Ministry of Higher Education and Scientific Research and Computing and Communication Technologies

General Directorate of Technological Studies

Higher Institute of Technological Studies of Bizerte

IT technology department

INTEGRATION PROJECT REPORT

Topic:

Development of a web and mobile event management application

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ACKNOWLEDGMENT

It is important to begin this report by expressing our deep gratitude to all those who have supported us throughout this period.

We thank our supervisor Mrs. Gafsi Afef who accompanied us throughout this experience, for her help and her precious advice. We wish her a lot of success and perspective.

We would also like to thank all our teachers Maatoug Nizar and Jridi Khaoula for being very patient and pedagogical in accompanying us during this experience. May these few words convey the deep admiration and gratitude we feel for you.

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General Introduction

The Integration Project is a way for the student to prepare for the graduation project in order to get a general idea of team spirit and working under pressure. At this level, the objective of the Higher Institute of Technology Studies of Bizerte is to allow the student to apply his knowledge and adapt to these conditions.

Moreover, during the period of this project we have discovered new knowledge, and we have tested and improved our abilities to face the problems encountered.

This report is an account of this month that will expose our activity, as well as our remarks, will be spread over three parts.

In the first part, we have established a presentation of the project and the methodology used.

Then we made the preliminary study which consists in the description of the existing, the criticisms that is to say the problems found, and the solutions proposed to solve these problems.

Finally, a third part which is composed in 4 chapters which represents our sprints each one with their conception the sprint goal and the sprint planning moreover the principal graphic interfaces.

Chapter 1: Presentation of the project

Introduction

In this chapter we will explain the operating principles of our application and propose solutions for the problems found. Since the design of a computer system is a very important step that will influence the quality and reliability of any application.

1. project framework

1.1. Context of the project

This project is realized within the framework of the integration project. The duration of the project is 2 months, during which we must realize the design and development of the requested functionalities.

2. Study of the existing

2.1. Description of the existing

While discussing between them we noticed that there are problems at the level of management of the events in our institute, especially the events of the clubs.

Those problems will affect mediating events in order to obstruct them.

2.2. Reviews of the existing

The institute page is a globally administrative page so publish these events in which it is not possible to ensure that they will be seen by the students.

In each event the administration does not manage to know the exact number of students who will participate and their data (Name, First name, CIN…).

An increase in the consumption of paper used to make event posters that will be destroyed later.

3. Suggested solutions

The team members and I decided to develop an application that contains a mobile and web version to facilitate the management of events in our institute. This project has a user part (the student) who must create an account to participate in any event and know all their details. And

another administrative part in which the administration will manage the events and see the list of participants and the approved ones.

The university administrator's system must be operational, scalable, user-friendly and provide the necessary real-time information.

For this, the system to be implemented must meet the requirements of all users. In the following, we present all functional and non-functional system requirements.

4. Methodology and modeling adopted

A development methodology is a framework used to plan and structure the development of a development of an application. To do this, it is necessary to process and model a system before it's to understand its functioning and ensure its coherence.

4.1. Modeling language UML:

UML for Unified Modeling Language is a graphical modeling language designed to understand and describe needs, specify, and document systems, sketch software architectures, design solutions and communicate points of view.

4.2. Framework SCRUM:

The agile framework we will adopt is Scrum. It represents the most agile approach to using existing agile approaches and is simple to understand.

The principle of SCRUM is to focus the development team on a set of functionalities to be carried out iteratively, in iterations lasting from two to four weeks, called Sprints.

Each Sprint must result in the delivery of a partial product called increment.

Chapter 2: Preliminary Study

Introduction

In this chapter we will first present the main actors of the application. Next, we will identify the functional and non-functional needs of the project. Afterwards, we will present the Scrum Framework, the Product Backlog, and the sprints sequence. Then we go on to model the overall use case of the project. Finally, we will close the chapter by explaining the hardware and software environment and identifying the application architecture.

1. Requirements Specification:

1.1. Functional requirements:

These are all the services offered by our system to all its primary actors. In order to meet user requirements, this software must provide the following functionality:

Our platform will offer the student the following features:

Sign in: the student can sign in to their account.

Sign up: the student can register to a new account.

Edit your profile: the student can change their profile information.

Consult the event list: the student can consult the list of events.

Participate in events: the student can participate in more than one event.

Contact admin: the student has the right to contact admin anytime he likes.

Our platform will provide the administrator with the following features:

Sign in: the admin can sign in to their account.

Manage students: the admin can modify, add, delete, access students.

Manage events: the admin has control over events list.

Receive messages: the admin receives messages from event participants.

1.2. Non-functional requirements:

Some projects will require a very large amount of work and for other project areas rapid monitoring will be sufficient. At a minimum, the following list can be a useful reminder to ensure you have covered the essentials:

• Speed of processing given the large number of students; it is imperative that the processing time be as close as possible to real time.

• Ergonomics: the application must have a pleasant and homogeneous interface.

• Performance: an application must meet all user requirements in an optimal way.

• Usability: develop an easy-to-use and maintain application. User interfaces must be user-friendly, that is, simple, ergonomic, and user-friendly.

• Data security: Our application takes the form of several interfaces whose content allows us to manipulate the data present at the database level.

Since some of this data is confidential, it can only be manipulated after user authentication, so it is important not to allow direct access to the system.

3. Product Backlog

This is the set of "User Stories" expressed by the end user of our application and

written and proposed by the Product Owner. This is one of the agile manifestations of SCRUM.

Indeed, it is a living and dynamic artifact as it adapts appropriately to changes in any context:

• Changing needs

• Change in technology

• Market change

As a development team, we always use the Product Backlog and its editor the Product Owner.

We voluntarily choose the appropriate user stories with our personal effort development and we

build our own sprints from the Product Backlog.

User Story		Type	Priority	Time estimated	complexity	Dod	Sp
US 0	Initializing the development enviroment	TS	1	3 Days	5	**dev enviroment initialized**	15 Days
US 1	As admin, i want to add an event	US	2	2 Days	5	**admin now can add an event**	
US 2	As admin, i want to delete an event	US	2	2 Days	5	**admin now can delete an event**	
US 3	As admin, i want to read an event	US	2	2 Days	5	**admin now can read an event**	
US 4	As admin, i want to update an event	US	2	2 Days	5	**admin now can update an event**	
US 5	As student ,i want to consult the list of events	US	3	4 Days	5	**Student can consult th list of events**	
US 6	As a student i want to participate in events	US	4	4 Days	7	**Student can participate to events**	15 Days
US 7	As admin , i want to consult the list of participants	US	5	2 Days	5	**admin can consult the list of participants**	
US 8	As admin , i want to delete students from list .	US	9	2 Days	5	**admin can delete students from list**	
US 9	As student , i want to sign up	US	7	4 Days	8	**student can sign up**	
US 10	As student , i want to sign in	US	7	3 Days	8	**student can sign in**	
US 11	As admin , i want to sign in	US	6	6 Days	6	**admin can sign in**	15 Days
US 12	As admin or student , i want to manage my profile informations	US	11	3 Days	7	**both of student and admin can manage their profiles**	
US 13	As student , i want to contact the admin	US	10	6 Days	6	**student can contact the admin**	
US 14	As admin i want to consult the statistics	US	12	7 Days	7	**admin can consult the statistics**	15 Days
US 15	As student ,i want to receive notifications of new events	US	8	8 Days	6	**student can receive notifications of new events**	

Table 1 : Product Backlog

4. Global Use Case Diagram:

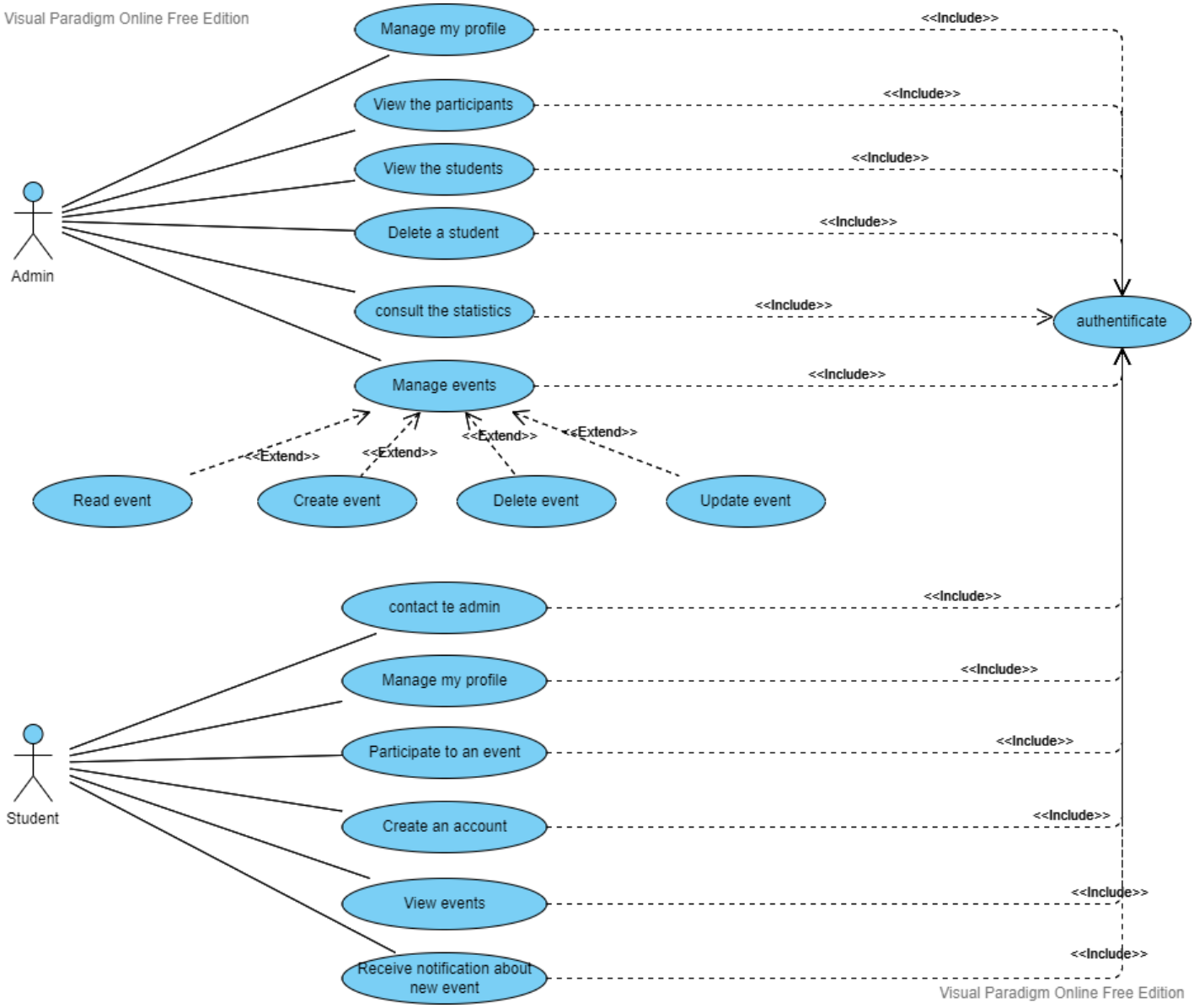

Figure 1: Global Use Case Diagram

5. Environnement de travail

5.1. Hardware environment:

We developed our application using four laptop computers including technical characteristics are described below:

laptop	1	2	3	4
owner	mossab weda	ahmed mekni	hajer noomane	salma lamouchi
processor	Core i3	Core i5	Core i3	Core i5
RAM	16Go		8Go	8Go
hard disk	1To		1To	1To
operating system	Windows 10 (x64)		Windows 10 (x64)	Windows 10 (x64)

Table 2: Computer features

5.2. Software environment

5.2.1. Code editor software:

.

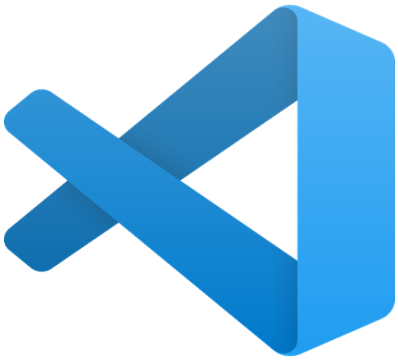

Figure 2: Visual Studio Code Logo

- **Visual Studio Code:** is an open-source code editor developed by Microsoft for Windows, Linux and Mac OS supporting a very large number of languages through extensions.

Figure 3:Visual Paradigm Logo

- **Visual paradigm**: it is an intelligent, online diagram editor that facilitates the creation of diagrams.

Figure 4: KEYCLOAK Logo

- **Keycloak**: is an open-source software that provides a single authentication method through identity and access management.

5.2.2. Frameworks and Database:

Figure 5: Bootstrap Logo

- **Bootstrap:** is a CSS framework. A Framework is a set of libraries grouped for a specific purpose and having internal rules that users must follow.

Figure 6: Angular Logo

- **Angular:** is an open-source framework developed by Google, written in JavaScript that allows the creation of Web applications

Figure 7: Flutter Logo

- **Flutter:** is an open-source user interface software development kit created by Google. created by Google. It is used to develop applications for Android, iOS, Linux, Mac, Windows and the web from a single code base.

Figure 8: Spring Boot Logo

- **Spring Boot**: is a JAVA development framework. It is a variation of the classical framework of Spring that allows essentially to realize microservices (most of the time web services are grouped in API).

