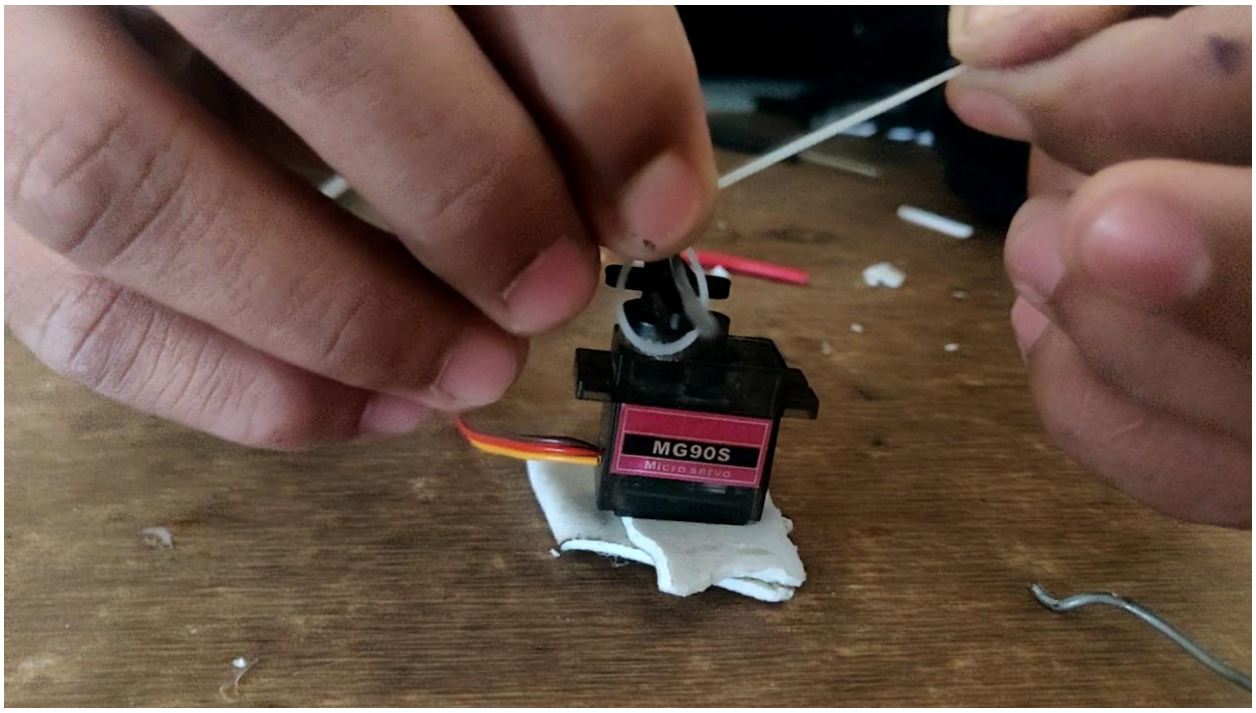
b. Connect switch and battery to the DC motor





