



Biometric Attendance Management System (BAMS)

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Motivation

- Instead of creating a namesake android app, we really wanted to create an app that could practically be used in our class on a daily basis for taking Attendance.
- This was something that sir really needed.
- Why go for fingerprint based Biometrics?

A brief Intro on the device we are using....

- **Secugen's Hamster™ Plus**

- Industry's one of the most accurate, rugged, and affordable USB fingerprint Reader.
- Fingerprint Capture Speed - **0.2 ~ 0.5 seconds.**
- High Image resolution - 500 DPI
- Used in various government applications.
- Encryption feature to protect user privacy
- Highly efficient matching algorithm
- Attractively small size

About BAMS

- BAMS (Biometric based Attendance Management System) is an Android app we developed to mark attendance.
- It uses an micro USB attached device - Secugen Hamster Plus to take fingerprints.
- It provides an elegant **solution** for fingerprint based authentication, using almost any android device - even when the device doesn't have inbuilt fingerprint scanning capabilities.

Additional Hardware required ?

- Besides having an Android based Mobile (Android based - version 3.1 or higher) you only need.
 - Secugen Fingerprint scanner(Costs Rs. 4000)
 - OTG cable (Costs around Rs.60)

Basic Overview

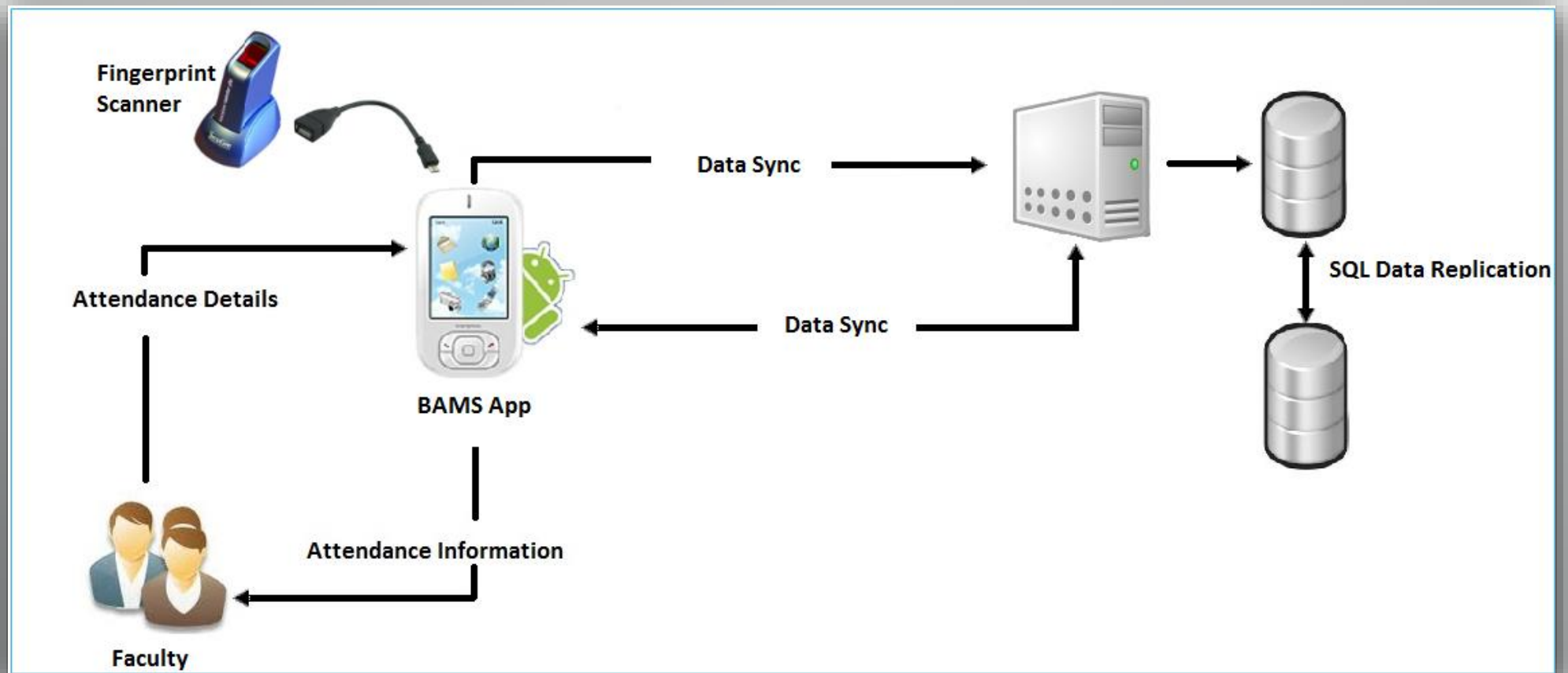
- **ONE TIME PROCESS:**

- Instructor uses this app to register his/her course students and their fingerprints.

- **DAILY PROCESS:**

- Instructor passes his android mobile along with the device to the students. Upon which, the students marks their attendance by recording their fingerprints.

Proposed Architecture Diagram...

