*Objectives:*

* To design Fingerprint Sensor Based Biometric Attendance System using Arduino..
* To enroll and take attendance.
* To prevent the waste of time for rollcalling.
* To calculate 60% attendance from the datasheet.
* Introducing a new technology to educational system.
* To stop proxy and cheating in attendance system.

*Introduction:*

In this project we are going to design Fingerprint Sensor Based Biometric Attendance System using Arduino. Simply we will be **interfacing fingerprint sensor with Arduino**, **LCD Display** , **RTC Module and SD card module** to design the desired project. In this project, we used fingerprint Module and Arduino to take and keep attendance data and records.

Biometric Attendance systems are commonly used systems to mark the presence in offices and schools. This project has a wide application in school, college, business organization, offices where marking of attendance is required accurately with time. By using the fingerprint sensor, the system will become more secure for the users.

*Project Description:*

In this fingerprint attendance system circuit, we used Fingerprint Sensor module to authenticate a true person or employee by taking their finger input in the system. Here we are using a keypad. We used “A” for enrollment. “B” for Attendance. And “C” and “D” for controlling ID no. “A” key is used for enrollment of a new person into the system. So when the user wants to enroll new finger then he/she need to press “A” key then LCD asks for the ID, where user want to be store the finger print image. Now if at this time user does not want to proceed further then he/she can press the key again to go back. When user enrolls new finger, then he/she need to select finger ID by using two key “C” and “D” and then press “#” to proceed with selected ID. User needs to press “B” for attendance. As all the students id are enrolled, when a student place his/her finger on the sensor,if the id saved against his finger matches his given finger he will be considered present. The fingers which will not be placed on the sensor will be considered absent. **SD Card Module** has been used for moving data from the arduino memory to a datasheet.

*Apparatus Required:*

1. Arduino Mega -1

2. Finger print module -1

3. Keypad  - 1

4. 16x2 LCD -1

5. RTC Module -1

6. SD Card Module -1

7. Power

8. Potentiometer – 1

9. Connecting wires

10. Bread Board – 1

*Block Diagram:*

*Circuit Diagram:*

*Working Procedure:*

Working of this fingerprint attendance system project is fairly simple. First of all, the user needs to enroll fingerprints of the user with the help of key “A” of the keypad. To do this, user need to press “A” and then LCD asks for entering ID for the fingerprint to save it in memory by ID number. So now user needs to enter ID by using “C” and “D” keys. After selecting ID, user needs to press “#” key to select the ID. Now LCD will ask to place finger over the fingerprint module. Now user needs to place his finger over finger print module and then the module takes finger image. Now the LCD will say to remove finger from fingerprint module, and again ask to place finger again. Now user needs to put his finger again and module takes an image and convert it into templates and stores it by selected ID into the finger print module’s memory.  Now the user will be registered and he/she can feed attendance by putting their finger over fingerprint module.By the same method, all the users will be registered into the system.

Now if the user wants to remove or delete any of the stored ID or fingerprint, then he/she need to go to “file” then “examples” then “Adafruit Fingerprint Sensor Library” and then choose the respected file and run it to delete or remove any template. SD Card Module has been used to transfer data from the memory of Arduino to a datasheet. All the records of the students attendance will be then stored on the SD Card which will be shown on a datasheet.

*Code:*

*System Testing:*

*Experimental Result:*

*Protype Design:*

*Discussion:*

*Conclusion:*

*Reference:*