Kingdom of Saudi Arabia Majmaah University Ministry of Higher Education
College of Science Al Zulfi

المملكة العربية السعودية
جامعة المجمعة
وزارة التعليم العالي
كلية العلوم بالزلفي

Biometric-based students attendance system (BSAS)

College of science Al Zulfi
Department of Computer Science and Information

Graduation Project Submitted in partial fulfillment of the requirements for the award of Bachelor degree of the Majmaah University (Semester 2, 2020-02)

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Biometric-based students attendance system (BSAS)

Abstract :

The need for legitimate and reliable means of authentication has resulted in considerable advances in authentication methods that relies on identifying unique features present in the biometry of the human body.

However, many real-world implementations of attendance systems, while effectively solving authentication issues, do not address biometric user privacy, that is many systems rely on few measures to ensure that user biometric data is not extracted and misused by third parties.

This project will analyze biometric authentication methods for class attendance in higher education, and propose a system that ensure effective and convenient attendance solutions with robust and safe measures for user privacy.

Introduction

Biometric recognition, or simply biometrics, refers to recognizing a person based on one or more of his anatomical or behavioral characteristics.

A good biometric trait should be measurable, distinctive (different for every person) and stable over time.

The sensing method should not be intrusive or socially unacceptable, and the system should be easy to use.

A biometric system based on this trait should be accurate, fast, robust and inexpensive.

A biometric system may be viewed as a signal detection system with a pattern recognition architecture that senses a biometric signal, processes this signal to extract a salient set of features, compares these features against the feature sets residing in the database (templates), and makes a decision about the identity of the person providing the input biometric signal.

Existing System

The system used in the process of attending and leaving is for the doctor to collect the attendance manually and enter it on the site, which causes a waste of time.

PROJECT JUSTIFICATION

- Reducing errors in the manual preparation process
- Take advantage of wasted time
- Speed up the process and make it automatic