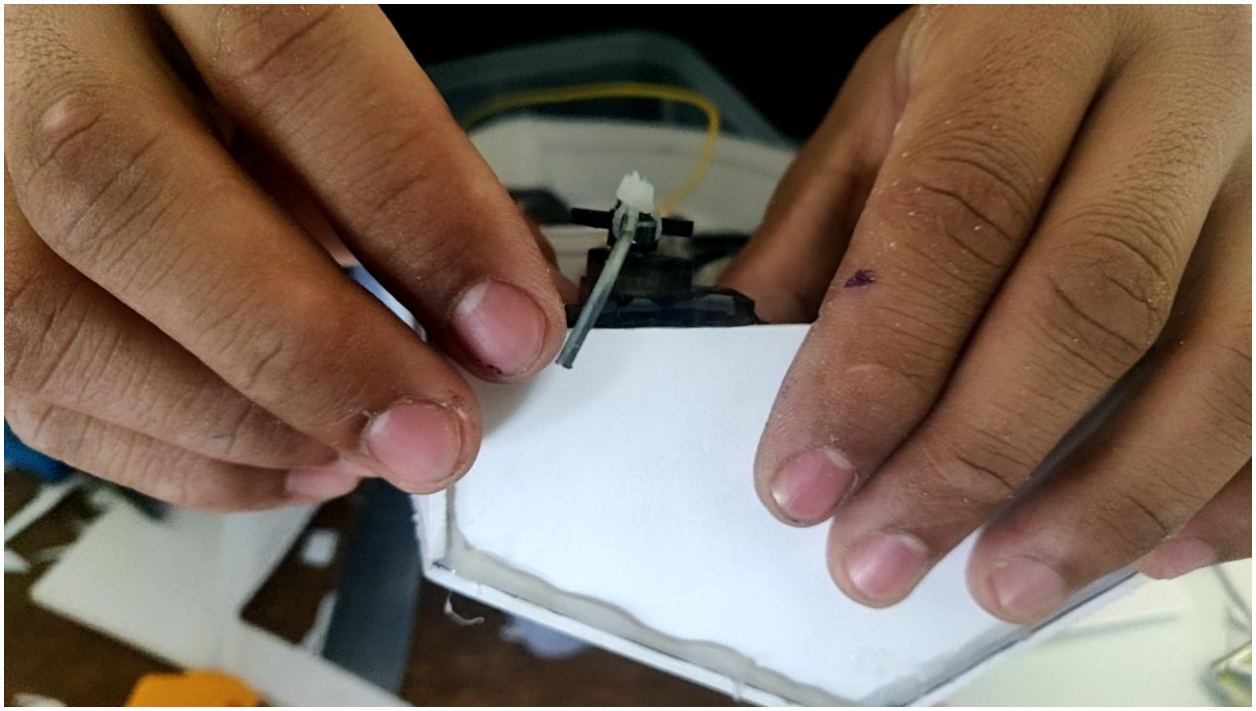
Step 3:

a. Connect servo motor to boat



b. Cut 14CM * 7CM section for the radar of the boat as shown in figure.

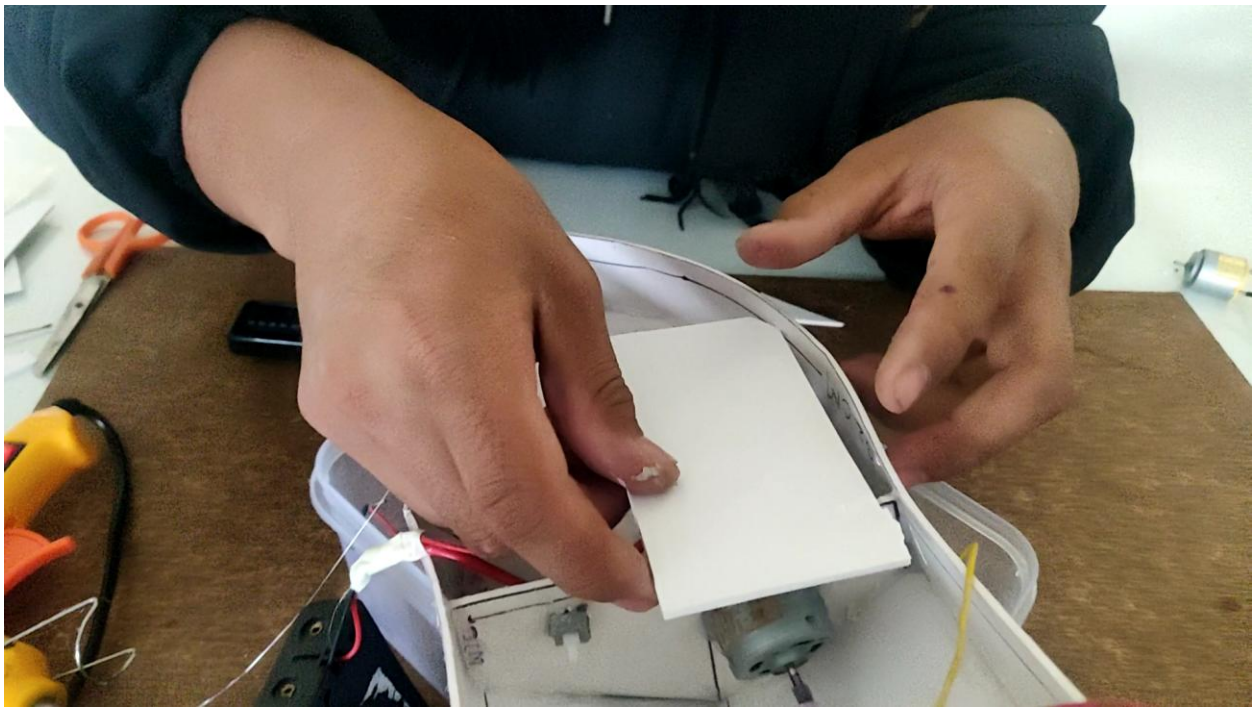
c. Glue servo motor at 3CM from right side



