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KORİNT YAYINCILIK

AİR MONİTORİNG DEVİCE FOR COVİD 19 WİTH IOT

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ABSTRACT

This study focuses on a simple and quick method of how to detect places that have the potential to spread covid 19 through the air by using temperature, humidity and gas sensors. Therefore, people will be alert and careful with the environment. This tool is for home quarantine. Users need to connect the device to the phone and use the Blynk Apps to know the temperature, humidity and gas values whether gas is detected or not. Users can check the temperature, humidity and gas to check whether the area is still active with the covid 19 virus or not. The virus will be inactive when the temperature (21-23) ℃, humidity (40-60)RH and gas is not detected. Users can check the status of the quarantine area whether it is very good, bad or very bad based on the situation. The method is to look at the light on the application. The application will show a light blue led (very good) when the temperature is above 21, the humidity is above 40 and gas is not detected. The application will show a light yellow led (bad) when it has 3 situations. First condition temperature 21 above, humidity 39 below and no gas detected. The second condition is temperature 20 below, humidity 40 above and gas is not detected. Third situation temperature 21 above, humidity 40 above and gas detected. The app will show the led turn red (very bad) when it has 4 situations. The first condition is temperature is 20 and below, humidity is 39 and below and gas is detected. Second condition temperature 20 below, humidity 39 below and gas not detected. The third condition is temperature is 20 and below, humidity is 40 and above and gas is detected. The fourth condition is temperature is 21 and above, humidity is 39 and below and gas is detected. If the status is very good, then the area is safe, if the status is bad, then it must be careful with the area and if the status of the area is very bad, then the area still has an active covid virus.

Keywords: Temperature, humidity, gas and Blynk.

INTRODUCTION

Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. Anyone can get sick with COVID-19 and become seriously ill or die at any age. The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe. These particles range from larger respiratory droplets to smaller aerosols. It is important to practice respiratory etiquette, for example by coughing into a flexed elbow, and to stay home and self-isolate until you recover if you feel unwell.

There are two types of methods to treat people infected with covid 19. The first is quarantine at home and the second is going to a government hospital.

For those who need to be sent to government hospitals who are infected with covid in stages 3,4 and 5. People who are infected with covid in stages 3,4 and 5 are usually people suffering from severe pain such as shortness of breath, decreased heart rate and others. But for those who are infected with covid 19 in stage 1 and 2. people who are infected with covid in stage 1 and 2 are usually people, get mild symptoms like loss of sense of taste, headache and others.

Most Malaysians are infected with covid 19 in stages 1 and 2 due to vaccination. from research 97.7% of people get the vaccine. Of the research 96.34% were infected with covid 19 in stages 1 and 2. Starting on 1/4/2022 malaysia moved into the endemic phase. so most people infected with covid just quarantine at home and update about their health through my sejahtera app.

Although many are infected with covid 19 at stage 1 and 2, but people can not take it easy, people must constantly monitor their health. Covid 19 is so dangerous that it can be fatal. Covid 19 can spread rapidly through the air. So it must make sure covid 19 is not there, you can claim you are not infected with covid 19. Covid 19 is serious and so you must take it seriously. It has cases of people infected with covid 19 in stages 1 and 2 die.

To ensure you are not infected 19 you cannot check through PCR and RTK as you have already been quarantined within 10 days as directed by the government. PCR and RTK will assume you are still infected with covid 19. So there is a method of detecting covid 19 through the air. But it must sense where people are quarantined. If the temperature rises, the humidity decreases and an increase in gas can spread the virus quickly. Therefore you will assume there is covid 19. if there is not you will assume there is no covid 19.

LITERATURE REVIEW

This chapter expands on the literature reviews that provide information tailored to the project's goals. The pertinent data and other characteristics were compiled as shown below.

(IoT Technologies during and Beyond COVID-19: A Comprehensive Review)

Mohamed Yousif *et al*[1]. This article provides, examines, and analyses IoT-inspired pandemic solutions in various industries, difficulties, and prospects outside of the pandemic.A smart network for health management systems is made possible by the enormous number of networked devices utilised by the IoT that can track and warn different sorts of disease.Without requiring human involvement, patient information is gathered, which may be useful in decision-making processes.Numerous wearable, lightweight IoT devices might be utilised to reduce the spread of infectious diseases like COVID-19 and enhance healthcare services.IoT devices make it simple to keep track of some symptoms. The gadget may alert the user and the nearby health agency if viral symptoms are found. IoT may also function as a mapping network that displays areas with a high density of people or areas where there are more instances and a higher risk of infection. This can enhance the performance of the health department's intervention to identify and save people in dire situations (for example, when the patient cannot contact the health department at the appropriate time due to symptoms) and share data with other departments to develop a faster cure and keep civilians safe.People who find it challenging to get to or access healthcare institutions. Through the use IOT of fever screening to identify some of the virus' symptoms, social isolation is enforced to stop the spread of the disease, and IoT technology is used to manage remote health monitoring, pollution and air quality management, occupancy control, and smart parking. Fever screening eliminates the need for interpersonal interaction and enables the identification of several targets. The first line of protection against the virus is pre-screening of workers, emergency evacuation, or patients. Although this does not ensure viral detection, it can be used to assess whether the person may be exhibiting signs of the virus. Subsequent examinations are then performed for a definitive confirmation.Most COVID-19 issues can be overcome through IoT. At the alerting level, IoT may warn users if, for instance, there are a lot of people in a certain location, there are cases there, or there will be a lockdown. The levels of warning and punishment interact. For instance, warnings might be given to visitors from other cities not to leave their homes for 14 days, and if they do, penalties could be imposed.These systems can stop the virus's transmission and keep the pandemic under control. However, when the level of involvement rises, the user's privacy and security are impacted by the need for additional personal information and permits (or consent). Data access for improved services and user privacy protection are at odds with one another. Individuals are at danger because of the volume of data acquired from IoT devices since profiling, tracing, and unlawful processing, which might be illegal, can make it easier for people to be identified. A worldwide epidemic like COVID-19 can be more effectively controlled, though, if legitimate interests are considered. The government discusses security and privacy concerns related to coronavirus diagnosis and prognosis.IoT-inspired solutions provide wider utilisation at a lower cost and quicker illness identification during the pandemic. IoT can be useful in these difficult times. the elderly need assistance since they are more susceptible to the illness than other age groups. They are increasingly common because of the rise in life expectancy. IoT wearables like the Apple smart health watch and the Omron blood pressure monitor that can take biometric readings and track activity can assist in continuously monitoring their health remotely. Grand care is an excellent tool for connecting older folks with loved ones and would be perfect for home monitoring.Eight machine learning techniques were suggested by a research to quickly identify probable COVID patients. Five of these algorithms have a case identification accuracy of higher than 90%.