Fig ure 9: Express Js Logo

- **Express JS:** is a framework for building web applications based on Node.js. It is in fact the standard framework for server development in Node.js.

Figure 10: MongoDB Logo

- **MongoDB:** is a document-oriented database management system that can be distributed to any number of computers and does not require a predefined data schema

Conclusion

The specification of the needs allowed us to have a clearer vision of the subject and a deeper understanding of the tasks to be performed. We have tried to describe throughout this chapter briefly the basic functionalities of the system, the technical choices, the development, and design tools.

In the next chapter we start the development of the first sprint.

Chapter 3: Sprint 1

Introduction

This chapter presents the first sprint of the project which is the initialization of the environment, the CRUD of the event by the admin and the consultation of the event list by the student.

1. Sprint Planning

The Sprint Planning is a collaborative work of the Scrum Team, it is the initial step of any Sprint, it lasts 4 hours, during which we set the Sprint Goal and the Sprint Backlog.

2. Sprint Goal

The goal of this sprint is event management and consultation by the student.

3. Sprint Backlog

Once we have defined the goal of our sprint, it's time to decide which features and features and their degree of importance are included in the sprint.

User Story		Tasks	Owner	Time estimated
Sprint 1	US 0 : Initializing the development enviroment	Create the DataBase	Hajer	1/2 Day
		Install Angular Project	Salma	1/2 Day
		Install Spring Boot Project	Salma	1/2 Day
		Install Node Js Project	Ahmed	1/2 Day
		Install Flutter Project	Mossab	1/2 Day
		Initialize Our Project in Github	Hajer	1/2 Day
	US 1-4 : As admin, i want to manage events(add,delete,update,read)	Create the class Diagram	Mossab + Ahmed	1/2 Day
		Create the Use Case Diagram	Hajer	1/2 Day
		Create the Sequence Diagrams	mossab	1 Day
		Generate CRUD Component (Angular)	salma	2 Days
		Build the CRUD interface with Flutter	hajer	2 Days
		Generate Event Managment micro-service (Spring Boot)	ahmed	1 Day
	US 5 : As student ,i want to consult the list of events	Generate the event-list Component (Angular)	salma	1 Day
		Generate the show-event Component (Angular)	salma	1 Day
		Build the events list interface with Flutter	hajer	1 Day
		Create Event-list micro-service (Node Js)	Mossab	1 Day

Table 3 : BackLog Sprint 1

4. Analysis of sprint1

4.1. Use Case diagram

The use case diagram is a functional diagram that shows the interactions of the system to be interactions of the system to be developed with its users.

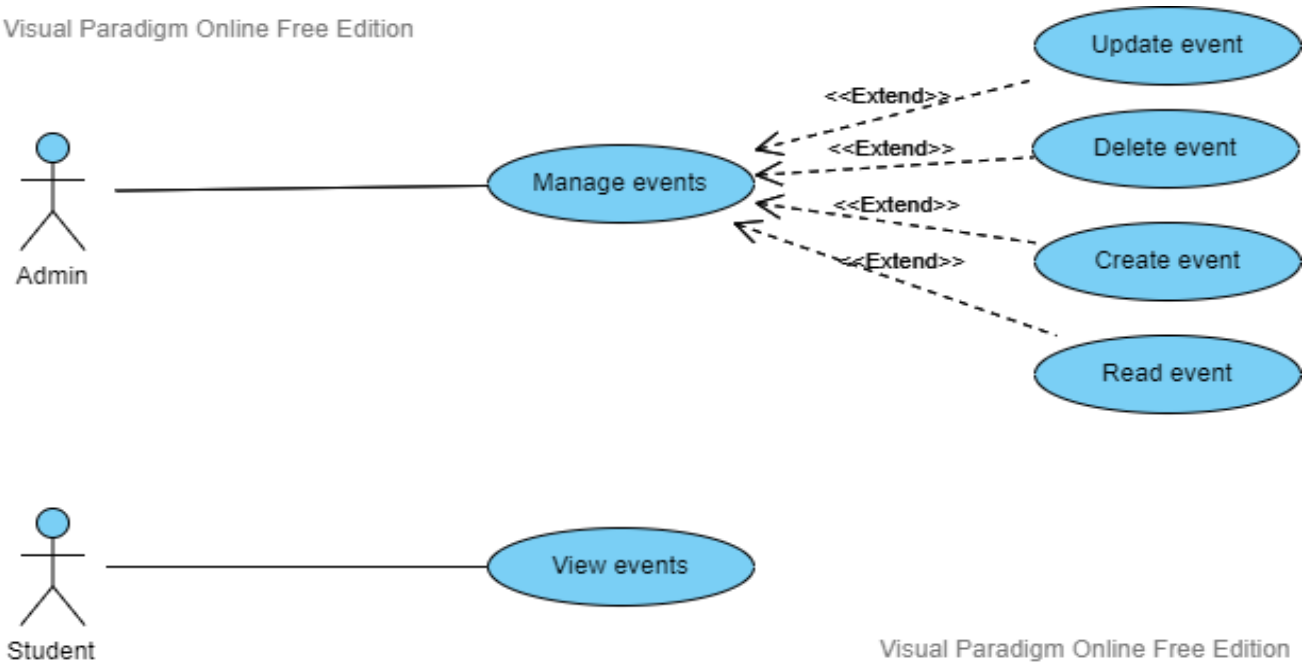

Figure 11: Sprint 1 Use Diagram:

5. Sprint 1 design

5.1. Class Diagram

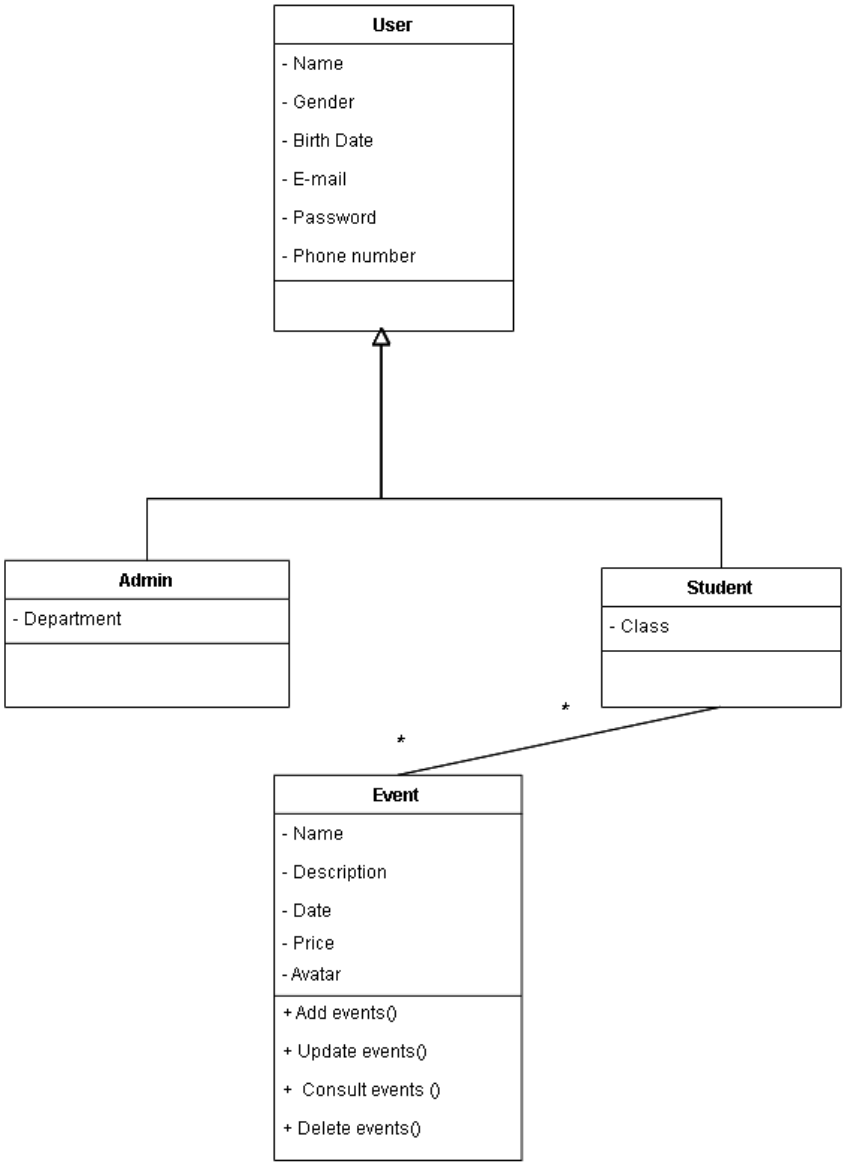

Figure 12: Sprint 1 Class Diagram

5.2. Sequence diagrams

5.1.1. Sequence diagram (add event):

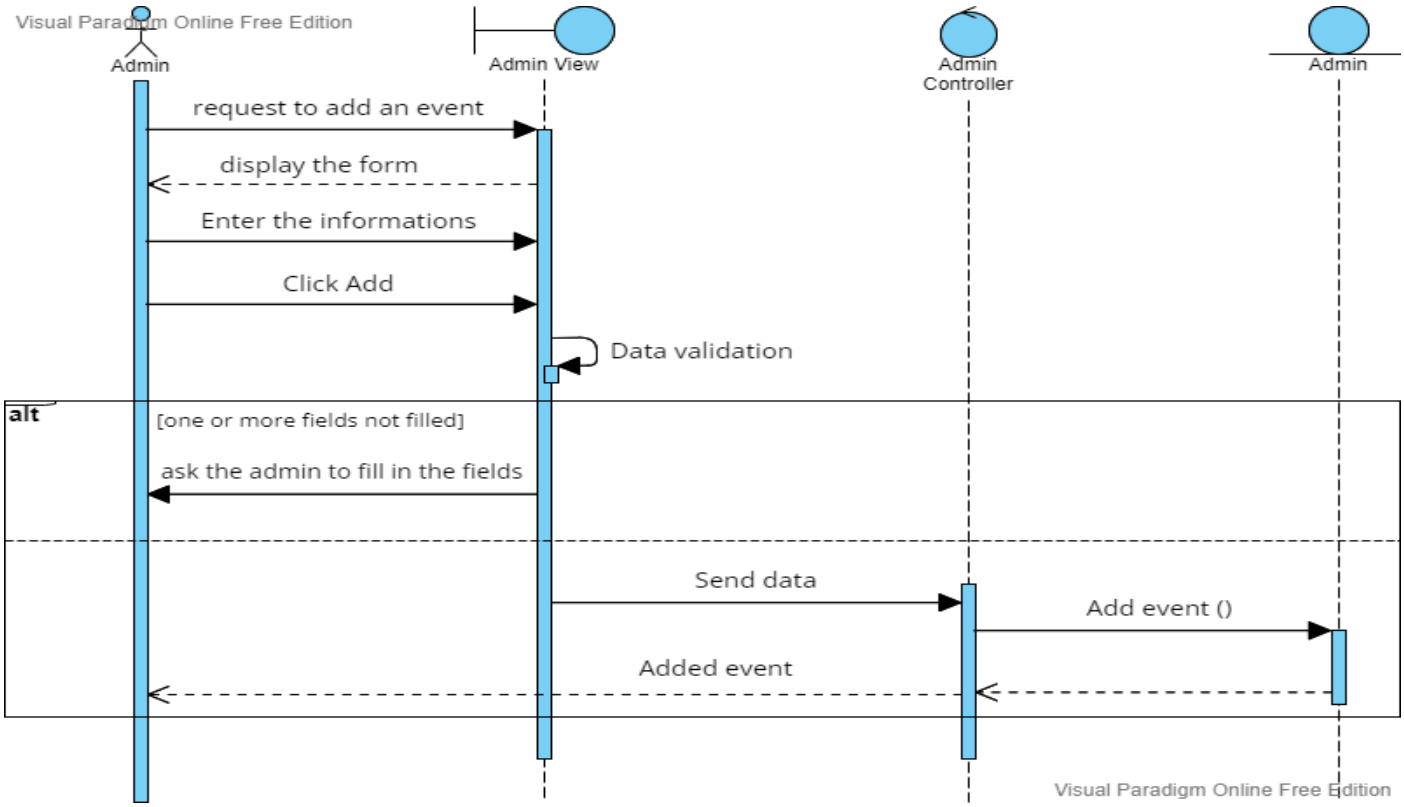

Figure 13: Add event Sequence Diagram

5.1.2. Sequence diagram (delete event):

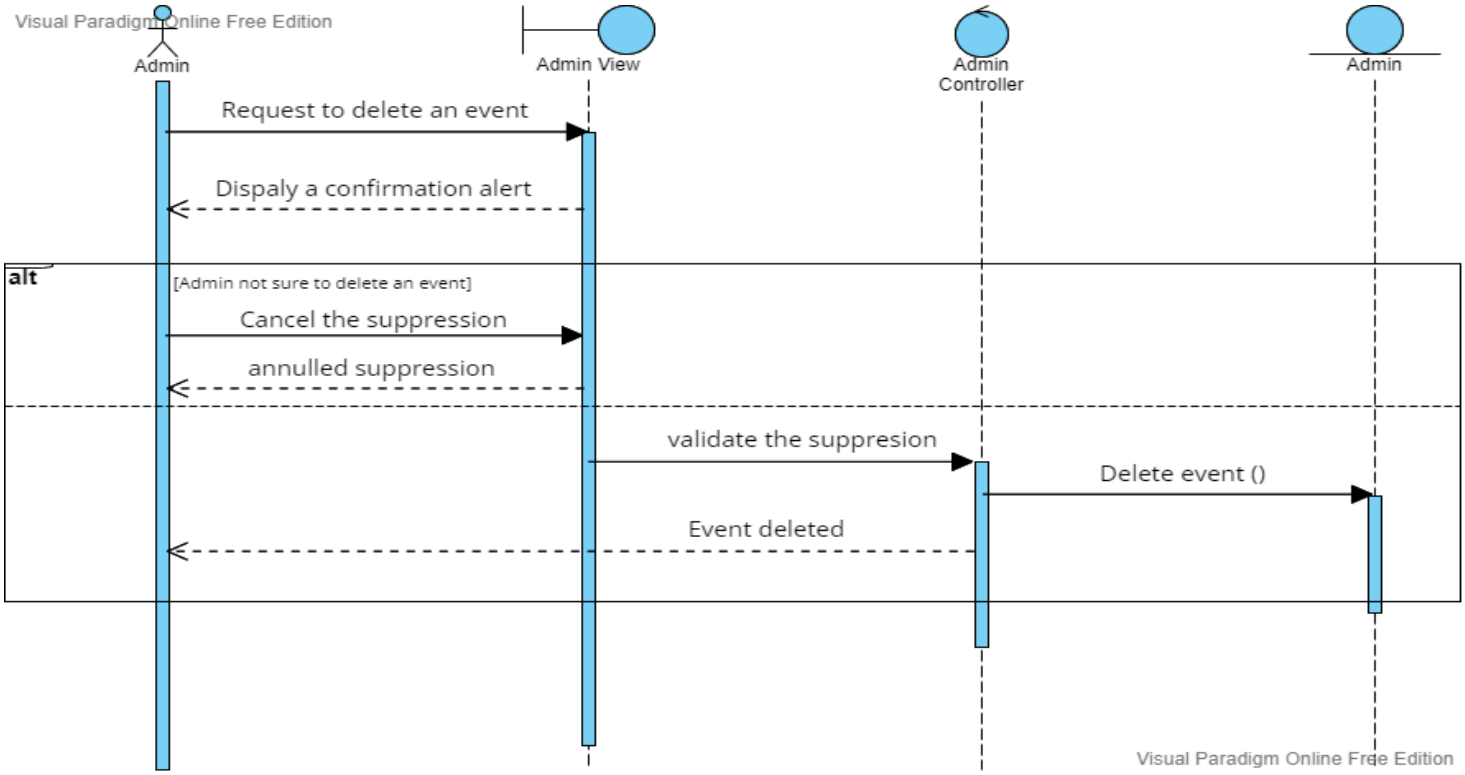

Figure 14: Delete Event Sequence Diagram

6. Sprint Review

The Sprint Review is held at the end of each Sprint to demonstrate the increment, inspect it and adapt the Product Backlog if necessary.

In the following, we will build the resulting increment this Sprint.

