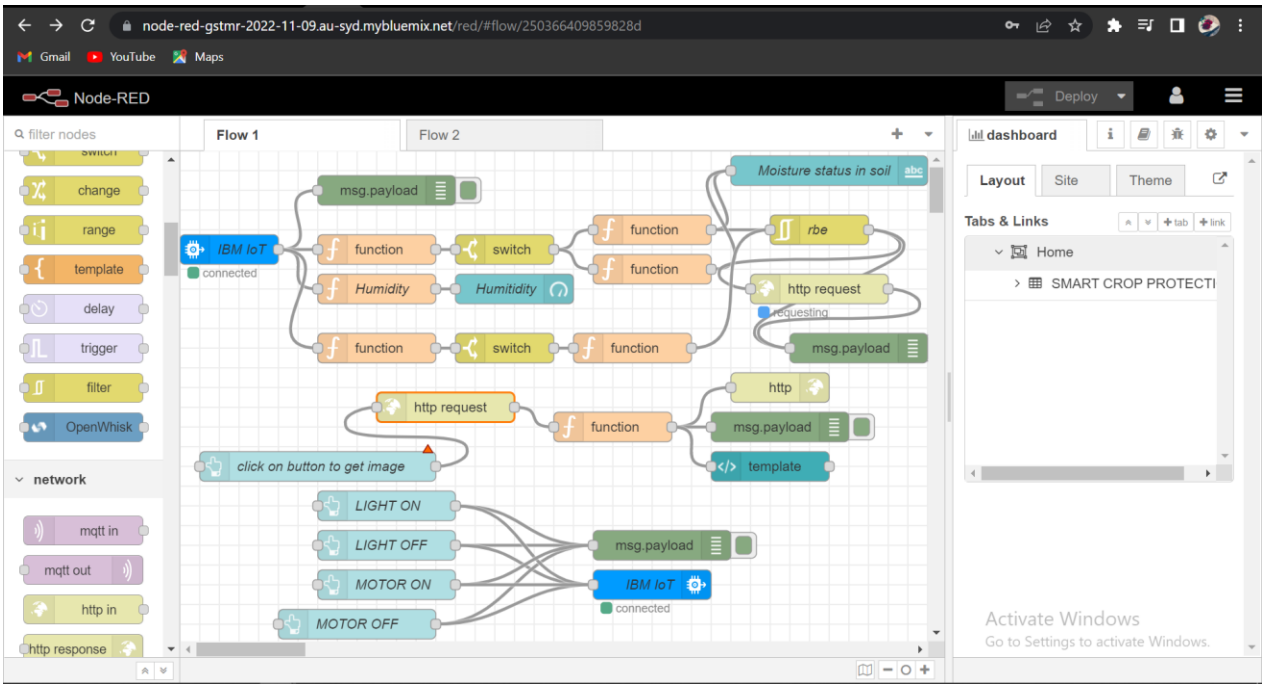
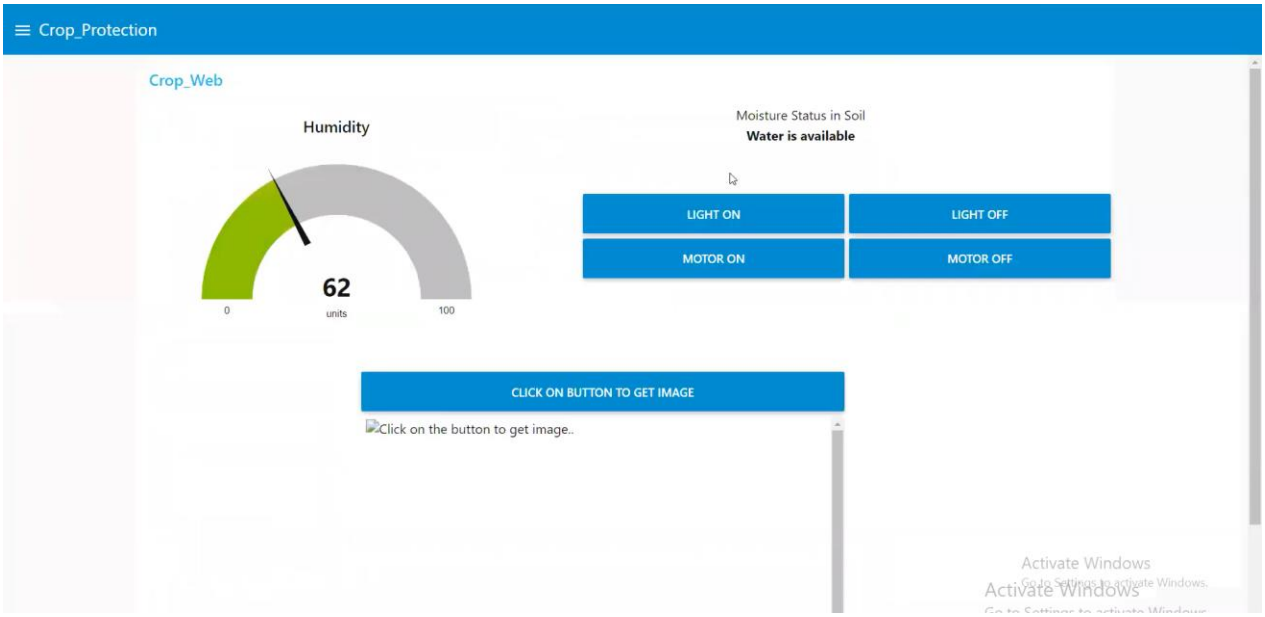
DEVELOP A WEB APPLICATION USING NODE-RED SERVICES

