BIOMETRIC ENTRIES SYSTEM

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Table of Contents

1.Introduction

1.1Purpose of Document

The challenge of maintaining hostel students entries record of departure and arrival justifies the development of Biometric Entries System(BES).BES has been built to eliminate the time and efforts wasting in manual data entry.It also greatly reduce the amount of paper resources needed in entering data .Report generation approach and histroy keeping feature enables more efficient handling of students record.BES will provide robust fingerprint recognition in hostels which uses biometric device for fingerprint scanning and matching machanism.Pairing of the data packages with finger scanner will ensure security.It gets date ,intime and outtime automatically of each individual.BES keeps track of student visits and also keeps track of late comers ,early leavers and by using the stored info it generates report on monthly basis.BES gives option to mail the report to the guardian.

1.2 Problem Statement

In traditional hostel entries method,students have to enter some info on register like roll no,room no,department,leaving time etc.There is no method to ensure that either student has entered correct info or student is hostalized or a day scholar.Most of the time closing entries are missing on register , reason is the lack of proper check and balance.Hard copy of data may get lost or if a student is missing or late , as data entries are not clear , accurate and student's histroy is not kept properly.So in such cases , they have to face alot of problems.BES is developed for students to maintain their records and to get rid of cheating and false marking in data entry.BES makes sure that only particular hostalized student is making entry in system.By using stored data,BES generates report and send it to the guardian of student to keep them aware and updated.BES will significantly develop the conventional procedure of student data entry framework in hostel surrounding.BES proposes computorized info accumulation technology,which leads to more precise entry.The whole idea is about designing a system that keeps record ,match it along gadgets sencor and generate report.

1.3 Objectives AND SCOPE

- **Project Scope**

1. Biometric enrollment of all relevant information of the employees like fingerprints,,contact information,personal info etc to ensure a comprehensive database of information for the functioning of the biometric entries system(BES).
2. Authenticate student, if fingerprints matched with stored fingerprint on database.
3. A comprehensive reporting functionality with the ability to generate MIS reports.
4. Automatic date and time generation ability.

- **Objectives**

- The objective of BES is to design a configurable system that keeps data,generate reports and match data in efficient way.

- System deals with reliable techniques for fingerprint image enhancement and minutiae extraction.
- System intented to inform guardians so that they can get notified about children routine.

Chapter 2 : Research and Requirements

2.1. Functional requirement

- Student will be enrolled by giving valid information.
- **Student entry management:**easily track entry info of students by keeping histroy.
- **Tracking management**:guardian will track their children by reporting machenism.

2.2. Non-Functional requirement

- **Performance:**
  Easy tracking of records and updating can be done.

- **Availability:**
  BES will be available only for authorized users

- **Security:**
  BES should be handled by authorized users. authorized users can access system by giving username and password.

- **Maintainability:**
  Backup of data is available.

- **Portability:**

BES is independent of platform and operating system

2.3. External Interface Requirement

2.3.1. Hardware Requirement

The hardware to be used can be divided into two categories – fingerprint scanner which captures the image and a personal computer which: houses the database, runs the comparison algorithm . The fingerprint scanner is connected to the computer via its USB interface.

Sr no	component	description
1	**Biometric device**	**Mantra MFS 100**
2	**usb interface**	**Mantra MFS 100**

Table 2: The Table of Components

2.3.2. Software Requirement

Sr no	component	description
1	Software used in project	Arduino, Android studio

Table 3: The Table of Components

2.4. Assumptions and Dependencies

It is assumed that the user is familiar with the windows operating system. It is assumed that information collected through experiment will be used for providing the demo for the presentations. There is a need for the smartphone. It will be assumed that the users will use a smartphone.

Chapter 3 : Detailed Design and System Architecture

3.1. System Level Architecture

3.1.1. System Block Diagram

In this Fingerprint Sensor Based Biometric Attendance System using Arduino, we used a Fingerprint Sensor module to authenticate a true person or employee by taking their finger input in the system. Here we are using keypad to register new fingerprint or delete stored fingerprint or match stored fingerprint. The keypad is used as an input unit for these tasks.The LCD displays the time record and every function happening .

