



Software Design Specification (SDS) for Mobile Application of Continuing Professional Development

Version 1.0

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Contents

| | |
|--|-----------|
| 1. Introduction | 2 |
| 1.1 Purpose | 2 |
| 1.2 Scope | 2 |
| 1.3. Document Convention | 2 |
| 1.4 Objective | 2 |
| Teacher Engagement: Personal Affect | 2 |
| Classroom Management: Teacher Movement | 2 |
| Classroom Management: On/Off Task | 2 |
| Children Engagement: Verbal Involvement | 2 |
| Children Engagement: Opportunities to Respond | 2 |
| Use of Questions | 3 |
| Lesson Competencies | 3 |
| 1.5. Non-Goals | 3 |
| Workflow Diagram | 3 |
| Class Diagram | 4 |
| Sequence Diagram | 5 |
| Architecture Design Diagram | 7 |
| Diagram 1 | 7 |
| Diagram 2 | 7 |
| Database Diagram | 8 |
| ERD Diagram | 8 |
| Interface Design | 9 |
| Test Cases | 10 |

1. Introduction

1.1 Purpose

This document will define the design of the Mobile Application for Continuing Professional Development. It describes the intended input, output, classes, and functions in detail. At the end of the document, detailed figures show how the classes interact to fulfil the desired specifications.

1.2 Scope

This Software Design Specification document is to be used by Software Engineering and Developers as a definition of the design to be used to implement the Mobile Application for Continuing Professional Development.

1.3. Document Convention

The font and font size that this document will be using is Times Roman and 12. It will use line spacing of 1 unit between lines.

1.4 Objective

The smartphone application for Continuing Professional Development is designed to provide teachers in government primary schools the ability to view centralised data and use observation resources. Its goal is to increase educational quality by including an assessment platform that allows users to observe how teachers give lectures and how much information students get.

Teacher Engagement: Personal Affect

Individuals (teachers) who wish to develop their communication style in the classroom will use this observation tool. Teachers have a hard time understanding their own tone. As a result, this tool allows the observer to give Teachers feedback about how they interact with the students.

Classroom Management: Teacher Movement

During a lecture, this technique tracks the teacher's body gestures. The System creates a spatial plan of the classroom as well as the positions of the children inside it. Attach the dots to draw the teacher's movements and document where he or she meets with the students, speaks to them, answers questions, and so on.

Classroom Management: On/Off Task

The purpose of this tool is to keep track of how children stay on task, or go off task, during a part of the lesson.

Children Engagement: Verbal Involvement

This tool's function is to keep track of how well children remain on target, or stray from it, during a certain part of the class.

Children Engagement: Opportunities to Respond

Students would be encouraged to interact with the instructor orally in this observation tool. To show what opportunities the children have to answer, the system will use the following code:

T – Teacher calls on child; C – Child raises hand and speaks; CO – Child calls out a response without raising hand; BR – Brief Response; LR – Long Response.

Use of Questions

When the teacher interacts with the students, the system would enable the teacher to script questions used to involve the children. Once you've scripted your questions, use Bloom's taxonomy to classify them.

