

# Advanced Airport Management System

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## Abstract

In today's scenario where security is a sharp worry for each person for their significant having a place and cash, thinking about this, we have actualized a System that is in light of mechanized administration framework. The Research Work is giving us the full information regarding the Airport and we have the details of person available by using the web designing application. We make use of two ultrasonic sensors to tell us about the number of person entering and leaving the Airport. We also have DHT 11 sensor available for the temperature as well as the humidity in the room. In the second part of Airport there is RF module available giving the information about the person travelling. We make use of MAX232 for the serial reading of data through the Microcontroller. The passport number can be entered in the PHP code and then the details of person are displayed. We are using ARDUINO IDE as Software for programming. The Research Work involves Atmega8 with RF MODULE EM-18 using MAX323, Ultrasonic sensor HC-SR04, DTH11 and web designing Module PHP. The implementation is done on a single board and work is tested with the help of ARDUINO. The paper has started with an introduction elaborating the new idea for the implementation of Airport management system. This Research Work makes the Airport smart as well as it increases security of the airport .

## INTRODUCTION TO SECURITY SYSTEM

### 1.1 Purpose:

A biometric visa, otherwise called an e-identification, epassport or an advanced identification is an electronic identification that contains biometric information that could be used to validate the personality of explorers. It makes use of contactless shrewd card novelty, involving a microcontroller. The visa's basic data is put away in the chip. We are using PKI (Open Key Infrastructure) for affirming the data set aside electronically in visa chip formation it is expensive, difficult to produce when every security parts are precisely and totally completed. There will be two stages of check associated with this innovation.

1st Phase – To get the name of the traveller along with Passport number

2ndPhase - Put the Passport number in the webpage to get the complete detail of the person. In this phase security person will verify the traveller with that passport number and check details in his system. If the passport number matched successfully then traveller can enter into the Airport. Using this technology, There will be a delicacy of passport will be removed.

### 1.2 Existing Security Systems:

Existing airport have the old system of putting the data offline and even the authentication security is very less. There is no SMART word in existing airports. So we tried to enhance the airports smartly by making them semi-automatic and also increase the security by providing digital passport to customers. Is the existing airports there is a case of delicacy but we tried to remove it by providing a case where PAN CARD in necessary and if a customer tries to make duplicate passport it will show error.



**Fig. 1.1:- Old traditional airports**

Conventional computerized visa stands were fully operational at Toronto's Pearson International Airport it's sought they will lessen hold up time after travelers venturing out to the United States. Clients will check their identification, have their image taken and answer a progression of inquiries before continuing to a U.S. import/export officer. The kiosks are already in use at several U.S. airports and in Montreal and Vancouver. According to the Chicago Sun Times, they've already made a big impact at O'Hare International Airport. Surprisingly, in the course of first forty days of use, the kiosk reduces sixteen minutes of the normal wait time, that too in busy travel hours. Passengers must hold either a Canadian or U.S. passport to use the Automated Passport Control (APC) kiosks, the Greater Toronto Airport Authority said Wednesday. If passengers have or require a Visa or work permit to enter the U.S., they cannot use the APC system. Unlike the NEXUS system, there is no fee to use the kiosks. There are 40 kiosks at Pearson, located in Terminal 1 and Terminal 3.



**Fig. 1.2: Passengers use the Automated Passport Control (APC) kiosks at Pearson airport**

## POSSIBILITY OF IMPROVEMENT

### 2.1 Main Research Work

The main purpose of the Research Work is to make airport secure and automatic. We make use of PHP coding as well as RF module to read the data of the person visiting the airport. The RF module is trying to make our Research Work automatic where as integration of PHP code is helping removing the delicacy.



**Fig. 2.1:- Main Research Work**

Under this Airport management system the technologies used are Arduino IDE, MC Programming Language: Embedded C, Wordpress – For web page Development, Domain Name, Web Secure Server.

### 2.2 Rationale behind Choosing the Research Work

The increase in the crime can be easily seen now a days one the major reason of crime is easy migration of person from one country to another. So we tried to implement a system where the system is so advanced that a person without proper authentication can't use the airport facilities even we tried to make of two domains of engineering that's computer science and electronics and communication. Under our Research Work we integrate the old passport into the advance passport where the passports are changed to RF cards holding the person's name and passport number and a special authenticated person with proper user name password is allowed to login on webpage he/she puts the passport number and whole information of that person's is displayed in pc.