(Internet of Things for Current COVID-19 and Future Pandemics: an Exploratory Study)

Mohammad Nasajpour *et al*[2]. Since early 2020, the globe has been battling the new severe respiratory syndrome coronavirus 2 pandemic by attempting to stop the virus's uncontrollable spread and create a vaccine. There is a strong demand for global surveillance of individuals with symptomatic and asymptomatic COVID-19 infection as most efforts to identify a therapy or restrict the spread of the COVID-19 have not yet shown satisfactory results.IoT technology has drawn a lot of attention in recent years in the healthcare industry, where it is crucial in various stages of infectious illnesses.In the present pandemic, it is crucial for patients to be linked with and followed by their doctors pro-actively in different phases of COVID-19 because to the high contingency of COVID-19. In this study, we examine the role of IoT technology in the early diagnosis, quarantine period, and post-recovery stages of COVID-19.Due to COVID-19's high rate of contagiousness, where even an asymptomatic patient can readily transfer the virus to others, earlier detection is crucial during the first phase of the illness, known as early diagnosis.The more quickly the illness is diagnosed, the more effectively the virus may be contained and the patient can receive the right care. By gathering data from patients, IoT devices might hasten the diagnostic process. This may be done by obtaining samples from questionable instances, using various instruments to measure body temperatures, etc. After the patient has been identified with COVID-19 and should be confined for the duration of therapy, the second phase of this illness, known as quarantine time, is crucial. IoT devices in this stage can remotely monitor patients' treatments and authorities' directives to stay at home. They can clean places without interacting with people. These sorts include the use of tracking wearing bands, cleaning tools, etc. as examples.Most people with mild symptoms may heal at home without receiving medical attention, according to the Centres for Disease Control and Prevention (CDC), but there is no assurance that they won't become reinfected once they get well.Reinfection may occur with various COVID-19 symptoms.The likelihood of resurfacing symptoms and probable infectiousness with regard to these potential reinfections in the post-recovery phase can be significant. To stop such from happening, social distancing should be enforced by deploying IoT devices, such as bands and crowd monitoring devices, to track individuals and make sure the right distance is maintained. In conclusion, IoT technology has demonstrated its value in supporting patients, healthcare professionals, and authorities throughout the COVID-19 epidemic. In this part, we provide a quick overview of the different Internet of Things (IoT) tools and applications, including as wearables, drones, robots, IoT buttons, and smartphone apps, which are mostly used as the front line of defence against COVID-19.

(Early Detection and Assessment of Covid-19)

Hafiz Abdul Sattar Hashmi *et al*[3]. The Hashmi-Asif Covid-19 Formula was created using data that was gathered and conformed to the most prevalent and accessible symptoms that might influence an early diagnosis of Covid-19 or, in the absence of them, could delay diagnosis or lead to misdiagnosis. The significant distinguishing clinical characteristics, signs, and symptoms were arranged in a table to provide an overview of the primary symptoms that are encountered most frequently. Clinical characteristics and blood biomarkers were used to classify data on the frequency of symptoms in connection to Covid-19 diagnosis. We divided the common symptoms and blood biomarkers for Covid-19 that were derived from the obtained data into two categories.Four score categories were developed. With a few minor adjustments, the Borg Scale scoring system previously reported by Homering et al. was used to assign a score to each sign and symptom. Scores ranging from 1 to 4 were assigned to the signs and symptoms. The first tier included normal signs and symptoms, which were given a score of 1, the second tier included mild signs and symptoms, which were given a score of 2, the third tier included symptoms that were moderately present, which were given a score of 3, and the fourth tier included severe cases, which were given a score of 4.The lowest score in the first layer, indicated normal or no disease, while the highest score in the fourth tier, 39, indicated serious disease. Moderate illness scored between 23 and 33, whereas mild disease fell between 13 and 22. Variable score indicated mild, moderate, or severe illness stages. For the information gathered and summarised in Table, the minimum and maximum scores were determined and assessed. For an easy decision on whether to hold isolation and other urgent steps surrounding the early confirmation of Covid-19, all the data were calculated on the score chart to evaluate its effectiveness for recognising early common signs and symptoms. For calculating early Covid-19 common signs and symptoms for early identification and illness evaluation, a chart was created and given the name of the Hashmi-Asif Covid-19 formula. By using Pearson correlation and Spearman correlation coefficient (rho) two-tail analysis, we looked at the link between the frequency of occurrence of common signs and symptoms and instances of Covid-19 that have been identified. Chi-square test two tail with Cramer's V strength techniques were used to calculate the cumulative frequencies of each common sign and symptom. The linear regression approach was used to evaluate highly significant symptoms and indicators of connection to demonstrate apparent association. IBM SPSS Version 2.0 was used to conduct a statistical analysis.

(Ventilation Systems and COVID-19 Spread: Evidence from a Systematic Review Study)

Abdolmajid Fadaei[4].In this study, a thorough literature assessment on the connection between HVAC systems and SARS-CoV-2 dissemination was carried out. Twenty papers in all were determined to be qualified for a thorough review. Ten observational essays that looked into the relationship between HVAC systems (i.e., effectiveness and key elements) and COVID-19 spread.Investigations on inadequate ventilation, efficient ventilation, and crucial components of ventilation to avoid COVID-19 were included in eight of the 20 studies. Numerous research on temperature and humidity have shown that the ideal conditions are for the humidity to range from 40 to 60 percent and the temperature to be between 21 to 23 °C.Low RH (20%) is believed to enhance a person's vulnerability to illness, while. According to another study, RH in hospitals should range from 30 to 60 percent. According to a research, coronavirus has a lipid envelope and can survive longer in environments with lower RH (50%) than it can in higher RH (> 80%) .Additionally, it was shown that the combination of high temperatures and low humidity might produce an infectious dosage over time .Overall, the research' findings demonstrated that temperature, space, and the type of microorganisms are all related to the ideal humidity. The operating room should be 24–26°C (74.2–78.8°F), the labour room should be 26–28°C (78.8–82°F), the babies department should be about 28–28°C (70–75°F), the patients' room should be 21–24°C (70–75°F), and the bronchoscopy room should be 20–23°C (68–73°F). In the beginning, the COVID-19 pandemic was worst in places with lower temperatures. According to one study, there is a significant inverse relationship between temperature and COVID-19 attack rate.According to another study, there is a link between COVID-19 mortality and both temperature and relative humidity.Studies have shown no connection between COVID-19 distribution and temperature, nevertheless. Another study discovered a strong correlation between COVID-19 instances and a 3°C threshold. According to the findings of one study, there isn't much proof that SARSCoV-2 spreads via aerosol transfer through HVAC systems. Additionally, there is currently no modelling studies on the virus particles scattering for COVID-19, which in the first SARS pandemic clearly indicated the possibility of SARS-CoV-1 aerosols being captured and re-diffused by HVAC. Two fundamental COVID19 control strategies were explored in three of the twenty trials that were included: efficient ventilation and social isolation.

