Project documentation

Course: Software engineering

Title:	**SummerFun Summer School (Saint Julian's)**
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Group:	Erasmus 2022-2023

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2 Links to external sources

- Git/github
  benbezz02/SummerFun-Prototype (github.com)

3 Terms

Playworker – Playworkers are the people who oversee a class of children.

Child Support – Child Supports are those that take care of the children that require extra attention due to mental or physical disability.

IT Support – The IT Support of the SummerFun Summer School is the person who oversees all tech related issues that require to be fixed.

Centre Coordinator – The Centre Coordinator is the person put in charge of all the employees and children at a certain SummerFun School.

4 Introduction

4.1 System name

The system is called SummerFun EduService and it is a school services type system.

4.2 Description of an organisation / market

SummerFun is a school that offers students ranging from the ages of 5 up until 15, fun activities and lessons on various subjects during the summer holidays. SummerFun is based in several schools around Malta, one in each locality, but this system is being created specifically for the Saint Julian's branch. Activities such as Physical Education, Beach Days, and many others are what bring students back to school even during the summer. With a small fee, parents can send their children here to improve their computer knowledge and enjoy fun outdoor games/activities. Approximately each centre has about 200 students and 22 Playworkers, all run by 1 Centre Coordinator with the help of 1 IT Support. These students are split into classes of approximately 10, with the important rule that all children in the same class are the same age. Even though education level is irrelevant, all students in that age group follow a certain syllabus over the summer. Included amongst the 200 students are some that require further assistance due to physical/mental impairments. These students (depending on the severity) get a Child Support with them to assist them with anything that they cannot accomplish alone. The school runs from the second week of July till the first week of September, during the week from 8a.m. to 1p.m. Some students however decide to stay Extra Hours, which can last till 5p.m. The day for students is normally includes 3 hours of learning time and activities and a 1-hour 30 minutes long break.

4.3 Description of a system

Since all users are now acquiring a netbook/laptop from the government, the previously used system is now out of date. The Saint Julian's branch requires a new system that includes various new features, such as allowing parents of the students to pay any fees, shows the Students and Playworkers timetable and many more. This system should be available for all the users, but only the Centre Coordinator and IT Support should have full unrestricted access to the entire system. Tracking which student has which laptop for example, is useless information for Students, Child Supports and Playworkers, but important for the Centre Coordinator and IT Support who are in constant communication with the government. Seeing that the project and school is funded by the government, the Playworkers are given a syllabus of things to do throughout the summer. This syllabus is sent in weekly by the government to all schools and will be available to view through the system for all the Playworkers.

4.4 Business goal

A new system needs to be manufactured that has better functionality and accessibility to information than the old system but is still easy to understand for the users and their new laptops/netbooks.

4.5 Users

- Students
- Playworkers
- Child Supports
- IT Support
- Centre Coordinator.

4.6 Initial Limitations

All laptops given to the users by the government are all laptops with a Microsoft based Operating System. Thus, system needs to be manufactured with only Microsoft compatibility.

5 Requirements

5.1 Functional requirements

5.1.1 List of requirements

1. The system can display timetable to Students, Playworker and Child Support.
2. If need be, the timetable can be inserted manually for each class or automatically be created by the system.
3. Playworkers and Centre Coordinators will have access to syllabus of the week.
4. Playworkers should be able to upload and store files on the system.
5. The uploaded files can then be edited, deleted, or viewed by the Playworker.
6. Students and Child Supports can only view the uploaded files.
7. Centre Coordinator will have a database with information about each User and their respective laptops/netbooks.
8. The Centre Coordinator can add and remove Students, Playworkers and Child Supports from classes.
9. IT Support will only have access to information with regards to laptops/netbooks of each student.
10. Events are to be created only by the Centre Coordinator.
11. Events would contain a description regarding any upcoming events, like date, duration, location, and an overall summary what is going to happen.
12. Whenever a new event is created, each user will receive a notification about it.
13. For the Student users, there should be an option for the parents to pay any due payments through an online payment system.
14. The parents are required to pay a certain amount at the beginning of each month of the Students' attendance.
15. A report can be generated by the Centre Coordinator which Students have paid and which have not.

