* 1. What is the application about?

M1C Prison was developed on an idea to help improve the security surveillance implemented at different prisons. This will allow prison officers to monitor the temperature and humidity of different areas of the prison. With the easy website, the security officers can monitor the information of different areas that the 2M1C Prison is implemented.

2M1C Prison have the ability to:

1. Monitor area information of Restricted Area

a. Such as the temperature and humidity

b. If movements is detected the LCD will display a message showing potential outbreak. The Restricted Area tab will also show if there is motion detected or there is a potential outbreak. Light installed at there will also light up upon motion detected.

2. Monitor information area of Guard Room

a. Monitor Authorized access to the guard room with RFID

b. Lock down function, Alert Function

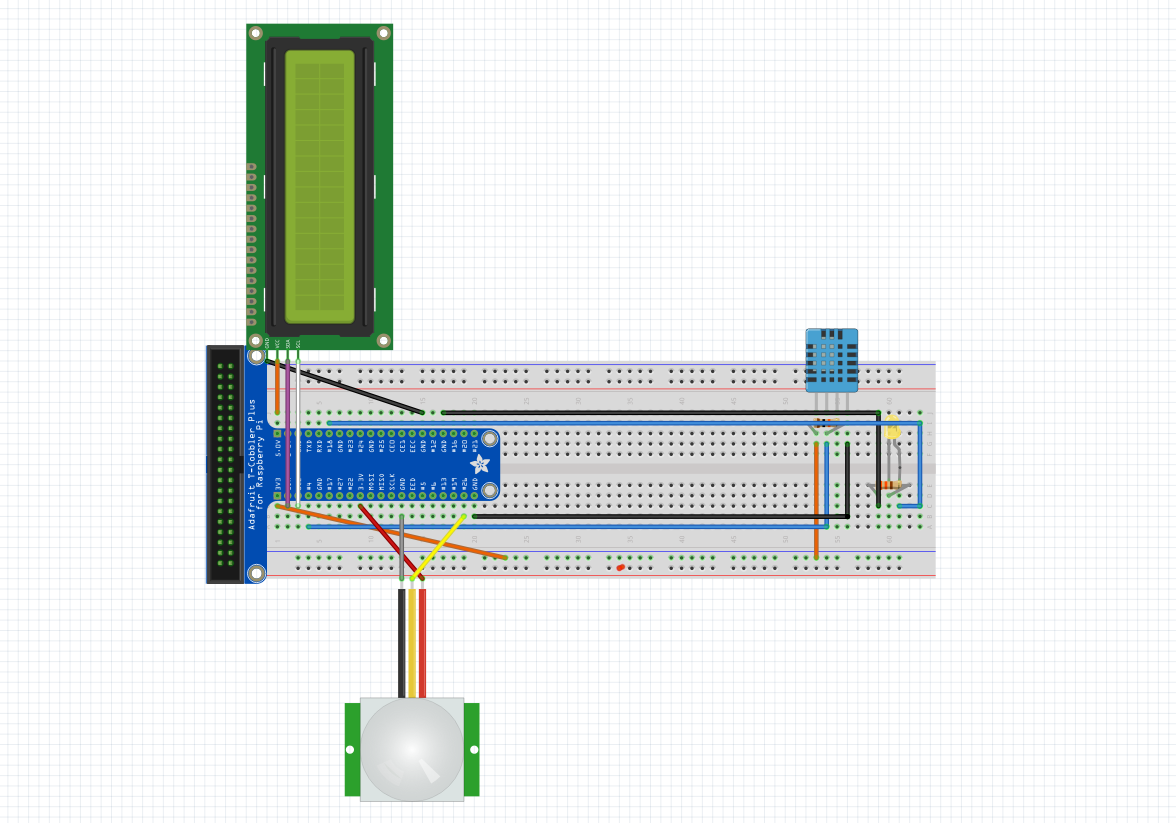
c. Such as the temperature and humidity

3. Monitor information area of Entrance

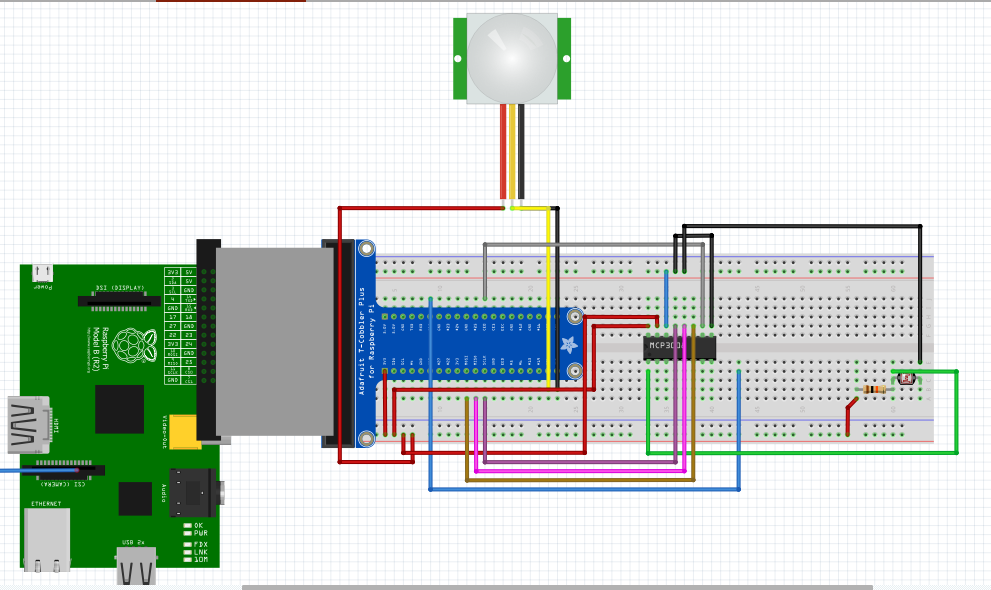
a. Video Recording

b. Send a sms when motion detected when light is below certain value

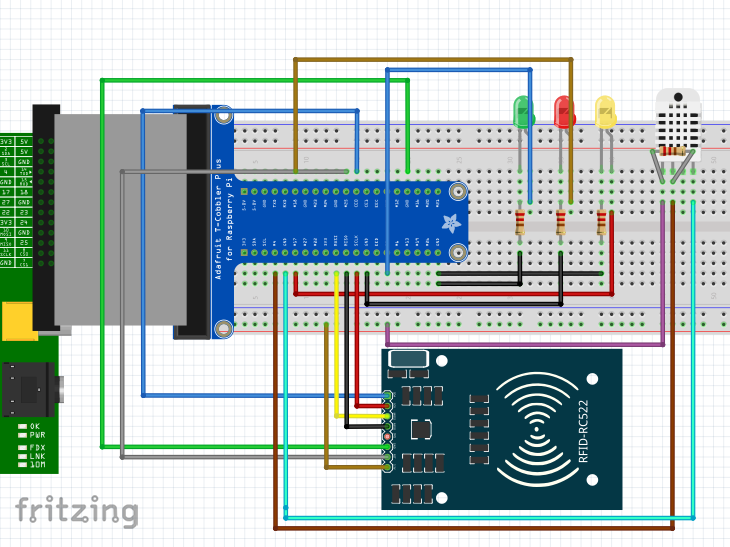
* 1. How does the final RPI set-up looks like?



