***REPORT ON PROJECT***

RFID USING RASPBERRY PI + WEBSITE

(RFID BASED ATTENDANCE SYSTEM)

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***COMPONENTS USED***

1. RFID RC522 MODULE
2. RFID TAG AND CARD
3. RASPBERRY PI
4. ARDUINO UNO

**SOFTWARES USED**

* PuTTY
* WINSCP
* VNC VIEWER
* ARDUINO IDE
* PYTHON IDE
* APACHE 2
* PHP
* MySQL
* phpMyAdmin

**BRIEF DESCRIPTION OF COMPONENTS**

1. **MIFARE RC522 –** This is the integrated read and write card chip applied to the 13.56 MHz frequency for contactless communication. Like a bar code reader there is no need to put the tag or card in front of the reader in a eye sight line. More over it works on very low voltage and of very low cost. The main function of the coil is to provide power to the chip as well as to work as an antenna to receive and transmit data.
2. **RFID TAG AND CARD-** It contain read-only serial number called UID and a rewriteable smart-card microchip that can be transcribed via radio waves. There is embedded integrated circuit that can store data and we can rewrite/remove it.

1. **ARDUINO UNO–** It is an open source microcontroller board based on the microchip ATmega328p. As humans has a brain to control their own body parts in the same way an Arduino acts to control all other components. It has 14 digital and 6 analog pins. Some pins 3,5,6,9,10,11 can also be used to give PWM (pulse width modulation) signal. Six analog pins can be used as digital pins by adding 14 to their corresponding index number. It has 32 kb flash memory, 2 kb SRAM and 1 kb EEPROM.
2. **RASPBERRY PI –** It is a small single board computer. It has many different models as zero,1,1 model B, 1 model B+, 2 , 3 model A+, model 3B, model 3B+. If we talk about the latest version that is 3B+ , processor speed ranges from 700 MHz to 1.4 GHz on board memory ranges 256 Mb to 1 Gb RAM. The size of a pi approximately equal to a credit card. A pi 3 B+ model has an Ethernet port, 4 USB ports, 1 HDMI port, 1 SD card slot, 1 audio output jack and inbuilt Bluetooth and Wi-fi. It contains GPIO pins that can be used for many purpose. We can install an operating system in pi. Raspbian is an operating system that is installed in our pi.

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**BRIEF DESCRIPTION OF SOFTWARES USED**

1. **PuTTY-** It is an SSH and talent client developed for the windows platform. It is a free and open source terminal emulator. It is probably used for secure remote shell access to a LINUX system.
2. **WINSCP-** It is a free and open-source SFTP, FTP, WebDAV, Amazon S3, and SCP client for Microsoft Windows. Its main function is secure file transfer between a local and a remote computer.
3. **VNC VIEWER-** Virtual Network Computing (VNC) is a graphical-desktop sharing system that uses the Remote Frame Buffer protocol to remotely control another computer.
4. **ARDUINO IDE-** IDE stands for Integrated Development Environment. It is a free software used for writing and uploading code to all Arduino compatible boards and also other vendor development boards like NodeMCU.
5. **PYTHON IDE-** Like Arduino IDE it is also a INTEGRATED DEVELOPMENT ENVIRONMENT used to write code in python language. It is a very easy software and useful for beginners.
6. **APACHE 2-** Apache HTTP server is free and open-source web server software. Web servers are used to serve web pages requested by client computers.
7. **PHP-** Hypertext Preprocessor is a language used for making dynamic web page and web development.
8. **MySQL-** It is an open-source database management system. We can create our own database as many as we want.
9. **phpMyAdmin-** It is an free and open-source administration tool for MySQL and MariaDB.

We installed apache2, php7.0, MySQL, MySQL-db and phpMyAdmin on Raspberry pi. In a group all the softwares are called a lamp/xampp server.

**WORKING**

**We can divide the working of our project in the following steps -----**

* Creating a particular RFID card or tag for a particular person by saving his name in that.
* Scanning the RFID card, sending the UID of the card/tag and the name of the particular person with sign in/out to raspberry pi by using python serial.
* Receiving the data from Arduino and by using date\_time function getting the current date and time.
* Saving the UID, Name, Sign in/out, Time, Date, as a csv file in raspberry pi using python code.
* Developing a local webserver and by using phpMyAdmin creating a database in which we have to create a table.
* Importing the csv file containing UID, Name, Time, Date in the table created in databse developed by us.
* At last taking the data from MySQl server and printing it as a table in HTML format.

**FUTURE PROSPECTS**

* One can check the records on one’s own desktop.
* No need to keep safe the huge and big records registers.
* Wastage of paper will get reduced.
* Fast, secure and easy to use.
* More advance technique.
* No one can change your sign in /out time.
* Very cheap as one time investment components are used.
* Eco-friendly.

**PROCEDURE WITH PROBLEMS FACED AND OVERCAME**

1. **STORING INFORMATION IN RFID CARD USING ARDUINO –** We store name of a particular person in a specific RFID tag/card.

**Problem-** We have to write the such that if we try to make read the same card again and again , it should show Sign In/Out correctly.

**Solution-** We declare an integer ‘i’ and for every time when we are scanning the same card we are incrementing the ‘i’ by 1. And gave the condition when ‘i’ is odd then give sign In and when ‘i’ is even give sign Out.

1. **RECEIVING DATA FROM ARDUINO USING PYTHON SERIAL PORT –** Now we want to receive data from arduino to raspberry pi for this we have installed the python serial and wrote a code for sending the data

**Problem-** We have to write the such that if we try to make read the same card again and again , it should show Sign In/Out correctly.

**Solution-** We declare an integer ‘i’ and for every time when we are scanning the same card we are incrementing the ‘i’ by 1. And gave the condition when ‘i’ is odd then give sign In and when ‘i’ is even give sign Out.

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