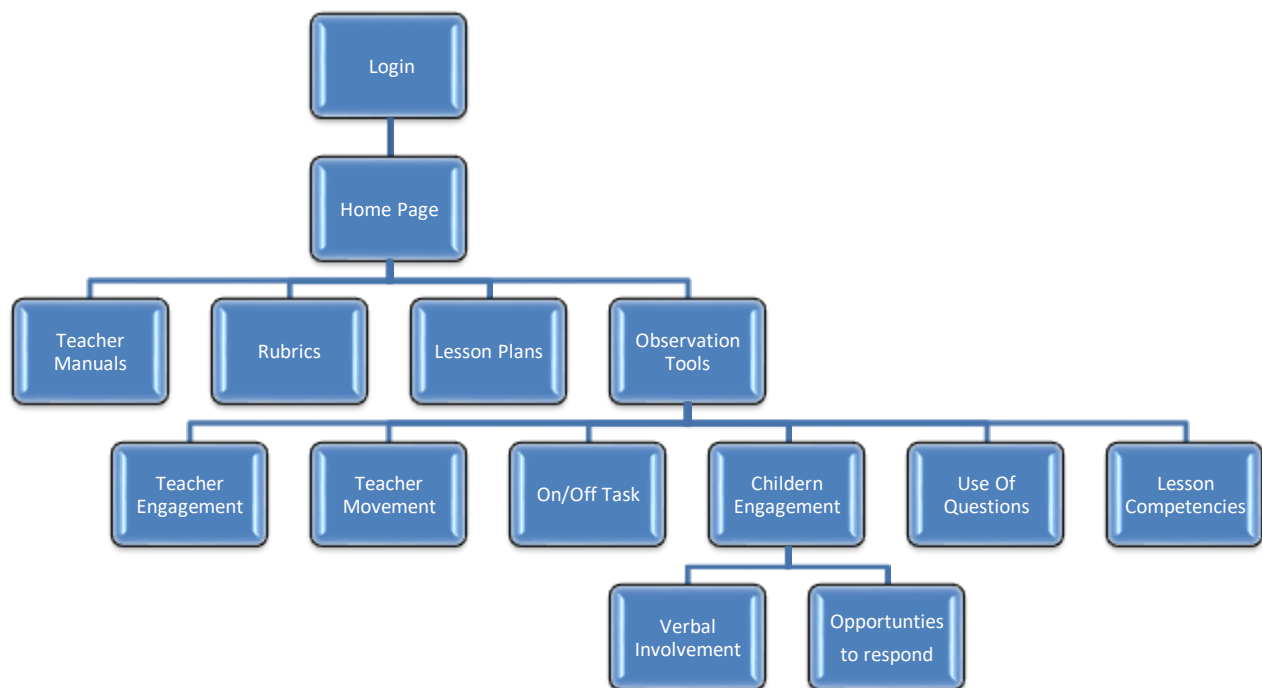
Lesson Competencies

This observation method assists teachers in observing an entire lesson and rating the teacher's performance in the various lesson competencies.