**Restricted Area Fritzing Diagram**



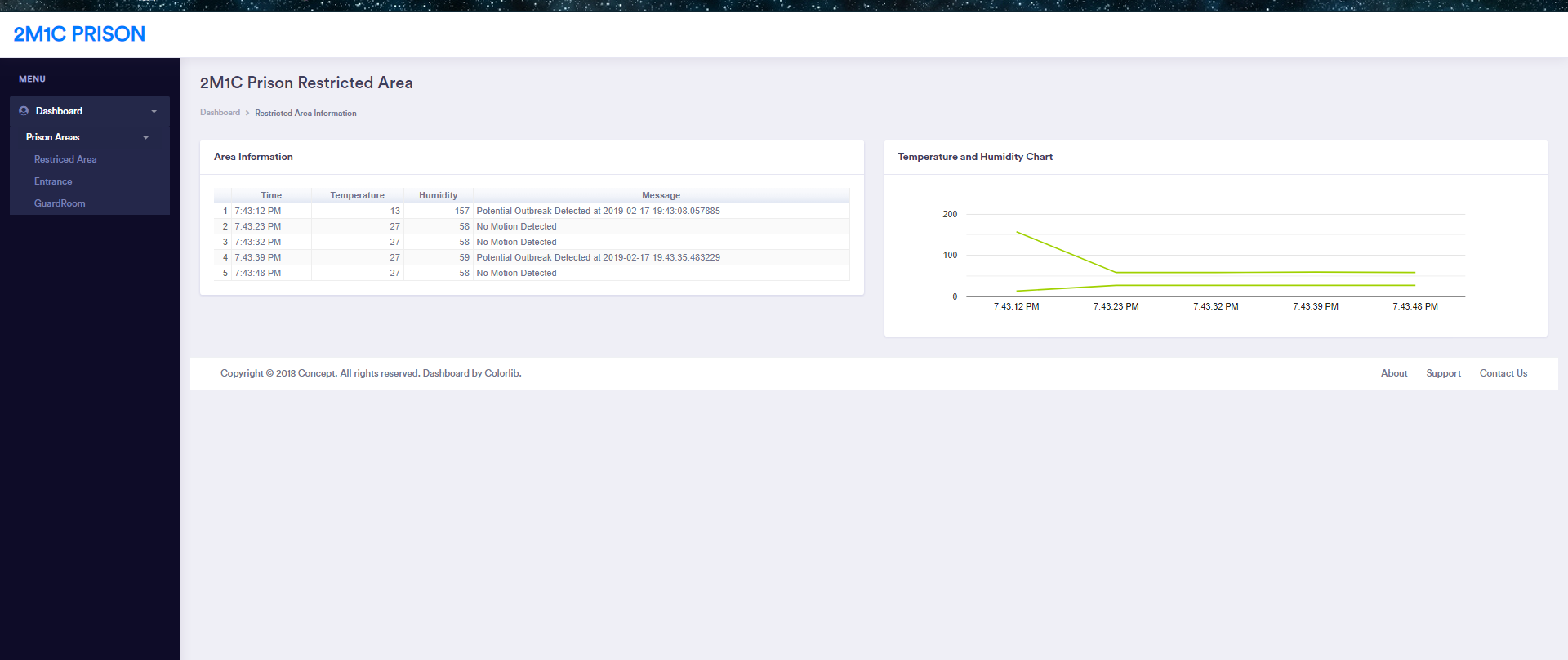
**Entrance Fritzing Diagram**



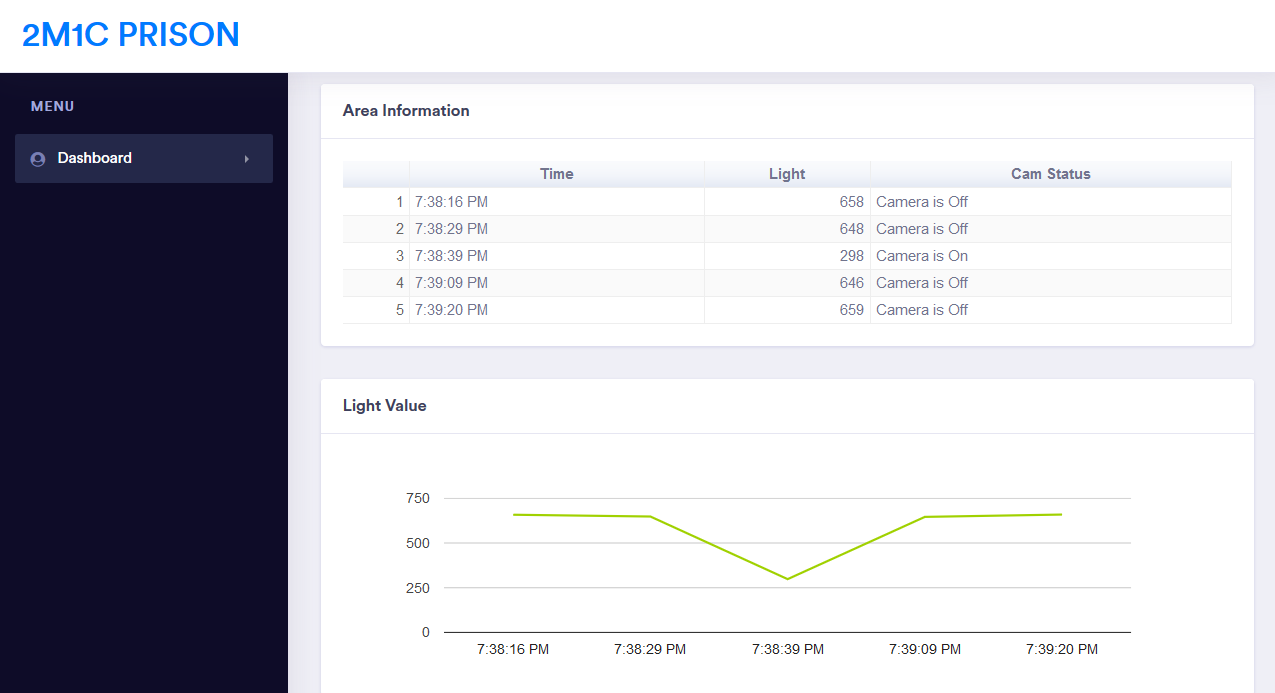
**Guard Room Fritzing Diagram**

* 1. How does the web or mobile application look like?

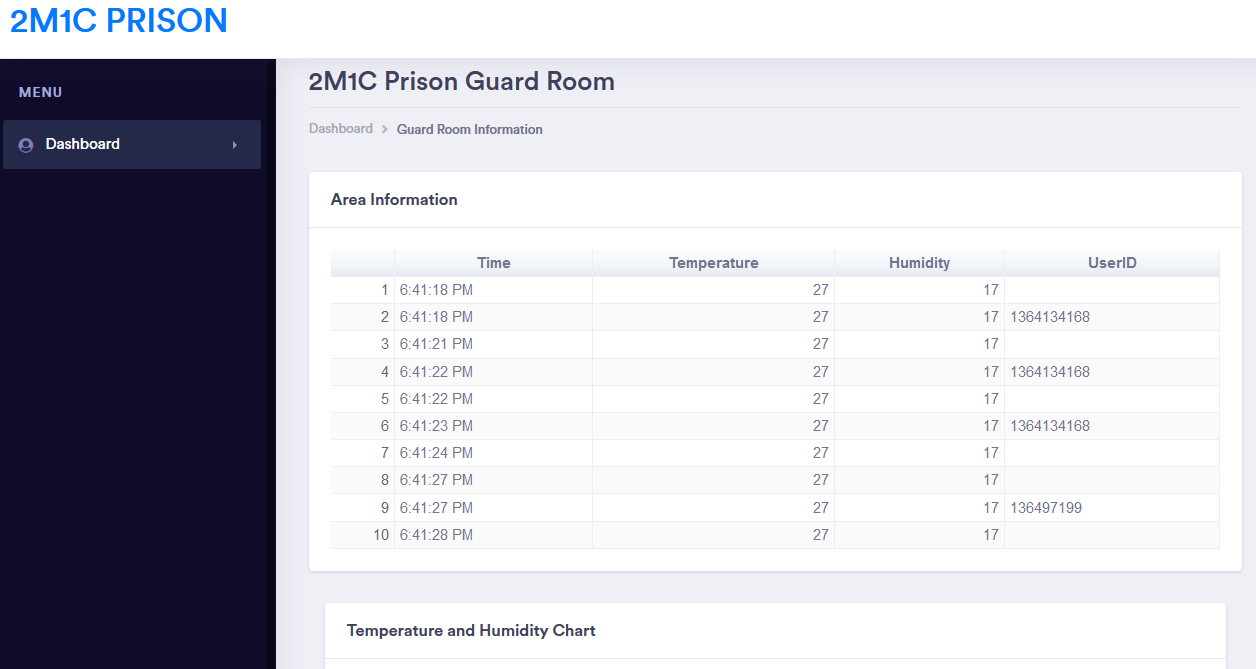
Restricted Area Website Look:



Entrance Website Look:



Guard Room Website Look:



# Section 2 Hardware requirements

Hardware checklist

For this project, we used the following items:

|  |  |
| --- | --- |
| No. of Items | Item Name |
| 50 | Jumper Cables |
| 1 | Pi Cam |
| 2 | DHT11 |
| 4 | LED |
| 1 | RFID Card Reader |
| 3 | RFID Card |
| 1 | LCD Display |
| 3 | Raspberrypi connect to TCobbler and BreadBoard |
| 1 | MCP3008 |
| 2 | Motion Sensor |

# Section 3 Installing necessary libraries

## Install flask and gevent for web server

|  | Task |
| --- | --- |
|  | Install Flask (http://flask.pocoo.org/)  sudo pip install flask |
|  | Install gevent (<http://www.gevent>.org)  sudo pip install gevent |

* 1. Install cloud libraries

|  | Task |
| --- | --- |
|  | sudo pip install AWSIoTPythonSDK  sudo pip install awscli  sudo pip install boto3  sudo pip install paho-mqtt |

* 1. Enable SPI and prepare the MFRC522 libraries

|  | Task | | |
| --- | --- | --- | --- |
| << Enable SPI via raspi-config >> | | | |
|  | | Run raspi-config, choose menu item “5 Interfacing Options” and enable SPI.  sudo rasp-config |  |
| << Enable device tree in boot.txt>> | | | |
|  | Modify the /boot/config.txt to enable SPI  sudo nano /boot/config.txt | | |
|  | Ensure these lines are included in *config.txt*  device\_tree\_param=spi=on  dtoverlay=spi-bcm2835 | | |
|  | **<< Install Python-dev>>** | | |
|  | Install the Python development libraries  sudo apt-get install python-dev | | |
|  | **<< Install SPI-Py Library >>** | | |
|  | Set up the SPI Python libraries since the card reader uses the SPI interface  cd ~  git clone https://github.com/lthiery/SPI-Py.git  cd ~/SPI-Py  sudo python setup.py install | | |
|  | **<< Install RFID library >>** | | |
|  | Clone the MFRC522-python library to your home folder as follows:-  cd ~  git clone https://github.com/mxgxw/MFRC522-python.git | | |

# Section 4

# Register your Raspberry Pi as a Thing

In this section, we created and registered our Raspberry Pi as a “Thing” with AWS.



## Create and register your “Thing”

| No | Task | | |
| --- | --- | --- | --- |
|  | In the left navigation pane, click “Manage” to expand it, then choose “Things”. | |  |
|  | On the page that says “You don't have any things yet”, choose “Register a thing”.  If you have created a thing before, choose Create. |  | |
|  | A thing represents a device whose status or data is stored in the AWS cloud. The Thing Shadows is the state of the device, e.g. is it “on” or “off”, is it “red” or “green” etc.  Our “thing” here is our RPi, so let’s type “MyRaspberryPi” for the name.  Click “Create a single thing” | | |
|  | | | |



## Create Certificates

| No | Task | | | | |
| --- | --- | --- | --- | --- | --- |
|  | After you have completed the previous section, you might be presented with this screen. |  | | | |
|  | Choose “One-click certificate creation” to generate an X.509 certificate and key pair. | | | | |
|  | After a while, you should see the following screen, where there are a total of **four** download links.  For the root CA, you can choose CA 1 |  | | | |
|  | Create a working directory called deviceSDK and download all the 4 files above in this deviceSDK directory, renaming them with friendly names like what I have done. | | |  | |
|  | Next, click the “Activate” button.  Almost immediately, you should see “Successfully activated certificate” and the Activate button changes to “Deactivate” | |  | | |
|  | Click to the next page, and click “Register Thing” | |  | | |
|  | You are brought to this page.  Continue with the next section to attach a security policy to your Thing. | | | |  |

## Create a Security Policy for your RPi

|  | Task | | | |
| --- | --- | --- | --- | --- |
|  | On the left IOT Core dashboard, select Policies under the Secure sub-menu | | |  |
|  | On the next page, choose “Create new policy” | |  | |
|  | On the Create a policy page, key in the following configuration | |  |  | | --- | --- | | **Field** | **Type this in** | | Name | MyRaspberryPiSecurityPolicy | | Action | iot:\* | | Resource ARN | \* | | Allow | Checked | | | |
|  | | | | |
|  | Click “**Create**”.  You now have a Security Policy that allows all access to IOT Core services |  | | |

## Attach Security Policy and Thing to your Cert

In this section, you will attach both your security policy and your Thing to your X.509 certificate

|  | Task | | | | |
| --- | --- | --- | --- | --- | --- |
|  | On the left nav bar, click “Security, Certificates” | | | |  |
|  | The X.509 certificate you created earlier is shown.  Click the checkbox beside it, then click “Actions” button and choose “**Attach Policy**” |  | | | |
|  | Check the “MyRaspberryPiSecurityPolicy” you created earlier and click “**Attach**” button. | |  | | |
|  | Let’s attach the “Thing” to this certificate.  Click “Actions” button and choose “**Attach Thing**” | | |  | |
|  | In the Attach things to certificate(s) dialog box, select the check box next to the thing you created to represent your Raspberry Pi, and then choose Attach | | |  | |