5.1.2 Use case diagrams

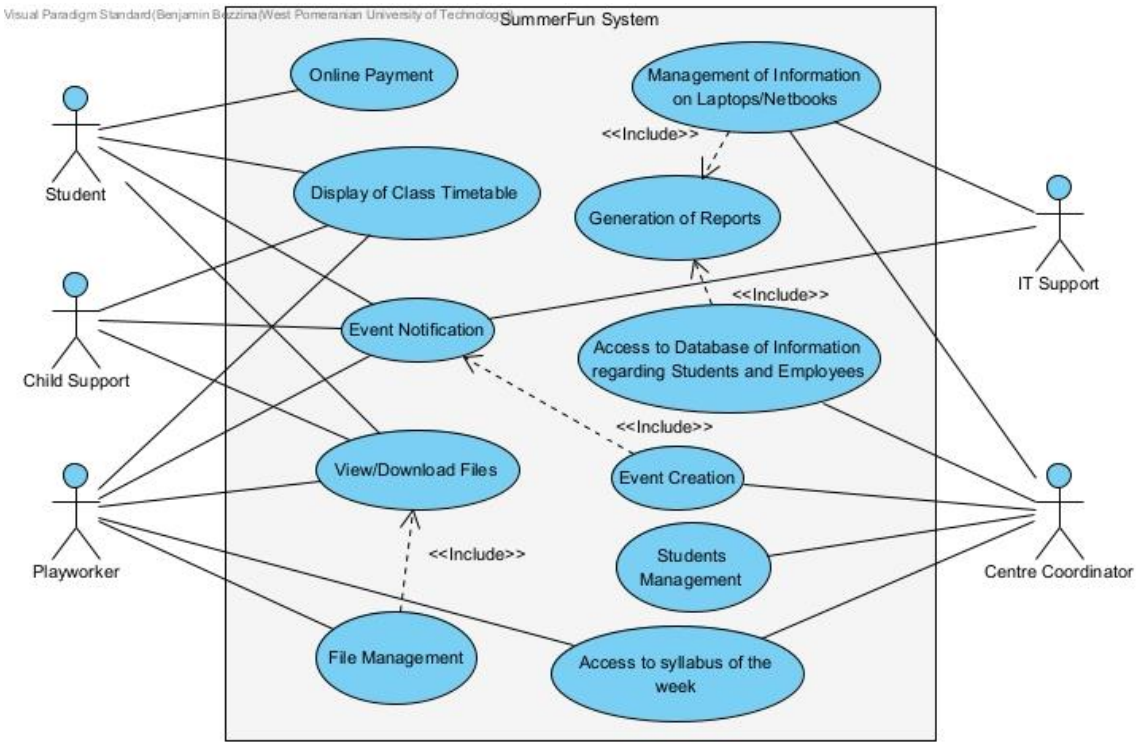

Figure 1 – Use Case Diagram

5.1.3 Use case specifications

Use Case no. 1: Display of Specific Timetables

Users: Student, Child Support, Playworker

Main Scenario for Student/Child Support

Preconditions:
The Student/Child Support is on the Log In Screen.

Flow of events:

1. The user first logs in with his/her ID and Password.
2. The user then selects the Get my Timetable button.
3. A timetable is displayed depending on the class of the user.

Postconditions:
A timetable is displayed.

Main Scenario for Playworker

Preconditions:
The Playworker is on the Log In Screen.

Flow of events:

1 – 3. As in the Main Scenario for Student/Child Support.
4. Below the timetable the attendance for the day can also be found.

Postconditions:
A timetable and attendance are displayed.

Alternative Scenario – Timetable not available yet
Preconditions:
The Student/Child Support/Playworker is on the Log In Screen.

Flow of events:

1 – 2. As in the Main Scenario for Student/Child Support.
3. A message is sent by the system to the user regarding the invalid request.
4. The user is redirected back to the main screen.

Postconditions:
The user is back at the main screen.

Use Case no. 2: File Management

Users: Playworker, Centre Coordinator

Main Scenario
Preconditions:
The Playworker hovers over Main Menu dropdown menu.

Flow of events:

1. The Playworker selects the MyFiles option.
2. On the MyFiles screen the Playworker presses the Upload button.
3. The system gives the options for the Playworker to upload either a file or folder.
4. If a file is selected then File Explorer is opened, where the Playworker can select the .docx or .pdf file, that they wish to upload.
5. If a folder is selected then File Explorer is opened, where the Playworker can select the folder containing .docx and .pdfs, that they wish to upload.
6. When a valid option is chosen the file/folder is sent first to the Centre Coordinator for her/his approval.
7. Once approved, the file/folder is uploaded to the system and is now viewable and downloadable by the Students.

Postconditions:
The file/folder is saved on the system and can be viewed/downloaded by Students.

Alternative Scenario – Deleting Files
Preconditions:
The Playworker hovers over Main Menu dropdown menu.
Flow of events:

1. As in Main Scenario.
2. On the MyFiles screen the Playworker presses the Delete button.
3. The system displays a list of files that have been uploaded by the Playworker.
4. The user can then choose one or more files that they wish to be removed from the system.
5. The system then permanently deletes the file/s chosen and can no longer be viewed/downloaded by the Students or Playworker.

Postconditions:
The file/files can no longer be found on the system any longer.

Use Case no. 3: Event Creation

Users: Centre Coordinator

Main Scenario

Preconditions:
The Centre Coordinator receives the funding from the government to create a new event for the students.

Flow of events:

1. The Centre Coordinator Logs In from the Log In Screen.
2. The Centre Coordinator clicks the New Event button from the systems Main Screen.
3. The system then displays the event creation form.
4. The Centre Coordinator is then to enter the data required.
5. With all the details filled in, the event is saved in the system.
6. The event details are then pushed to all other users as a notification.

Postconditions:
Event is created and a notification is sent to all users.

Alternative Scenario – Invalid details

Preconditions:
The Centre Coordinator receives the funding from the government to create a new event for the students.

Flow of events:

1 – 4. As in the main scenario.

5. The system notifies about any invalid details and refuses to create a new event.

Postconditions:
The form can be edited for valid details or can be cancelled.

Use Case no. 4: Access to syllabus of the week

Users: Playworker, Centre Coordinator

Main Scenario
Preconditions:
The Centre Coordinator receives the syllabus of the week from the government.

Flow of events:
1. The Centre Coordinator clicks on the Syllabus option from the Main Menu drop down menu.
2. The Centre Coordinator then clicks on the Upload option.
3. The system opens File Explorer, where the Centre Coordinator can select the .pdf file that they wish to upload.
4. If there was a previous file, then this file gets deleted and replaced by the new chosen one.

Postconditions:
The Centre Coordinator updates the syllabus saved on the system.

Alternative Scenario – Viewing of syllabus
Preconditions:
The Centre Coordinator has uploaded the syllabus of the week.

Flow of events:
1. As in the main scenario.
2. The Centre Coordinator/Playworker then clicks on the View option.
3. The currently saved syllabus .pdf file is displayed.

Postconditions:
The syllabus is displayed.

Use Case no. 5: Report Generation
Users: Centre Coordinator, IT Support

Main Scenario for Centre Coordinator
Preconditions:
The government requests a general report about the students from the Centre Coordinator.

Flow of events:
1. The Centre Coordinator clicks on the Database View option from the Main Menu drop down menu.
2. The system redirects the Centre Coordinator to the SummerFun Database Screen.
3. The Centre Coordinator then clicks on the Report Generation drop down menu and selects the Students' Report option.
4. The system generates a report and downloads it as a .pdf file on the Centre Coordinator's machine.

Postconditions:
The Centre Coordinator has the.pdf file report saved on her/his machine.

Main Scenario for IT Support
Preconditions:
The government requests a general report about the Laptops from the IT Support.

