

FACULTY OF COMPUTERS, INFORMATICS AND MICROELECTRONICS

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OBJECT-ORIENTED MODELING AND ANALYSIS

LABORATORY WORK #2

**Use Case Diagrams. Basic and Alternative Flow.
Modeling Languages.**

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Laboratory work #2

1 Tasks

- Model your application using 3 Use Case Diagrams;
- Create the basic and alternate flows of 3 most important use cases.

2 Theory

Use case diagrams are used to describe a set of actions (use cases) that some system (subject) can perform in collaboration with one or more external users of the system (actors).

2.1 Use case diagram elements

- a) Actor - Someone who interacts with use case (system function).
- b) Use Case - System function (process - automated or manual)
- c) Communication Link - a solid link which shows the participation of an actor in a use case

2.2 Use Case Relationship

- a) Include
 - 1) When a use case is using functionality of another use case.
 - 2) An include relationship is depicted with a directed arrow having a dotted line.
 - 3) The stereotype "include" identifies the relationship as an include relationship.
- b) Extends
 - 1) When a use case can be divided in another use cases.
 - 2) Depicted with a directed arrow having a dotted line.
 - 3) The stereotype "extends" identifies as an extend relationship
- c) Generalization
 - 1) A generalization relationship is a parent-child relationship between use cases.
 - 2) The child use case in the generalization relationship can replace the parent use case.
 - 3) Generalization is shown as a directed arrow with a triangle arrowhead.

3 Use Case Diagrams

In Figure 3.1 is represented the Use Case diagram for the actor "student".

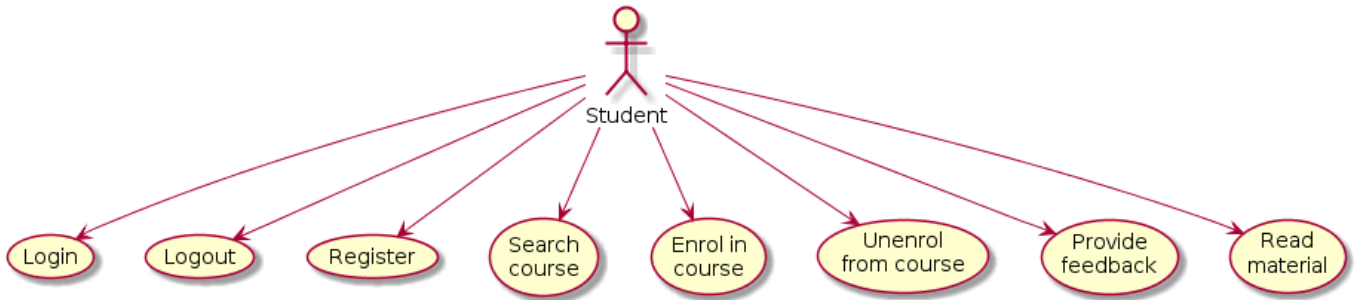


Figure 3.1 – Student Use Case diagram

In order to be able to login the student should have an account. Also, to logout the student should firstly login. Another case is the registration - the student must provide personal information (first / last name, year of study, university, faculty. group etc.). After registration, the user searches a course, the student can input the name of teacher or the title of the lecture.

Enrolment in a course is performed by selecting a course, clicking the [Enrol] button and accepting the confirmation message. The same with the unenrollment procedure. Finally, the student selects a course in which he is already enrolled and can start reading the content. At the bottom of the page the student also can find the "Feedback" form.

In Figure 3.2 is represented the Use Case diagram for the actor "teacher".

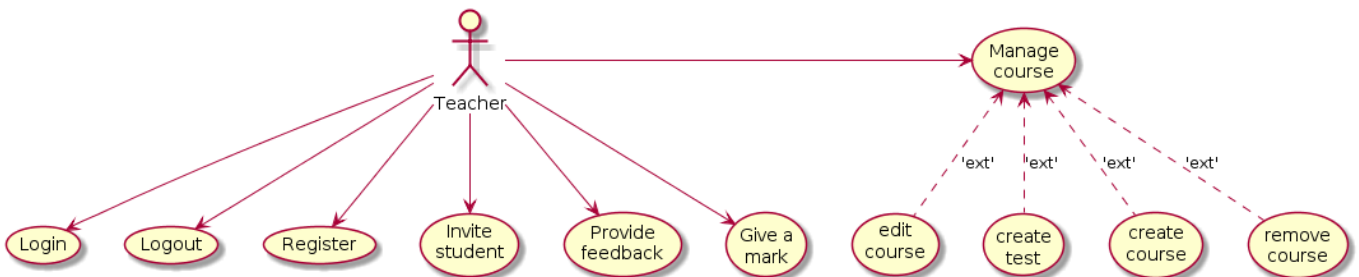


Figure 3.2 – Teacher Use Case diagram

The teacher has access like the student user, but with additional privileges. He invite a student to one of his own courses. The teacher is responsible for giving marks or evaluating the student at the end of course.