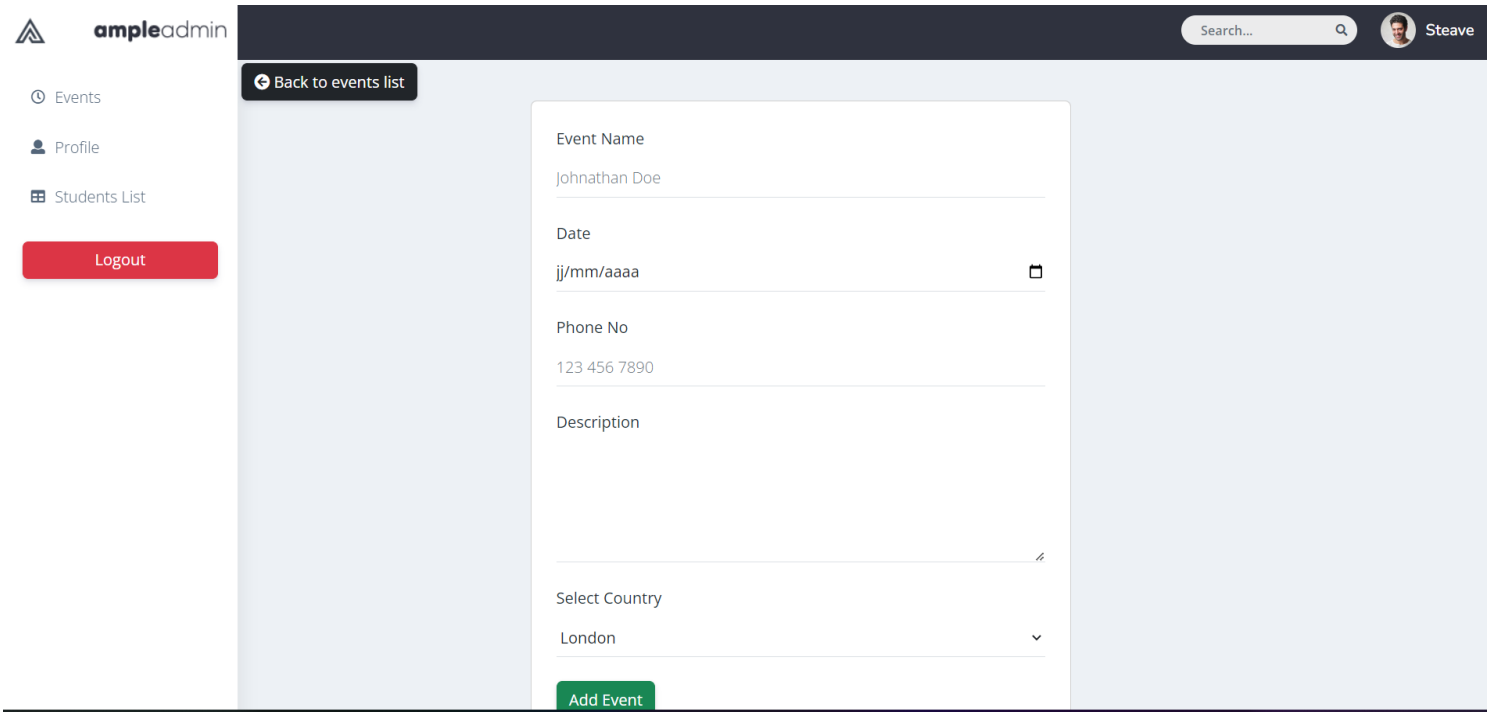

Figure 15: Add Event Web

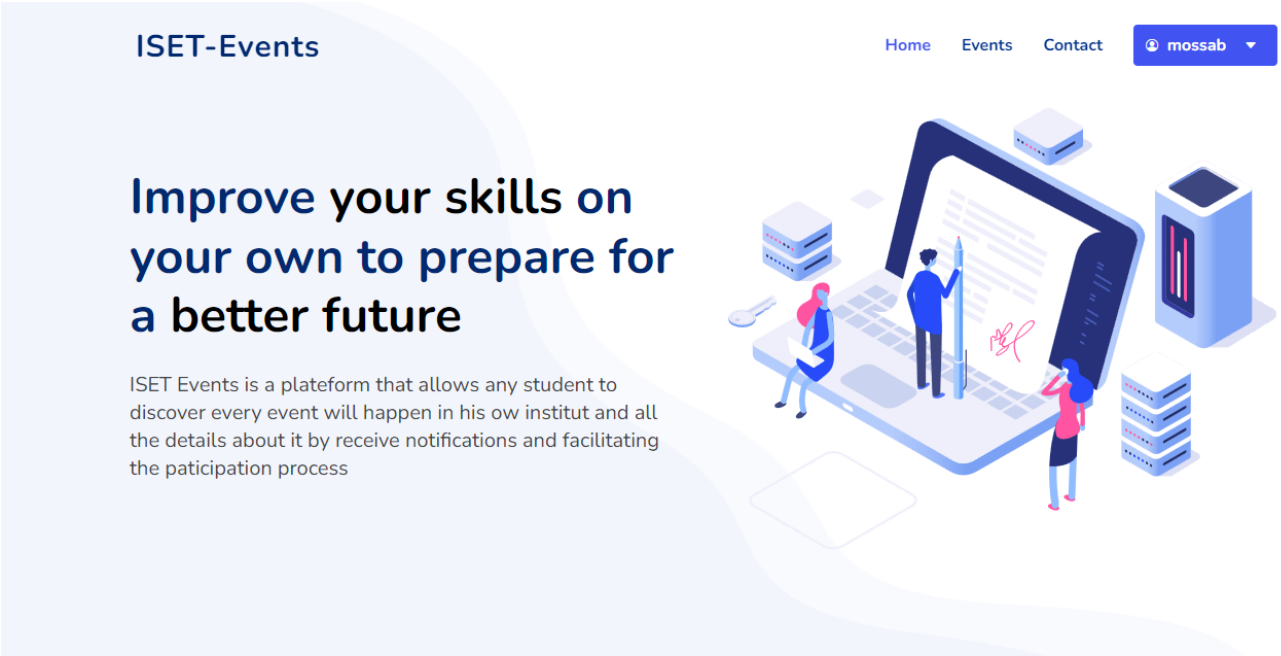

Figure 16: home page

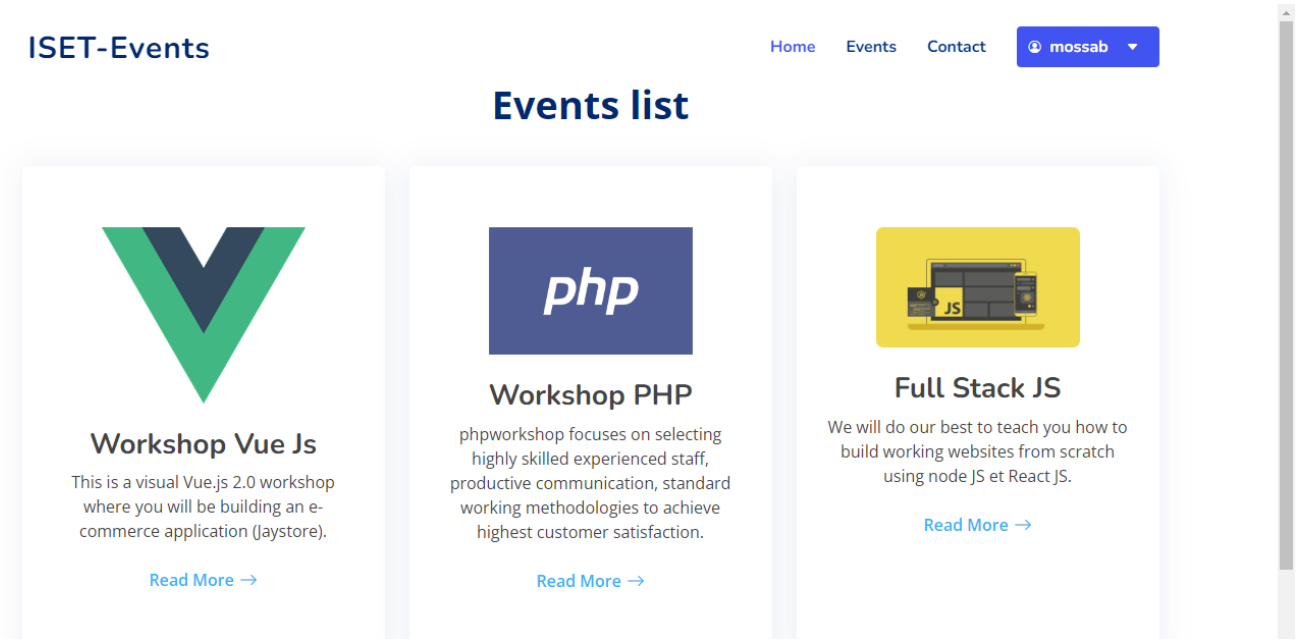

Figure 17: Consult events

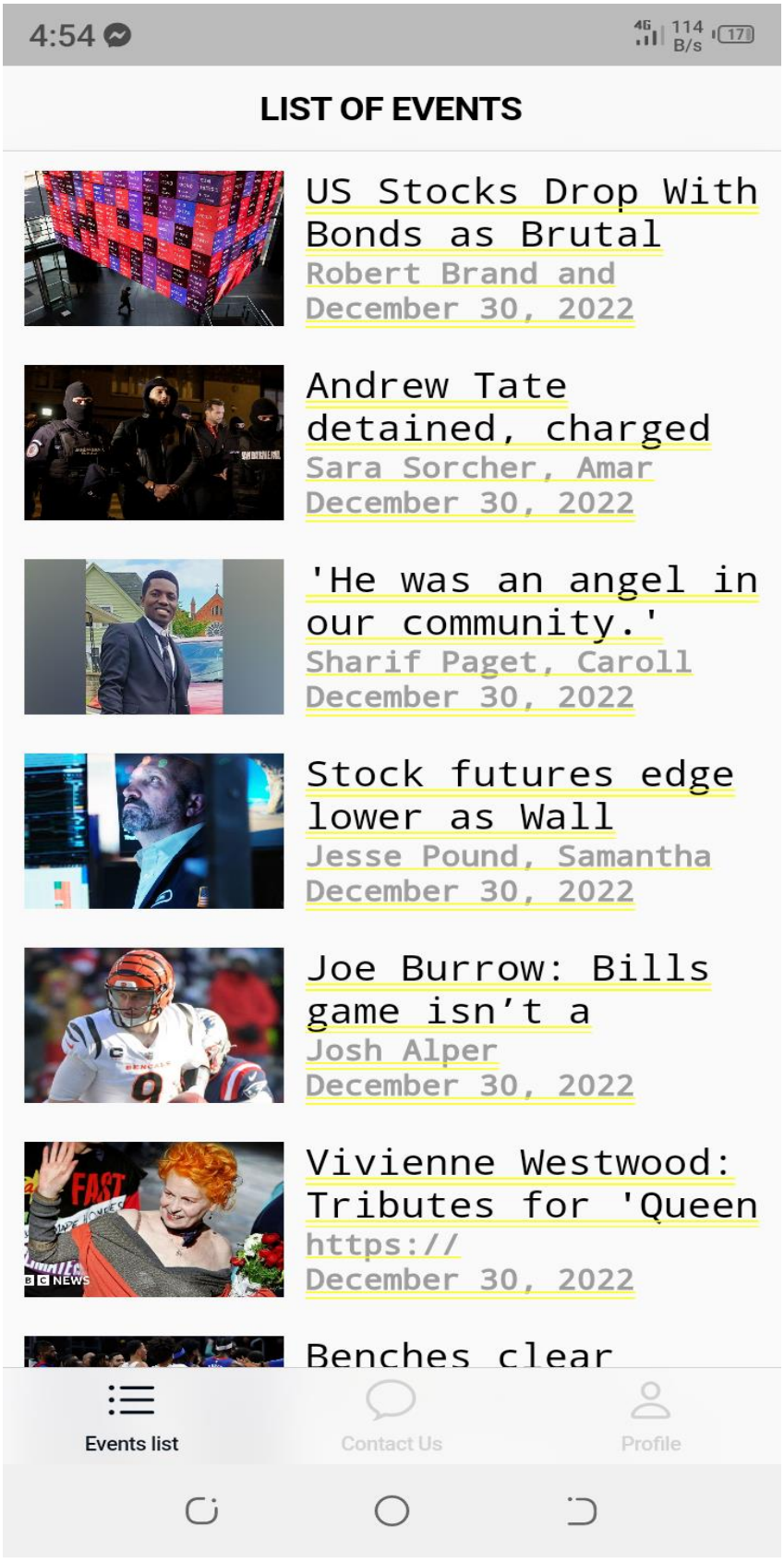

Figure 18: List of events mobile

Conclusion:

This chapter details the first sprint. It details the analysis, design and construction of the incremental steps. The next chapter introduces the second sprint.

Chapter 4: Sprint 2

Introduction

The objective of this chapter is to present the work completed during the second sprint of our project. In this part, we focus on two tasks being the participation in the events and the authentication of the student. The sprint study covers the analysis, the design, the realization and the functional tests...

1. Sprint Planning

The Sprint Planning is a collaborative work of the Scrum Team, it is the initial step of any Sprint, it lasts 4 hours, during which we set the Sprint Goal and the Sprint Backlog.

2. Sprint Goal

The goal of this sprint is event participation and the student authentication.

3. Sprint Backlog

Once we have defined the goal of our sprint, it's time to decide which features and features and their degree of importance are included in the sprint.

User Story		Tasks	Owner	Time estimated
Sprint 2	US 6 : As a student i want to participate in events	Create th class diagram	hajer	1/2 Day
		Create the Use Case Diagram	ahmed	1/2 Day
		Create the Sequence Diagram	mossab	1 Day
		Create Event-Participation micro-service (Node Js)	mossab	1 Day
		Generate Participation Form (Angular)	Salma	1 Day
		Build the participation form with flutter	hajer	1 Day
	US 7 : As admin , i want to consult the list of participants	Generate the participations-list Component (Angular)	Mossab	1 Day
		Create Event-participation service (Spring Boot)	ahmed	1 Day
		Build events interface with flutter	hajer	1 Day
	US 8 : As admin , i want to delete students from list	Create Participation Managment service (Spring Boot)	ahmed	1 Day
	US 9 : As student , i want to sign up	Create the inetface of Sign up (Angular)	Salma	1 Day
		Create the inetface of Sign up (Flutter)	hajer	1 Day
		Make the authentification with Keycloack	Mossab	1 Day
	US 10 : As student , i want to sign in	Generate the student Sign in component (Angular)	Salma	1 Day
		Build the Log in page for student (flutter)	hajer	1 Day
		Verify the authentification with keycloack	mossab	1 Day

Table 4: BackLog Sprint 2

4. Analysis of sprint 2

4.1. Use Case diagram

The use case diagram is a functional diagram that shows the interactions of the system to be interactions of the system to be developed with its users.