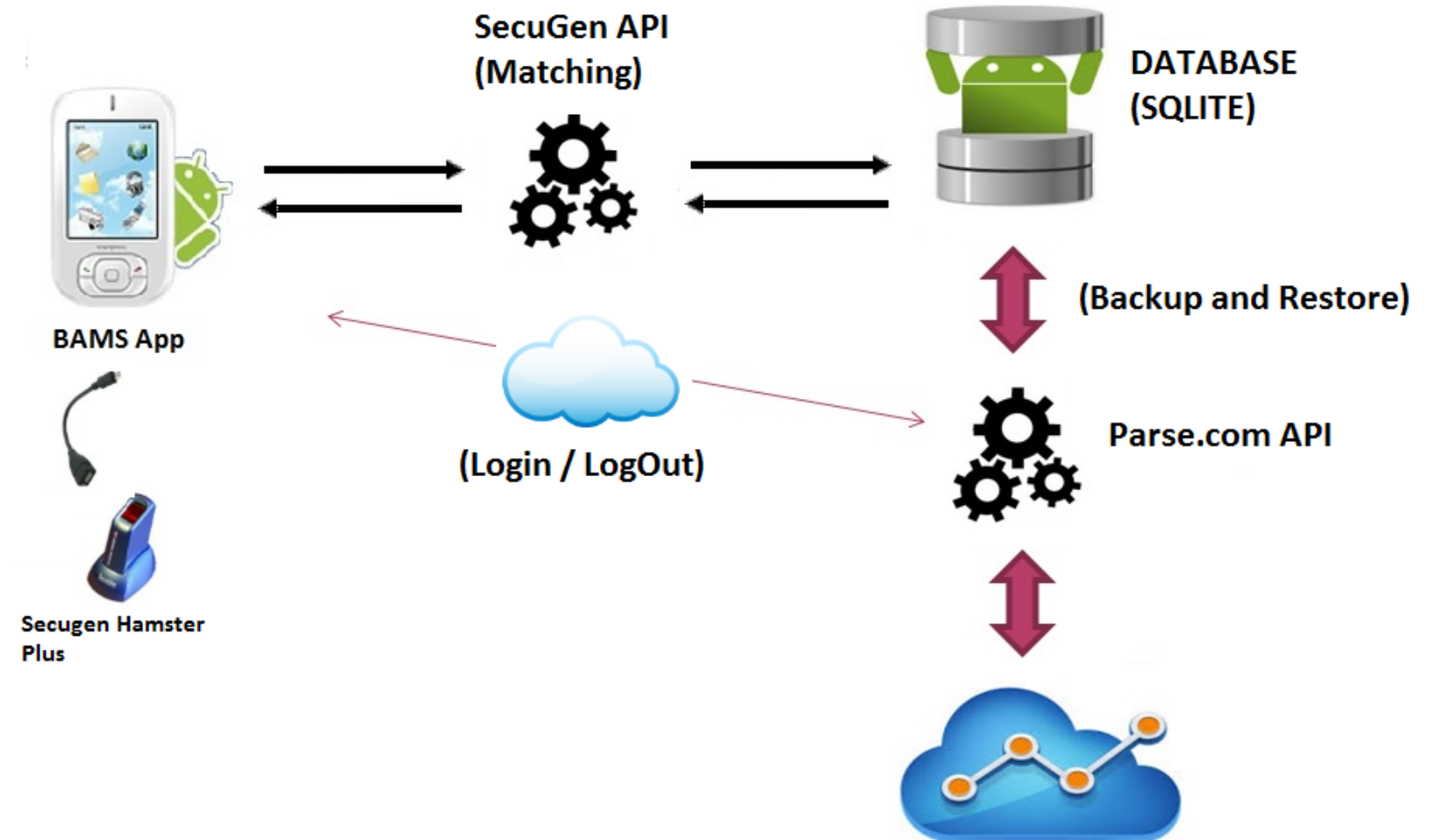


Parse.com

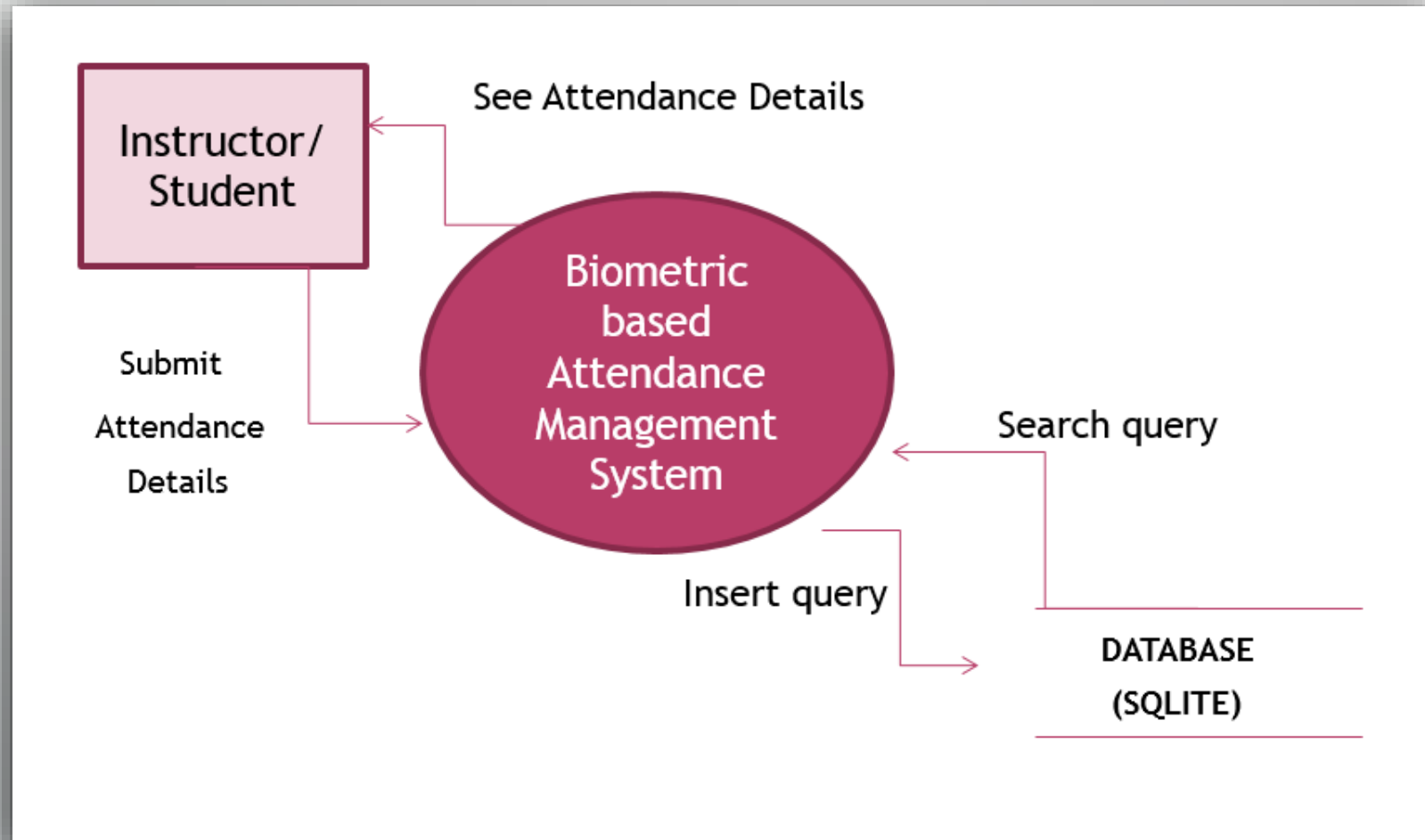
- Provides **BaaS** – Backend as a Service.
- The Parse Cloud handles your entire backend so your team can focus on making an engaging user experience. Don't worry about databases, performance, or scaling.
- Free User Benefits
 - - 20 GB File Storage.
 - - 20 GB DB Storage.
 - - 2 TB Data Transfer Limit.
 - - 30 Requests/Sec