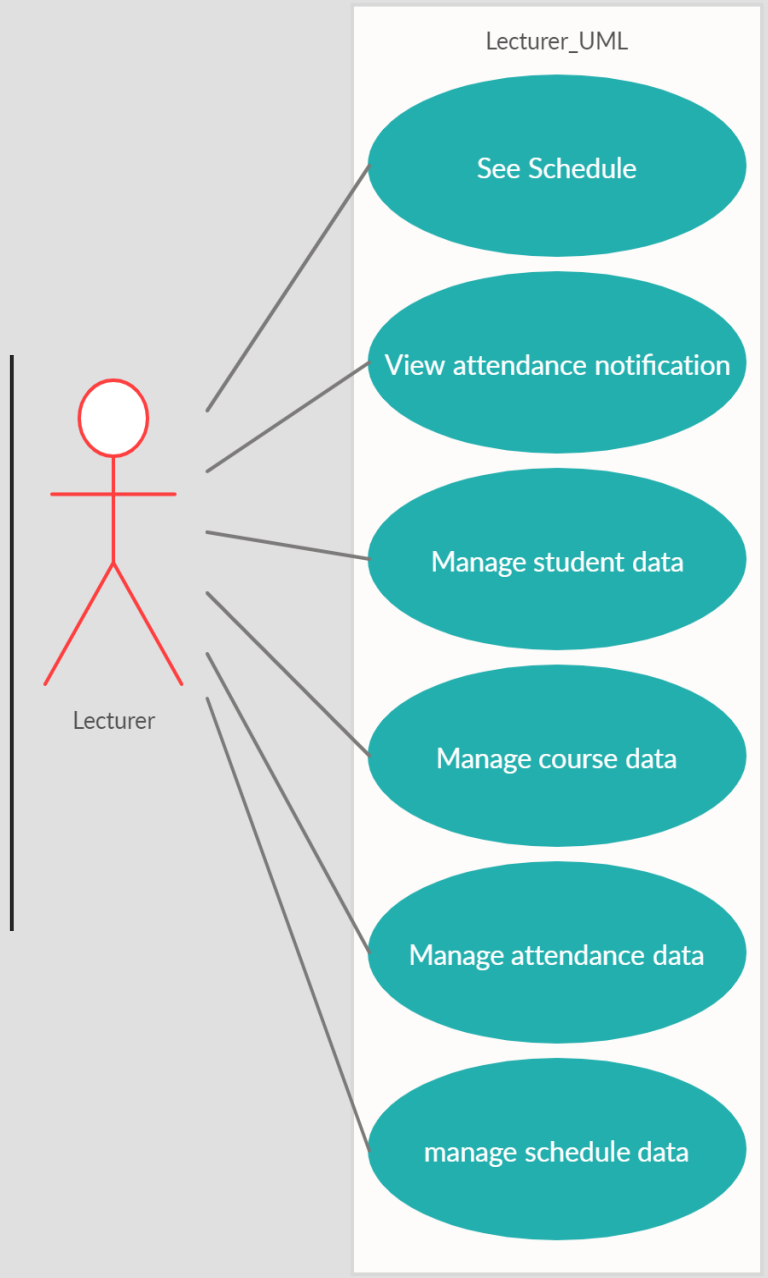
Proposed System

- The process should take place without the intervention of the educational staff and be automatic
- The system should calculate attendance and leave continuously (where if the student exits the lecture, attendance also decreases from the lecture hours)

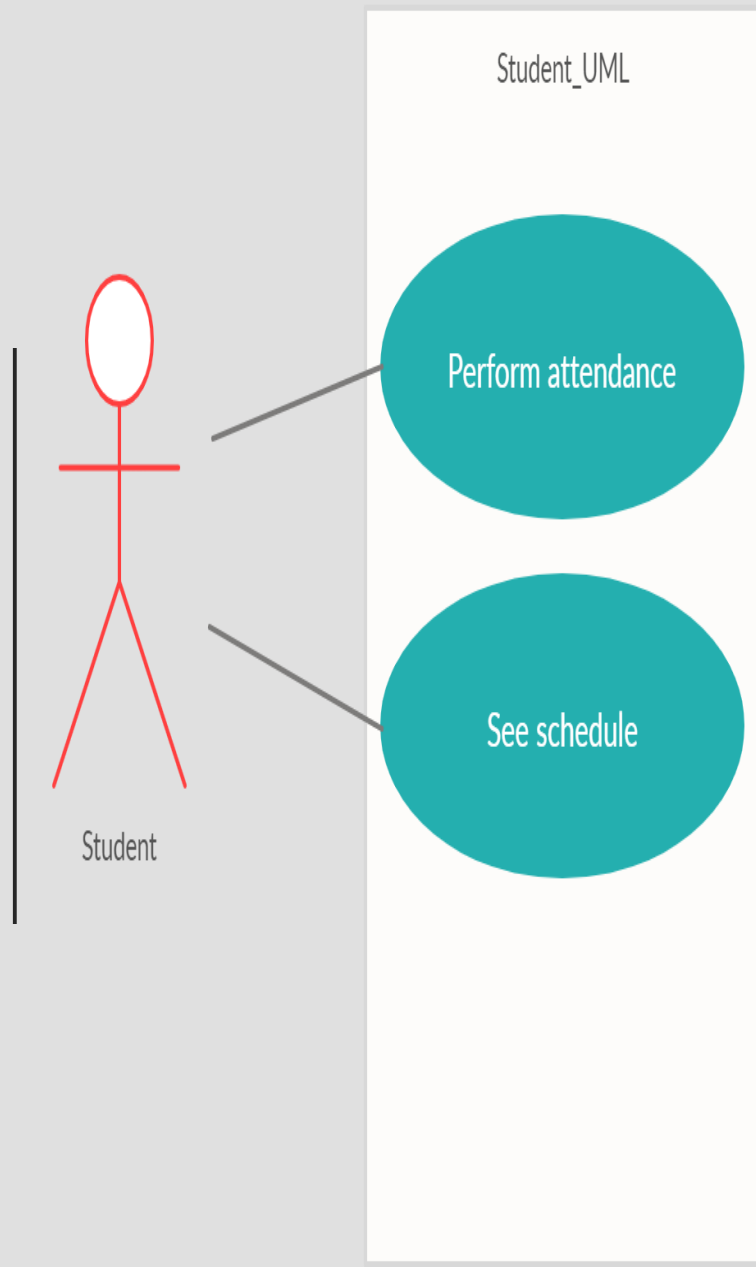
Advantages

- Change the paper system to a dynamic, smart system that identifies the student via the camera.
- Make the method of preparation easy, safe and fast.
- Take advantage of the time spent preparing manually.
- A solution for students' manipulation and preparation of their classmates.
- Calculating the student’s attendance from the moment he enters and exits from the lecture (the system is excluded from the attendance of the student when he exits the lecture in the middle of it and returns before the end of the time, as it allows preparation for the time completely).
- It allows the teacher and officials of the academic units to know the number of hours of attendance for students and the number of times they leave the lecture.