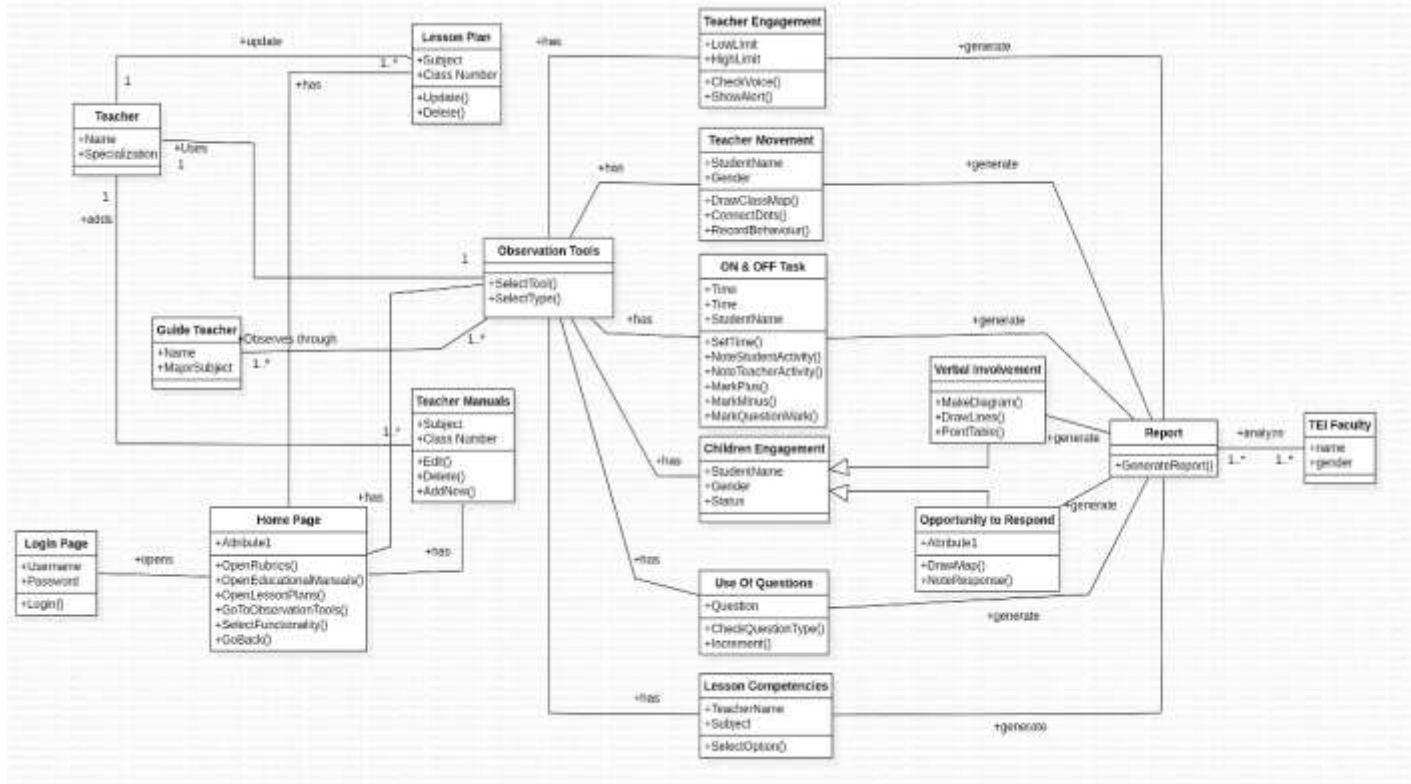
1.5. Non-Goals

Some observation tools like observing body language of teacher and word selection during lecture are not in scope of the application, as it needs surveillance system and NLP.