(IoT-Q-Band: A low cost internet of things based wearable band to detect and track absconding COVID-19 quarantine subjects)

Vibhutesh Kumar Singh *et al*[5] . Most mobile applications are used to track COVID-19 positive patients. According to user evaluations of this software that established by goverment,they worried personal data such as address, nric etc. easily hacked by hackers and they use the information in the wrong direction.The most effective tracking method for locating COVID19 quarantine victims who have escaped is a visual indication based tracking approach (such as medical authority stamping on the hands with non-washable ink). However, as in every case, the evading individuals were discovered far from their quarantine site and reported by the public; an earlier warning to the authorities would have been more valuable. Thus, neither of the two described approaches appears to operate properly to find the missing individuals in time and also somehow infringes their privacy.A wearable band would be the best choice in this situation because several studies in the field of healthcare reveal that wearing a wearable gadget makes a patient more comply with prescribed medical routines and limits.As a result, we created a wearable band and mobile application that would detect and follow people who had escaped quarantine in real-time. The wearing band should only be removed when the designated quarantine time has passed. The fact that concerned medical authorities are in charge of the monitoring system and are in charge of the initial subject registration lessens the subjects' worries about privacy while also ensuring the accuracy of the data.The tracking technology delivers real-time warnings and enables the authorities to immediately identify absconding quarantine patients using GPS-based geofencing. Any disembarkation or tampering with the wearable band when a quarantine is in effect is also reported by the mobile app.We carefully considered how many parts our prototype would need because the COVID-19 outbreak and related lock-downs have impacted the worldwide supply chain for medical and technical components. We chose the wearable band's components and their method of operation with the WHO's recommended 14-day quarantine for those who have been exposed to COVID-19 positive patients in mind. This ensures that the accompanying battery will last the whole quarantine period. We also aimed to keep the cost of the device low so that it could be destroyed after use and yet be mass-produced because the reuse of tainted devices in epidemic scenarios is usually avoided. A person in quarantine wears the wearable band, which connects wirelessly to the mobile application through Bluetooth, on their hand, arm, or leg. The band's processing unit (ESP32) continuously detects if the band has been tampered with a predetermined intervals. Every two minutes after sensing, the band communicates the status (a byte of data) to the mobile application. The subject will only be registered to the IoT-Q-Band system by the relevant medical authority, which is also in charge of determining how long the quarantine will last and verifying the information. The supervisory position of authority automatically eliminates the worry that dangerous data will enter the tracking system and protects the confidentiality of the subjects in quarantine.The GPS coordinates of the quarantine site are also kept together with the personal information throughout the registration process. The mobile application offers the following visual feedbacks: (1) whether the wearable band is functioning normally or has been tampered with; (2) whether the subject is inside a 50-meter geofence around the registered quarantine location; and (3) the amount of time still remaining in the quarantine.Through a web interface that retrieves all active cases and presents them in a legible format, a designated person may keep track of each registered quarantine case. The data flow is shown, starting with the wearable band and ending with the monitoring web interface (admin dashboard panel).For the following situations, notifications are produced using onscreen visual highlights on the web interface: (1)the wearable band has been altered or removed,(2)the patient's position is 50 metres outside the Geofence of the recorded quarantine area and (3)according to a calculation made using the timestamp of the most recent packet received, the patient data has not been updated in the previous 10 minutes.

(Detection and Tracking Contagion using IoT-Edge Technologies: Confronting COVID-19 Pandemic)

Muhammad Usman Ashraf *et al*[6]. The worldwide epidemic known as COVID 19 is developing rapidly. The deadly spread of COVID19 has made Internet of things (IoT) enabled gadgets popular. One of the key objectives of all nations is the early diagnosis of infectious individuals. Therefore, it is suggested to identify various patient symptoms by using various devices to discover suspect individuals. Additionally, a WHOOP is worn on the wrist for respiratory system detection. The suggested approach in this research primarily addresses all of the fundamental symptoms, such as fever, respiratory issues, and blood pressure.The proposed COVID 19 suspicious person surveillance system uses wearable and non-wearable devices with sensors to collect real-time data. It will be utilised to keep track of the chain of all hotspots where the COVID 19 suspected victim enters and to be aware of the medical health state. Additionally, by adopting the internet of things (IoT) architecture, the microcontroller gathers data from sensors and communicates it to the multi-Edge layer nodes, where rule base analysis is used to compare the present status of the suspected individual with specified conditions. The suitable action triggering module allows the alerts in the Android application and creates the track chain hierarchy on the web server after computing the data on edge and cloud layers. We can trace the COVID 19 suspects in this way and do our best to protect other people from them. Two sensors, an IR temperature sensor, and a pulse sensor, are part of the wearable module. Additionally, it has real-time pulse rate and body temperature calculations capabilities. According to WHO guidelines, the primary symptom of COVID 19 afflicted people is unequal changes in body temperature (fever). Additionally, we consider the user's pulse rate, which is another important indicator for identifying the COVID 19 suspicious population. Although we cannot be certain if a certain individual is impacted by the COVID 19 pandemics or not with the aid of the wearable module, at least we may identify the suspected cases and take preventative steps.As this viral illness spreads from one person to another, it is imperative to find and follow the suspected individual in order to protect the healthy.The human respiration rate and blood pressure may be detected by a non-wearable module when travelling by any mode of transportation, but notably by airline and bus.Moreover, this non-wearable module will affix to the walkthrough gate entrances at the airport or even in retail centres where big crowds of people are anticipated.Additionally, it is accessible inside buses and aeroplanes to ensure that any suspected COVID 19 medical conditions are properly investigated and treated, if necessary.In addition to the wearable module, the non-wearable module offers the respiratory and blood pressure data of a suspected victim to confirm whether or not the patient is infected with the viral illness in accordance with WHO recommendations. We will also provide a means of communication between the cloud and edge layers. Furthermore, we will create a hybrid technique to identify and monitor the suspected COVID 19 victims considering the emergence of two viral technologies at this moment, namely IoT and Edge computing. However, the suggested approach will be successful in identifying and monitoring COVID 19 viral sufferer.While traditional public health techniques are still employed throughout the world to combat the COVID 19 pandemic in 2020, a variety of digital technologies are now available that may be used to supplement and improve current public health efforts.