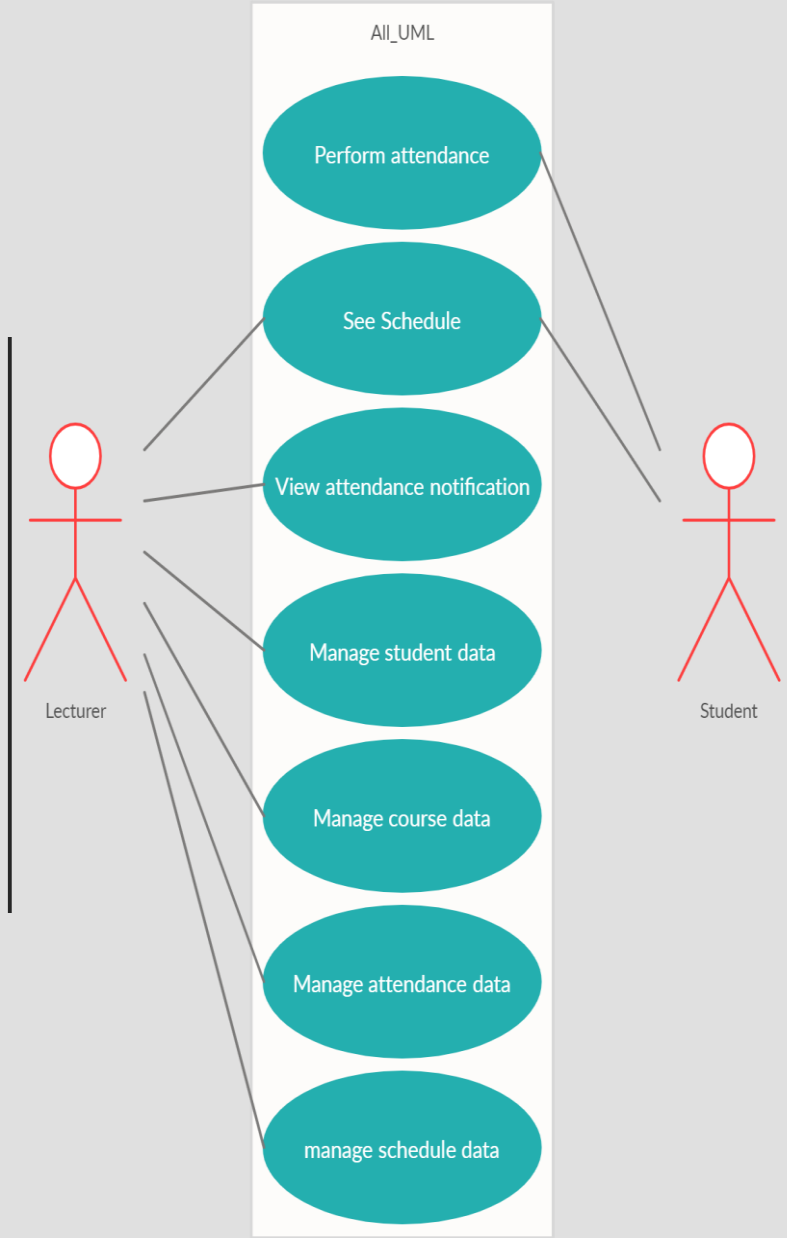
Use case for Lecturer



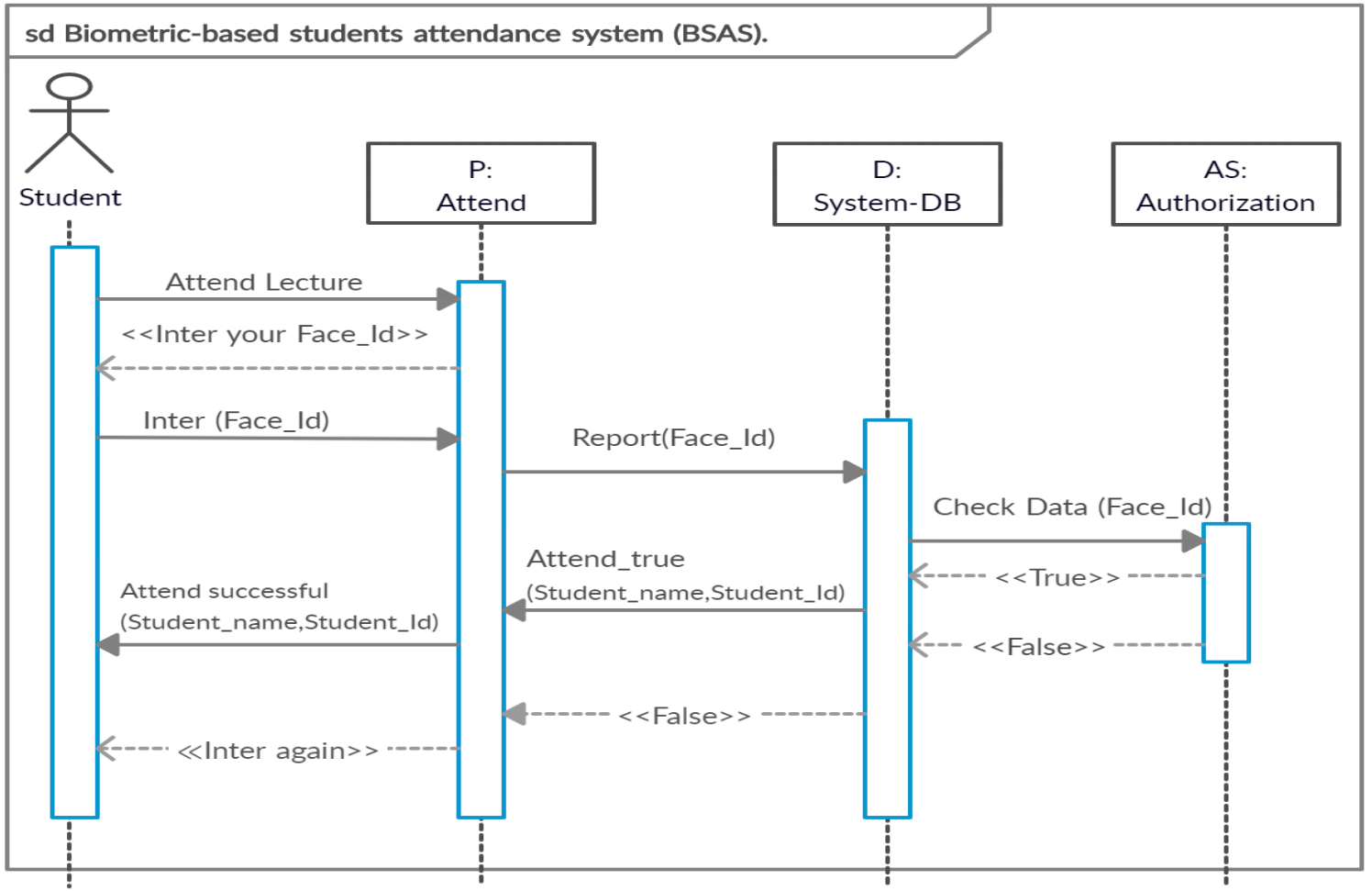
Use Case for Student



Use Case for All



Sequence Diagram



System Design

- 3.1 ERD : Entity Relationship Diagram
- An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is a component of data.