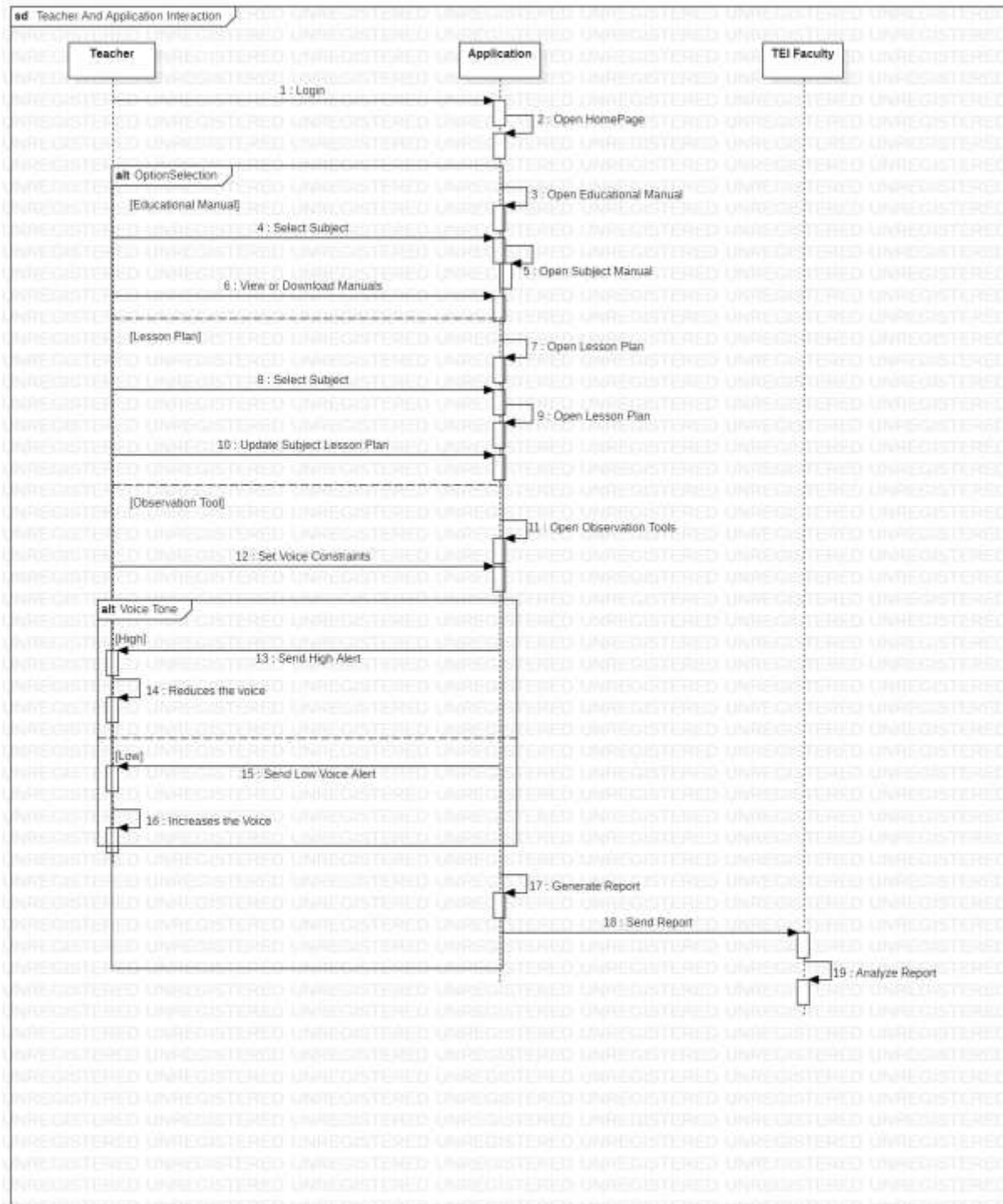
Workflow Diagram

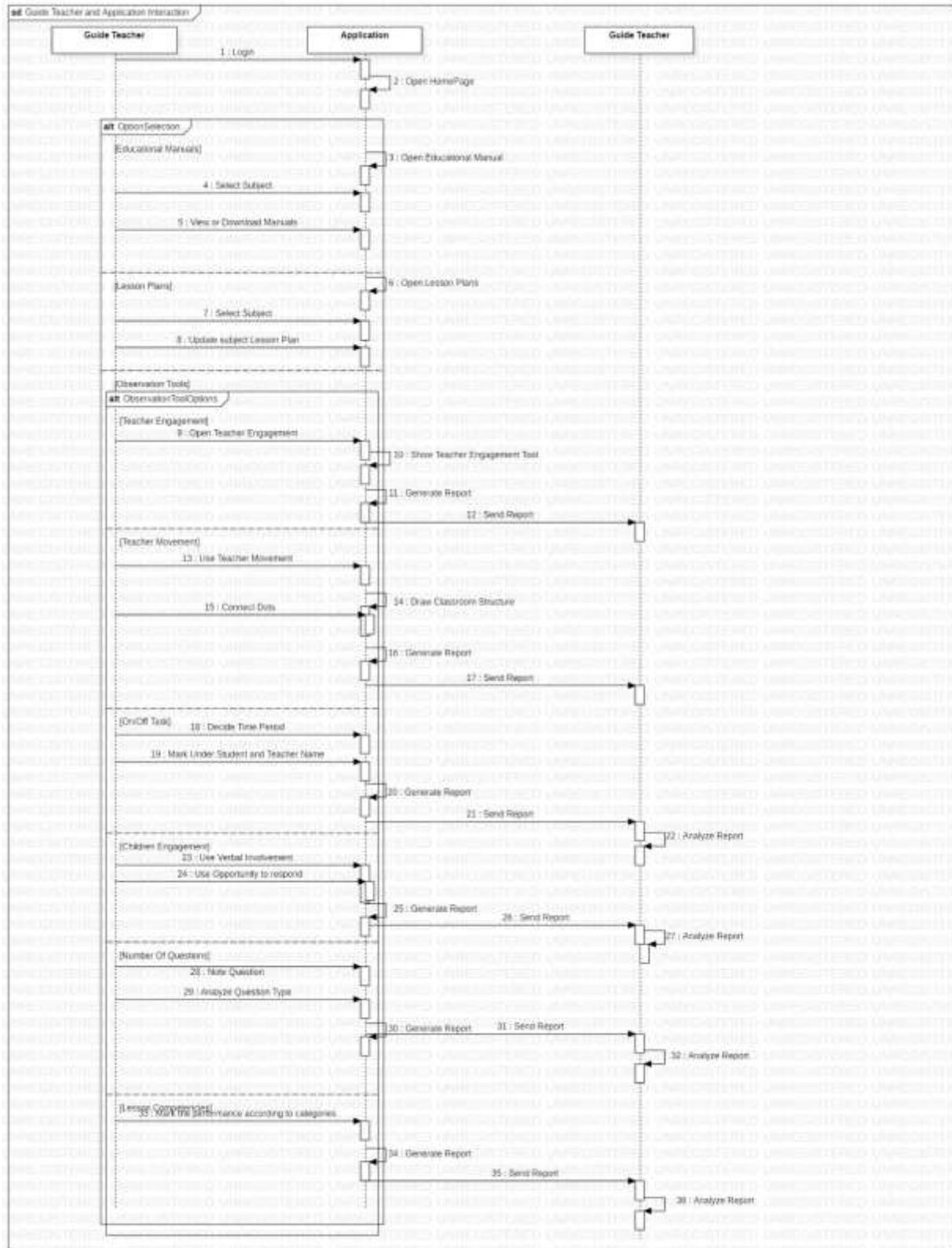


