

Smart course Management System in cloud

Software Design Document

By

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Chapter One | Introduction

1.1 Purpose

The software design document (SDD) is written for describing the high level of software design, system architecture, database system and graphic user interfaces. It also consists of the users' requirements. This document is an important thing for facilitating the developer team members to understand the direction for developing Smart course management system in the cloud.

1.2 Software Scope

This document describes the implementation details of Smart course management system in the cloud. The system consists of five features. First feature is '*User registration*' which covers the registration of Lecturer and Student. Second feature is '*Log in/Log out system*' and covers the log in/log out of Lecturer account, Student account, and Administrator account. Third feature is '*Course management*'. It covers management of courses by Administrator, and access to those courses by Lecturer and Student. Fourth feature is '*Assignment and quiz management*' that covers assigning, editing, deleting assignments or quizzes by Lecturer. Fifth feature is '*Taking assignments and quizzes*'. It covers taking assignments and quizzes by Student. This document explains how all features in the application are implemented using class diagrams and sequence diagrams for clarifying and providing the overall picture of the system.

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1.3 Technology Review

Commented [rp1]: Anything else to add here? What about C#.Net for creating web services?

1.3.1 JavaScript

Technology description

JavaScript is a programming language known as the “script”. Translation operates on each command. It is commonly used as part of web browsers, which allow client-side scripts to interact with the user, control the browser, and change the content displayed on the We can add the JavaScript programming web pages to process data of both the display and receiving - transmitting. And that can interact with users immediately. JavaScript is also used in server-side programming and building games as well as desktop and mobile applications.

The selection of this technology

- We use JavaScript for calculating data, displaying, sending – receiving data for interacting with the user.
- JavaScript is easy to learn.

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1.3.2 HTML5

Technology description

HTML5 is a language that was developed for use as a markup language. Website for writing the latest version is being developed by WHATWG (The Web Hypertext Application Technology Working Group). Several features have been added to allow developers to use more easily.

Alternative technology

- HTML4

The selection of this technology

- HTML5 can access sites easier than older version.
- HTML5 supports multimedia content.
- HTML5 is standardized for creating the user interface of website.

1.3.3 JavaScript Object Notation (JSON)

Technology description

JSON (JavaScript Object Notation) is a data interchange - format. It is based on a JavaScript programming language. JSON is a text format that is completely language independent. JSON uses sending and receiving data to and from different platforms.

Alternative technology

- XML

The selection of this technology

- JSON can send and receive data between different platforms.
- JSON is based on JavaScript, which the developers are familiar with.

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Chapter Two | System Architecture

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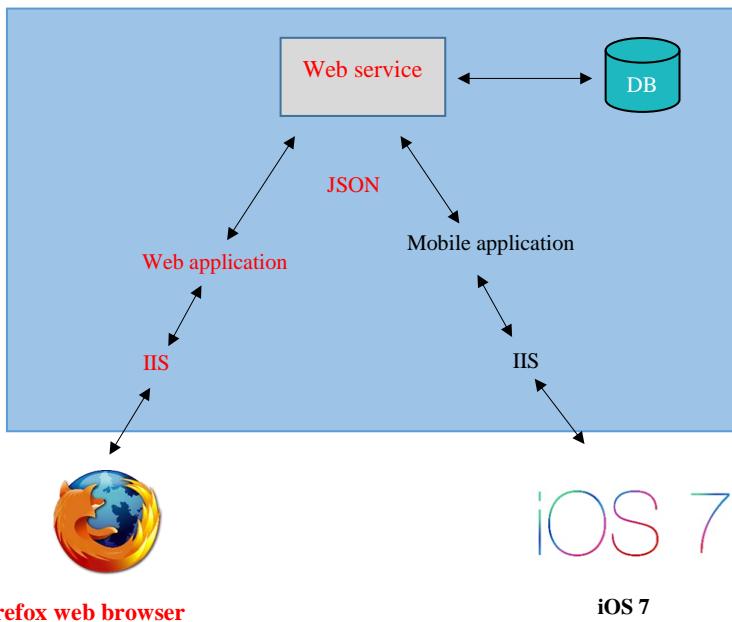


Figure 8 Smart course management system in the cloud Architecture.

The architecture of Smart course Management system in the cloud is shown in Figure 8. It consists of the web application, which the user can access via a Firefox browser. It also consists of the mobile application that is available on IOS7. The system uses JSON for interchanging data between the web services and the web application. Moreover, the system uses JSON for interchanging data between the web services and the mobile application. The web services have been implemented in C#.Net and MS SQL database. In this progress, the system functionalities are tested for Firefox web browser only.

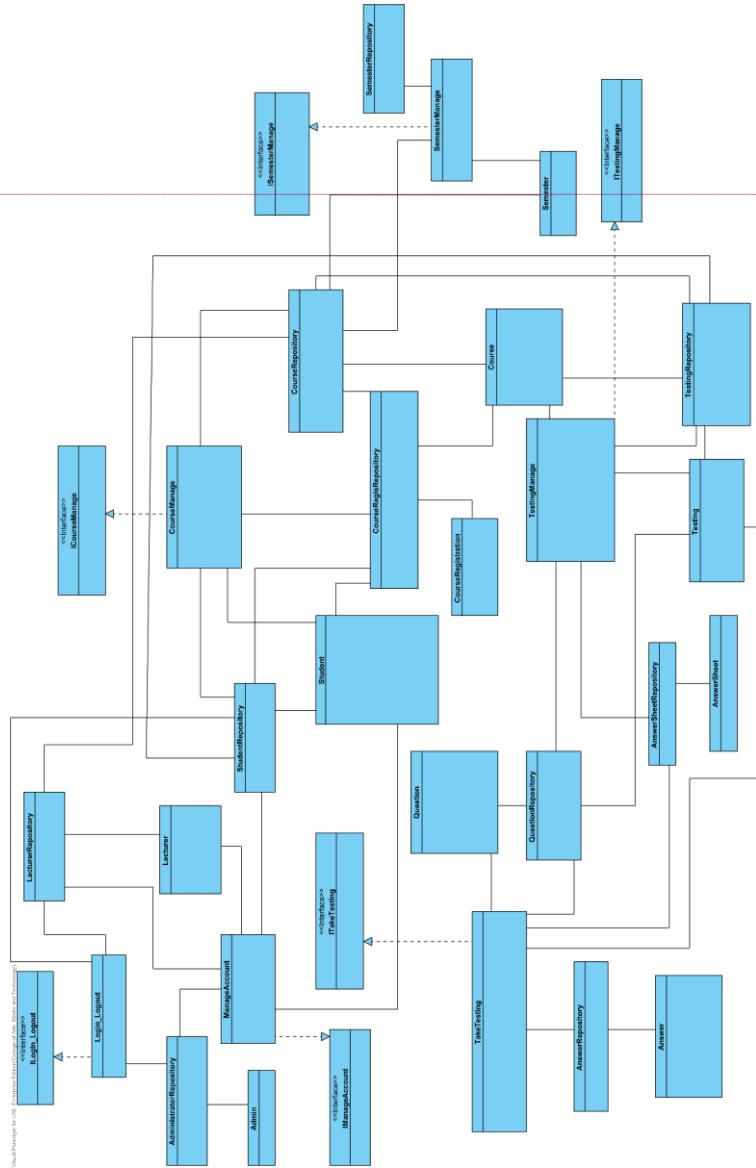
Commented [rp3]: Can you add the entire architecture of the system (what you had in the proposal) and highlight the parts implemented in this progress? It might be helpful for readers to see the entire picture of the system rather than the Progress 1 only.

Commented [rp4]: "The web services have been implemented in C#.Net and MS SQL database. In this progress, the system functionalities are tested for Firefox web browser only." Please add this at the end.

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Chapter Three | Detail Design

3.1 Class Diagram Description



Commented [rp5]: Well.. can you change this diagram somehow so that it is readable? If you cannot have all the details in each class, maybe drop some information.

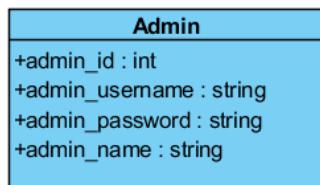
Figure 2 Smart course management system in the cloud Class diagram.

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Method Design

3.1.1 Class-01. Admin

Class Admin is Model-1 (MD-1)



Description

This class is a model of for administrator which consists administrator information and username/password.

Attribute

No.	Name	Description	Type
1.1	admin_id	Unique Identifier of Administrator	int
1.2	admin_username	Username of Administrator	string
1.3	admin_password	Password of Administrator	string
1.4	admin_name	Name of Administrator	string

Commented [rp6]: Method Design? This section describes each class. And your model classes do not seem to have any method. So.. Method Design does not seem to be a proper title for this section.

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3.1.2 Class-02, Lecturer

Class Lecturer is Model-2 (MD-2)

Lecturer	
+lecturer_id : int	
+lecturer_username : string	
+lecturer_password : string	
+lecturer_name : string	
+lecturer_faculty : string	
+lecturer_department : string	
+lecturer_email : string	
+lecturer_tel : string	
+lecturer_approvement : int	

Description

This class is a model class for the lecturer which consists lecturer information and username/password.

Attribute

No.	Name	Description	Type
2.1	lecturer_id	Unique Identifier of Lecturer	int
2.2	lecturer_username	Username of Lecturer	string
2.3	lecturer_password	Password of Lecturer	string
2.4	lecturer_name	Name of Lecturer	string
2.5	lecturer_faculty	Faculty of Lecturer	string
2.6	lecturer_department	Department of Lecturer	string
2.7	lecturer_address	Address of Lecturer	string
2.8	lecturer_email	Email of Lecturer	string
2.9	lecturer_tel	Tel of Lecturer	string
2.10	lecturer_approvement	Approval status of Lecturer (1 is approve, 0 is not approve)	int

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3.1.3 Class-03. Student

Class Student is Model-3 (MD-3)

Student	
+student_id : int	
+student_username : string	
+student_password : string	
+student_name : string	
+student_faculty : string	
+student_department : string	
+student_address : string	
+student_email : string	
+student_tel : string	
+student_approval : int	

Description

This class is a model class for the student which consists student information and username/password.

Attribute

No.	Name	Description	Type
3.1	student_id	Unique Identifier of Student	int
3.2	student_username	Username of Student	string
3.3	student_password	Password of Student	string
3.4	student_name	Name of Student	string
3.5	student_faculty	Faculty of Student	string
3.6	student_department	Department of Student	string
3.7	student_address	Address of Student	string
3.8	student_email	Email of Student	string
3.9	student_tel	Tel of Student	string
3.10	student_approval	Approval status of Student (1 is approve, 0 is not approve)	int

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3.1.4 Class-04. Course

Class Course is Model-4 (MD-4)

Course	
+course_id : int	
+lecturer_id : Lecturer	
+semester_id : Semester	
+course_name : string	
+course_credit : int	
+course_description : string	

Description

This class is a model class for the course which consists course information.

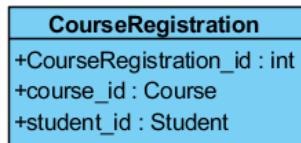
Attribute

No.	Name	Description	Type
4.1	course_id	Unique Identifier of Course	int
4.2	lecturer_id	Object for identifying Lecturer	Lecturer
4.3	semester_id	Object for identifying Semester	Semester
4.4	course_name	Name of Course	string
4.5	course_credit	Credit of Course	int
4.6	course_description	Description of Course	string

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3.1.5 Class-05. CourseRegistration

Class CourseRegistration is Model-5 (MD-5)



Description

This class is a model class for registration of student in each course which consists student id and course id for identifying registration.

Attribute

No.	Name	Description	Type
5.1	CourseRegistration_id	Unique Identifier of Registration of Student into Course	int
5.2	course_id	Object for identifying Course	Course
5.3	student_id	Object for identifying Student	Student

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3.1.6 Class-06. Semester

Class Semester is Model-6 (MD-6)

Semester
+semester_id : int
+academic_year : string

Description

This class is a model class for semester model which consists academic year information.

Attribute

No.	Name	Description	Type
6.1	semester_id	Unique Identifier of Semester	int
6.2	academic_year	Value of semester	string

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3.1.7 Class-07. Testing

Class Testing is Model-7 (MD-7)

Testing	
+testing_id : int	
+course_id : Course	
+testing_name : string	
+testing_type : string	
+testing_amountQuestion : int	
+testing_score : double	
+tesing_random : int	
+testing_posting : int	
+student_id : List<Student>	
+testing_submitTime : Nullable<DateTime>	

Description

This class is a model class for testing model which consists testing information and list of student that can access to the testing.

Attribute

No.	Name	Description	Type
7.1	testing_id	Unique Identifier of Testing	int
7.2	course_id	Object for identifying Course	Course
7.3	testing_name	Name of Testing	string
7.4	testing_type	Type of Testing (1 is an assignment, 2 is a quiz)	string
7.5	testing_amountQuestion	Amount of question in testing	int
7.6	testing_score	Score of Testing	double
7.7	tesing_random	Random status of testing (1 is random, 2 is not random)	int
7.8	testing_posting	Post status of testing (1 is post, 0 is not post)	int
7.9	student_id	List of Student objects in testing. It use for identifying accession to testing of a student.	List<Student>
7.10	testing_submitTime	Deal line of time to submission	Nullable<Date Time>

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3.1.8 Class-08. Question

Class Question is Model-8 (MD-8)

Question
+question_id : int
+testing_id : Testing
+question_type : string
+question_description : string
+question_choice : string
+question_solution : string
+question_point : double

Description

This class is a model class for question model which consists question information and testing id for identifying where question in testing.

Attribute

No.	Name	Description	Type
8.1	question_id	Unique Identifier of Question	int
8.2	testing_id	Object for identifying Testing	Testing
8.3	question_type	Type of question (1 is a multiple choices question, 2 is a true/false question, 3 is a short answer question)	string
8.4	question_description	Description of question	string
8.5	question_choice	Description of choice in question - Format of data 1. Multiple choice Ex. choice1#\$choice2#\$choice3#\$choice4 2. True/False Ex. True#\$False 3. Short answer Ex. null	string
8.6	question_solution	Solution of question - Format data 1. Multiple choice Ex. index of choice (1 or 2 or 3 or 4) 2. True/False Ex. index of choice (1 or 2) 3. Short answer Ex. null	string
8.7	question_point	Score of question	double

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3.1.9 Class-09. AnswerSheet

Class AnswerSheet is Model-9 (MD-9)

AnswerSheet	
+answerSheet_id : int	
+testing_id : Testing	
+student_id : Student	
+answerSheet_score : Nullable<double>	
+answerSheet_time : DateTime	
+answerSheet_submitResult : Nullable<int>	

Description

This class is a model class for answer sheet model which consists answer sheet information, student id for identifying who is student that take testing, and testing id for identifying testing in an answer sheet.

Attribute

No.	Name	Description	Type
9.1	answerSheet_id	Unique Identifier of Answer sheet	int
9.2	testing_id	Object for identifying Testing	Testing
9.3	student_id	Object for identifying Student	Student
9.4	answerSheet_score	Score of answer sheet. Score can null status.	Nullable<double>
9.5	answerSheet_time	Time of answer sheet in submission.	DateTime
9.6	answerSheet_submitResult	Submit result of answer sheet (1 is early deal line of testing's submission time, 0 is late deal line of testing's submission time)	Nullable<int>

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3.1.10 Class-10. Answer

Class Answer is Model-10 (MD-10)

Answer
+answer_id : int
+question_id : Question
+answersheet_id : AnswerSheet
+answer : string
+answer_point : Nullable<double>

Description

This class is a model class for answer model which consists answer information, answer sheet id for identifying answer sheet that keep answers, and question id for identifying a question that student create an answer.

