SMART BRIDGE: PROJECT

Smart security and safety solutions based on IoT for large industrial plants

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Introduction:

Overview:

To create smart security and safety system for large industrial plants.

Objective:

To develop smart security and safety system which stores the date and time of employee while entry and exit using IBM cloud. Alerts the employee who exceeds the time duration in radiation room by using buzzer and by displaying message to leave the room in OLED screen.

Survey:

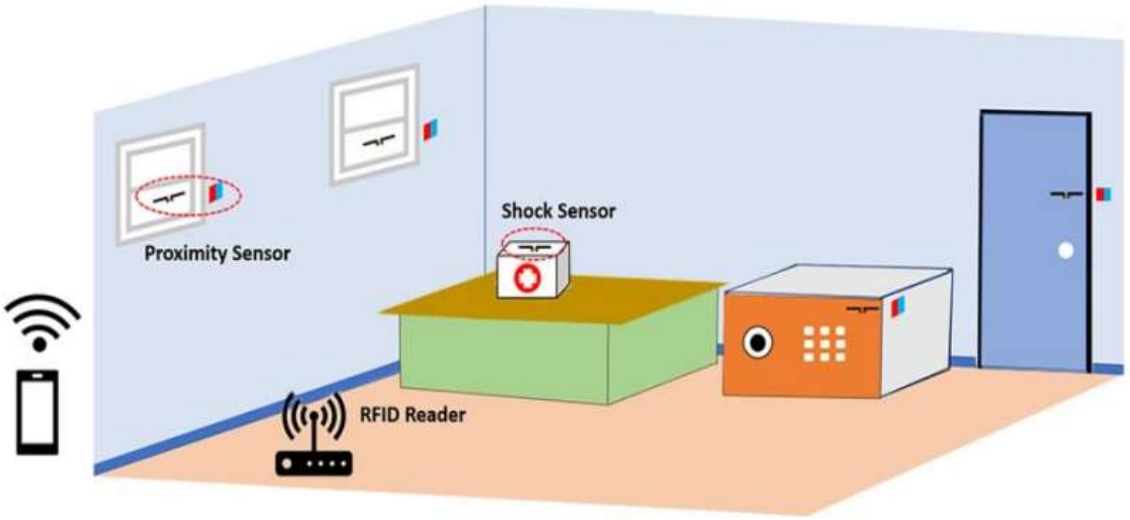
Existing model:

General model which can store date and time for entry and exit.

Solution:

We can calculate the total time spent in company using IBM cloud, we can send alert to employee in radiation room who exceeds the time limit. This can save the employee from radiation effect.

Block Diagram:



Requirements:

Python IDLE

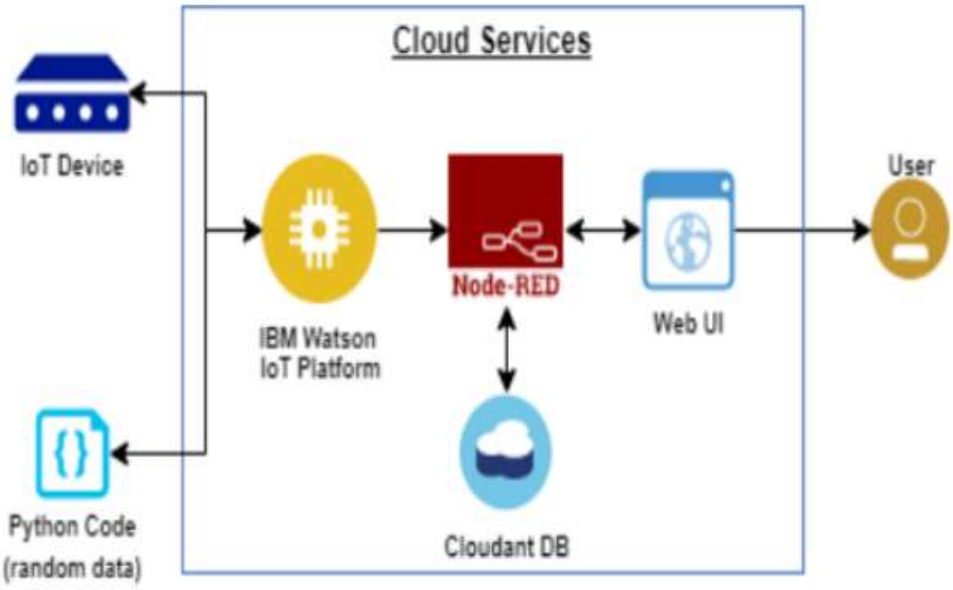
IBM account:

IBM Cloud

IBM Watson IoT platform

Node-red

Flow Chart:

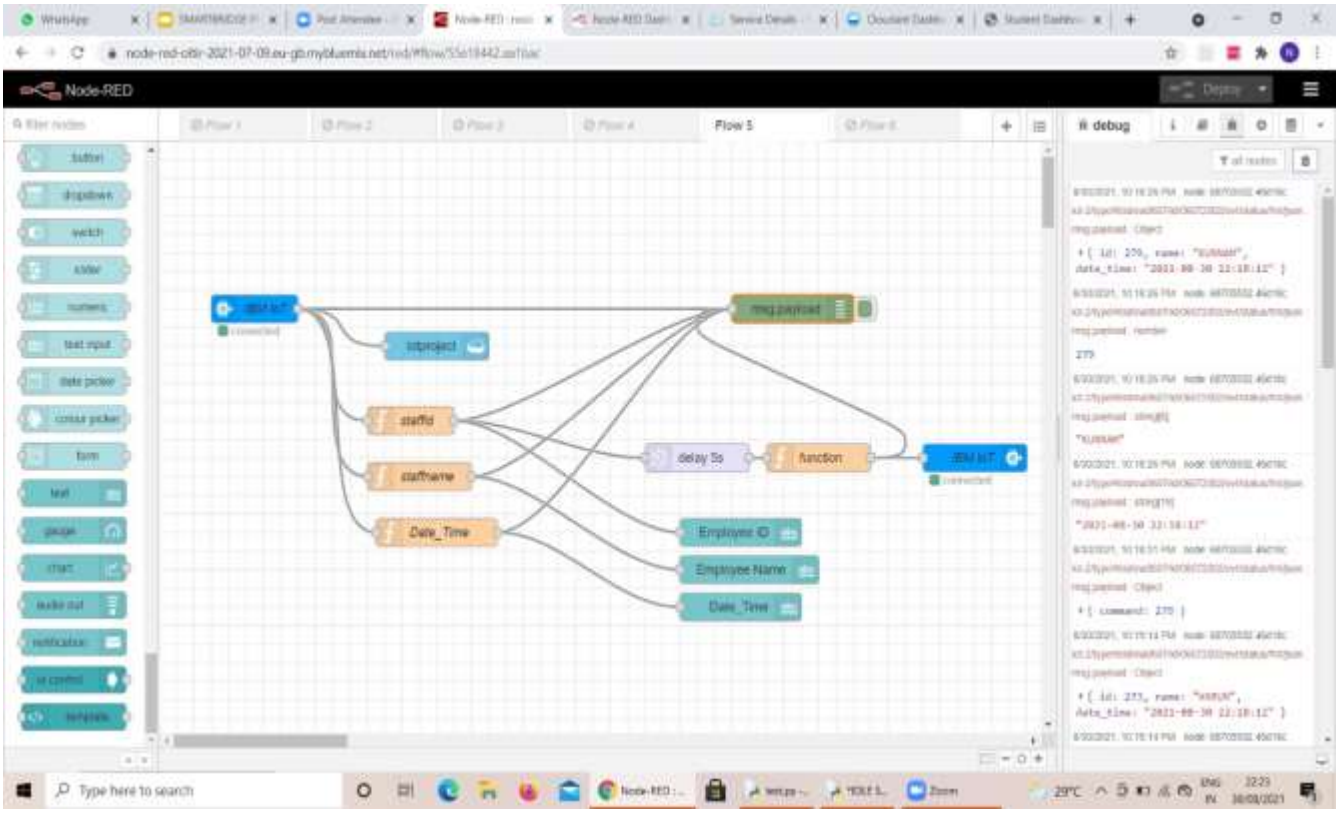


Procedure:

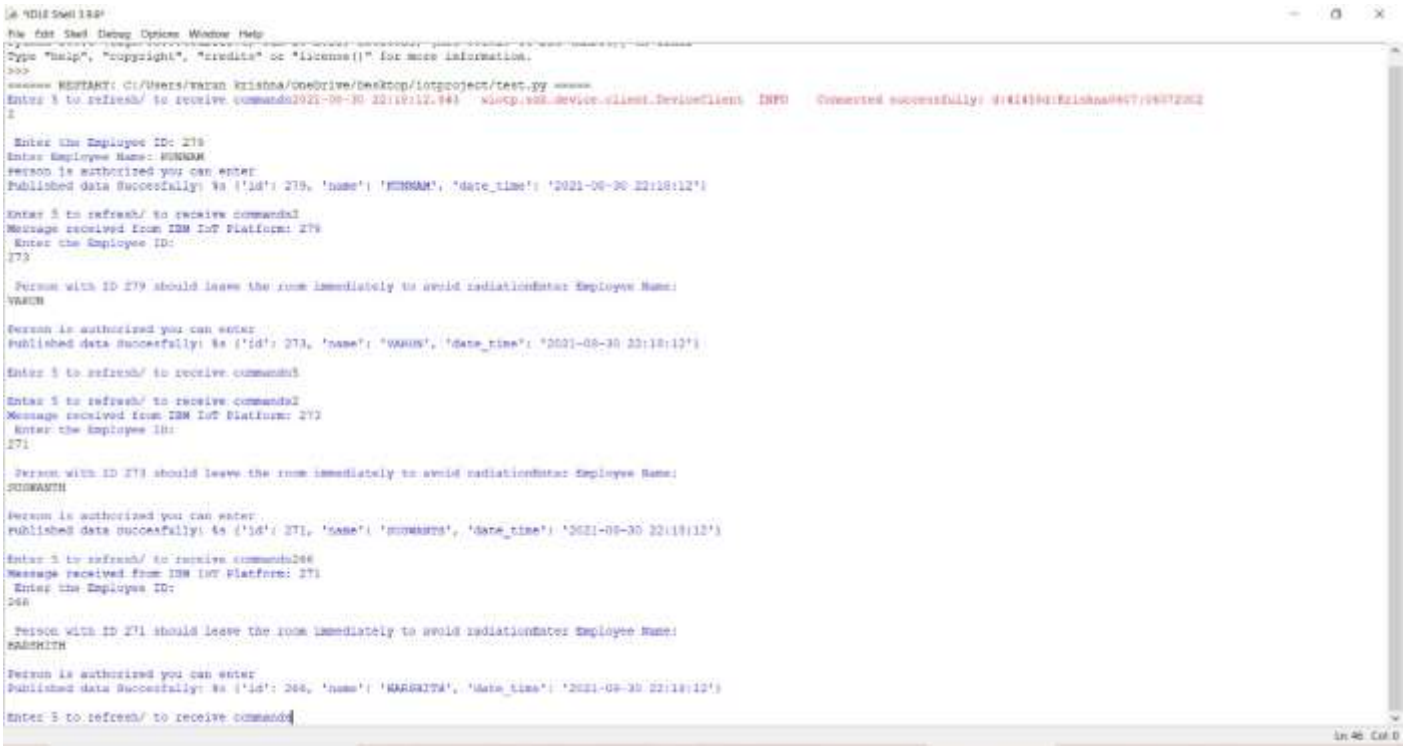
Develop the code:

```
test.py - C:/Users/varun krishna/OneDrive/Desktop/iotproject/test.py (3.8.0)
File  Edit  Format  Run  Options  Window  Help
    "identity": {
        "orgId": "414598",
        "typeId": "Krishna2607",
        "deviceId":"26072002"
    },
    "auth": {
        "token": "Krishna2607"
    }
}

def myCommandCallback(cmd):
    print("Message received from IBM IoT Platform: %s" % cmd.data['command'])
    m=cmd.data['command']
    print("\n Person with ID " + str(m) + " should leave the room immediately to avoid radiation")
    print()
    time.sleep(3)

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()

name = { 273: 'VARUN', 266: 'ABHIJITH', 271: 'HIMAMSU', 279: 'HUMAN'}
l = [273,266,271,279]
now=datetime.datetime.now()
date_time = now.strftime("%Y-%m-%d %H:%M:%S")

while True:
    x = int(input("Enter 5 to refresh/ to receive commands"))
    if x==5:
        client.commandCallback = myCommandCallback
    else:
        i = int(input("\n Enter the Employee ID: "))
        n = input("Enter Employee Name: ")
        if i in l:
            if name[i] == n:
                print("Person is authorized you can enter")
                myData={'id':i, 'name':n,'date_time':date_time}
                client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
                print("Published data Successfully: %s",myData)
            else:
                print("Invalid name for the Employee ID")
        else:
            print("Unauthorized Access")

        client.commandCallback = myCommandCallback
    print()
client.disconnect()
```