Class Diagram



Sequence Diagram





Architecture Design Diagram

Diagram 1

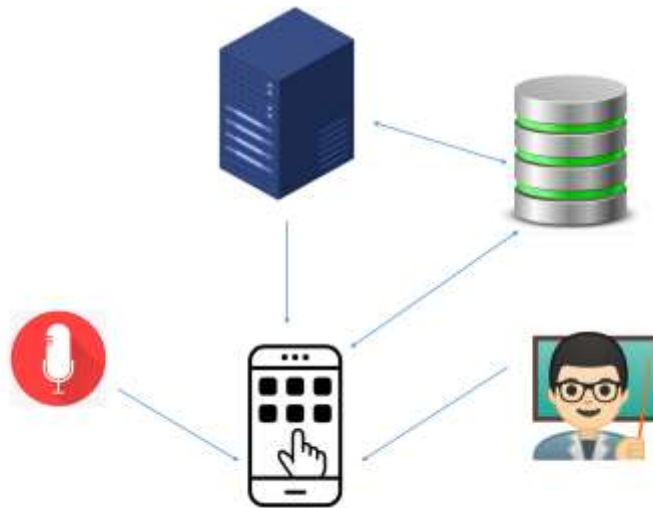
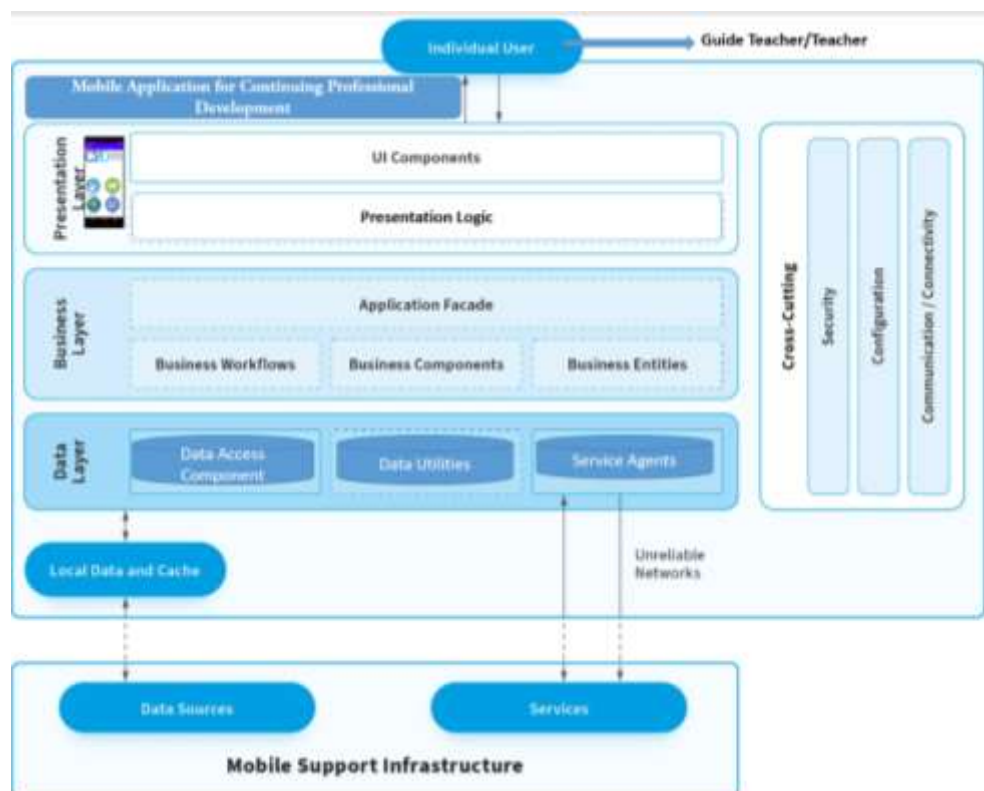
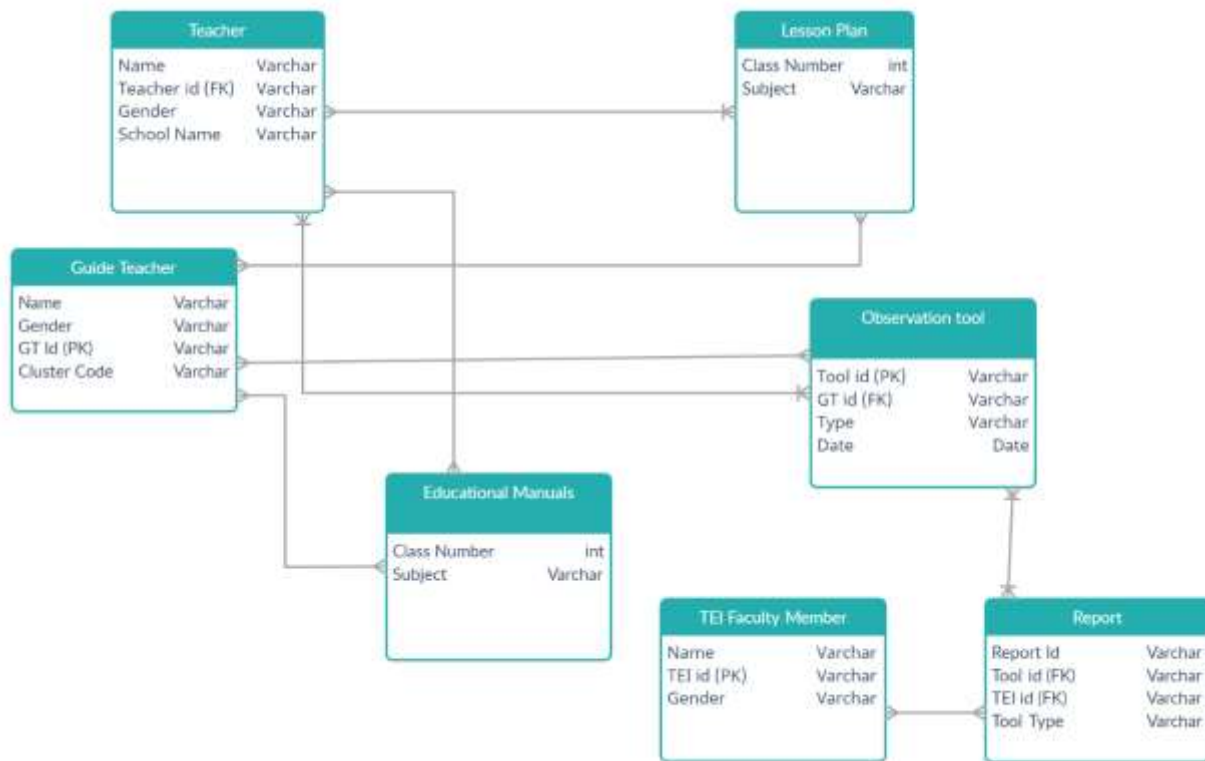