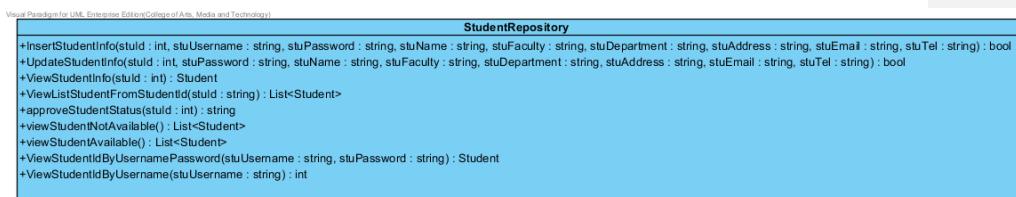
Attribute

No.	Name	Description	Type
10.1	answer_id	Unique Identifier of Answer	int
10.2	question_id	Object for identifying Question	Question
10.3	answersheet_id	Object for identifying Answer sheet	AnswerSheet
10.4	answer	Description of answer	string
10.5	answer_point	Score of correctness of answer	Nullable<double>

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3.1.11 Class-11. StudentRepository

Class StudentRepository is Repository-01 (MD-11)



Method

No.	Name	Description	Parameters	Return
11.1	InsertStudentInfo	This method is used for inserting a student account to the database.	stuId: int, stuUsername: string, stuPassword: string, stuName: string, stuFaculty: string, stuDepartment: string, stuAddress: string, stuEmail: string, stuTel: string	bool
11.2	UpdateStudentInfo	This method is used for updating student information into the database.	stuId: int, stuPassword: string, stuName: string, stuFaculty: string, stuDepartment: string, stuAddress: string, ,string, stuTel: string	bool
11.3	ViewStudentInfo	This method is used for viewing student information from the database.	stuId: int	Student
11.4	ViewListStudentFrom StudentId	This method is used for viewing a list of student information from the database. Input of this method is many student id in the form of string.	stuId: string	List<Student>
11.5	approveStudentStatus	This method is used for updating student approval status in the database.	stuId: int	string

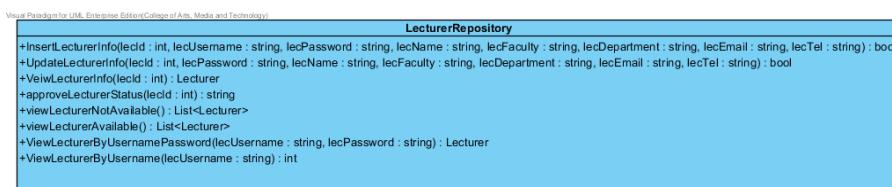
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11.6	viewStudentNotAvailable	This method is used for viewing student accounts that still does not approved.	None	List<Student>
11.7	viewStudentAvailable	This method is used for viewing student accounts that are approved.	None	List<Student>
11.8	ViewStudentByUsernamePassword	This method is used for viewing a Student object.	stuUsername: string, stuPassword: string	Student
11.9	ViewStudentIdByUsername	This method is used for viewing a Student id.	stuUsername: string	int

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3.1.12 Class-12. LecturerRepository

Class LecturerRepository is Repository-02 (MD-12)



Method

No.	Name	Description	Parameters	Return
12.1	InsertLecturerInfo	This method is used for inserting a lecturer account to the database.	lecId: int, lecUsername: string, lecPassword: string, lecName: string, lecFaculty: string, lecDepartment: string, lecEmail: string, lecTel: string	bool
12.2	UpdateLecturerInfo	This method is used for updating lecturer information into the database.	lecId: int, lecPassword: string, lecName: string, lecFaculty: string, lecDepartment: string, lecEmail: string, lecTel: string	bool
12.3	ViewLecturerInfo	This method is used for viewing lecturer information from the database.	lecId: int	Lecturer
12.4	approveLecturerStatus	This method is used for updating lecturer approval status in the database.	lecId: int	string
12.5	viewLecturerNotAvailable	This method is used for viewing lecturer accounts that still does not approved.	None	List<Lecturer>
12.6	viewLecturerAvailable	This method is used for viewing lecturer accounts that are approved.	None	List<Lecturer>

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12.7	ViewLecturerByUsernamePassword	This method is used for viewing a lecturer object.	lecUsername: string, lecPassword: string	Lecturer
12.8	ViewLecturerByUsername	This method is used for viewing a lecturer id.	lecUsername: string	int

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3.1.13 Class-13. AdministratorRepository

Class AdministratorRepository is Repository-03 (MD-13)



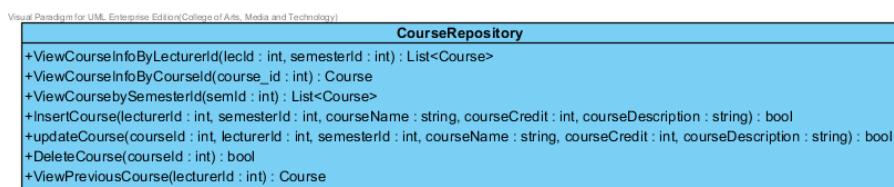
Method

No.	Name	Description	Parameters	Return
13.1	ViewAdminByUsernameP assword	This method is used for viewing an administrator object by using username and password in searching administrator.	adminUsername: string, adminPassword: string	Admin
13.2	ViewAdminByUsername	This method is used for viewing an administrator id by using username in searching administrator id.	adminUsername: string	int

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3.1.14 Class-14. CourseRepository

Class CourseRepository is Repository-04 (MD-14)



Method

No.	Name	Description	Parameters	Return
14.1	ViewCourseInfoByLecture rId	This method is used for viewing a list of courses that Lecturer teaches.	lecId: int, semesterId: int	List<Course>
14.2	ViewCourseInfoByCourseI d	This method is used for view course object by using course id in searching course object.	course_id: int	Course
14.3	viewCoursebySemesterId	The method is used for viewing a list of courses in each semester by using semester id in searching list of course.	semId : int	List<Course>
14.4	InsertCourse	This method is used for inserting course information to the database.	lecturerId: int, semesterId: int, courseName: string, courseCredit: int, courseDescription: string	bool
14.5	updateCourse	This method is used for updating course	courseId: int, lecturerId: int, semesterId: int,	bool

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		information in the database	courseName: string, courseCredit: int, courseDescription: string	
14.6	DeleteCourse	This method is used for deleting course information in the database.	courseId: int	bool
14.7	ViewPreviousCourse	The method is used for viewing a course that was created by a lecturer.	lecturerId: int	Course

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3.1.15 Class-15. CourseRegisRepository

Class CourseRegisRepository is Repository-05 (MD-15)



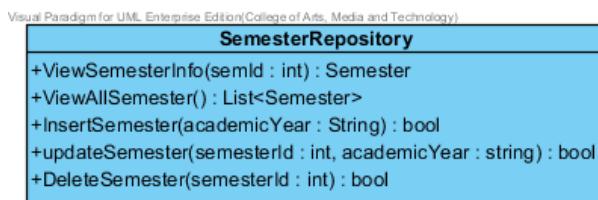
Method

No.	Name	Description	Parameters	Return
15.1	ViewStudentInCourse	This method is used for viewing a list of students that registered in course.	courseId: int	List<CourseRegistration>
15.2	ViewCourseFromStudent	This method is used for viewing a list of courses that student registered.	student_id: int	List<CourseRegistration>
15.3	InsertStudentsInCourse	This method is used for registering list of students in course.	courseId: int, studentIdList: List<int>	bool
15.4	DeleteStudentInCourse	This method is used for deleting a student in course.	courseId: int, studentId: int	bool

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3.1.16 Class-16. SemesterRepository

Class SemesterRepository is Repository-06 (MD-16)



Method

No.	Name	Description	Parameters	Return
16.1	ViewSemesterInfo	This method is used for viewing semester information.	semId: int	Semester
16.2	ViewAllSemester	The method is used for viewing all semester that was created.	None	List<Semester>
16.3	InsertSemester	This method is used for inserting a semester information to the database.	academicYear: String	bool
16.4	updateSemester	This method is used for updating a semester information in the database.	semesterId: int, academicYear: string	bool
16.5	DeleteSemester	This method is used for deleting a semester in the database	semesterId: int	bool

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3.1.17 Class-17. QuestionRepository

Class QuestionRepository is Repository-07 (MD-17)

Visual Paradigm for UML, Enterprise Edition(College of Arts, Media and Technology)

QuestionRepository	
+InsertQuestion(testing_id : int, listQuestion : List<Question>) : bool	
+ViewQuestionbyTestingId(testing : Testing) : List<Question>	
+UpdateQuestioninfo(testing_id : int, listQuestion : List<Question>) : bool	
+ViewQuestionByQuestionId(questionId : int) : Question	
+DeleteQuestion(questionId : int) : bool	

Method

No.	Name	Description	Parameters	Return
17.1	InsertQuestion	This method is used for inserting list of questions to the database.	testing_id: int, listQuestion: List	bool
17.2	ViewQuestionbyTestingId	This method is used for viewing a list of questions in testing.	testing: Testing	List<Question>
17.3	UpdateQuestioninfo	This method is used for updating list of question in the database.	testing_id: int, listQuestion: List	bool
17.4	ViewQuestionByQuestionId	This method is used for viewing question information by using question id in searching.	questionId: int	Question
17.5	DeleteQuestion	This method is used for deleting question information in the database.	questionId : int	bool

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3.1.18 Class-18. TestingRepository

Class TestingRepository is Repository-08 (MD-18)

TestingRepository	
+insertTesting(courseId : int, testing_name : string, testing_type : string, testing_amountQuestion : int, testing_score : double, testing_random : int, testing_posting : int, testing_student : string, submit_date : Nullable<DateTime>) : bool	
+viewPreviousTestingId(courseId : int) : int	
+viewTestingByTestingId(testingId : int) : Testing	
+viewListTestingbyCourseId(courseId : int) : List<Testing>	
+updateTestingInfo(testingId : int, courseId : int, testing_name : string, testing_type : string, testing_amountQuestion : int, testing_score : double, testing_random : int, testing_posting : int, testing_student : string) : bool	
+viewListTestingThatPost() : List<Testing>	
+updateStudentInTesting(testingId : int, testing_student : string) : bool	
+deleteTesting(testingId : int) : bool	

Method

No.	Name	Description	Parameters	Return
18.1	insertTesting	The method is used for inserting testing information to the database.	courseId: int, testing_name: string, testing_type: string, testing_amountQuestion: int, testing_score: double, testing_random: int, testing_posting: int, testing_student: string, submit_date: Nullable<DateTime>	bool
18.2	viewPreviousTestingId	This method is used for viewing a testing that was created in a course.	courseId: int	int
18.3	viewTestingByTestId	This method is used for viewing testing information by using testing id in searching.	testingId: int	Testing
18.4	viewListTestingbyCourseId	This method is used for viewing a list of testing in a course.	courseId: int	List<Testing>

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18.5	updateTestinginfo	This method is used for updating testing information in the database.	testingId : int, courseId : int, testing_name : string, testing_type : string, testing_amountQuestion : int, testing_score : double, testing_random : int, testing_posting : int, testing_student : string	bool
18.6	viewListTestingThat Post	This method is used for viewing a list of testing that are post status.	None	List<Testing>
18.7	updateStudentInTesting	This method is used for updating students in a testing.	testingId : int, testing_student : string	bool
18.8	DeleteTesting	This method is used for deleting testing in the database.	testingId : int	bool

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3.1.19 Class-19. AnswerRepository

Class AnswerRepository is Repository-09 (MD-19)

Visual Paradigm for UML, Enterprise Edition(College of Arts, Media and Technology)

AnswerRepository

```
+insertAnswer(questionId : List<int>, answerSheetId : int, answer : List<string>, answerPoint : List<Nullable<double>>) : bool  
+viewAnswerListByAnswerSheetId(answerSheetId : int) : List<Answer>  
+updateAnswer(answerId : int, answerPoint : doble) : bool
```

Method

No.	Name	Description	Parameters	Return
19.1	insertAnswer	This method is used for inserting a list of answers to the database	questionId : List<int>, answerSheetId : int, answer : List<string>, answerPoint : List<Nullable<double>>	bool
19.2	viewAnswerListByAnswerSheetId	This method is used for viewing a list of answers in an answer sheet.	answerSheetId : int	List<Answer>
19.3	updateAnswer	This method is used for updating point of answer in the database.	answerId : int, point : double	bool

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3.1.20 Class-20. AnswerSheetRepository

Class AnswerSheetRepository is Repository-10 (MD-20)

Visual Paradigm for UML Enterprise Edition(College of Arts, Media and Technology)

AnswerSheetRepository	
+insertAnswerSheet(studentId : int, testingId : int, answerSheetScore : Nullable<double>, submitTime : DateTime, submit_result : Nullable<int>) : bool	
+viewPreviousAnswerSheetId(studentId : int) : int	
+viewListAnswerSheetBytestingId(testingId : int) : List<AnswerSheet>	
+viewAnswerSheetInfo(answerSheetId : int) : AnswerSheet	
+updateAnswerSheetScore(answerSheetId : int, score : double) : bool	

Method

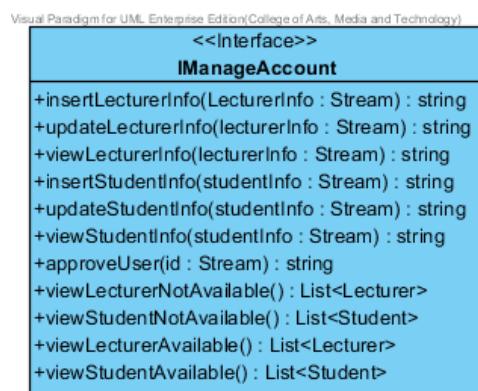
No.	Name	Description	Parameters	Return
20.1	insertAnswerSheet	This method is used for inserting an answer sheet to the database.	studentId : int, testingId : int, answerSheetScore : Nullable<double>, submitTime : DateTime, submit_result : Nullable<int>	bool
20.2	viewPreviousAnswerSheetId	This method is used for viewing answer sheet id that student take a testing in latest.	studentId : int	int
20.3	viewListAnswerSheetBytestingId	This method is used for viewing a list of answer sheets in a testing.	testingId : int	List<AnswerSheet>
20.4	viewAnswerSheetInfo	This method is used for viewing answer sheet information in the database	answerSheetId : int	AnswerSheet

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20.5	updateAnswerSheetS core	This method is used for updating score of answer sheet in the database.	answerSheetId : int, score : double	bool
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3.1.21 Class-21. IManageAccount

Class IManageAccount is Interface class-01 (MD-21)



Method

Commented [rp7]: Add a column for Description.

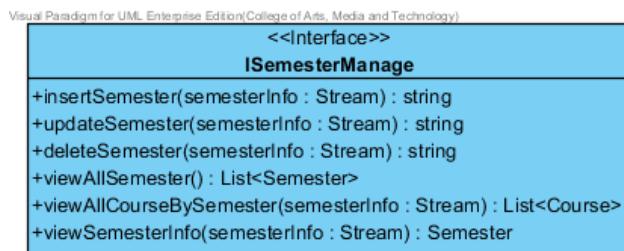
No.	Name	Parameters	Return
21.1	insertLecturerInfo	lecturerInfo: Stream	string
21.2	updateLecturerInfo	lecturerInfo: Stream	string
21.3	viewLecturerInfo	lecturerInfo: Stream	string
21.4	insertStudentInfo	studentInfo: Stream	string
21.5	updateStudentInfo	studentInfo: Stream	string
21.6	viewStudentInfo	studentInfo: Stream	string
21.7	approveUser	id: Stream	string
21.8	viewLecturerNotAvailable	None	List<Lecturer>
21.9	viewStudentNotAvailable	None	List<Student>

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21.10	viewLecturerAvailable	None	List<Lecturer>
21.11	viewStudentAvailable	None	List<Student>

3.1.22 Class-22. ISemesterManage

Class ISemesterManage is Interface class-02 (MD-22)



Method

Commented [rp8]: Add a column for Description.

No.	Name	Parameters	Return
22.1	insertSemester	semesterInfo: Stream	string
22.2	updateSemester	semesterInfo: Stream	string
22.3	deleteSemester	semesterInfo: Stream	string
22.4	viewAllSemester	None	List<Semester>
22.5	viewAllCourseBySemester	semesterInfo: Stream	List<Course>
22.6	viewSemesterInfo	semesterInfo: Stream	Semester

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3.1.23 Class-23. ICourseManage

Class ICourseManage is Interface class-03 (MD-23)

Visual Paradigm for UML, Enterprise Edition(College of Arts, Media and Technology)	
<<Interface>>	
ICourseManage	
+viewAllCourseByLecturerId(lecturerInfo : Stream) : List<Course>	
+viewStudentInCourse(courseInfo : Stream) : List<CourseRegistration>	
+viewAllCourseByStudentId(studentInfo : Stream) : List<CourseRegistration>	
+viewCourseByCourseId(courseInfo : Stream) : Course	
+insertCourse(courseInfo : Stream) : string	
+updateCourse(courseInfo : Stream) : string	
+deleteCourse(courseInfo : Stream) : string	
+viewPreviousCourse(lecturerId : Stream) : Course	
+insertStudentsInCourse(courseInfo : Stream) : string	
+deleteStudentInCourse(courseRegisInfo : Stream) : string	
+viewStudentInCourseForUpdate(courseInfo : Stream) : List<Student>	

Method

Commented [rp9]: Add a column for Description.

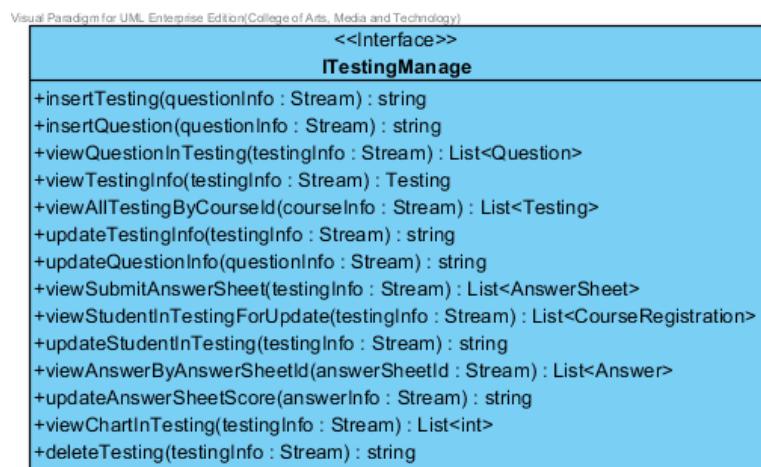
No.	Name	Parameters	Return
23.1	viewAllCourseByLecturerId	lecturerInfo: Stream	List<Course>
23.2	viewStudentInCourse	courseInfo: Stream	List<CourseRegistration>
23.3	viewAllCourseByStudentId	studentInfo: Stream	List<CourseRegistration>
23.4	viewCourseByCourseId	courseInfo: Stream	Course

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23.5	insertCourse	courseInfo: Stream	string
23.6	updateCourse	courseInfo: Stream	string
23.7	deleteCourse	courseInfo: Stream	string
23.8	viewPreviousCourse	lecturerId: Stream	Course
23.9	insertStudentsInCourse	courseInfo: Stream	string
23.10	deleteStudentInCourse	courseRegisInfo: Stream	string
23.11	viewStudentInCourseForUpdate	courseInfo: Stream	List<Student>

3.1.24 Class-24. ITestingManage

Class ITestingManage is Interface class-04 (MD-24)



Method

Commented [rp10]: Add a column for Description.

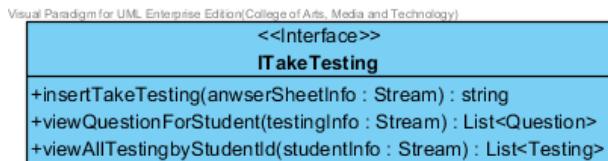
No.	Name	Parameters	Return
24.1	insertTesting	questionInfo: Stream	string

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24.2	insertQuestion	questionInfo: Stream	string
24.3	viewQuestionInTesting	testingInfo : Stream	List<Questiom>
24.4	viewTestingInfo	testingInfo: Stream	Testing
24.5	viewAllTestingByCourseId	courseInfo: Stream	List<Testing>
24.6	updateTestingInfo	testingInfo: Stream	string
24.7	updateQuestionInfo	questionInfo: Stream	string
24.8	viewSubmitAnswerSheet	testingInfo : Stream	List<AnswerSheet>
24.9	viewStudentInTestingForUpdate	testingInfo : Stream	List<CourseRegistration>
24.10	updateStudentInTesting	testingInfo : Stream	String
24.11	viewAnswerByAnswerSheetId	answerSheetId : Stream	List<Answer>
24.12	updateAnswerSheetScore	answerInfor : Stream	string
24.13	viewChartInTesting	testingInfo : Stream	List<int>
24.14	deleteTesting	testingInfo : Stream	string

3.1.25 Class-25. ITakeTesting

Class ITakeTesting is Interface class-05 (MD-25)



Method

Commented [rp11]: Add a column for Description.