## Copy REST API endpoint of your “Thing”

| No | Task | | |
| --- | --- | --- | --- |
|  | Click “Manage->Things” and choose “MyRaspberryPi”.  On the next screen, choose “Interact” | |  |
|  | Copy and paste the REST API endpoint into a Notepad.  You will need this value later. |  | |

# Section 5 Codes

## Create entrance.py

Create entrance.py and enter the following codes:

|  |
| --- |
| Entrance.py |
| # Import SDK packages  from AWSIoTPythonSDK.MQTTLib import AWSIoTMQTTClient  from gpiozero import MCP3008, MotionSensor, LED  from time import time, sleep  from twilio.rest import Client  import datetime  from picamera import PiCamera  adc = MCP3008(channel=0)  pir = MotionSensor(26, sample\_rate=5,queue\_len=1)  ledRed = LED(5)  camera = PiCamera()  # Twilio----------------------------------------------  account\_sid = "ACd79c4e1721ccf1ac17b0d27ebd7d10d1"  auth\_token = "60b19c5b631ec1b5354b762138a42126"  client = Client(account\_sid, auth\_token)  my\_hp = "+6587540499"  twilio\_hp = "+13168359808"  # Custom MQTT message callback------------------------  def customCallback(client, userdata, message):  print("Received a new message: ")  print(message.payload)  print("from topic: ")  print(message.topic)  print("--------------\n\n")  # AWS Certs-------------------------------------------  host = "abpl27ba00qyj-ats.iot.us-west-2.amazonaws.com"  rootCAPath = "AmazonRootCA1.pem"  certificatePath = "cd5aee883b-certificate.pem.crt"  privateKeyPath = "cd5aee883b-private.pem.key"  my\_rpi = AWSIoTMQTTClient("2M1C-Fawwaz-basicPubSub")  my\_rpi.configureEndpoint(host, 8883)  my\_rpi.configureCredentials(rootCAPath, privateKeyPath, certificatePath)  my\_rpi.configureOfflinePublishQueueing(-1) # Infinite offline Publish queueing  my\_rpi.configureDrainingFrequency(2) # Draining: 2 Hz  my\_rpi.configureConnectDisconnectTimeout(10) # 10 sec  my\_rpi.configureMQTTOperationTimeout(5) # 5 sec  # Connect and subscribe to AWS IoT---------------------  my\_rpi.connect()  my\_rpi.subscribe("2M1C-Fawwaz/entrance/sensors", 1, customCallback)  sleep(5)  # Publish to the same topic in a loop forever----------  loopCount = 0  while True:  light = round(1024-(adc.value\*1024))  motionTrue = "Motion Detected"  motionFalse = "No Motion Detected"  camOn= "Camera is On"  camOff= "Camera is Off"  loopCount = loopCount+1  message = {}  message["deviceid"] = "deviceid\_fawwaz"  today = datetime.datetime.now()  message["datetimeid"] = today.isoformat()  # Send Twilio SMS  old\_time = time()  pir.wait\_for\_motion()  new\_time = time()  # If light value is less than 600, do...  if light < 600:  #If motion is detected..  if new\_time - old\_time > 1:  ledRed.on()  print("Begin video recording!")  camera.start\_recording('/home/pi/Desktop/VidFolder/'+str(today)+'.h264')  camera.wait\_recording(20)  camera.stop\_recording()  print("Video recording ended!")  print("Sending SMS to user\n\n")  sms = "Motion Detected On " + str(today)  SentToMyHP = client.api.account.messages.create(to=my\_hp,from\_=twilio\_hp,body=sms)  message["Light"] = light  message["Motion"] = motionTrue  message["CamStatus"] = camOn  import json  my\_rpi.publish("2M1C-Fawwaz/entrance/sensors", json.dumps(message), 1)  ledRed.off()  sleep(5)  #If no motion....  else:  old\_time = new\_time  pir.wait\_for\_no\_motion()  new\_time = time()  message["Light"] = light  message["Motion"] = motionFalse  message["CamStatus"] = camOn  import json  my\_rpi.publish("2M1C-Fawwaz/entrance/sensors", json.dumps(message), 1)  sleep(5)  #Else...  else:  message["Light"] = light  message["Motion"] = "N/A"  message["CamStatus"] = camOff  import json  my\_rpi.publish("2M1C-Fawwaz/entrance/sensors", json.dumps(message), 1)  sleep(5) |

## Create restricted.py

Create restricted.py and enter the following codes:

|  |
| --- |
| restricted.py |
| # Import SDK packages  from AWSIoTPythonSDK.MQTTLib import AWSIoTMQTTClient  from time import sleep  import Adafruit\_DHT  import sys  from time import time  from gpiozero import MotionSensor  import datetime  pir = MotionSensor(26, sample\_rate=5,queue\_len=1)  #from gpiozero import MCP3008  from twilio.rest import Client  from gpiozero import LED, Button  from rpi\_lcd import LCD #\\ used for lcd  #----------------------------------------------------  #Twilio and LCD  lcd = LCD()  account\_sid = "AC8c11af0109a45b1016069562126dd605"  auth\_token = "38d5f83ab73dc1c75e93a0db9a87d784"  client = Client(account\_sid, auth\_token)  my\_hp = "+6591138883"  twilio\_hp = "+14244002037"  #----------------------------------------------------  led = LED(18)  pin = 4  def customCallback(client, userdata, message):  print("Received a new message: ")  print(message.payload)  print("from topic: ")  print(message.topic)  print("--------------\n\n")    host = "abpl27ba00qyj-ats.iot.us-west-2.amazonaws.com"  rootCAPath = "AmazonRootCA1.pem"  certificatePath = "cd5aee883b-certificate.pem.crt"  privateKeyPath = "cd5aee883b-private.pem.key"  my\_rpi = AWSIoTMQTTClient("2M1C-Fawwaz-basicPubSub")  my\_rpi.configureEndpoint(host, 8883)  my\_rpi.configureCredentials(rootCAPath, privateKeyPath, certificatePath)  my\_rpi.configureOfflinePublishQueueing(-1) # Infinite offline Publish queueing  my\_rpi.configureDrainingFrequency(2) # Draining: 2 Hz  my\_rpi.configureConnectDisconnectTimeout(10) # 10 sec  my\_rpi.configureMQTTOperationTimeout(5) # 5 sec  # Connect and subscribe to AWS IoT  my\_rpi.connect()  my\_rpi.subscribe("2M1C-Fawwaz/RestrictedArea/sensors", 1, customCallback)  my\_rpi.subscribe("2M1C-Fawwaz/RestrictedArea/sensors", 1, customCallback)  my\_rpi.subscribe("2M1C-Fawwaz/RestrictedArea/sensors", 1, customCallback)  sleep(2)  # Publish to the same topic in a loop forever  loopCount = 0  while True:  humidity, temperature = Adafruit\_DHT.read\_retry(11, pin)  my\_rpi.publish("2M1C-Fawwaz/RestrictedArea/sensors", int(temperature), 1)  my\_rpi.publish("2M1C-Fawwaz/RestrictedArea/sensors", int(humidity), 1)  old\_time = time()  pir.wait\_for\_motion()  new\_time = time()  today = datetime.datetime.now()  if new\_time - old\_time > 1:  sms = "Potential Outbreak Detected at " + str(today)  my\_rpi.publish("2M1C-Fawwaz/RestrictedArea/sensors", str(sms), 1)  #sms = "Potential Outbreak Detected at " + str(today) #uncomment this and the bottom when finialize with the codes  message = client.api.account.messages.create(to=my\_hp,from\_=twilio\_hp,body=sms)  led.on()  lcd.text("Potential OutBreak ", 1) #\\will show the temp on the top line  lcd.text('Detected!', 2) #\\ will show the humidity on the second line  sleep(3)  else:  sms = "No Motion Detected"  sleep(3)  loopCount = loopCount+1  message = {}  message1 = {}  message["deviceid"] = "deviceid\_zongbei"  import datetime as datetime  now = datetime.datetime.now()  message["datetimeid"] = now.isoformat()  message["Humidity"] = humidity  message["Temperature"] = temperature  message["Message"] = sms        import json  my\_rpi.publish("2M1C-Fawwaz/RestrictedArea/sensors", json.dumps(message), 1)  my\_rpi.publish("2M1C-Fawwaz/RestrictedArea/sensors", json.dumps(message), 1)  my\_rpi.publish("2M1C-Fawwaz/RestrictedArea/sensors", json.dumps(message), 1)        #light = round(1024-(adc.value\*1024))  # my\_rpi.publish("sensors/light", str(light), 1)  # sleep(5) |

## Create guard.py

Create guard.py and enter the following codes:

|  |
| --- |
| guard.py |
| # Import SDK packages  from AWSIoTPythonSDK.MQTTLib import AWSIoTMQTTClient  from time import sleep  import Adafruit\_DHT  import sys  import MFRC522  #from gpiozero import MCP3008  #adc = MCP3008(channel=0)  MIFAREReader = MFRC522.MFRC522()  pin = 4  # Custom MQTT message callback  def customCallback(client, userdata, message):  print("Received a new message: ")  print(message.payload)  print("from topic: ")  print(message.topic)  print("--------------\n\n")  host = "abpl27ba00qyj-ats.iot.us-west-2.amazonaws.com"  rootCAPath = "AmazonRootCA1.pem"  certificatePath = "cd5aee883b-certificate.pem.crt"  privateKeyPath = "cd5aee883b-private.pem.key"  my\_rpi = AWSIoTMQTTClient("2M1C-Fawwaz-basicPubSub")  my\_rpi.configureEndpoint(host, 8883)  my\_rpi.configureCredentials(rootCAPath, privateKeyPath, certificatePath)  my\_rpi.configureOfflinePublishQueueing(-1) # Infinite offline Publish queueing  my\_rpi.configureDrainingFrequency(2) # Draining: 2 Hz  my\_rpi.configureConnectDisconnectTimeout(10) # 10 sec  my\_rpi.configureMQTTOperationTimeout(5) # 5 sec  # Connect and subscribe to AWS IoT  my\_rpi.connect()  my\_rpi.subscribe("2M1C-Fawwaz/guardroom/sensors", 1, customCallback)  my\_rpi.subscribe("2M1C-Fawwaz/guardroom/sensors", 1, customCallback)  my\_rpi.subscribe("2M1C-Fawwaz/guardroom/sensors", 1, customCallback)  sleep(2)  # Publish to the same topic in a loop forever  loopCount = 0  #int humidity=0  #int temperature=0  while True:  humidity, temperature = Adafruit\_DHT.read\_retry(11, pin)  (status,TagType) = MIFAREReader.MFRC522\_Request(MIFAREReader.PICC\_REQIDL)  (status,uid) = MIFAREReader.MFRC522\_Anticoll()  userid = " "  if status == MIFAREReader.MI\_OK:  (userid) = str(uid[0])+str(uid[1])+str(uid[2])+str(uid[3])  print("UID:"+userid )  if userid ==" ":  userid = "0"  my\_rpi.publish("2M1C-Fawwaz/guardroom/sensors", int(temperature), 1)  my\_rpi.publish("2M1C-Fawwaz/guardroom/sensors", int(humidity), 1)  my\_rpi.publish("2M1C-Fawwaz/guardroom/sensors", str(userid), 1)  loopCount = loopCount+1  message = {}  #message1= {}  #message1 = {}  message["deviceid"] = "deviceid\_shakir"  import datetime as datetime  now = datetime.datetime.now()  message["datetimeid"] = now.isoformat()  message["Temperature"] = temperature  message["Humidity"] = humidity  message["User ID"] = userid  import json  my\_rpi.publish("2M1C-Fawwaz/guardroom/sensors", json.dumps(message), 1)  my\_rpi.publish("2M1C-Fawwaz/guardroom/sensors", json.dumps(message), 1)  my\_rpi.publish("2M1C-Fawwaz/guardroom/sensors", json.dumps(message), 1)  #light = round(1024-(adc.value\*1024))  # my\_rpi.publish("sensors/light", str(light), 1)  # sleep(5) |

# Section 6

# DynamoDB

In this section, we will learn how to transfer data from AWS to DynamoDB NoSQL database.