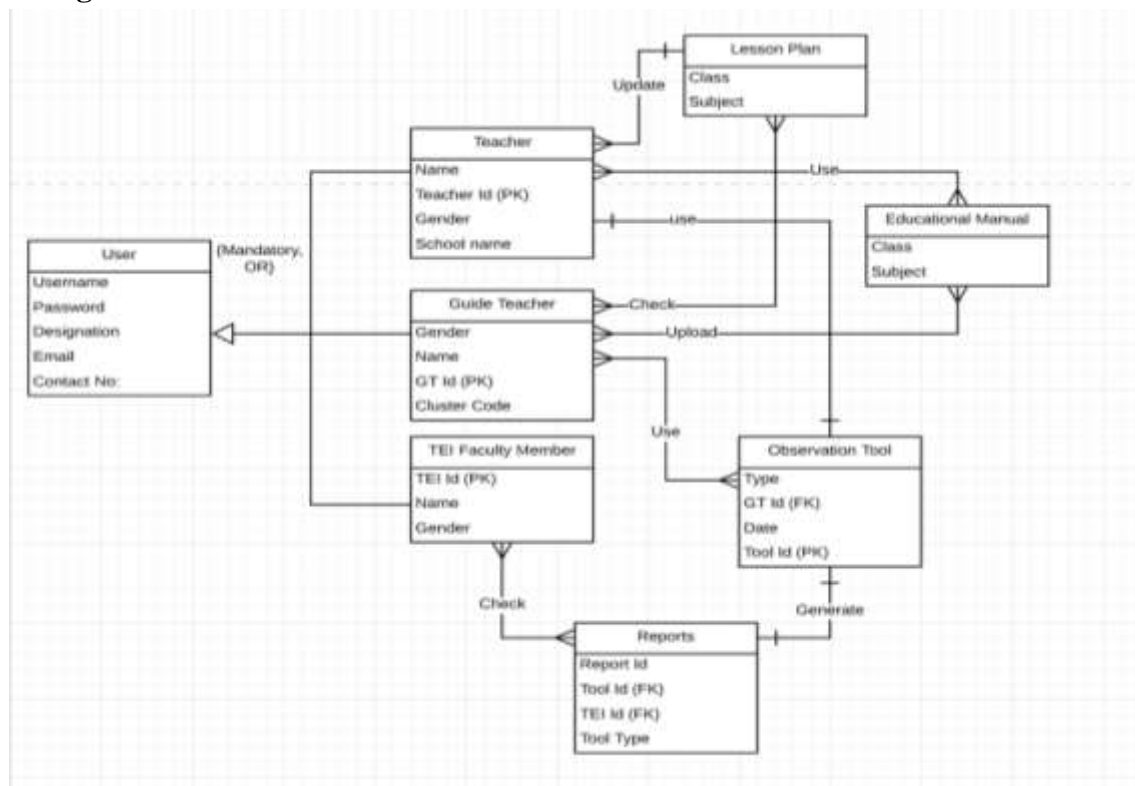
Diagram 2



Database Diagram

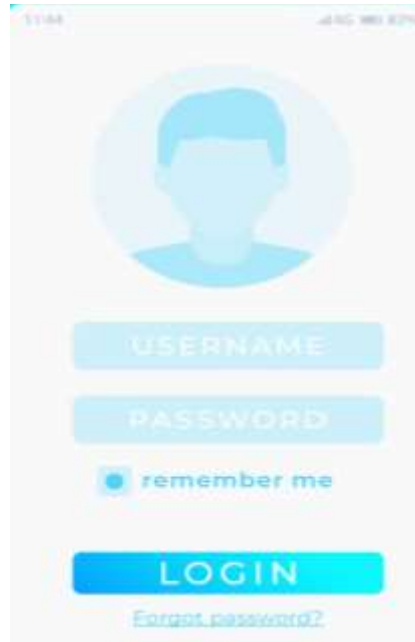


ERD Diagram

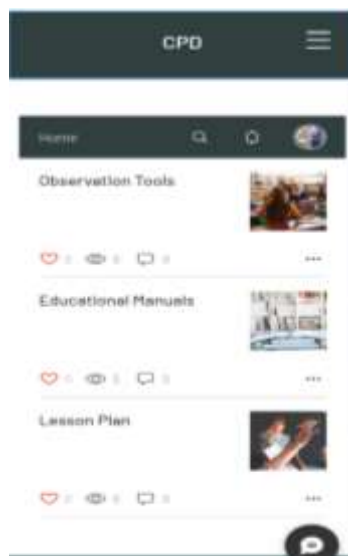


Interface Design

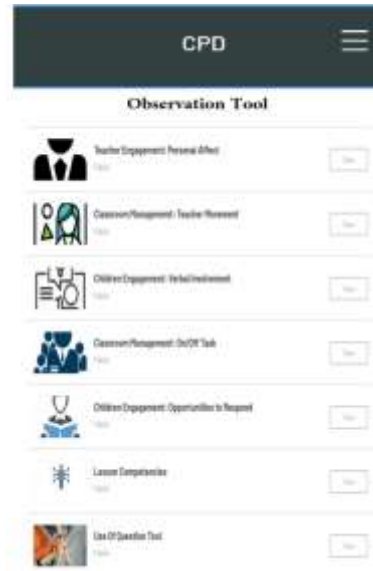
Login Page



Home Page



Observation Tools



Test Cases

| <i>Test Case Id</i> | <i>Test Type</i> | <i>Test case Scenario</i> | <i>Test case</i> | <i>Input data</i> | <i>Expected output</i> |
|---------------------|------------------|---|--|--|---|
| 01 | Functional | To ensure that the required fields are visible on the screen. | When teacher is using observation tool (Classroom Management: Teacher Movement). The system draw the physical plan of classroom. | No of Students in class | Number of dots equals to the number of student will appear in screen in grid form. |
| 02 | Functional | To ensure that the user gets the correct error code. | When user enter credentials in login form, system authorize the user | User enter wrong username and password | System show error message "Invalid User" |
| 03 | Performance | To determine if the application's response time meets the requirement. | When teacher uses observation tool of Teacher Engagement: Personal Affect, system record the voice and generate alert. | Voice of teacher. | Record the voice and generate alert when voice go up or below the given threshold. |
| 04 | Security | Analyze the specifications for data collection and validation. | After using observation tool, system secure the report generated. | - | The report should only be accessible to guide teacher who was using observation tool. |
| 05 | Usability | To prevent end-user misunderstanding, the buttons should all be in the same part of screen. | The dots representing the students are placed in right position. | Number of students | Dots should have the required size and be suitable to big fingers. |

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|----|----------------|--|--|------------------|--|
| 06 | Usability | To keep the text short and understandable so that it can be read by the users. | When user uses observation tool of Lesson Competencies, the text of rubric is clear | | Text must be readable to user. |
| 07 | Compatibility | To make sure the applications' alert mode is still active. | When teacher uses observation tool of Teacher Engagement: Personal Affect, system record the voice and generate alert. | Voice of teacher | System generate alert alarm when voice go up or below the given threshold. |
| 08 | Recoverability | During a power outage, verifying the application's reaction. | When teacher is using any of the observation tool and the phone suddenly hang or battery dies. | - | State of observation tool must be saved. |