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PRACTICE SCHOOL I

BITS PILANI

SEMINAR PRESENTATION

Attendance Marking System and Temperature Measurement of the Employees of Adani Power

STUDENTS WORKING ON THE PROJECT :-
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Purpose of the Project

Due to the unfortunate outbreak of Coronavirus, it has become mandatory for the employers to have a regular temperature check for their employees.

Our system not only records the attendance of the employees using the RFID cards but also checks their temperature using IR sensors upon arrival.

- This project uses RFID (radio frequency identification) technology to make a note of every employee entering into the workplace and also to calculate the time resides in the workplace. In this proposed system, every employee is allotted with an RFID tag. The process of attendance can be done by placing the card near the RFID reader.

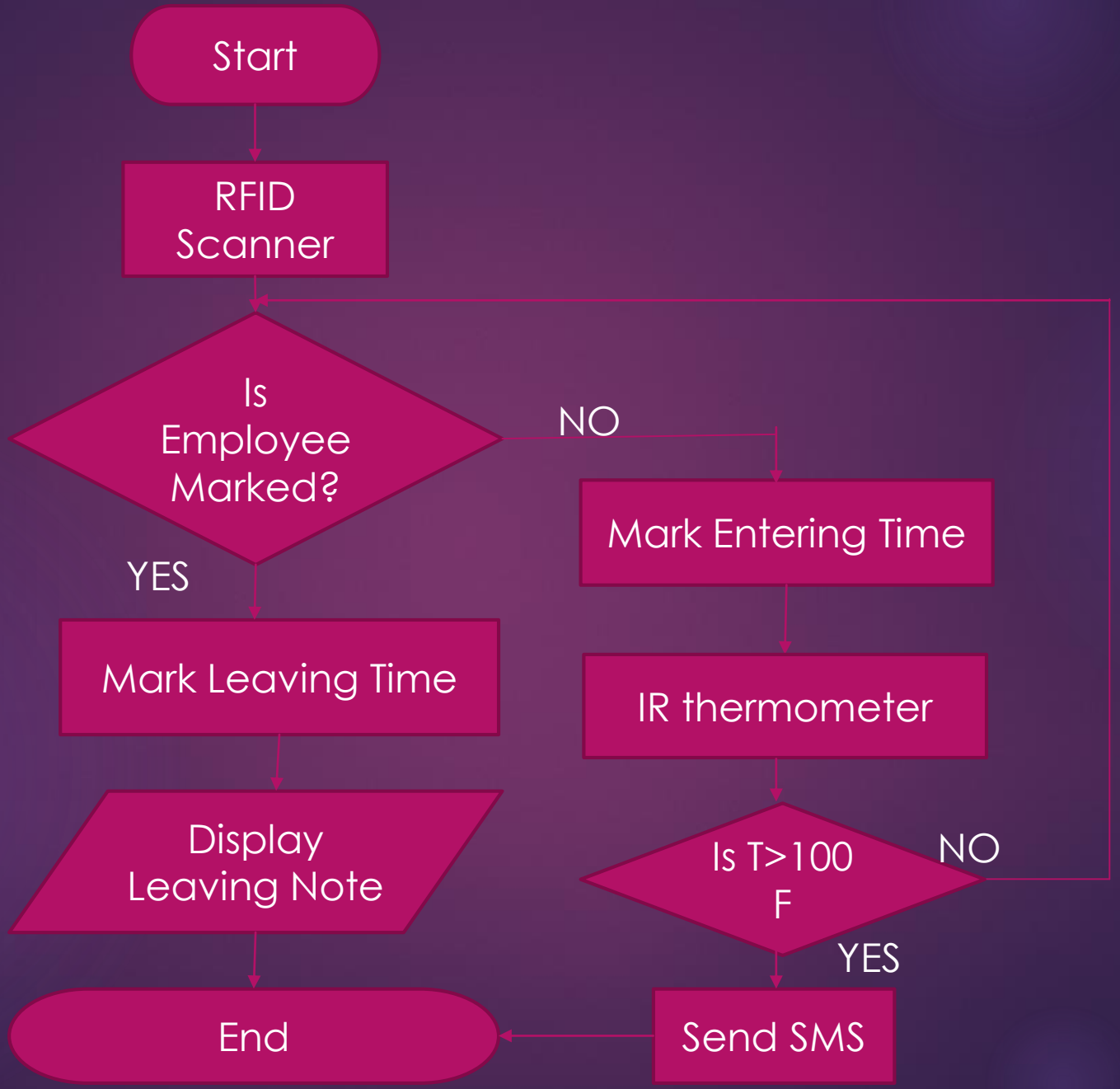
- Every RFID tag has a unique number so whenever employee will scan his/her card the RFID tag number will be sent to the database and that unique tag number will be the identity of every single employee.