## Create an DynamoDB table

| No | Task |
| --- | --- |
|  | Open the Amazon DynamoDB console and click “Create Table” |
|  | Create the table using the attributes as shown below |

## Create rule to store MQTT message to DB

In this step, you will create and configure a rule to send the data received from a device to the AWS DynamoDB table you created in Step A of this section

| No | Task | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  | In the AWS IoT console, in the left navigation pane, choose “Act”, then “Create a rule” | | | | |  |
|  | On the Create a rule page, in the Name field, type a name for your rule. In the Description field, type a description for the rule. | | |  | | |
|  | Scroll down to Message source. Choose the latest version from the Using SQL version drop-down list. In the Attribute field, type \*. This specifies that you want to send the entire MQTT message that triggered the rule. |  | | | | |
|  | The rules engine uses the topic filter to determine which rules to trigger when an MQTT message is received.  In the Topic filter field, type “sensors/light”  Leave the condition blank |  | | | | |
|  | In Set one or more actions, choose Add action. | | | |  | |
|  | On the Select an action page, select the action below. Next, choose Configure action. | | | | | |
|  | On the Configure action page, from the SNS target drop-down list, choose the DynamoDB table you created earlier. | |  | | | |
|  | If you are using a **AWS Paid account**, go ahead and click “Create a new role”. Then select the newly created role and click “Update role”. For example, I have used my Paid Account to create a new role named “dynamodb\_role” and chosen it.  If you are using a **AWS Educate account**, you will not be able to create a new role. Instead, just choose the one you created in Section 8 Step A (iotlab11role) from the drop-down list and click “Update Role” | | | | | |
|  | Click “Create” at the bottom right hand side of the screen. | | | | | |
|  | The previous action brings you back to the “Create a Rule” page.  Click “Create Rule” at the bottom right hand side of the screen to finalise the steps in this section | | | | | |

## Test the AWS IoT Rule

| No | Task |
| --- | --- |
|  | Run the aws\_pubsub\_edited.py  sudo python aws\_pubsub\_edited.py |
|  | Go back to the DynamoDB table and click on the iotdata table you created in Step A. Click on the “Items” tab |
|  | After a while, the light sensor values you send from the aws\_pubsub\_edited.py program should be stored in the DynamoDB as shown |

# Section 7

# Get Data

## Install AWS CLI on Raspberry Pi

| No | Task |
| --- | --- |
|  | Type the following command to install the AWS Command-Line Interface Client on your Raspberry Pi  sudo pip install awscli |



## AWS Configure

Get ready your AWS Access key and Secret Access key as follows:-

| No | Task |
| --- | --- |
|  | On your Raspberry Pi, navigate to the directory where your Python code will be stored  cd ~/labs/p12 |
|  | Type the following command in your Raspberry Pi terminal so that you can use the AWS CLI to configure your credentials file:  aws configure |
|  | Enter your Access Key ID and Secret Access Key |

# Section 8

# DynamoDB

In this section, you will write a Python module that is capable of querying data from DynamoDB.

## Dynamodb.py files

|  | Task |
| --- | --- |
|  | Create the following file in your laptop and then use Filezilla to transfer it to the **~/labs/p12** folder on your RPI. |
| |  | | --- | | **Dynamodb1.py** | | def get\_data\_from\_dynamodb():  try:  import boto3  from boto3.dynamodb.conditions import Key, Attr  dynamodb = boto3.resource('dynamodb', region\_name='us-west-2')  table = dynamodb.Table('2M1C-Fawwaz-GuardRoom')  startdate = '2019-02-17T'  response = table.query(  KeyConditionExpression=Key('deviceid').eq('deviceid\_shakir') & Key('datetimeid').begins\_with(startdate),  ScanIndexForward=False  )  items = response['Items']  n=10 # limit to last 10 items  data = items[:n]  data\_reversed = data[::-1]  return data\_reversed  except:  import sys  print(sys.exc\_info()[0])  print(sys.exc\_info()[1])  if \_\_name\_\_ == "\_\_main\_\_":  query\_data\_from\_dynamodb()  query\_data\_from\_dynamodb() | |  | | |  | | --- | | **Dynamodb2.py** | | def get\_data\_from\_dynamodb():  try:  import boto3  from boto3.dynamodb.conditions import Key, Attr  dynamodb = boto3.resource('dynamodb', region\_name='us-west-2')  table = dynamodb.Table('2M1C-Fawwaz-RestrictedArea')  startdate = '2019-01-16T'  response = table.query(  KeyConditionExpression=Key('deviceid').eq('deviceid\_zongbei'),  ScanIndexForward=False  )  items = response['Items']  n=5 # limit to last 10 items  data = items[:n]  data\_reversed = data[::-1]  return data\_reversed  except:  import sys  print(sys.exc\_info()[0])  print(sys.exc\_info()[1])  if \_\_name\_\_ == "\_\_main\_\_":  query\_data\_from\_dynamodb() | | |  | | |  | | --- | | **Dynamodb3.py** | | def get\_data\_from\_dynamodb():  try:  import boto3  from boto3.dynamodb.conditions import Key, Attr  dynamodb = boto3.resource('dynamodb', region\_name='us-west-2')  table = dynamodb.Table('2M1C-Fawwaz-Entrance')  startdate = '2019-02-17T'  response = table.query(  KeyConditionExpression=Key('deviceid').eq('deviceid\_fawwaz'),  ScanIndexForward=False  )  items = response['Items']  n=10 # limit to last 10 items  data = items[:n]  data\_reversed = data[::-1]  return data\_reversed  except:  import sys  print(sys.exc\_info()[0])  print(sys.exc\_info()[1])  if \_\_name\_\_ == "\_\_main\_\_":  query\_data\_from\_dynamodb()  query\_data\_from\_dynamodb() | | | |

## Jsonconverter.py

|  | Task |
| --- | --- |
|  | Create the following file in your laptop and then use Filezilla to transfer it to the **~/labs/p12** folder on your RPI. |
| |  | | --- | | **jsonconverter.py** | | from decimal import Decimal  import json  import datetime  import numpy  class GenericEncoder(json.JSONEncoder):    def default(self, obj):  if isinstance(obj, numpy.generic):  return numpy.asscalar(obj)  elif isinstance(obj, Decimal):  return str(obj)  elif isinstance(obj, datetime.datetime):  return obj.strftime('%Y-%m-%d %H:%M:%S')  elif isinstance(obj, Decimal):  return float(obj)  else:  return json.JSONEncoder.default(self, obj)  def data\_to\_json(data):  json\_data = json.dumps(data,cls=GenericEncoder)  print(json\_data)  return json\_data | | |

# Section 9

# Configure Flask

In this section, you will code a Flask web server that contains an API to retrieve the latest 10 records from DynamoDB. The webserver will use the API to display a line chart of these 10 records using Google Charts (similar to Lab 7).

## Server.py

|  | Task |
| --- | --- |
|  | Create the following file in your laptop and then use Filezilla to transfer it to the **~/labs/p12** folder in your RPI |
| |  | | --- | | **server.py** | | from flask import Flask, render\_template, jsonify,request  app = Flask(\_\_name\_\_)  import sys  import dynamodb1  import dynamodb2  import dynamodb3  import jsonconverter as jsonc  from gpiozero import LED  Led1 = LED (18)  Led2 = LED (5)  Led3 = LED (17)  #===========================================================================================================================  def led1On():  Led1.blink()  return "Entrance Red has been turned On"  def led1Off():  Led1.off()  return "Entrance Red has been turned Off"    def led2On():  Led2.on()  return "Wide Light has been turned On"  def led2Off():  Led2.off()  return "Wide Light has been turned Off"  def led3On():  Led3.on()  return "Lockdown has been turned On"  def led3Off():  Led3.off()  return "Lockdown has been turned Off"    def ledStatus():  if led.is\_lit:  return 'On'  else:  return 'Off'  #===========================================================================================================================  @app.route("/api/getdata1",methods=['POST','GET'])  def apidata\_getdata1():  if request.method == 'POST' or request.method == 'GET':  try:  data = {'chart\_data': jsonc.data\_to\_json(dynamodb1.get\_data\_from\_dynamodb()), 'title': "IOT Data"}  return jsonify(data)  except:  import sys  print(sys.exc\_info()[0])  print(sys.exc\_info()[1])  @app.route("/api/getdata2",methods=['POST','GET'])  def apidata\_getdata2():  if request.method == 'POST' or request.method == 'GET':  try:  data = {'chart\_data': jsonc.data\_to\_json(dynamodb2.get\_data\_from\_dynamodb()), 'title': "IOT Data"}  return jsonify(data)  except:  import sys  print(sys.exc\_info()[0])  print(sys.exc\_info()[1])  @app.route("/api/getdata3",methods=['POST','GET'])  def apidata\_getdata3():  if request.method == 'POST' or request.method == 'GET':  try:  data = {'chart\_data': jsonc.data\_to\_json(dynamodb3.get\_data\_from\_dynamodb()), 'title': "IOT Data"}  return jsonify(data)  except:  import sys  print(sys.exc\_info()[0])  print(sys.exc\_info()[1])  @app.route("/")  def home():  return render\_template("index.html")  @app.route("/RestrictedArea")  def RestrictedArea():  return render\_template("RestrictedArea.html")  @app.route("/GuardRoom")  def GuardRoom():  return render\_template("GuardRoom.html")  @app.route("/Entrance")  def Entrance():  return render\_template("Entrance.html")    #===========================================================================================================================  #Entrance LED Related  @app.route("/readLED/")  def readPin():  response = ledStatus()  templateData = {  'title' : 'Status of LED: ',  'response' : response  }  return render\_template('pin.html', \*\*templateData)    #Entrance LED Related  @app.route("/writeLED1/<status>")  def writePin1(status):  if status == 'On':  response = led1On()  else:  response = led1Off()  templateData = {  'title' : 'Status of LED',  'response' : response  }  return render\_template('pin.html', \*\*templateData)  #Entrance LED Related  @app.route("/writeLED2/<status>")  def writePin2(status):  if status == 'On':  response = led2On()  else:  response = led2Off()  templateData = {  'title' : 'Status of LED',  'response' : response  }    return render\_template('pin.html', \*\*templateData)  #GuardRoom LED Related  @app.route("/writeLED3/<status>")  def writePin3(status):  if status == 'On':  response = led3On()  else:  response = led3Off()  templateData = {  'title' : 'Status of LED',  'response' : response  }  return render\_template('pin.html', \*\*templateData)  if status == 'On':  response = led4On()  else:  response = led4Off()  templateData = {  'title' : 'Status of LED',  'response' : response  }    return render\_template('pin.html', \*\*templateData)  #===========================================================================================================================  app.run(debug=True,host="0.0.0.0") | | |

