Software Engineering (CS- 310)
BSCS- Section: 171

Project-Phase No: *#2*
The Smart School Bus
(software plan document)

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1. Abstract

In this document, most of the explanations will be diagrams in addition to the introduction and conclusion. There will be 4 diagrams showing some of the functions in the system in addition to designing the user interface to show the customer and the developer what the system interface will be like.

2. Introduction

2.1 Progress

In the SRS document, the system is explained in theory and detail, but in this document (DD), it will be explained some things in the SRS document but with diagrams to further clarify the idea of the system.

2.2 Purpose

If we take the bus driver as an example, he always wastes his time and effort by going to each student's house and waiting for the student to leave his home, while he really does not know whether the student will go to school or not. But with this app, the driver can save time going by knowing the students who will attend this day of school as well as the itinerary for students who will attend school from the closest driver to the furthest student.
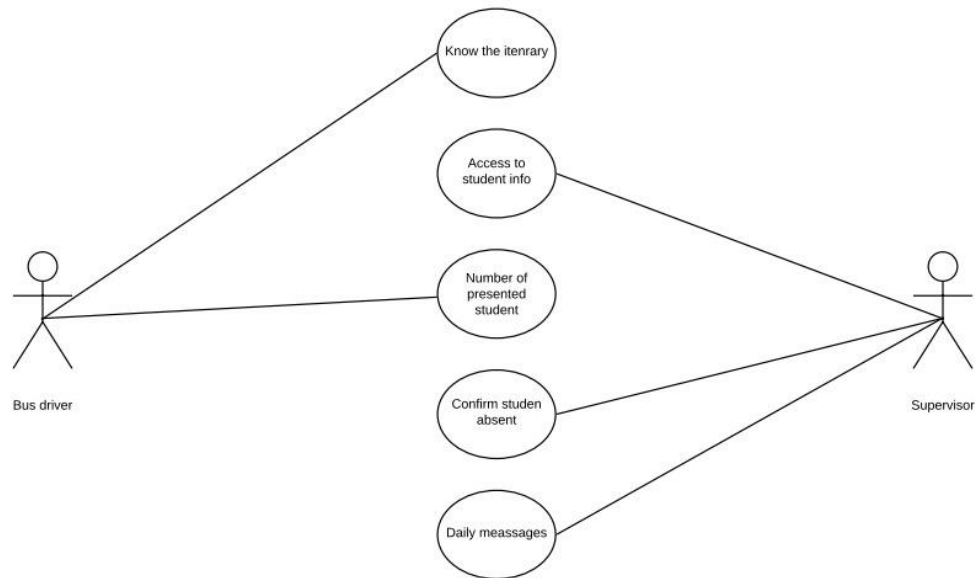
This application is suitable for all school levels (except for the university level) whether they are boys or girls.
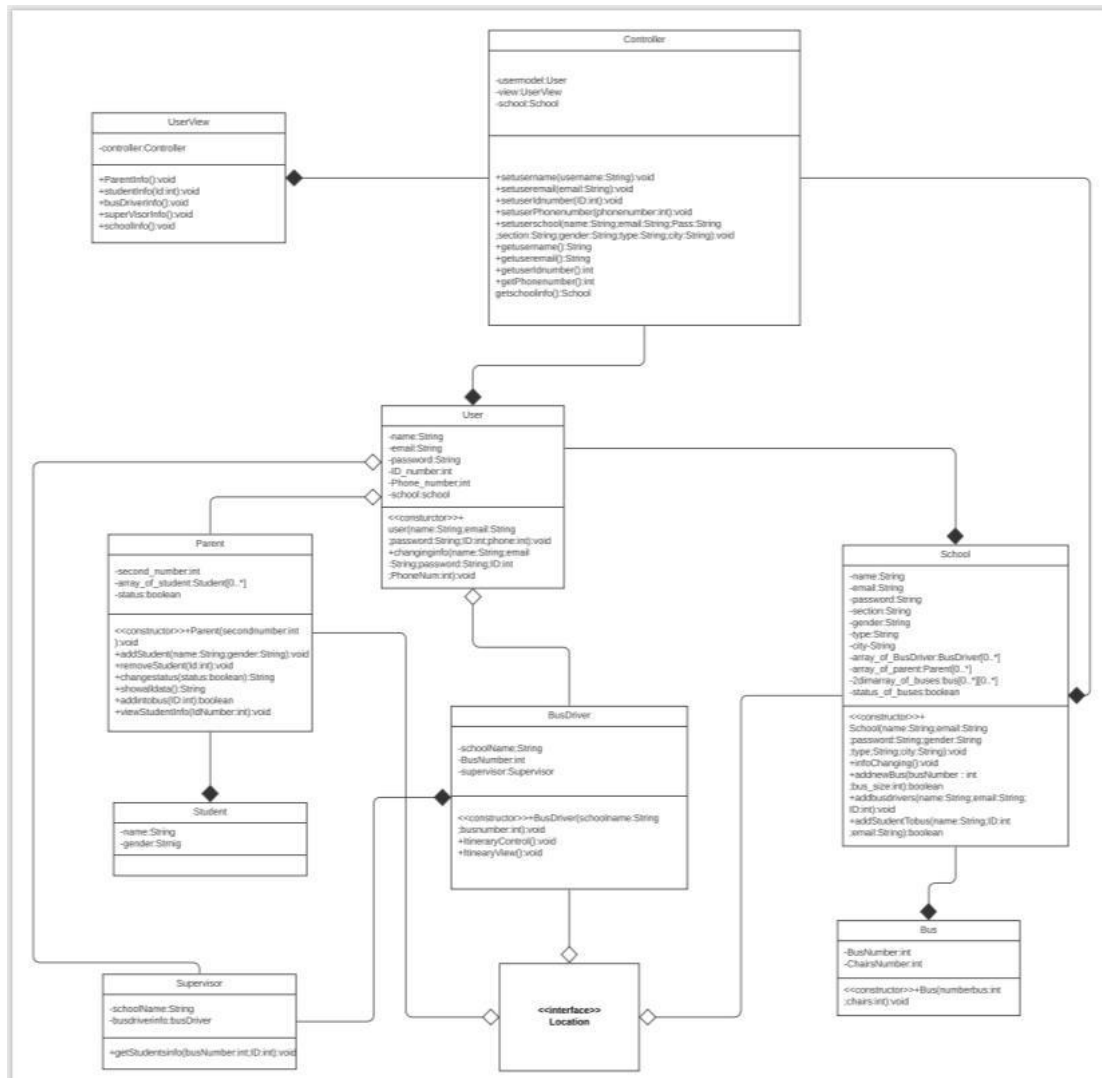
3. Design