- The need to be able to measure the temperature of person without physical contact arose especially during these times. This need brought the measurement of temperature using infrared sensors aka Infrared thermometers.

- The system flashes

red light if T >= 100 degree Fahrenheit

green light if T < 100 degree Fahrenheit


Start
RFID Scanner
Is Employee Marked?
NO
YES
Mark Entering Time
Mark Leaving Time
IR thermometer
Display Leaving Note
Is T>100 F
NO
YES
End
Send SMS

Total Cost of the Project

- After coming up with the most reliable and cost-effective equipment for our project, the total cost of the prototype is roughly around Rs. 3500.
- This is very cost effective as compared to the present substitutes.

Components used in making this device

Arduino Board- Arduino Uno

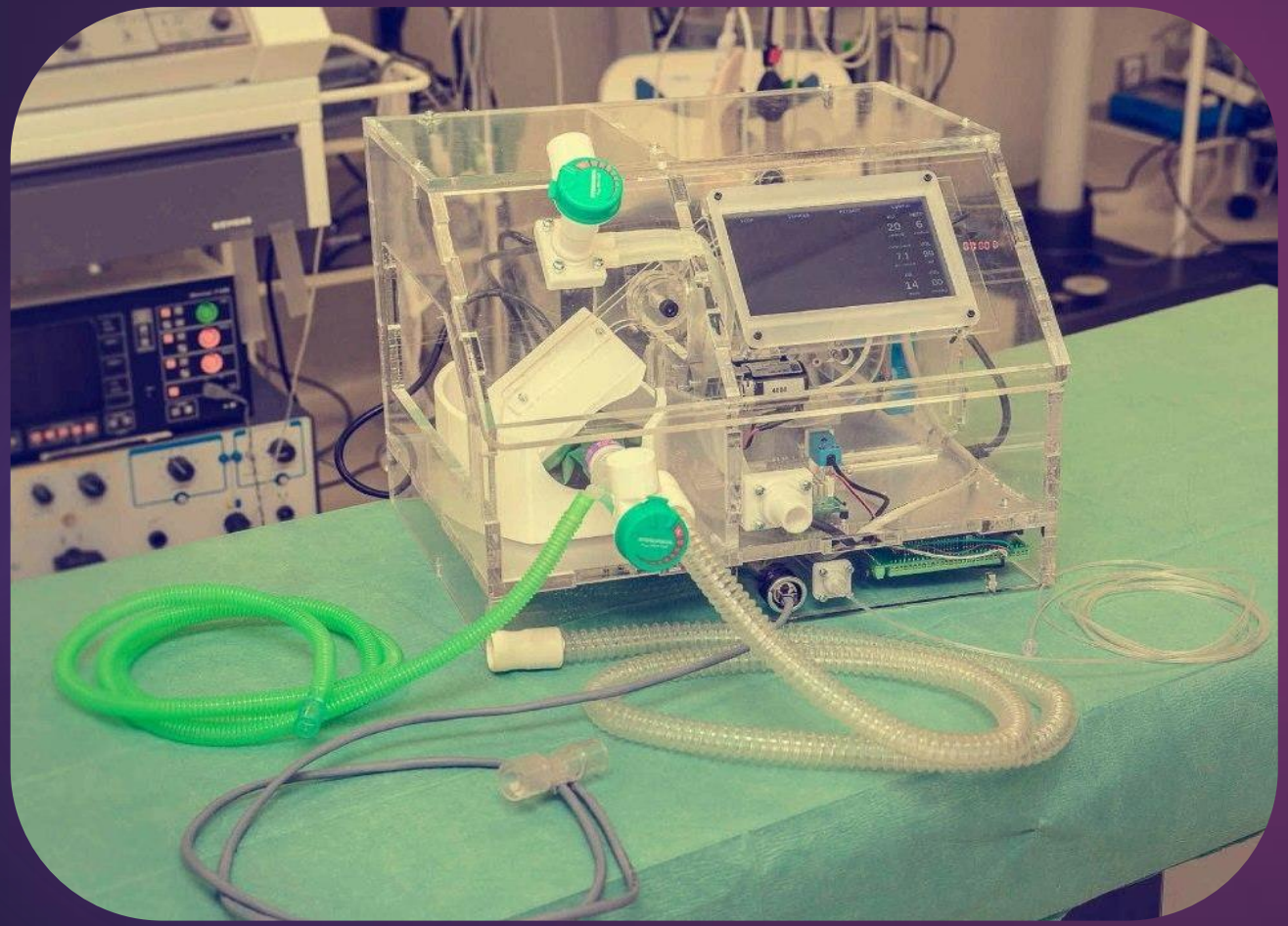
About Arduino

- It is an open-source electronics platform based on easy-to-use hardware and software.
- It is a microcontroller board which is used as a base for thousands of electronics projects
- It is based on a programming language called ‘Wiring’ and is compatible with most of the programming languages like C, C++, python etc.
- It has a wide range of applications ranging from turning on/off an LED bulb to controlling complicated circuits used in control and automation of industries.