Flow of events:

1. The IT Support clicks on the Database View option from the Main Menu drop down menu.
2. The system redirects the IT Support to the SummerFun Database Screen.
3. The IT Support then clicks on the Report Generation drop down menu and selects the Laptops' Report option.
4. The system generates a report and downloads it as a .pdf file on the IT Support's machine.

Postconditions:
The IT Support has the.pdf file report saved on her/his machine.

5.2 Non-functional requirements

1. The system must be able to hold a minimum of 300 users.
2. The maximum system downtime cannot exceed 24 hours.
3. All display/load instructions should not exceed 5 seconds in loading time.
4. User interface will be designed in a large font, colourful and in a way that is easy to understand.
5. Regulations with regards to children with learning disabilities must be carefully checked and taken into consideration.
6. Any hardware issues are to be tackled by the IT Support, who in certain situations may request a replacement laptop/netbook.

6 Technical design

6.1 Architecture and technologies used

6.2 UML diagrams

6.2.1 Class diagram(s)

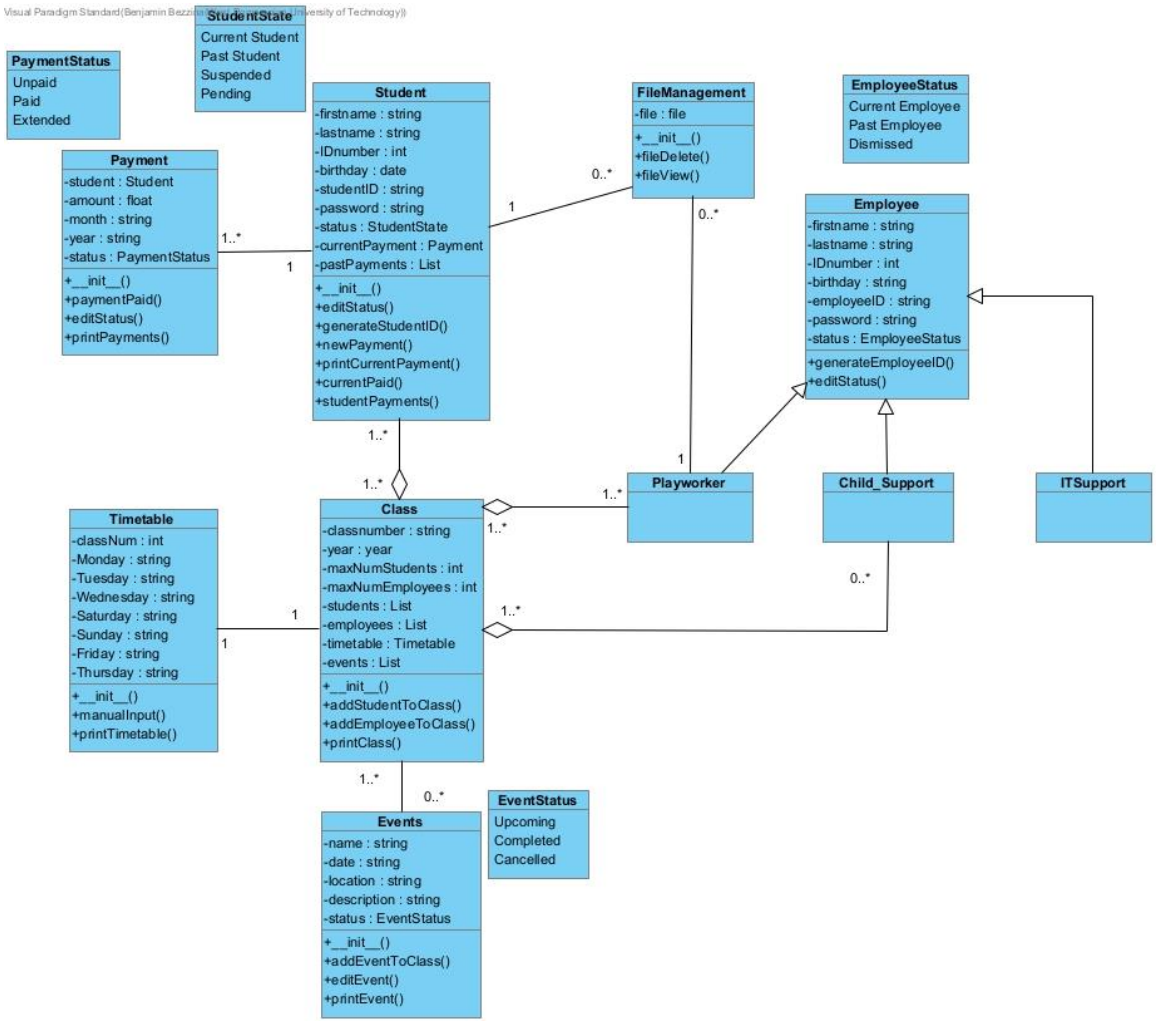

Figure 2 – Class Diagram

6.2.2 Activity diagram(s)

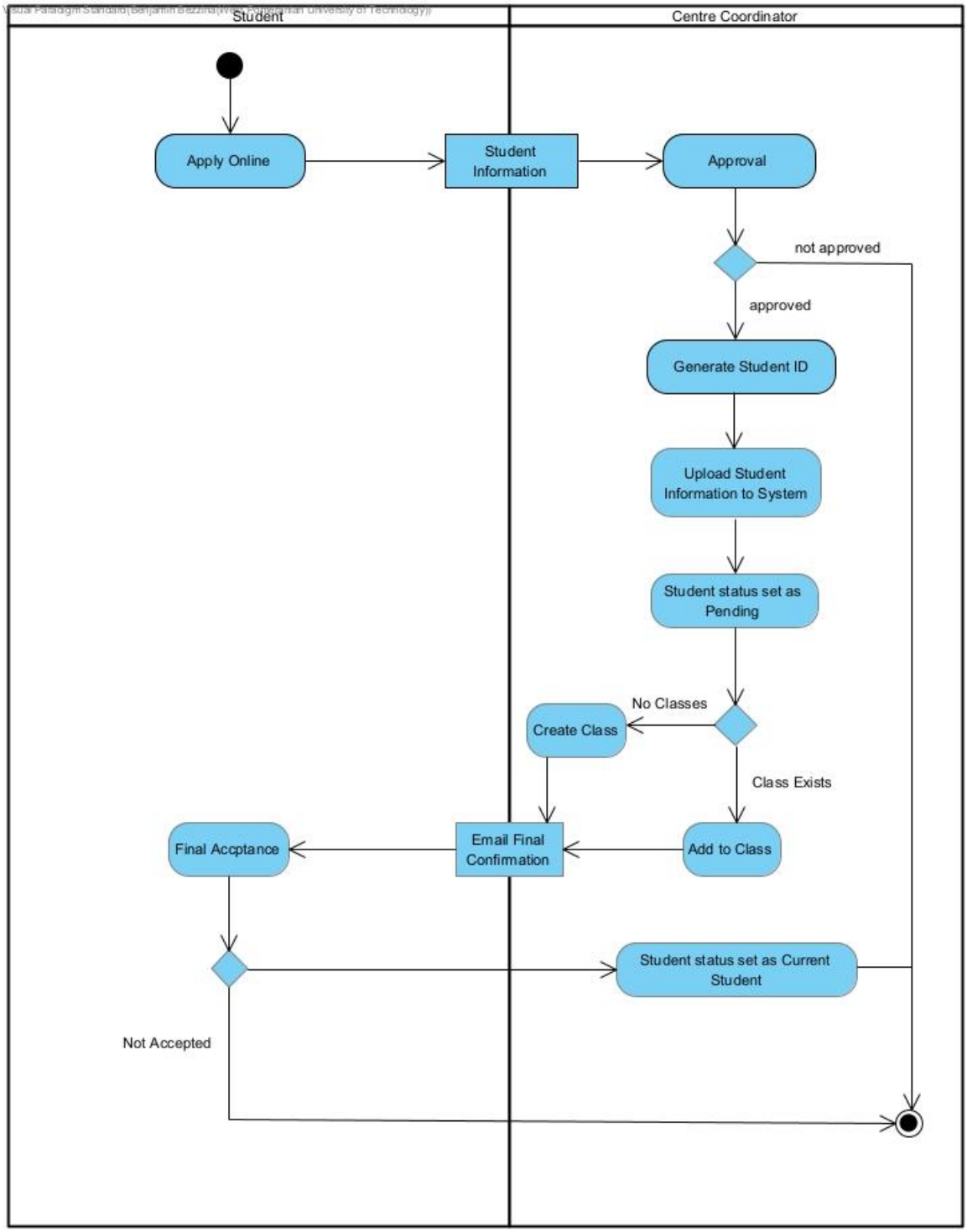

Figure 3 – Activity Diagram

6.2.3 Sequence diagrams