(NOVEL COVID-19 DETECTION AND DIAGNOSIS SYSTEM USING IOT BASED SMART HELMET)

M. N. Mohammed *et al*[7]. Two distinct types of cameras were built into the smart helmet, enabling for the thorough collection of temperature readings and facial detection information. Optical and infrared thermal cameras collected data on the temperatures at which various points of were located. A thermographic camera is a device that produces images using infrared radiation instead of visible light, just like a typical camera would. This lesson discusses how to segment a picture based on the temperature that was recorded and the color images that were collected by both thermal and optical cameras.Utilizing the fluctuation of high temperature compared to other objects inside the scanned zone, thermal cameras are used for hot body detection and recognition. When a thermal camera detects a hot body, it produces infrared spectra with high degrees of intensity.The latest technology focuses on appropriate types of thermal imaging frameworks for body temperature detection and surveillance, and more specifically on an improved helmet-mountable camera system that can be quickly deployed and used to view thermal images with high resolution for the infected site coordinated to either user's eye while maintaining directed and coordinated visual contact of the client with the location to replace Fever, or a rise in body temperature relative to other persons in the near vicinity, is a key sign of an illness. Thermography is the best technique for scanning big flows of people as well as individuals. To do this, the temperature is monitored, and if there is a deviation, an alert is set off. This enables individuals with elevated body temperatures to be rapidly and accurately detected and segregated for more precise testing. AI is being used to diagnose COV19 in addition to measuring body temperature. Infer vision, a programme that uses screening pictures to automatically identify symptoms, can speed up diagnosis and lower the possibility of human mistake. Since a few decades ago, face recognition has been extensively studied. Additionally, Google Location History (GLH) can provide the system with information on the locations visited by the infected up to this point to detect the history of places visited by a person who is suspected of being infected. GLH is a Google tool that records user movements on all mobile devices. GLH has been used to evaluate user behaviour and mobility in addition to providing visions concerning infrastructure design, infectious disease management, and appropriate response to catastrophic events.The micro-controller (type NodeMcu) had data including the recognised face, body temperature, and GPS position uploaded to it via the Web after being given information by Arduino through sequential communication in order to provide independent online global access to this data. This led to the use of an external server named Blynk. The device contacts the authorities to warn them about the hazard when the thermal camera identifies a body with a high temperature. The system will snap a photo at the same moment and send it to the health official.

(TOWARD A NOVEL DESIGN FOR CORONAVIRUS DETECTION AND DIAGNOSIS SYSTEM USING IOT BASED DRONE TECHNOLOGY)

M. N. Mohammed *et al*[8]. Due to the UAV's two distinct types of cameras, it is possible to collect precise data on both ambient temperature and human faces. This module refers to a method of segmenting photographs based on the temperature that was recorded and the coloured images that were collected by the thermal and optical cameras. A thermal camera is used to detect and identify hot bodies by adopting a high temperature variance in comparison to other objects in the scanned region. The thermal camera will produce high intensity levels of infrared spectra if it is able to see the hot body. Additionally, virtual reality, or VR, will be used to operate and control the cameras.The Internet of Things (IoT) and drone technology will combine with virtual reality.Virtual reality is employed together with live video monitoring to operate the camera in order to scan individuals since the drone is directed by the pilot to the present place. After the drone reaches the designated position, the VR will be linked to the camera and begin to scan the subjects' body temperatures. The smartphones will receive the live video surveillance from the cameras that do the scanning. The live video monitoring is linked to a smartphone app so the user may obtain a continuous live scan from the drone's whole flight.The drone control module is in charge of directing the drone's movements and plans. The GPS position obtained from the emergency call served as the route's intended destination point. Two cameras are used in the proposed system to track and keep an eye on the designated scanned zone. The drone is used to execute thermal and visual camera depictions and gather additional data for an accurate hazard analysis. To differentiate and assess the risks, optical and thermal sensors will be applying algorithms for detection of the heated body temperature by using an image processing module. To merge the reality of visual technology with the drone, which will give a direct view of the flying activities, this drone's idea will be combined with Virtual Reality, or VR. Additionally, this headgear has sensors that can monitor head movement. To observe the persons being scanned, the controller only needs to turn their head to operate the drone's camera. A connected application can also be used to regulate flight to follow a specified course. Wi-Fi signals are used to connect drones to smartphones, and an Android smartphone's gyroscope data is used to control cameras.The IMU includes or incorporates the gyroscope. The flight controller system will include the IMU for the drone and GPS for satellite location. The gyroscopes are used by the IMU to detect changes in rotational characteristics including pitch, roll, and yaw. The drone's camera will scan individuals, and live footage will be transmitted through a VR headset that is attached to an IMU that communicates with the microcontroller. The correction for the head's yaw and pitch movements is calculated by the IMU that is attached to the virtual reality headset. The light controller collects IMU data on current location in order to fly in any direction, and then delivers fresh data to the motor electronic speed controllers.A small device will be placed on top of the VR headset to enable real-time tracking of the designated head. It will take raw data from the IMU, render it to determine movement, encode the data, and transmit it.After receiving data about each user's body temperature and GPS location from the Arduino via sequential communication, the microcontroller (type NodeMcu) had these observations sent to it via the Web to provide independent online access to this data anywhere in the world. Additionally, the system is distinguished by the operation of collecting and/or delivery of situation reports according to a timetable or upon demand. The authentication of decisions made is a crucial component of this module since some actions call for officialization. For instance, the system alerts the authorities to warn them about the risk when the thermal camera identifies a corpse with a high temperature. The technology will simultaneously snap a photo and send it to the health official.

(Certain Investigations on IoT system for COVID-19)

Sarah Jaafari *et al*[9]. The study suggested an IOT-based healthcare application to identify COVID-19 patients. IOT systems are made up of several devices that collaborate to achieve the system's core goals. IOT systems employ many protocols to control data transit between various devices and users.The suggested method relies on IOT systems, which offer efficient remote control services for patient monitoring. Data is continually examined and handled in the suggested system to keep track of any changes. Corona patients experience symptoms that fluctuate constantly and differ in their impact from person to person. The proposed system offers the capability to follow a wide range of diseases, monitor their condition, and transfer information to the system's main supervisor where the data is accurately analysed and handled. This increases the suggested system's strength and efficiency in order to achieve the primary goals of COVID-19 patient detection in an IOT system.One of the most often used protocols in internet of things systems is Message Queuing Telemetry Transport (MQTT). MQTT is a message transfer protocol that operates in publish/subscribe mode between a server and client. It is open source, simple to use, and small enough to be put into practise. It is especially created for the context of Internet of Things applications in scarce resource situations in the areas of energy, data transfer, and memory storage.In the initial section, the patient was attached to GPS and ECG sensors so that they could read information about the patient, such as where they were and what symptoms of corona illness they were experiencing (such as fever and irregular heartbeat). After sending data to the system's main server, all information will be kept in a local database for use by the physicians. ECG and GPS analysis of the patient's data will be done in the last section. The patient's condition is determined using the findings of the statistical analysis of the data, which aids in identifying which patients suffer from COVID-19.

