

Software requirement specification document for primary school e-learning system project

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November 22, 2022

1 Introduction

1.1 Purpose of this document

Purpose of the software is mainly focused on providing a primary school e-learning system .

1.2 Scope of this document

Scope of this document is focused on the development of an e-learning system that will be used by target users. This system offers the facility of being used either by admin, students, or parents. By mentioning admin it refers to education staff (i.e teachers). Teacher will have different options to navigate through. He will be offered subject details and subject activities panel. Each of which has it's own operations that will be applied against it. Starting from applying different operations on lessons sub-panel in subject details panel, as well as on each of assignments, quizzes sub-panel in subject activities panel. Student panel will have sub-panels that contain different operations that will make them able to be updated with new requirements for the subject. Parent panel will be added to be able to track and overview student's progress in different subjects. The system won't include any kind of HR, managerial, attendance, or any kind of process that isn't related to education/e-learning curriculum.

1.3 Overview

Primary e-learning system provides flexibility to be used either by students in-order to be updated with all school tasks, for parents to check up on their children whilst for teachers to be able to monitor and guide their students through their education.

1.4 Business Context

The business objective about this system is looking forward to having the students updated with any new announcements from teachers. Also looking forward for the teachers to having a way to be able to communicate and being more interactive with students remotely. Enabling students to have a fixed source material for their subjects to refer to for studying, and for practicing what they have learnt by solving assignments and attempting quizzes to gain more knowledge. Finally to have a way to keep parents who have an important and effective role, always updated with their children overall performance in school and being able to contact their teachers at any time.

2 General Description

2.1 Product Functions

The general function of this system is to act like a platform through which teachers and students can be in parallel contact education-wise, each performing their role. Parents wise, to act as a reference to their children overall performance along their school semester.

2.2 Similar System Information

This product system is inspired from "Classera" primary e-learning school system. New feature added which is parent's eligibility to check up on their children's overall performance, as well as being able to have a direct contact with teachers for any issues.

2.3 User Characteristics

The environment upon which the system will be used will be for a non-profit organization which will be a primary school for this product system. The product system will be in a very simple interface, easy to use and understand how to deal with it's functionalities. The product system's language will be in the simplest way of an English language taking in consideration the possibility of lack in understanding second language (i.e English). School admins (i.e teachers), students, and parents will be able to deal with such system starting from the flexibility of the interface and it's simple English language expression till dealing with it's basic, common functionalities.

2.4 User Problem Statement

Based on the requirements analysis that was done, the main problem facing the user is the in-ability of teachers to update students with new announcements/changes that happens occasionally, overwhelming paperwork for teachers, students not having a fixed place where they can access their subjects materials easily instead of the overwhelming papers and high-costing books. Finally lack of parent's supervision due to absence of contact between teachers and parents as well as parent's inability to check on their children's performance frequently.

2.5 User Objectives

The target users of this product system is looking forward to seeing functional solutions for all the problems listed above and declared in the requirement analysis document, as well as dashboard design, pictures of teachers and students, and events panel which will be considered as wish list till executing and finalizing the main functionalities.

2.6 General Constraints

School product system won't be able to accommodate large number participants/users because, a school is expected to have relatively approximate number of students unlike a university system. No hardware constraints.

3 Functional Requirements

This section lists the functional requirements in ranked order. Functional requirements describes the possible effects of a software system, in other words, what the system must accomplish. Other kinds of requirements (such as interface requirements, performance requirements, or reliability requirements) describe how the system accomplishes its functional requirements see table 27. Each functional requirement should be specified in a format similar to the following:

Table 1: Functional Requirement : Teacher subject material panel; View subject material

Function Name	View subject material
Description	This function allows teachers to display options to show related subject materials to be able to either upload or modify on them.
Critically	This function is critical for user (i.e teacher)flexibility in displaying and modifying curriculum.
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Object from subject material is sent as parameter to the function.
Post-Condition	Subject material is displayed.

Table 2: Functional Requirement : Teacher subject material panel; View subject activities

Function Name	View subject activities
Description	This function allows teachers to display options to show related subject activities required to be done to test student's understanding for the subject. Also to be able to either upload or remove or mark them according to each one.
Critically	This function is critical for user (i.e teacher)flexibility in displaying, removing or marking process related to student's performance.
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Object from subject activity is sent as parameter to the function.
Post-Condition	Subject activities are displayed.

