



COMPUTER SCIENCE

CCS1410 : System Analysis and Design

Spring 2021-2022

Initial Analysis of a Company System

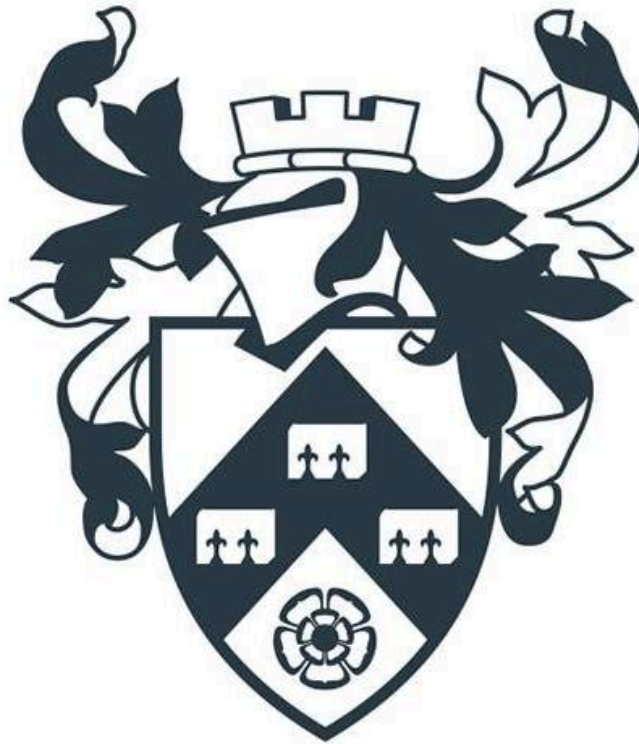
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Student Registration Number
CSY21052
CSY21057
CSY21062

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Coursework 2: Case Studies Analysis



Abstract

This report will describe the functionality and structure of a new application which will be used to manage student information. It will showcase the ways this application will be implemented, as requested by the client.

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1 Introduction

This report will provide an insight into the performance and usability of a new application created to keep track of student information for our client. As this application is focused on the maintenance of information for first-year students, we will dive into the different ways that the different system features will be utilized by specific users, which are part of the university.

This report will then continue to give an overview of the key concepts which are part of the system and how they will interact with each other in the context of student management. The visual representation provided further on will serve as an opportunity to understand the functionality of this application as a whole.

2 Brief Description

The course administrator and staff members have to manage or modify information about the students inside the application. The types of information that they put are different and will be briefly covered in this part. The course administrator will have the access to modify the absences of students after the absences have been written in the program. After absences, they can also modify the grades of each student in the course.

Except for modifying accessibility, the course administrator can add a student in the application and then continue to modify the information about the new student. Staff members can add information inside the application, but they do not have the access to modify any sort of information that is already inserted there. A report of absences can be generated after the lecturers get the absences that they add anytime a student misses a lecture. The staff members should also set the grades of each student in their course inside the application.

3 User requirements

User requirements are necessary for the application to function properly and show us how the system will be utilized when accessed by different users. To begin with, the students will only be able to see what their grades are, and obviously they will not be able to change them. Staff members, as lectures of the students, will be able to see the grades as well as set them. They

will be able to get the absences of the students and then report them back to the students if they wish to do so Fig.1.



Figure 1: Actors

To set the grades, the staff member will need to log into the system, and then the system will verify if the log in information is correct. The staff members will then set the grades and the system will verify if the grades are valid (not over 100 and not less then 0). The grades will then be recorded. Some exceptions exist. In case that the log in information is not correct, then the user will not be able to log into the system. In the instance that the grades entered are not valid, the system will request again for the correct data to be entered Fig.2.

Use case: Set Grades	
Actor: Staff member	
Main success scenario	
Staff member	System
1. Log in	
	2. Verifies if the users' username and password are correct
3. Set grades	
	4. Verifies that grades added are valid
	5. Record grades
Extensions	
	2a. Username and password are incorrect
	end of use case
	4a. Grades are not valid
	Request again for the data
Re-enter the valid data	

Figure 2: Set Grades use case

To report absences, the log in requirement also takes place. The system verifies that the log in information of the staff member is valid, and if it's not the exception mentioned earlier takes place again. Afterwards the staff members will request the absence record which will then be automatically generated by the system, based on previous absences that the staff members got in class. After this report is generated, then the system will notify the staff member if the student has passed the absence limit. In the case that no one passed the absence limit, the system will not do anything Fig.3.