Seeing the problems with the existing airports we come across a new idea to make airport smart also by placing an ultrasonic sensor showing the number of person entering and existing the airport. We also make of temperature and humidity sensor to show the temperature of room as well as the humidity in the room. The number of person entering and existing can be used to gather an information regarding people boarded the aeroplane and people departed from airport. It also secures the system of airport.

We have basically used passport number as identity of person and also the webpage can create the form using some authenticated person login. So a system now a days can be make smart by using some simple measures. So by simple measures we are able to do Low cost and expandable devices to be controlled. Highly Secure System. Saves money and energy. Delicacy of passport removed Small in size so easy to use or implements.

### 2.3 Scope Of The Research Work

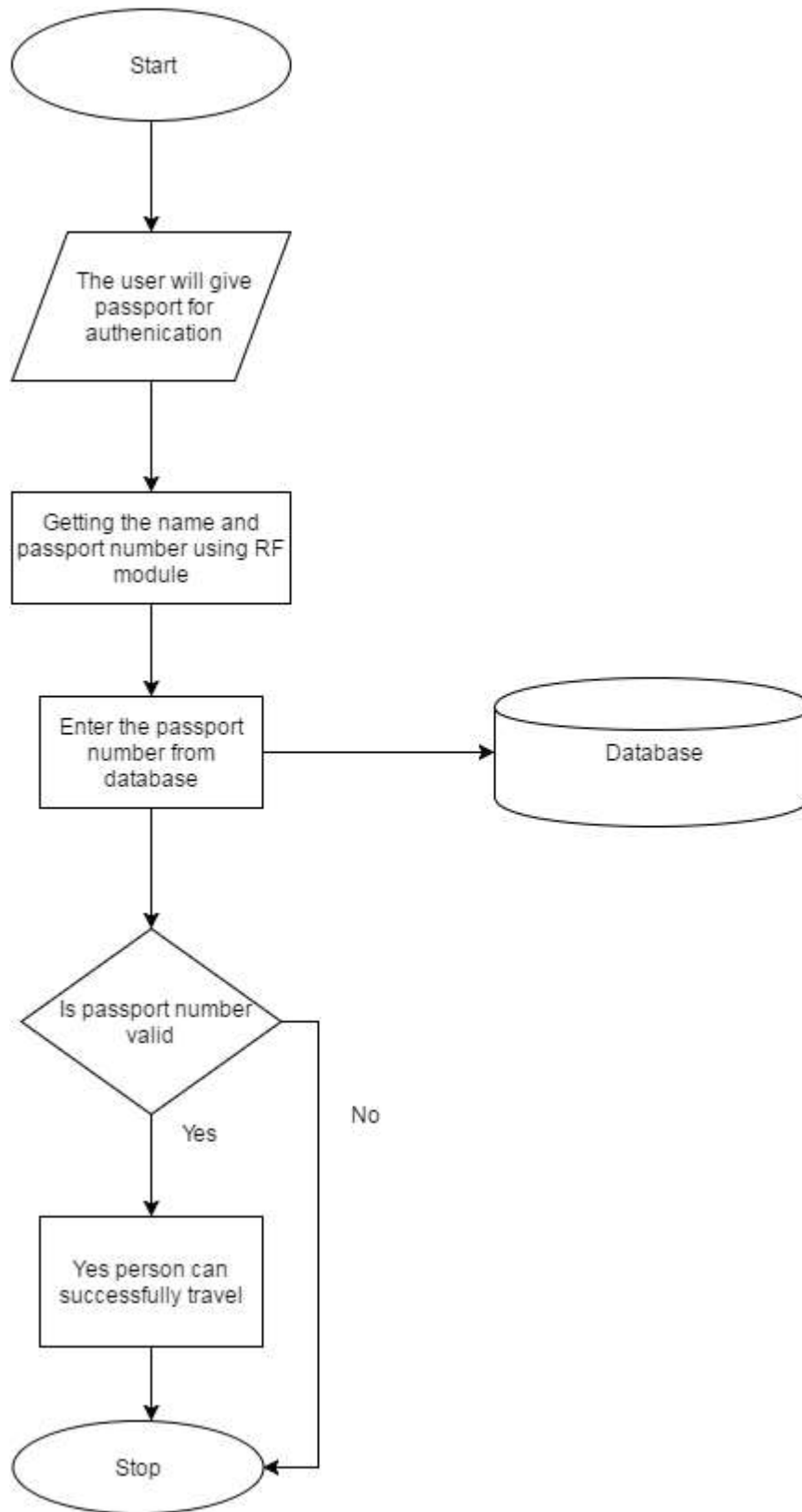
The advancement of our venture, air terminal administration framework utilizing web planning gives a smart thought in the area of digitalization. This venture discovers a huge degree in the area of safety just as robotization. This undertaking requirement validated individual association for ensuring the visa information. This security framework is modest. Along these lines, it can pick up ubiquity in light of the fact that of this progressive and cash sparing thought. Right now framework there is an utilization page to guard framework on the grounds that the data of the traveler is spared in the page which diminishes the trickery also as framework is more made sure about the information hacking is extreme in the event that we take appropriate measures to control it. One the confirmed individual is permitted to utilize the website page .This can function as shelter in the field of security.