No.	Name	Parameters	Return
25.1	insertTakeTesting	anwserSheetinfo: Stream	string
25.2	viewQuestionForStudent	testinginfo: Stream	List<Questiom>
25.3	viewAllTestingbyStudentId	studentInfo : Stream	List<Testing>

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3.1.26 Class-26. ITakeTesting

Class ITakeTesting is Interface class-06 (MD-26)



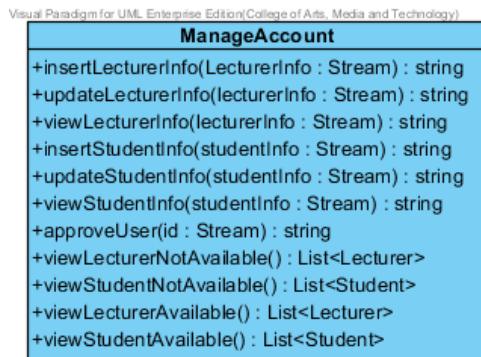
Method

Commented [rp12]: Add a column for Description.

No.	Name	Parameters	Return
26.1	Login	loginInfo : Stream	string

3.1.27 Class-27. ManageAccount

Class ManageAccount is service class-01 (MD-27)



Method

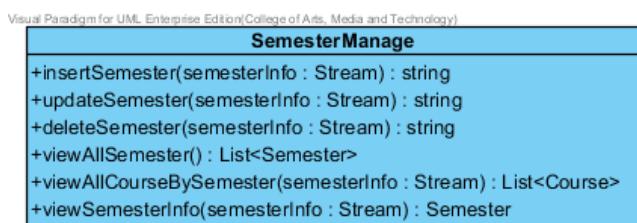
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No.	Name	Description	Parameters	Return
27.1	insertLecturerInfo	This method is used for inserting lecturer information to the system.	lecturerInfo: Stream	string
27.2	updateLecturerInfo	This method is used for updating lecturer information in the system.	lecturerInfo: Stream	string
27.3	viewLecturerInfo	This method is used for viewing lecturer information from the system.	lecturerInfo: Stream	string
27.4	insertStudentInfo	This method is used for inserting student information in the system.	studentInfo: Stream	string
27.5	updateStudentInfo	This method is used for updating student information in the system.	studentInfo: Stream	string
27.6	viewStudentInfo	This method is used for viewing student information from the system.	studentInfo: Stream	string
27.7	approveUser	This method is used for updating lecturer or student approval status.	id: Stream	string
27.8	viewLecturerNotAvailable	This method is used for viewing lecturers that have approval status equal “0”.	None	List<Lecturer>
27.9	viewStudentNotAvailable	This method is used for viewing students that have approval status equal “0”.	None	List<Student>
27.10	viewLecturerAvailable	This method is used for viewing students that have approval status equal “1”.	None	List<Lecturer>
27.11	viewStudentAvailable	This method is used for viewing students that have approval status equal “1”.	None	List<Student>

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3.1.28 Class-28. SemesterManage

Class SemesterManage is service class -02 (MD-28)



Method

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No.	Name	Description	Parameters	Return
28.1	insertSemester	This method is used for inserting semester information to the system.	semesterInfo: Stream	string
28.2	updateSemester	This method is used for updating semester information in the system.	semesterInfo: Stream	string
28.3	deleteSemester	This method is used for deleting semester information from the system.	semesterInfo: Stream	string
28.4	viewAllSemester	This method is used for viewing all of semesters from the system.	None	List<Semester>
28.5	viewAllCourseBySemester	This method is used for viewing all of courses in a semester.	semesterInfo: Stream	List<Course>
28.6	viewSemesterInfo	This method is used for viewing semester information from the system.	semesterInfo: Stream	Semester

3.1.29 Class-29. CourseManage

Class CourseManage is service class -03 (MD-29)

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Method

No.	Name	Description	Parameters	Return
29.1	viewAllCourseByLecturerId	This method is used for viewing a list of courses that are taught by a lecturer.	lecturerInfo: Stream	List<Course>
29.2	viewStudentInCourse	This method is used for viewing a list of students that register in a course.	courseInfo: Stream	List<CourseRegistration>
29.3	viewAllCourseByStudentId	This method is used for viewing a list of courses that are registered by a student.	studentInfo: Stream	List<CourseRegistration>
29.4	viewCourseByCourseId	This method is used for viewing course information from the database.	courseInfo: Stream	Course
29.5	insertCourse	This method is used for inserting course information to the system.	courseInfo: Stream	string
29.6	updateCourse	This method is used for updating course information in the system.	courseInfo: Stream	string
29.7	deleteCourse	This method is used for deleting course information in the system.	courseInfo: Stream	string
29.8	viewPreviousCourse	This method is used for viewing latest course information of lecturer.	lecturerId: Stream	Course
29.9	insertStudentsInCourse	This method is used for inserting students to the course.	courseInfo: Stream	string
29.10	deleteStudentInCourse	This method is used for deleting students from the course.	courseRegisInfo: Stream	string
29.11	viewStudentInCourseForUpdate	This method is used for viewing students that aren't registered in a course.	courseInfo: Stream	List<Student>

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3.1.30 Class-30. TestingManage

Class TestingManage is service class -04 (MD-30)