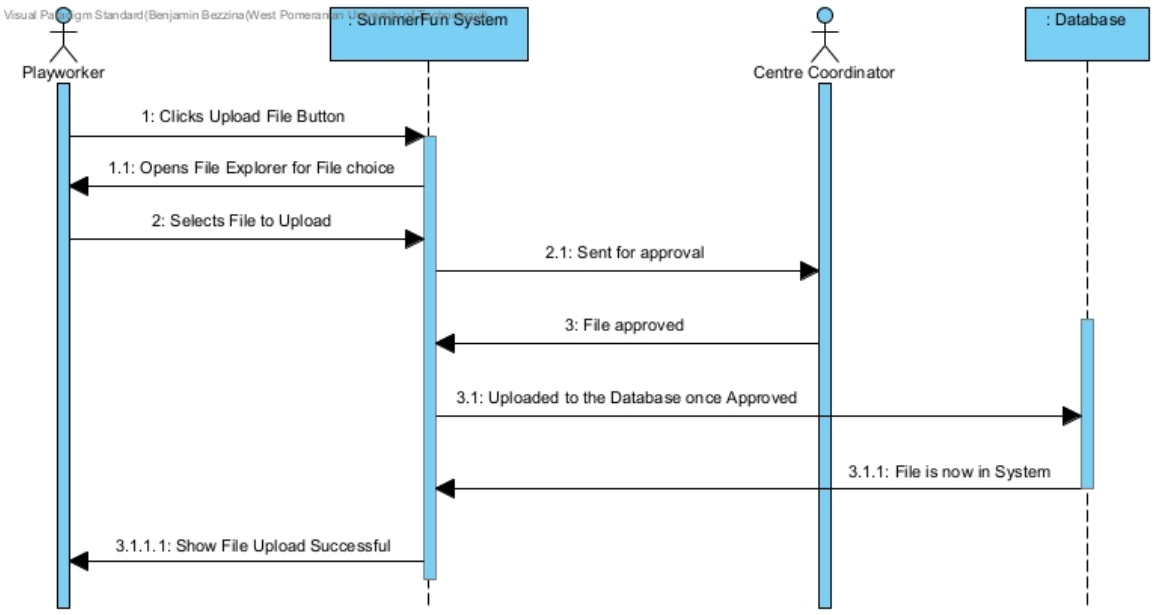

Figure 4.1 – Sequence Diagram of File Upload

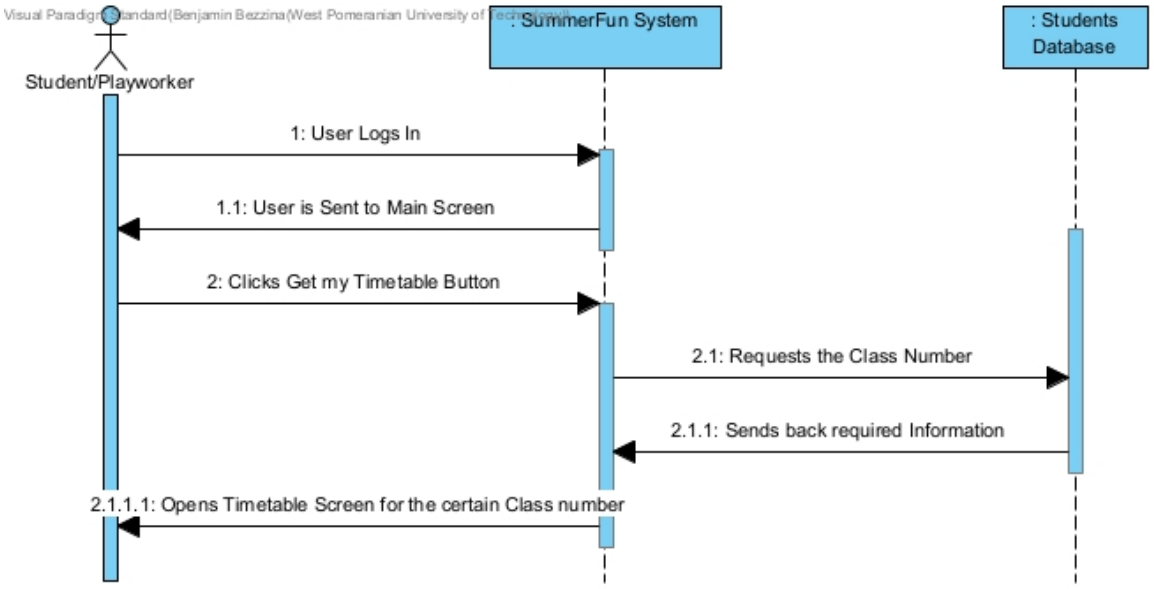

Figure 4.2 – Sequence Diagram of the Printing of a Timetable

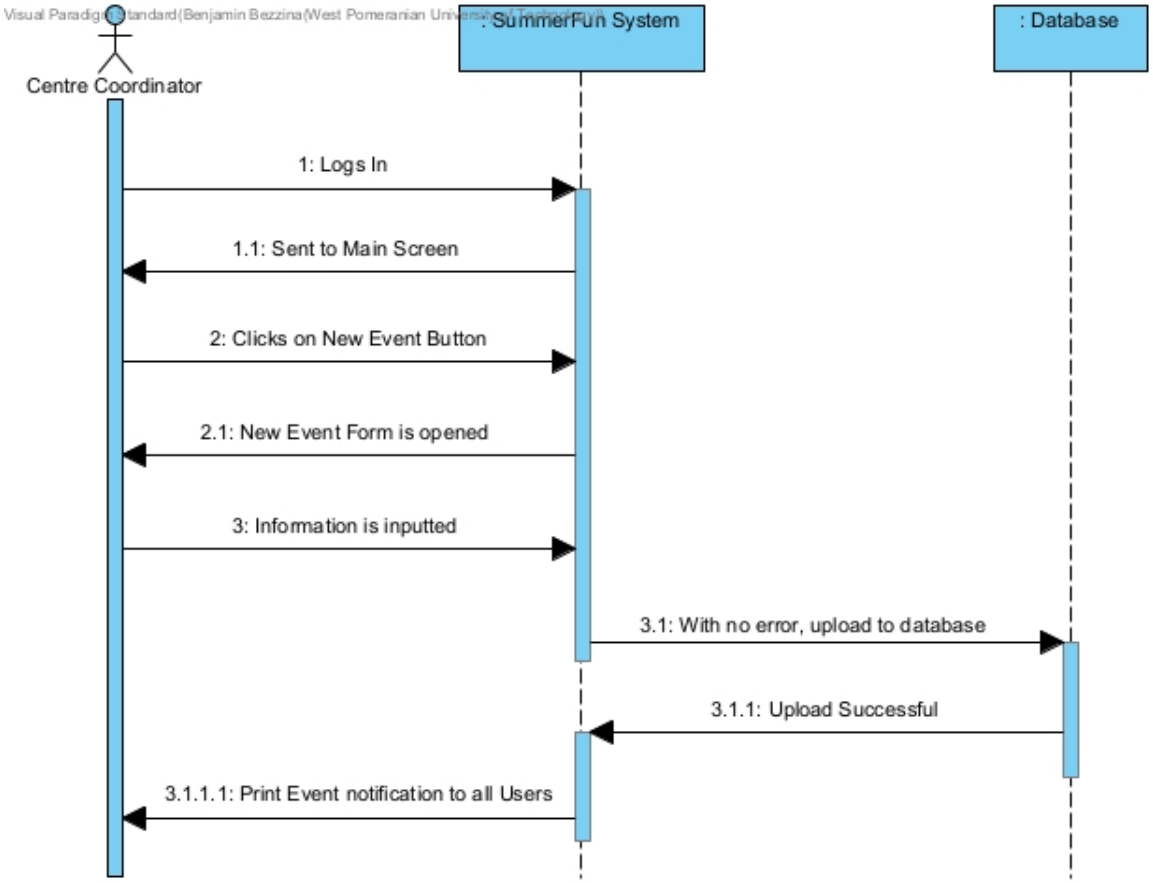

Figure 4.3 – Sequence Diagram for Event Creation

6.2.4 Other diagrams

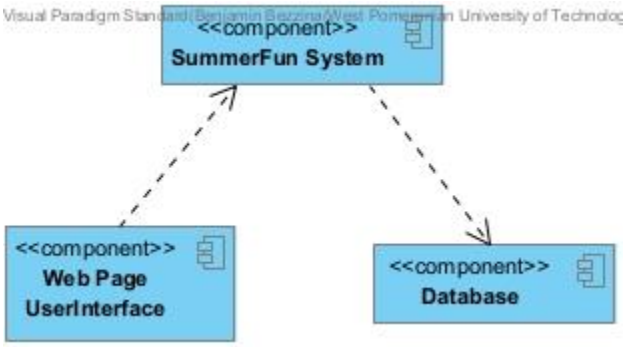

Figure 5 – Component Diagram

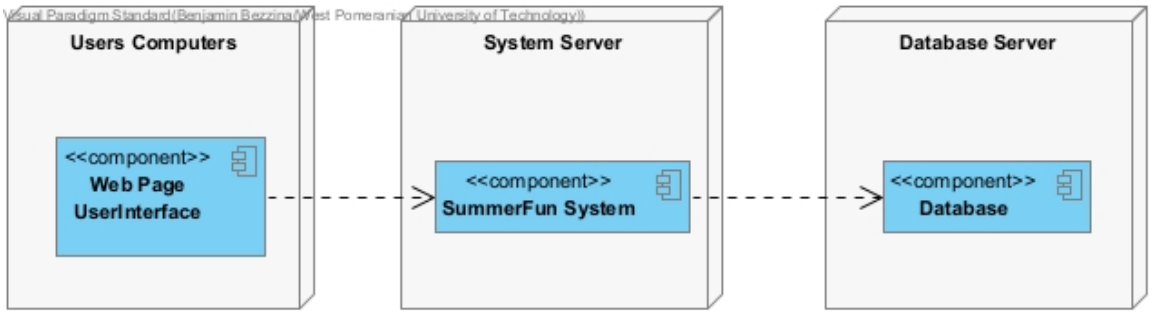

Figure 6 – Deployment Diagram

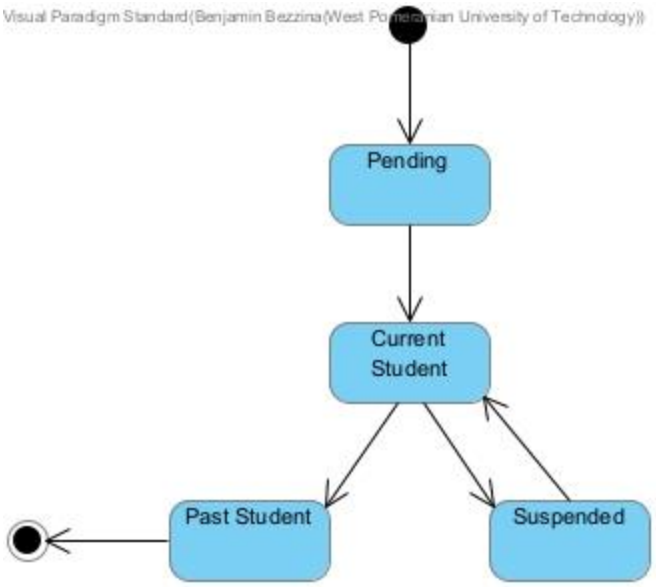

Figure 7 – State Machine Diagram

6.3 User interface design

6.3.1 List of main elements

- Log In
- Main Window
- Timetable
- File Options
- Syllabus Menu
- Events Menu
- Information