## 2.4 Explanation of the problem and possible Solution

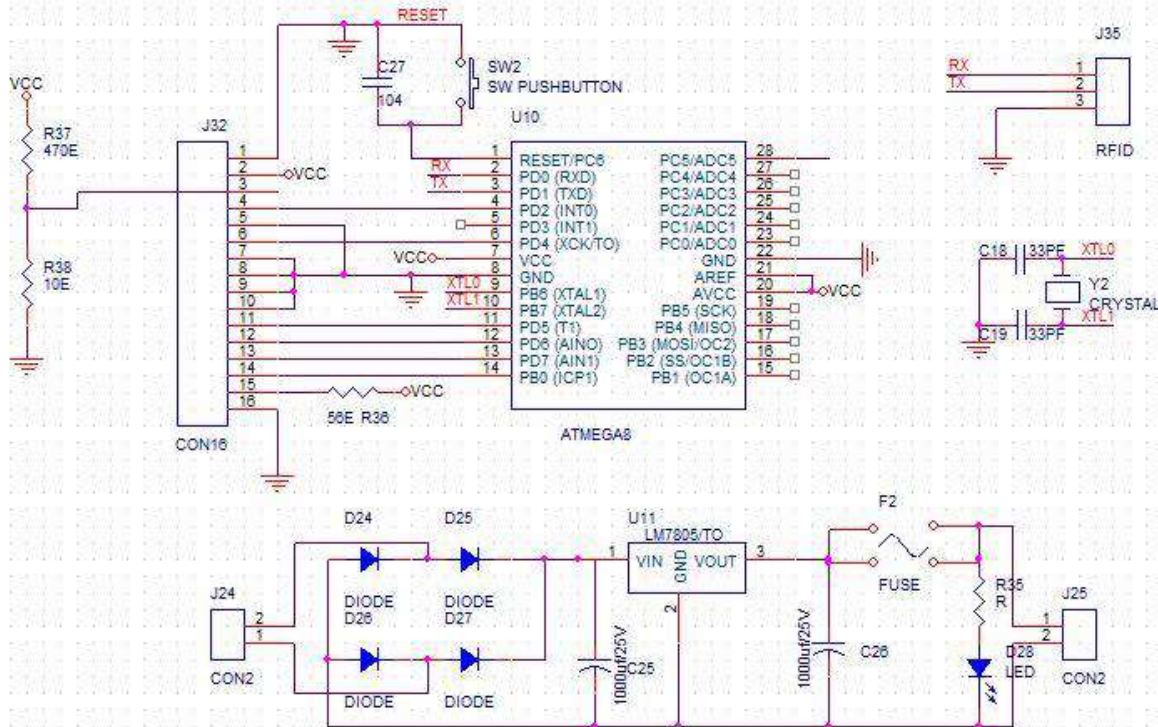
We are trying to give a protected framework for air terminals. We have kept each conceivable part of uncertainty to date of air terminal in our psyche we attempted to conquer the vast majority of the instances of weakness. Yet, everything has its pros and cons. However, we need to focus so errors of our own don't compel us to see that terrible side of coin. Right off the bat, we will disclose to you the things that we have done to give security. If there should arise an occurrence of air terminal burglary, air terminal don't assume the liability of any misfortune to data of people information. Thus, we have utilized site page to make sure about and fruitful data of individual on around the world. A biometric visa, otherwise called an e-identification, ePassport or an advanced visa, is an electronic visa that contains biometric information that could be use to verify the character of explorers. It uses contactless keen card novelty, involving a microcontroller. The identification's basic data is put away in the chip. The PKI (Open Key Infrastructure) can be used for verifying the data. The cost of chip becomes high because of putting away data electronically in it further, it's difficult to manufacture when every security aspects are effectively and completely finished. This issue isn't normal since now-a-days we always have our mobile phones. Be that as it may, we need to watch out for each conceivable viewpoint so on the off chance that they overlooks their PDA in office or home or. They won't be conceded access to their storage by our security framework. To get the name of the explorer alongside Passport number utilizing the RF module and RF card as the visa. The LCD will show the name of individual just as the identification number. Put the Passport number in the website page to get the total detail of the individual. Right now security individual will confirm the voyager with that identification number and check subtleties in his framework. On the off chance that the visa number coordinated effectively, at that point voyager can go into the Airport. This lessen the identification trickery too the module is utilized to tell number of individual entering and leaving the air terminal lessen the opportunity of individual to remain in the port with no work .