Use case: Report Absences	
Actor: Staff member	
Main success scenario	
Staff Member	System
1. Log in	
	2. Verifies if the users' username and password are correct
3. Request absence report	
	4. Generate absences report
	5. Notify staff member if the student has passed absences limit
Extensions	
	2a. Username and password are incorrect
	end of use case
	5a.No one passed the limit
	end of use case

Figure 3: Report Absences use case

The course administrator, head of department, and director of program have full access to the application unlike the staff members who are limited to what we described earlier. The full access includes the ability to modify absences, grades and student information.

To add a student, the course administrator for example, will first need to log in and the system will verify that this log in information is valid for the full access. The course administrator will then be able to add the student and the system will check if that specific student has already been added before. The changed will then be recorded. In the case that the student had already been added before, the system will not record anything new Fig.4.

Use case: Add student	
Actor: Course administrator	
Main success scenario	
Course Administrator	System
1. Log in	
	2. Verifies if the users' username and password are correct
3. Add student	
	4. Checks if student is already added
	5. Record changes
Extensions	
	2a. Username and password are incorrect
	end of use case
	4a. Student has already been added before
	end of use case

Figure 4: Add Student use case

To modify the student information, the same procedure as before applies. After successfully logging in, the course administrator will be able to modify the student information. This information will then be recorded in the system Fig.5.

Use case: Modify student	
Actor: Course administrator	
Main success scenario	
Course Administrator	System
1. Log in	
	2. Verifies if the users' username and password are correct
3. Modify student information	
	5. Record changes
Extensions	
	2a. Username and password are incorrect
	end of use case

Figure 5: Modify Student use case

4 Domain Model

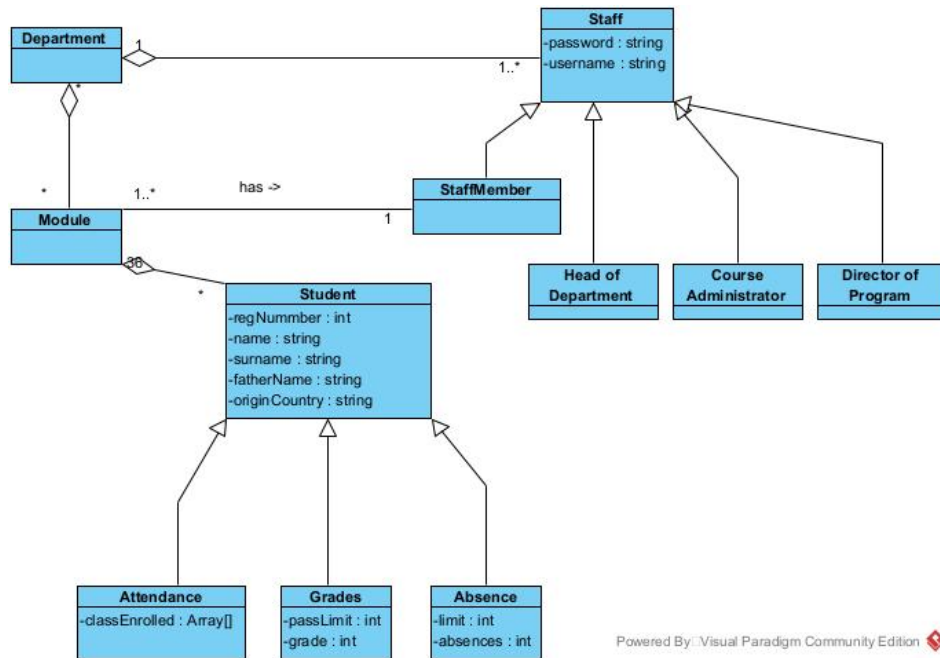


Figure 6: Conceptual Class Diagram

The department of the university has many modules and for each module there will be multiple students in that class and a specific staff member as a lecturer for for that semester. In the span of their three-year studies, each student will need to complete 36 modules in total, because based on the client specifications each module will have 10 credits for a total of 360 credits at the end of the studies. Each student will have specific information about themselves stored in the system, such as registration number, their name and surname, their father's name and their country of origin. Except from that, each student will have the list of the modules they are attending, their grades, and their absences recorded Fig.6.

The department's staff will require a username and password to log into the system to have access to the handling of the student information. Part of the staff are the staff members (lecturers), the head of department, the course administrator, and the director of program. As we can see in the Actor's diagram Fig.1, these different entities will have different access on the type of information they're allowed to change.

5 Conclusion

To conclude, this new application will include all the requirements that have been stated by the client and will allow an easy management of the student information. The system will be able to perform different functions depending on the user which accesses it, in a safe and secure way.

Compared to the previous system the client was using, this application is very user-friendly and will not be confusing to use. Any change that the staff members make will be saved in the system and the students will have a seamless experience whenever they wish to see their grades.