

Automatic Water Plant System

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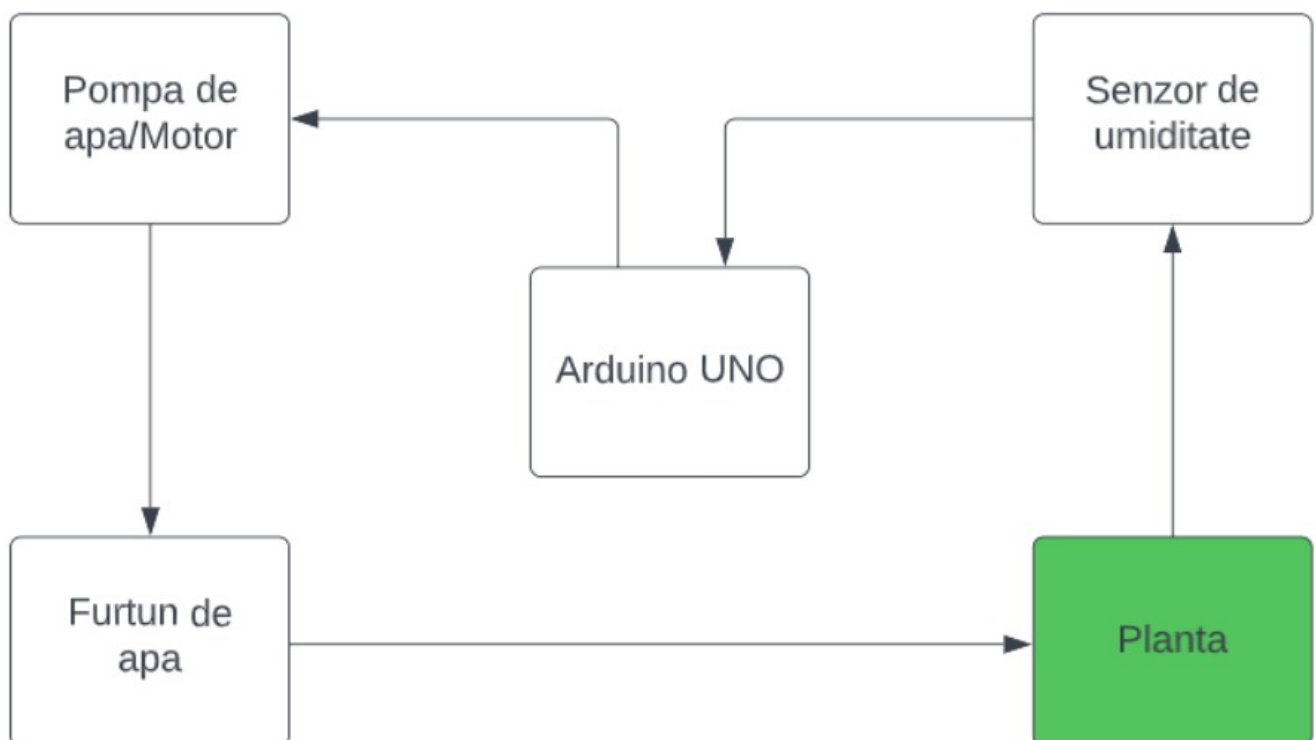
Group: 1222B

Introduction

Managing and maintaining a garden can be time-consuming, especially when it comes to watering plants. By developing an automatic water plant system, I overcome my childhood's "displeasure", and by displeasure I mean watering my mom's flowers. My mother have a lot of flowers and when I was little I had to water all her's flowers, and now I made a project that can help her with her passion.. I did this by creating an automated system for watering plants using an Arduino UNO board while taking into account the needs of the plants.

General Description

The soil moisture sensor in this system measures the amount of soil moisture. The water pump will automatically start if the soil is dry and the sensor detects the low moisture level. This will provide the plant with water. The water pump will automatically shut off once the soil has been sufficiently hydrated and the plant has received enough water.