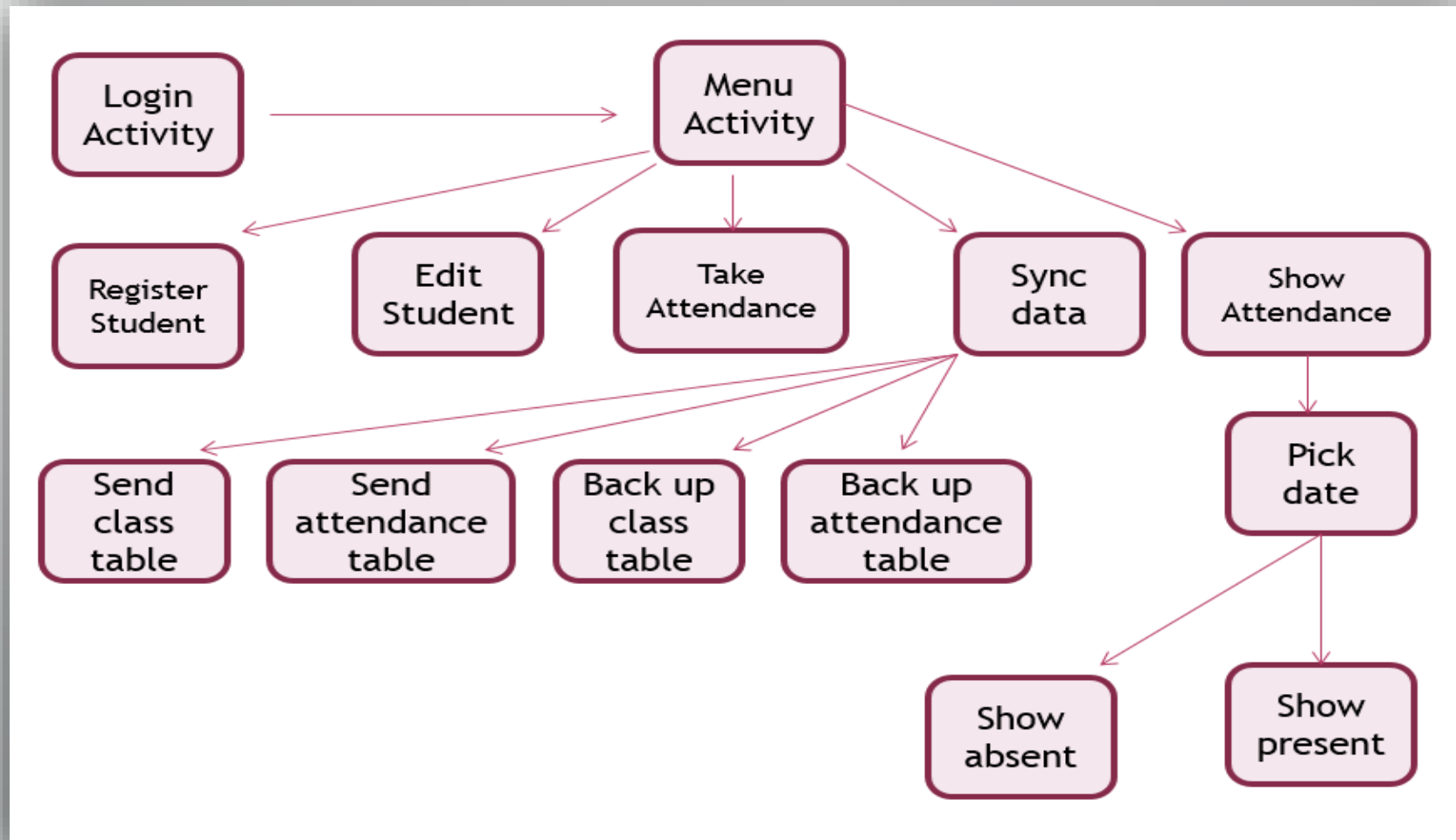
New Architecture Diagram



Context diagram



Activity Diagram



Quality attributes

- **Performance**

- Matching algorithm is very fast and efficient (500 ~ 800ms).
- Using locally stored SQLITE database.
- Takes less data storage – As only fingerprint templates are stored in db ~ 400B

