

**A UML Documentation for  
Learning Management System (LMS)**

**ELEC5620**

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## **1. Introduction**

The Learning Management System (LMS) is designed by Perfect Software Pty Ltd. for Aussie College to manage students and units of study.

Students in the University of Sydney use the LMS system to manage their units of study.

Learning Management System is the system that mainly includes two parts: essential requirements and desirable features. Essential requirements manage students' course description and selection, enrollment, assignment submission, manage teachers' handouts, assignment viewing and marking, and notification, and also manage administrators' course allocation.

Desirable features are divided into two parts: major features and minor features. Major features include program, credit management and timetable management, while minor features include discussion board, finance management and online e-learning and quiz system. The LMS system has good functions for Sydney students, teachers and administrators. The following content will demonstrate the system's analysis.

## **2. Requirements**

### **2.1 Login**

The user should input the username and password, and click the Login button to log into the Learning Management System.

### **2.2 View enrolled units of current semester**

The student user should click the My Studies button. The enrolled units of current semester should be shown on the page.

## **2.3 View unit descriptions**

At the My Studies page and the Add Units page, the student user should view the unit descriptions by clicking the unit name.

## **2.4 Add units**

At the My Studies page, the student user should click the Add Units button to go to the Add Units page.

At the Add Units page, the student user should select the available units from the Units drop-down box and click the Confirm Add Units button to add the units. The student user also should view the unit descriptions by clicking the unit name.

After the student user click the Confirm Add Units button, the result should be shown on the page.

## **2.5 Drop units**

At the My Studies page, the student user should click the Drop Units button. The check box should be shown before each unit name. The student user should check the checkboxes of the units that user wants to drop and click the Confirm Drop Units button. The user also should view the unit descriptions by clicking the unit name.

After the student user click the Confirm Drop Units button, the result should be shown on the My Studies page.

## **2.6 Manage unit information**

### **2.6.1 Edit unit description**

The administrator user should click the Manage Units button to go to the Manage Units page. At the Manage Units page, all the units should be shown on the page. The admin user should click the unit name that the user wants to edit. The unit descriptions and current lecturer should be shown on Unit Info page and the content is editable. The admin user should click the Confirm button to finish the edit of unit description. The result should be shown on the page.

### **2.6.2 Allocate lecturer**

The administrator user should click the Manage Units button to go to the Manage Units page. At the Manage Units page, all the units should be shown on the page. The admin user should click the unit name that the user wants to allocate. The unit descriptions and current lecturer should be shown on Unit Info page and the content should be editable. If the lecturer has not been allocated, the content of that column should be empty. The user should allocate lecturer and click the Confirm button to finish allocating. The result should be shown on the Unit Info page.

## **2.7 Manage units**

### **2.7.1 Add units (admin)**

The administrator user should click the Manage Units button to go to the Manage Units page. At the Manage Units page, all the units will be shown on the page. The admin user should click the Add Units button to go to the Add Units page. At the Add Units page, the admin user should input the unit information and then click the Confirm button to add unit. After the admin user click the Confirm button, the result will be shown on the page.

### **2.7.2 Drop units (admin)**

The administrator user should click the Manage Units button to go to the Manage Units page. All the units will be shown on the Manage Units page. The admin user should click the Drop Units button. The checkbox of each unit will be shown before unit name. The admin user should check

the checkboxes of the units that the user wants to drop, and then click the Confirm button. After the admin user click the Confirm button, the result will be shown on the page.

## **2.8 Enrol students to units**

The administrator user should click the Manage Enrol button to go to the Manage Enrol page. At the Manage Enrol page, the admin user should input the student ID to search student, choose units for student, and click the Confirm button to finish the manual enrol. The result should be shown on the page.

## **2.9 Lecture materials and announcement**

The lecture materials and announcement should be viewed and downloaded by both teacher and students who has enrolled in the specific course and can only be deleted, edit, uploaded by teacher.

## **2.10 Assignment submission**

Students should submit assignments by upload files from computer and can delete the uploaded file or upload more files before submit. As long as students submit the assignment successfully, the teacher and the student can download the files which are submitted. The students and teachers should only enter the assignment submission function of the courses that he or she has enrolled in.

## **2.11 Marking**

The teacher user should click “Marking” button to go to the Marking page. At the Marking page, the teacher user should select the unit and which assignment of this unit to mark. After teacher user selects the unit and assignment, all enrolled student should be shown on the page. The user should input the marks for students and click the “Submit” button. The result should be shown on the page.

The student user should click “My Grades” button to go to the View Grade page. At the View Grade page, the user should select the unit and view the assignment grades of the selected unit.

## **2.12 Send emails**

The teacher user should click the Send Email button to open the send email page. The teacher user should select enrolled students, input the message and click the send button to inform student the class updates.

## **2.13 Manage program**

### **2.13.1 Set units for program**

The administrator user should click the Manage Program button to go to the Manage Program page. At the Manage Program page, the administrator user should select the program and set the units for this program, which all the students who enrolled in this program can choose these units to study.