Team ID	PNT2022TMID13381
PROJECT NAME	IoT Based Smart Crop Protection System For Agriculture

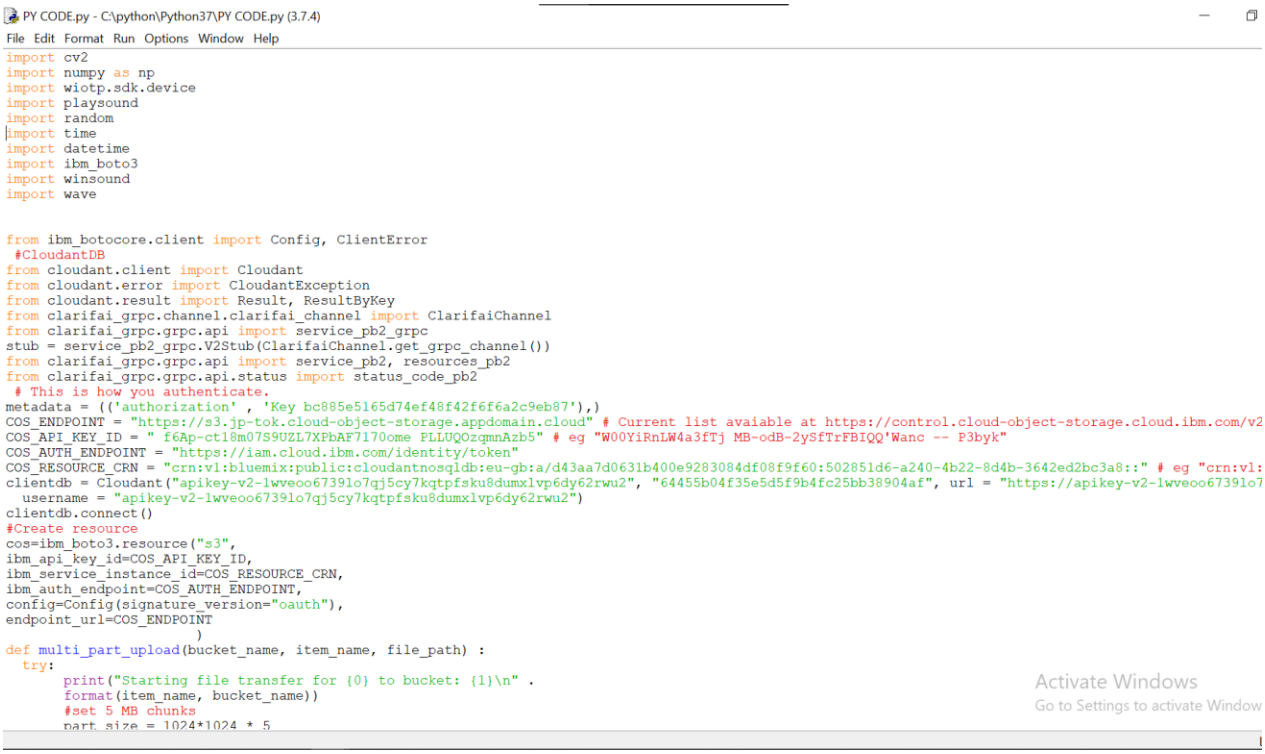
NODE-RED-CONNECTION:



OUTPUT:


Crop_Protection
Crop_Web
Humidity
62
units
0
100
Moisture Status in Soil
Water is available
LIGHT ON
LIGHT OFF
MOTOR ON
MOTOR OFF
CLICK ON BUTTON TO GET IMAGE
Click on the button to get image..
Activate Windows

PYTHON CODE:



PY CODE.py - C:\python\Python37\PY CODE.py (3.7.4)

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```
import cv2
import numpy as np
import wiotp.sdk.device
import playsound
import random
import time
import datetime
import ibm_boto3
import winsound
import wave


from ibm_botocore.client import Config, ClientError
 #CloudantDB
from cloudant.client import Cloudant
from cloudant.error import CloudantException
from cloudant.result import Result, ResultByKey
from clarifai_grpc.channel.clarifai_channel import ClarifaiChannel
from clarifai_grpc.grpc.api import service_pb2_grpc
stub = service_pb2_grpc.V2Stub(ClarifaiChannel.get_grpc_channel())
from clarifai_grpc.grpc.api import service_pb2, resources_pb2
from clarifai_grpc.grpc.api.status import status_code_pb2
 # This is how you authenticate.
metadata = (('authorization' , 'Key bc885e5165d74ef48f42f6f6a2c9eb87'),)
COS_ENDPOINT = "https://s3.jp-tok.cloud-object-storage.appdomain.cloud" # Current list avaiable at https://control.cloud-object-storage.cloud.ibm.com/v2
COS_API_KEY_ID = " f6Ap-ct18m07S9UZL7XPbAF7170ome PLLUQOzqmnAzb5" # eg "W00YiRnLW4a3fTj MB-odB-2ySfTrFBIQQ'Wanc -- P3byk"
COS_AUTH_ENDPOINT = "https://iam.cloud.ibm.com/identity/token"
COS_RESOURCE_CRN = "crn:v1:bluemix:public:cloudantnosqldb:eu-gb:a/d43aa7d0631b400e9283084df08f9f60:502851d6-a240-4b22-8d4b-3642ed2bc3a8::" # eg "crn:v1:
clientdb = Cloudant("apikey-v2-1wveoo6739lo7qj5cy7kqtpfsku8dumxlvp6dy62rwu2", "64455b04f35e5d5f9b4fc25bb38904af", url = "https://apikey-v2-1wveoo6739lo7
  username = "apikey-v2-1wveoo6739lo7qj5cy7kqtpfsku8dumxlvp6dy62rwu2")
clientdb.connect()
#Create resource
cos=ibm_boto3.resource("s3",
ibm_api_key_id=COS_API_KEY_ID,
ibm_service_instance_id=COS_RESOURCE_CRN,
ibm_auth_endpoint=COS_AUTH_ENDPOINT,
config=Config(signature_version="oauth"),
endpoint_url=COS_ENDPOINT
                    )
def multi_part_upload(bucket_name, item_name, file_path) :
  try:
       print("Starting file transfer for {0} to bucket: {1}\n" .
       format(item_name, bucket_name))
       #set 5 MB chunks
       part_size = 1024*1024 * 5
```

Activate Windows

Go to Settings to activate Window

PY CODE.py - C:\python\Python37\PY CODE.py (3.7.4)

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```
        format(item_name, bucket_name))
        #set 5 MB chunks
        part_size = 1024*1024 * 5
        #set threadhold to 15 MB
        file_threshold = 1024 * 1024 * 15
        #set the transfer threshold and chunk size
        transfer_config = ibm_boto3.s3.transfer.TransferConfig(
        multipart_threshold=file_threshold,
        multipart_chunksize=part_size
        )
        # the upload_fileobj method will automatically execute a multi-part upload
        # in 5 MB chunks for all files over 15 MB
        with open(file_path, "rb") as file_data:
            cos.Object(bucket_name, item_name) .upload_fileobj(
            Fileobj=file_data,
            Config=transfer_config
            )
        print("Transfer for {0} Complete!\n". format(item_name))

  except ClientError as be:
          print("CLIENT ERROR: {0}\n" . format(be))
  except Exception as e:
          print("Unable to complete multi-part upload: {0}" .format(e))
def myCommandCallback(cmd) :
        print("Command received: %s" % cmd.data)
        command=cmd.data[ ' command']
        print(command)
        if(command =='lighton'):
           print('lighton')
        elif(command =='lightoff'):
           print('lightoff')
        elif(command =='motoron'):
           print('motoron')
        elif(command =='motoroff') :
           print('motoroff')
myConfig = {
"identity": {
"orgId": "blxckb",
"typeId": "NodeMCU",
"deviceId": "12345"
},
"auth": {
"token": "12345678"
}
}
```