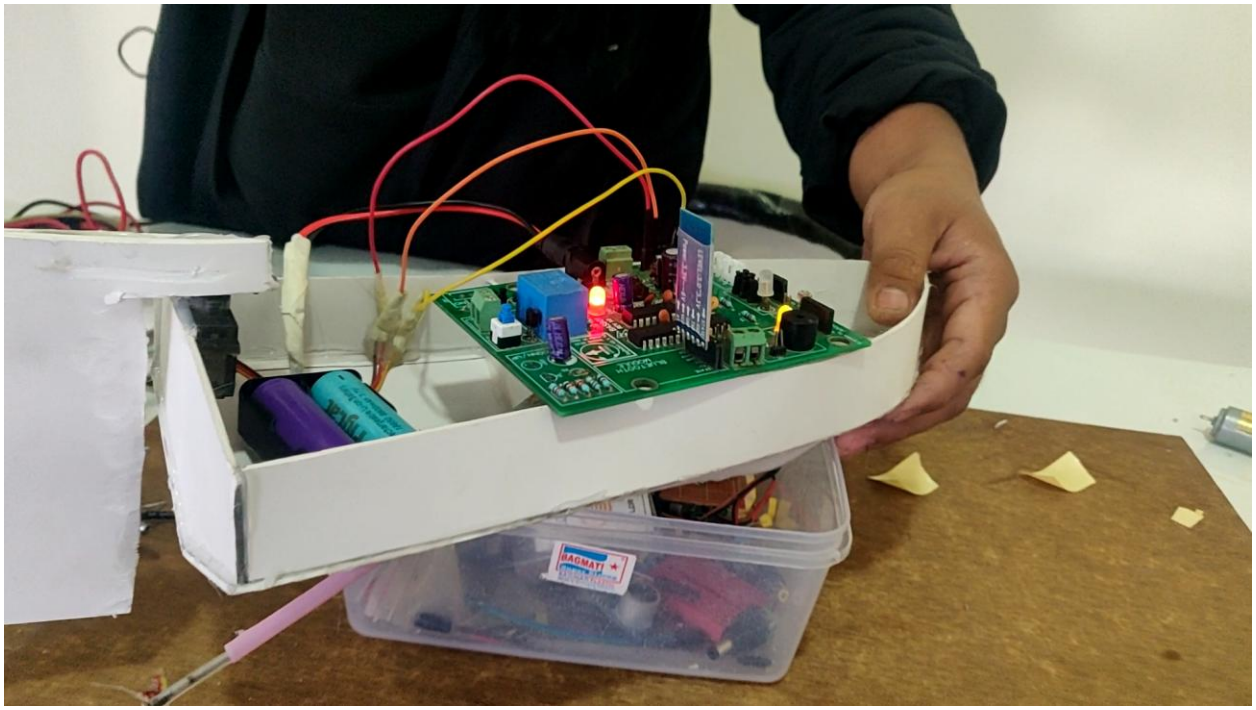
d. Join radar to servo motor

Step 4:

a.Make the place to hold the SajiloBot as shown below



Now, Aqua Boat is complete, upload the code and test the boat.