6.3.2 Graphical design of main elements

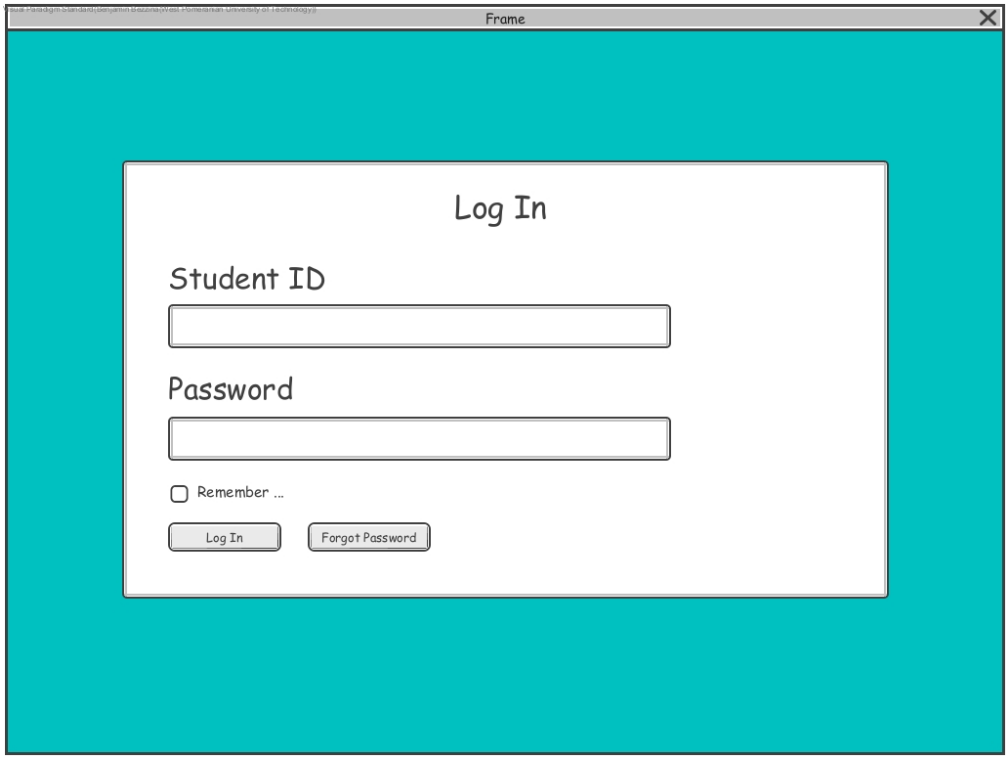

Figure 8 - Log in Screen Design

Figure 9 - Main Screen Design

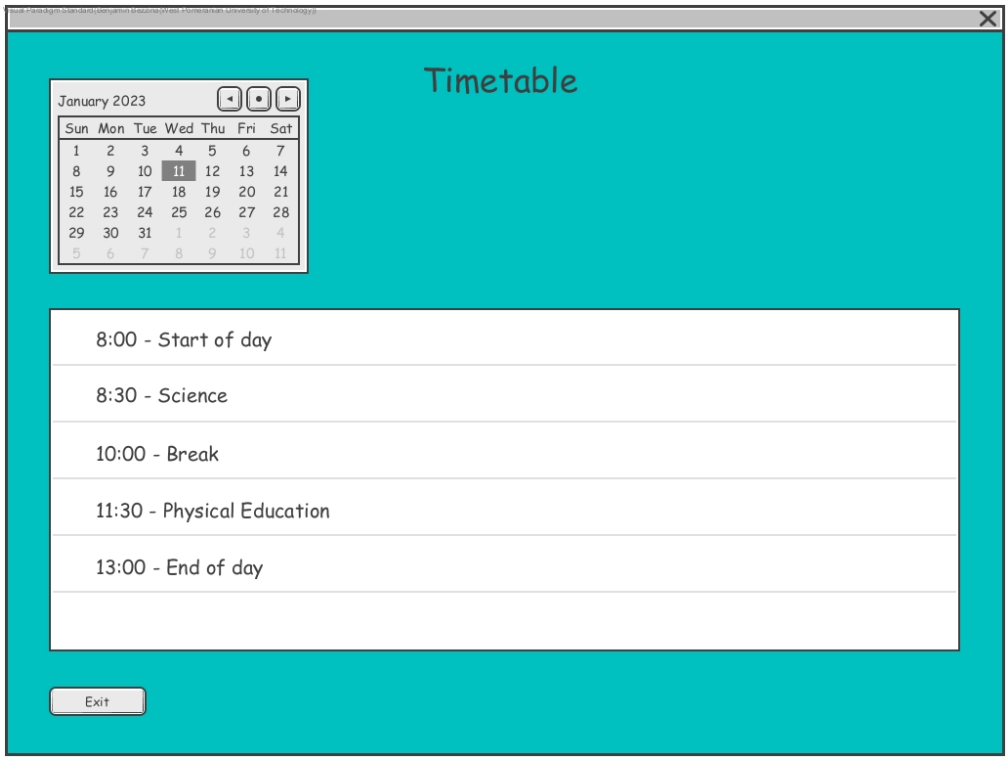