Also, the teacher is in control of the content of the course - we can say that he can perform "CRUD" operations on his own courses.

In Figure 3.3 is represented the Use Case diagram for the actor "administrator".

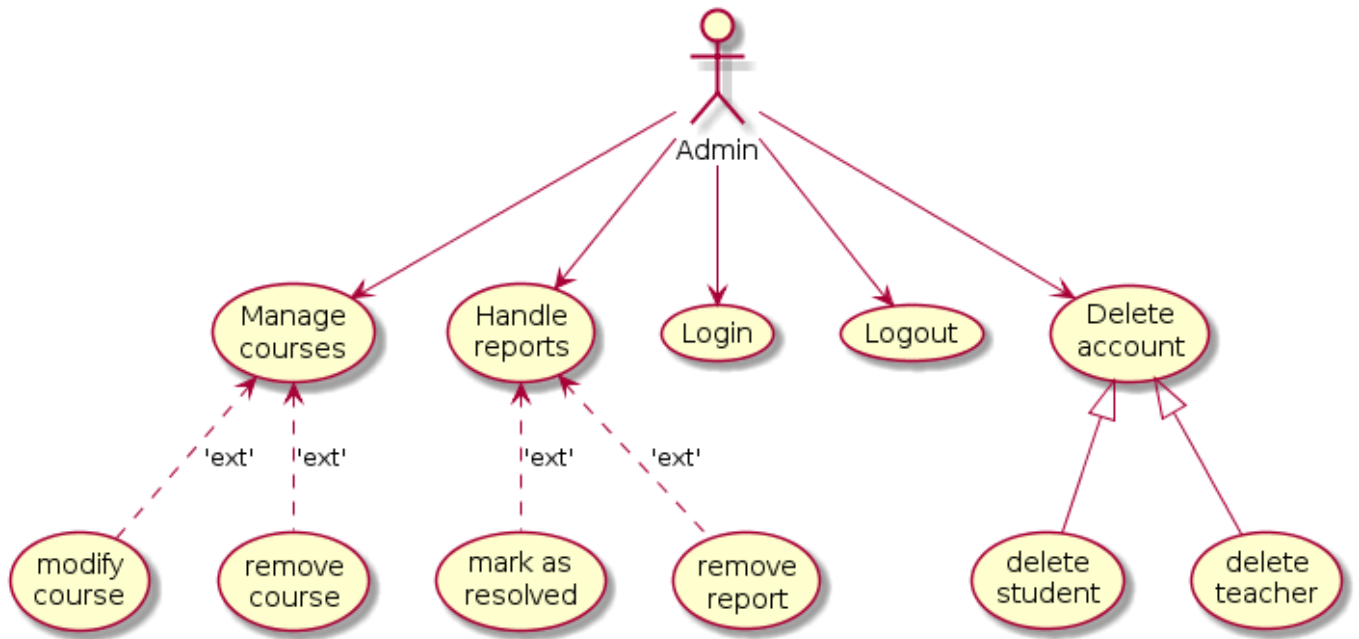


Figure 3.3– Admin Use Case diagram

The administrator can do almost everything he wants. He can manage courses from any teacher, can remove any accounts. Also he is responsible for handling reports.

4 Flow of Events

– Student Use Case diagram - Enrol in course

Success scenario:

- 1. The student navigates to "Courses" page
- 2. The student selects from the list a course
- 3. The student clicks the [Enrol] button.
- 4. The system outputs success message.

Alternate flow:

- 1.a The student enrolled to the course by a teacher, other steps are not performed.
- 2.a The student inputs name of course in the search box

– Teacher Use Case diagram - Create course

Success scenario:

- 1. The teacher navigates to "Courses" page
- 2. The teacher clicks the [New] button.
- 3. The teacher writes the title, date, content.

- 4. The teacher clicks the [Save] button.
- 5. The system outputs success message.

Alternate flow:

- 3.a The teacher writes the title, date and imports the pdf file with the content.

– **Admin Use Case diagram - Login**

Success scenario:

- 1. The admin navigates to "Login" page
- 2. The admin inputs correct username and correct password.
- 3. The admin clicks the [Login] button.
- 4. The system outputs success message.

Alternate flow:

- 2.a The admin inputs wrong username or wrong password, fails to login but attempts one more time with correct username and correct password.
- 3.a The admin presses the [Enter] key on the keyboard.