- In other words, ER diagrams illustrate the logical structure of databases.
- At first glance an entity relationship diagram looks very much like a flowchart. It is the specialized symbols, and the meanings of those symbols, that make it unique. Uses of entity relationship diagrams:

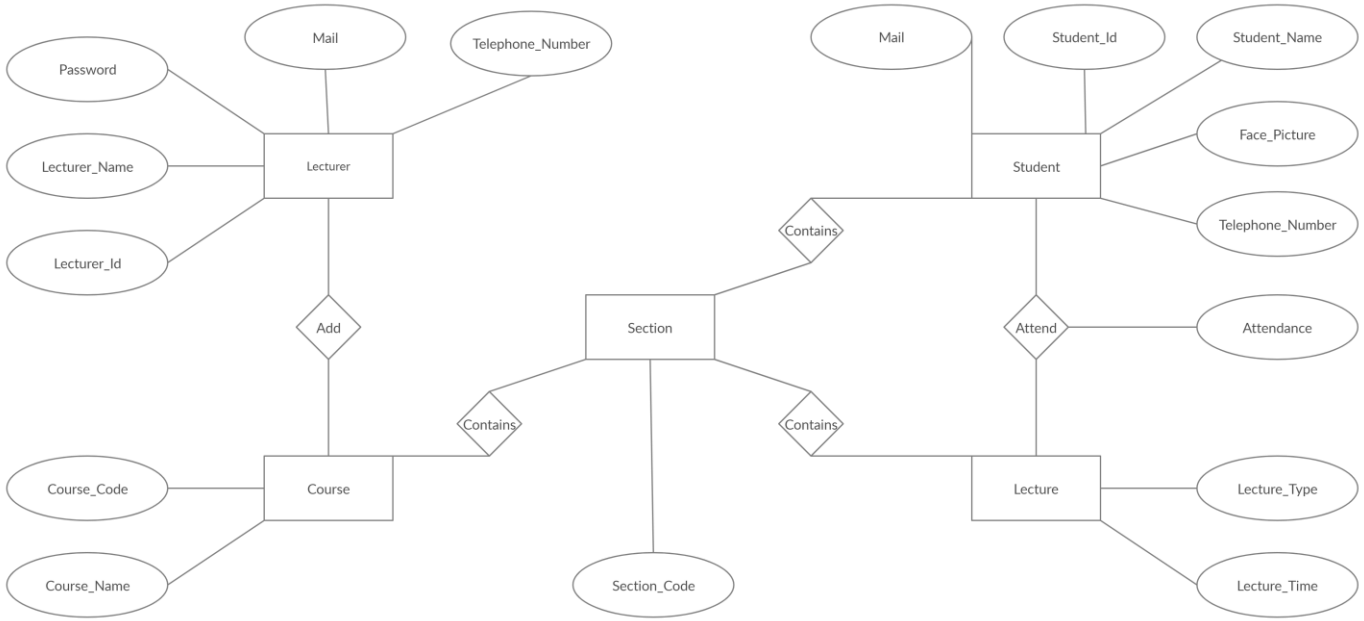
Database design:

ER diagrams are used to model and design relational databases, in terms of logic and business rules (in a logical data model) and in terms of the specific technology to be implemented (in a physical data model.) In software engineering, an ER diagram is often an initial step in determining requirements for an information systems project. It's also later used to model a particular database or databases. A relational database has an equivalent relational table and can potentially be expressed that way as needed.

The components and features of an ER diagram:

Component	Shape
Entity	
Relationship	
Attribute	
Cardinality	

ER Diagram

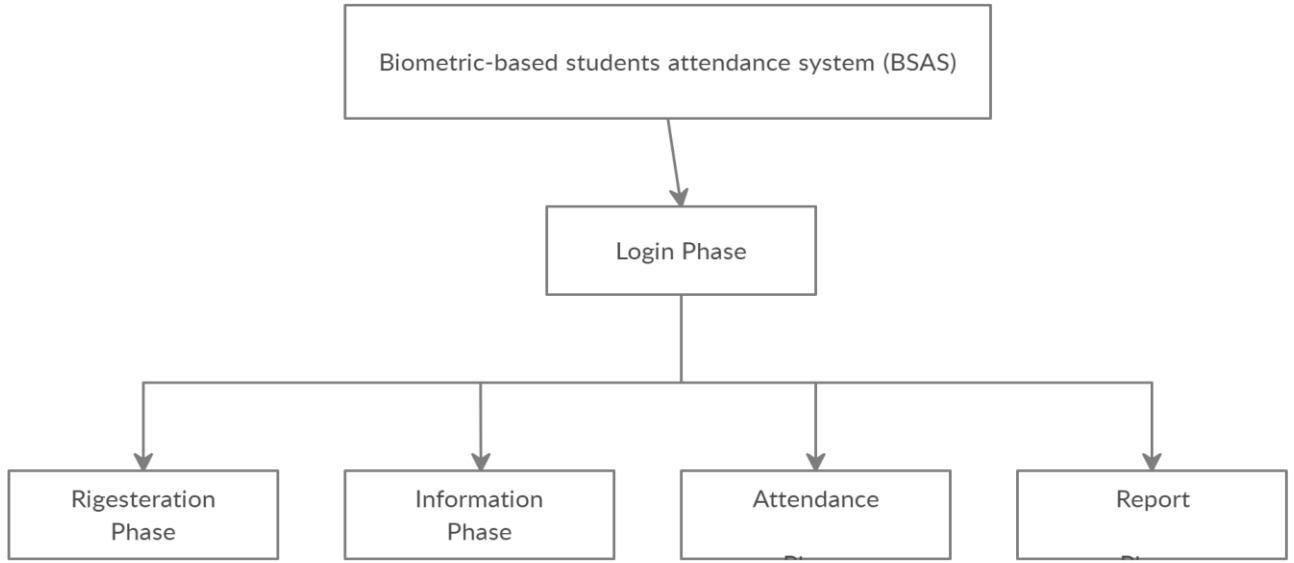

Mail
Telephone_Number
Password
Lecturer_Name
Lecturer
Lecturer_Id
Add
Course_Code
Course
Course_Name
Contains
Section
Contains
Contains
Section_Code
Mail
Student_Id
Student_Name
Face_Picture
Student
Telephone_Number
Attend
Attendance
Lecture
Lecture_Type
Lecture_Time

Application User Interface

Block Diagram

In this Diagram show the Block of the system.