## Index.html

|  | Task |
| --- | --- |
|  | Create the following file in your laptop and then use Filezilla to transfer it to the **~/labs/p12/templates** folder in your RPI |
| |  | | --- | | **index.html** | | <!-- Done BY P1646096 Koh Zong Bei -->  <!doctype html>  <html lang="en">    <head>  <!-- Required meta tags -->  <meta charset="utf-8">  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">  <!-- Bootstrap CSS -->  <link rel="stylesheet" href="static/assets/vendor/bootstrap/css/bootstrap.min.css">  <link href="static/assets/vendor/fonts/circular-std/style.css" rel="stylesheet">  <link rel="stylesheet" href="static/assets/libs/css/style.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/fontawesome/css/fontawesome-all.css">  <link rel="stylesheet" href="static/assets/vendor/charts/chartist-bundle/chartist.css">  <link rel="stylesheet" href="static/assets/vendor/charts/morris-bundle/morris.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/material-design-iconic-font/css/materialdesignicons.min.css">  <link rel="stylesheet" href="static/assets/vendor/charts/c3charts/c3.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/flag-icon-css/flag-icon.min.css">  <title>2M1C Prison Restricted Area</title>  <!--Load Google Chart stuffs-->  <body>  <!-- ============================================================== -->  <!-- main wrapper -->  <!-- ============================================================== -->  <div class="dashboard-main-wrapper">  <!-- ============================================================== -->  <!-- navbar -->  <!-- ============================================================== -->  <div class="dashboard-header">  <nav class="navbar navbar-expand-lg bg-white fixed-top">  <a class="navbar-brand" href="/">2M1C Prison </a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse " id="navbarSupportedContent">  <ul class="navbar-nav ml-auto navbar-right-top">    </ul>  </div>  </nav>  </div>  <!-- ============================================================== -->  <!-- end navbar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- left sidebar -->  <!-- ============================================================== -->  <!----> <div class="nav-left-sidebar sidebar-dark">  <div class="menu-list">  <nav class="navbar navbar-expand-lg navbar-light">  <a class="d-xl-none d-lg-none" href="#">Dashboard</a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarNav" aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse" id="navbarNav">  <ul class="navbar-nav flex-column">  <li class="nav-divider">  Menu  </li>  <li class="nav-item ">  <a class="nav-link active" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1" aria-controls="submenu-1"><i class="fa fa-fw fa-user-circle"></i>Dashboard <span class="badge badge-success">6</span></a>  <div id="submenu-1" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1-2" aria-controls="submenu-1-2">Prison Areas</a>  <div id="submenu-1-2" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="RestrictedArea">Restriced Area</a>  </li>  <li class="nav-item">  <a class="nav-link" href="Entrance">Entrance</a>  </li>  <li class="nav-item">  <a class="nav-link" href="GuardRoom">Guard Room</a>  </li>      </ul>  </div>  </li>    </li>  </ul>  </div>  </nav>  </div>  </div>  <!-- ============================================================== -->  <!-- end left sidebar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- wrapper -->  <!-- ============================================================== -->  <div class="dashboard-wrapper">  <div class="dashboard-ecommerce">  <div class="container-fluid dashboard-content ">  <!-- ============================================================== -->  <!-- pageheader -->  <!-- ============================================================== -->  <div class="row">  <div class="col-xl-12 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="page-header">  <h2 class="pageheader-title">2M1C Prison Home Page </h2>  <p class="pageheader-text">Nulla euismod urna eros, sit amet scelerisque torton lectus vel mauris facilisis faucibus at enim quis massa lobortis rutrum.</p>  <div class="page-breadcrumb">  <nav aria-label="breadcrumb">  <ol class="breadcrumb">  <li class="breadcrumb-item"><a href="#" class="breadcrumb-link">Dashboard</a></li>  <li class="breadcrumb-item active" aria-current="page">Home Page</li>  </ol>  </nav>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end pageheader -->  <!-- ============================================================== -->      <h2 class="text-muted">Welcome </h5>    <h5 class="text-muted" > To view the information of different area please use the navigation bar on the left! </h5>            <!-- footer -->  <!-- ============================================================== -->  <div class="footer">  <div class="container-fluid">  <div class="row">  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  Copyright © 2018 Concept. All rights reserved. Dashboard by <a href="https://colorlib.com/wp/">Colorlib</a>.  </div>  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  <div class="text-md-right footer-links d-none d-sm-block">  <a href="javascript: void(0);">About</a>  <a href="javascript: void(0);">Support</a>  <a href="javascript: void(0);">Contact Us</a>  </div>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end footer -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end wrapper -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end main wrapper -->  <!-- ============================================================== -->  <!-- Optional JavaScript -->  <!-- jquery 3.3.1 -->  <script src="static/assets/vendor/jquery/jquery-3.3.1.min.js"></script>  <!-- bootstap bundle js -->  <script src="static/assets/vendor/bootstrap/js/bootstrap.bundle.js"></script>  <!-- slimscroll js -->  <script src="static/assets/vendor/slimscroll/jquery.slimscroll.js"></script>  <!-- main js -->  <script src="static/assets/libs/js/main-js.js"></script>  <!-- chart chartist js -->  <script src="static/assets/vendor/charts/chartist-bundle/chartist.min.js"></script>  <!-- sparkline js -->  <script src="static/assets/vendor/charts/sparkline/jquery.sparkline.js"></script>  <!-- morris js -->  <script src="static/assets/vendor/charts/morris-bundle/raphael.min.js"></script>  <script src="static/assets/vendor/charts/morris-bundle/morris.js"></script>  <!-- chart c3 js -->  <script src="static/assets/vendor/charts/c3charts/c3.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/d3-5.4.0.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/C3chartjs.js"></script>  <script src="static/assets/libs/js/dashboard-ecommerce.js"></script>  </body>    </html> | | |