3.1 System-Level Diagram
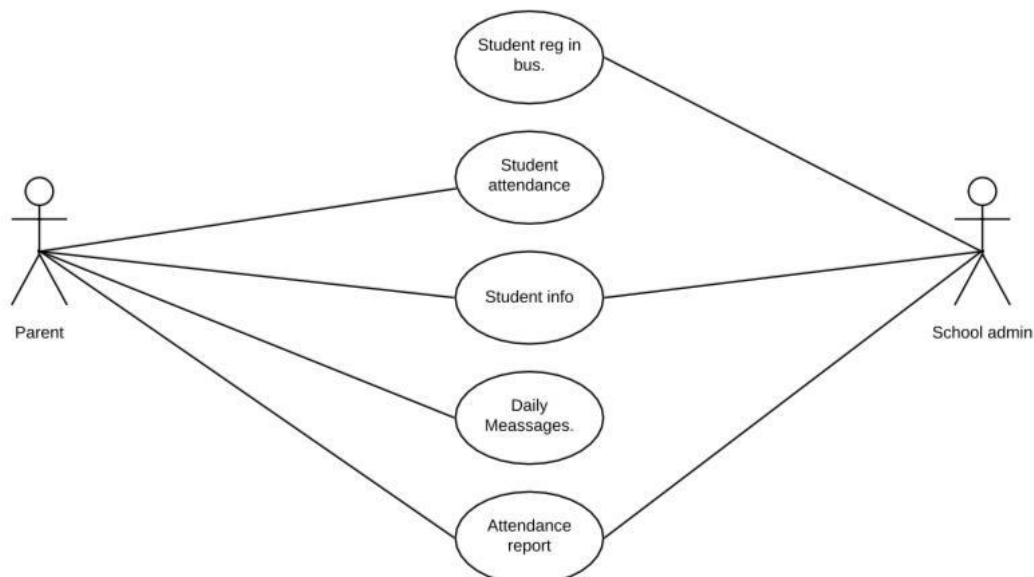
Fig 1. describe the use case of parent and school administration.