Visual Paradigm for UML Enterprise Edition(College of Arts, Media and Technology)	
TestingManage	
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```
+insertTesting(questionInfo : Stream) : string
+insertQuestion(questionInfo : Stream) : string
+viewQuestionInTesting(testingInfo : Stream) : List<Question>
+viewTestingInfo(testingInfo : Stream) : Testing
+viewAllTestingByCourseId(courseInfo : Stream) : List<Testing>
+updateTestingInfo(testingInfo : Stream) : string
+updateQuestionInfo(questionInfo : Stream) : string
+viewSubmitAnswerSheet(testingInfo : Stream) : List<AnswerSheet>
+viewStudentInTestingForUpdate(testingInfo : Stream) : List<CourseRegistration>
+updateStudentInTesting(testingInfo : Stream) : string
+viewAnswerByAnswerSheetId(answerSheetId : Stream) : List<Answer>
+updateAnswerSheetScore(answerInfo : Stream) : string
+viewChartInTesting(testingInfo : Stream) : List<int>
+deleteTesting(testingInfo : Stream) : string
```

Method

No.	Name	Description	Parameters	Return
30.1	insertTesting	This method is used for inserting testing information to the system.	questionInfo: Stream	string
30.2	insertQuestion	This method is used for inserting questions to the system.	questionInfo: Stream	string
30.3	viewQuestionInTesting	This method is used for view a list of questions in a testing.	testingInfo : Stream	List<Questiom>
30.4	viewTestingInfo	This method is used for viewing testing information from the system	testingInfo: Stream	Testing
30.5	viewAllTestingByCourse Id	This method is used for viewing all of testing in a course.	courseInfo: Stream	List<Testing>
30.6	updateTestingInfo	This method is used for updating testing information in the system.	testingInfo: Stream	string
30.7	updateQuestionInfo	This method is used for updating question information in the system.	questionInfo: Stream	string
30.8	viewSubmitAnswerSheet	This method is used for viewing all of answer sheets that students submit in a course.	testingInfo : Stream	List<AnswerShe et>
30.9	viewStudentInTestingFor Update	This method is used for viewing student that don't have in a testing.	testingInfo : Stream	List<CourseReg istration>
30.10	updateStudentInTesting	This method is used for updating students to access the testing	testingInfo : Stream	String
30.11	viewAnswerByAnswerS heetId	This method is used for viewing a list of answers in a answer sheet.	answerSheetId : Stream	List<Answer>
30.12	updateAnswerSheetScore	This method is used for updating answer sheet score.	answerInfor : Stream	string

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30.13	viewChartInTesting	This method is used for viewing the chart of answers in testing	testingInfo : Stream	List<int>
30.14	deleteTesting	This method is used for deleting a testing in the system.	testingInfo : Stream	string

3.1.31 Class-31. TakeTesting

Class TakeTesing is service class -05 (MD-31)

Visual Paradigm for UML Enterprise Edition(College of Arts, Media and Technology)	
TakeTesting	
+insertTakeTesting(answerSheetInfo : Stream) : string	
+viewQuestionForStudent(testingInfo : Stream) : List<Question>	
+viewAllTestingbyStudentId(studentInfo : Stream) : List<Testing>	

Method

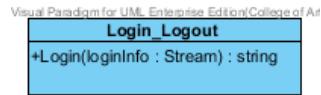
No.	Name	Description	Parameters	Return
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31.1	insertTakeTesting	This method is used for inserting an answer sheet, when student takes a testing.	anwserSheetinfo: Stream	string
