Software Requirement Specification

(Digital Attendance System)

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ISSUED BY
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General System Definition

Digital Attendance System is the tool for organizing, managing and tracking the students attendance in the educational institutions.

Purpose

The main purpose of the Digital Attendance System SRS is to provide the view of the working of the system and expectations by the end users. It provides thorough analysis on the requirements, feasibility study, cost and time constraints of the project that provide the development team with detailed understanding of the system and assist in designing with the same flow.

Project Scope

Attendance is the inevitable process in any educational institutes. This helps to track the students involvement towards the subject matter. It also helps in categorizing the students based on their performance. Most of the educational institutions restrict their students for certain percentage of attendance. The manual attendance process and analyzing those attendance consume time of teacher, lecturer and professor. Keeping in mind that time is valuable, instead of wasting time on manual attendance, let the employee focus on other creative task and hand over those process to the DAS and at the end, just focus on the reporting of the attendance.

Acronyms and Abbreviations

DAS	Digital Attendance System
SRS	Software Requirement Specification
FR	Functional Requirement
NFR	Non-Functional Requirement
IT	Information Technology
CEO	Chief Executive Officer
ROI	Return on Investment
BEP	Break Even Point

Business Need and Requirements

Digital Attendance System provides the automated ease of organizing and analyzing the attendance of the student. The functionalities that our system should have are as follows:

1. Register users
2. Automated attendance
3. Track individual student's attendance
4. Generate customized attendance report

Business Value

DAS is expected to subscribed by one hundred educational institutions at the first year. The estimation of business value to the company include the following:

- Rs. 20, 00, 000 sales from subscription
- Rs. 50, 00, 000 annual sales from use of service

Return on Investment (ROI) is estimated to be 41.67%.
Break Even Point (BEP) is estimated to be 1.2 years.

Special Constraints

- DAS completion deadline is by December 30, 2018.

Feasibility Study

Feasibility analysis was carried out for Digital Attendance System under following categories:

Technical Feasibility :

DAS is technically feasible. Our IT department has enough experience to carry out the project with the association of cloud computing and machine learning techniques. We have enough consultants and experts to guide us throughout the completion of the projects. All the resources and technology required for the project are easily available.

The project size induces minimal risk. The project will likely have team of around 8 or lesser people. The project timeline is a bit narrow, but the expertise in working in the tight schedule is the plus.

Economic Feasibility :

A sales projection and cost benefit analysis was performed and they are provided in the **APPENDIX 1 and 2** with estimation, evaluation and calculation.

Following results was obtained from the cost benefit analysis:

- ROI over 2 years : 41.67%
- BEP : 1.2 years

DAS has good chance of improving the finance of the company. The project is economically feasible.

Organizational Feasibility :

From the organizational viewpoint, the project has low risk. The founders as well as CEO of the company has shown keen interest in the project and are providing motivation to complete the project. There is a high demand of the solution among the users.

User Characteristics

There will be two different users who can use this product in different way.

1. **Teacher or Lecturer :**

They have administrative control over their portion of the system. They can access attendance history of any student. They can generate report on the attendance analysis. They are capable of managing and updating the operation on the resources.

2. **Student or Parent :**

They will have read access to their own or their children's attendance records. They will be notified in case the student is absent in any particular day.

General Constraints

1. Storage Constraints : Every educational institution subscribed to the DAS will have maximum of 20 GB cloud storage allocated.
2. Language Requirement : The system should be in both English and Nepali languages.
3. Reliability Constraints : The system should be updated to the backup server in order to provide fault tolerant capability.
4. Implementation Constraints : The system should be implemented in Ruby on Rails backend, Python for AWS serverless application.

Functional Requirements

1. **Teacher :**

Logging In (Partial Admin Access) :

FR1 - The system shall verify valid email and password.

FR2 - The system shall restrict access to invalid users.

FR3 - The system shall allow partial admin access to valid users.

Track Student Attendance :

FR4 - The system shall allow teacher to be able to enter the individual student.

FR5 - The system shall retrieve all the information related to the queried student.

FR6 - The system shall report the obtained information in an user friendly manner.

Manage and Update Account :
FR7 - The system shall allow teacher to add student and associate with their parent.
FR8 - The system shall allow teacher to remove student.
FR9 - The system shall allow teacher to update the content of added student.
Customized Report :
FR10 - The system shall allow teacher to enter various criteria for customization.
FR11 - The system shall obtain information based on the customization criteria.
FR12 - The system shall display customized report in an user friendly manner.

2. **Parent :**

Logging In (User Access) :
FR13 - The system shall verify valid email and password.
FR14 - The system shall restrict access to invalid users.
FR15 - The system shall allow user access to valid users.

Obtain Notification :
FR16 - The system shall notify when the student is absent, through sms or email.

View Detailed Record :
FR17 - The system shall display detailed analysis report based on attendance data of the student associated with the particular parent.

Non-Functional Requirements

Performance Requirements :
NFR1 - Database update should be quick.
NFR2 - Generation of report should be within seconds.
NFR3 - User Interface shall not take more on 3 seconds to load on good internet connectivity.

NFR4 - Login credentials should be verified within 2 seconds.

Security Requirements :
NFR5 - Each and every record should be secure.
NFR6 - The records of a single institution shall be visible only to the users associated to that institution.

User Interface Requirements

The UI should be loaded from the server to any modern browsers such as Moxilla Firefox, Google Chrome, Safari, Opera and so on. The design should be responsive and user friendly.

Appendix

1. **Sales Projection :**

Subscription Sales : Assume 100 institution subscribes to DAS which costs Rs. 20, 000 per year.

100 institution * Rs. 20, 000 = Rs. 20, 00, 000

Use of Service : Assume each institution uses 20 attendance records in total in each day and assuming 200 working days in a year.

100 institution * 200 days * 20 records * Rs. 12.5 = Rs. 50, 00, 000

Average Expected Revenue = Rs. 70, 00, 000 per annum

2. Cost Benefit Analysis

	Year 0	Year 1	Year 2	Total
Total Benefits		70, 00, 000	1, 00, 00, 000	1, 70, 00, 000
Total Costs	50, 00, 000	30, 00, 000	40, 00, 000	1, 20, 00, 000
Net Profits	- 50, 00, 000	40, 00, 000	60, 00, 000	50, 00, 000
Cumulative Net Cash Flow	- 50, 00, 000	- 10, 00, 000	50, 00, 000	
Return on Investment	41.67%			
Break Even Point	1.2 years			