(Wildfire and COVID-19 pandemic: effect of environmental pollution PM-2.5 and carbon monoxide on the dynamics of daily cases and deaths due to SARS-COV-2 infection in San-Francisco USA)

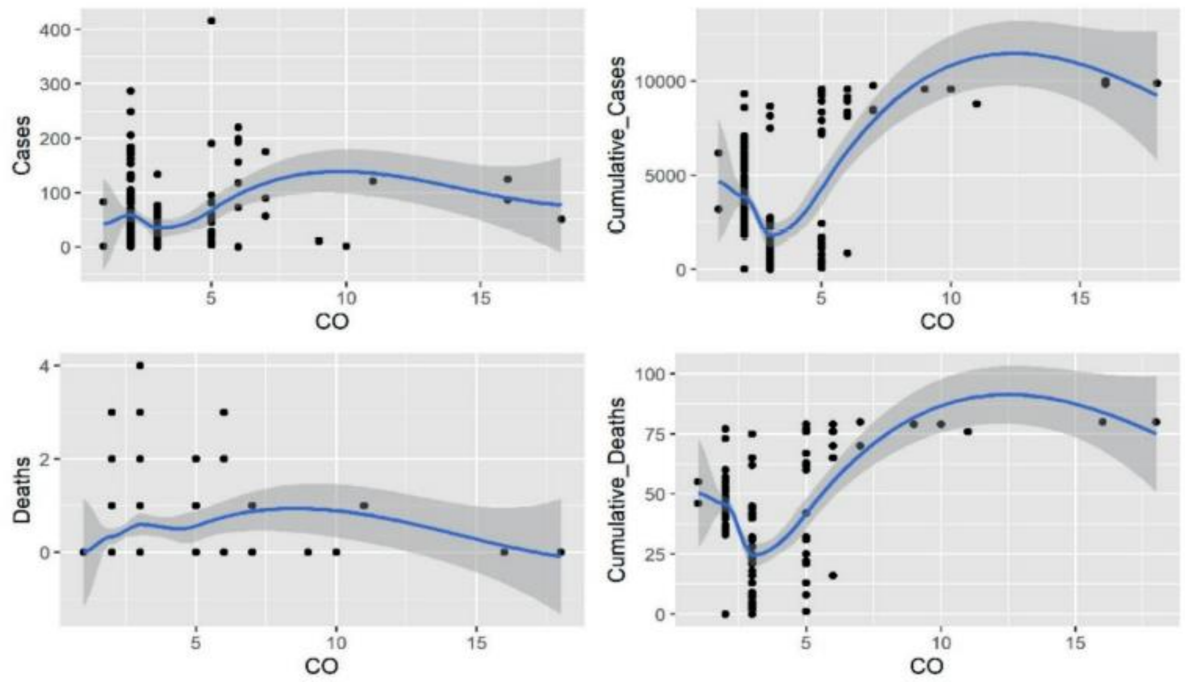


Figure 2. Relationship of CO with cases, deaths, cumulative cases, and deaths.

Meo SA *et al*[10]. In San Francisco, California, wildfire-related environmental pollutants PM.2.5 and carbon monoxide are increasing the epidemiological trends of COVID-19 cases and fatalities. Environmental pollution is recognised in the literature to increase both the incidence and mortality of SARS-COV infection. According to Kan et al.13, an increase in the mean total respirable particulate matter (PM-10), which also includes PM-2.5 and bigger particles, by 10 micrograms per cubic metre resulted in a 6% increase in the coronavirus epidemic.Along with the cumulative SARS-COV-2 mortality, we also discovered a significant association between CO and cases.Furthermore, they came to the conclusion that the COVID-19 epidemic in Italian regions is largely caused by particulate matter pollution. Air pollutants such PM2.5, PM10, CO, and O3 were reported to have a strong positive correlation with COVID-19 infection by Zhu et al. Similar findings from the current study indicate an uptick in COVID-19 cases and fatalities associated with wildfires and other environmental contaminants in San Francisco, California.Additionally, there is a link between the occurrence of COVID-19 and airborne pollution. Particulate matter from environmental pollution serves as a pathogen carrier, weakens immunity, increases susceptibility to infections, and accelerates the progression of illness. These are the few studies that support the relationship between carbon monoxide (CO) ppm and particulate matter (PM-2.5 m), two wildfire pollutants, and the epidemiological dynamics of COVID-19 cases and death. Carbon monoxide is also a very hazardous gas that may harm the lungs. This mechanism lends credence to the theory that SARS-COV-2 cases and fatalities increased in San Francisco, one of the areas hit by the wildfires in California, USA, because of the wildfire-related pollutants particulate matter (PM-2.5) and carbon monoxide.

3.0 METHODOLOGY

Hardware Products that used for this project. It contains of Arduino microcontroller, Temperature Sensor, Humidity Sensor, Gas Sensor and WIFI module.The project's chosen piece of software are proteus and Arduino 1.8.19 . Apps utilized for the project include Blynk.Source code is coding for make it this project.

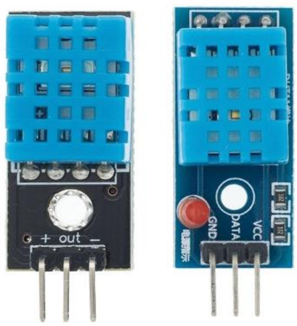
HARDWARE

Arduino UNO

AVR microprocessor Atmega328, six analogue input pins, and 14 digital I/O pins, six of which are utilized for PWM output, are all included in the Arduino UNO. This board has a USB interface, which enables it to be connected to a computer via a USB connection and programmed using the Arduino IDE (Integrated Development Environment) application. While the SRAM is 2KB and the EEPROM is 1KB, the device has 32KB flash memory, which is utilized to store the number of instructions.