## Entrance.html

|  | Task |
| --- | --- |
|  | Create the following file in your laptop and then use Filezilla to transfer it to the **~/labs/p12** folder in your RPI |
| |  | | --- | | **Entrance.html** | | <!doctype html>  <html lang="en">    <head>  <!-- Required meta tags -->  <meta charset="utf-8">  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">  <!-- Bootstrap CSS -->  <link rel="stylesheet" href="static/assets/vendor/bootstrap/css/bootstrap.min.css">  <link href="static/assets/vendor/fonts/circular-std/style.css" rel="stylesheet">  <link rel="stylesheet" href="static/assets/libs/css/style.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/fontawesome/css/fontawesome-all.css">  <link rel="stylesheet" href="static/assets/vendor/charts/chartist-bundle/chartist.css">  <link rel="stylesheet" href="static/assets/vendor/charts/morris-bundle/morris.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/material-design-iconic-font/css/materialdesignicons.min.css">  <link rel="stylesheet" href="static/assets/vendor/charts/c3charts/c3.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/flag-icon-css/flag-icon.min.css">  <link href="index1.html">  <link href="index2.html">  <title>2M1C Prison Entrance</title>  <script type="text/javascript" src="https://code.jquery.com/jquery-3.2.1.js"></script>  <script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>  <script type="text/javascript">  google.charts.load('current', {'packages':['corechart','table']});  // Set a callback to run when the Google Visualization API is loaded.  google.charts.setOnLoadCallback(googlecharts\_is\_ready);  var chart;  var graphdata;  function reset\_status\_messages(){  $("#status").html("")  }  function googlecharts\_is\_ready(){  $("#buttonloadchart").show()  $("#buttonloadchart").click()  $("#status").html("Google charts is ready")  }  function loadChart(){  getData\_and\_drawChart()  }  function getData\_and\_drawChart(){  getNewData()  }  function getNewData(){  $("#status").html("Fetching data to plot graph...");  jQuery.ajax({  url: "/api/getdata3" ,  type: 'POST',  error: function(jqXHR,textStatus, errorThrown ){  console.log("Error while ajax:" + textStatus)  },  success: function(ndata, textStatus, xhr){  //console.log(ndata)    //console.log(ndata.chart\_data)  $("#status").html("Data fetched! Now plotting graph!");  chartdata = ndata.chart\_data  graphdata = createDataTable(chartdata)  graphdata1 = createDataTable1(chartdata)  drawLineChart(graphdata1)  drawDataTable(graphdata)  $("#status").html("Graph plotted");  }//end success  });//end ajax  } //end getNewData  function createDataTable(newdata){  graphdata = new google.visualization.DataTable();  graphdata.addColumn('string', 'Time');  graphdata.addColumn('number', 'Light');  graphdata.addColumn('string', 'Cam Status');  var newdata = JSON.parse(newdata);    for (index=0;index<newdata.length;index++){    datetime = (newdata[index].datetimeid)  datetime = datetime.substring(0, 19) //+ "+0000"  jsdatetime = new Date(Date.parse(datetime));  jstime = jsdatetime.toLocaleTimeString();  light = parseInt(newdata[index].Light);  cam = (newdata[index].CamStatus);  graphdata.addRows([[jstime,light,cam]]);  }//end for  return graphdata  }    // New Added codes to try get the string to work    function createDataTable1(newdata){  graphdata1 = new google.visualization.DataTable();  graphdata1.addColumn('string', 'Time');  graphdata1.addColumn('number', 'Light');  // graphdata.addColumn('string', 'Message');  var newdata = JSON.parse(newdata);    for (index=0;index<newdata.length;index++){    datetime = (newdata[index].datetimeid)  datetime = datetime.substring(0, 19) //+ "+0000"  jsdatetime = new Date(Date.parse(datetime));  jstime = jsdatetime.toLocaleTimeString();  light = parseInt(newdata[index].Light);  graphdata1.addRows([[jstime,light]]);  }//end for  return graphdata1  }    function drawDataTable(graphdata){  var table = new google.visualization.Table(document.getElementById('table\_div'));  table.draw(graphdata, {showRowNumber: true, width: '100%', height: '100%'});    }//end drawTable  function drawLineChart(graphdata1) {  chart = new google.visualization.LineChart(  document.getElementById('chart\_div'));  chart.draw(graphdata1, {legend: 'none', vAxis: {baseline: 0},  colors: ['#A0D100']});  return  } //end drawChart  $(document).ready(function(){  reset\_status\_messages()  setInterval(function () {  loadChart()  }, 3000);  });    //===========================================================================================================================  function turnon1(){  $.ajax({url: "writeLED1/On",  success: function(result){  $("#reply").html(result);  }  })  }      function turnoff1(){  $.ajax({url: "writeLED1/Off",  success: function(result){  $("#reply").html(result);  }  })  }    $(document).ready(function(){  $("#b1").click(function(){  turnon1();  });  $("#b2").click(function(){  turnoff1();  });  });    //===========================================================================================================================  function turnon2(){  $.ajax({url: "writeLED2/On",  success: function(result){  $("#reply2").html(result);  }  })  }      function turnoff2(){  $.ajax({url: "writeLED2/Off",  success: function(result){  $("#reply2").html(result);  }  })  }    $(document).ready(function(){  $("#b3").click(function(){  turnon2();  });  $("#b4").click(function(){  turnoff2();  });  });    //===========================================================================================================================  </script>  </head>  <body>  <!-- ============================================================== -->  <!-- main wrapper -->  <!-- ============================================================== -->  <div class="dashboard-main-wrapper">  <!-- ============================================================== -->  <!-- navbar -->  <!-- ============================================================== -->  <div class="dashboard-header">  <nav class="navbar navbar-expand-lg bg-white fixed-top">  <a class="navbar-brand" href="/">2M1C Prison </a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse " id="navbarSupportedContent">  <ul class="navbar-nav ml-auto navbar-right-top">    </ul>  </div>  </nav>  </div>  <!-- ============================================================== -->  <!-- end navbar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- left sidebar -->  <!-- ============================================================== -->  <!----> <div class="nav-left-sidebar sidebar-dark">  <div class="menu-list">  <nav class="navbar navbar-expand-lg navbar-light">  <a class="d-xl-none d-lg-none" href="#">Dashboard</a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarNav" aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse" id="navbarNav">  <ul class="navbar-nav flex-column">  <li class="nav-divider">  Menu  </li>  <li class="nav-item ">  <a class="nav-link active" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1" aria-controls="submenu-1"><i class="fa fa-fw fa-user-circle"></i>Dashboard <span class="badge badge-success">6</span></a>  <div id="submenu-1" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1-2" aria-controls="submenu-1-2">Prison Areas</a>  <div id="submenu-1-2" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="RestrictedArea">Restriced Area</a>  </li>  <li class="nav-item">  <a class="nav-link" href="Entrance">Entrance</a>  </li>  <li class="nav-item">  <a class="nav-link" href="GuardRoom">GuardRoom</a>  </li>      </ul>  </div>  </li>    </li>  </ul>  </div>  </nav>  </div>  </div>  <!-- ============================================================== -->  <!-- end left sidebar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- wrapper -->  <!-- ============================================================== -->  <div class="dashboard-wrapper">  <div class="dashboard-ecommerce">  <div class="container-fluid dashboard-content ">  <!-- ============================================================== -->  <!-- pageheader -->  <!-- ============================================================== -->  <div class="row">  <div class="col-xl-12 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="page-header">  <h2 class="pageheader-title">2M1C Prison Entrance </h2>  <p class="pageheader-text">Nulla euismod urna eros, sit amet scelerisque torton lectus vel mauris facilisis faucibus at enim quis massa lobortis rutrum.</p>  <div class="page-breadcrumb">  <nav aria-label="breadcrumb">  <ol class="breadcrumb">  <li class="breadcrumb-item"><a href="#" class="breadcrumb-link">Dashboard</a></li>  <li class="breadcrumb-item active" aria-current="page">Entrance Information</li>  </ol>  </nav>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end pageheader -->  <!-- ============================================================== -->  <div class="ecommerce-widget">    <div class="row">    <div class="col-xl-6 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="card">  <div class="card-header">  <!-- <div class="float-right">  <select class="custom-select">  <option selected>Today</option>  <option value="1">Weekly</option>  <option value="2">Monthly</option>  <option value="3">Yearly</option>  </select>  </div> -->  <h5 class="mb-0"> Area Information </h5>  </div>  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div id="table\_div"></div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- ============================================================== -->    <div class="col-xl-6 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="card">  <div class="card-header">  <!-- <div class="float-right">  <select class="custom-select">  <option selected>Today</option>  <option value="1">Weekly</option>  <option value="2">Monthly</option>  <option value="3">Yearly</option>  </select>  </div> -->  <h5 class="mb-0"> Light Value </h5>  </div>  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div id="chart\_div"></div>  </div>  </div>  </div>      <div class="col-xl-6 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="card">  <div class="card-header">  <!-- <div class="float-right">  <select class="custom-select">  <option selected>Today</option>  <option value="1">Weekly</option>  <option value="2">Monthly</option>  <option value="3">Yearly</option>  </select>  </div> -->  <h5 class="mb-0"> Light Control </h5>  </div>  </div>  </div>    <div class="card">  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div class= "buttonwrapper" style= "text-align: center; ">  <h4>Alert Light</h4>  <button id="b1">Turn on</button>  <button id="b2">Turn off</button>  <div id="reply"></div>  </div>    <div class= "buttonwrapper" style= "text-align: center; ">  <h4>Wide Light</h4>  <button id="b3">Turn on</button>  <button id="b4">Turn off</button>  <div id="reply2"></div>  </div>  </div>  </div>    <!-- ============================================================== -->  <!-- end product sales -->  <!-- ============================================================== -->    <!-- footer -->  <!-- ============================================================== -->  <div class="footer">  <div class="container-fluid">  <div class="row">  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  Copyright © 2018 Concept. All rights reserved. Dashboard by <a href="https://colorlib.com/wp/">Colorlib</a>.  </div>  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  <div class="text-md-right footer-links d-none d-sm-block">  <a href="javascript: void(0);">About</a>  <a href="javascript: void(0);">Support</a>  <a href="javascript: void(0);">Contact Us</a>  </div>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end footer -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end wrapper -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end main wrapper -->  <!-- ============================================================== -->  <!-- Optional JavaScript -->  <!-- jquery 3.3.1 -->  <script src="static/assets/vendor/jquery/jquery-3.3.1.min.js"></script>  <!-- bootstap bundle js -->  <script src="static/assets/vendor/bootstrap/js/bootstrap.bundle.js"></script>  <!-- slimscroll js -->  <script src="static/assets/vendor/slimscroll/jquery.slimscroll.js"></script>  <!-- main js -->  <script src="static/assets/libs/js/main-js.js"></script>  <!-- chart chartist js -->  <script src="static/assets/vendor/charts/chartist-bundle/chartist.min.js"></script>  <!-- sparkline js -->  <script src="static/assets/vendor/charts/sparkline/jquery.sparkline.js"></script>  <!-- morris js -->  <script src="static/assets/vendor/charts/morris-bundle/raphael.min.js"></script>  <script src="static/assets/vendor/charts/morris-bundle/morris.js"></script>  <!-- chart c3 js -->  <script src="static/assets/vendor/charts/c3charts/c3.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/d3-5.4.0.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/C3chartjs.js"></script>  <script src="static/assets/libs/js/dashboard-ecommerce.js"></script>  </body>    </html> | | |

