# An Implementation of an Electronic Registration System of the Attendance of Students

**Libyan International Medical University, Faculty of Information Technology**

Mohamed saleh kasim, Software Engineer, 4th year

## Abstract

Registration system of the attendance has become much interesting and important because can impact in level of quality inside specific organization by observing it environment, and most organization is like education, work station, hospital etc. In this proposed shows the important of attendance management with students of educational institution. So, selecting technique for attendance registration system is effect in students either harm or help the system. And also, can affect in clerk (or user) who responsible in managing the students' attendance all times, with using manual of attendance recording negatively. In the proposed work, will solve the problems manual work by implementation of an electronic with using Arduino chip and card reader and software components, and will showing how card reader is actually works.

## Introduction

Attendance management is important to every single organization; it can decide whether or not an organization such as educational institutions, public or private sectors will be successful in the future. Organizations will have to keep a track of people within the organization such as employees and students to maximize their performance. Managing student attendance during lecture periods has become a difficult challenge. The ability to compute the attendance percentage becomes a major task as manual computation produces errors and wastes a lot of time [1].

The techniques that being used in Attendance Registration System is fingerprint (or biometric) machine, the advent of the Biometric is the identification of people based upon their physical characteristics by the laser produced verification among humans has been noted and it's having high levels of security. Also, another registration technology is Voice Recognition Attendance Recording System. Third type is Facial Recognition Technology; the benefit is improvement of security level and having high accuracy rates. Another one is Attendance Recorder – RFID Card Based. Besides that, card reader can read magnetic card able to have a unique data, and Attendance Record depends on existing Card and the Reader. The goal of this project is solve problems of manual work.

## Methodology

In this proposed work, using technique for Attendance Registration System is Radio Frequency Identification reader (RFID reader), RFID reader is an automatic identification information able to read magnetic card or tag RFID that have a unique key using electronic waves.

For national components of this solution it contains: record teacher of course first, then record student attendance by using RFID and Arduino, to record needs to have RFID card or tag.

Besides that, using smart chip can control the RFID reader is Arduino's chip, which **Arduino chip** is a smart chip (or electronic computer card) made by Arduino's company and can be develop by coding and change it (open source), which means Arduino's chip able to develop and modify the source code with using software Arduino Studio. So, Arduino's company having different types of Arduino' chip.

### Hardware Overview

The proposal hardware discusses the solution with hardware component, Arduino RFID reader. Additionally, every student is required to have a unique tag or card RFID. The type of Arduino's chip being used is Arduino UNO. The Arduino Uno is microcontroller board based on the ATmega328. beside that, ATmega328 is basically an Advanced Virtual RISC (AVR) micro-controller which exist on it chip. When the RFID reader installed at the entrance detects an RFID tag, the system captures the user unique identifier (UID) and compares it with the stored UID in database for a match, another component is Local Area Network (LAN) device to connect between user' computer and the Arduino component.
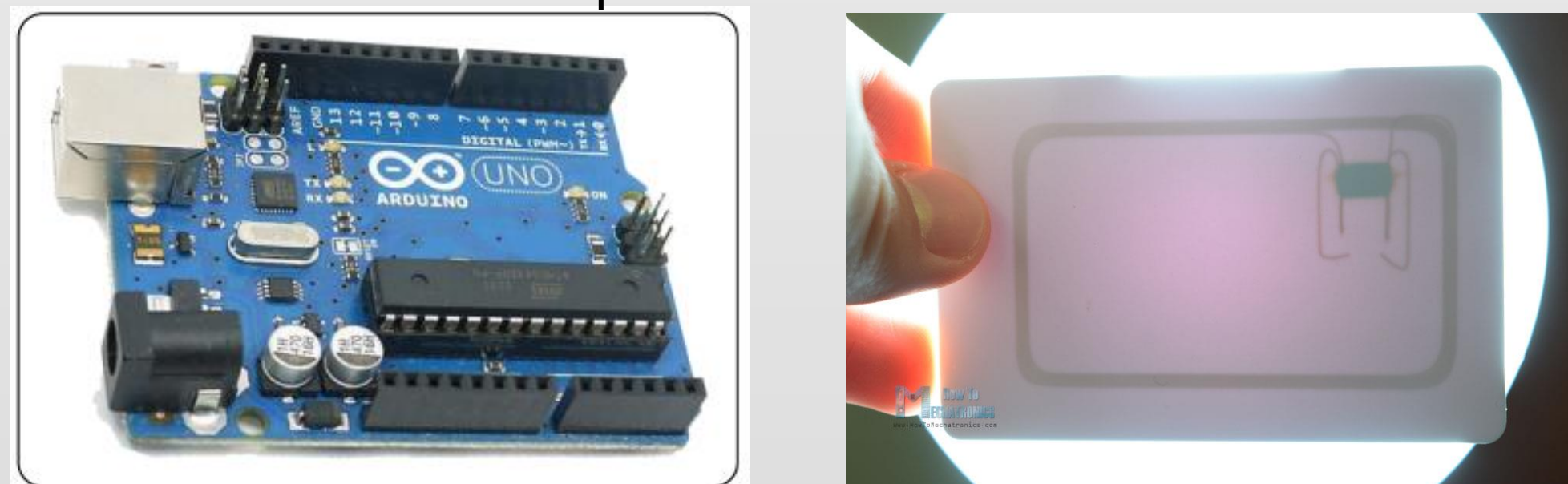


