# https://www.youtube.com/watch?v=JvQKZXCYMUM&t=275s

**HANDOUT 4**

# https://www.youtube.com/watch?v=DHbLBTRpTWM

#https://www.youtube.com/watch?v=OTBIXnzcI34&t=197s

#**AUTOMATED WATER TANK MANAGEMENT SYSTEM USING HCSR04 DISTANCE SENSOR**

#Libraries

import RPi.GPIO as GPIO

import time

#set up components

GPIO.setwarnings(False)

GPIO.setmode(GPIO.BCM) #using broadcom pin system GPIO

TRIG=20

ECHO=21

#We are using a Activity Low Relay

GPIO.setup(26,GPIO.OUT) #IN1 PUMP

#Program Logic

print("distance measurement in progress")

print("waiting for sensor to settle")

while True:

GPIO.setup(TRIG,GPIO.OUT)

GPIO.setup(ECHO,GPIO.IN)

GPIO.output(TRIG,False)

time.sleep(0.2)

GPIO.output(TRIG,True)

time.sleep(0.00001)

GPIO.output(TRIG,False)

#When the trigger pin sends out a pulse, the echo pin becomes high

#this will give us the pulse\_start time

while GPIO.input(ECHO)==0:

pulse\_start=time.time()

#the Echo pin remains high until the pusle echo is received back

#by the receiver. At this point, the echo pin will drop to low - pulse\_end time

while GPIO.input(ECHO)==1:

pulse\_end=time.time()

pulse\_duration=pulse\_end-pulse\_start

distance=pulse\_duration\*34300

distance = distance / 2

distance=round(distance,2)

if distance <= 50:

print("distance:",distance,"cm")

GPIO.output(26,False) #ON PUMP to top up water tank

else:

#once the water level reaches set level, pump will stop pumping

GPIO.output(26,True) #OFF PUMP