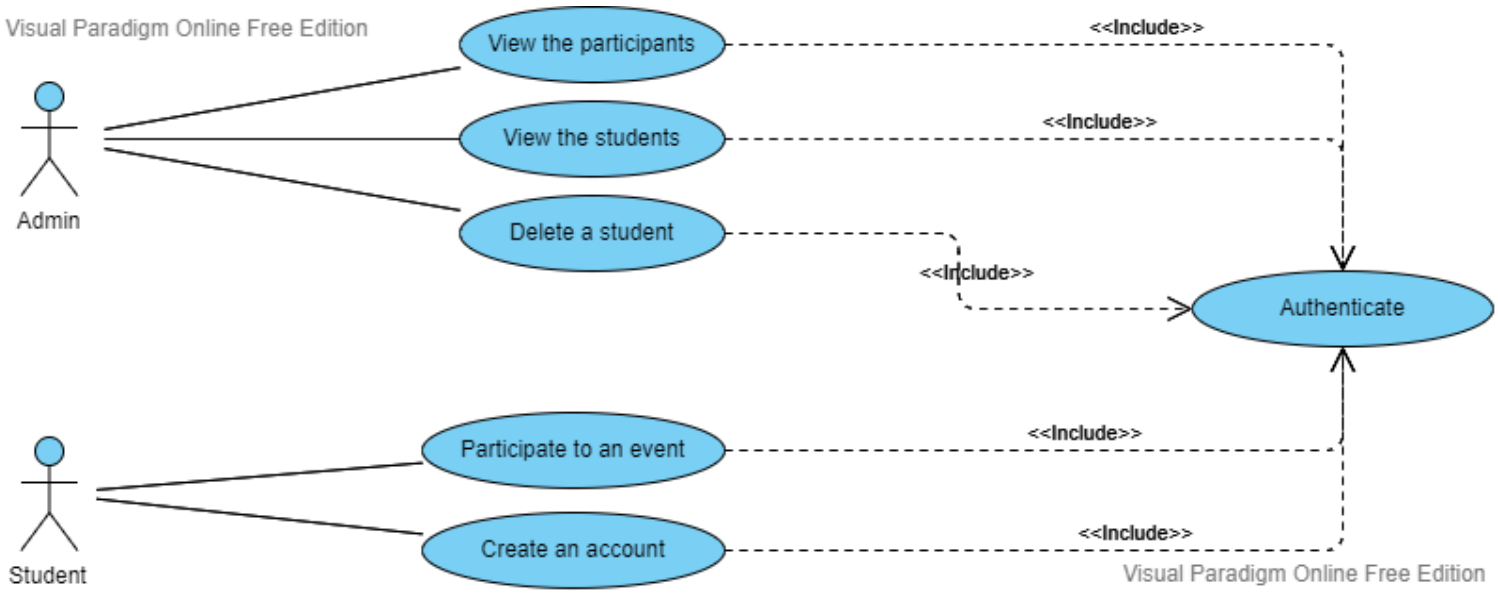

Figure 19: Sprint 2 Use Diagram

5. Sprint 2 design

5.1. Class Diagram

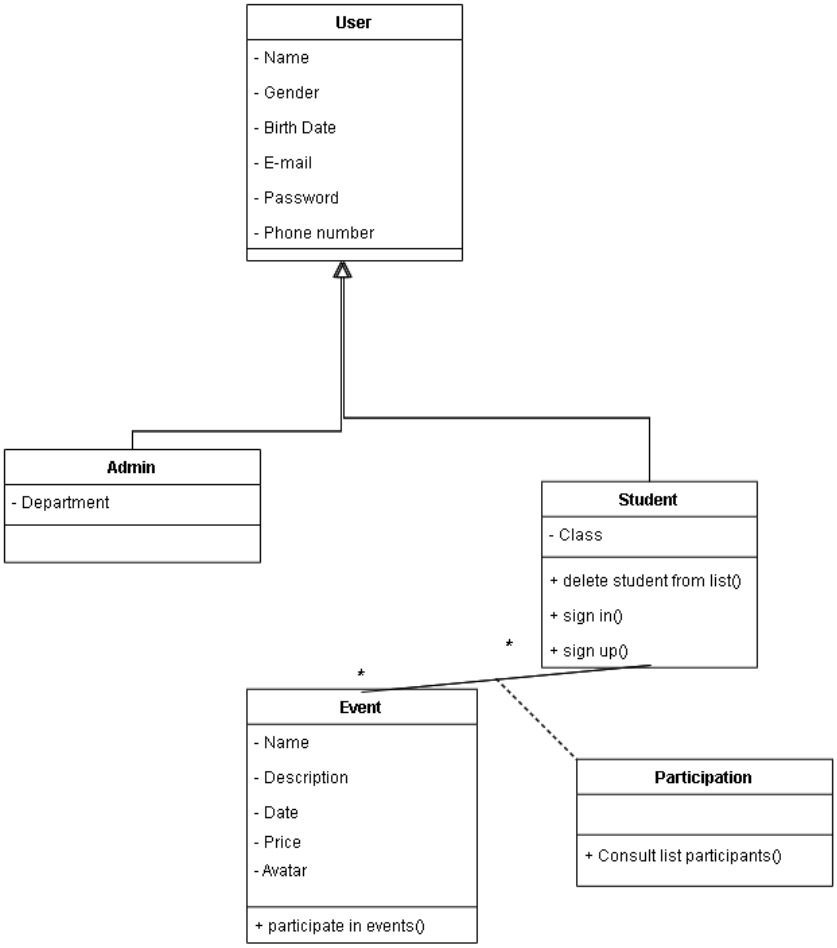

Figure 20: Sprint 2 Class Diagram

5.2. Sequence diagrams

5.1.1. Sequence diagram (Student participation):

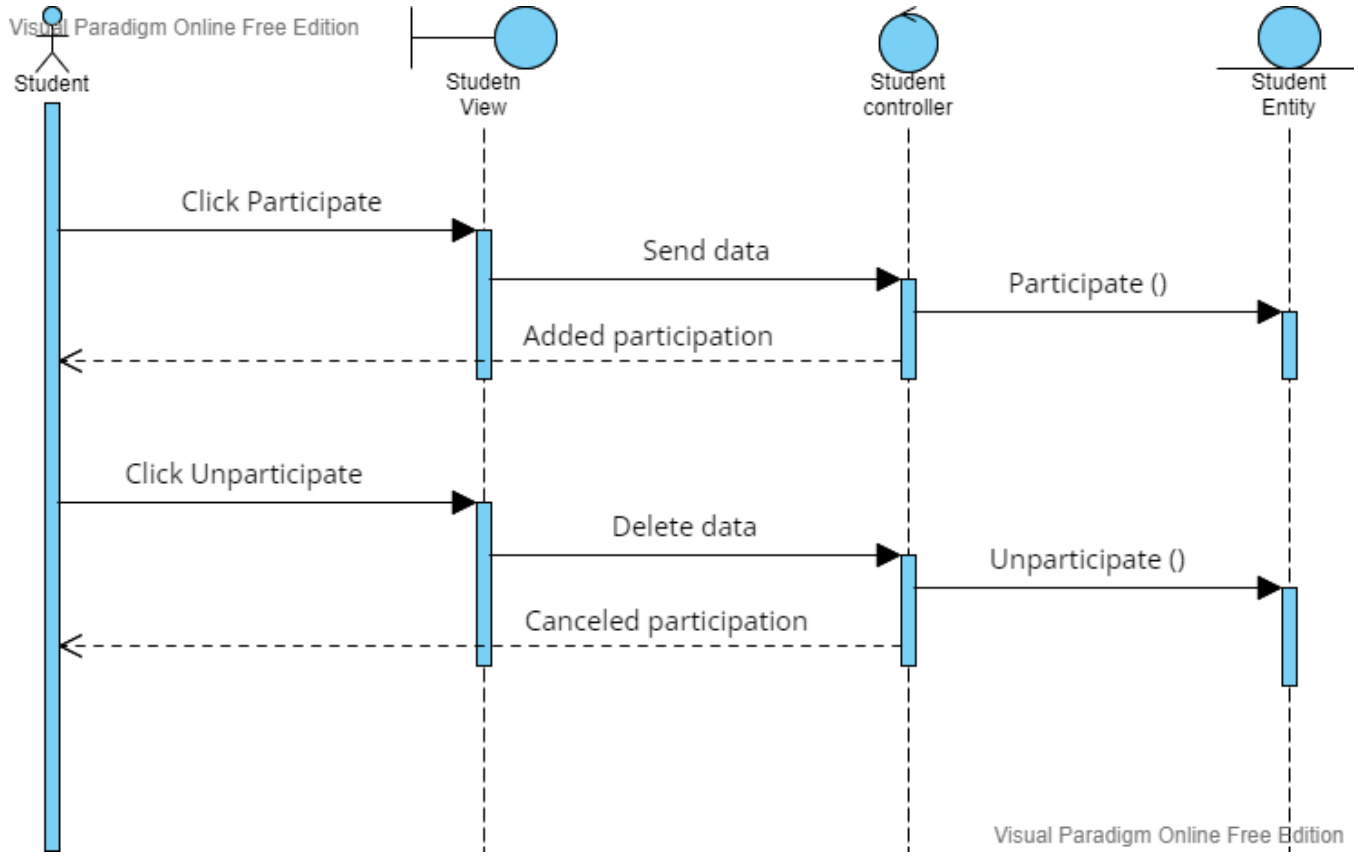

Figure 21: Student Participation

5.1.2. Sequence diagram (Student register):

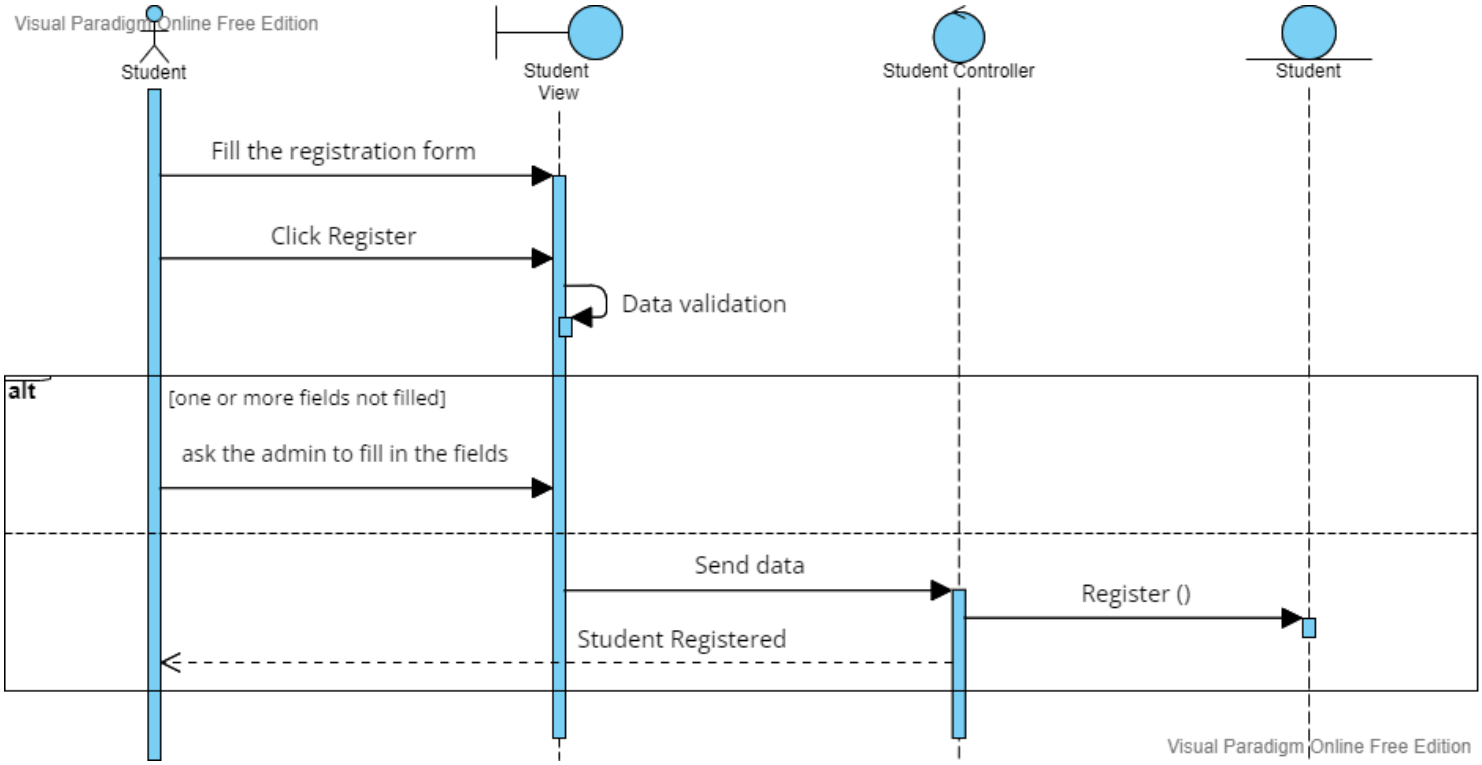

Figure 22: Student register Sequence Diagram

6. Sprint Review

The Sprint Review is held at the end of each Sprint to demonstrate the increment, inspect it and adapt the Product Backlog if necessary.

In the following, we will build the resulting increment this Sprint.