Component List

Arduino UNO

Breadboard

Wires 1N4007 diode

NPN transistor

Resistance 220 Ω

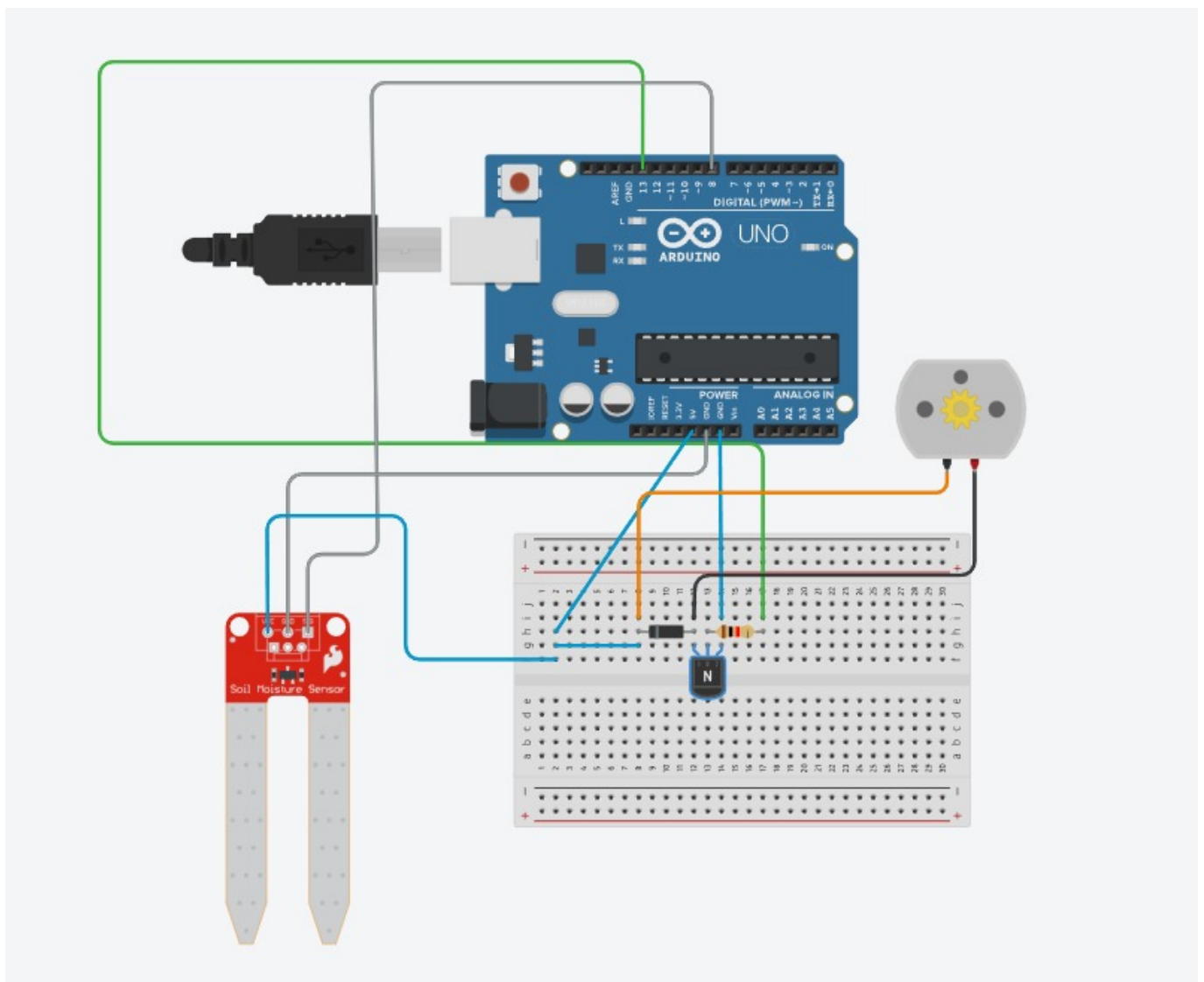
DC 5V motor

Soil moisture sensor

Water hose

Water container

Circuit Diagram



Software Design

I'm building a water pump with a DC motor. I'll harm the Arduino board if I attach the motor straight to it. In order to prevent harming the board, I used the NPN transistor to control the motor's switching behavior in accordance with the instructions. Electric current can only flow in one direction through the diode. A negative voltage surge that happens when the power is switched off could harm the Arduino board or the transistor. I thus utilized a diode to guard against this harm.

The two wires that make up the soil moisture sensor are used to gauge how much water is present in the soil. These cables compute the resistance while still allowing current to flow through the ground.

Conclusions

Embarking on this project was an exciting and enlightening experience that offered me valuable learning opportunities. It allowed me to delve deeper into the practical applications of an Arduino board beyond what I had previously encountered in lab sessions. As I carefully soldered wires with the assistance of flux, I discovered the intricacies of hardware assembly, ensuring a safe and efficient system. The process of building the water pump from scratch demanded considerable manual labor, which underscored the dedication and effort required to bring the project to fruition.

Undoubtedly, there were challenges along the way. Initially, I encountered difficulties in getting the Arduino application on my laptop to recognize the designated port. However, I tenaciously persevered, exploring troubleshooting methods and seeking guidance to overcome these obstacles. Eventually, I successfully resolved the issue, allowing me to proceed and reach the desired stage of the project.

In addition to the technical knowledge gained, this endeavor also fostered a sense of personal growth and accomplishment. It cultivated my problem-solving skills, resilience, and adaptability in the face of setbacks. The project provided a platform for me to explore the fascinating intersection of technology and plant care, encouraging me to think innovatively and consider the potential applications of automation in various domains.

Overall, working on this project not only expanded my practical skills and knowledge but also instilled a sense of satisfaction in tackling complex challenges head-on. It reinforced my enthusiasm for exploring the possibilities presented by emerging technologies and their impact on our daily lives.

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Journal

29th Apr - 7th May: Choosing the project

10th May: Ordering components

20th-27th May: Realization of the project

27th May: Documentation

Bibliografy/Resources

Resurse HARDWARE

www.conexelectronic.ro

Resurse SOFTWARE

www.tinkercad.com

https://www.youtube.com/watch?v=tfNEIWDVL1E&ab_channel=GlobalFun (TUTORIAL POMPA DE APA)

<https://projecthub.arduino.cc/>

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