### Software Overview

The proposal software is built using programming language to develop the User Interface (UI) or monitor of users that allows users to act with RFID reader and Arduino Uno as one component and control the data (one case). The UI is to manage the communication between RFID reader and the software component, also the control of data flow between Arduino and the personal computer (PC). Another software component is database management system called Structured Query Language server (SQL server) is used to manage data and transactions through database files coming from RFID reader. Arduino Uno is able to develop an operating system inside the chip with software Arduino Studio (Arduino Integrated Development Environment IDE).

### Case Study work of the system

Before starting automatic record of attendance, using Arduino and RFID project is shown in the diagram follows:


[1]
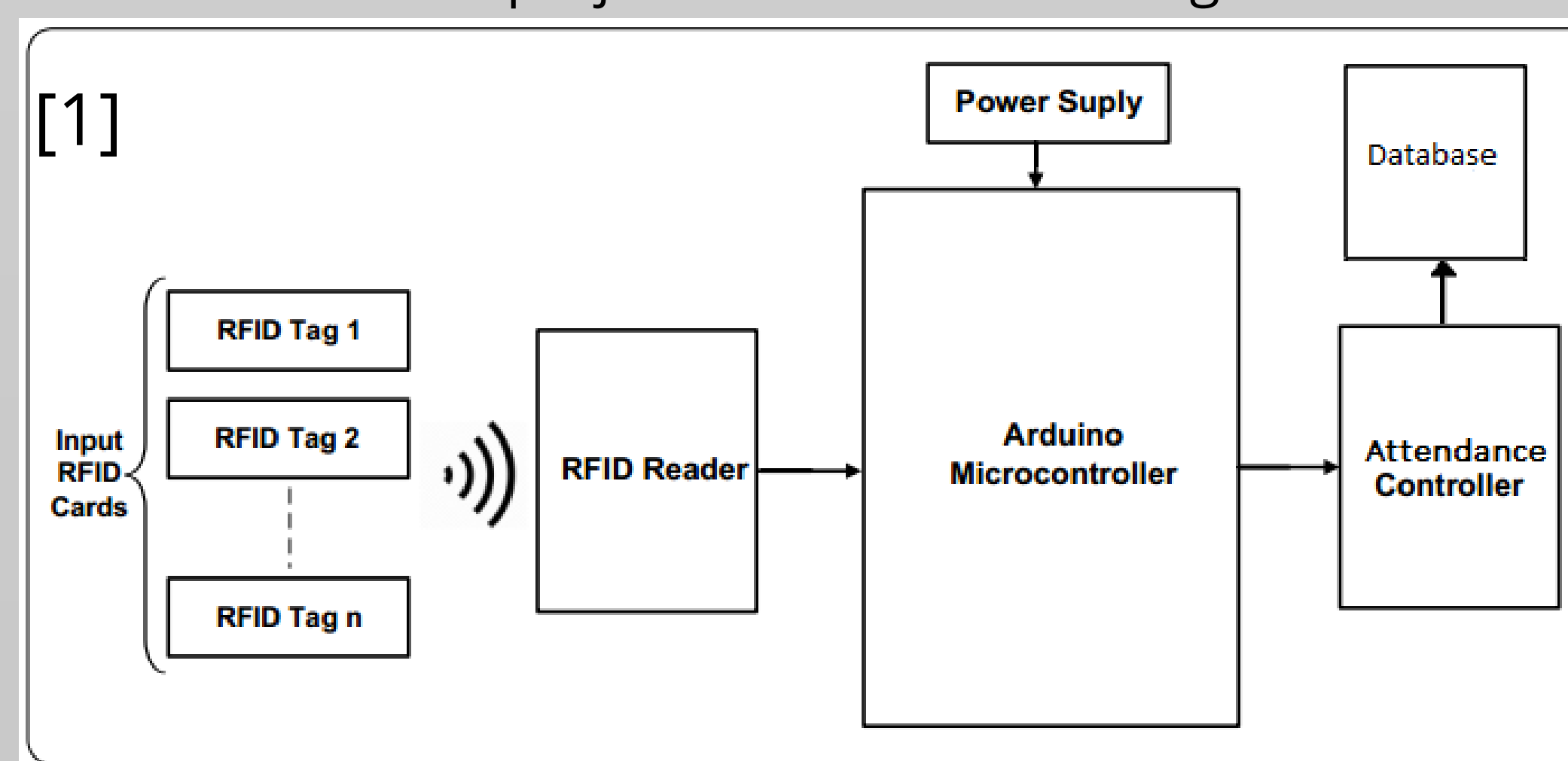
In the diagram in above, the system has three separate parts, an RFID reader, a microcontroller, and an attendance registration controller. The RFID reader reads the RFID tags and the microcontroller accept the data from the reader process it and use the result to either recorded or deny record to the student using access controller. For more usability, this project can be enhanced by connecting **a Liquid Crystal Display** (or LCD display) to display if attendance is recorded or denied instead of serial monito. [2]
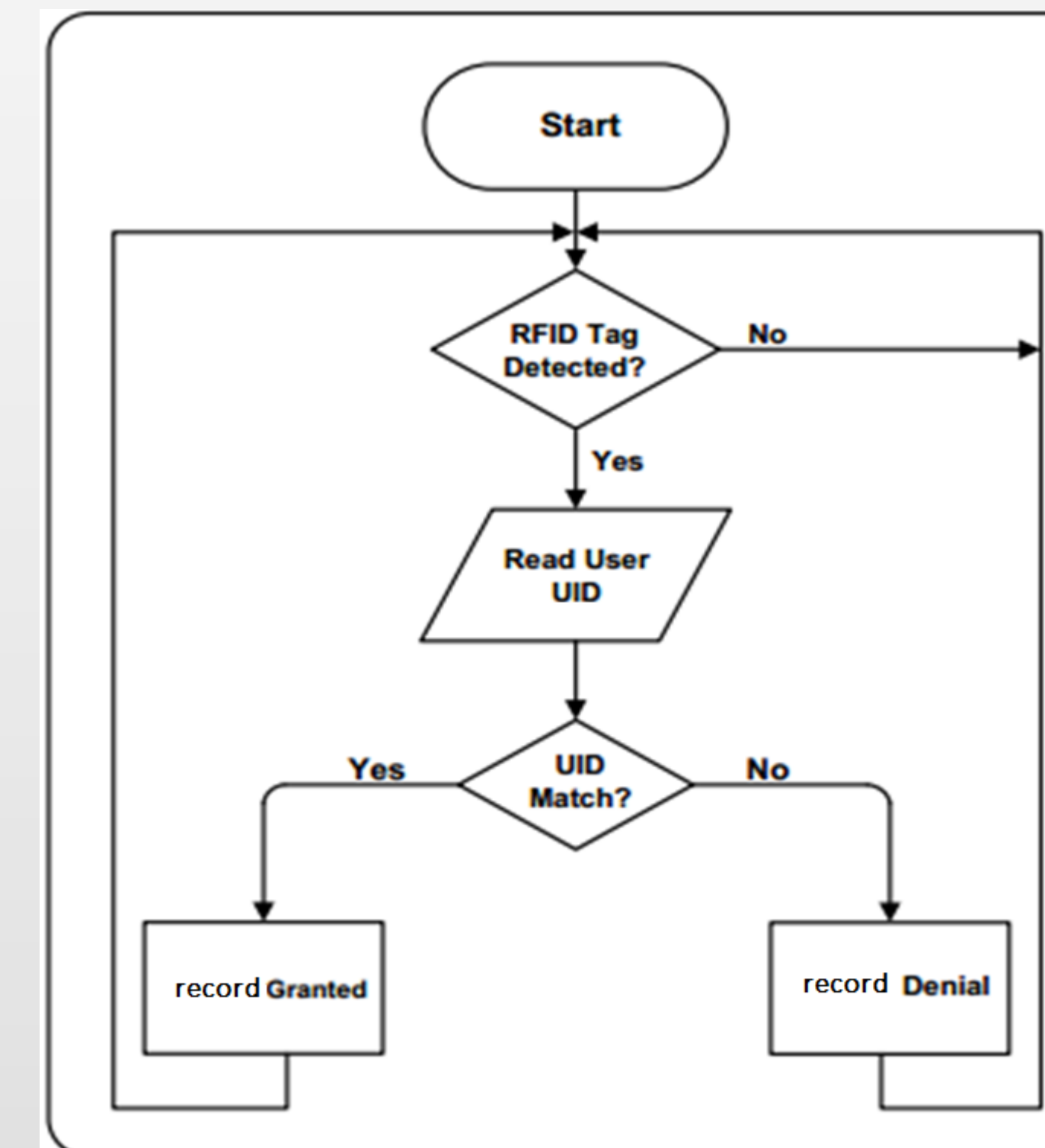