**2.5 Flow Chart:**





### EXPECTED OUTCOMES OF THE STUDY



**Fig.3.1:- Circuit diagram of RF module and LCD interfacing**

The board is executed and observed how the functioning happen. Interface of all the segments is done in the program written. Different capacities were made for the RF module, ultrasonic sensors and PHP. The serial communication of the RF module with microcontroller is based on the MAX232 so it plays a major role in Research Work. So the thing we come across to learn is the IC MAX232. We are expecting to provide a higher level of relief and security to users. The FR module will send the information of passport holder on LCD. On the basis on LCD passport number the user information can be easily accessed using PHP code.

The system will give not give the chance of the delicacy as the PAN number of the person is used as key point for security purpose. The person PAN CARD number once register will not allow the user to create the passport again. The output depends on following assumption.

**1<sup>st</sup> Assumption (Data base safety): -**

There must not be data crash in our data base

The user must carry its valid passport as the passport data must be there in our data base

**2<sup>nd</sup> Assumption (User is valid): -**

The person for checking passport must be valid.

The user name password needs to be secured.

The person having information about login should not make wrong use of it.

## WORK DONE

Earlier the headway of the endeavor, we had endeavored some investigation that would support the improvement stages. Their inquiry done was in 3 noteworthy zones.

As arduino is an open gear so it was definitely not hard to learn it, yet even its not too easy to program arduino for such a fundamental task. We have to grasp the necessity for the security and need to find the ways to deal with improve our security for the errand to sound extraordinary in parts of resolute quality and trust. We endeavored to make the structure look direct and work clear from the customer point of view in light of the fact that that is the greatness of Embedded language that customer can make some incredible memories of basic movement while the critical advance is for the product architects to fathom their need and effortlessness.

The RF module is a device which can never change its internal property that is the chip number in it. So if systems are made safe it is not possible to hack the system or make a wrong use of it. As well as the coding of microcontroller can be much safer if microcontroller is kept at some safe place.

After the exploration we went for the trial work. First thing was to join RF module and ARDUINO as it is the minimum necessity for our Research Work then we set out toward the age PHP code which was the fundamental eye of our Research Work. We also make of temperature and humidity sensor to show the temperature of room as well as the humidity in the room. The number of person entering and existing can be used to gather an information regarding people boarded the aero plane and people departed from airport. It also secures the system of airport. So by simple measures we are able to do Low cost and expandable devices to be controlled. Highly Secure System. Saves money and energy. Delicacy of passport removed Small in size so easy to use or implements.