31.2	viewQuestionForStudent	This method is used for viewing a list of questions in testing, when Student takes a testing.	testinginfo: Stream	List<Question>
31.3	viewAllTestingbyStudentId	This method is used for viewing all of testing which student can access to the testing.	studentInfo : Stream	List<Testing>

3.1.32 Class-32. Login_Logout

Class Login_Logout is service class -06 (MD-32)



Method

No.	Name	Description	Parameters	Return
32.1	Login	This method is used for validating username and password, when user login to the system.	loginInfo : Stream	string

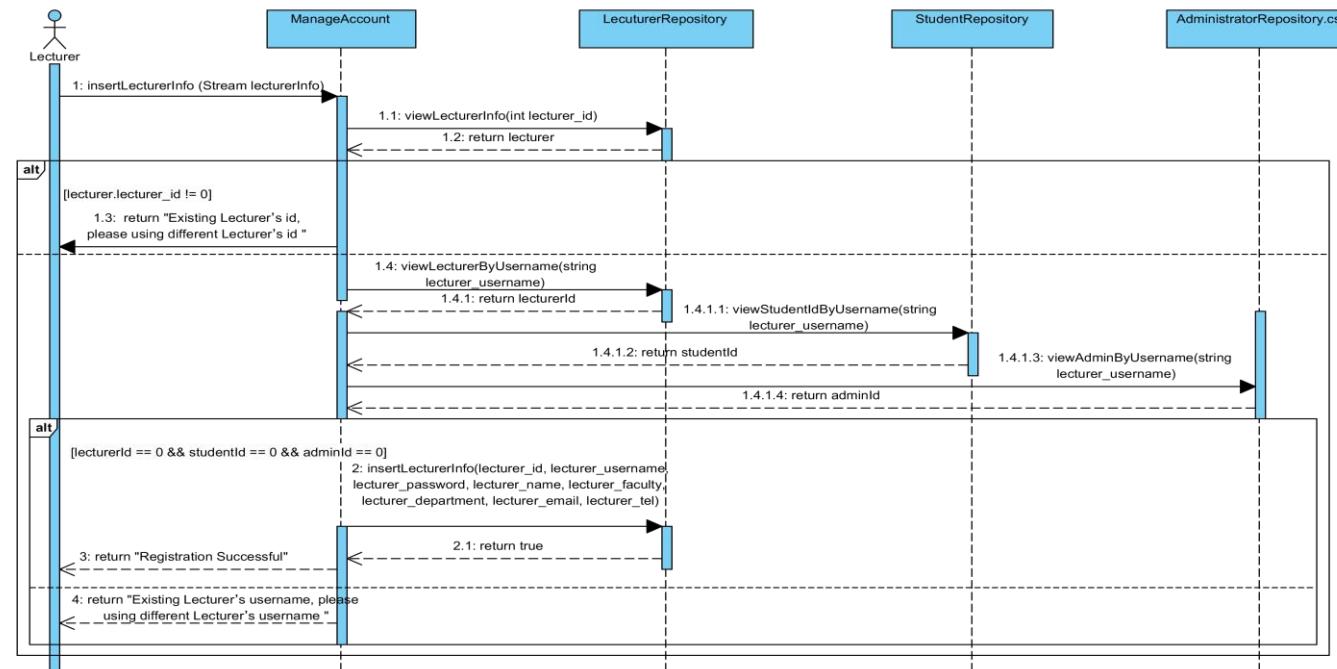
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3.2 Sequence Diagram

3.2.1 Sequence Diagram (SD 1.1): Lecturer registers to the system.

: This sequence diagram responses to URS 1.1: Lecturer can register to the system.

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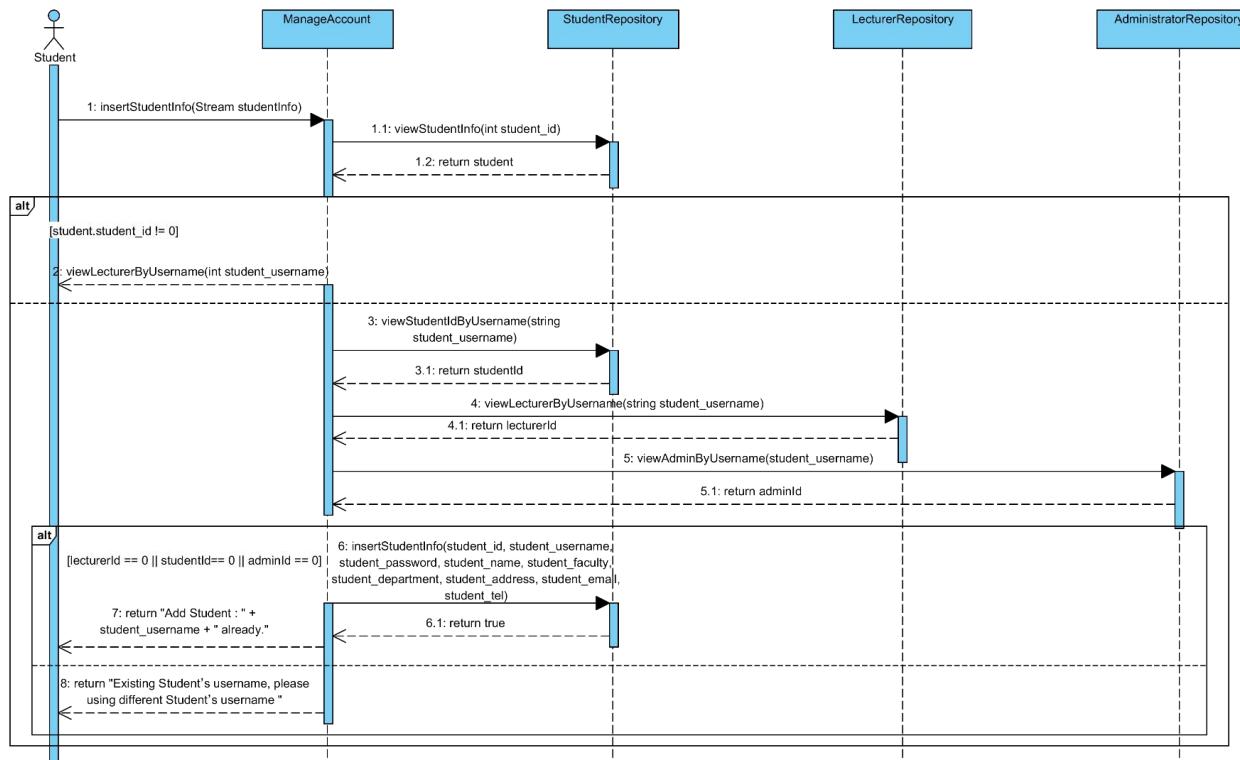


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3.2.2 Sequence Diagram (SD 1.2): Student registers to the system.

: This sequence diagram responses to URS 1.2: Student can register to the system.

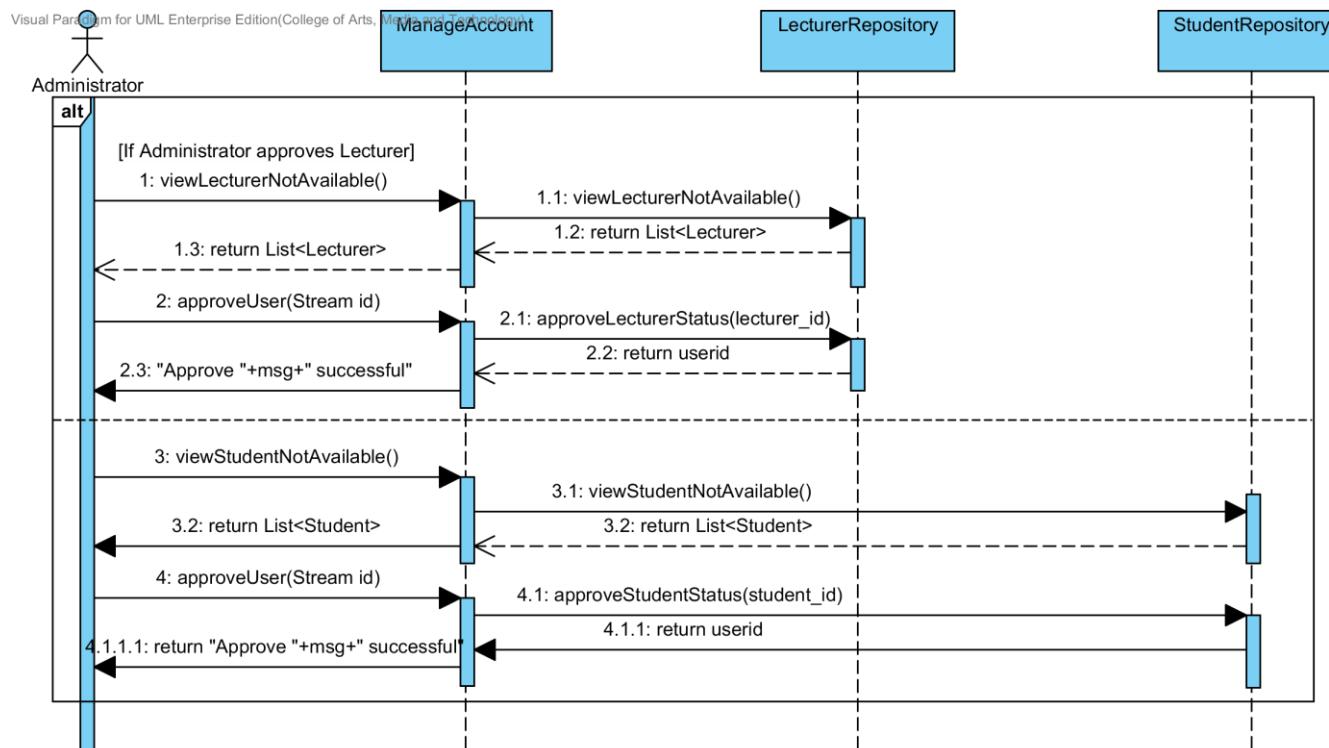
UML Paradigm for UML Enterprise Edition(College of Arts, Media and Technology)



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3.2.3 Sequence Diagram (SD 1.3): Administrator approves Lecturer or Student account.

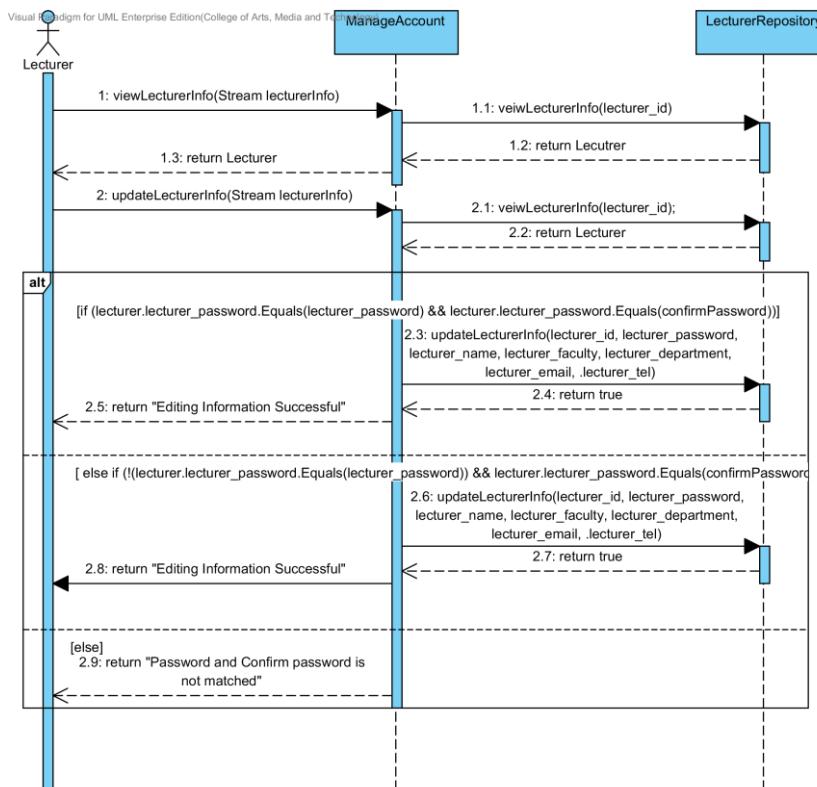
: This sequence diagram responses to URS 1.3: Administrator can approve Lecturer or Student account.



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3.2.4 Sequence Diagram (SD 1.4): Lecturer edits personal information.

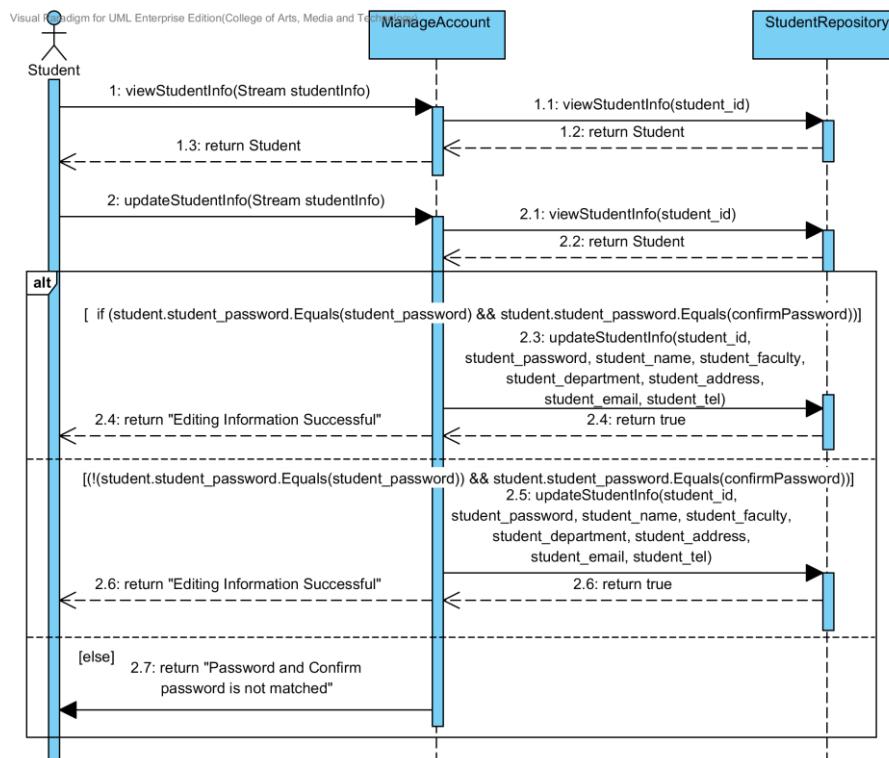
: This sequence diagram responses to URS 1.4: Lecturer can edit personal information.



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3.2.5 Sequence Diagram (SD 1.5): Student edits personal information.

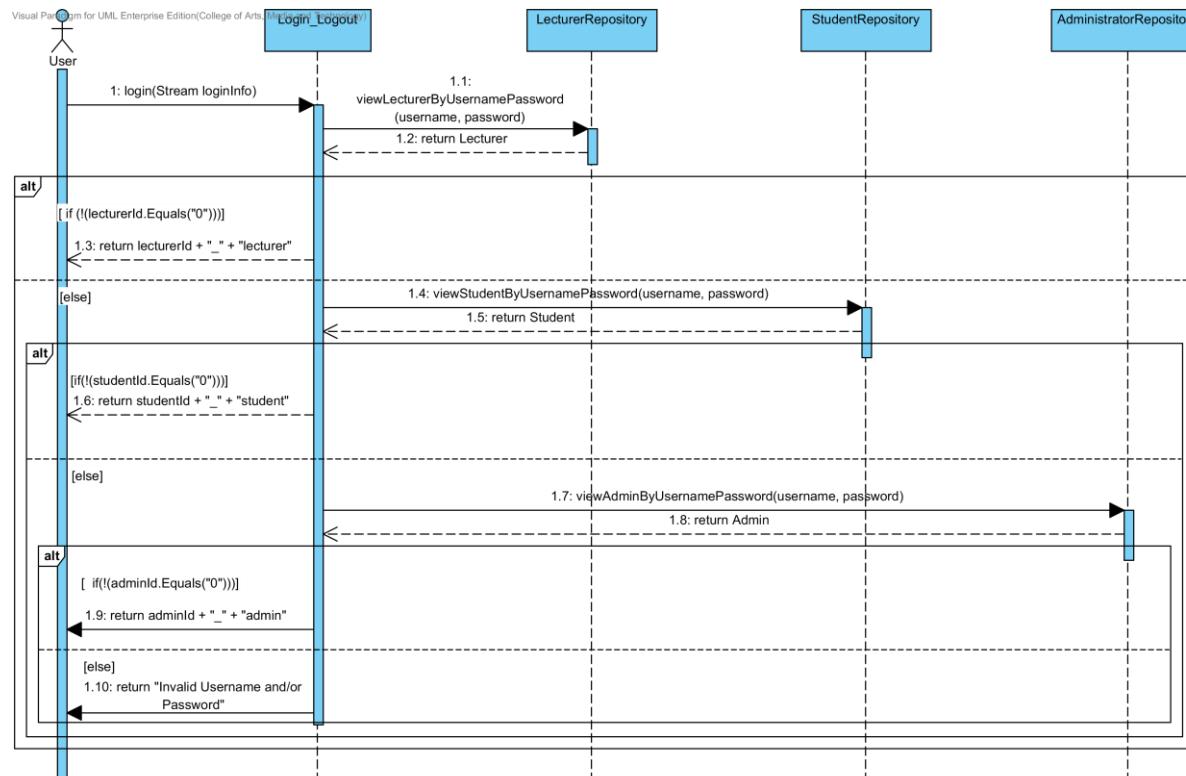
: This sequence diagram responses to URS 1.5: Student can edit personal information.



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3.2.6 Sequence Diagram (SD 1.6): User log in to the system.

: This sequence diagram responses to URS 1.6: User can log in to the system.



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3.2.7 Sequence Diagram (SD 1.7): User can log out to the system.

: This sequence diagram responses to URS 1.7: User can log out to the system.

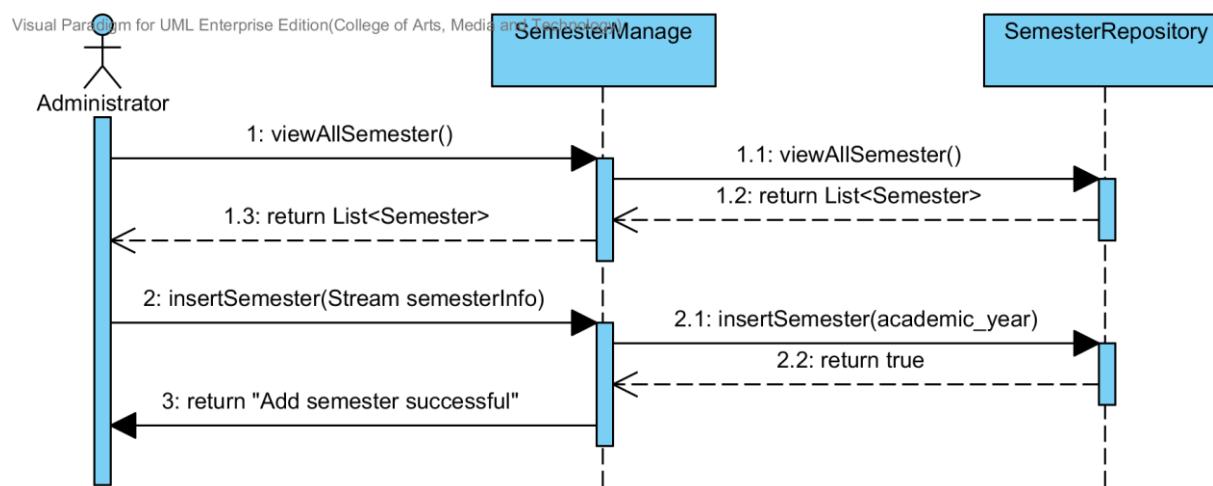
Not have sequence diagram

Commented [rp13]: Why? Please create one.

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3.2.8 Sequence Diagram (SD 1.8): Administrator creates a semester.

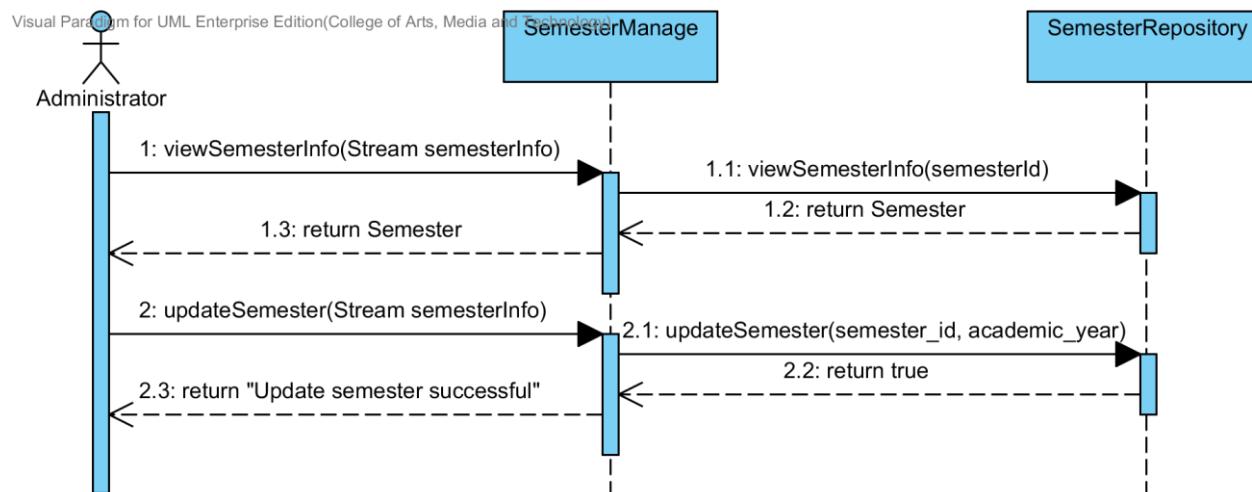
: This sequence diagram responses to URS 1.8: Administrator can create a semester.



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3.2.9 Sequence Diagram (SD 1.9): Administrator edits a semester.

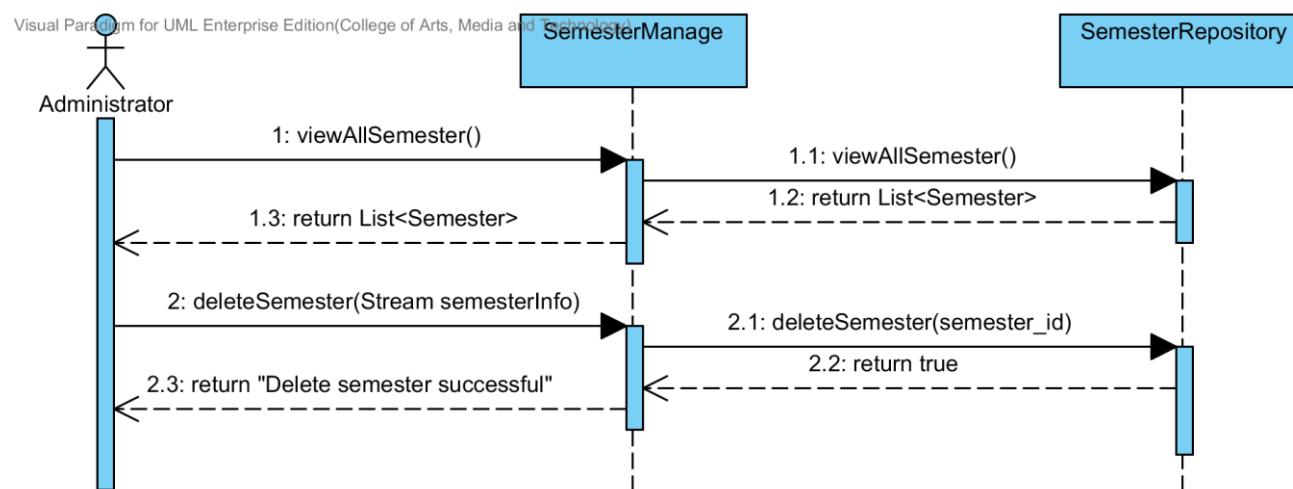
: This sequence diagram responses to URS 1.9: Administrator can edit a semester.



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3.2.10 Sequence Diagram (SD 1.10): Administrator deletes a semester.

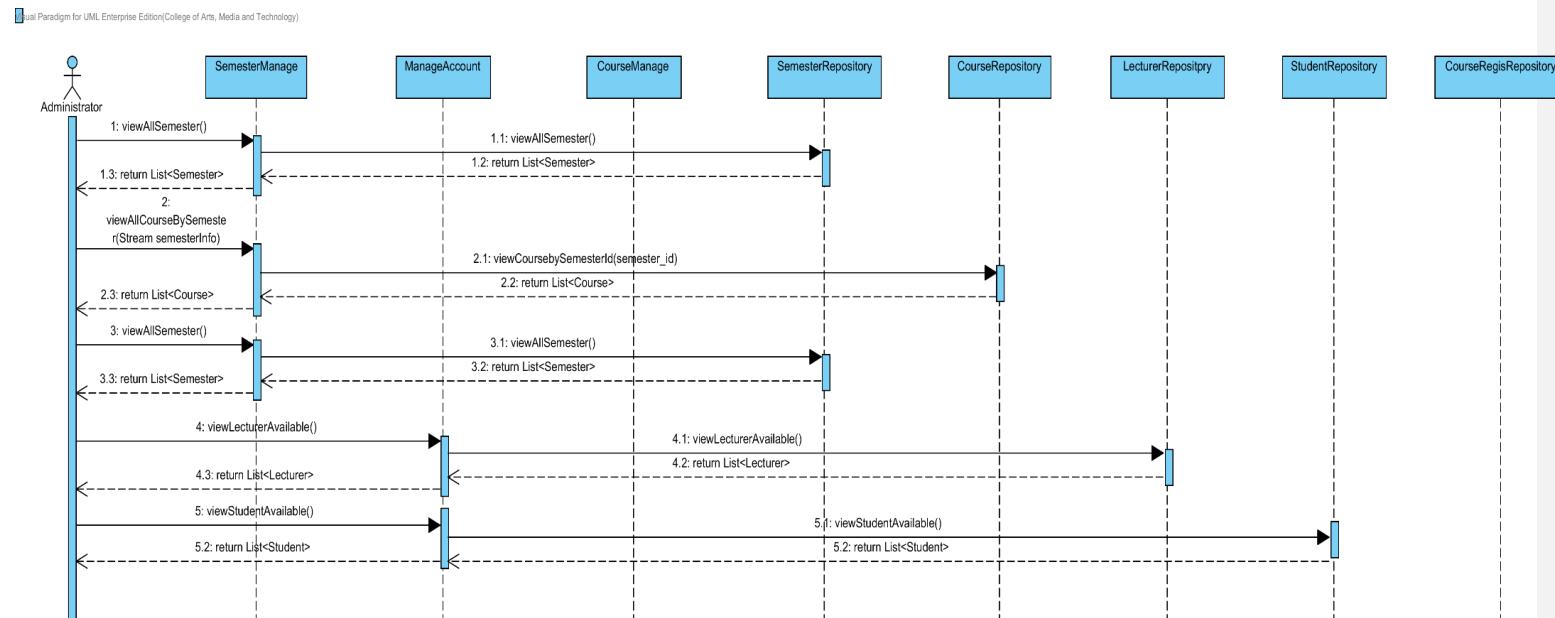
: This sequence diagram responses to URS 1.10: Administrator can delete a semester.



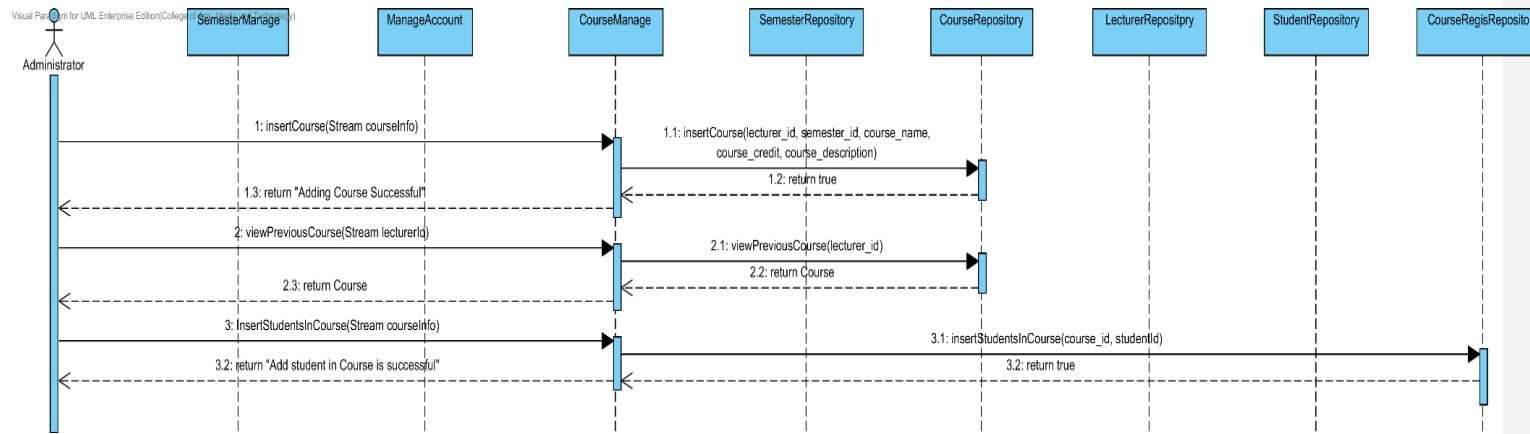
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3.2.11 Sequence Diagram (SD 1.11): Administrator creates a course.

: This sequence diagram responses to URS 1.11: Administrator can create a course.