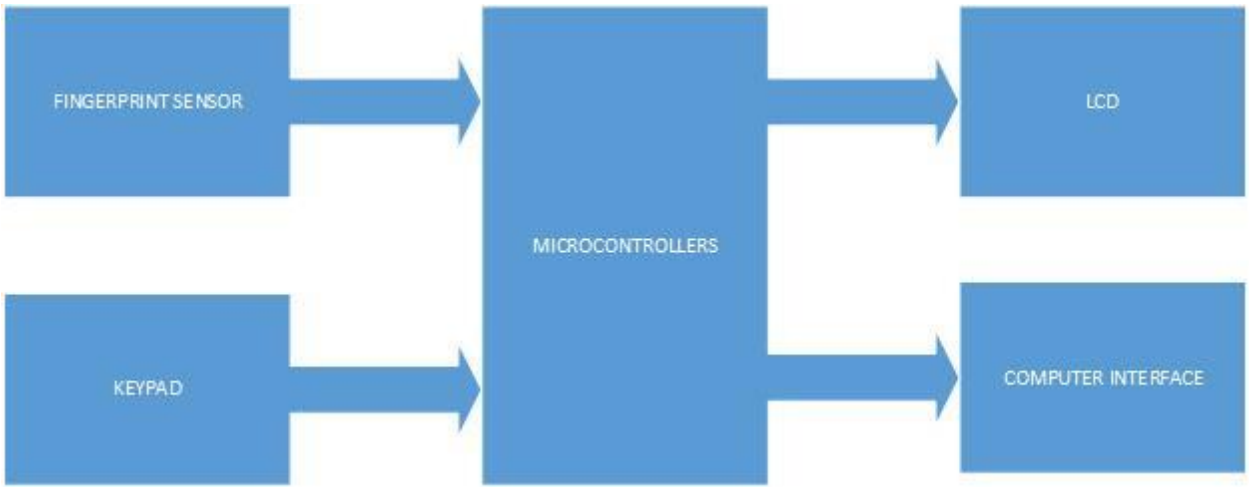

Figure 1: System Block Diagram

3.1.2. Activity Diagram of System

Activity Diagram of Attendent:

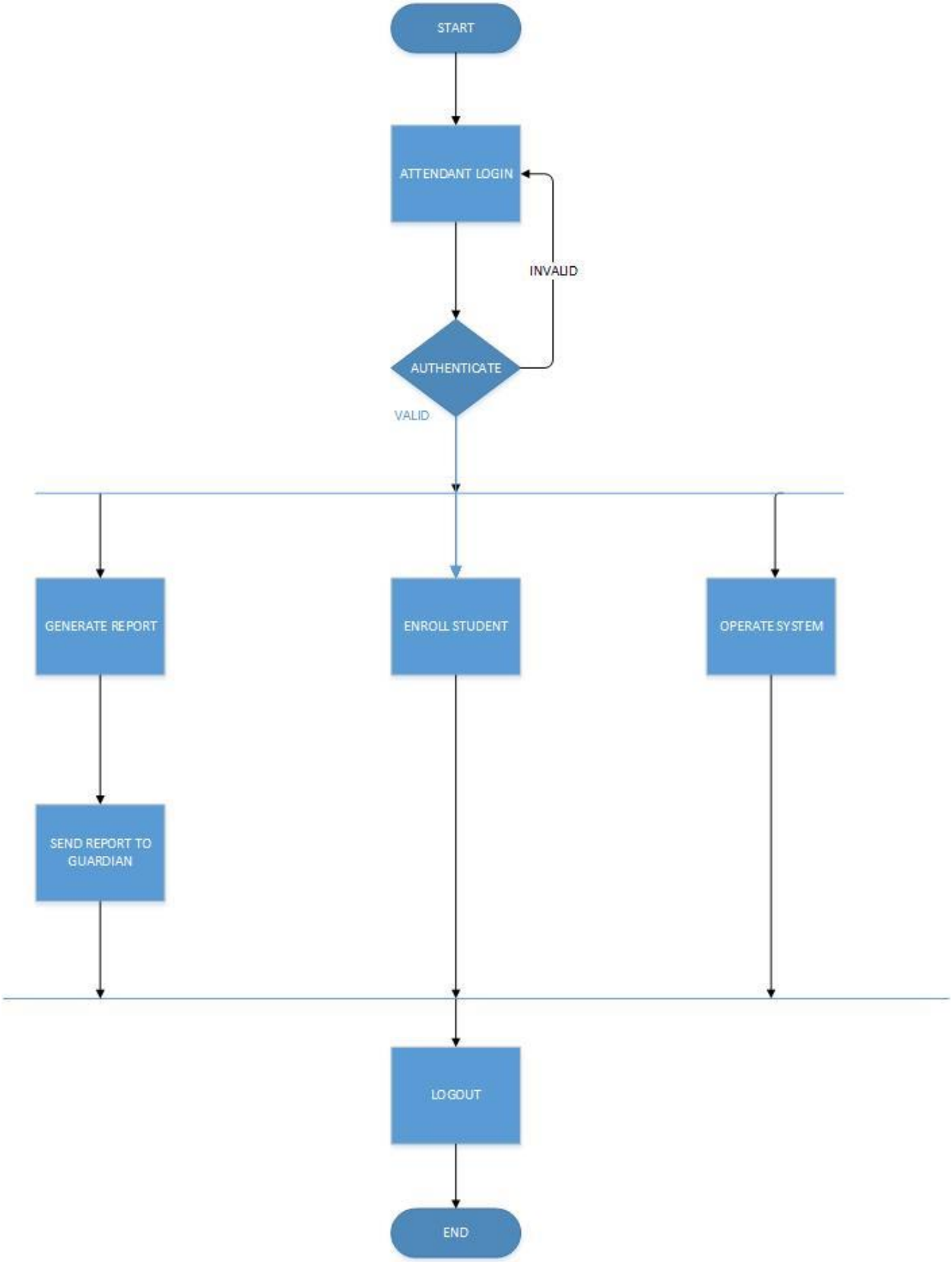

Figure 2: Activity Diagram of attentend

Activity Diagram of Student:

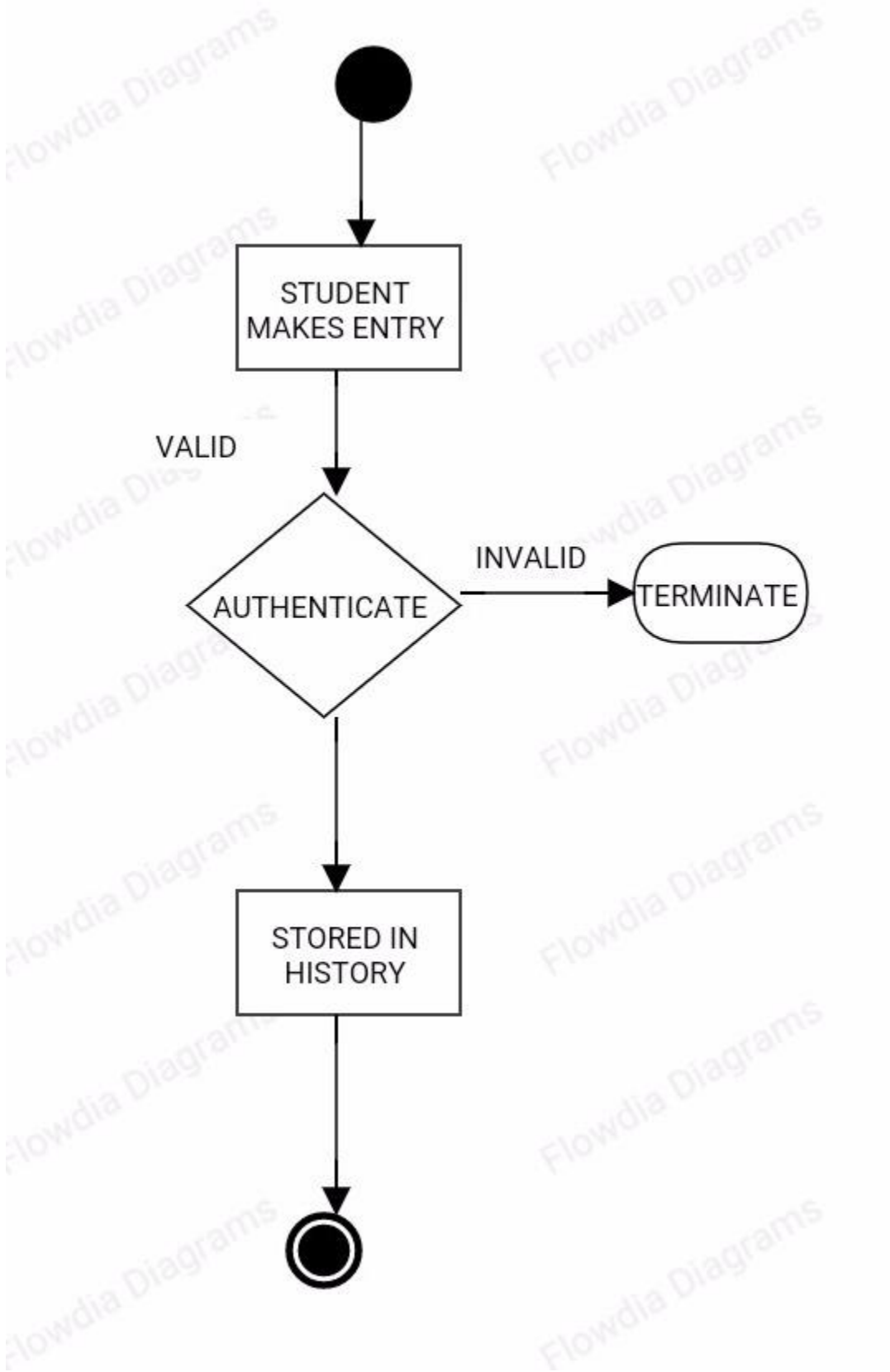

Figure 3: Activity Diagram of student

3.1.3 EERD

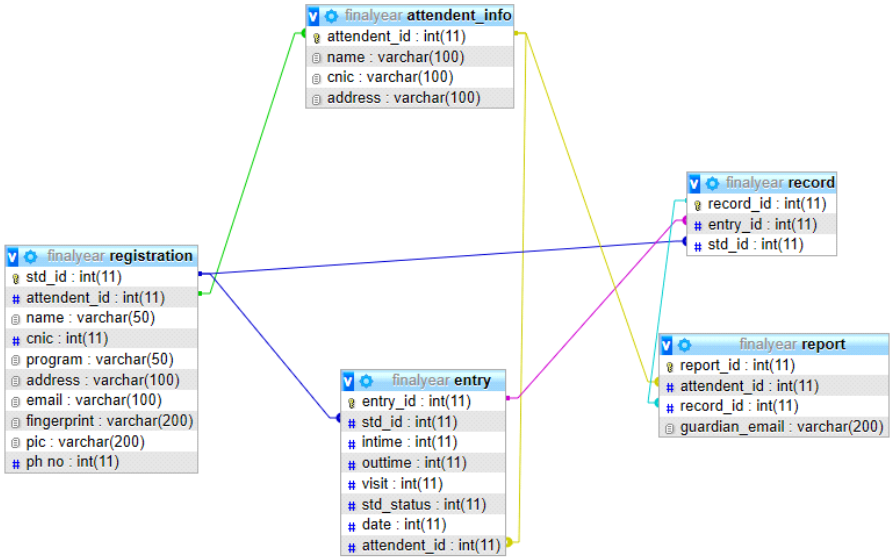

Figure4: System eer Diagram

3.1.4 ERD MODEL

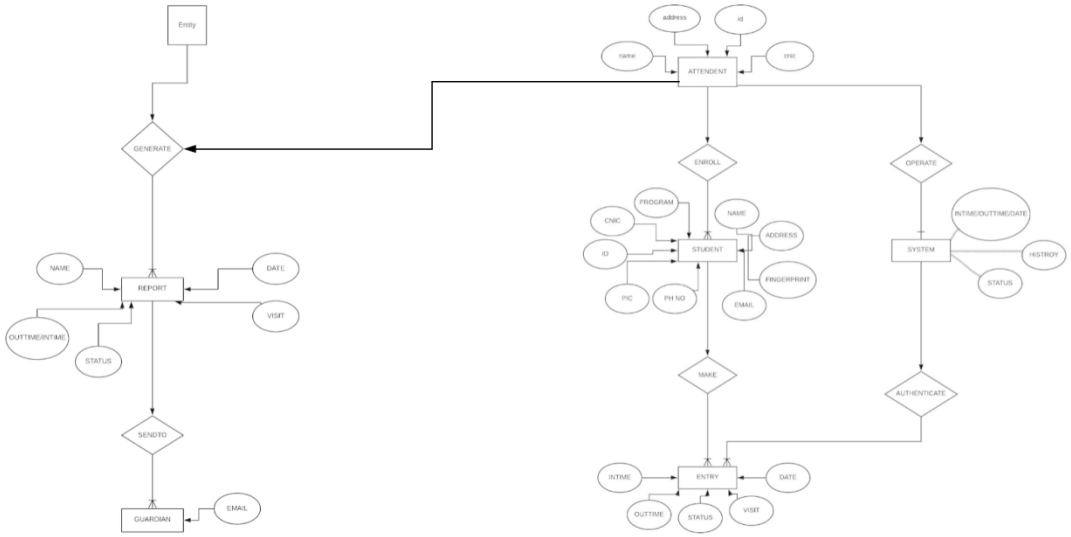

Figure 5: System er Diagram

3.1.5 USE CASE Diagram

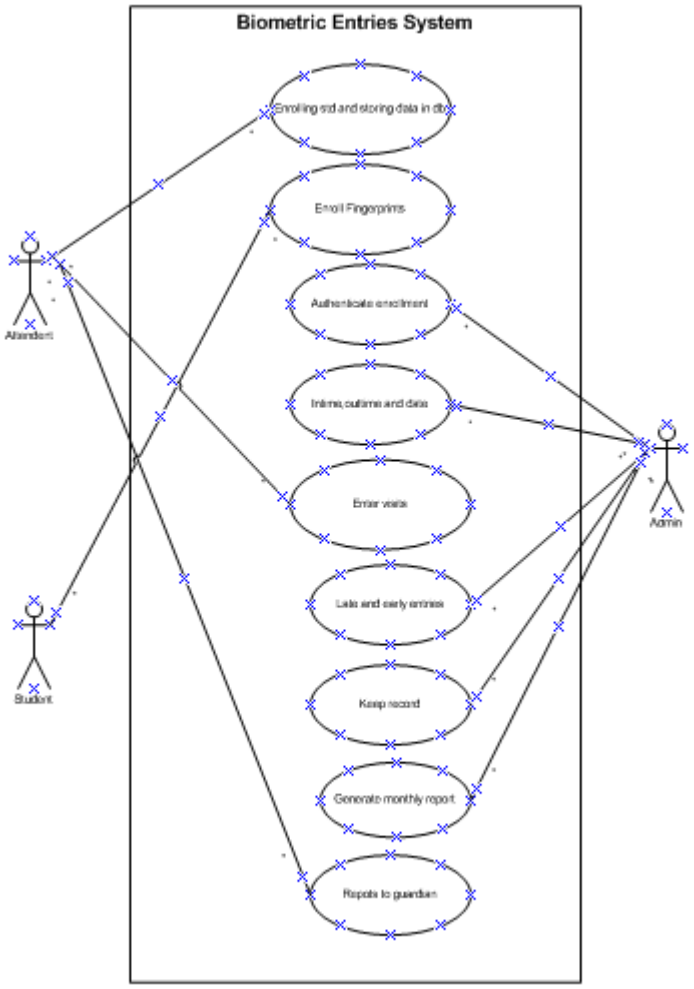

Figure 6: System usecase Diagram

3.2. Transmitting Section

3.2.1. SMARTPHONE

A Smartphone is a mobile phone built on a mobile OS; it has more advanced computing capability and connectivity than an ordinary phone. the following project uses the Smartphone to use it as a transmitter and biometric device completely eliminating the need for a separate transmitter block.

3.3. Receiving Section

3.3.1. MICROCONTROLLER

- Its need involves the reception of data signals that are transmitted by the Smartphone . e.g. Arduino (an open source single board microcontroller).
- The biometric device interacts with the Smartphone app by means of Arduino microcontroller

3.4. Structure of Biometric system