Node-red:



Result:



msg.payload : string[8]

"SUSWANTH"

8/30/2021, 10:19:40 PM node: 68705552.46d18c
iot-2/type/Krishna0607/id/06072002/evt/status/fmt/json :
msg.payload : string[19]

"2021-08-30 22:18:12"

8/30/2021, 10:19:45 PM node: 68705552.46d18c
iot-2/type/Krishna0607/id/06072002/evt/status/fmt/json :
msg.payload : Object

▶ { command: 271 }

8/30/2021, 10:20:19 PM node: 68705552.46d18c
iot-2/type/Krishna0607/id/06072002/evt/status/fmt/json :
msg.payload : Object

▶ { id: 266, name: "HARSHITH", date_time: "2021-08-30 22:18:12" }

8/30/2021, 10:20:19 PM node: 68705552.46d18c
iot-2/type/Krishna0607/id/06072002/evt/status/fmt/json :
msg.payload : number

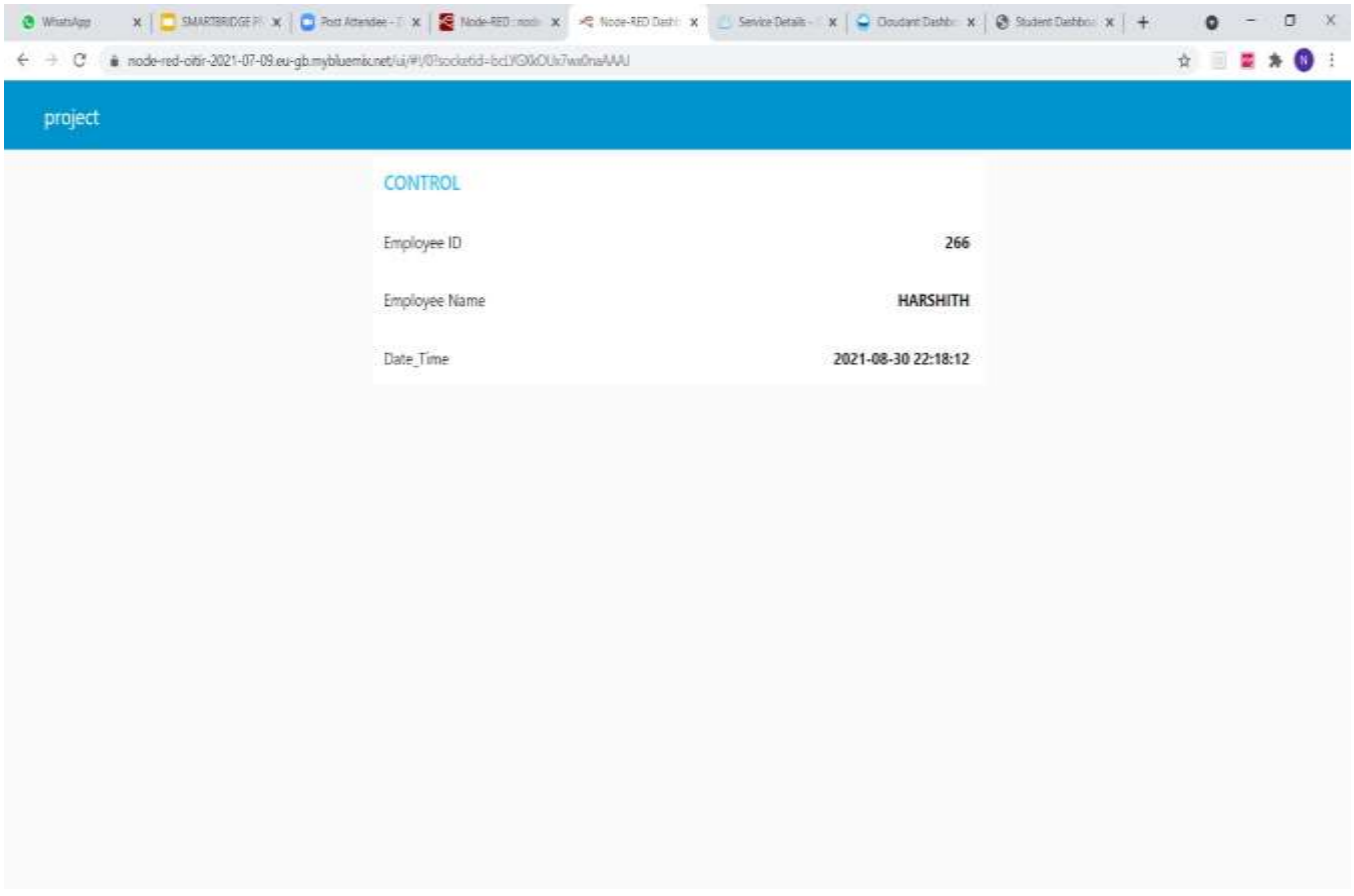