DHT11

A basic, extremely affordable digital temperature and humidity sensor is the DHT11. It measures the humidity in the air using a thermistor and a capacitive humidity sensor, and it outputs a digital signal on the data pin (no analogue input pins needed). Although reasonably easy to operate, data collection needs precise timing. The sensor's only significant drawback is that it can only provide fresh data once every two seconds, which means that when utilising our library, sensor values might be as much as two seconds outdated.

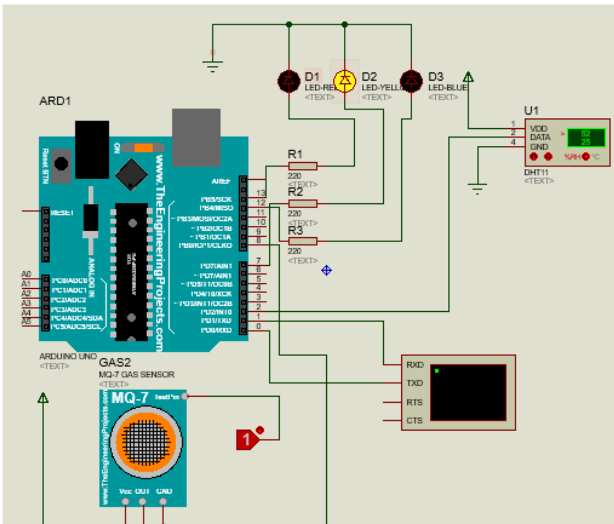


MQ-7

The MQ-7 is a simple Carbon Monoxide (CO) sensor that can detect CO levels in the air. It can detect CO-gas quantities between 20 and 2000 ppm. It is employed in gas detection devices for the CO family, particularly in the automotive sector.

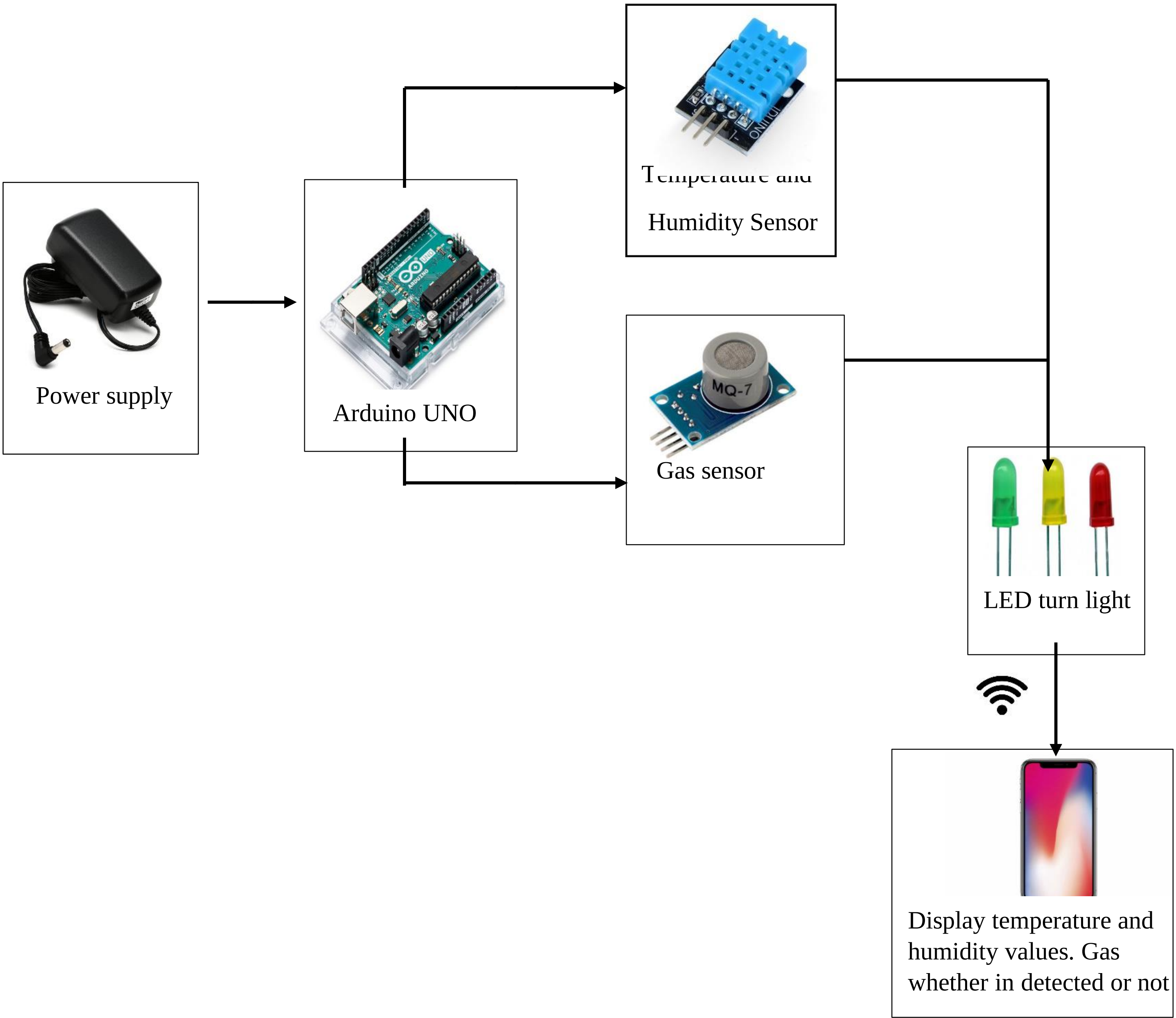
ESP8266 ESP-01

The ESP8266 ESP-01 is a Wi-Fi module that allows microcontrollers access to a Wi-Fi network. This module is a self-contained SOC (System On a Chip) that doesn't necessarily need a microcontroller to manipulate inputs and outputs as you would normally do with an Arduino, for example, because the ESP-01 acts as a small computer. Depending on the version of the ESP8266, it is possible to have up to 9 GPIOs (General Purpose Input Output). Thus, we can give a microcontroller internet access like the Wi-Fi shield does to the Arduino, or we can simply program the ESP8266 to not only have access to a Wi-Fi network, but to act as a microcontroller as well. This makes the ESP8266 very versatile, and it can save you some money and space in your projects.



