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AIRPORT LUGGAGE TRACKING SYSTEM USING RFID TECHNOLOGY

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Abstract— ***Radio Frequency Identification (RFID) is a promising technology that has been widely used in manufacturing and processing, retail, security, location tracking, supply chain management and so on. In our proposed project we are going to implement passive RFID for luggage identification in airport. For every luggage we are going to give RFID tag with passenger detail in it. The main aim of this paper is to trace and check the luggage at different security stages and inform the passenger about the status of the luggage at each stage. Every luggage is attached with an RFID card with unique number. The number is given to the passenger at the entrance of airport. This information is used to monitor the movement of the luggage by using GSM and GPS technology. Hence the RFID technology is used to enhance the customer satisfaction.***

Index Terms—Atmega8 microcontroller, RFID reader, GPS and GSM module.

I. INTRODUCTION

In the light of the increasing number of airline users, many initiatives have been undertaken to enhance customers' satisfaction. These include the implementation of RFID luggage tracking system in airports. This system is still facing some challenges as it does not involve the passenger in the luggage tracking process. Consequently, an efficient luggage handling system is required. The use of an interactive RFID-based bracelet luggage tracking system would make the process of luggage handling easier and faster as it would reduce the passenger waiting time when a mishandling error occurs. The currently used luggage handling system causes a large number of mishandled bags. Mishandled luggage generates losses to the passenger. RFID implementation in airports becomes very useful since it enhances the ability of luggage tracking, and increases customer's satisfaction. Yet, many improvements were done on the RFID system to optimize its results. In the implementation of an intelligent RFID reader was done to provide various computing and logging operations also support the deployment of real-time tasks, execution, control and automatic update of passenger details.

II. HARDWARE PROPOSED SYSTEM

1. ATmega8 Microcontroller

The microcontroller used here is ATmega8. It is a high speed processor with low power consumption. It is fully Static Operation and has a 23 Programmable I/O Lines. Atmega8 has