## RestrictedArea.html

|  | Task |
| --- | --- |
|  | Create the following file in your laptop and then use Filezilla to transfer it to the **~/labs/p12** folder in your RPI |
| |  | | --- | | **Restrictedarea.html** | | <!doctype html>  <!doctype html>  <html lang="en">    <head>  <!-- Required meta tags -->  <meta charset="utf-8">  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">  <!-- Bootstrap CSS -->  <link rel="stylesheet" href="static/assets/vendor/bootstrap/css/bootstrap.min.css">  <link href="static/assets/vendor/fonts/circular-std/style.css" rel="stylesheet">  <link rel="stylesheet" href="static/assets/libs/css/style.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/fontawesome/css/fontawesome-all.css">  <link rel="stylesheet" href="static/assets/vendor/charts/chartist-bundle/chartist.css">  <link rel="stylesheet" href="static/assets/vendor/charts/morris-bundle/morris.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/material-design-iconic-font/css/materialdesignicons.min.css">  <link rel="stylesheet" href="static/assets/vendor/charts/c3charts/c3.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/flag-icon-css/flag-icon.min.css">  <link href="index1.html">  <link href="index2.html">  <title>2M1C Prison Restricted Area</title>  <!--Load Google Chart stuffs-->  <script type="text/javascript" src="https://code.jquery.com/jquery-3.2.1.js"></script>  <script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>  <script type="text/javascript">  google.charts.load('current', {'packages':['corechart','table']});  // Set a callback to run when the Google Visualization API is loaded.  google.charts.setOnLoadCallback(googlecharts\_is\_ready);  var chart;  var graphdata;  function reset\_status\_messages(){  $("#status").html("")  }  function googlecharts\_is\_ready(){  $("#buttonloadchart").show()  $("#buttonloadchart").click()  $("#status").html("Google charts is ready")  }  function loadChart(){  getData\_and\_drawChart()  }  function getData\_and\_drawChart(){  getNewData()  }  function getNewData(){  $("#status").html("Fetching data to plot graph...");  jQuery.ajax({  url: "/api/getdata2" ,  type: 'POST',  error: function(jqXHR,textStatus, errorThrown ){  console.log("Error while ajax:" + textStatus)  },  success: function(ndata, textStatus, xhr){  //console.log(ndata)    //console.log(ndata.chart\_data)  $("#status").html("Data fetched! Now plotting graph!");  chartdata = ndata.chart\_data  graphdata = createDataTable(chartdata)  graphdata1 = createDataTable1(chartdata)  drawLineChart(graphdata1)  drawDataTable(graphdata)  $("#status").html("Graph plotted");  }//end success  });//end ajax  } //end getNewData  function createDataTable(newdata){  graphdata = new google.visualization.DataTable();  graphdata.addColumn('string', 'Time');  graphdata.addColumn('number', 'Temperature');  graphdata.addColumn('number', 'Humidity');  graphdata.addColumn('string', 'Message');  var newdata = JSON.parse(newdata);    for (index=0;index<newdata.length;index++){    datetime = (newdata[index].datetimeid)  datetime = datetime.substring(0, 19) //+ "+0000"  jsdatetime = new Date(Date.parse(datetime));  jstime = jsdatetime.toLocaleTimeString();  //light = parseInt(newdata[index].value);  temperature = parseInt(newdata[index].Temperature);  humidity = parseInt(newdata[index].Humidity);  message = (newdata[index].Message);  graphdata.addRows([[jstime,temperature,humidity,message]]);  }//end for  return graphdata  }    // New Added codes to try get the string to work    function createDataTable1(newdata){  graphdata1 = new google.visualization.DataTable();  graphdata1.addColumn('string', 'Time');  graphdata1.addColumn('number', 'Temperature');  graphdata1.addColumn('number', 'Humidity');  // graphdata.addColumn('string', 'Message');  var newdata = JSON.parse(newdata);    for (index=0;index<newdata.length;index++){    datetime = (newdata[index].datetimeid)  datetime = datetime.substring(0, 19) //+ "+0000"  jsdatetime = new Date(Date.parse(datetime));  jstime = jsdatetime.toLocaleTimeString();  //light = parseInt(newdata[index].value);  temperature = parseInt(newdata[index].Temperature);  humidity = parseInt(newdata[index].Humidity);  // message = (newdata[index].Message);  graphdata1.addRows([[jstime,temperature,humidity]]);  }//end for  return graphdata1  }    function drawDataTable(graphdata){  var table = new google.visualization.Table(document.getElementById('table\_div'));  table.draw(graphdata, {showRowNumber: true, width: '100%', height: '100%'});    }//end drawTable  function drawLineChart(graphdata1) {  chart = new google.visualization.LineChart(  document.getElementById('chart\_div'));  chart.draw(graphdata1, {legend: 'none', vAxis: {baseline: 0},  colors: ['#A0D100']});  return  } //end drawChart  $(document).ready(function(){  reset\_status\_messages()  setInterval(function () {  loadChart()  }, 3000);  });  </script>  </head>  <body>  <!-- ============================================================== -->  <!-- main wrapper -->  <!-- ============================================================== -->  <div class="dashboard-main-wrapper">  <!-- ============================================================== -->  <!-- navbar -->  <!-- ============================================================== -->  <div class="dashboard-header">  <nav class="navbar navbar-expand-lg bg-white fixed-top">  <a class="navbar-brand" href="/">2M1C Prison </a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse " id="navbarSupportedContent">  <ul class="navbar-nav ml-auto navbar-right-top">    </ul>  </div>  </nav>  </div>  <!-- ============================================================== -->  <!-- end navbar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- left sidebar -->  <!-- ============================================================== -->  <!----> <div class="nav-left-sidebar sidebar-dark">  <div class="menu-list">  <nav class="navbar navbar-expand-lg navbar-light">  <a class="d-xl-none d-lg-none" href="#">Dashboard</a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarNav" aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse" id="navbarNav">  <ul class="navbar-nav flex-column">  <li class="nav-divider">  Menu  </li>  <li class="nav-item ">  <a class="nav-link active" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1" aria-controls="submenu-1"><i class="fa fa-fw fa-user-circle"></i>Dashboard <span class="badge badge-success">6</span></a>  <div id="submenu-1" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1-2" aria-controls="submenu-1-2">Prison Areas</a>  <div id="submenu-1-2" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="RestrictedArea">Restriced Area</a>  </li>  <li class="nav-item">  <a class="nav-link" href="Entrance">Entrance</a>  </li>  <li class="nav-item">  <a class="nav-link" href="GuardRoom">GuardRoom</a>  </li>      </ul>  </div>  </li>    </li>  </ul>  </div>  </nav>  </div>  </div>  <!-- ============================================================== -->  <!-- end left sidebar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- wrapper -->  <!-- ============================================================== -->  <div class="dashboard-wrapper">  <div class="dashboard-ecommerce">  <div class="container-fluid dashboard-content ">  <!-- ============================================================== -->  <!-- pageheader -->  <!-- ============================================================== -->  <div class="row">  <div class="col-xl-12 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="page-header">  <h2 class="pageheader-title">2M1C Prison Restricted Area </h2>  <p class="pageheader-text">Nulla euismod urna eros, sit amet scelerisque torton lectus vel mauris facilisis faucibus at enim quis massa lobortis rutrum.</p>  <div class="page-breadcrumb">  <nav aria-label="breadcrumb">  <ol class="breadcrumb">  <li class="breadcrumb-item"><a href="#" class="breadcrumb-link">Dashboard</a></li>  <li class="breadcrumb-item active" aria-current="page">Restricted Area Information</li>  </ol>  </nav>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end pageheader -->  <!-- ============================================================== -->  <div class="ecommerce-widget">    <div class="row">    <div class="col-xl-6 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="card">  <div class="card-header">  <!-- <div class="float-right">  <select class="custom-select">  <option selected>Today</option>  <option value="1">Weekly</option>  <option value="2">Monthly</option>  <option value="3">Yearly</option>  </select>  </div> -->  <h5 class="mb-0"> Area Information </h5>  </div>  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div id="table\_div"></div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- ============================================================== -->    <div class="col-xl-6 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="card">  <div class="card-header">  <!-- <div class="float-right">  <select class="custom-select">  <option selected>Today</option>  <option value="1">Weekly</option>  <option value="2">Monthly</option>  <option value="3">Yearly</option>  </select>  </div> -->  <h5 class="mb-0"> Temperature and Humidity Chart</h5>  </div>  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div id="chart\_div"></div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end product sales -->  <!-- ============================================================== -->    <!-- footer -->  <!-- ============================================================== -->  <div class="footer">  <div class="container-fluid">  <div class="row">  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  Copyright © 2018 Concept. All rights reserved. Dashboard by <a href="https://colorlib.com/wp/">Colorlib</a>.  </div>  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  <div class="text-md-right footer-links d-none d-sm-block">  <a href="javascript: void(0);">About</a>  <a href="javascript: void(0);">Support</a>  <a href="javascript: void(0);">Contact Us</a>  </div>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end footer -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end wrapper -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end main wrapper -->  <!-- ============================================================== -->  <!-- Optional JavaScript -->  <!-- jquery 3.3.1 -->  <script src="static/assets/vendor/jquery/jquery-3.3.1.min.js"></script>  <!-- bootstap bundle js -->  <script src="static/assets/vendor/bootstrap/js/bootstrap.bundle.js"></script>  <!-- slimscroll js -->  <script src="static/assets/vendor/slimscroll/jquery.slimscroll.js"></script>  <!-- main js -->  <script src="static/assets/libs/js/main-js.js"></script>  <!-- chart chartist js -->  <script src="static/assets/vendor/charts/chartist-bundle/chartist.min.js"></script>  <!-- sparkline js -->  <script src="static/assets/vendor/charts/sparkline/jquery.sparkline.js"></script>  <!-- morris js -->  <script src="static/assets/vendor/charts/morris-bundle/raphael.min.js"></script>  <script src="static/assets/vendor/charts/morris-bundle/morris.js"></script>  <!-- chart c3 js -->  <script src="static/assets/vendor/charts/c3charts/c3.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/d3-5.4.0.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/C3chartjs.js"></script>  <script src="static/assets/libs/js/dashboard-ecommerce.js"></script>  </body>    </html> | | |