Circuit Diagram

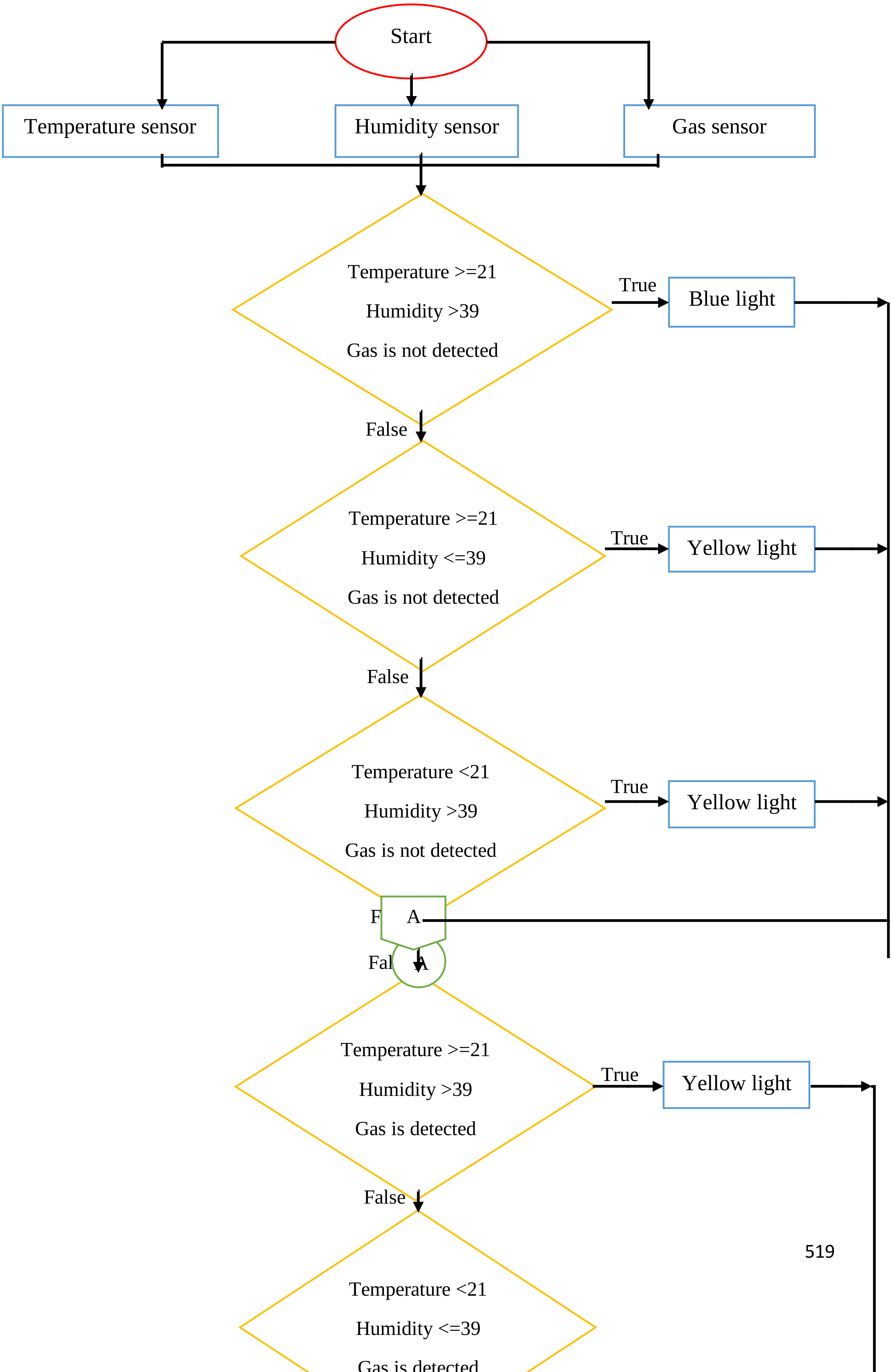
BLOCK DIAGRAM

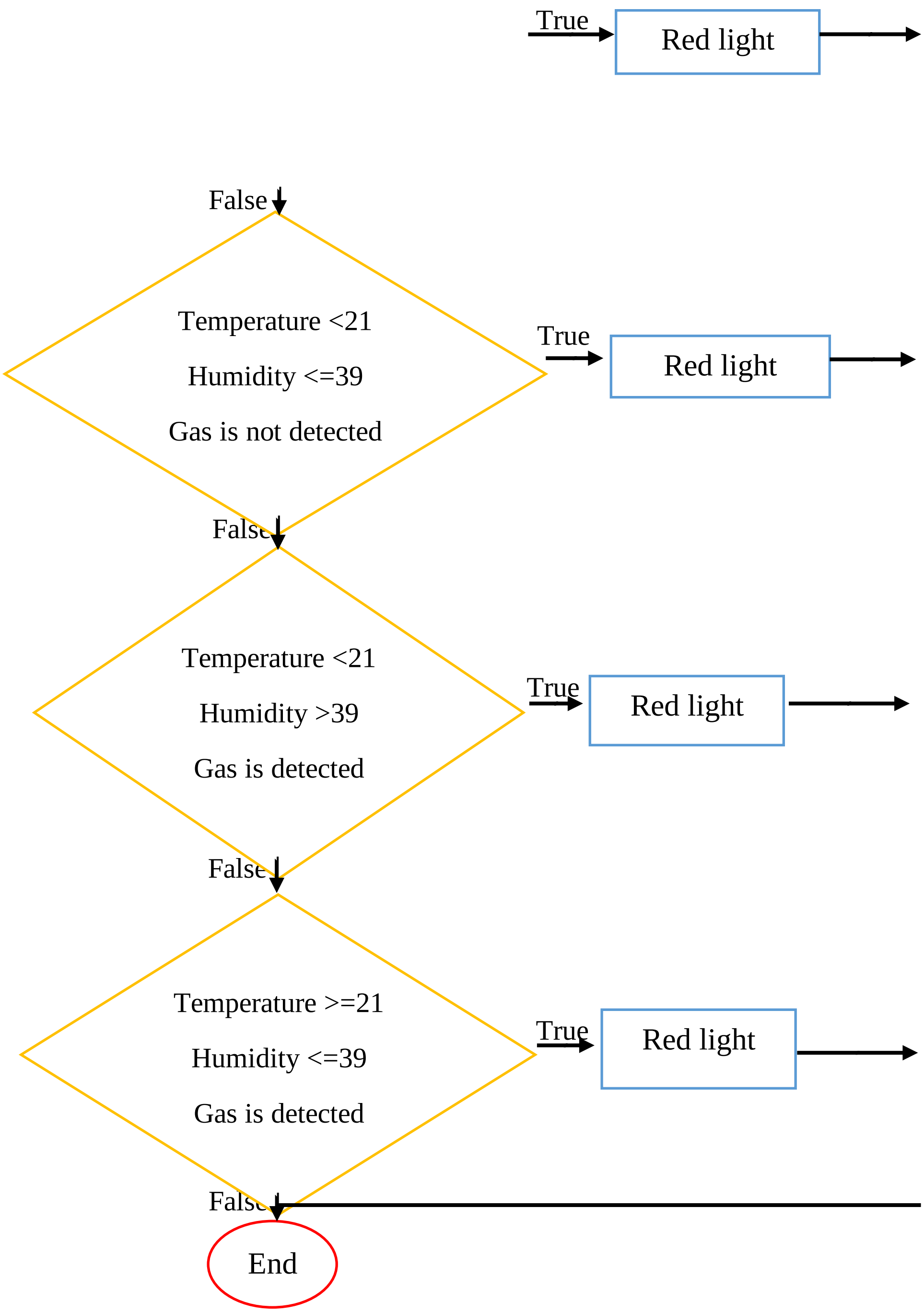


Arduino UNO gets its power from the power supply.DHT11 and MQ-7 will connect with Arduino UNO.DHT11 detect temperature and humidity.MQ-7 will detect gas. Results for temperature and humidity in values while gas output whether in detected or not.LED will turn on base on condition.If blue light is on (very good).If yellow light is on (bad) and if the red light is on(very bad).The result for temperature and humidity in value,Gas whether in detected or not and colour of led will display on apps Blynk.

FLOWCHART

The flow diagram of the methodology that has been used in this project is shown below. It contains a signal detected in a closed area, it will output temperature, humidity in value and gas whether it is detected or not. It will be displayed on the phone application and the result will show the state of the area whether the blue light is on (very good) or, the yellow light is on (bad) or the red light (very bad).


Start
Temperature sensor
Humidity sensor
Gas sensor
Temperature >=21
Humidity >39
Gas is not detected
True
Blue light
False
Temperature >=21
Humidity <=39
Gas is not detected
True
Yellow light
False
Temperature <21
Humidity >39
Gas is not detected
True
Yellow light
A
A
Temperature >=21
Humidity >39
Gas is detected
True
Yellow light
False
Temperature <21
Humidity <=39
Gas is detected



SOFTWARE

PROTEUS

Proteus is a platform that can create circuits for my projects. The application provides many components and can add coding in the components. Proteus can add components that are not in proteus, for example Arduino UNO, DHT11 and others.

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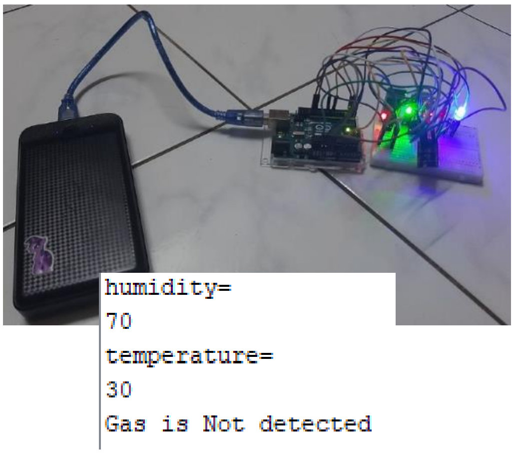
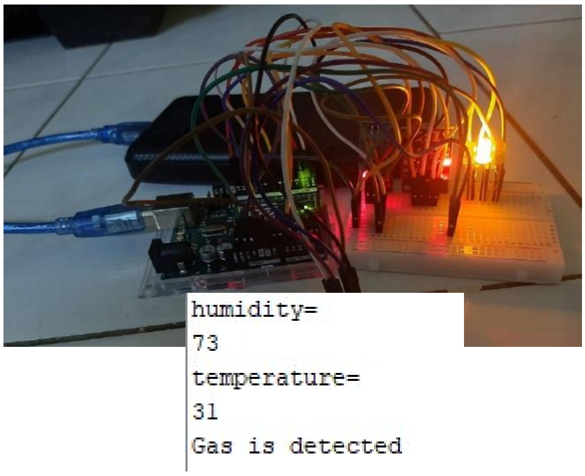
ARDUINO 1.8.19

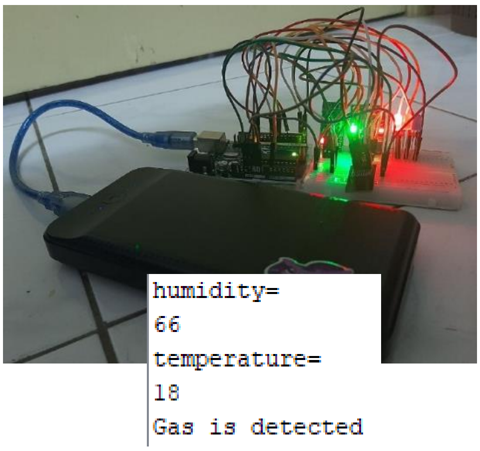
ARDUINO