Fig 2. describe the use case of bus driver and supervisor.

3.2 Class Diagram

Fig 3. class diagram using MVC pattern describe smart school bus classes and functions.

School Class

This class contains school and bus drivers and student's information.

Class	School
Method	ChangingInfo
Visibility	Public
Return type	Void
Parameters:type	Name:String, email:String
description	School can change school name or school email

Class	School
Method	addnewBus
Visibility	Public
Return type	Boolean
Parameters:type	BusNumber:int , BusSize:int
description	In this method schools can adding buses for students

Supervisor Class

The Supervisor contains of supervisor information and the access of Students information.

Class	SuperVisor
Method	getStudentInfo
Visibility	Public
Return type	Void
Parameters:type	busNumber:int, StudentID:int
description	in this method supervisor have access to Student info

Parent Class

The parent class is a user, that includes features and information for parent and student

Class	Parent
Method	addStudent
Visibility	Public
Return type	void
Parameter, types	name:String , gender:String
Description	this method will add student to the parent

Class	Parent
Method	removeStudent
Visibility	Public
Return type	Void
Parameter, types	ID:int
Description	this method will delete a student from parent sons

Class	Parent
Method	Showalldata
Visibility	Public
Return type	void
Parameter, types	none
Description	this method will show data for school,supervisor,busDriver and bus number

Class	Parent
Method	viewStudentInfo
Visibility	Public
Return type	void
Parameter, types	IDnum:int
Description	this method will allow the parent to see his student information

User Class

The user class have information for all users

Class	User
Method	changingInfo
Visibility	public
Return type	void
Parameter, types	name:String , email:String , password:String ,ID:int ,phoneNum:int , school:School
Description	this method will add student to the parent

User View Class

The user view class is like an interface of the application and have all the information of the users.

Class	User view
Method	parentInfo
Visibility	Public
Return type	void
Parameter, types	none
Description	this method will show the parent information

Class	User view
Method	studentInfo
Visibility	Public
Return type	void
Parameter, types	none
Description	this method will show the student information

Class	User view
Method	busDriverInfo
Visibility	Public
Return type	void
Parameter, types	none
Description	this method will show the bus driver information

Class	User view
Method	superVisorInfo
Visibility	Public
Return type	void
Parameter, types	none
Description	this method will show the super visor information

Class	User view
Method	schoolInfo
Visibility	Public
Return type	void
Parameter, types	none
Description	this method will show the school information

controller class

this controller class attach user class to view class

Class	Controller
Method	Setusername
Visibility	Public
Return type	Void
Parameters, types	Username: string
description	This method set the user name

Class	Controller
Method	Setuseremail
Visibility	Public
Return type	Void
Parameters, types	Email: string
description	This method set the user email

Class	Controller
Method	setuserIdnumber
Visibility	public
Return type	void
Parameters, types	id: Int
description	this method set user id

Class	Controller
Method	Setuserphonenumber
Visibility	Public
Return type	Void
Parameters, types	Phonenumber; int
description	This method set user phone number

Class	Controller
Method	Setuserschool
Visibility	Public
Return type	Void
Parameters, types	Name: String; email: String; pass: String; section: string; Gender: String; type: String; city: string
description	This method set user school

Class	Controller
Method	getuserName
Visibility	public
Return type	string
Parameters, types	none
description	This method show the user name

Class	Controller
Method	getuseremail
Visibility	public
Return type	string
Parameters, types	none
description	this method show the user email

Class	Controller
Method	getuseridnumber
Visibility	public
Return type	int
Parameters, types	none
description	This method show the user id

Class	Controller
Method	getphonenumber
Visibility	public
Return type	int
Parameters, types	none
description	This method show the user phone number

Class	Controller
Method	getschoolinfo
Visibility	public
Return type	school
Parameters, types	none
description	This method show the school information

Bus driver

The bus driver class contain information for bus driver and can control itinerary

Class	Busdriver
Method	Itinerarycontrol
Visibility	Public
Return type	Void
Parameters, types	none
description	This method bus driver can control itinerary students location