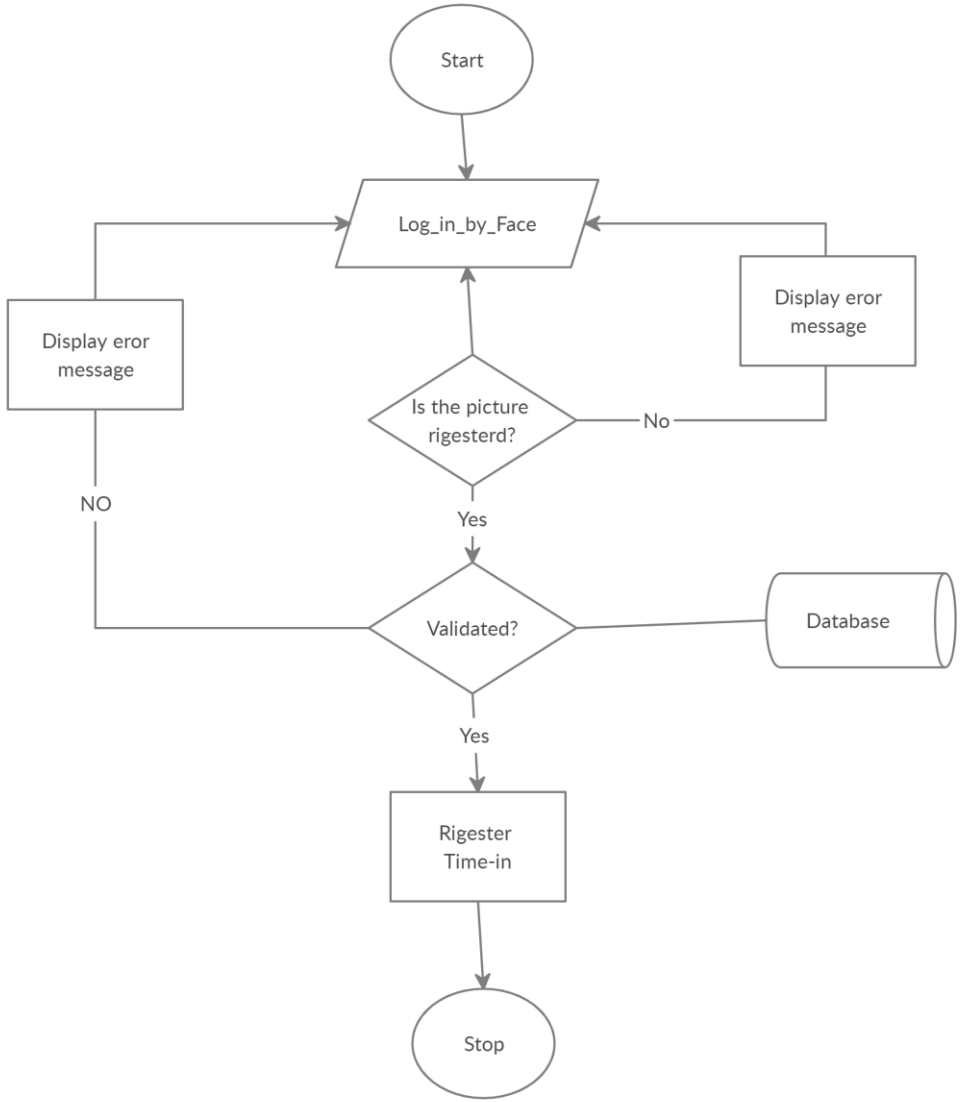
Start with the login phase.
The CREATLY App was used to carry out this work.