Table 3: Functional Requirement : Teacher subject material panel; View lessons

Function Name	View lessons
Description	This function allows teachers to view required curriculums and shows table of contents of required lessons to be taught. It acts as a good reference to study from for students. For parents to check on their children if they keep up with the same progress of the teacher, and how far they've achieved in the curriculum.
Critically	This function is critical for flexibility and having overview about the subject, and to send providing different functionalities in the system as the regular one should.
Technical issues	/NA
Cost and schedule	/NA
Risks	No issues are found to be found.
Dependencies with other requirements	It depends on the inserted data in database table of lessons.
Pre-Condition	Lesson code is available.
Post-Condition	Lessons are displayed.

4 Interface Requirements

Web browser availability to run the interface.

Table 4: Functional Requirement : Teacher subject material panel; Add lesson

Function Name	Add lesson
Description	This function allows teachers to add lessons to their curriculum in case of any changes wants to be added.
Critically	This function is critical for flexibility in modifying curriculum and providing different functionalities in the system.
Cost and schedule	/NA
Risks	Lesson isn't added if not all the required arguments are sent.
Dependencies with other requirements	/NA
Pre-Condition	Lesson _i code, lesson _i title
Post-Condition	Lesson is added

Table 5: Functional Requirements : Teacher subject activities panel; View assignment

Function Name:	View assignment
Description:	This function enables the teacher to check how much assignments has been done by students, as well as to be updated by how far did he/she go based on the curriculum.
Critically:	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	Assignment code and assignment title
Post-Condition:	Assignments are displayed

4.1 User Interfaces

4.1.1 GUI

graphics

4.1.2 CLI

/NA

4.1.3 API

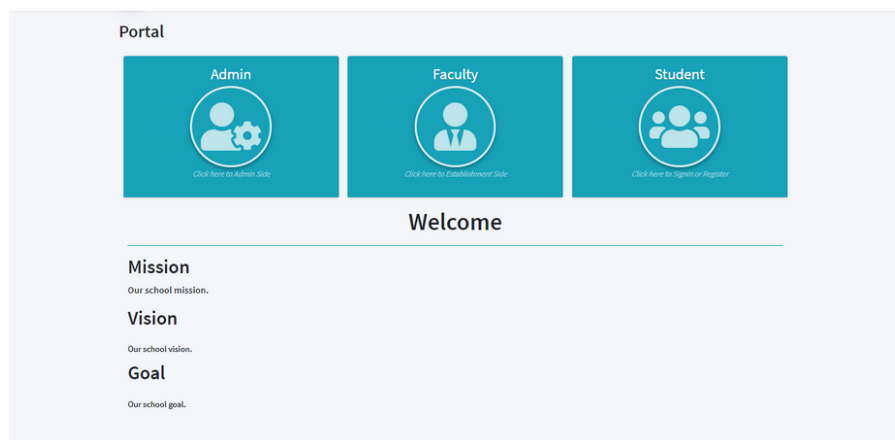
/NA

4.1.4 Diagnostics or ROM

4.2 Hardware Interfaces

4.3 Communications Interfaces

The following product system doesn't need any network communication.



./image

Figure 1: Inheritance Relations

Table 6: Functional Requirements : Teacher subject activities panel; Add assignment

Function Name:	Add assignment
Description:	This function enables the teacher to update assignments for students with a new ones.
Critically:	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	Assignment code and assignment title
Post-Condition:	Assignment is added

Table 7: Functional Requirements : Teacher subject activities panel; Remove assignment

Function Name:	Remove assignment
Description:	This function enables the teacher to modify by showing or hiding assignments needed to be solved related to content that wasn't yet taken. Provides flexibility for teachers in using offered system functionalities.
Critically:	This function is critical for flexibility and providing the ability to modify if any errors occurred by the teacher.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	Assignment_code and Assignment_title
Post-Condition:	Assignment is removed

4.4 Software Interfaces

5 Performance Requirements

6 Design Constraints

6.1 Standards Compliance

6.2 Hardware Limitations

There are no hardware limitations.

6.3 others as appropriate

7 Other non-functional attributes

Specifies any other particular non-functional attributes required by the system. Examples are provided below.

7.1 Re-usability

Using interface that is kind of similar of an old project, improving old class diagram/use-case for an old project and updating our database from unordered text files to database (phpMyadmin).