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```
}
}
client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()
database_name = "sample"
my_database = clientdb.create_database(database_name)
if my_database.exists():
  print(f"¹ {database_name} ' successfully created.")
cap=cv2.VideoCapture('garden.mp4')
if(cap.isOpened()== True) :
  print('File opened')
else:
  print('File not found')
while(cap.isOpened()) :
   ret, frame=cap.read()
   gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
   ims = cv2.resize(frame, (960, 540))
   cv2.imwrite('ex.jpg' ,ims)
   with open("ex.jpg", "rb") as f:
      file_bytes = f.read()
   # This is the model ID of a publicly available General model. You may use any other public or custom model ID.
   request = service_pb2.PostModelOutputsRequest(
      model_id='aaa03c23b3724a16a56b629203edc62c',
      inputs=[resources_pb2.Input(data=resources_pb2.Data(image=resources_pb2.Image(base64=file_bytes))
      )])
   response = stub.PostModelOutputs(request, metadata=metadata)
   if response.status.code != status_code_pb2.SUCCESS:
       raise Exception("Request failed, status code: " + str(response.status.code))
   detect=False
   for concept in response.outputs[0] .data.concepts:
     #print('%12s: %.2f¹ % (concept.name, concept.value))
     if(concept.value>0.98):
        #print(concept.name)
        if(concept.name =="animal") :
            print("Alert! Alert! animal detected")
            #playsound.playsound('alarm.wav')
            playsound.playsound('alert.mp3')
            picname=datetime.datetime.now() . strftime("%Y-%m-%d-%H-%M")
            cv2.imwrite(picname+ '.jpg',frame)
            multi_part_upload('kiruthika2001' , picname+ '.jpg' , picname+ '.jpg')
            json_document={"link":COS_ENDPOINT+'/'+'kiruthika2001'+'/'+picname+'.jpg'}
            new_document = my_database.create_document(json_document)
            if new_document.exists():
                print(f"Document successfully created.")
            time.sleep(5)
```


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```
                print(f"Document successfully created.")
            time.sleep(5)
            detect=True
    moist=random.randint(0,100)
    humidity=random.randint(0,100)
    myData={ 'Animal' : detect, 'moisture' :moist, 'humidity':humidity}
    print(myData)
    if(humidity!=None):
         client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
         print("Publish Ok ..")
    client.commandCallback = myCommandCallback
    cv2.imshow('frame ' , ims)
    if cv2.waitKey(1) & 0xFF == ord('q'):
        break
client.disconnect()
cap.release()
cv2.destroyAllWindows()
```


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OUTPUT:

Python 3.7.4 Shell

File Edit Shell Debug Options Window Help

```
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul  8 2019, 20:34:20) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:\python\Python37\PY CODE.py ==========
2022-11-18 23:59:40,332   wiotp.sdk.device.client.DeviceClient  INFO    Connected successfully: d:blxckb:NodeMCU:12345
¹ sample ' successfully created.
File opened
{'Animal': False, 'moisture': 0, 'humidity': 60}
Publish Ok ..
{'Animal': False, 'moisture': 100, 'humidity': 27}
Publish Ok ..
{'Animal': False, 'moisture': 45, 'humidity': 37}
Publish Ok ..
{'Animal': False, 'moisture': 93, 'humidity': 16}
Publish Ok ..
{'Animal': False, 'moisture': 86, 'humidity': 40}
Publish Ok ..
{'Animal': False, 'moisture': 87, 'humidity': 81}
Publish Ok ..
{'Animal': False, 'moisture': 47, 'humidity': 28}
Publish Ok ..
{'Animal': False, 'moisture': 24, 'humidity': 24}
Publish Ok ..
{'Animal': False, 'moisture': 6, 'humidity': 71}
Publish Ok ..
{'Animal': False, 'moisture': 18, 'humidity': 36}
Publish Ok ..
{'Animal': False, 'moisture': 61, 'humidity': 76}
Publish Ok ..
{'Animal': False, 'moisture': 94, 'humidity': 20}
Publish Ok ..
{'Animal': False, 'moisture': 23, 'humidity': 88}
Publish Ok ..
```


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