Assignment 2

SOFE 3650: Software Design and Architecture

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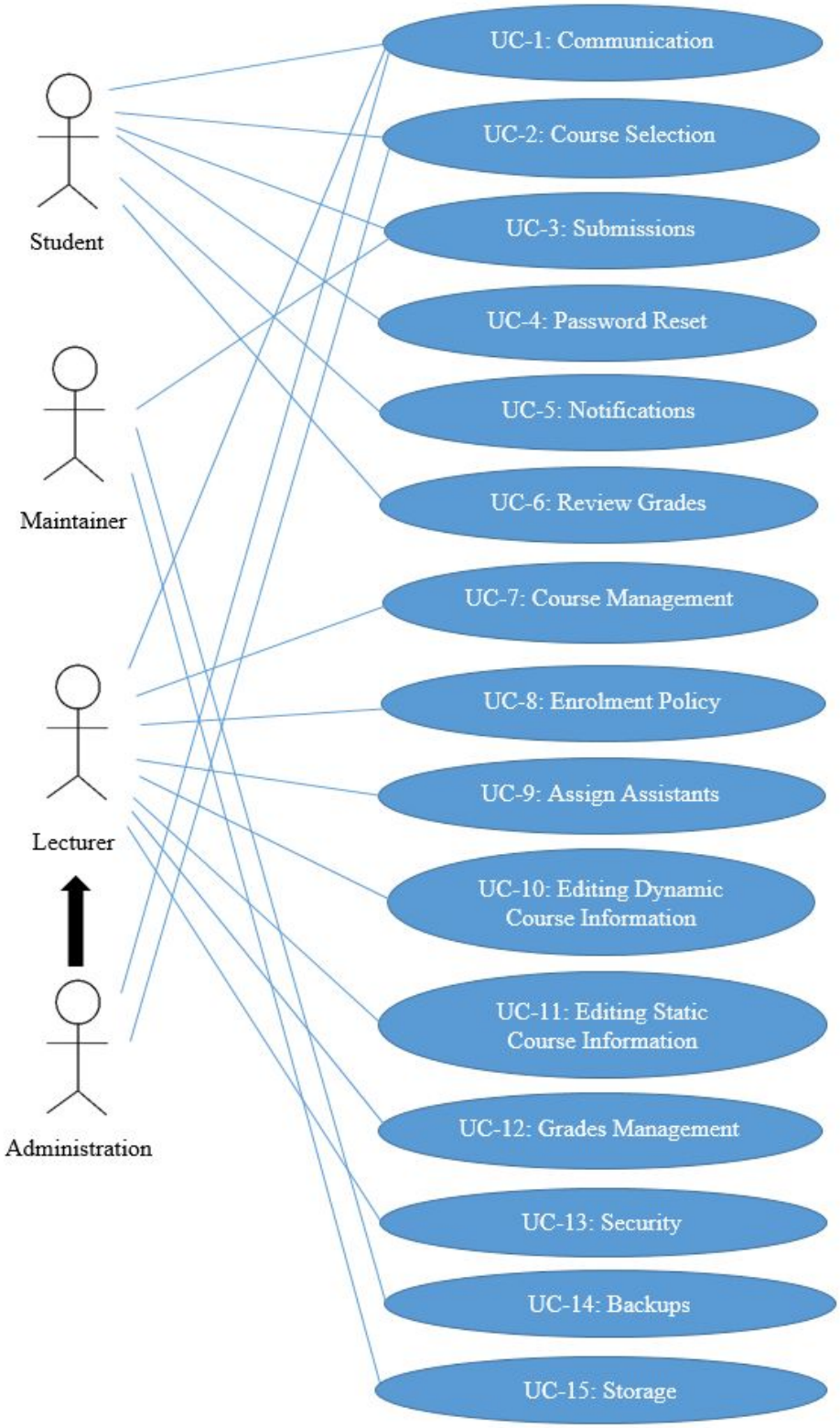
1.

Use Case Model:



Each of the Use Cases are described in the following table:

Use Case	Description	Goal
UC-1: Communication	Students can retrieve contact information of other students, teachers, and send them messages. Lecturer sends mass email to all students in a course.	Allow communication between students and teachers in a course.
UC-2: Course Selection	Students can subscribe or unsubscribe to courses and/or decide to take exams.	The student can add or drop course, also partake in exams or defer.
UC-3: Submissions	Students can submit data to a course drop box where the Lecturer(s) can view submissions. Size of uploads are limited to keep performance stable.	Allow the student to submit assignments or activities.
UC-4: Password Reset	Students are able to reset their login password via their email if they forget it.	Students can always reset their account password.
UC-5: Notification	Students are able to receive notifications when events are created or modified.	Inform students of lecturer uploaded events.
UC-6: Review Grades	Students can see their course grades for the semester.	Students can access their semester grades and gpa.
UC-7: Course Management	A lecturer wants to create a new course or recreate a course from a previous semester. Lecturer can set max capacity of a course.	The lecturer can freely create a new course or recreate a course from previous period with their own conditions.

UC-8: Course Enrolment Policy	Lecturer can choose which enrolment policy to apply to course. Lecturer can apply specific prerequisite courses required for other courses.	Lecturer to assign enrolment policy for courses.
UC-9: Assign Assistants	Lectures want to add assistants to a course.	The system would allow lecturers to add teaching assistants to course(s) for extra help.
UC-10: Editing Dynamic Course Information	Lecture schedule needs to be created. Weights of grades need to be adjusted. Edit dynamic information. Size of uploads are limited to keep performance stable.	To layout a course lecture schedule. Grading policy for the course can be edited. Dynamic course information can be edited.
UC-11: Editing Static Course Information	Lecture related course material must be uploaded. Edit static information. Size of uploads are limited to keep performance stable.	To upload course related material.
UC-12: Grades Management	Lecturers can insert, update, and calculate final grades. They can provide grade statistics.	Manage student grades.
UC-13: Security	Lecturer can only edit courses which were created by them.	Lecturers cannot edit courses for which they do not teach.
UC-14: System Backups	Maintainers can take backups of system and restore system from backups.	Incase of system failure backups exist where system can be restored.
UC-15: System Storage	Maintainers can limit file upload sizes and can also limit total available course space on system.	Keep one course from occupying too much space on system.

Quality Attribute Scenarios:

ID	Quality Attribute	Scenario	Associated Use Case
QA-1	Performance	Upload file size limited so servers are not overloaded, reducing the possibility of system crash.	UC-15, UC-10, UC-11, UC-3
QA-2	Modifiability	A lecturer can create a new course without affecting the rest of the system.	UC-7
QA-3	Security	It is possible to know which user uploaded what content to the system and make sure that users can only access their own courses.	All
QA-4	Availability	If the system crashes, it can be restored from a earlier backup.	UC-14
QA-5	Usability	A user displays their grades over the course of a semester for a particular course.	UC-6
QA-6	Performance, usability	A lecturer can upload quizzes for in class completion within 5 seconds.	UC-10
QA-7	User availability	A user can access any content within 3 clicks.	All
QA-8	Extensibility	The system shall be easily extensible and evolvable to incorporate more features as courses evolve.	All

Constraints:

ID	Constraint
CON-1	Students cannot view other students personal information or grades.
CON-2	The system can only have a max of 4 hours/month downtime during low-intensity hours.
CON-3	The system must be accessible to disabled users who should be able to access full system content.
CON-4	The system shall be interoperable with secondary university systems.
CON-5	The system shall be scalable as more data will be uploaded each year.