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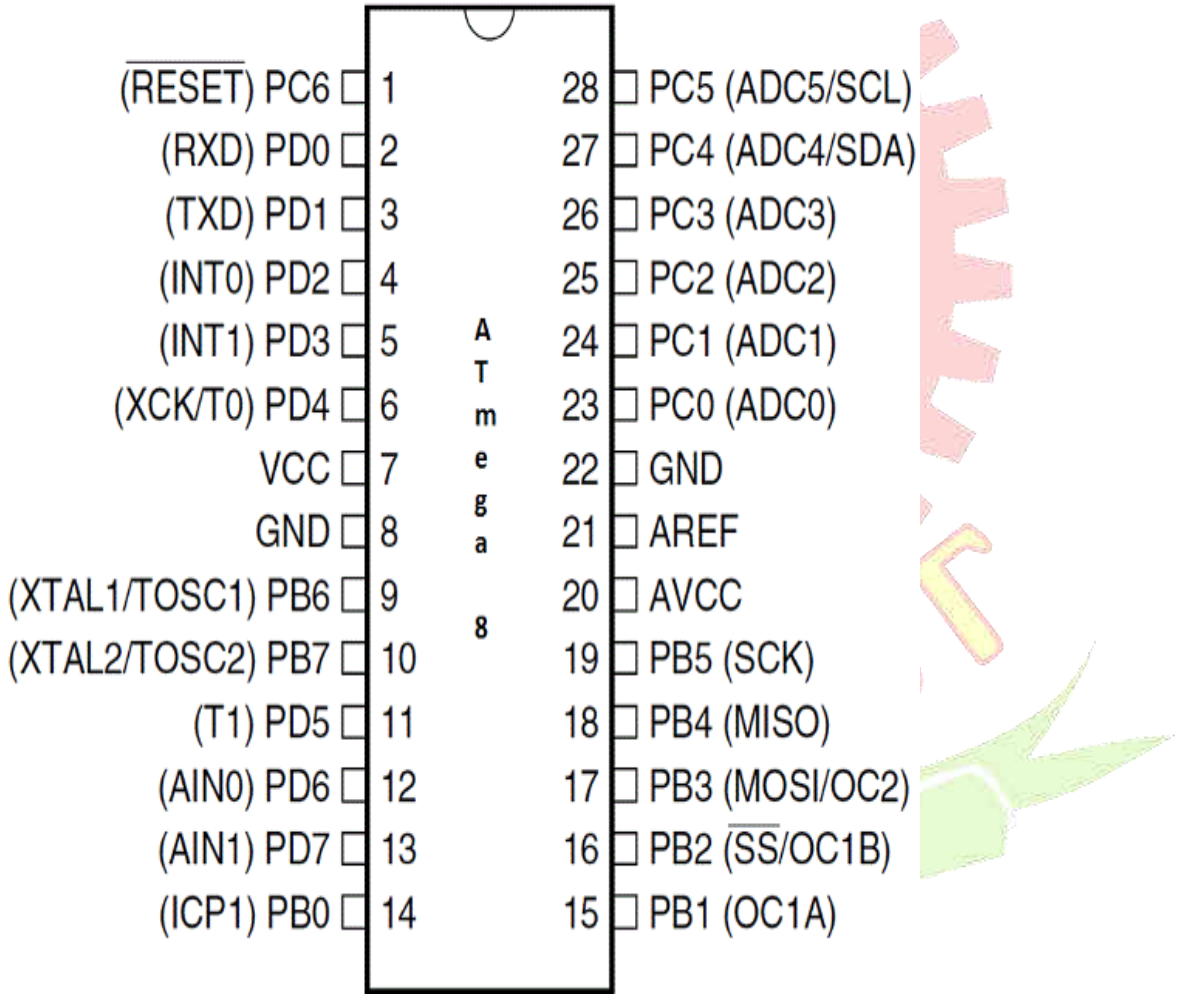
an operating at 5volt. It executes the 130 most powerful instructions at 1clock cycles per second. Up to 16MIPS throughput at 16MHZ ..The output of microcontroller is given to the GSM module, LCD display, GPS module. ATmega8 generally has a 3 ports namely port B, port C and port D. Port B and port D is bidirectional. Port C is only for input.



Pin diagram of ATmega8

2. RFID

Many types of RFID exist, but at the highest level, we can divide RFID devices into two classes **active** and **passive**. Active tags require a power source i.e., they are either connected to a powered infrastructure or use energy stored in an integrated battery. In the latter case, a tag's lifetime is limited by the stored energy, balanced against the number of read operations

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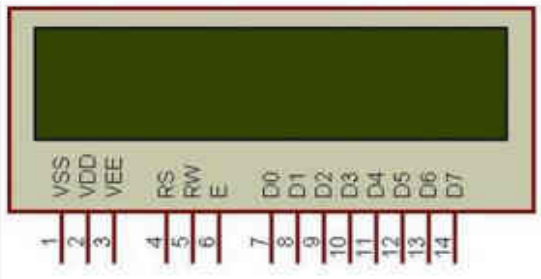
the device must undergo. However, batteries make the cost, size, and lifetime of active tags impractical for the retail trade. Passive RFID tags don't require batteries or maintenance so we are using these tags . The tags also have an indefinite operational life and are small enough to fit into a practical adhesive label. A passive tag consists of three parts: an antenna, a semiconductor chip attached to the antenna and some form of encapsulation. The tag reader is responsible for powering and communicating with a tag. The tag antenna captures energy and transfers the tag's ID (the tag's chip coordinates this process). The encapsulation maintains the tag's integrity and protects the antenna and chip from environmental conditions or reagents.

RFID TAG

3. Liquid-crystal display (LCD):

LCD is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly . LCDs are available to display arbitrary images or fixed images which can be displayed or hidden, such as pre-set words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.