Uses of Arduino

- DIY projects for beginners.
- Development projects which have code-based control.
- Development of embedded systems and automation technologies.
- Wearables and other IoT devices, like fitbits, smartwatches etc.

COVID-19 and Arduino



A prototype of Ventilator under development using Arduino board.
This will help in providing a cheap substitutes to the conventional ventilators.
It will prove to be very effective during a world pandemic such as COVID-19.

RFID- Radio-Frequency Identification

About RFID-

- It uses electromagnetic fields to automatically track and identify tags which are generally attached to objects.
- It consists of a radio receiver and a transmitter.
- When triggered by an electromagnetic interrogation pulse from a nearby RFID reader device, the tag transmits digital data, usually an identifying inventory number, back to the reader.

Types of tags-

- Active RFID-
  - Active RFID tags have their own transmitter and power source (usually a battery) onboard with the tag
  - They read ranges that can extend up to 100 m.
  - They are usually larger and more expensive than their passive counterparts
- Passive RFID-
  - The tag-reader and reader antenna send a signal to the tag, and that signal is used to power on the tag and reflect energy back to the reader.
  - They read ranges are shorter than with active tags and are limited by the power of the radio signal reflected back to the reader.
  - They are usually smaller, less expensive, and more flexible than active tags.

Types of tags-

- Battery Assisted Passive RFID-
  - BAP systems, or semi-passive RFID systems, incorporate a power source into a passive tag configuration.
  - The power source helps ensure that all of the captured energy from the reader can be used to reflect the signal, which improves read distance and data transfer rates.
  - Unlike active RFID transponders, Hybrid (BAP) tags do not have their own transmitters.

Uses of RFID-

- In Supermarkets to prevent shoplifting.
- To monitor livestock and pets.
- To capture attendance of employees and students.
- In Automobile Industry to track progress through assembly line.

This Device and RFID

- This device uses the RFID scanner integrated with Arduino to capture the attendance of an employee and store it along with the persons credentials into the database.
- Every employee is issued a passive RFID tag integrated into their company ID card, which when brought near the sensor can be scanned.

Infrared Temperature sensors- IR THERMOMETERS

Uses

- It is primarily used in healthcare industry as thermometers.
- It is better than the conventional Mercury based thermometers as no skin contact is required to sense the temperature.
- This no-contact mode of operation makes this sensor/thermometer very useful in pandemic caused by communicable diseases like COVID-19 which can spread through contact.

COVID-19 and IR SENSORS

A café shop employee checking the body temperature before allowing a person to enter the café.

This Device and IR Sensor

- This device uses the IR scanner integrated with Arduino to sense the body temperature and store it along with the persons credentials into the database.

- It also sends the output to the Arduino which is programmed to send an SMS to the Security-in-charge.

GSM Module

Uses

- This is an extension of the Arduino microcontroller board.
- It enables the board to send and receive calls and SMS.
- A Subscriber Identity Module (SIM) card is required in addition to the board.

This Device and GSM Module

- This project uses this module to send an alert in form of SMS along with the employee's credentials.
- This notifies the "Security-in-charge" that a particular employee has a high body temperature.
- This can help in monitoring the employee's health and controlling the spread of a pandemic such as COVID-19.

Other Components-

- The device also uses some minor components like-
  - Breadboards
  - LED lights
  - Jumper Cables
  - USB Cables etc.

Our progress so far-

- Since we are new to this vast world of Arduino, it requires an extensive reading of literature and watching tutorials.
- Major portion of Planning is done.
- We will procure the above components once the lockdown opens.
- Some designing on Arduino simulators is going on along with in depth study of writing sketches and wiring.

WITH THIS DEVICE WE ARE TRYING TO MAKE WORK A SAFER PLACE FOR INDUSTRIES THAT DO NOT HAVE THE PRIVILEGE OF WORK-FROM-HOME SYSTEM.

THANK YOU

REFERENCES-

- WIKIPEDIA
- ARDUINO.CC
- LOWRY SOLUTIONS
- GOOGLE IMAGES
- AMAZON.IN
- ELEMENTO LABS
- ARDUINO.CC- BLOG