

FACULTY OF COMPUTERS, INFORMATICS AND MICROELECTRONICS

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OBJECT-ORIENTED MODELING AND ANALYSIS

LABORATORY WORK #2

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

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Chișinău 2018

## **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

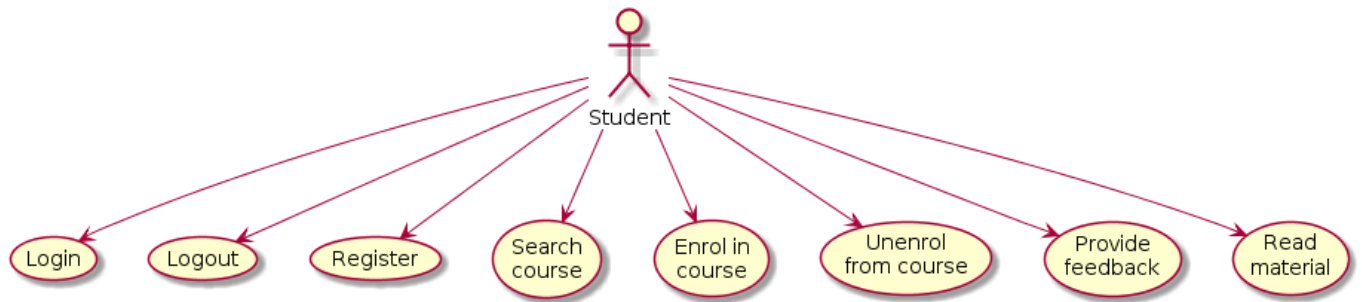


Figure 3.1 – Student Use Case diagram

Login - to be able to login the student should have an account.

Logout - to be able to logout, the student should be logged in.

Register - the student must provide personal information (first / last name, year of study, university, faculty. group etc.).

Search course - to search a course, the student can input the name of teacher or the title of the course.

Enrol in course - the student selects a course, clicks the [Enrol] button and is prompted with a confirmation message.

Unenroll from course - the student selects the course clicks the [Unenrol] button and is asked to confirm the operation.

Provide feedback - at the bottom of the page is the "Feedback" form with a single field.

Read material - the student selects a course in which he is already enrolled and can start to read the content.

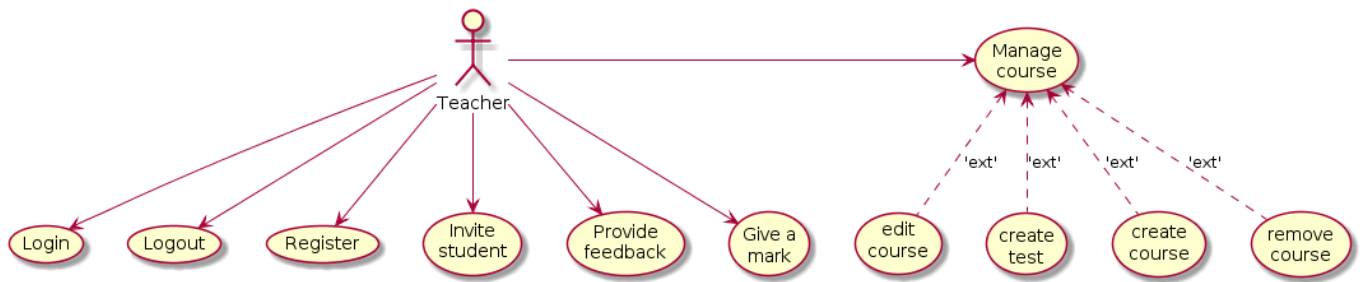


Figure 3.2– Teacher Use Case diagram

Invite student - the teacher can find a student, invite him to a course which was created by that teacher.

Give a mark - the teacher can give a mark to a student enrolled in one of his courses.

Manage course:

Edit course - to edit a course it should be created in advance

Create test - at the end of the course, the teacher can append a test.

Create course - the teacher must provide a title, date and content (text, images, graphs).

Remove course - if the course ended, the teacher can delete it.

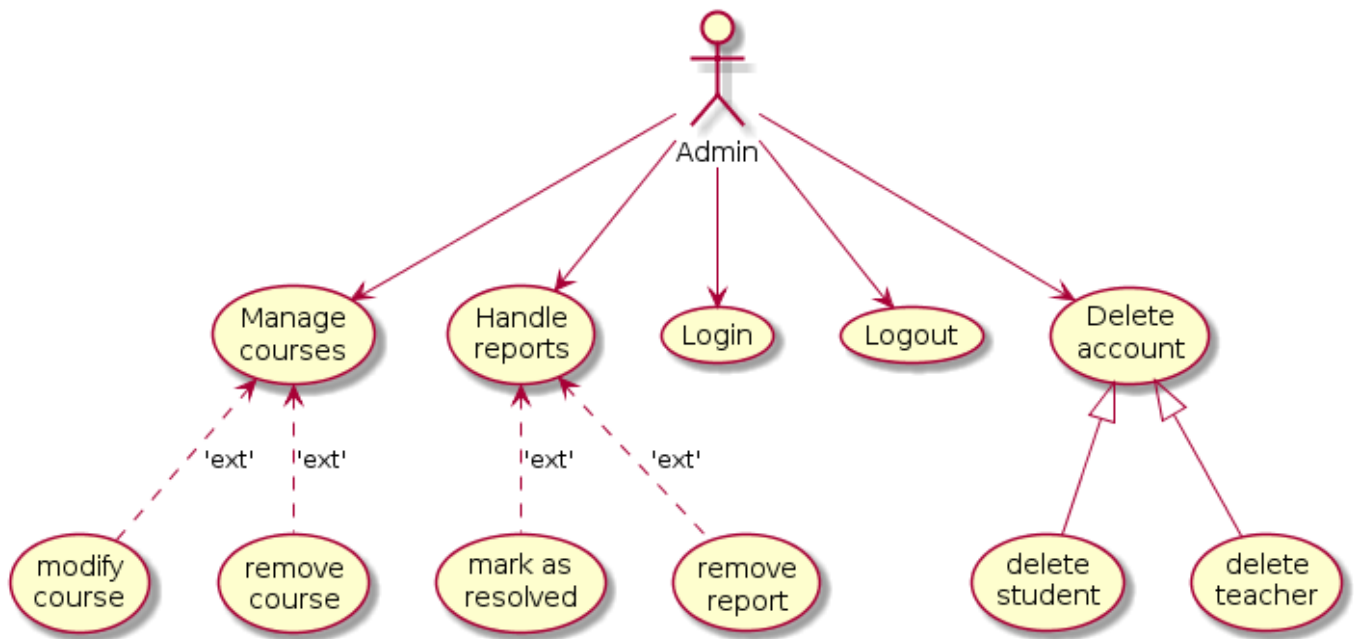


Figure 3.3– Admin Use Case diagram

Handle reports:

Mark as resolved - if the feedback of a course has an alert, then it is marked as a report.

When the problem is eliminated, the report is resolved.

Remove report - if an report is fake or resolved, it can be removed.

Delete account:

Delete student - if a person is no longer a student, his account can be removed.

Delete

teacher - if a person is no longer a teacher, his account can be removed.

## 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.