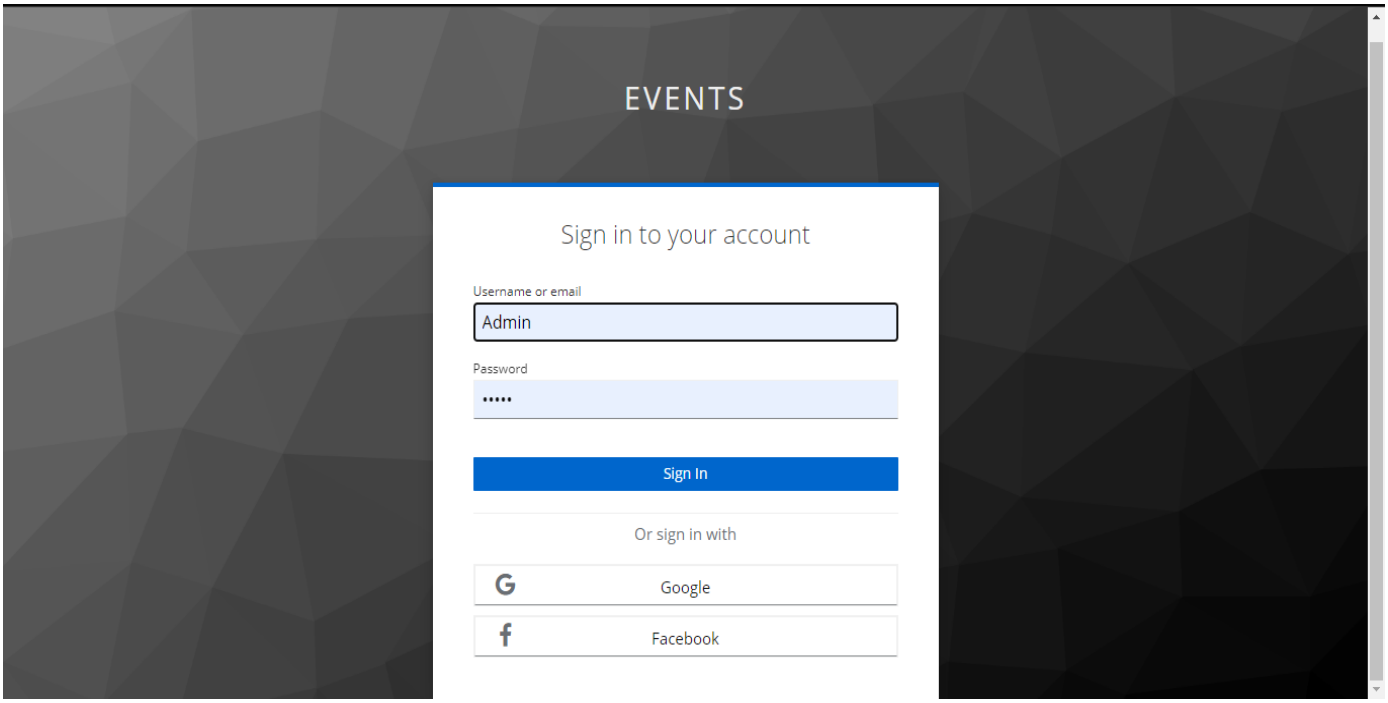

Figure 23: Sign in Student

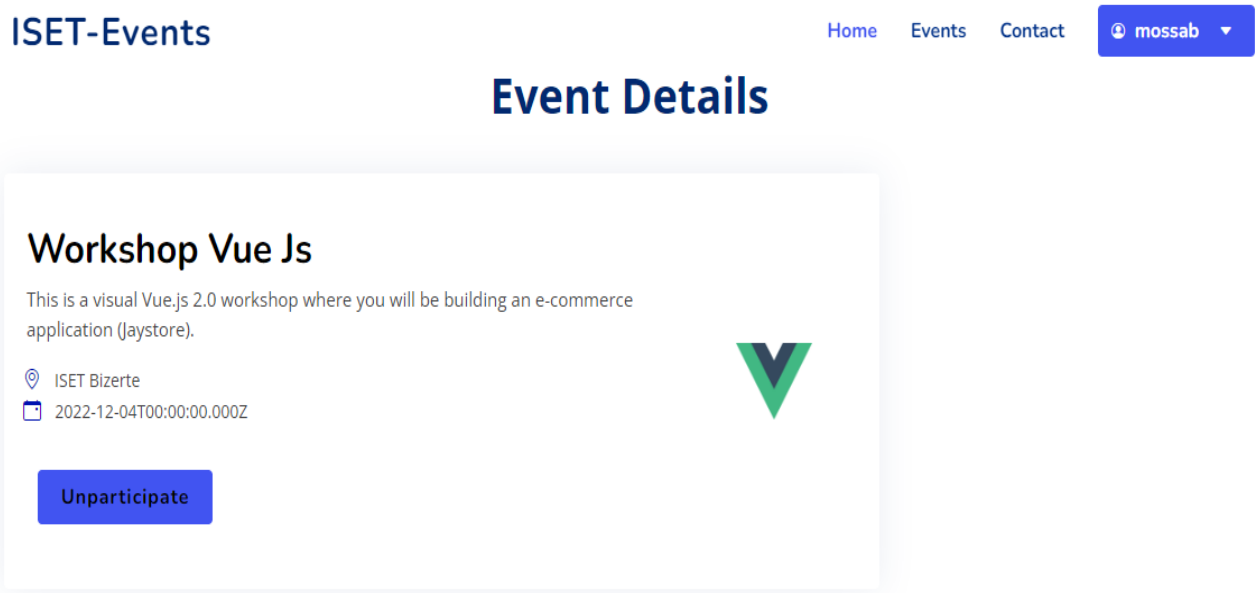

Figure 24: participation

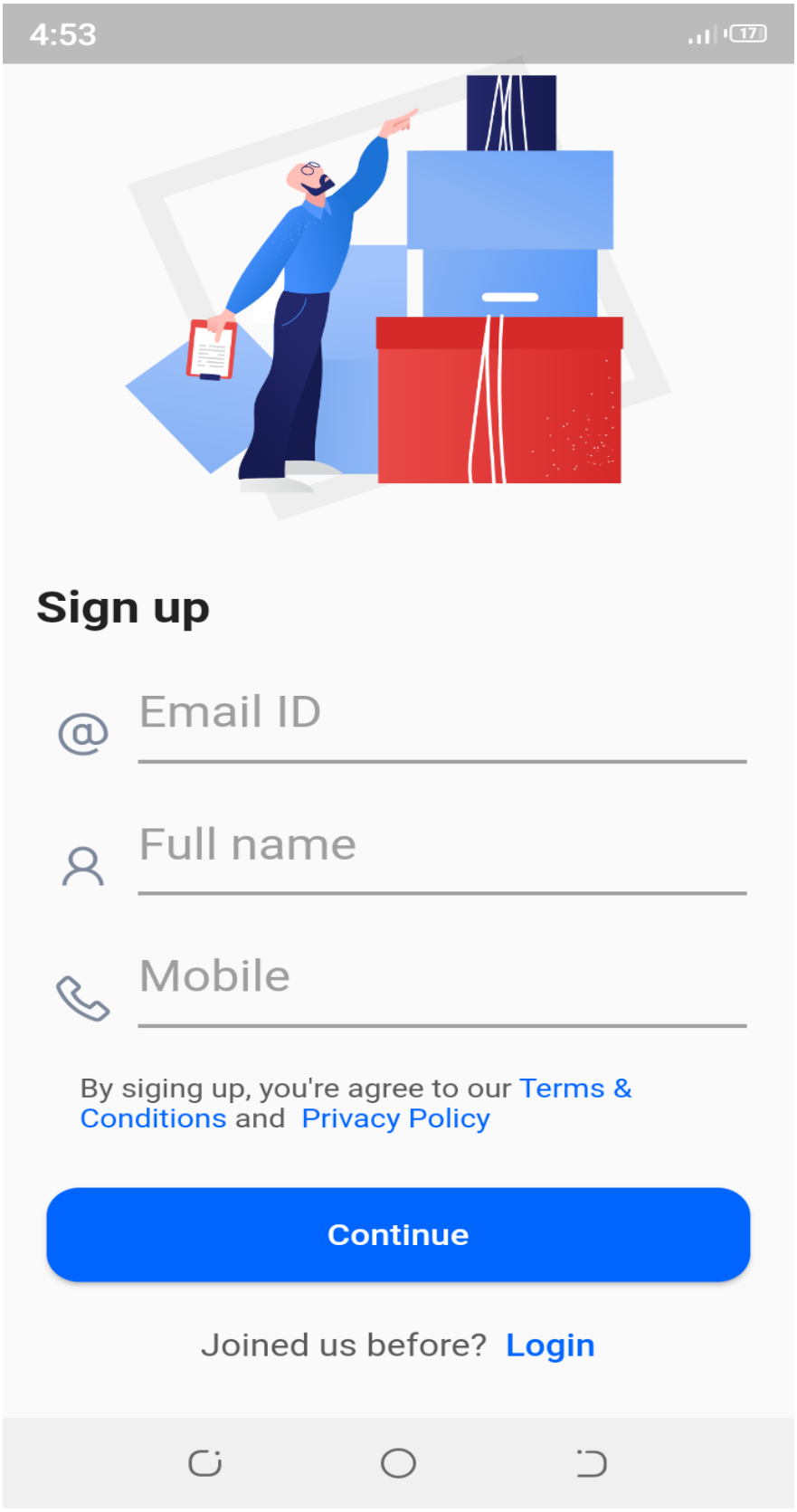

Figure 25: Sign up mobile

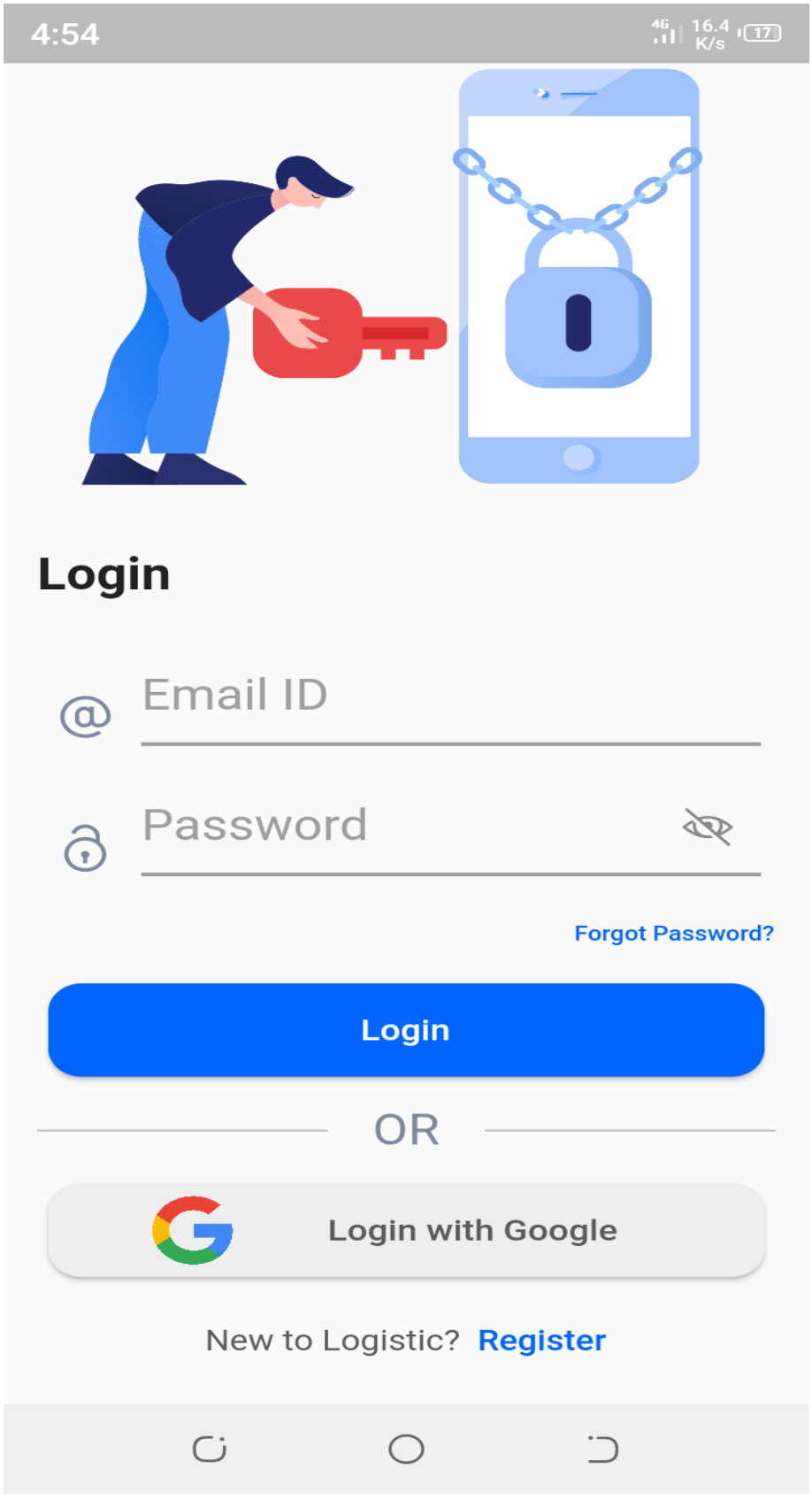

Figure 26: Sign in mobile

Conclusion:

We covered the second sprint in this chapter by discussing the analysis, design and implementation of its components. The next chapter begins the third sprint.

Chapter 5: Sprint 3

Introduction

The objective of this chapter is to present the work completed during the third sprint of our Project. In this part, we are interested in three tasks being the sign in of the management admin, the profile management for the latter and the student and the contact admin part.

1. Sprint Planning

The Sprint Planning is a collaborative work of the Scrum Team, it is the initial step of any Sprint, it lasts 4 hours, during which we set the Sprint Goal and the Sprint Backlog.

2. Sprint Goal

This sprint have many goals such as ensuring the authentication of the admin, the management of his profile as well as for the student and the admin contact part.

3. Sprint Backlog

Once we have defined the goal of our sprint, it's time to decide which features and features and their degree of importance are included in the sprint.

User Story		Tasks	Owner	Time estimated
Sprint 3	US 11 : As admin , i want to sign in	create the class diagram	hajer	1/2 Day
		Create the Use Case Diagram	mossab	1/2 Day
		Create the Sequence Diagram	mossab	1 Day
		Manage the authentification with keycloak(Spring boot)	ahmed	1 Day
		Create the authentification interface (Angular)	salma	1 Day
		Create the sign in page for admin (Flutter)	hajer	1 Day
	US 12 : As admin or student , i want to manage my profile informations	Generate the Profile Managment Component (Angular)	salma	2 Day
		Build Profile managment interface (flutter)	hajer	2 Day
		Create Profile managment services (Node Js + Spring Boot)	ahmed + mossab	2 Day
	US 13 : As student , i want to contact the admin	Fix contact admin Back-end (Node Js)	mossab	2 Day
		Build the contact form (Angular)	salma	1 Day
		Design the Contact admin page (flutter)	hajer	1 Day

Table 5: Backlog Sprint 3

4. Analysis of sprint 3

4.1. Use Case diagram

The use case diagram is a functional diagram that shows the interactions of the system to be interactions of the system to be developed with its users.