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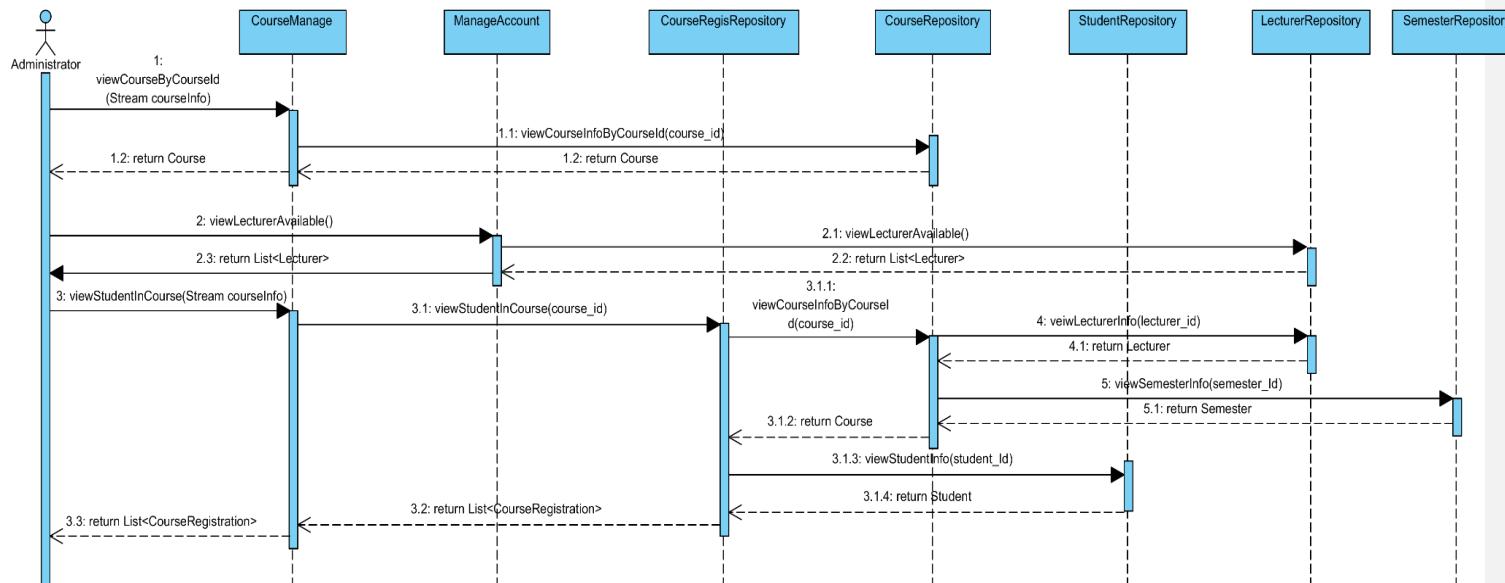


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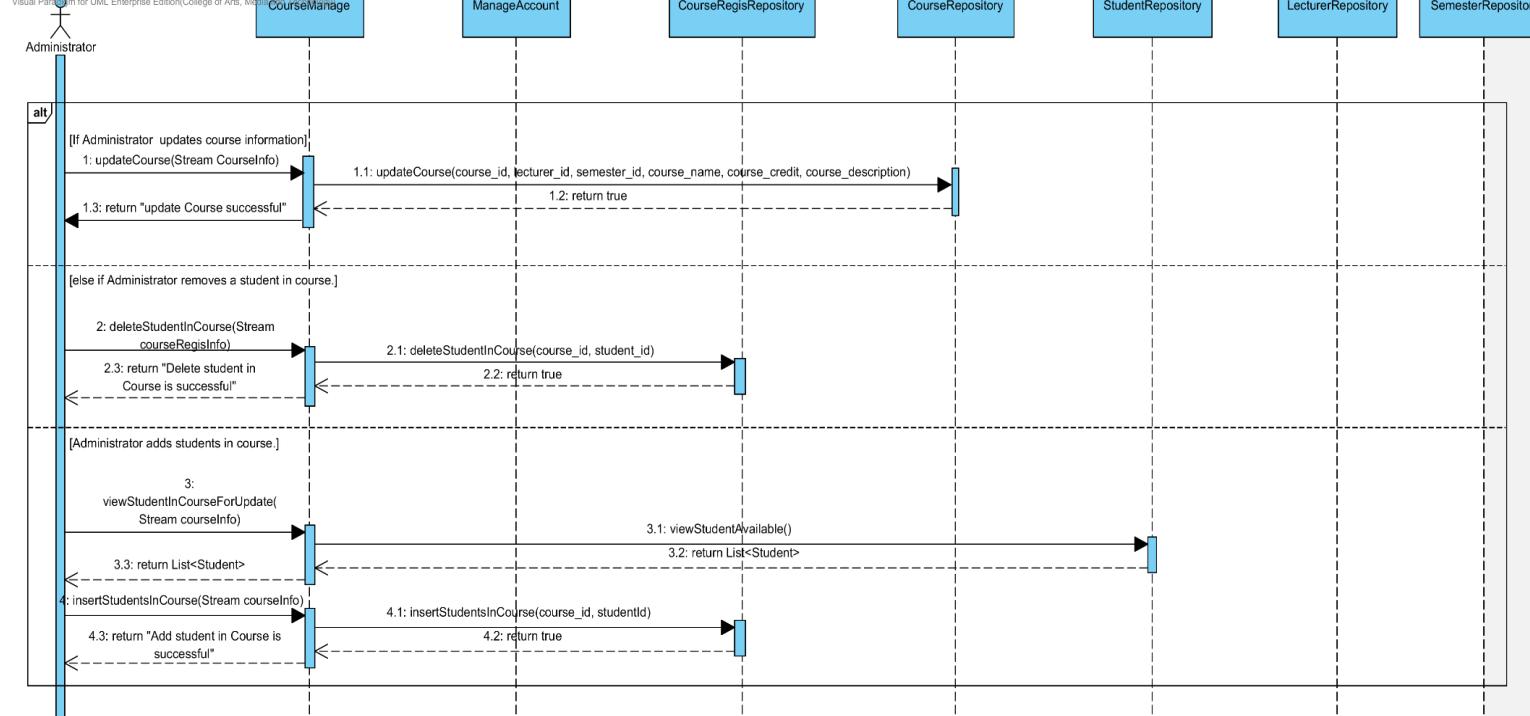
3.2.12 Sequence Diagram (SD 1.12): Administrator edits a course.

: This sequence diagram responses to URS 1.12: Administrator can edit a course.

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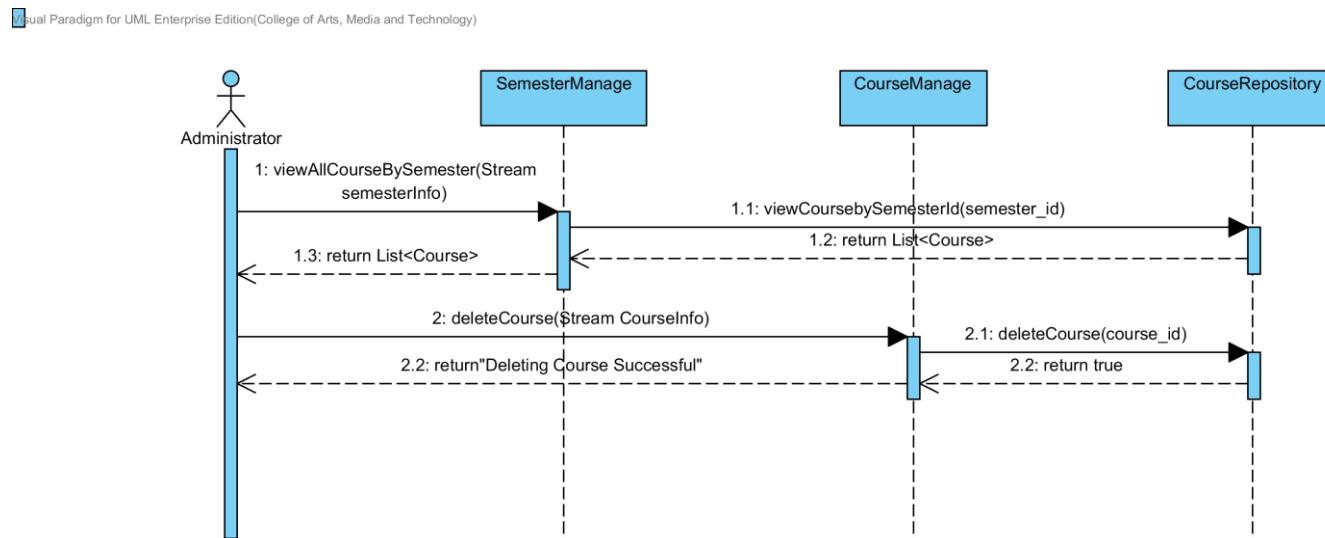
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3.2.13 Sequence Diagram (SD 1.13): Administrator deletes a course.

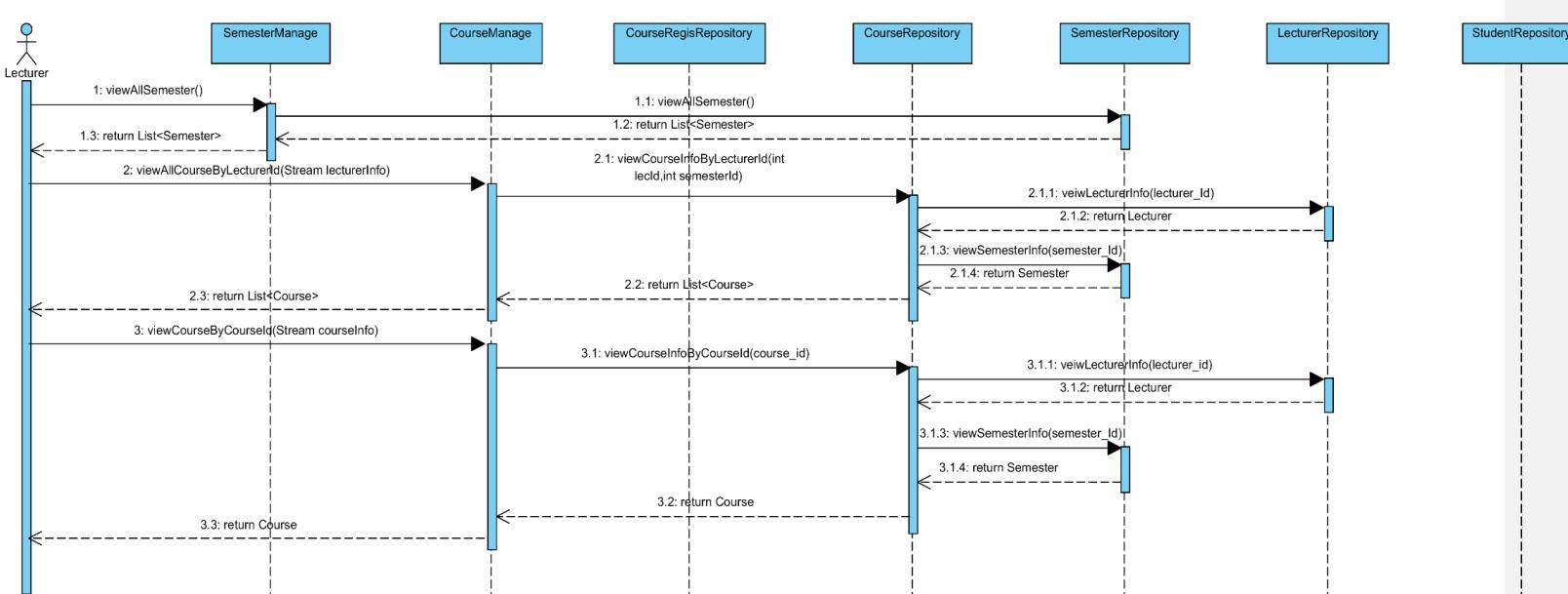
: This sequence diagram responses to URS 1.13: Administrator can delete a course.



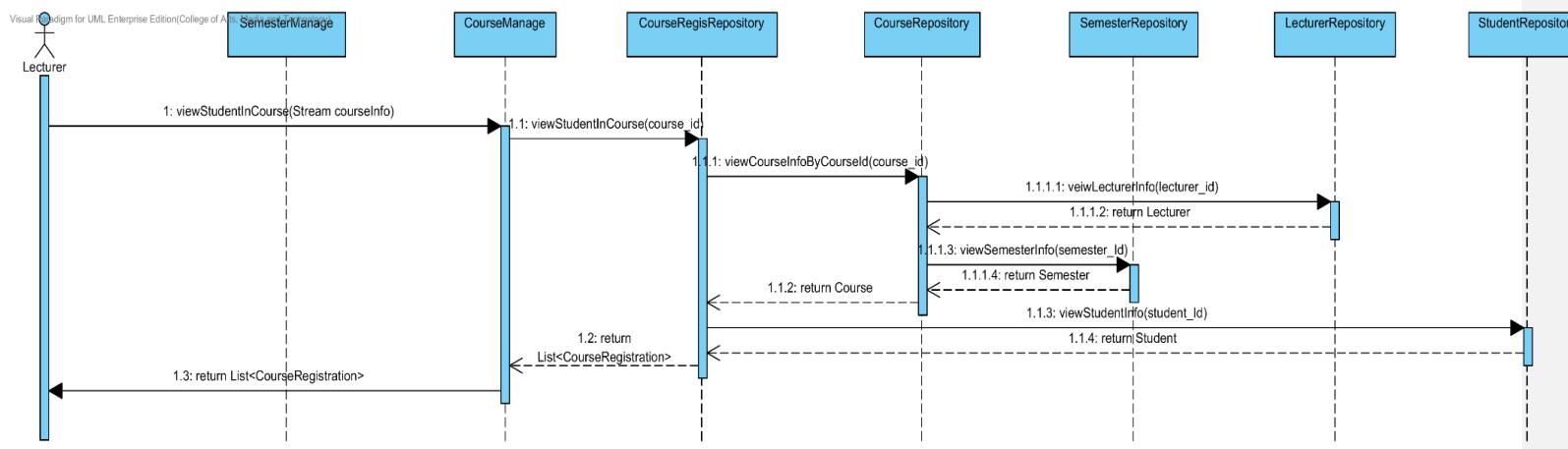
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3.2.14 Sequence Diagram (SD 1.14): Lecturer views course information.

: This sequence diagram responses to URS 1.14: Lecturer can view course information.



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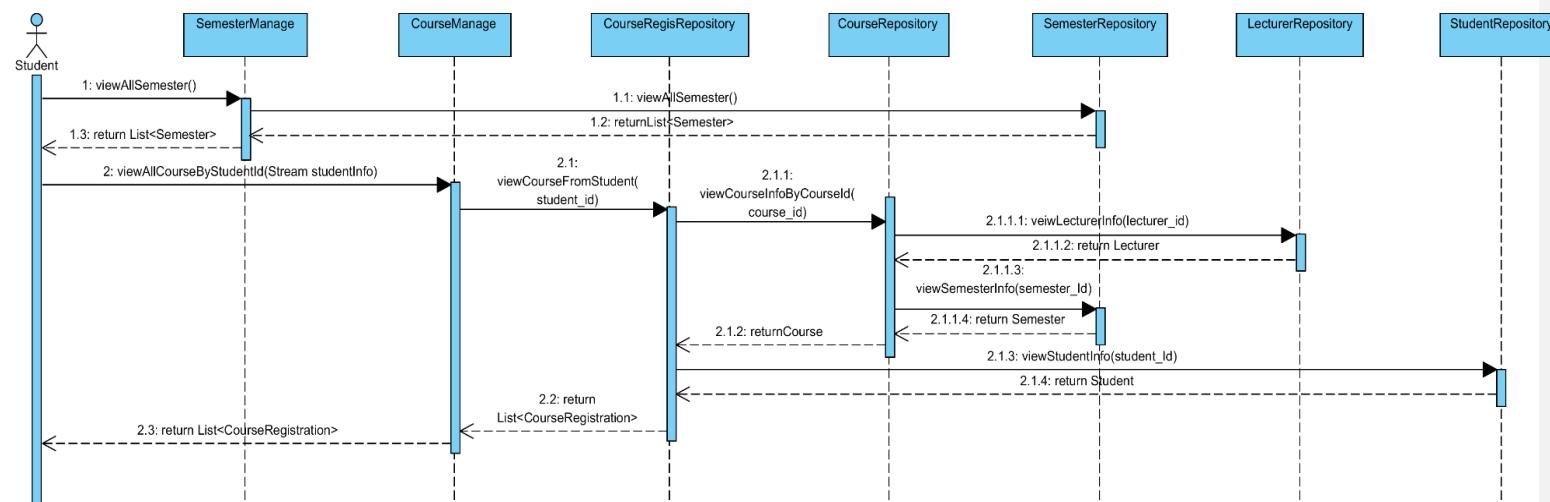


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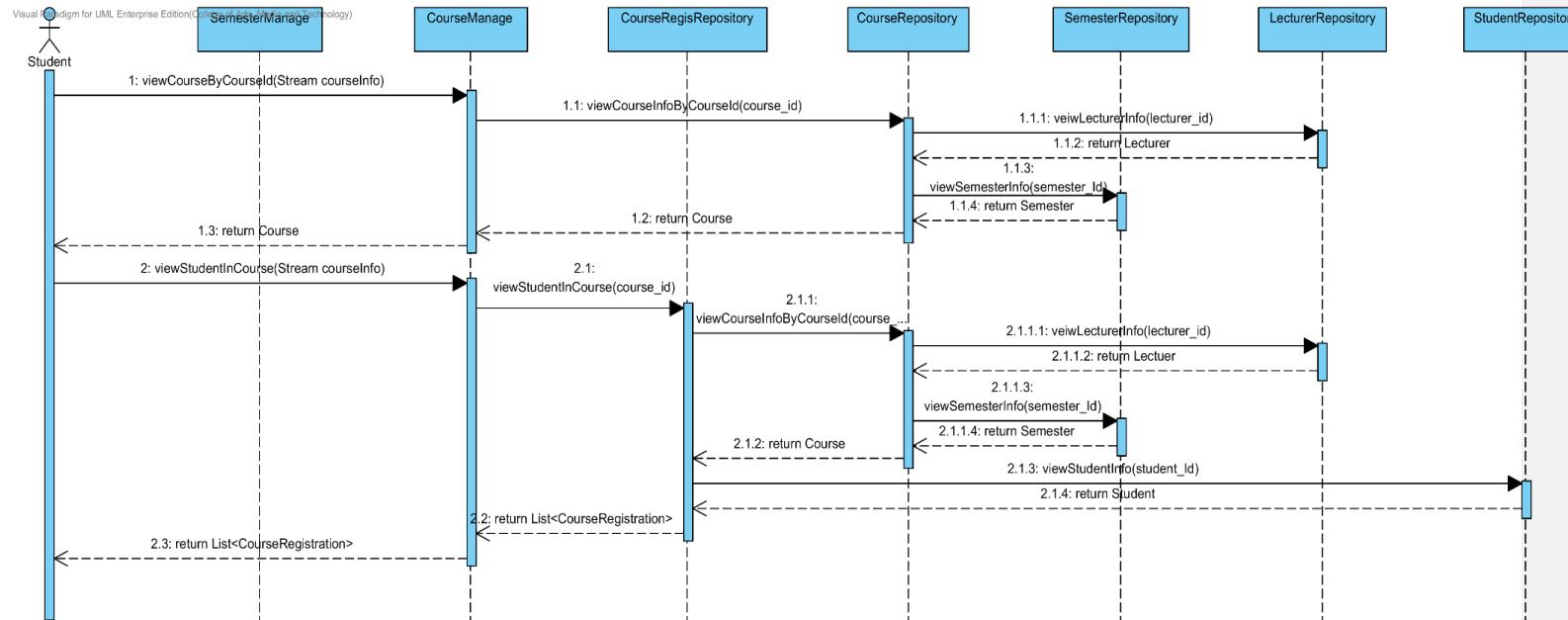
3.2.15 Sequence Diagram (SD 1.15): Student views course information.

: This sequence diagram responses to URS 1.15: Student can view course information.

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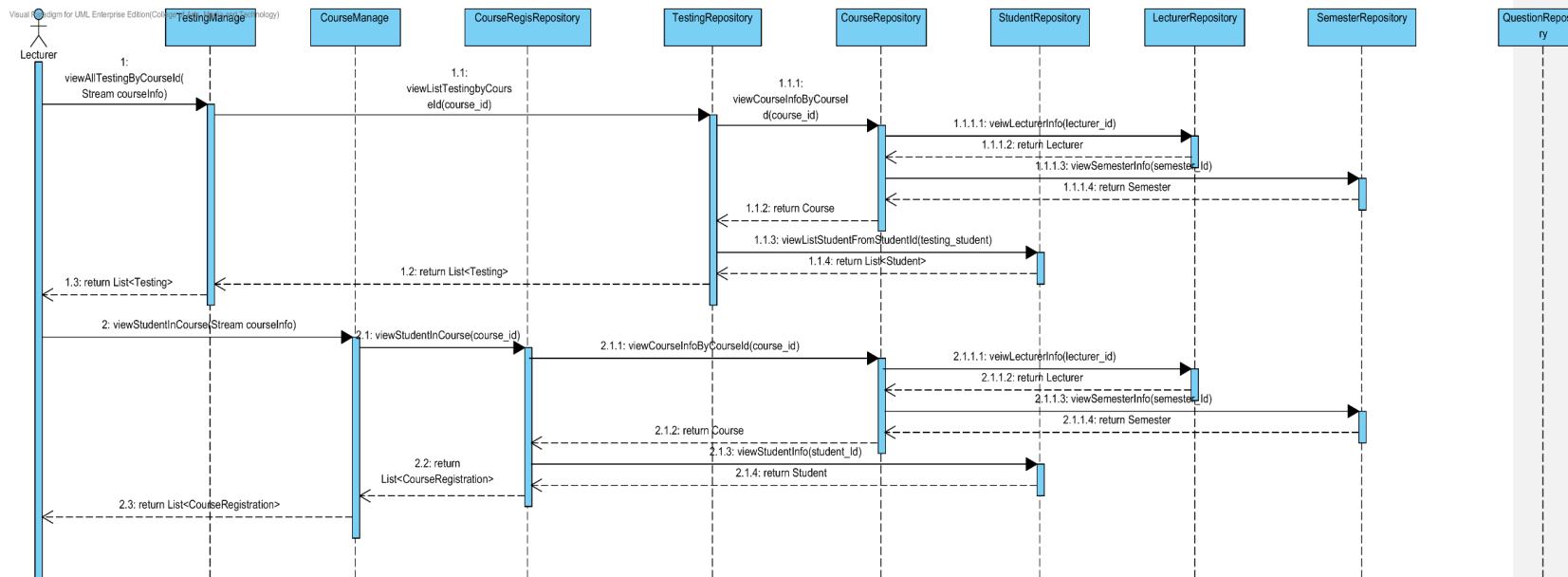
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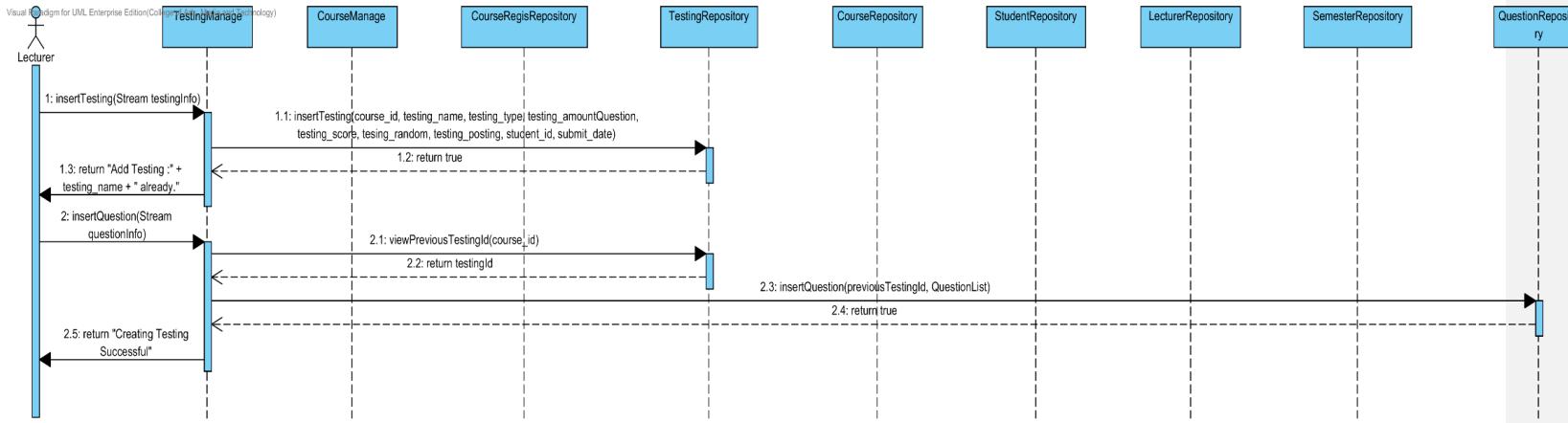
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3.2.16 Sequence Diagram (SD 1.16): Lecturer assigns assignments or quizzes which are multiple choices question, true/false question, and short answers.

: This sequence diagram responses to URS 1.16: Lecturer can assign assignments or quizzes which are multiple choices question, true/false question, and short answers.



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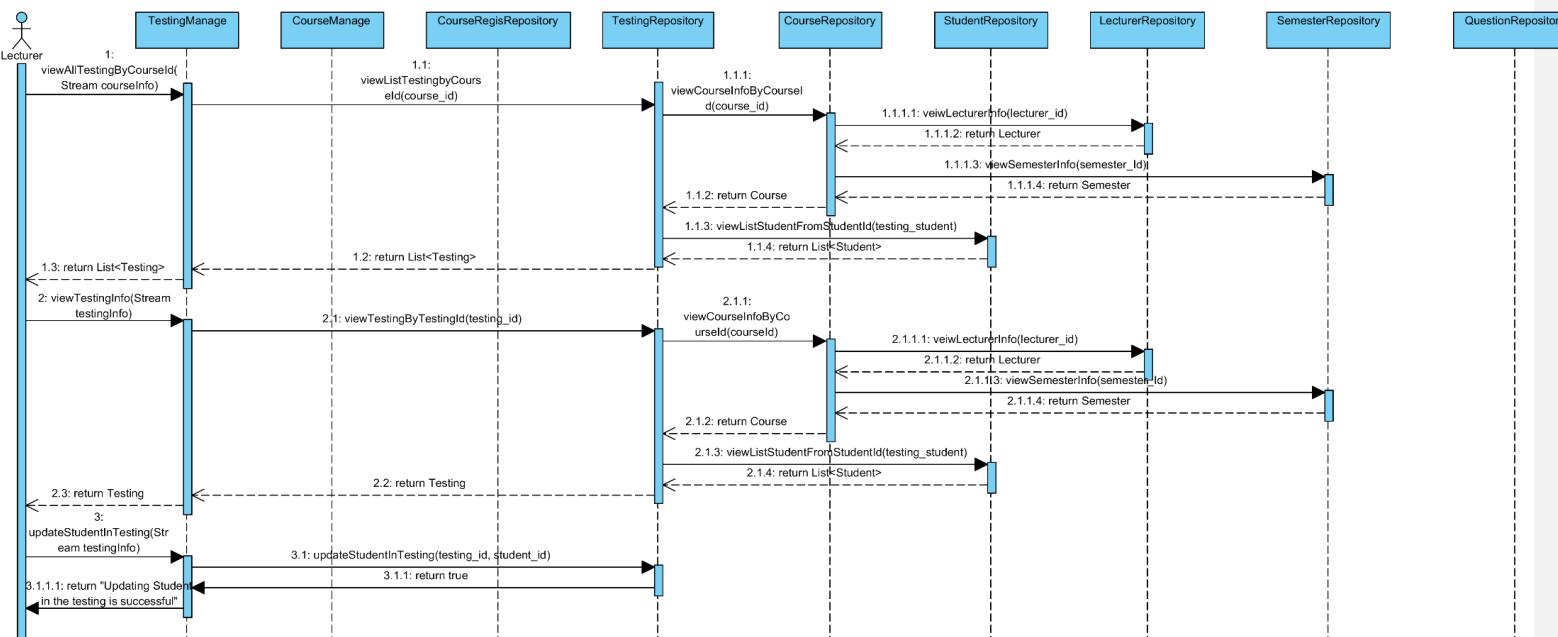


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Document Type	Software design document	Release Date	6 July 2014	Print Date	

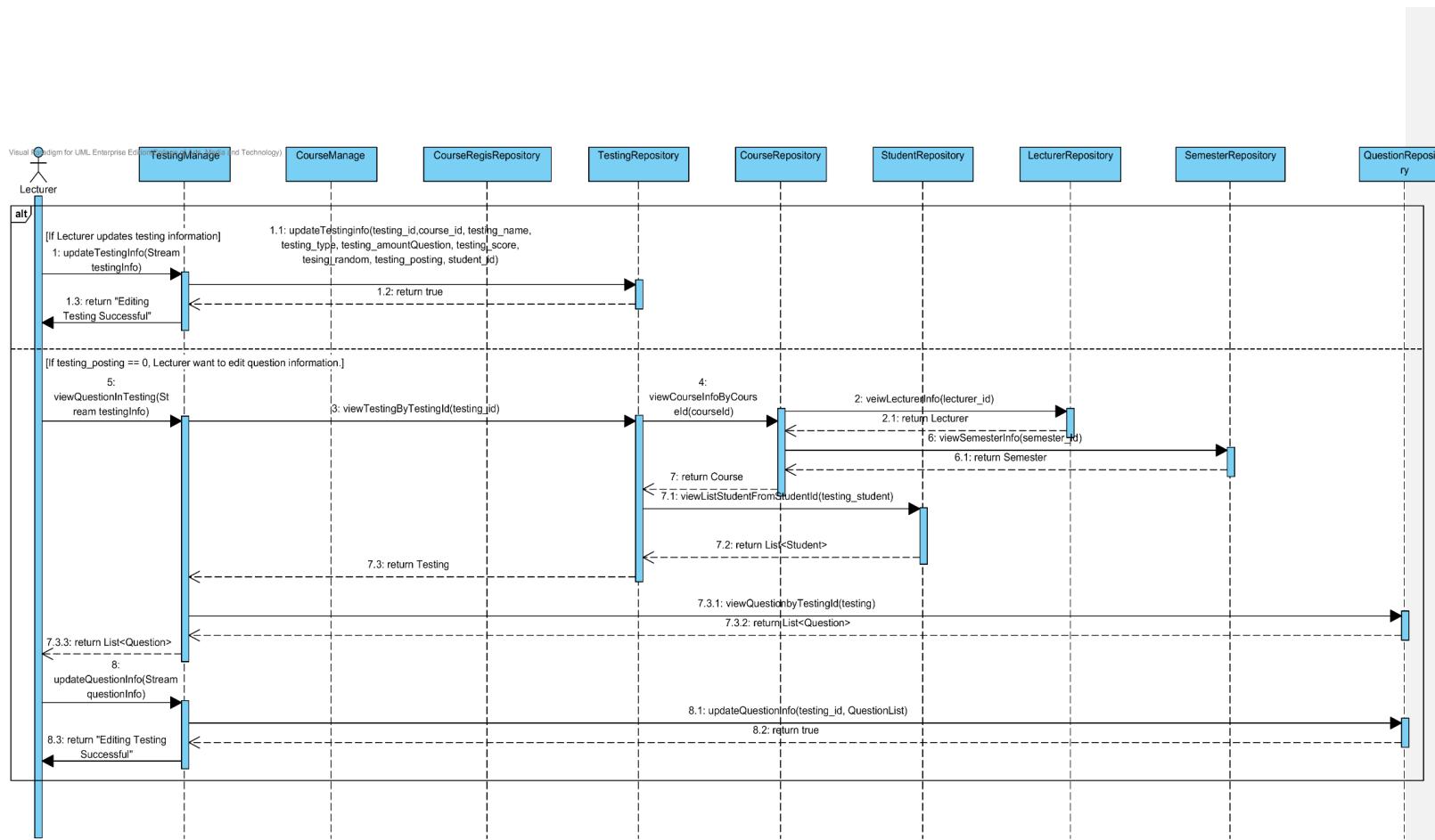
3.2.17 Sequence Diagram (SD 1.17): Lecturer edits assignments or quizzes which are multiple choices question, true/false question, and short answers.

: This sequence diagram responses to URS 1.17: Lecturer can edit assignments or quizzes which are multiple choices question, true/false question, and short answers.

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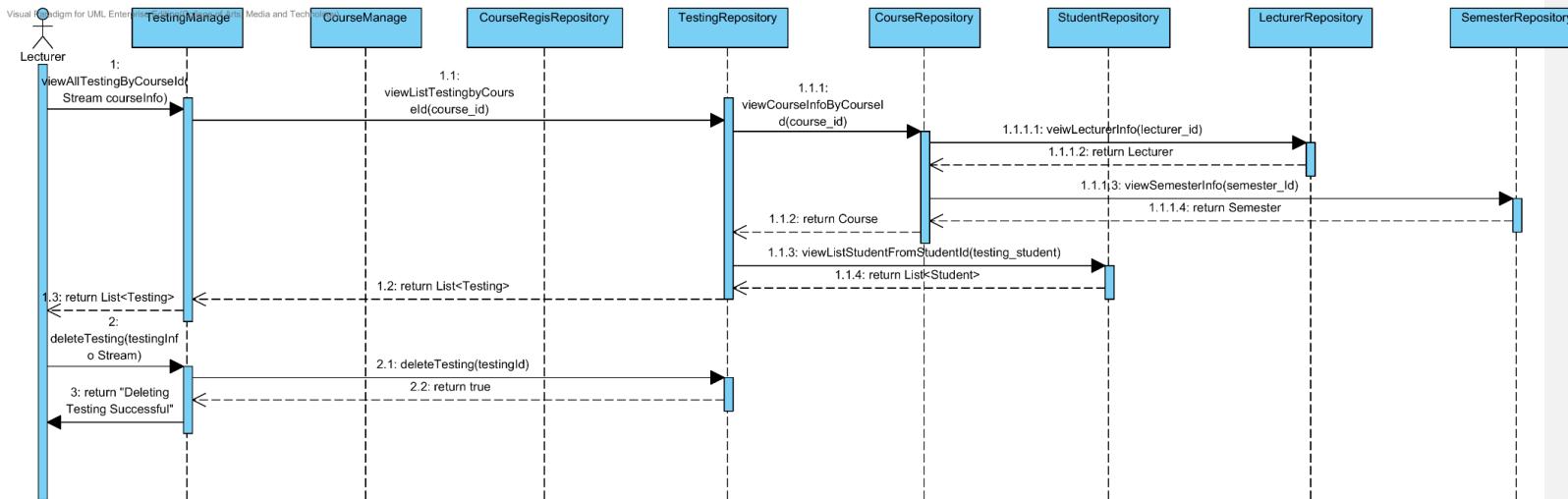
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3.2.18 Sequence Diagram (SD 1.18): Lecturer deletes assignments or quizzes which are multiple choices question, true/false question, and short answers.

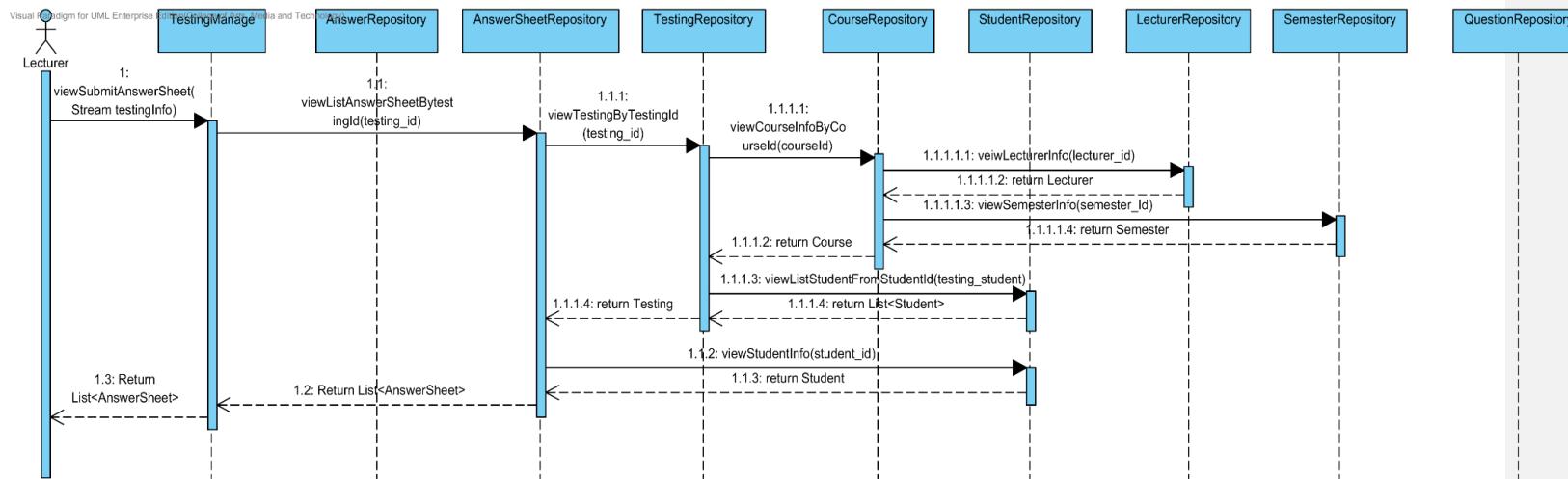
: This sequence diagram responses to URS 1.18: Lecturer can delete assignments or quizzes which are multiple choices question, true/false question, and short answers.



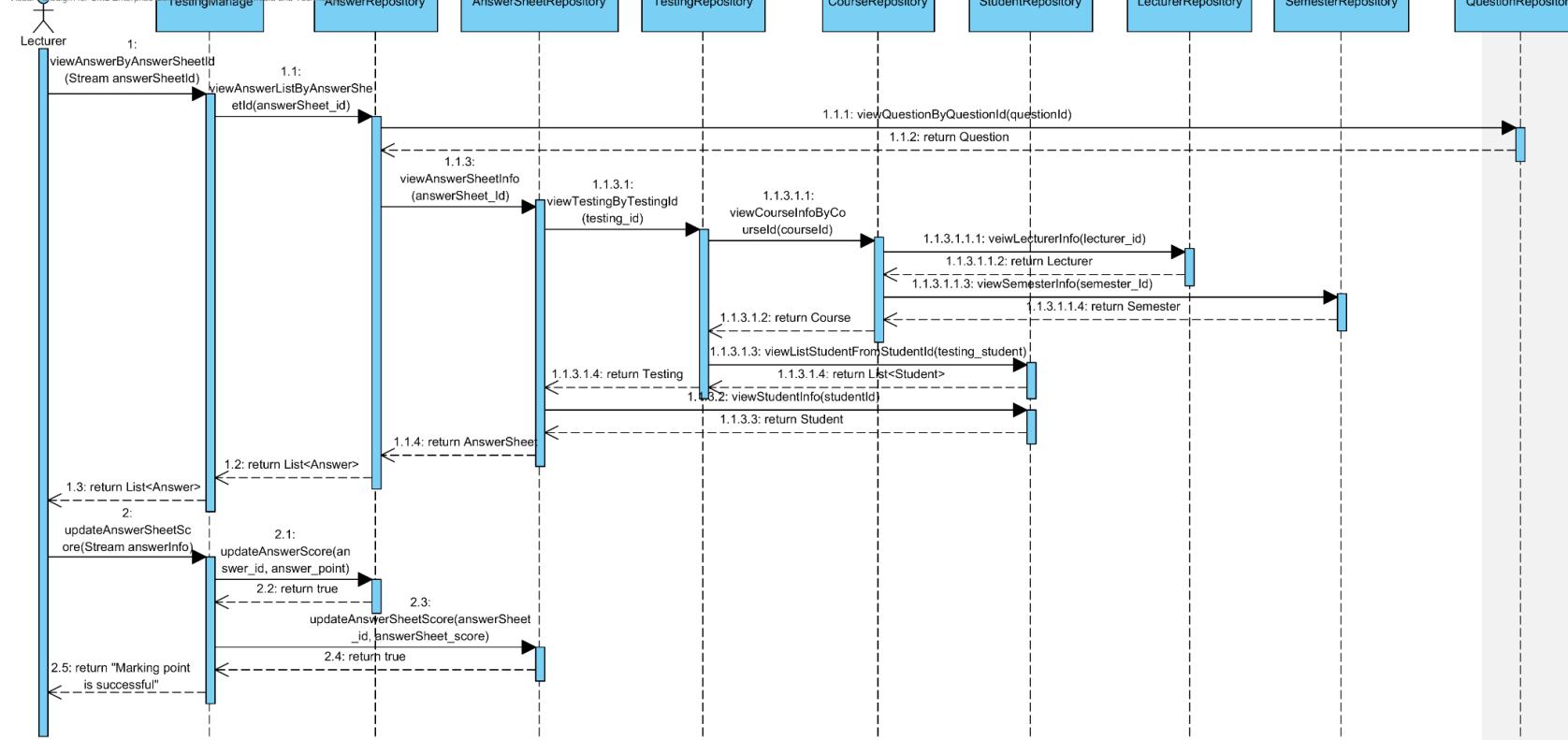
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3.2.19 Sequence Diagram (SD 1.19): Lecturer marks the point for student's short answer.

: This sequence diagram responses to URS 1.19: Lecturer marks the point for student's short answer.



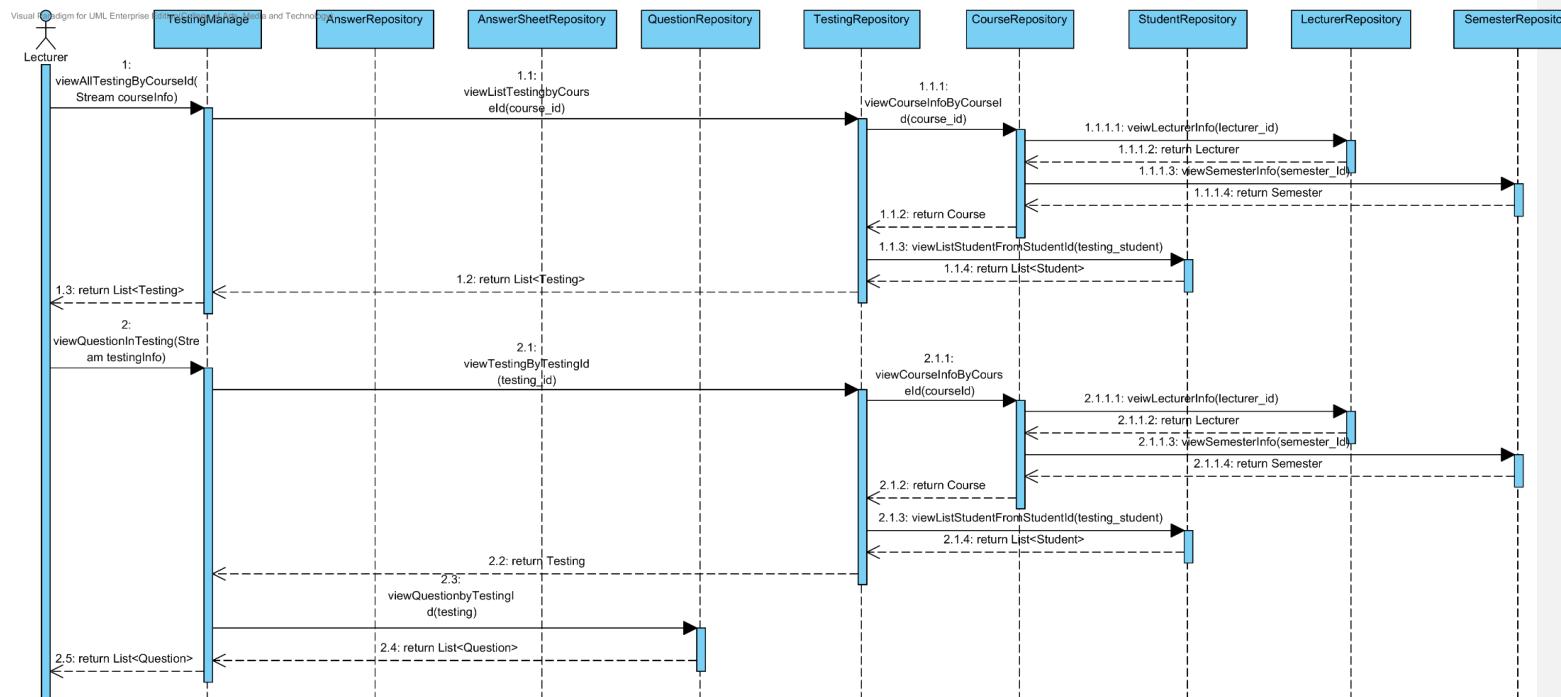
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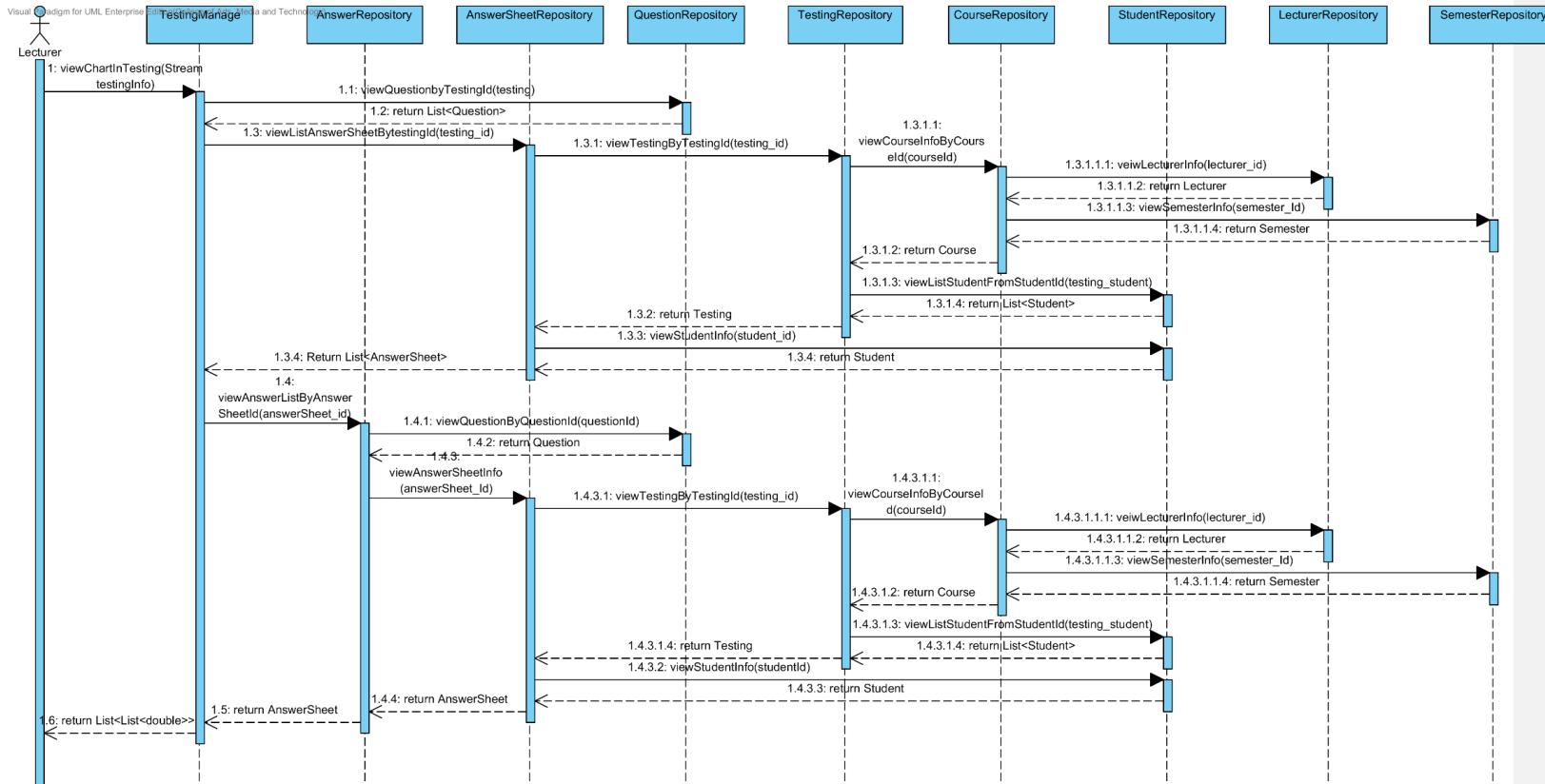