System Flowchart

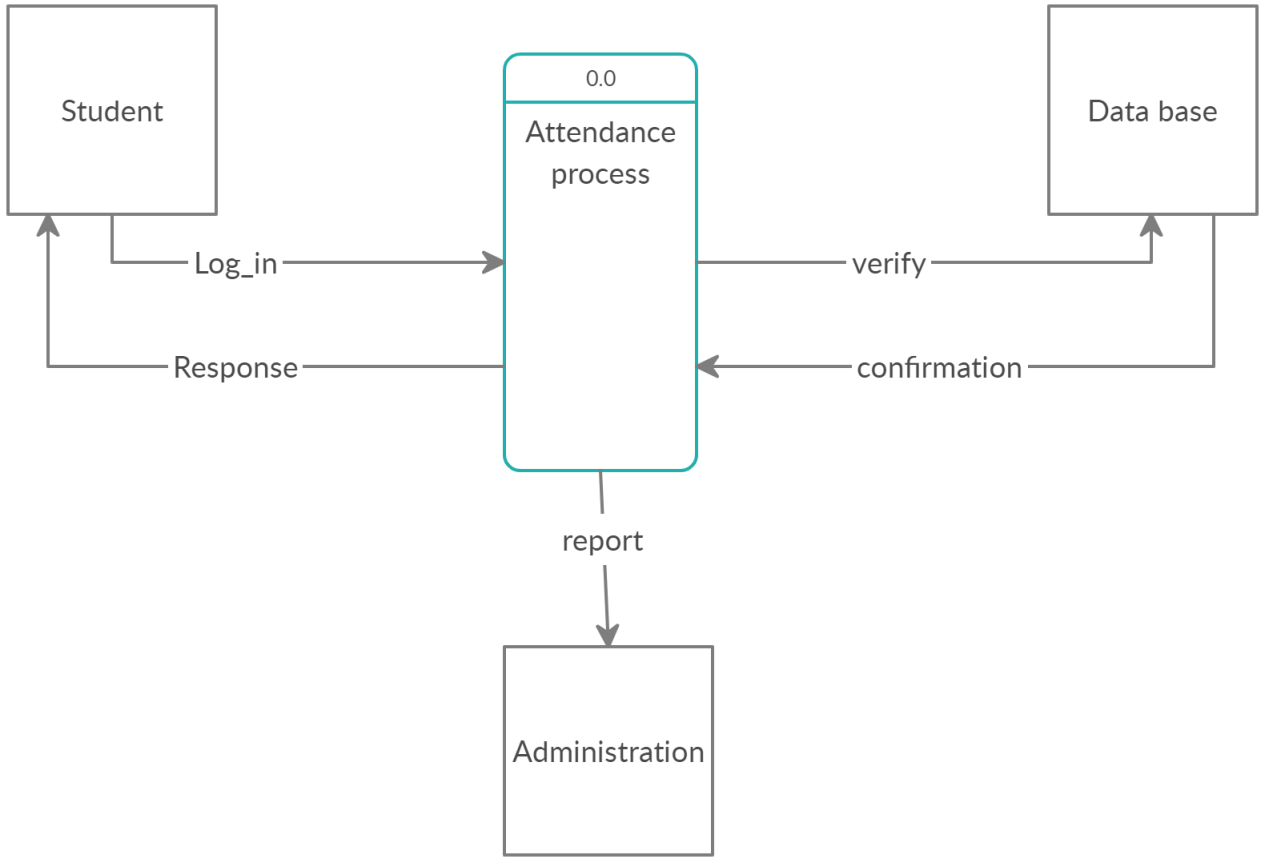
- This diagram shows how the system works.

- The CREATLY App was used to carry out this work.



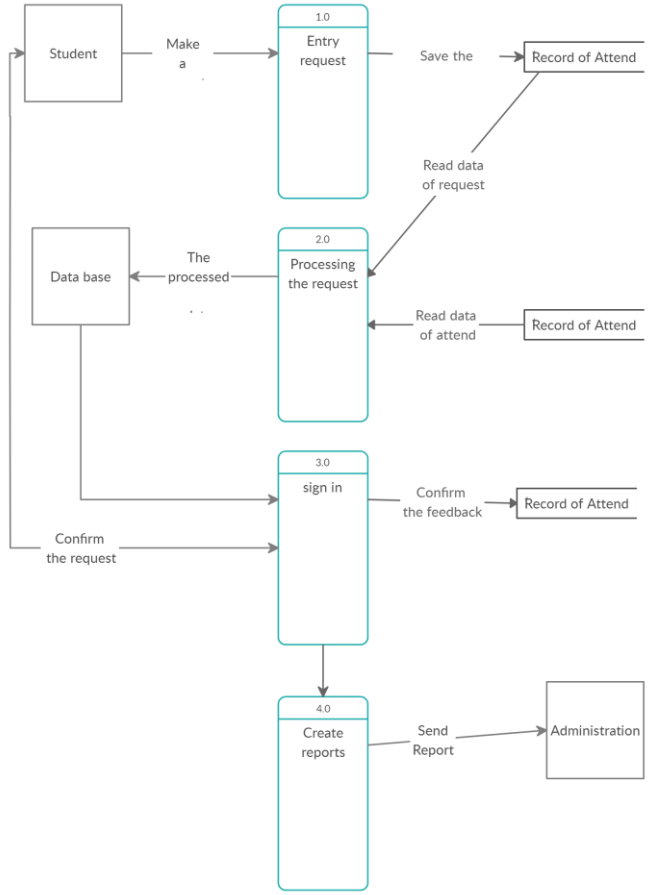
Dataflow Diagram

- This Diagram Shows Data Flowing System.
- (This is data flow diagram 0.0)
- The CREATLY App was used to carry out this work.