8 Preliminary Object-Oriented Domain Analysis

This section presents a list of the fundamental objects that must be modeled within the system to satisfy its requirements. The purpose is to provide an alternative, "structural" view on the requirements stated above and how they might be satisfied in the system. A primitive class diagram to be delivered.

Table 8: Functional Requirements : Teacher subject activities panel; Mark assignment

Function Name:	Mark assignment
Description:	This function enables the teacher to mark the assignments done and uploaded by the students to see how far their commitment and understanding level to the content of the subject.
Critically:	This function is critical for teacher to show the overview level of his students and how well the explanation is understood, also to check how far do the students study.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	Assignment _{code} andAssignment _{title}
Post-Condition:	Assignment is marked

Table 9: Functional Requirements : Teacher subject activities panel; Add assignment marks

Function Name:	Add assignment marks
Description:	This function enables the teacher to add each student mark to the subject related mark sheet in-order to be able to overview their level of commitment to studying and their understanding. Also to be viewed for their parents to see their overall performance.
Critically:	This function is critical for teacher to overview his students well studying and understanding for the content of the subject.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	Assignment _{code} andAssignment _{title}
Post-Condition:	Assignment mark is added

8.1 Inheritance Relationships

This section should contain a set of graphs that illustrate the primary inheritance hierarchy (is-kind-of) for the system. For example:

8.2 Class descriptions

This section presents a more detailed description of each class identified during the OO Domain Analysis. For more details on the process giving rise to these descriptions, see Lecture 5.3: OO Domain Analysis and/or texts on object-oriented software development. Each class description should conform to the following structure:

8.2.1 Puppet class I

Abstract or Concrete: Concrete.

8.2.2 Puppet class II

Abstract or Concrete: Concrete.

8.2.3 List of Subclasses

Teacher

Subject

Subject material

Subject activities

Student

Parent

8.2.4 Purpose:

Teacher: The purpose of the teacher is to perform all required functions that admin performs in-order to be able to monitor and guide students through their education level and to offer much flexibility by using the e-learning system.

Table 10: Functional Requirements : Teacher subject activities panel; View class task

Function Name	View class task
Description	This function allows teacher to see class tasks which were uploaded day by day and according to the lesson that was taken for students to test their understanding to what was explained earlier.
Critically	This function is critical for the teacher in-order to keep track of the latest progress he reached in class.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	/Task_codeandTask_gate
Post-Condition	Class tasks are viewed

Table 11: Functional Requirements : Teacher subject activities panel; Add class task

Function Name	Add class task
Description	This function allows teacher to add class tasks expecting to be solved by students for in class interaction purpose, and to test how far did the student understand the lesson explained.
Critically	This function is critical for teacher to see how far the student understood the target of the lesson that was explained in-order to see how clear or ambiguous the explanation was.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Task_codeandTask_gate
Post-Condition	Class task is added

8.2.5 Collaborations:

This class will interact with subject,subject material, subject activities he/she will perform .

8.2.6 Attributes:

subject code : Int subject name : String Age: Int Degree: String YouTube channel name: String Teacher id: Int Teacher name: String

8.2.7 Operations

: View Subject(Subject X) Set teacher (String :name) Get teacher (Int: id)

8.2.8 Purpose:

Subject: The purpose of this class is to use / show all the types of subject actions related to it either subject activities or material.

8.2.9 Collaborations:

This class will interact with teacher,subject material, subject activities, student, and parent .

8.2.10 Attributes:

subject code : Int subject name : String subject teacher's name: String

8.2.11 Operations

: set subject(String: subject name) Get subject(Int : subject code) construct(String: subject name, Int: subject Id) View subject activities(subject activities X) View subject material(Subject material Y)

Table 12: Functional Requirements : Teacher subject activities panel; Remove class task

Function Name	Remove class task
Description	This function allows teacher to modify by showing or hiding class tasks based on what was explained to students in-order to clear any ambiguity or error in adding class task material that wasn't taken yet.
Criticality	This function is critical for teacher to modify error in adding class task related to content that wasn't yet explained.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Task_code and Task_gate
Post-Condition	Class task is removed

Table 13: Functional Requirements : Teacher subject activities panel; Mark class task

Function Name	Mark class task
Description	This function allows teacher to mark all class tasks that were done by students in class in-order to grade how his explanation affected in great manner the student's overall understanding to what was explained. Class tasks expecting to be asked by students for in class interaction purposes, and to test how far did the student understand the lesson explained.
Criticality	This function is critical for teacher to grade how his explanation affected in great manner the student's overall understanding to what was explained.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Task_code and Task_gate
Post-Condition	Class task is marked

8.2.12 Purpose:

Subject material: The purpose of this class is to identify the subject material in terms of lessons and teacher's preparation as well as sources to help students through their study.