- **Usability**

- Simple intuitive user interface.
- Proper dialog and alert messages are provided.

... Quality attributes

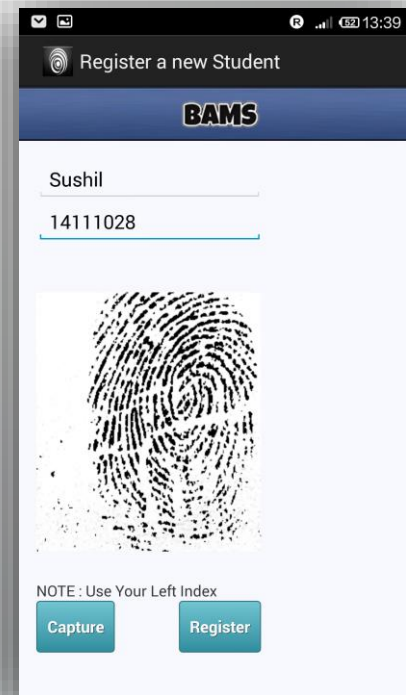
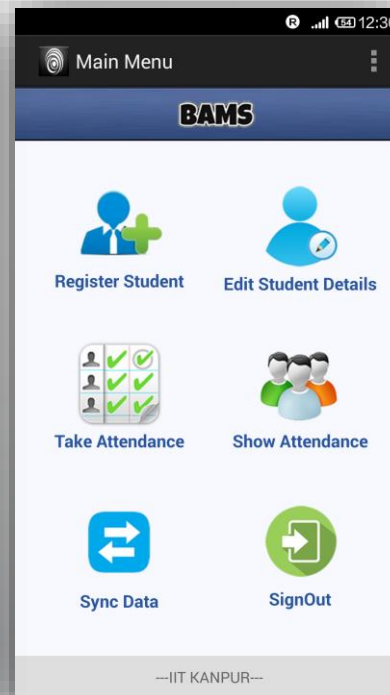
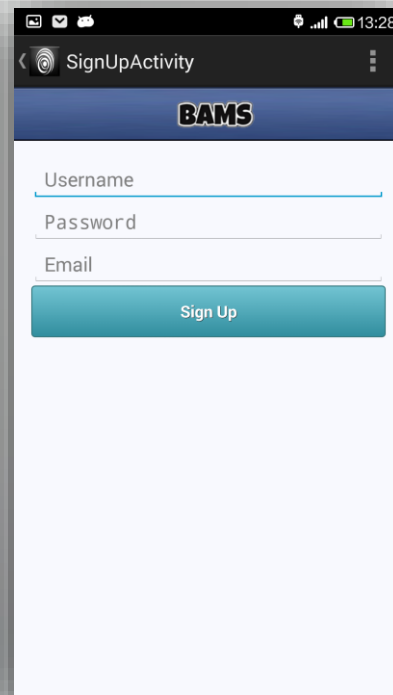
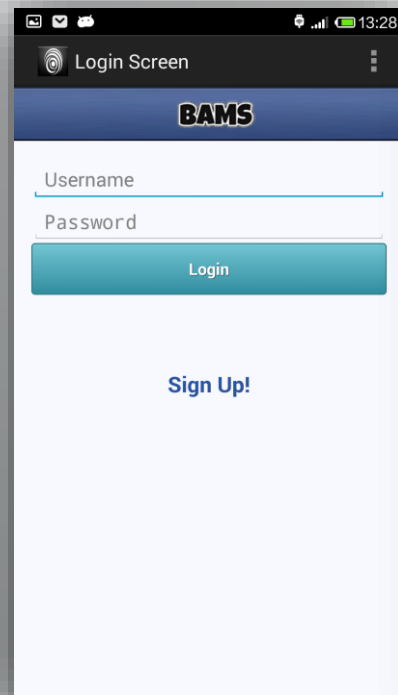
- **Security**