LCD

4. GSM/GPS Block:

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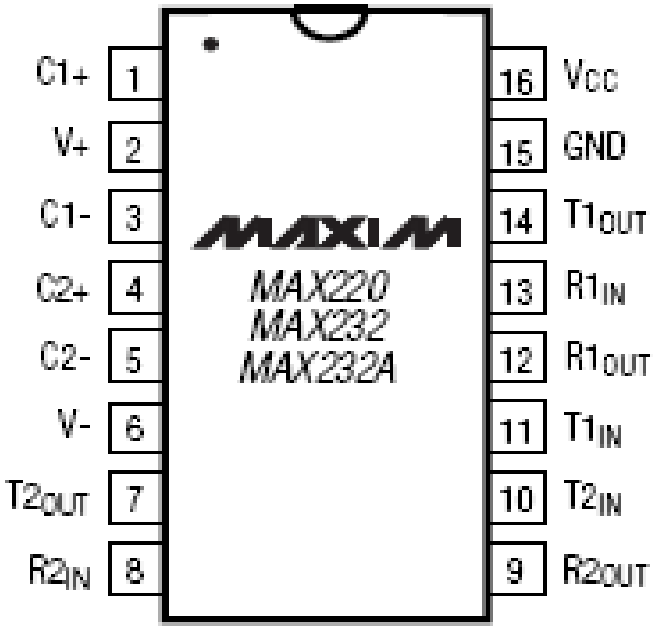
GSM block is used here for sending the alert messages to the passenger about their luggage. The GSM block used here is GSM SIM900A. It can operates at 5volt and it also sends the exact location of theft place by tracking the latitude and longitude of the location using GPS block.

5. Battery:

The battery used here is one 6 volt and 4.5Ah. For GPS, ATmega8 and LCD display operating volt is 5volt so 12volt supply is regulated to 5volt by using 7805 voltage regulator.GSM operating volt is 12volt and the supply is given directly from the series connection of battery through the RS 232 cable.

6.RS 232

The MAX220–MAX249 family of line drivers/receivers is intended for all EIA/TIA-232E and V.28/V.24 communications interfaces, particularly applications where ±12V is not available. These parts are especially useful in battery-powered systems, since their low-power shutdown mode reduces power dissipation to less than 5µW.



Pin diagram of MAX232

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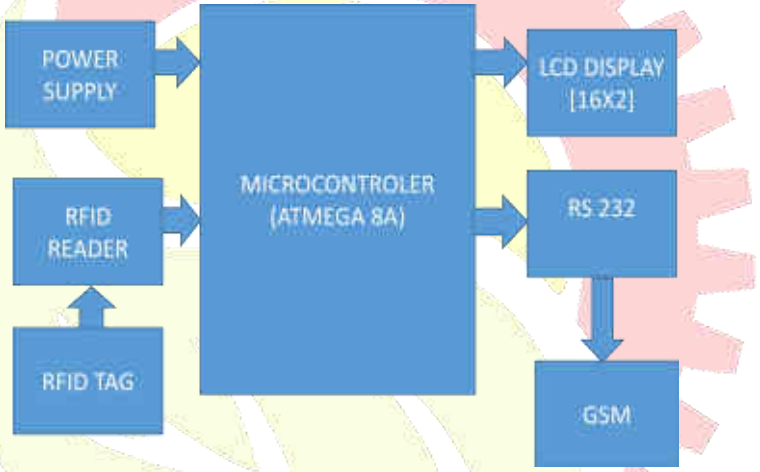
7. Designing the hardware proposed system:



III. EXPECTED OUTPUT

In our project by using RFID technology, the mishandling of luggage can be minimized by the proper and interactive communication in the proposed system . Even though luggage is missed it can be find out using GSM/GPS technology. This GSM gives message to the customer if luggage is missed. Then GPS will find out the exact location of the luggage. This is the expected output of our project.

IV. CONCLUSION

Nowadays many problem occur in airports. Main problem is mishandling of luggage during check out ,loaded to the correct airplane, etc. In this paper, an interactive RFID-based luggage tracking system was proposed. The suggested bracelet involves passengers in the luggage tracking process. the interaction between RFID reader and RFID tag was presented. Furthermore, the design and implementation of the considered system were also discussed. With this solution, customers satisfaction in airports would be increased and mishandling cost would be lowered.

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