Assemblages des programmes
DHT22+LCD+2RELAIS+2POMPES

SCRIPT :

Cd lcd
Sudo nano pp. py

Programme :

```
#!/usr/bin/env python

import time

import board

import adafruit_dht

import drivers

import RPi.GPIO as GPIO


# Initialisation du capteur DHT22

dhtDevice = adafruit_dht.DHT22(board.D17)


# Initialisation de l'Ã©cran LCD

display = drivers.Lcd()


# Initialisation des relais

GPIO.setmode(GPIO.BCM)

GPIO.setup(26, GPIO.OUT)  # Relay 1

GPIO.setup(16, GPIO.OUT)  # Relay 2


# DÃ©marrer relais en OFF (HIGH = inactif)

GPIO.output(26, GPIO.HIGH)

GPIO.output(16, GPIO.HIGH)


try:

    while True:

        try:

            # Lire donnÃ©es DHT22

            temperature_c = dhtDevice.temperature

            humidity = dhtDevice.humidity
```

```
            # Activer les relais (LOW = activÃ©)
            GPIO.output(26, GPIO.LOW)
            GPIO.output(16, GPIO.LOW)
            relay1_state = "ON"
            relay2_state = "ON"

            # Afficher tout en mÃªme temps
            display.lcd_display_string(f"Temp:{temperature_c:.1f}C H:{humidity:.1f}%", 1)
            display.lcd_display_string(f"R1:{relay1_state} R2:{relay2_state}", 2)
            time.sleep(2)

            # DÃ©sactiver les relais
            GPIO.output(26, GPIO.HIGH)
            GPIO.output(16, GPIO.HIGH)
            relay1_state = "OFF"
            relay2_state = "OFF"

            # RÃ©afficher tout en mÃªme temps
            display.lcd_display_string(f"Temp:{temperature_c:.1f}C H:{humidity:.1f}%", 1)
            display.lcd_display_string(f"R1:{relay1_state} R2:{relay2_state}", 2)
            time.sleep(2)

        except RuntimeError as error:
            print("Erreur capteur:", error.args[0])
            time.sleep(2.0)
            continue
        except Exception as error:
            dhtDevice.exit()
            raise error

except KeyboardInterrupt:
    print("Cleaning up!")
    display.lcd_clear()
    GPIO.cleanup()
```

Assemblages des programmes
DHT22+LCD+2RELAIS+2POMPES+NIVEAU D'EAU

Script :

Cd lcd

Sudo nano jj. Py

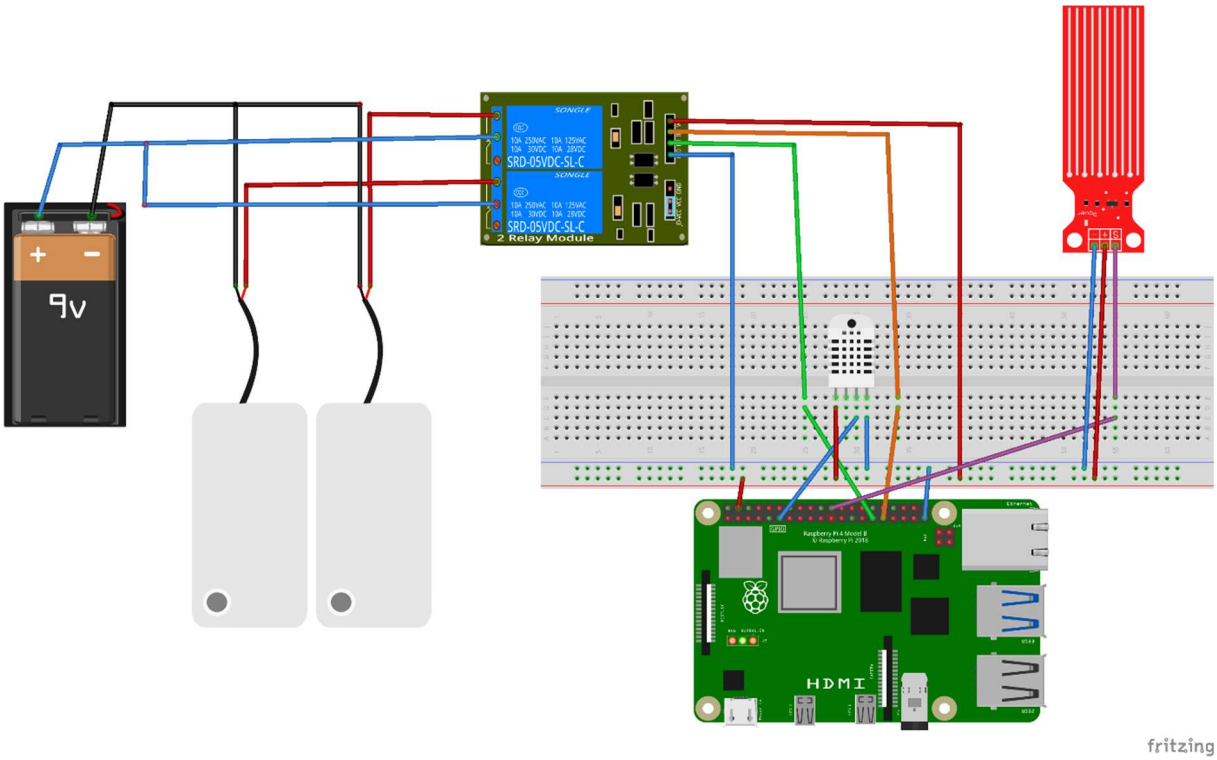
Programme:

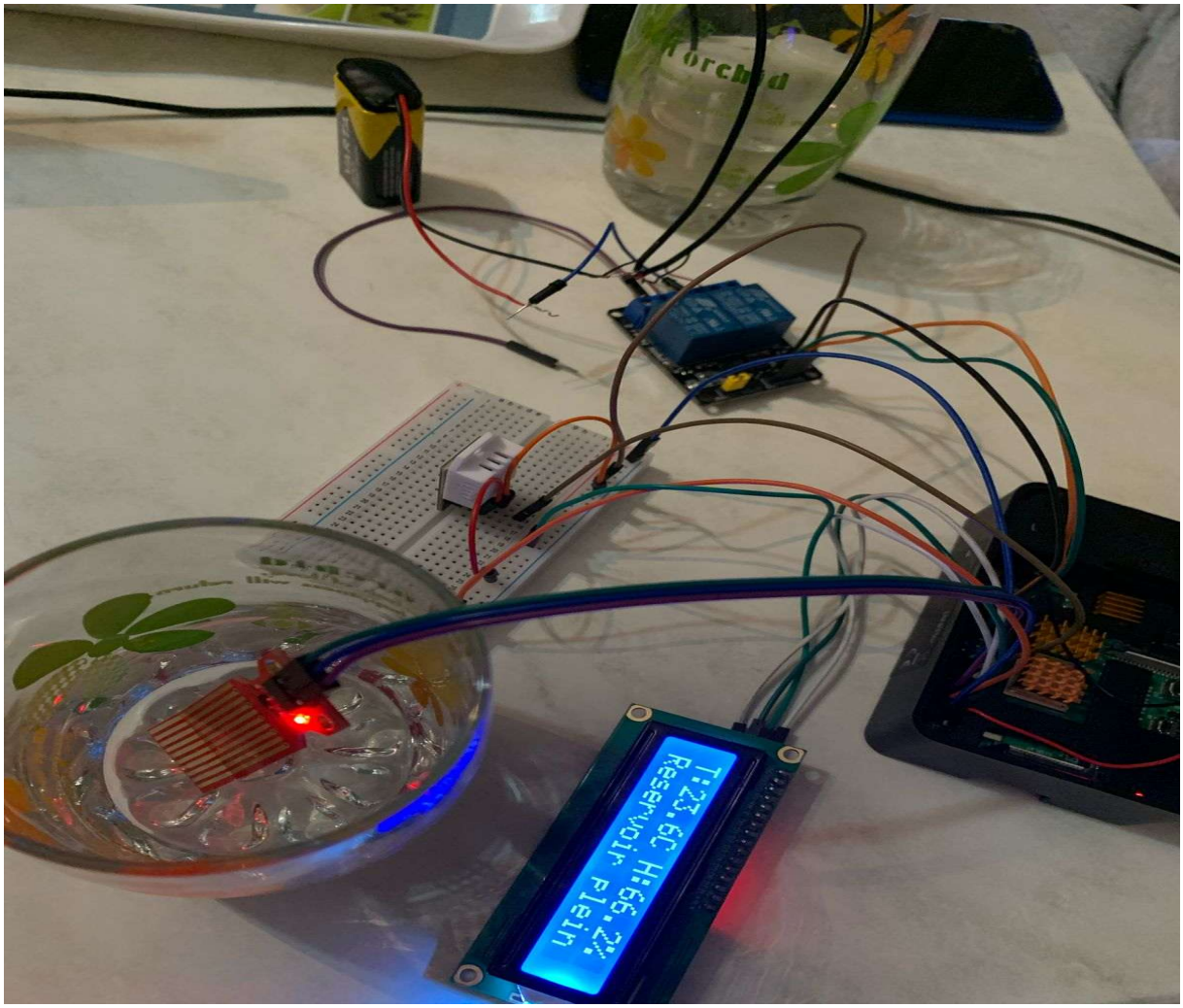
```
import time
import RPi.GPIO as GPIO
import drivers  # Pour l'□cran LCD
import board
import adafruit_dht

# Initialisation du LCD
display = drivers.Lcd()

# Configuration du capteur d'eau
capteur_pin = 25  # GPIO utilis□
GPIO.setmode(GPIO.BCM)
GPIO.setup(capteur_pin, GPIO.IN)

# Initialisation du capteur DHT22
dhtDevice = adafruit_dht.DHT22(board.D17)

# Initialisation des relais
GPIO.setup(5, GPIO.OUT)  # Relay 1
GPIO.setup(6, GPIO.OUT)  # Relay 2

# D□marrer relais en OFF (HIGH = inactif)
GPIO.output(5, GPIO.HIGH)
GPIO.output(6, GPIO.HIGH)

def lire_dht22():
    """Fonction pour lire les donn□es du capteur DHT22 avec gestion des erreurs."""
    max_retries = 5  # Nombre maximal de tentatives
```

```
    retry_count = 0

    while retry_count < max_retries:
        try:
            temperature_c = dhtDevice.temperature
            humidity = dhtDevice.humidity
            return temperature_c, humidity  # Retourner les valeurs si la lecture r□ussit
        except RuntimeError as error:
            print("Erreur capteur DHT22:", error.args[0])
            retry_count += 1
            time.sleep(2.0)  # Attendre avant de r□essayer
        except Exception as error:
            print("Erreur grave capteur DHT22:", error)
            dhtDevice.exit()
            raise error

    # Si toutes les tentatives □chouent
    print("□chec de la lecture du capteur DHT22 apr□s", max_retries, "tentatives.")
    return None, None

try:
    while True:
        # Lire l'□tat du capteur d'eau
