EP1000 Digital Fabrication Fundamentals
Module Project

Group:

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Project Title:
Hydroponic Planter with Humidity Control

What does it do?
It is a Kratky Method hydroponic planter without the use of pumps. It has the ability to turn on a LED grow light when the light is dim and actively maintains humidity at a certain set point and warns the user if the water level is too low by flashing an LED red

What are it's features?
Its has a Light Dependent Resistor(LDR) to measure light levels to turn on the LED Grow light when the light gets too dim. It has a DHT11 Module to measure the humidity within the grow enclosure. It uses a 5V ultrasonic humidifier module and a process control loop to maintain the humidifier. A 5v fan is also used to blow humidified air. It also has a water level sensor to measure the water level To not overload the board, a power supply and relays are used to control the circuit.

What will you make?

CAD Design, Graphics	
	Enclosure, Electronics housing, water container, fan ducting, Led and display housing, base enclosure
Laser cutting	
	Clear acrylic enclosure, Base enclosure
3D Printing	Fan ducting
Micro-controller	Arduino Nano
Input devices	DHT11, Light Dependent Resistor (LDR), Water level sensor
Output devices	5V fan, Arduino LCD display, LED , 5V ultrasonic humidifier. Relay

Bill of materials

Sn.	Qty	Item Description	Approx Cost
1	1	5V Mist Maker Transducer (https://shopee.sg/ONE--Humidifier-DIY-Kit-5V-Mist-Maker-Transducer-Humidified-Plate-Accessories-%2B-PCB-Module-D16mm-i.273199336.11206611389?gclid=Cj0KCQjwI_SHBhCQARIsAFIFRVVk6f9rX743KJCYT9Z6H-wFkqt-eVM7Pku243qszbeAppRNJkB00UYaAnrDEALw_wcB&__hybrid_pc__=1&stm_referrer=)	5.99
2	1	Arduino Nano (https://shopee.sg/Arduino-Nano-V3.0-CH340-Atmega328P-Circuit-Board-Welded-i.462735011.9567228051?position=3)	7.00
3	1	5v fan (https://shopee.sg/chin-DC-5V-12V-24V-Computer-CPU-Cooler-Mini-4010-Cooling-Fan-40x40x10mm-Small-Exhaust-Fan-for-Printer-i.313942543.4062014550?position=25)	1.55
4	1	5v grow lamp (https://shopee.sg/-Ready-Stock!!!-Grow-Light-USB-LED-Strip-0.5m-1m-2m-3m-Full-Spectrum-2835-Phyto-Lamp-5V-USB-Plant-Light-for-Plants-Indoor-Seedlings-i.250741993.7644405783?position=16	5.00
5	1	Arduino LCD (https://shopee.sg/LCD1602-LCD-module-Blue-screen-IIC-I2C-1602-for-arduino-1602-LCD-UNO-r3-mega2560-Green-screen-i.161750523.9012049118?position=1)	2.48
6	1	3 Channel Relay https://shopee.sg/3.3V-5V-3-Channel-Relay-Modul	3.00

		e-5mA-With-Optocoupler-Isolation-Compatible-Sig nal-i.237143839.7420235535?position=6	
7	1	Breadboard Power supply https://shopee.sg/Breadboard-5V-3.3V-Power-Sup ply-Module-MB102-i.189216177.7005257978?pos ition=5	1.25
8	1	Miscellaneous Dupont Wires	NIL
9	1	Acrylic Sheets	NIL
10	1	Water level sensor https://www.lazada.sg/products/fenteer-rain-water-sensor-liquid-level-sensor-for-arduino-water-level-sensor-orange-i1769096105-s9136689140.html?s pm=a2o42.searchlist.list.1.3bf0e02a24EzHo&sear ch=1	1
			Total est. 27

References:

1. https://create.arduino.cc/projecthub/taifur/smart-humidifier-dac66f