## RESULTS AND DISCUSSION

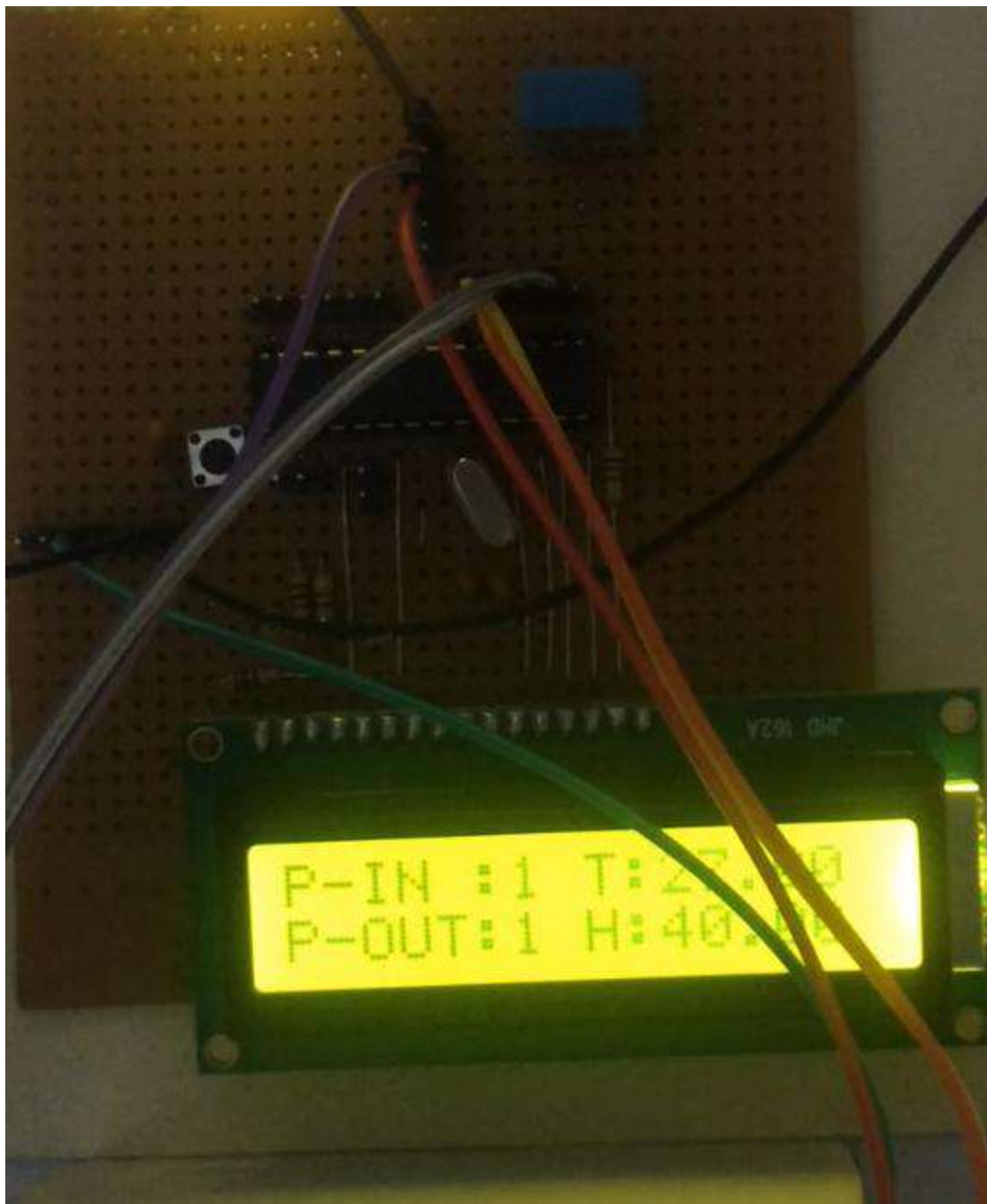
**The result is based on two Parts:**

**First part:-** The ultrasonic sensors are telling us the number of people entering and leaving the airport. Whereas, the DTH is used to check the temperature and humidity of the room. It is also using RF module for getting user information about the name and passport number.

- i. Module 1:







**Fig. 5.1: -People entering and leaving, room temperature and humidity.**

The second module in first part if RF module

ii. RF module showing name and passport number:



Fig. 5.2: - name and passport number

**Second part:-** It consists of the PHP code for the proper face verification and checking is that user is having passport already. This part will end up the delicacy too.



Fig. 5.3: - Passport number verification using PHP code

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