Class	Busdriver
Method	Itineraryviwe
Visibility	Public
Return type	Void
Parameters, types	none
description	This method show the students home location

3.3 System Behavior Diagram
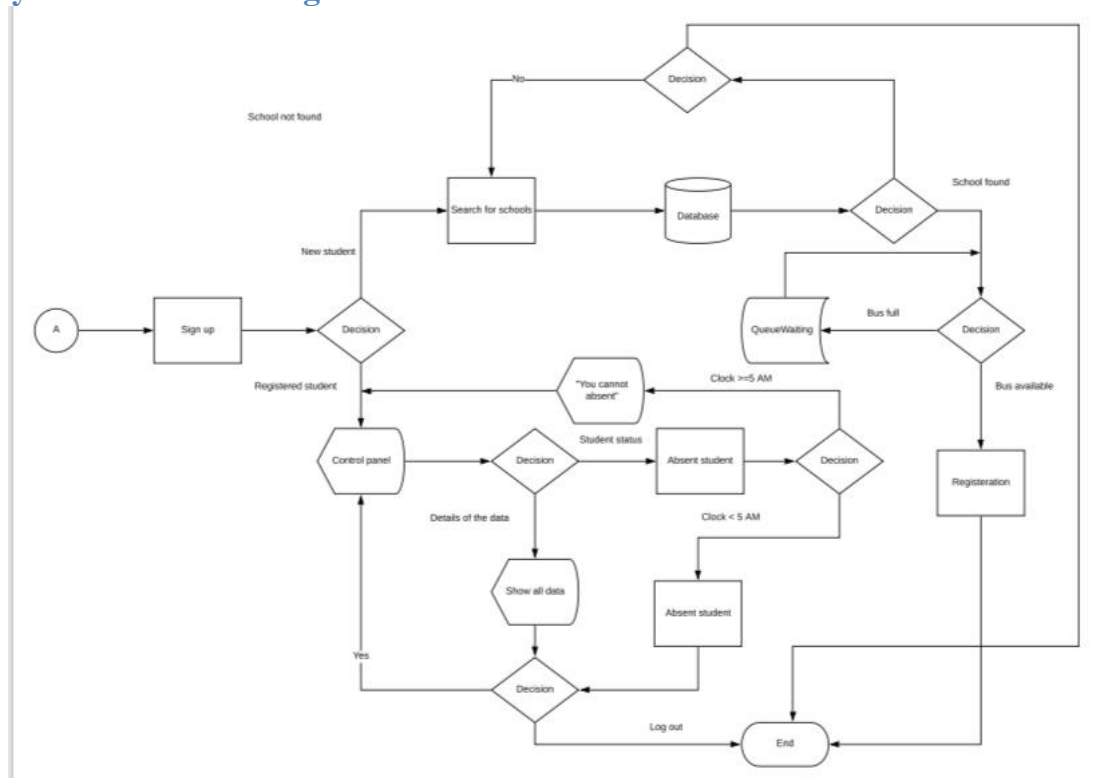
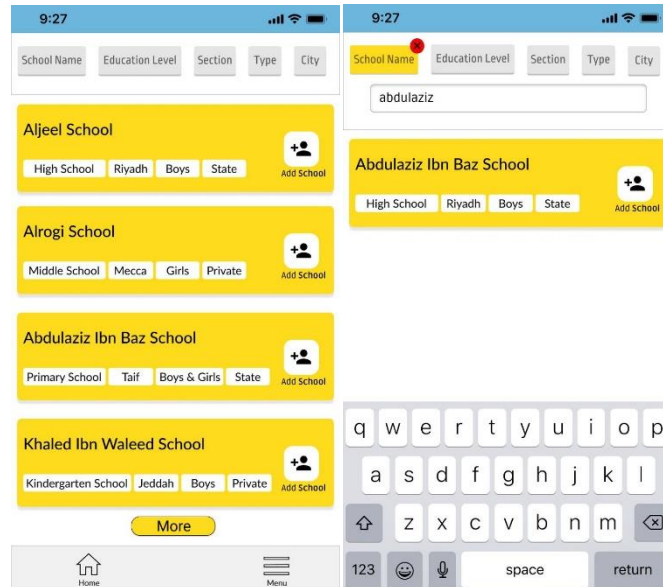**Fig 4.