8.2.13 Collaborations:

This class will interact with subject.

8.2.14 Attributes:

subject code : Int subject name : String

8.2.15 Operations

: set subject material() Get subject material()

8.2.16 Purpose:

Subject activities: The purpose of this class is to identify the subject various subject activities in terms of assignments, class tasks, quizzes, to help students to practice what they have learnt so far and see how far they understand the subject material.

8.2.17 Collaborations:

This class will interact with subject.

8.2.18 Attributes:

subject code : Int subject name : String

8.2.19 Operations

: set subject activities() Get subject activities()

8.2.20 Constraints:

Lists any restrictions upon the general state or behavior of instances of this class.

Table 14: Functional Requirements : Teacher subject activities panel; Add class task marks

Function Name	Add class task marks
Description	This function allows teacher to add the student's marks to the class task related subject sheet in-order to be able to overview students level in studying and understanding to the subject.
Critically	This function is critical for teacher to add the student's marks to the class task related subject sheet in-order to be able to overview students level in studying and understanding to the subject.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	<i>Task_codeandTask_gate</i>
Post-Condition	Class task is added to the mark sheet

Table 15: Functional Requirements : Teacher; View quiz

Function Name	View quiz
Description	This function allows teacher to see all quizzes uploaded for students to attempt.
Critically	This function is critical for teacher for flexibility purposes.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	<i>Quiz_codeandQuiz_title</i>
Post-Condition	Quizzes are viewed

9 Operational Scenarios

Scope of this document is focused on the development of an e-learning system that will be used by target users. This system offers the facility of being used either by admin, students, or parents. By mentioning admin it refers to education staff (i.e teachers). Admin will have different options to navigate through. It will have subject details and subject activities panel. Each of which has it's own operations that will be applied against it. Starting from applying different operations on lessons sub-panel in subject details panel, as well as on each of assignments, quizzes sub-panel in subject activities panel. Student panel will will have sub-panels that contain different operations that will make him able to be updated with new requirements for the subject. Parent panel will be added to be able to track and overview student's progress in different subjects.

10 Preliminary Schedule Adjusted

Trello ss
graphicx

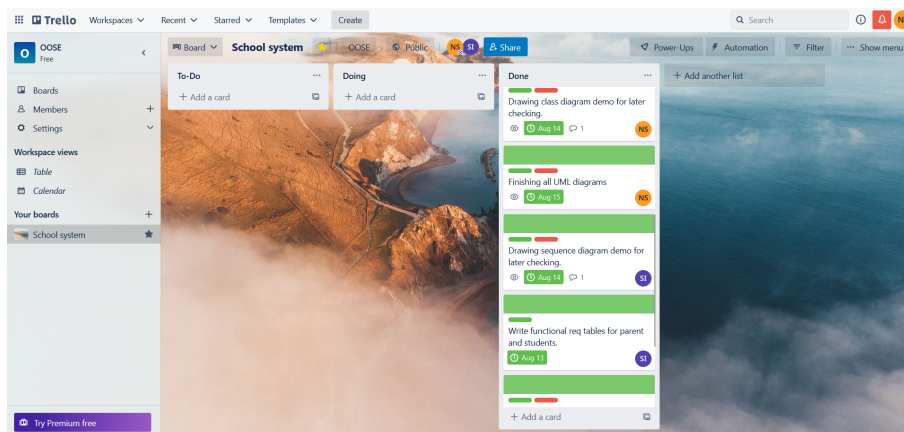


Figure 2: Trello screen shot

Table 16: Functional Requirements : Teacher; Add quiz

Function Name	Add quiz
Description	This function allows teacher to upload quizzes for students to attempt to test the student's ability to in recalling the required topics.
Critically	This function is critical for teacher to test the student's level in the subject and their ability to recall the required topics.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Quiz _{odeandQuizitle}
Post-Condition	Quiz is added

Table 17: Functional Requirements : Teacher; Remove quiz

Function Name	Remove quiz
Description	This function allows teacher to modify in the quizzes he uploaded by either showing or hiding them if there were any errors occurred to prevent any confusion.
Critically	This function is critical for teacher to modify any errors or misleading.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Quiz _{odeandQuizitle}
Post-Condition	Quiz is removed

11 Preliminary Budget Adjusted

/NA

12 Appendices

ı If there are any extra information beyond the knowledge of the reader you have to specify it at the very back of the document.ı

12.1 Definitions, Acronyms, Abbreviations

Provides definitions of unfamiliar definitions, terms, and acronyms.