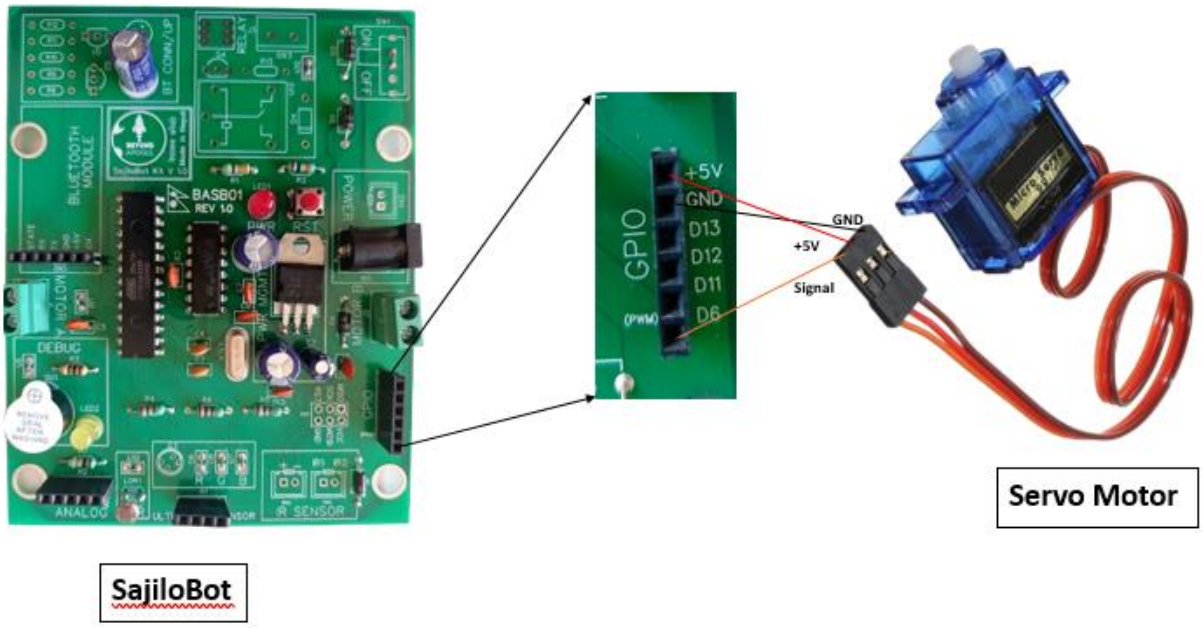


Fig. Circuit connection for the Servo Motor

Coding

//arduino code for Aqua Boat

```
#include <Servo.h>


Servo myServo;
int servoPin = 6;
int currentPosition = 105;


void setup() {
  Serial.begin(9600);
  pinMode(servoPin, OUTPUT);
  myServo.attach(6);
  myServo.write(100);
}
void loop() {
  if(Serial.available()>0){
    char value = Serial.read();


    if(value == 'U'){
      moveServoSmoothly(currentPosition, 105);
    }else if(value== 'R'){
      moveServoSmoothly(currentPosition,65);
```

```
    }else if(value== 'L'){
      moveServoSmoothly(currentPosition, 145);
    }
  }
}
void moveServoSmoothly(int startPos, int endPos) {
  int step = (startPos < endPos) ? 1 : -1;
  for (int pos = startPos; pos != endPos + step; pos += step) {
    myServo.write(pos);

   delay(10);
  }
  currentPosition = endPos;
}
```

Thank You