In Control flow diagram [2], when a student comes to the entry point where the RFID reader is installed and places the RFID tag (or card) close to the reader, the system checks whether it is a registered student or not. If the they are registered, the tag information is matched with the student information stored in database as shown in flow diagram. record is accepted to such student while record is denied to unauthorized student see flow diagram. Beside that. Also, to record the students, should be record the teacher first. The teacher able to have a card it have course' number and course name and teacher name and the time that been recorded. This project allow system to being connected by network device LAN with user.

Hardware component, RFID reader and The chip Arduino Uno being connected together as one component hardware (one case). This solution allows each class room to have one case of hardware registration system and connected with users' software in their office by LAN device. Besides, the received information from hardware registration is being stored inside database, and the database is exist with users of computer in their office. User' task is manage the received information in database.

## Results

RFID reader system was analyzed using the following criteria: cost, energy consumption, speed, user satisfaction, and stability. The bar chart of figure shows that there are significant enhancements in control system using Arduino system and RFID technology. Figure [3] (from ref 2)
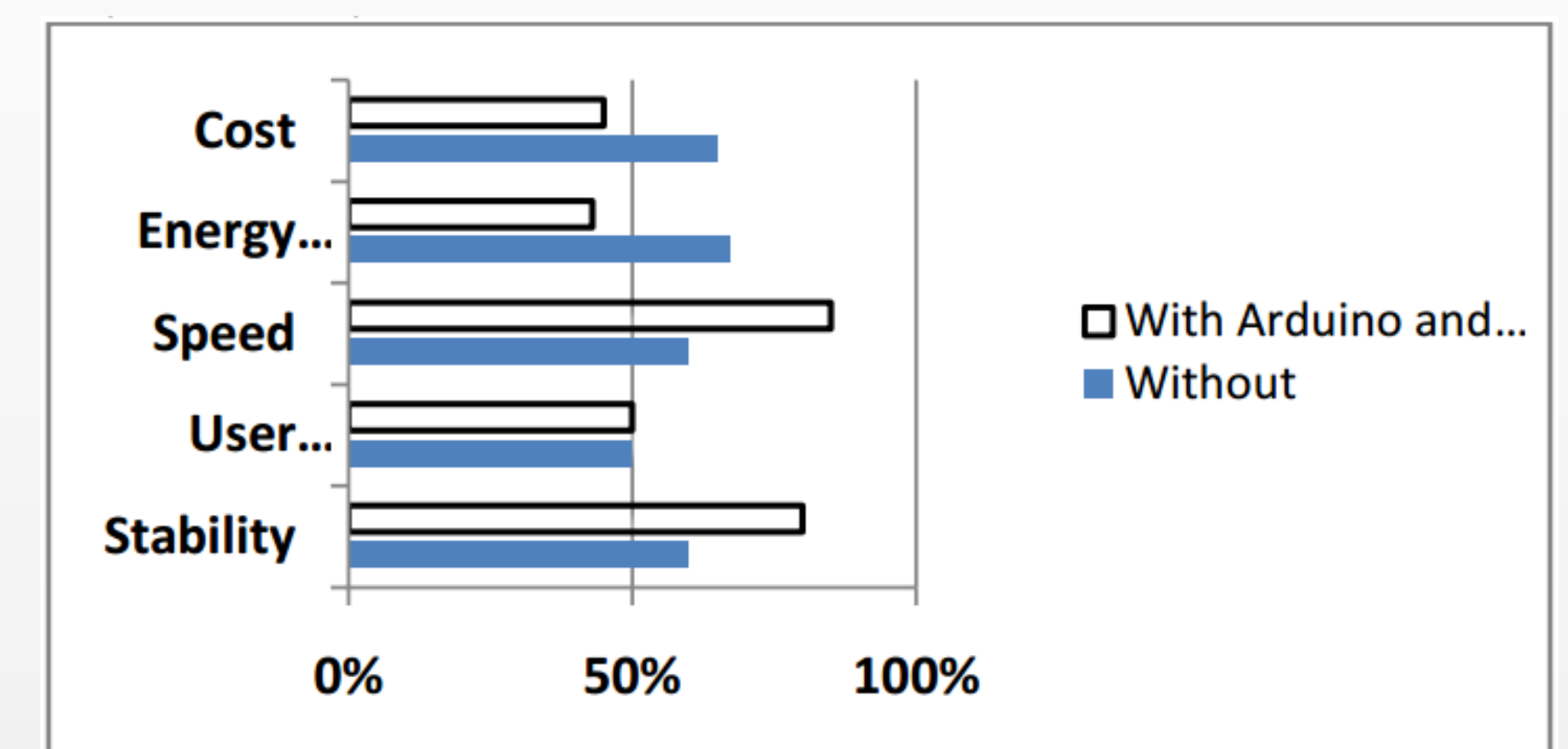


The provided project has auto attendance system when the student and teacher on arriving close to the card reader where the registration attendance system is installed, one is asked to approximate their RFID tag (or card) to the reader to record the attendance. Then, provided project have software application that with users to act with registration attendance system and they able to manage the information coming from RFID and the Arduino board that inserted inside database. Besides that, provided connection between RFID and the software of user is LAN. Insert/edit new information of card each student into database is being by using user of software application.

## Conclusion

The expectation of this project, a prototype of automatic registration system for use in an environment is presented. The system uses RFID with Arduino technology to differentiate between authorized and unauthorized students. The RFID reads RFID tag issued to the teacher and students too, and matches it with stored UID on the database through network connection. In successful match, the microcontroller that is inside Arduino Uno records the attendance or deny the record if no match was found in database. Most important, record attendance should be start teacher to insert major information and after that able to students to record their attendance.

## Acknowledgements

## References

1. Jacksi, Zebari, Ibrahim. (2018, February 15). Student Attendance Management System. Retrieved from http://www.recearchgate.com
2. Orji EZ*, Oleka CV, Nduanya UI. (2018). Automatic Access Control System using Arduino and RFID. Retrieved from http://www.jsaer.com .