** describe the activity diagram of smart school bus, if the parent sign up
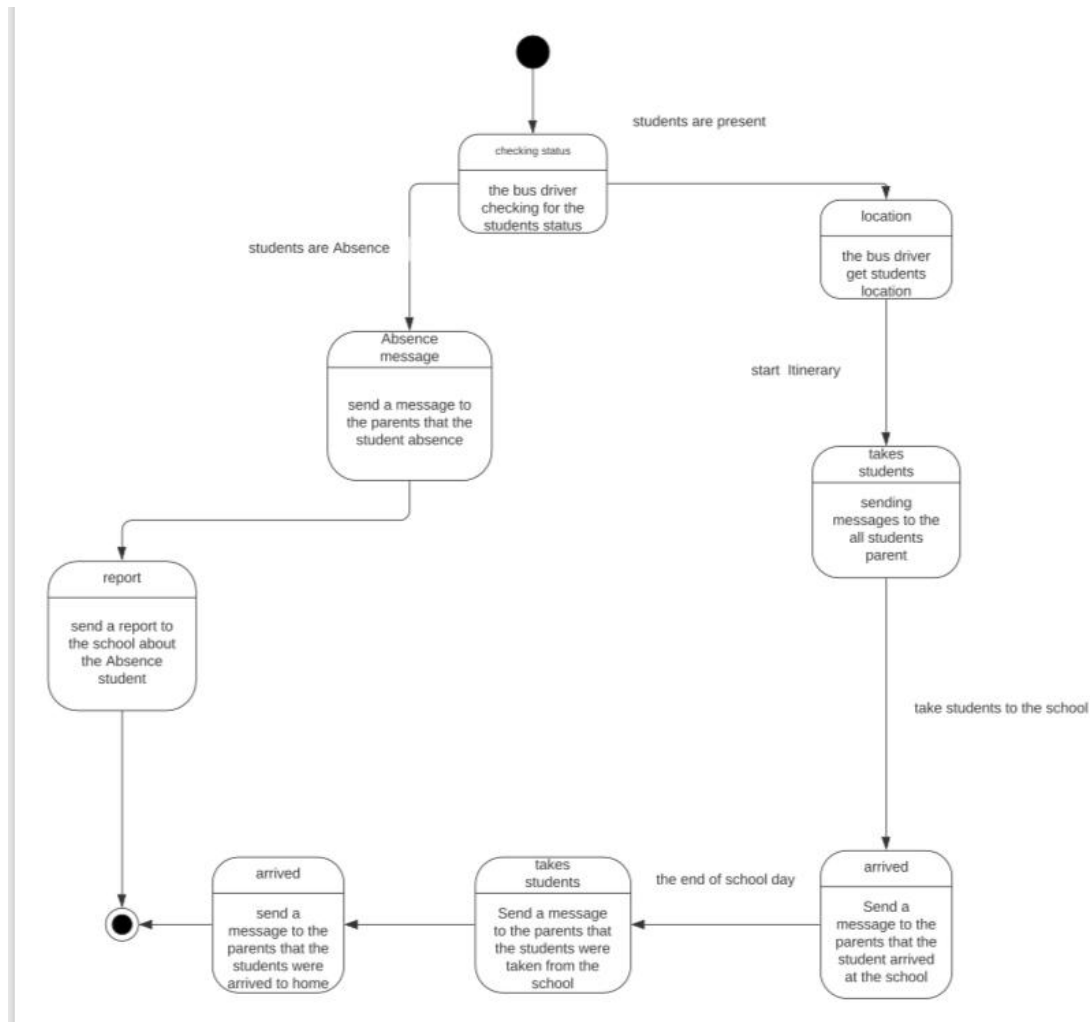
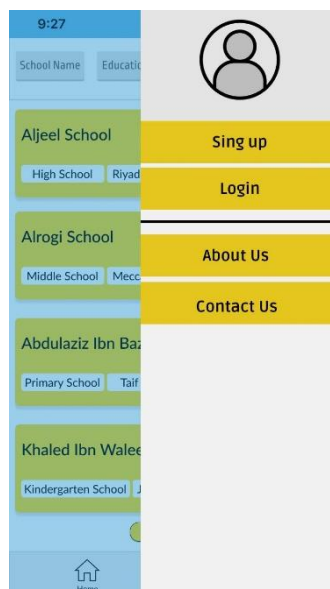**Fig 5.** describe state diagram of smart school bus

4. User Interface Design

This section contains screen shots of a prototype for the Smart School Bus.