266

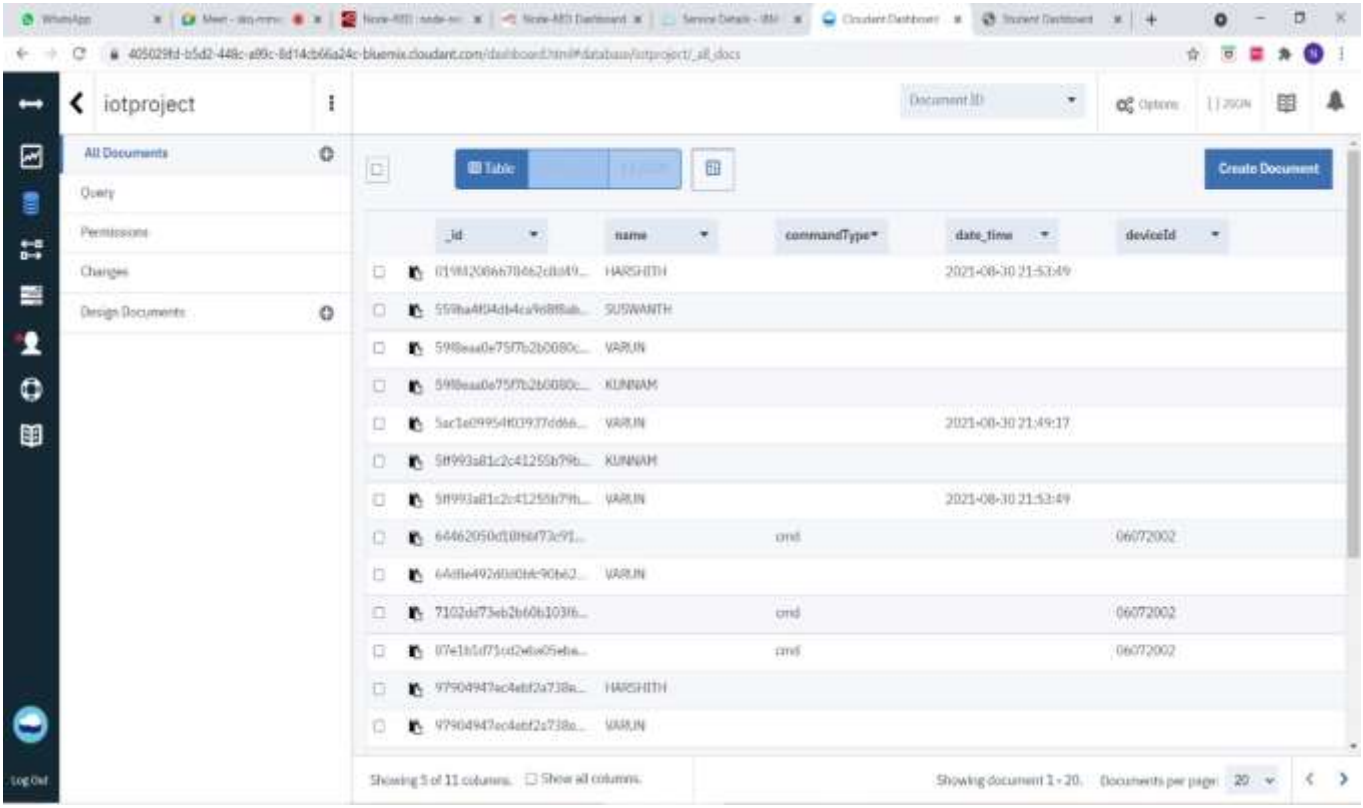
8/30/2021, 10:20:19 PM node: 68705552.46d18c
iot-2/type/Krishna0607/id/06072002/evt/status/fmt/json :
msg.payload : string[8]

"HARSHITH"

8/30/2021, 10:20:19 PM node: 68705552.46d18c
iot-2/type/Krishna0607/id/06072002/evt/status/fmt/json :
msg.payload : string[19]

"2021-08-30 22:18:12"





Advantages:

Reduction in maintenance costs

Safety operator

Secured data

Flexible

Easy accessibility

Interference

Disadvantages:

Cost

High storage required

Disturbances

Conclusion:

This project is mainly focused on date and time of entry/exit of the employee. This can measure the total time spent in company by calculating time from exit and entry time. To ensure the safety of the employee, we use countdown from the time of entry to the radiation room and when the time limit has reached, alert is given to employee by making the buzzer on and displaying message to leave the radiation room in the OLED screen. This helps the safety of the employee. All the data is stored in the cloud, which can be accessed easily.

Bibliography:

Smart bridge lecture videos

IBM platform videos

https://thesmartbridge.com/documents/projects/SmartHomeAutomationusingIBMCloud.pdf

Source code:

https://github.com/gnaneshwarbandari/IOT/blob/main/ibm_code.py

https://github.com/divyanemuri/SmartInternz-IoT-Externship-2021/blob/master/Python_pubsubIBM.p