Figure 10 - Timetable Screen Design

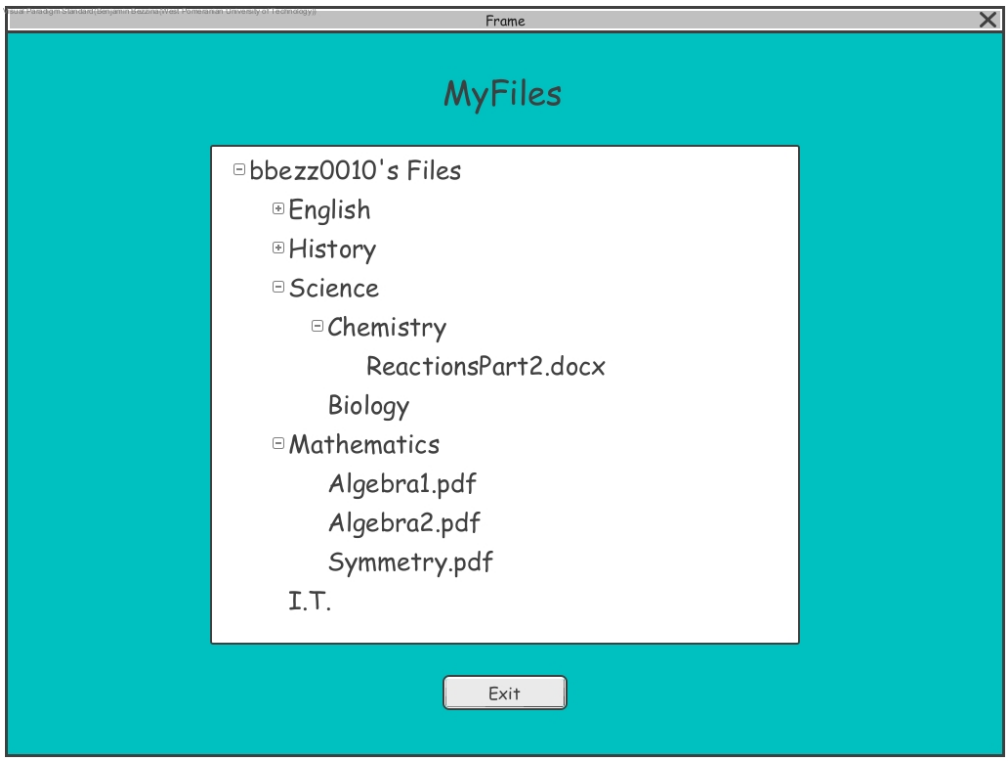

Figure 11 – MyFiles System Design

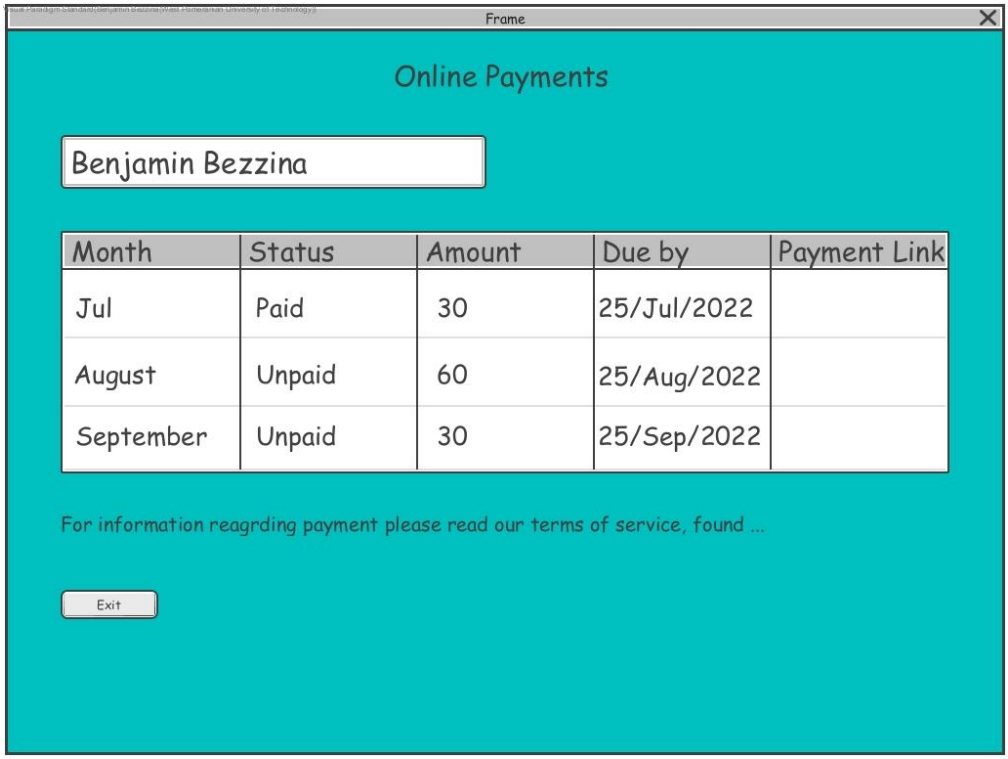

Figure 12 – Online Payment Screen