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3.2.20 Sequence Diagram (SD 1.20): Lecturer reviews overall student's answer in each choice of assignment or quiz in chart format.

: This sequence diagram responses to URS 1.20: Lecturer can review overall student's answer in each choice of assignment or quiz in chart format.



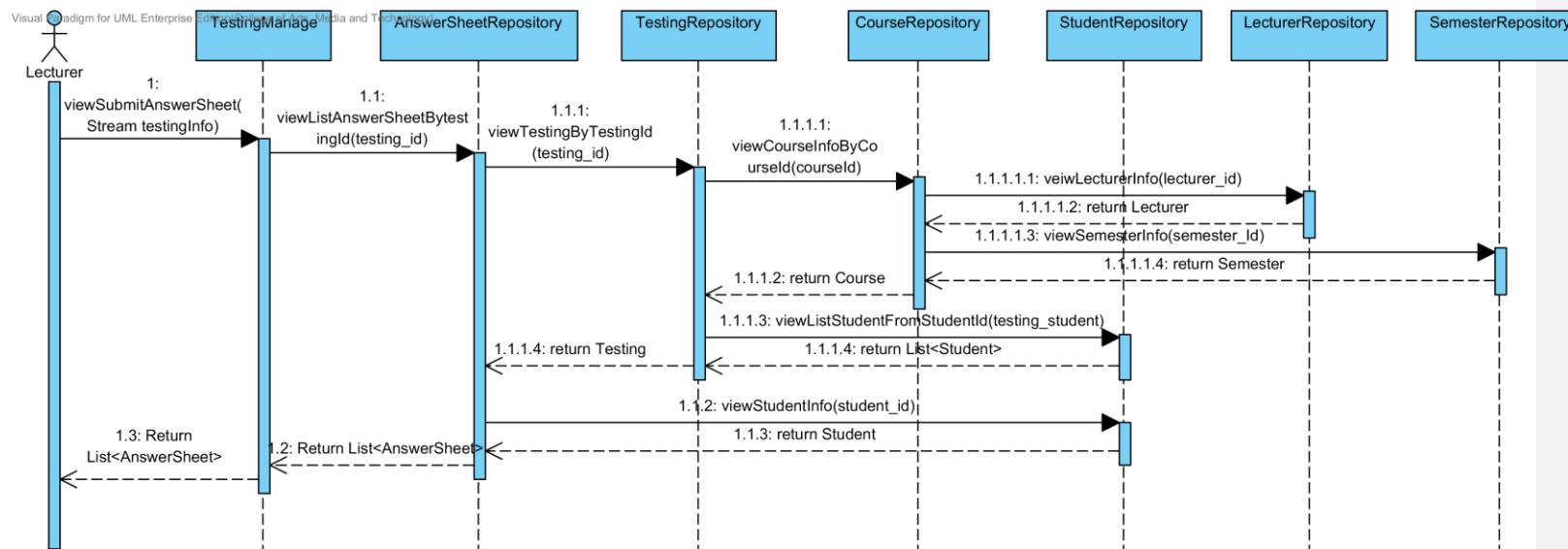
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3.2.21 Sequence Diagram (SD 1.21): Lecturer checks whether the assignments are submitted in time.

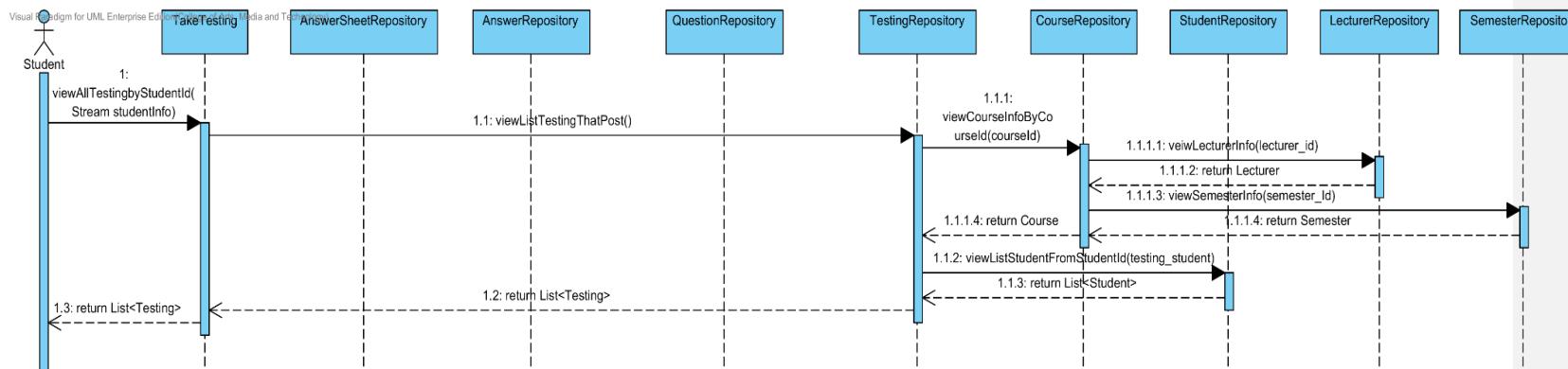
: This sequence diagram responses to URS 1.21: Lecturer can check whether the assignments are submitted in time.



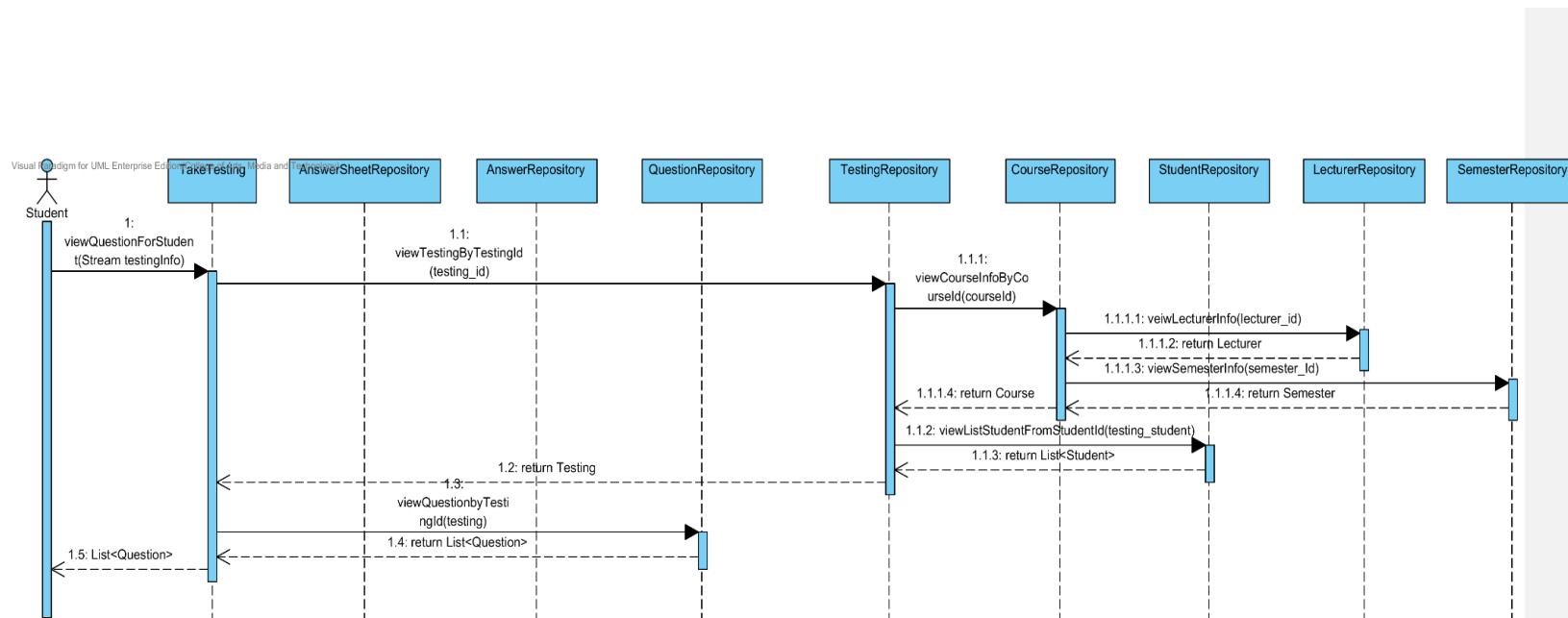
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3.2.22 Sequence Diagram (SD 1.22): Student takes assignments or quizzes which are multiple choices, true/false questions, short answers.

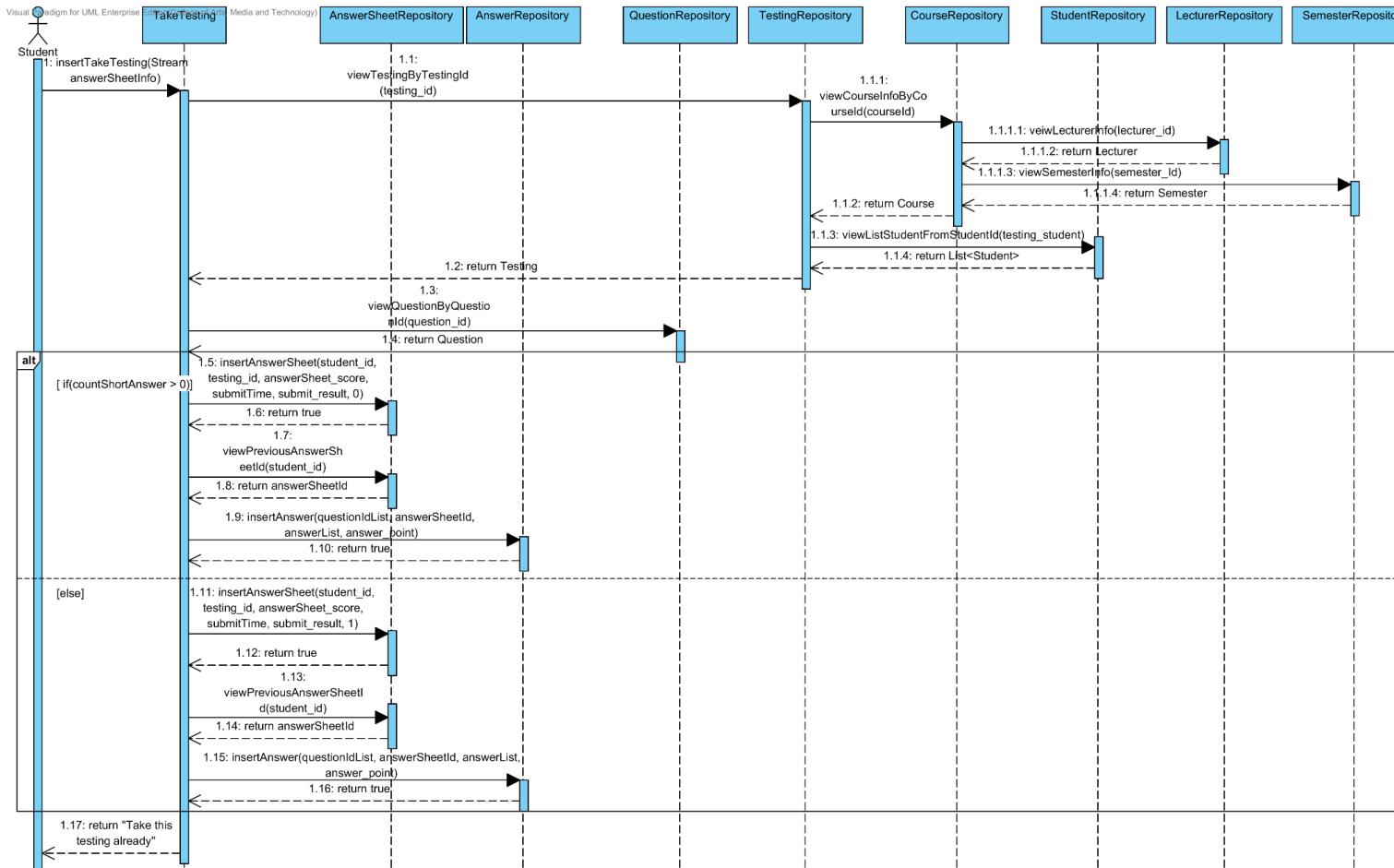
: This sequence diagram responses to URS 1.22: Student can take assignments or quizzes which are multiple choices, true/false questions, short answers.



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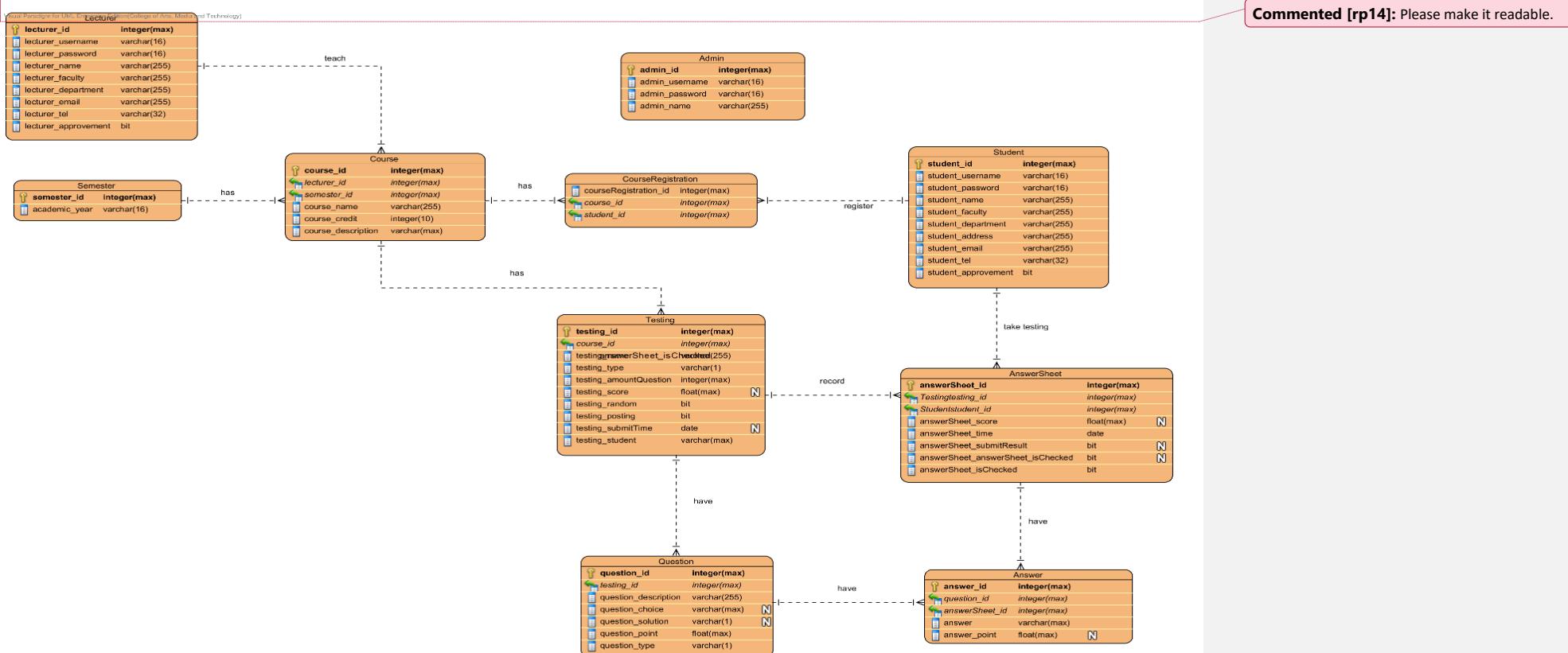


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3.3 Database design



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3.1.1 Lecturer table

Description: Lecturer table stores all the lecturer information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
lecturer_id	Unique Identifier of Lecturer	integer	max	PK	-	Not Null
lecturer_username	Username of Lecturer	varchar	16	-	-	Not Null
lecturer_password	Password of Lecturer	varchar	16	-	-	Not Null
lecturer_name	Name of Lecturer	varchar	255	-	-	Not Null
lecturer_faculty	Faculty of Lecturer	varchar	255	-	-	Not Null
lecturer_department	Description of Lecturer	varchar	255	-	-	Not Null
lecturer_email	Email of Lecturer	varchar	255	-	-	Not Null
lecturer_tel	Tel of Lecturer	varchar	32	-	-	Not Null
lecturer_approval	Approval status of lecturer account	bit	1	-	-	Not Null

3.1.2 Student table

Description: Student table stores all the student information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
student_id	Unique Identifier of Student	integer	max	PK	-	Not Null
student_username	Username of Student	varchar	16	-	-	Not Null
student_password	Password of Student	varchar	16	-	-	Not Null
student_name	Name of Student	varchar	255	-	-	Not Null
student_faculty	Faculty of Student	varchar	255	-	-	Not Null
student_department	Description of Student	varchar	255	-	-	Not Null
student_address	Address of Student	varchar	255	-	-	Not Null
student_email	Email of Student	varchar	255	-	-	Not Null
student_tel	Tel of Student	varchar	32	-	-	Not Null
student_approval	Approval status of Student account	bit	1	-	-	Not Null

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3.1.3 Admin table

Description: Admin table stores all the admin information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
admin_id	Unique Identifier of Admin	integer	max	PK	-	Not Null
admin_username	Username of Admin	varchar	16	-	-	Not Null
admin_password	Password of Admin	varchar	16	-	-	Not Null
admin_name	Name of Admin	varchar	255	-	-	Not Null

3.1.4 Semester table

Description: Semester table stores all the semester information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
semester_id	Unique Identifier of Semester	integer	max	PK	-	Not Null
academic_year	Academic year information	varchar	16	-	-	Not Null

3.1.5 Course table