12.2 Collected material

13 References

References

Table 18: Functional Requirements : Teacher; Mark quiz

Function Name	Mark quiz
Description	This function allows teacher to mark quizzes attempted by students to overview their overall studying and understanding to the content of the subject. Also to provide their parents with feedback about their performance.
Critically	This function is critical for teacher to overview overall students marks and level of understanding.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Quiz _{odeand} Quiz _{itle}
Post-Condition	Quiz is marked

Table 19: Functional Requirements : Teacher subject activities panel; Add quiz marks

Function Name	Add quiz marks
Description	This function allows teacher to add the student's marks to the quiz related subject sheet in-order to be able to overview students level in studying and understanding to the subject.
Critically	This function is critical for system to provide flexibility and required functionalities like any dedicated product system. For teacher to add the student's marks to the quiz related subject sheet in-order to be able to overview students level in studying and understanding to the subject.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Quiz _{odeand} Quiz _{itle}
Post-Condition	Quiz is added to the mark sheet

Table 20: Functional Requirement : Student; View lesson

Function Name	View lesson
Description	This function allows students to view their subject material as well as it acts as reference for them to study from.
Critically	Critical for the system as there's no e-learning system without the ability to view course/subject material (i.e lessons).
Technical issues	/NA
Cost and schedule	/NA
Risks	No lessons
Dependencies with other requirements	NA
Pre-Condition	Lesson _{odeand} Lesson _{itle}
Post-Condition	Lessons are displayed

Table 21: Functional Requirements : Student; View assignment

Function Name:	View assignment
Description:	This function enables student to check how much assignments have been uploaded by their teacher in-order to be updated and have the ability to solve and send them.
Critically:	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	Assignment _{odeand} Assignment _{itle}
Post-Condition:	Assignments are displayed

Table 22: Functional Requirements : Students; View class task

Function Name	View class task
Description	This function allows students to interact with and solve uploaded in-class tasks from teachers to enhance their knowledge.
Critically	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	/Task _{odeand} Task _{ate}
Post-Condition	Class task is viewed

Table 23: Functional Requirements : Student; View quiz

Function Name	View quiz
Description	This function allows student to check their progress in how many quizzes were attempted by him.
Critically	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	Quiz _{odeand} Quiz _{itle}
Post-Condition	Quizzes are viewed

Table 24: Functional Requirement : Parent; View preparation

Function Name	View preparation
Description	This function allows parents to be updated by the day to day material that is taken in school to keep up with their child .
Critically	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	NA
Pre-Condition	preparation _{odeand} preparation _{itle}
Post-Condition	preparations are displayed

Table 25: Functional Requirements : Parent; View assignment marks

Function Name:	View assignment marks
Description:	This function enables parents to check on the latest uploaded assignments to be updated in-order to keep up with their child interaction and progress in the subject.
Critically:	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	/NA
Post-Condition:	Assignments are displayed

Table 26: Functional Requirements : Parent; View class task marks

Function Name:	View class task marks
Description:	This function enables parents to check on the latest uploaded assignments to be updated in-order to keep up with their child interaction and progress in the subject.
Critically:	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues:	/NA
Cost and schedule:	/NA
Risks:	/NA
Dependencies with other requirements:	/NA
Pre-Condition:	/NA
Post-Condition:	Assignments are displayed

Table 27: Functional Requirements : Parent; View quiz marks

Function Name	View quiz marks
Description	This function allows parents to check their child's well understanding percentage for the subject.
Critically	This function is critical for flexibility and providing different functionalities in the system as the regular one should.
Technical issues	/NA
Cost and schedule	/NA
Risks	/NA
Dependencies with other requirements	/NA
Pre-Condition	/NA
Post-Condition	Quiz mark is viewed