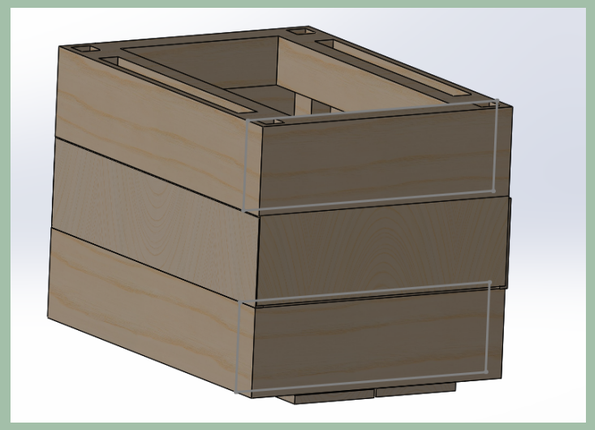
DESIGN AND BUILD AN AUTOMATED PLANT WATERING SYSTEM

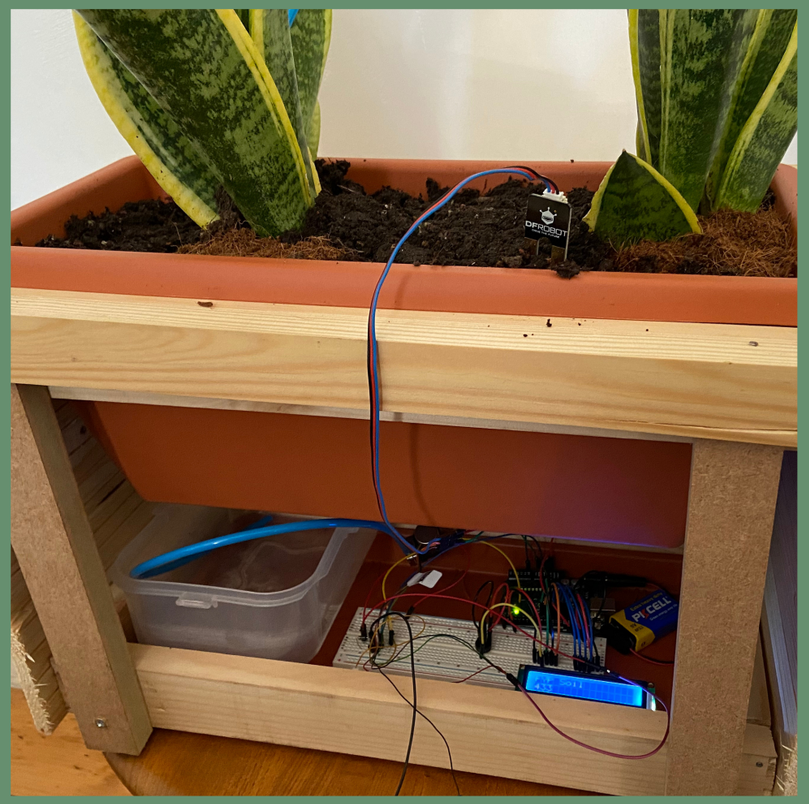
Project Statement

The aim of this project is to design and build a functioning automated plant watering system, that has been tested and developed to align with the objectives of the project. This project identifies the issue of having to manually water plants and aims to solve this issue in the timeline given.
The project should be self-contained and small enough to be suitable for someone with minimal space available to them.

Objectives

- esearch pump systems which deliver accurate amount of water over a given time.
- The pump must be able to provide the plants with the same amount of water each time it is turns on for a given time.
- - Create a design for the system.
- The design process it to be conducted using solidworks. The design must align with the project being automated and self-contained.
- - Build the mechanical system aligning with the design specifications
- The mechanical system must be constructed fully using the tolerances given in the previous design specifications.
- - Complete the mechanical build.
- The mechanical build must be completed in the timeline set out by this project
- - Code an Arduino to receive input from a sensor and deliver an output.
- - Review the system and identify any changes that could be made for future iterations.





The project was complete in the timeline set out and achieved all of the objectives of the project. Some of the objectives were slightly altered from the initial idea of the project but stay true to the idea of creating a fully automated plant watering system.
The electrical components in this project resulted in the largest timeline of work. There were. Three different modules working together with the Arduino resulting in a cohesive project.
Testing for the electrical components was carried out throughout this project and was the longest testing process. Each component was tested individually.

```
  pinMode(SoilPin, INPUT);

  pinMode(motorPin, OUTPUT);

  Serial.begin(9600);
}
void loop()
{

  sensorValue = analogRead(SoilPin);

  Serial.print("Moisture Sensor Value:");
  Serial.println(sensorValue);

  if (Serial.available())

    sensorValue = analogRead (A0);

  if (sensorValue < 300) {
    digitalWrite(motorPin, HIGH);
  }
  else {
    digitalWrite(motorPin, LOW);
  }


  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("FYP Soil");

  lcd.setCursor(0, 1);
  lcd.print(sensorValue);
  lcd.setCursor(6, 1);
```

This project features an LCD, Solenoid pump, and soil moisture sensors connected to an arduino and 9v battery.
The soil moisture sensors relay a value to the arduino, if the value is below 300 the solenoid pump turns on, if the value is below it remains off.
An LCD display is attached to the Arduino and reports the soil moisture value
for the pump. A transistor is used to form a switch to turn the motor on. A relay could be used to do this, but a transistor is suitable and a less expensive alternative. A diode and. resistor are used so as to not overload the arduino

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