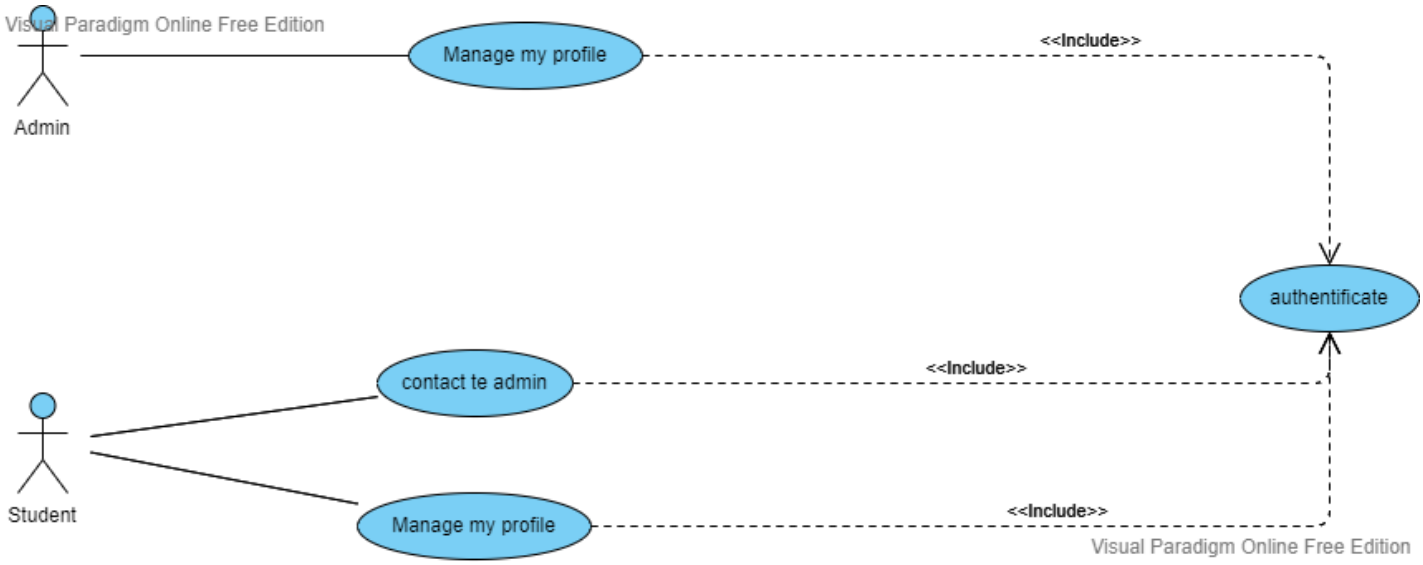

Figure 27: Sprint 3 Use Diagram

5. Sprint 3 design

5.1. Class Diagram

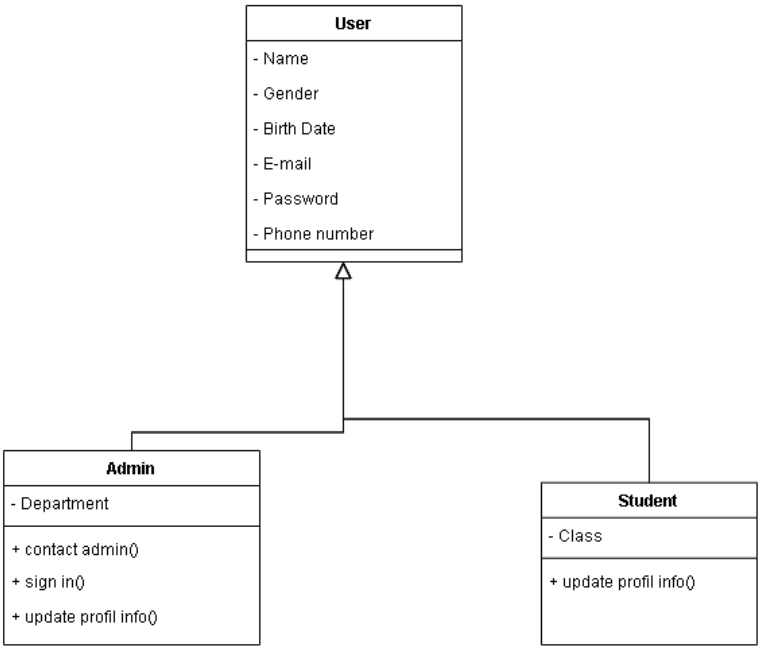

Figure 28: Sprint 3 Class Diagram

5.2. Sequence diagrams

5.1.1. Sequence diagram (Update Profile):

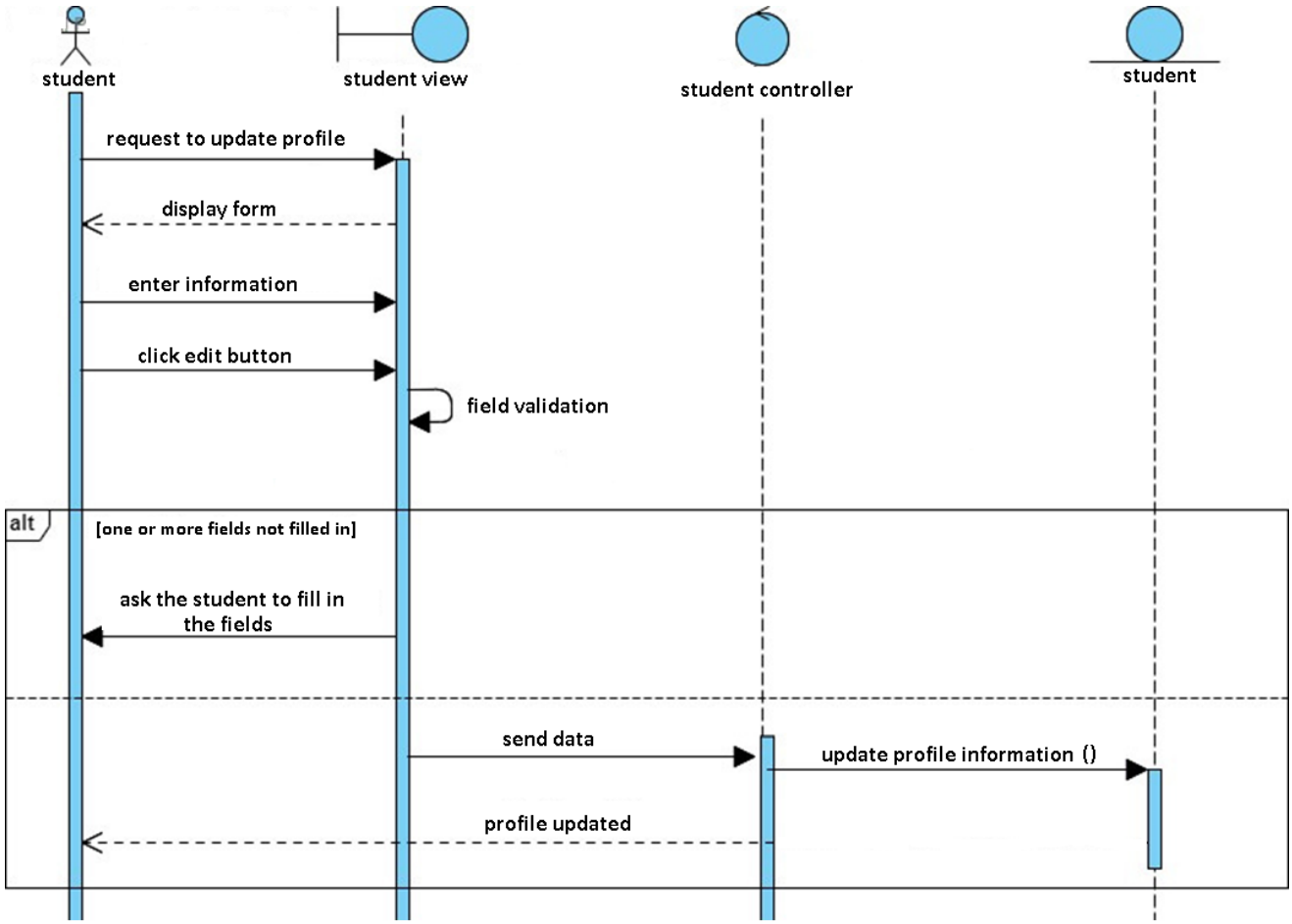

Figure 30: Update Profile

5.1.2. Sequence diagram (Contact Admin):

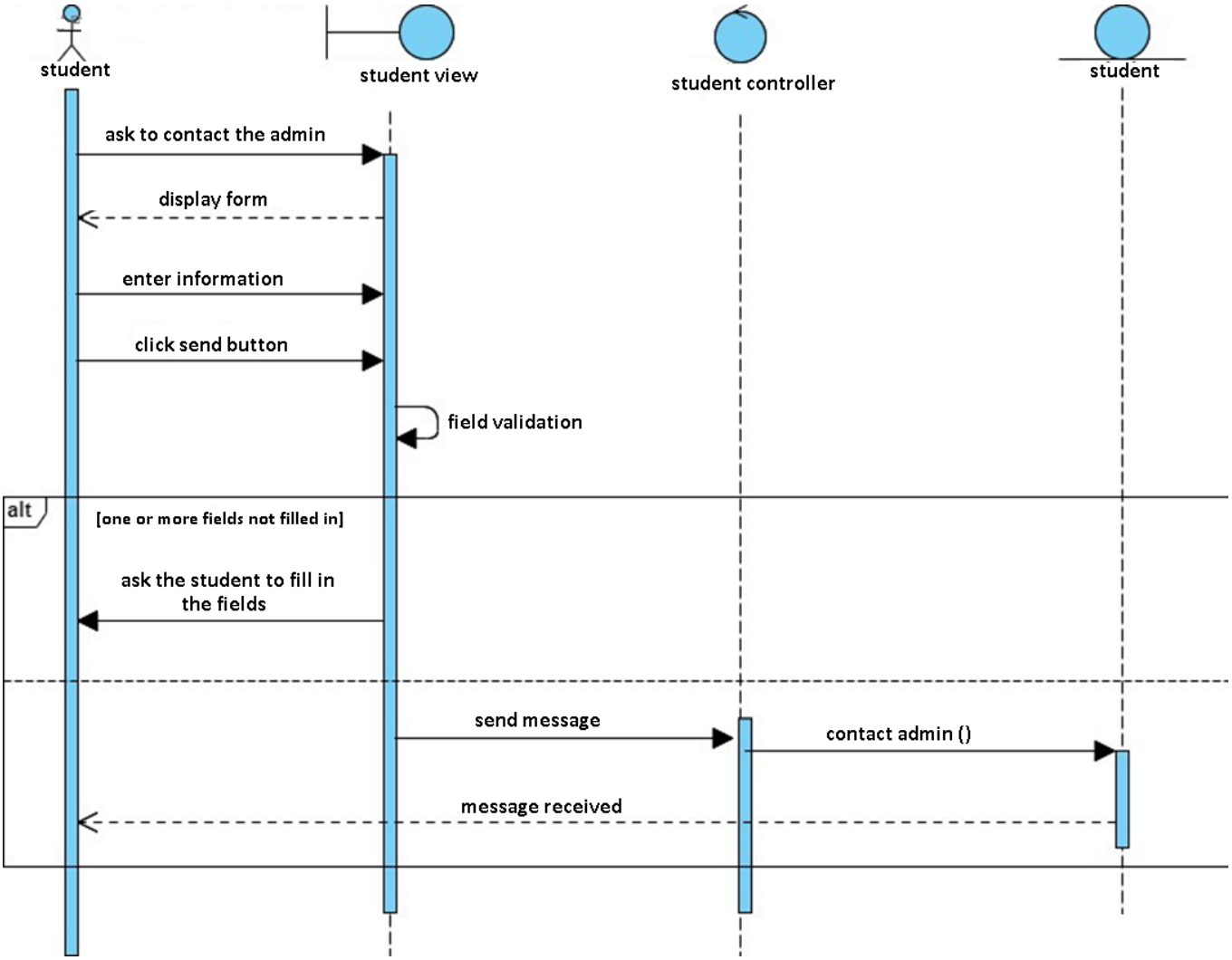

Figure 31: Contact Admin

6. Sprint Review

The Sprint Review is held at the end of each Sprint to demonstrate the increment, inspect it and adapt the Product Backlog if necessary.

In the following, we will build the resulting increment this Sprint.