        etat_capteur = GPIO.input(capteur_pin)
        if etat_capteur == GPIO.HIGH:
            etat_eau = "Reservoir plein"
            relais_actif = True
        else:
            etat_eau = "Reservoir vide"
            relais_actif = False

        # Lire donn□es DHT22
        temperature_c, humidity = lire_dht22()
```

```
        if temperature_c is not None and humidity is not None:
            # Afficher la temp□rature et l'humidit□ sur la premi□re ligne
            display.lcd_display_string(f"T:{temperature_c:.1f}C H:{humidity:.1f}%", 1)
        else:
            # Afficher un message d'erreur si la lecture □choue
            display.lcd_display_string("Erreur DHT22", 1)

        # Afficher l'□tat du capteur d'eau sur la deuxi□me ligne
        display.lcd_display_string(etat_eau, 2)

        # Activer les relais uniquement si le r□servoir est plein
        if relais_actif:
            GPIO.output(5, GPIO.LOW)  # Activer Relay 1
            GPIO.output(6, GPIO.LOW)  # Activer Relay 2
            print("Relais activ□s (r□servoir plein)")
        else:
            GPIO.output(5, GPIO.HIGH)  # D□sactiver Relay 1
            GPIO.output(6, GPIO.HIGH)  # D□sactiver Relay 2
            print("Relais d□sactiv□s (r□servoir vide)")

        time.sleep(2)  # Attendre 2 secondes avant la prochaine lecture

except KeyboardInterrupt:
    print("Programme arr□t□.")
    display.lcd_clear()  # Nettoyer l'□cran LCD avant de quitter
    GPIO.cleanup()
```

Cablage:


9v
SRD-05VDC-SL-C
SRD-05VDC-SL-C
2 Relay Module
HDMI
fritzing


T:23.6C H:66.2%
Reservoir plein