- Login Based System.
- Encrypted Fingerprint data storage.

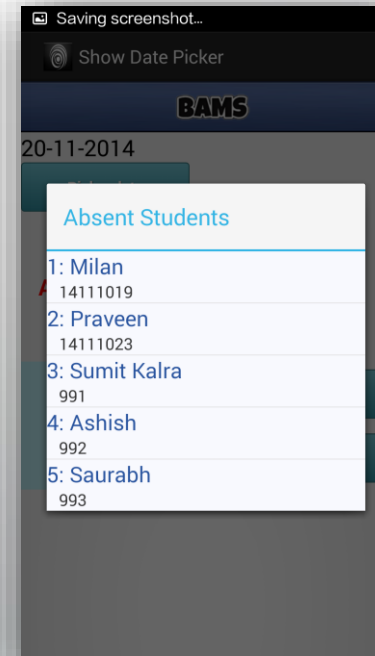
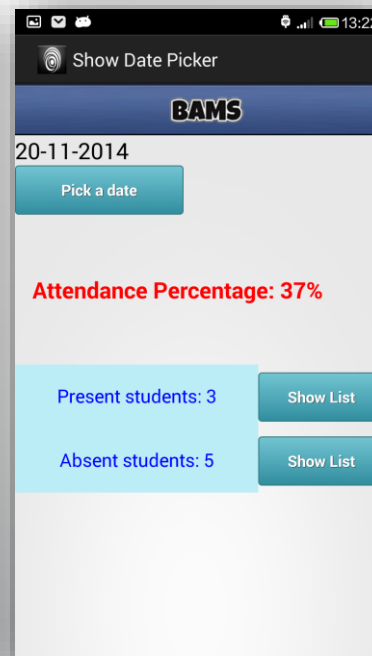
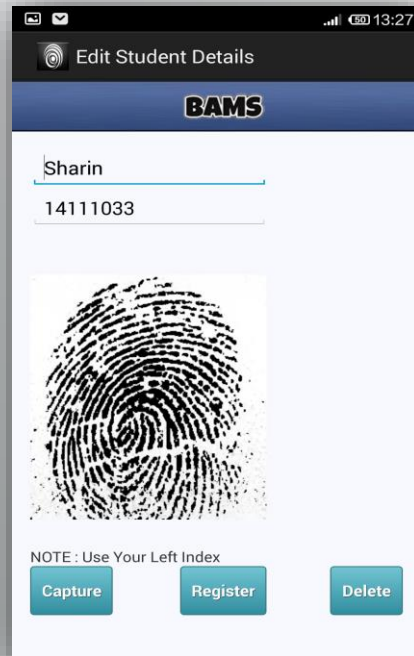
- **Recoverability**

- Persistent data storage using SQLITE databases.
- Data Back up and Restore - using cloud.

Few Sample Screenshots...



...few more Screenshots



Features OF BAMS

- Simple intuitive user interface.
- State full system.
- Fast and Reliable .
- Options to Edit and Delete records.
- Data Back up and Restore.
- Can be used without internet also.
- Can see Attendance % and Present/absent students for any user given date.
- Dynamic list view on marking attendance.

Features that can be added...

- Ability to save / share the sheets.
- Can be extended to support many other Courses.
- Can also be used to mark Staff Attendance.
- More analysis reports like attendance graphs, patterns, can be shown.

REFERENCES

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- www.vogella.com/tutorials/android.html
- www.secugen.com/
- <http://en.wikipedia.org/wiki/>
- <https://parse.com/>
- <http://stackoverflow.com/>



THANK YOU !