**Fig 6.** Screen Shot of the application intro

Fig 7. Screen Shot of the Home Screen.
The user can search for the school by filtering.

Fig 8. Screen Shot of the Menu Screen.
The user will be able to sign up, login, read about us,
contact by the menu screen.

Fig 9. Screen Shot of the sign up Screen.
The user will be able to choose to sign up as School administration, student parent, Bus supervisor, Bus driver.
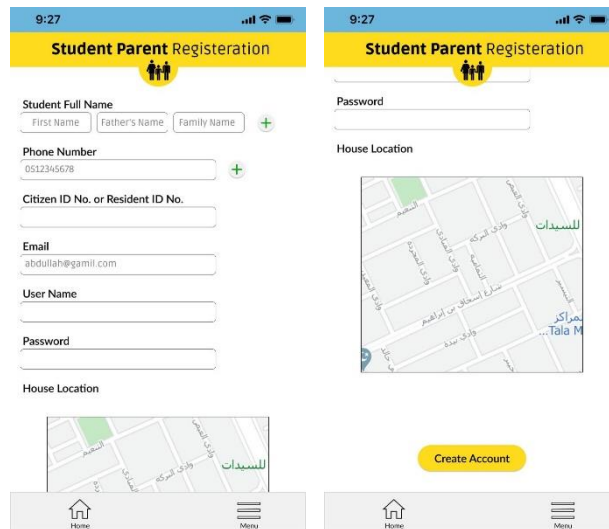
Fig 10. Screen Shot of the student parent registration Screen.
The user must enter his info and house location to register as parent.

Fig 11. Screen Shot of the student parent control panel Screen.
The user can cancel attendance, edit info and add school.
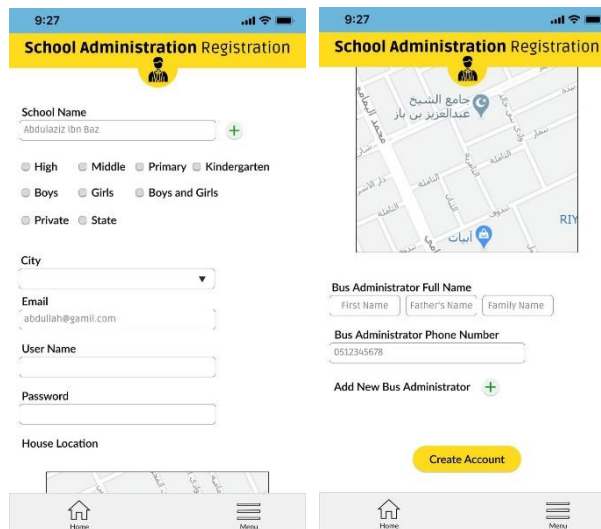
Fig 12. Screen Shot of the school administration registration.
The user must enter school info and house location
to register as School administration.

Fig 13. Screen Shot of the school administration control panel.
The user can link student to the buses, view the report, view bus driver,
Supervisor, Student informatio.

Fig 14. Screen Shot of the bus driver registration.
The user must enter school info and house location to register as bus driver.
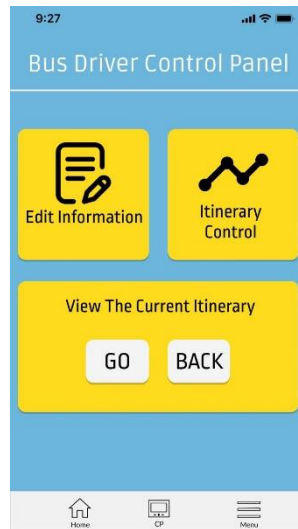
Fig 15. Screen Shot of the bus driver control panel.
The user can control the itinerary, view the current itinerary and edit info.
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Fig 16. Screen Shot of the bus supervisor registration.
The user must enter school info and house location to register as bus supervisor.

Fig 17. Screen Shot of the bus supervisor control panel.
The user can view student info and edit info.

5. Conclusion

In this document, we used diagrams to partially explain the system to facilitate the process of understanding the idea of the system and for the customer to be able to discuss with us about his system and to facilitate the process of implementing this system.