## GuardRoom.html

|  | Task |
| --- | --- |
|  | Create the following file in your laptop and then use Filezilla to transfer it to the **~/labs/p12** folder in your RPI |
| |  | | --- | | **Guardroom.html** | | <!doctype html>  <html lang="en">    <head>  <!-- Required meta tags -->  <meta charset="utf-8">  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">  <!-- Bootstrap CSS -->  <link rel="stylesheet" href="static/assets/vendor/bootstrap/css/bootstrap.min.css">  <link href="static/assets/vendor/fonts/circular-std/style.css" rel="stylesheet">  <link rel="stylesheet" href="static/assets/libs/css/style.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/fontawesome/css/fontawesome-all.css">  <link rel="stylesheet" href="static/assets/vendor/charts/chartist-bundle/chartist.css">  <link rel="stylesheet" href="static/assets/vendor/charts/morris-bundle/morris.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/material-design-iconic-font/css/materialdesignicons.min.css">  <link rel="stylesheet" href="static/assets/vendor/charts/c3charts/c3.css">  <link rel="stylesheet" href="static/assets/vendor/fonts/flag-icon-css/flag-icon.min.css">  <link href="index1.html">  <link href="index2.html">  <title>2M1C Prison Guard Room</title>  <!--Load Google Chart stuffs-->  <script type="text/javascript" src="https://code.jquery.com/jquery-3.2.1.js"></script>  <script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>  <script type="text/javascript">  google.charts.load('current', {'packages':['corechart','table']});  // Set a callback to run when the Google Visualization API is loaded.  google.charts.setOnLoadCallback(googlecharts\_is\_ready);  var chart;  var graphdata;  function reset\_status\_messages(){  $("#status").html("")  }  function googlecharts\_is\_ready(){  $("#buttonloadchart").show()  $("#buttonloadchart").click()  $("#status").html("Google charts is ready")  }  function loadChart(){  getData\_and\_drawChart()  }  function getData\_and\_drawChart(){  getNewData()  }  function getNewData(){  $("#status").html("Fetching data to plot graph...");  jQuery.ajax({  url: "/api/getdata1" ,  type: 'POST',  error: function(jqXHR,textStatus, errorThrown ){  console.log("Error while ajax:" + textStatus)  },  success: function(ndata, textStatus, xhr){  //console.log(ndata)    //console.log(ndata.chart\_data)  $("#status").html("Data fetched! Now plotting graph!");  chartdata = ndata.chart\_data  graphdata = createDataTable(chartdata)  graphdata1 = createDataTable1(chartdata)  drawLineChart(graphdata1)  drawDataTable(graphdata)  $("#status").html("Graph plotted");  }//end success  });//end ajax  } //end getNewData  function createDataTable(newdata){  graphdata = new google.visualization.DataTable();  graphdata.addColumn('string', 'Time');  graphdata.addColumn('number', 'Temperature');  graphdata.addColumn('number', 'Humidity');  graphdata.addColumn('string', 'UserID');  var newdata = JSON.parse(newdata);    for (index=0;index<newdata.length;index++){    datetime = (newdata[index].datetimeid)  datetime = datetime.substring(0, 19) //+ "+0000"  jsdatetime = new Date(Date.parse(datetime));  jstime = jsdatetime.toLocaleTimeString();  //light = parseInt(newdata[index].value);  temperature = parseInt(newdata[index].Temperature);  humidity = parseInt(newdata[index].Humidity);  userid = (newdata[index].UserID);  graphdata.addRows([[jstime,temperature,humidity,userid]]);  }//end for  return graphdata  }    // New Added codes to try get the string to work    function createDataTable1(newdata){  graphdata1 = new google.visualization.DataTable();  graphdata1.addColumn('string', 'Time');  graphdata1.addColumn('number', 'Temperature');  graphdata1.addColumn('number', 'Humidity');  // graphdata.addColumn('string', 'Message');  var newdata = JSON.parse(newdata);    for (index=0;index<newdata.length;index++){    datetime = (newdata[index].datetimeid)  datetime = datetime.substring(0, 19) //+ "+0000"  jsdatetime = new Date(Date.parse(datetime));  jstime = jsdatetime.toLocaleTimeString();  //light = parseInt(newdata[index].value);  temperature = parseInt(newdata[index].Temperature);  humidity = parseInt(newdata[index].Humidity);  // message = (newdata[index].Message);  graphdata1.addRows([[jstime,temperature,humidity]]);  }//end for  return graphdata1  }    function drawDataTable(graphdata){  var table = new google.visualization.Table(document.getElementById('table\_div'));  table.draw(graphdata, {showRowNumber: true, width: '100%', height: '100%'});    }//end drawTable  function drawLineChart(graphdata1) {  chart = new google.visualization.LineChart(  document.getElementById('chart\_div'));  chart.draw(graphdata1, {legend: 'none', vAxis: {baseline: 0},  colors: ['#A0D100']});  return  } //end drawChart  $(document).ready(function(){  reset\_status\_messages()  setInterval(function () {  loadChart()  }, 3000);  });  //===========================================================================================================================  function turnon3(){  $.ajax({url: "writeLED3/On",  success: function(result){  $("#reply3").html(result);  }  })  }      function turnoff3(){  $.ajax({url: "writeLED3/Off",  success: function(result){  $("#reply3").html(result);  }  })  }    $(document).ready(function(){  $("#b5").click(function(){  turnon3();  });  $("#b6").click(function(){  turnoff3();  });  });    //===========================================================================================================================  </script>  </head>  <body>  <!-- ============================================================== -->  <!-- main wrapper -->  <!-- ============================================================== -->  <div class="dashboard-main-wrapper">  <!-- ============================================================== -->  <!-- navbar -->  <!-- ============================================================== -->  <div class="dashboard-header">  <nav class="navbar navbar-expand-lg bg-white fixed-top">  <a class="navbar-brand" href="/">2M1C Prison </a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse " id="navbarSupportedContent">  <ul class="navbar-nav ml-auto navbar-right-top">    </ul>  </div>  </nav>  </div>  <!-- ============================================================== -->  <!-- end navbar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- left sidebar -->  <!-- ============================================================== -->  <!----> <div class="nav-left-sidebar sidebar-dark">  <div class="menu-list">  <nav class="navbar navbar-expand-lg navbar-light">  <a class="d-xl-none d-lg-none" href="#">Dashboard</a>  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarNav" aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">  <span class="navbar-toggler-icon"></span>  </button>  <div class="collapse navbar-collapse" id="navbarNav">  <ul class="navbar-nav flex-column">  <li class="nav-divider">  Menu  </li>  <li class="nav-item ">  <a class="nav-link active" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1" aria-controls="submenu-1"><i class="fa fa-fw fa-user-circle"></i>Dashboard <span class="badge badge-success">6</span></a>  <div id="submenu-1" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="#" data-toggle="collapse" aria-expanded="false" data-target="#submenu-1-2" aria-controls="submenu-1-2">Prison Areas</a>  <div id="submenu-1-2" class="collapse submenu" style="">  <ul class="nav flex-column">  <li class="nav-item">  <a class="nav-link" href="RestrictedArea">Restriced Area</a>  </li>  <li class="nav-item">  <a class="nav-link" href="Entrance">Entrance</a>  </li>  <li class="nav-item">  <a class="nav-link" href="GuardRoom">GuardRoom</a>  </li>      </ul>  </div>  </li>    </li>  </ul>  </div>  </nav>  </div>  </div>  <!-- ============================================================== -->  <!-- end left sidebar -->  <!-- ============================================================== -->  <!-- ============================================================== -->  <!-- wrapper -->  <!-- ============================================================== -->  <div class="dashboard-wrapper">  <div class="dashboard-ecommerce">  <div class="container-fluid dashboard-content ">  <!-- ============================================================== -->  <!-- pageheader -->  <!-- ============================================================== -->  <div class="row">  <div class="col-xl-12 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="page-header">  <h2 class="pageheader-title">2M1C Prison Guard Room </h2>  <p class="pageheader-text">Nulla euismod urna eros, sit amet scelerisque torton lectus vel mauris facilisis faucibus at enim quis massa lobortis rutrum.</p>  <div class="page-breadcrumb">  <nav aria-label="breadcrumb">  <ol class="breadcrumb">  <li class="breadcrumb-item"><a href="#" class="breadcrumb-link">Dashboard</a></li>  <li class="breadcrumb-item active" aria-current="page">Guard Room Information</li>  </ol>  </nav>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end pageheader -->  <!-- ============================================================== -->  <div class="ecommerce-widget">    <div class="row">    <div class="col-xl-6 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="card">  <div class="card-header">  <!-- <div class="float-right">  <select class="custom-select">  <option selected>Today</option>  <option value="1">Weekly</option>  <option value="2">Monthly</option>  <option value="3">Yearly</option>  </select>  </div> -->  <h5 class="mb-0"> Area Information </h5>  </div>  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div id="table\_div"></div>  </div>  </div>    <!-- ============================================================== -->  <!-- ============================================================== -->    <div class="col-xl-6 col-lg-12 col-md-12 col-sm-12 col-12">  <div class="card">  <div class="card-header">  <!-- <div class="float-right">  <select class="custom-select">  <option selected>Today</option>  <option value="1">Weekly</option>  <option value="2">Monthly</option>  <option value="3">Yearly</option>  </select>  </div> -->  <h5 class="mb-0"> Temperature and Humidity Chart</h5>  </div>  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div id="chart\_div"></div>  </div>  </div>  </div>    <div class="card">  <div class="card-body">  <!--<div class="ct-chart-product ct-golden-section"></div>-->  <div class= "buttonwrapper" style= "text-align: center; ">  <h4>Lockdown Light</h4>  <button id="b5">Turn on</button>  <button id="b6">Turn off</button>  <div id="reply3"></div>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end product sales -->  <!-- ============================================================== -->    <!-- footer -->  <!-- ============================================================== -->  <div class="footer">  <div class="container-fluid">  <div class="row">  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  Copyright © 2018 Concept. All rights reserved. Dashboard by <a href="https://colorlib.com/wp/">Colorlib</a>.  </div>  <div class="col-xl-6 col-lg-6 col-md-6 col-sm-12 col-12">  <div class="text-md-right footer-links d-none d-sm-block">  <a href="javascript: void(0);">About</a>  <a href="javascript: void(0);">Support</a>  <a href="javascript: void(0);">Contact Us</a>  </div>  </div>  </div>  </div>  </div>  <!-- ============================================================== -->  <!-- end footer -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end wrapper -->  <!-- ============================================================== -->  </div>  <!-- ============================================================== -->  <!-- end main wrapper -->  <!-- ============================================================== -->  <!-- Optional JavaScript -->  <!-- jquery 3.3.1 -->  <script src="static/assets/vendor/jquery/jquery-3.3.1.min.js"></script>  <!-- bootstap bundle js -->  <script src="static/assets/vendor/bootstrap/js/bootstrap.bundle.js"></script>  <!-- slimscroll js -->  <script src="static/assets/vendor/slimscroll/jquery.slimscroll.js"></script>  <!-- main js -->  <script src="static/assets/libs/js/main-js.js"></script>  <!-- chart chartist js -->  <script src="static/assets/vendor/charts/chartist-bundle/chartist.min.js"></script>  <!-- sparkline js -->  <script src="static/assets/vendor/charts/sparkline/jquery.sparkline.js"></script>  <!-- morris js -->  <script src="static/assets/vendor/charts/morris-bundle/raphael.min.js"></script>  <script src="static/assets/vendor/charts/morris-bundle/morris.js"></script>  <!-- chart c3 js -->  <script src="static/assets/vendor/charts/c3charts/c3.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/d3-5.4.0.min.js"></script>  <script src="static/assets/vendor/charts/c3charts/C3chartjs.js"></script>  <script src="static/assets/libs/js/dashboard-ecommerce.js"></script>  </body>    </html> | | |

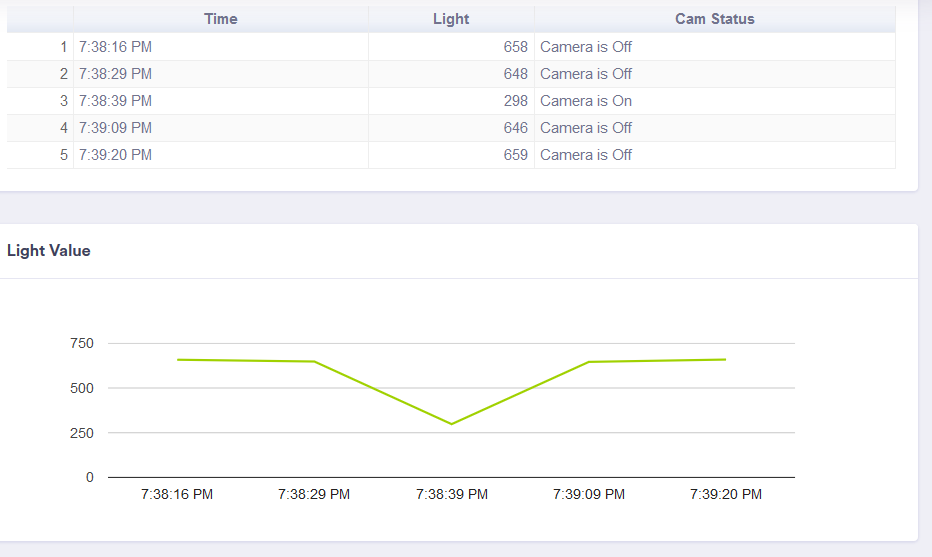
# Section 10

# Test the program

## Checking the webpage for realtime updates

Now we will do the following:

* Run the server.py
* Run Entrance.py, Guardroom.py, Restrictedarea.py
* Ensure that the message is being sent
* Access the website
* See it update on realtime



Now we can see everything is working and good to go!