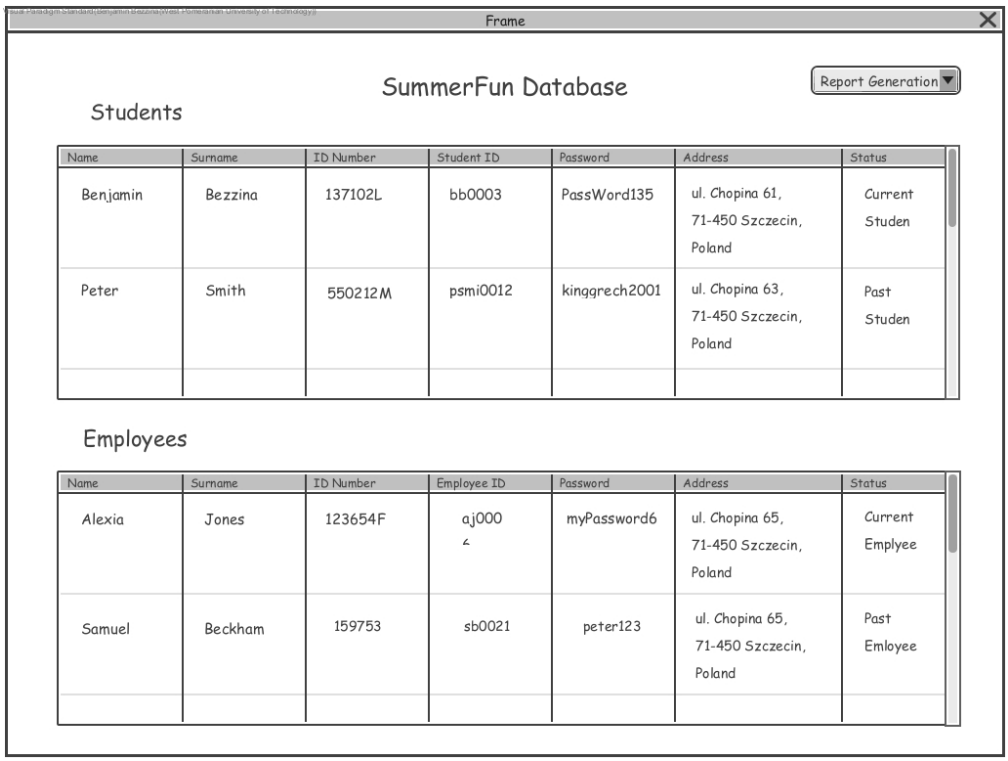

Figure 13 – Screen for Centre Coordinator to access databases

6.3.3 Flow between elements

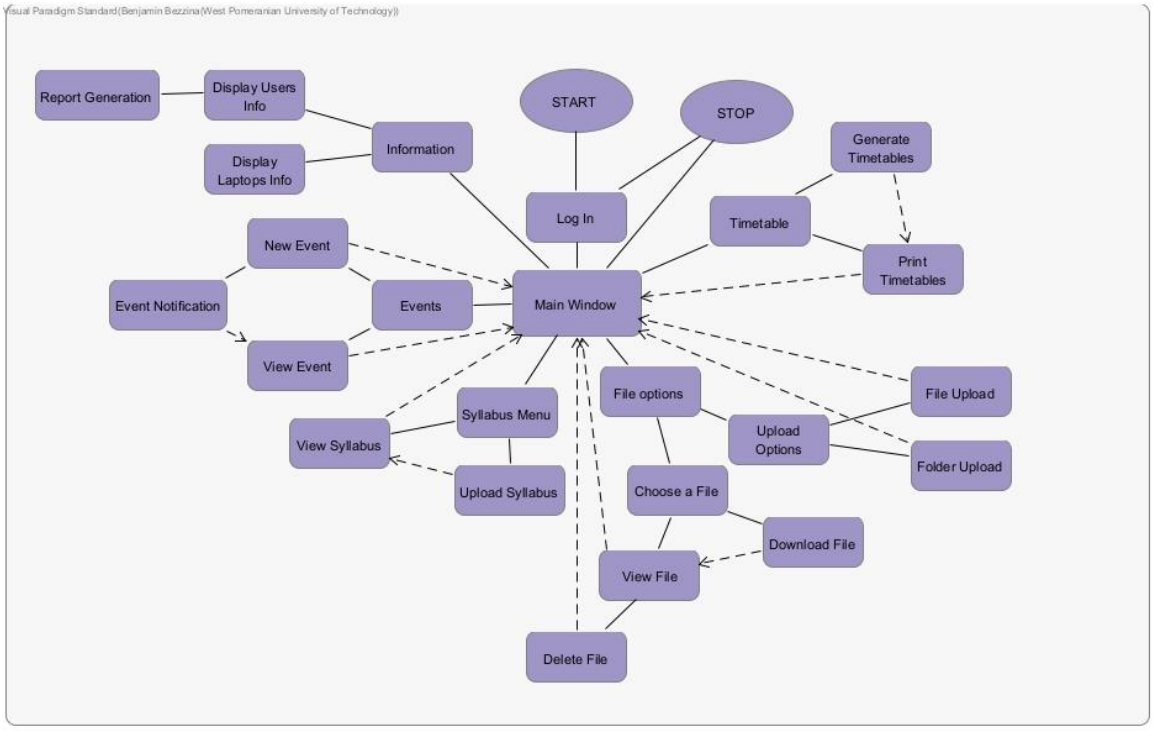

Figure 14 – Flow Diagram