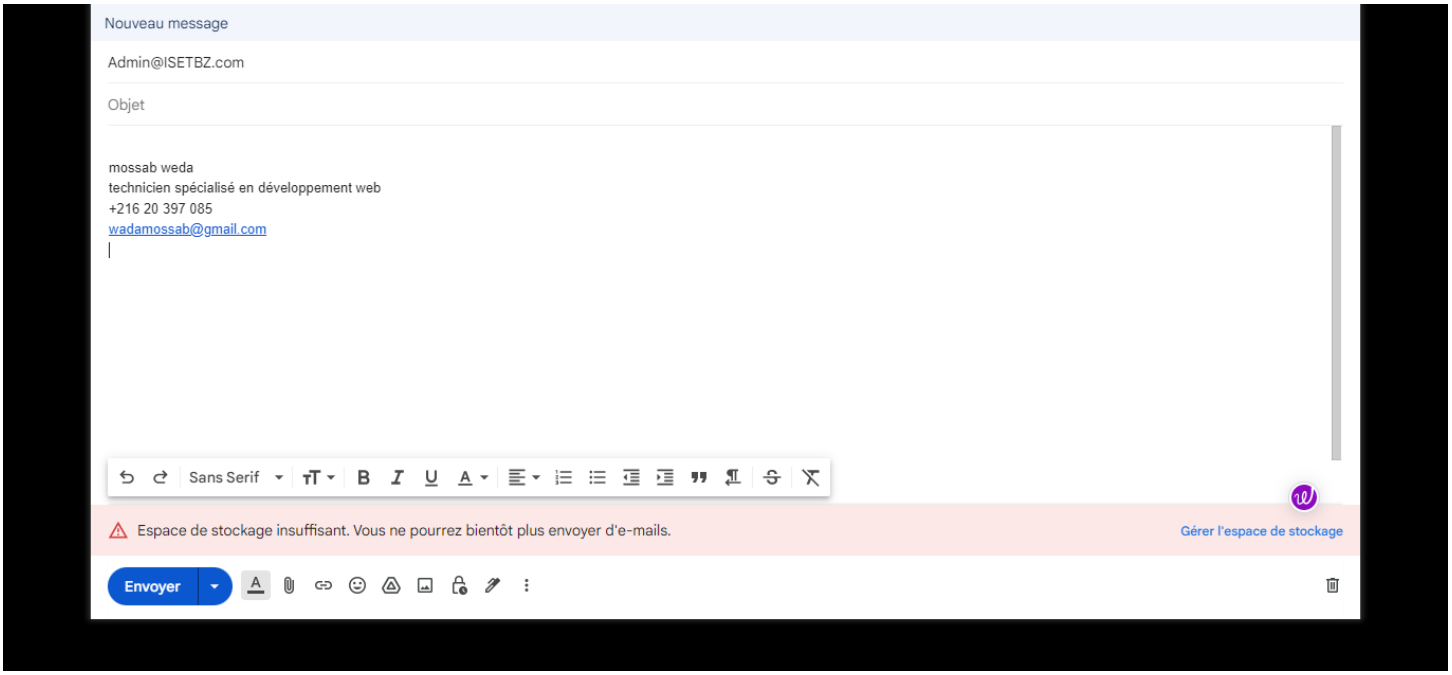

Figure 32: Contact Admin

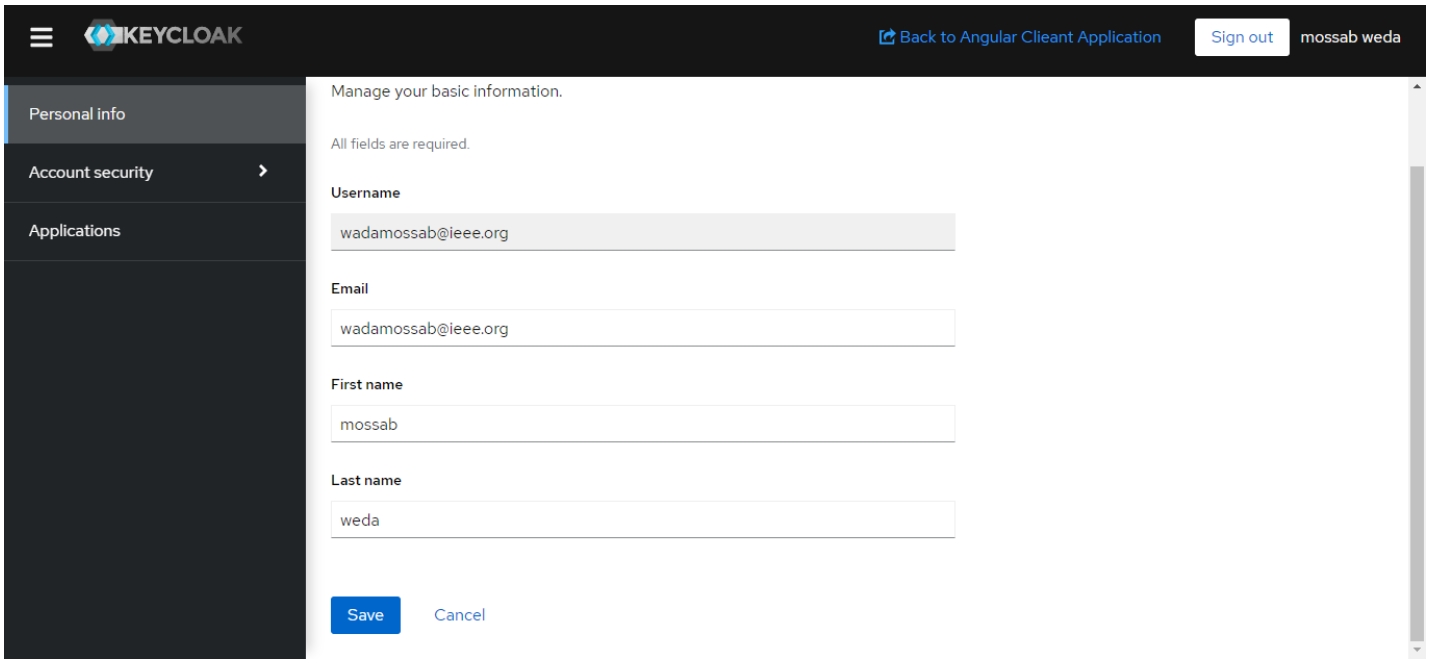

Figure 33: edit profile

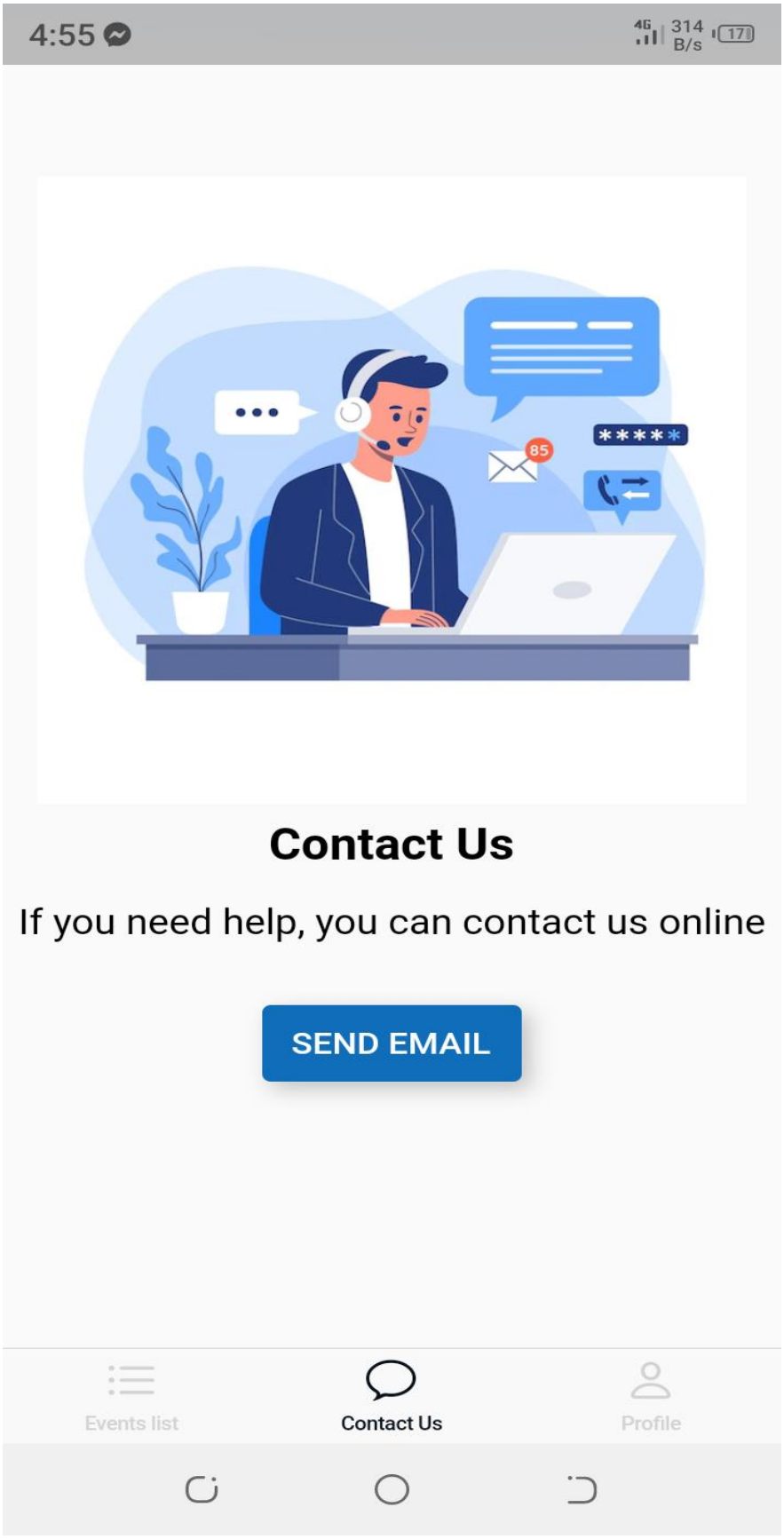

Figure 34: Contact Admin mobile

Conclusion:

In this chapter, we have presented the third sprint. To do this, we went through the analysis, the design, the realization of the increments. In the next chapter we start the fourth sprint.

Chapter 6: Sprint 4

Introduction

The objective of this chapter is to present the work completed during the fouth sprint of our Project. In this part, we are interested in two parts being the sign in of the management admin, the profile management for the latter and the student and the contact admin part.

1. Sprint Planning

The Sprint Planning is a collaborative work of the Scrum Team, it is the initial step of any Sprint, it lasts 4 hours, during which we set the Sprint Goal and the Sprint Backlog.

2. Sprint Goal

This sprint have many goals such as ensuring the authentication of the admin, the management of his profile as well as for the student and the admin contact part.

3. Sprint Backlog

Once we have defined the goal of our sprint, it's time to decide which features and features and their degree of importance are included in the sprint.

User Story		Tasks	Owner	Time estimated
Sprint 4	US 14 : As admin i want to consult the statistics	Create the class diagram	hajer	1/2 Day
		Create the Use Case Diagram	ahmed	1/2 Day
		Create the Sequence Diagram	mossab	1 Day
		Create Event-Participation micro-service (Node Js)	mossab	3 Day
		Design the Statistics Page (Angular)	salma	3 Day
		Build the satistics page with flutter	hajer	3 Day
	US 15 : As student ,i want to receive notifications of new events	Manage the notifcations (Spring boot)	ahmed	3 Day

Table 6: Backlog Sprint 4

4. Analysis of sprint 4

4.1. Use Case diagram

The use case diagram is a functional diagram that shows the interactions of the system to be interactions of the system to be developed with its users.

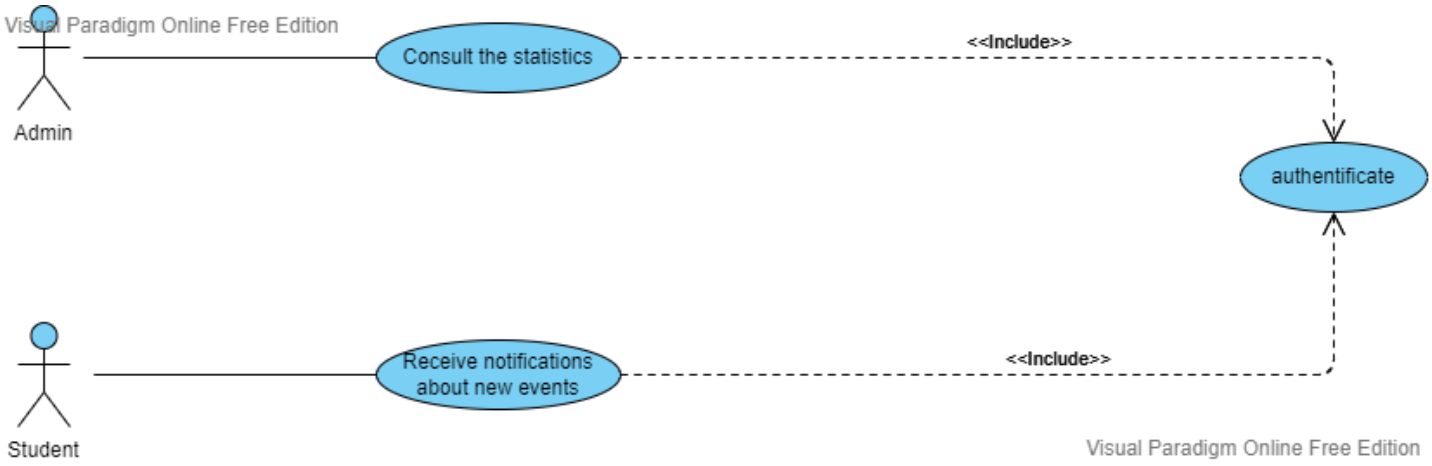

Figure 35: Sprint 4 Use Diagram

5. Sprint 4 design

5.1. Class Diagram

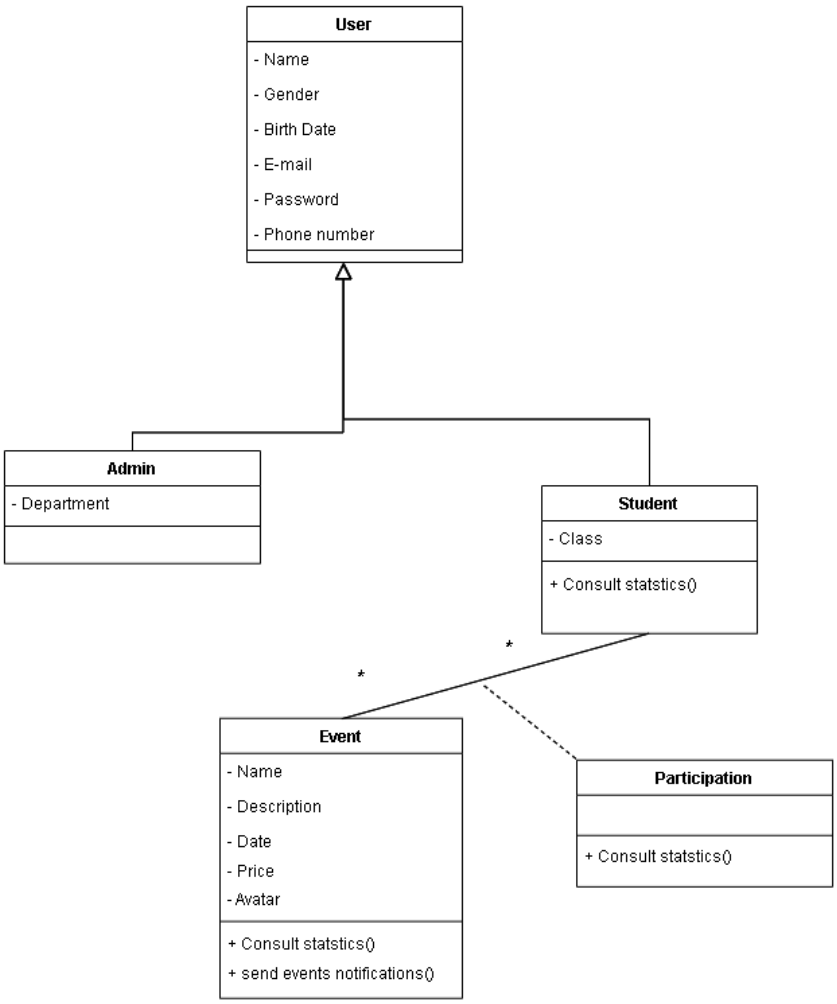

Figure 36: Sprint 4 Class Diagram

5.2. Sequence diagrams

5.1.1. Sequence diagram (Consult statistics):

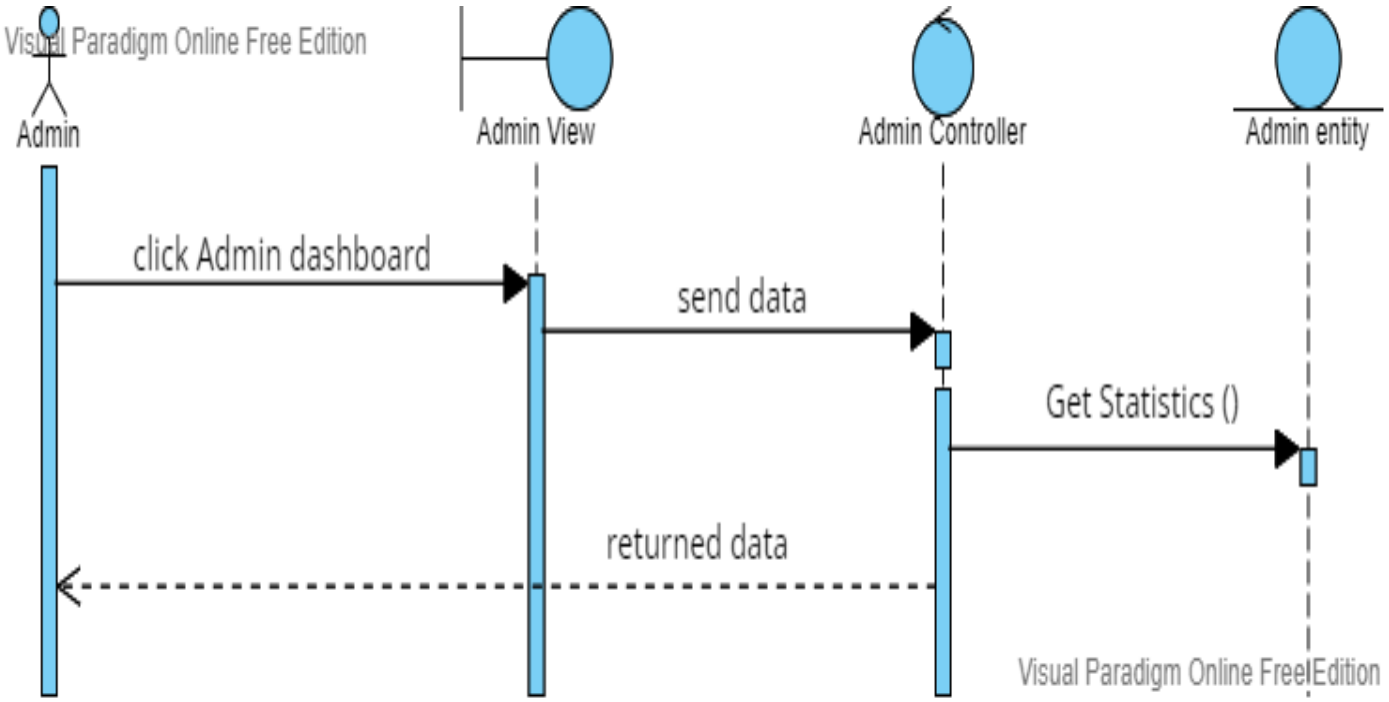

Figure 37: Student Participation

Figure 38: Update Profile

6. Sprint Review

The Sprint Review is held at the end of each Sprint to demonstrate the increment, inspect it and adapt the Product Backlog if necessary.

In the following, we will build the resulting increment this Sprint.

Conclusion:

In this chapter, we have presented the fourth sprint. To do this, we went through the analysis, the design, the realization of the increments. In the next chapter we start the fourth sprint.

General Conclusion

It was a wonderful learning experience for us while working on this project. This project led us through the different phases of project development and gave us a real insight into the world of software engineering. The joy of working and the thrill of solving different problems and challenges gave all of us a sense of the developer industry.

It was through this project that we learned how professional software is designed while working as a team.

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