Description: Course table stores all the course information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
course_id	Unique Identifier of Course	integer	max	PK	-	Not Null
lecturer_id	Unique Identifier of Lecturer	integer	max	-	FK	Not Null
semester_id	Unique Identifier of Semester	integer	max		FK	Not Null
course_name	Name of Course	varchar	255	-	-	Not Null
course_credit	Credit of Course	int	max	-	-	Not Null
course_description	Description of Course	varchar	max	-	-	Not Null

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3.1.6 Course Registration table

Description: Course Registration table stores all the student's registration information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
courseRegistration_id	Unique Identifier of Course registration	integer	max	PK	-	Not Null
course_id	Unique Identifier of Course	integer	max	-	FK	Not Null
student_id	Unique Identifier of Student	integer	max	-	FK	Not Null

3.1.7 Testing table

Description: Testing table stores all the testing information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
testing_id	Unique Identifier of Testing	integer	max	PK	-	Not Null
course_id	Unique Identifier of Course	integer	max	-	FK	Not Null
testing_name	Name of Testing	varchar	255	-	-	Not Null
testing_type	Type of Testing	varchar	1	-	-	Not Null
testing_amount	Amount of questions in Testing	integer	max	-	-	Not Null
testing_score	Score of Testing	float	max	-	-	Not Null
testing_random	Random status of Testing	bit	1	-	-	Not Null
testing_posting	Posting status of Testing	bit	1	-	-	Not Null
testing_submitTime	Submit Time of Testing	datetime	2	max	-	Null
testing_student	Student of Testing	varchar	max	-	-	Not Null

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3.1.8 Question table

Description: Question table stores all the question information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
question_id	Unique Identifier of Question	integer	max	PK	-	Not Null
testing_id	Unique Identifier of Testing	integer	max	-	FK	Not Null
question_descrioption	Description of Question	varchar	max	-	-	Not Null
question_choice	Choices of Question	varchar	max	-	-	Null
question_soluti on	Solution of Question	varchar	1	-	-	Null
question_point	Point of Question	float	max	-	-	Not Null
question_type	Type of Question	varchar	1	-	-	Not Null

3.1.9 AnswerSheet table

Description: AnswerSheet table stores all the answer sheet information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
answerSheet_id	Unique Identifier of Answer Sheet	integer	max	PK	-	Not Null
student_id	Unique Identifier of Student	integer	max	-	FK	Not Null
testing_id	Unique Identifier of Testing	integer	max	-	FK	Not Null
answerSheet_score	Score of Answer sheet	varchar	max	-	-	Not Null
answerSheet_time	Time of Answer sheet	varchar	max	-	-	Not Null
answerSheet_submitResult	Submit result of Answer sheet	varchar	1	-	-	Null
answerSheet_isChecked	Status of marking point in answer sheet	varchar	1	-	-	Not Null

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3.1.10 Answer table

Description: AnswerSheet table stores all the answer sheet information.

Field Name	Description	Type	Length	Primary Key	Foreign Key	Nullable
answer_id	Unique Identifier of Answer	integer	max	PK	-	Not Null
question_id	Unique Identifier of Question	integer	max	-	FK	Not Null
answerSheet_id	Unique Identifier of Answer Sheet	integer	max	-	FK	Not Null
answer	Answer detail	varchar	max	-	-	Not Null
answer_point	Point of Answer	float	max	-	-	Null

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