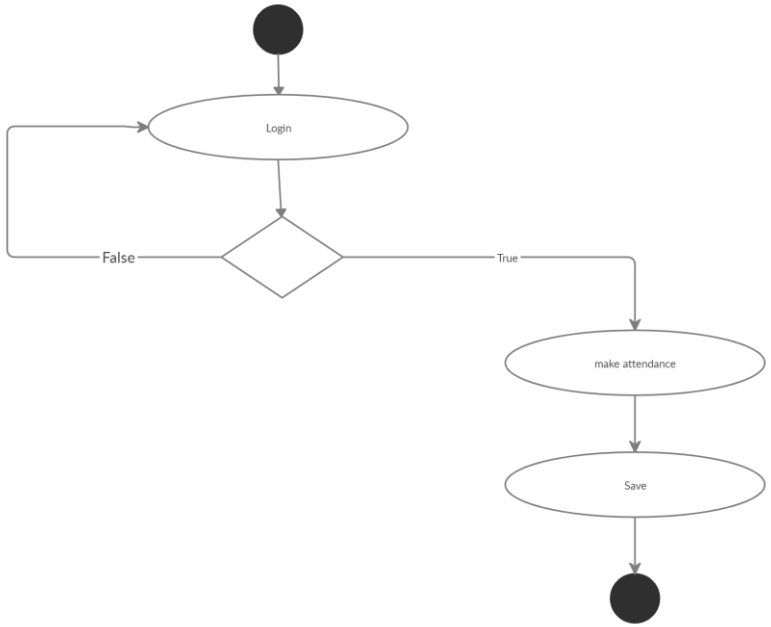


Dataflow Diagram

- This Diagram Shows Data Flowing System.
- (This is data flow diagram FINAL)
- The CREATLY App was used to carry out this work.

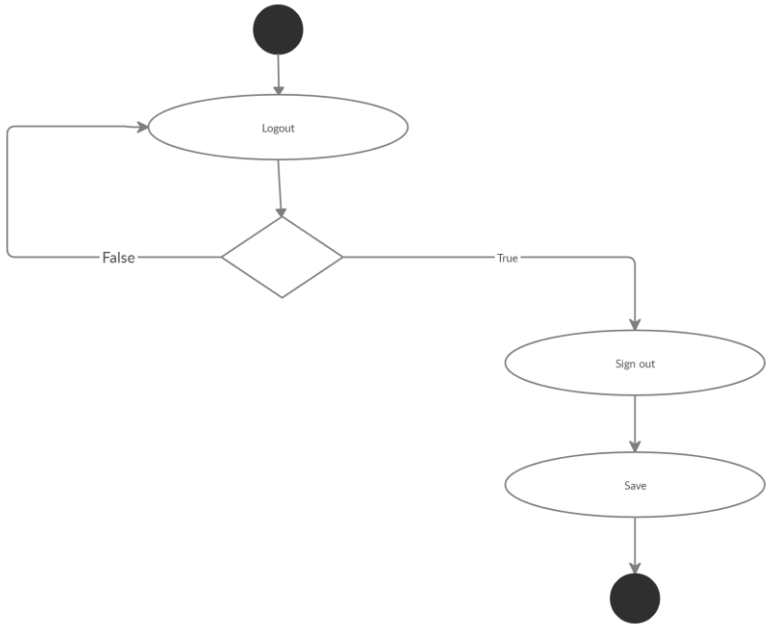


Activity Diagram



- This Diagram Shows how the process will done .
- Activity Diagram For Login
- The CREATLY App was used to carry out this work.

Activity Diagram



- This Diagram Shows how the process will done .
- Activity Diagram For Log out
- The CREATLY App was used to carry out this work.

References

- 1. *Jain, A. K.; Bolle, R.; Pankanti, S., eds. (1999). Biometrics: Personal Identification in Networked Society. Kluwer Academic Publications. ISBN 978-0-7923-8345-1.*
- **^** *Bleicher, Paul (2005). "Biometrics comes of age: despite accuracy and security concerns, biometrics are gaining in popularity". Applied Clinical Trials. Retrieved 6 December 2019.*
- ^ Jump up to:**a b c** *Jain, Anil K.; Ross, Arun (2008). "Introduction to Biometrics". In Jain, AK; Flynn; Ross, A (eds.). Handbook of Biometrics. Springer. pp. 1–22. ISBN 978-0-387-71040-2. Archived from the original on 9 March 2011.*
- ^ Jump up to:**a b c** *Sahoo, Soyuj Kumar;*