Arduino 1.8.19 is a platform that can create coding. Many languages can be used for coding, for example C language, machine language (binary code) and others.

4.0 EXPECTED RESULT







DATA	RESULT
Humidity is high, temperature is high and Gas is not detected	LED Blue is on
Humidity is low, temperature is high and Gas is not detected	LED Yellow is on
Humidity is high, temperature is low and Gas is not detected	LED Yellow is on
Humidity is high, temperature is high and Gas is detected	LED Yellow is on
Humidity is low, temperature is low and Gas is detected	LED Red is on
Humidity is low, temperature is low and Gas is not detected	LED Red is on
Humidity is high, temperature is low and Gas is detected	LED Red is on
Humidity is low, temperature is high and Gas is detected	LED Red is on

If humidity >39, temperature >=21 and Gas is not detected,so LED Blue is on. It means the area in good condition.If humidity <=39, temperature >=21 and Gas is not detected, so LED Yellow is on.Then,if humidity >39, temperature <21 and Gas is not detected,so LED Yellow is on and if humidity >39, temperature >=21 and Gas is detected,so LED Yellow is on.If led yellow is on,it mans the area in bad condition. If humidity <=39, temperature <21 and Gas is detected,so LED Red is on.If humidity <=39, temperature <21 and Gas is not detected,so LED Red is on.If humidity >39, temperature <21 and Gas is detected,so LED Red is on. If humidity <=39 temperature >=21 and Gas is detected,so LED Red is on.If led red is on,it means the area in very bad condition.

5.0 CONCLUSION

In conclusion, covid is still in the world. We cannot see the virus to avoid getting infected with covid 19, but we can take care of getting infected with covid by knowing whether the place has the potential to spread the covid 19 virus or not. This can reduce the risk of contracting covid 19

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