**Detail problem statement**

**1.1 Purpose**

The ultimate goal of our application is to transform current attendance taking systems by involving and combining latest technologies and advancements in geo-fencing.

The application intends to provide a common platform for teachers and professors to gather seamless attendance and track students during school hours if they leave the campus or don’t attend scheduled lectures.

**1.2 Scope**

The geo-fencing application includes real-time tracking of students mobile phones in a given geo-fence (in this case, college or university). The application extends its capabilities by providing downloadable attendance sheet after the teacher has concluded the lecture. By providing timetables and lecture scheduling features, the application further extends its scope towards providing a common platform for attendance systems.

**1.3 Intended Audience**

The intended audience include all educational organizations that want to conduct and maintain attendance for all students based on geo-fencing on a single application.

**1.4 Benefits of the system:**

Benefits of the system include better accuracy in attendance tracking, convenient maintenance of all attendance records, on par attendance systems for educational institutes with technologies used in corporate businesses.

**Overall description**

**2.1 Product Perspective**

Geo-fencing application technology is not being currently used at many educational organizations. The application that we aim to develop tends to this very problem and presents a viable solution for any attendance problems that the organization might face.

**2.2 Product Function**

The following are the product functions for proposed system:

1. The system is a multi-page application that has separate user interfaces for teachers and student.

2. The system tracks all students for a specific condition that if they are in the given geo-fenced area.

3. All the data generated by the above analysis is stored in a database which further provides a downloadable attendance sheet.

**2.3 User characteristics**

The students will have option for turning their location on, viewing their timetable and checking their attendance while the teachers will check students that leave the geo-fence and generate attendance for respective subjects.

**2.4 Design Constraints**

All mobile phones that can share their location with the application and run somewhat latest android versions can use the proposed system without interruptions.

**2.5 Assumptions and dependencies**

The teachers have to rely on admins to keep the teacher and student data updated. Also it is assumed that all students have a good enough smart phone to run the application.

**System Requirements and analysis**

The system requirements and analysis section introduces the numerous requirements of the system from the user’s point of view. It also introduces a number of decisions that have been taken regarding implementation of the system.

**3.1User Interface:**

The proposed application is a mobile app with screens to record and view attendance. Contains multiple screens for login, lecture scheduling and timetable viewing for both teachers and students. Also the recorded attendance is marked automatically and provided in a downloadable format for teacher login only.

**3.2 Hardware Requirements:**

Any mobile phone that has at least 4gb ram and has at least 4 gb of storage with 1.5 ghz processing power will be able to run the application.

**3.3 Software Requirements:**

Any mobile phone that has recent android (9 and above) or iOS (10 and above) with location and internet access provided to the application.

**Supplementary Requirements**

The system fulfils the following supplementary requirements:

1. Easy to maintain and operate: The system has simple user interface and a multiple screens and functions based on user login.

2. Reduces overall time taken as compared to traditional attendance systems. The application provides single platform for all subjects and teachers to maintain attendance of all students in the organization.

**Other Non-functional Requirements**

**5.1Performance Requirements:**

The system should run smoothly without taking much to deduce results as it is a single page website.

**5.2 Security Requirements:**

The system must provide access to the registered users only. The data used by the system is privately stored and data of users is stored in an encrypted database.

**5.3 Portability Requirements:**

The system should run on android as well as iOS on any given mobile phone which reduces purchase of new systems to run the application.

* 1. **Maintainability Requirements:**

The admins have to make sure that the student and teacher information remain up to date.

**5.5 Reliability Requirements**

The app must consistently track students and provide accurate attendance records to the teachers with almost negligible errors.