### **2.13.2 Set credit for program**

The administrator user should click the Manage Program button to go to the Manage Program page. At the Manage Program page, the administrator user should select the program and set the credit for this program, which all the students who enrolled in this program should complete to get the degree.

### **2.13.3 Set the number of units for program**

The administrator user should click the Manage Program button to go to the Manage Program page. At the Manage Program page, the administrator user should select the program and set the number of units for this program in a semester, which all the students who enrolled in this program should take in a semester.

## 2.14 Feature Diagram (see in attaches)

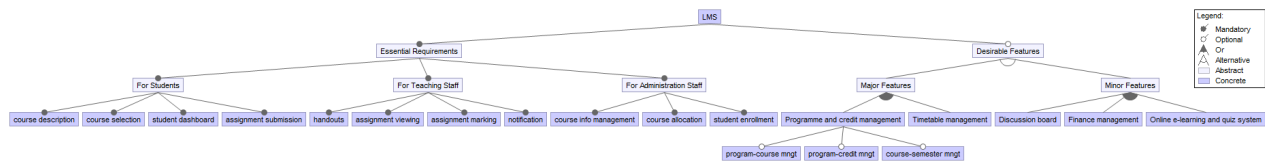


Figure1: Feature Diagram

## 3 Modeling the static aspects of the system

### 3.1 A snapshot of the LMS

The learning management system designed as our class project is a system with Sydney Student and eLearning merged. For our system, the users are classified into student, teacher and administrator. The student can apply for the course and change the course, view and choose units after enrolment, download learning material, submit assignments and view their grades in the system. The teachers can release announcements and materials to the student as well as mark the quiz into the system. Both teachers and students can see their personal information including the course, unit they study or teach. The administrator can change the information of faculty, course, unit and student. They also have rights to help students enroll in units and allocate units to lectures.

### 3.2 Use Case Templates

Name	Login
Goal	User logs into the Sydney Student System
Level	System
Precondition	User has Sydney Student's account
Success Condition	User logs into the Learning Management System

Failure Condition	Fail to log into the Learning Management System	
Actors	Administrator, teacher, student	
Trigger	Using the Learning Management System	
Description	Step	Actions
	1	Input username
	2	Input password
	3	Press Login button
	4	User logs into the Learning Management System
Extends	--	
Includes	--	

Table1: Login use case

Name	View Enrolled Units of Current Semester	
Goal	Show the enrolled units of current semester	
Level	System	
Precondition	User logs into the Learning Management System	
Success Condition	User's enrolled units are shown on the page	
Failure Condition	Fail to get user's enrolled units	
Actors	Student	
Trigger	Press the My Studies button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks My Studies button
	3	User's enrolled units are shown on the page
	4	User logs out
Extends	--	
Includes	Login	

Table2: View Enrolled Units of Current Semester use case



Name	View Unit Descriptions	
Goal	View the descriptions of units	
Level	System	
Precondition	User at the My Studies page or Add Units page	
Success Condition	the descriptions of the chosen unit are shown on the page	
Failure Condition	Fail to get the unit's descriptions	
Actors	Student	
Trigger	Click the unit name	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks My Studies button
	3	User clicks unit name
	4	User logs out
Extends	--	
Includes	Login	

Table3: View Unit Descriptions use case

Name	Add Units	
Goal	Add units of the current semester	
Level	System	
Precondition	User at the My Studies page	
Success Condition	User's selected units are added to the current semester	
Failure Condition	Fail to add user's selected units to the current semester	
Actors	Student	
Trigger	Click the Add Units button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks My Studies button

	3	User clicks Add Units button
	4	User selects unit from the drop-down box
	5	User clicks the Confirm Add Units button
	6	User logs out
Extends	--	
Includes	Login, View Enrolled Units of Current Semester	

Table4: Add Units use case

Name	Drop Units	
Goal	Drop units of the current semester	
Level	System	
Precondition	User at the My Studies page	
Success Condition	User's selected units are dropped from the current semester	
Failure Condition	Fail to drop user's selected units from the current semester	
Actors	Student	
Trigger	Click the Drop Units button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks My Studies button
	3	User clicks Drop Units button
	4	User checks the check box of each selected unit
	5	User clicks the Confirm Drop Units button
	6	User logs out
Extends	--	
Includes	Login, View Enrolled Units of Current Semester	

Table5: Drop Units use case

Name	Edit Unit Descriptions
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Goal	Update the unit descriptions	
Level	System	
Precondition	User at the Manage Units Page	
Success Condition	The unit descriptions are updated	
Failure Condition	Fail to update the unit descriptions	
Actors	Administrator	
Trigger	Press the unit name	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks Manage Unit button
	3	User clicks the unit name that the use wants to edit
	4	User inputs the unit descriptions
	5	User clicks the confirm button
	6	User logs out
Extends	--	
Includes	Login	

Table6: Edit Unit Descriptions use case

Name	Allocate Lecturer	
Goal	Allocate lecturers for units	
Level	System	
Precondition	User at the Manage Units Page	
Success Condition	The lecturer is allocated to the unit	
Failure Condition	Fail to allocate lecturer to the unit	
Actors	Administrator	
Trigger	Press the unit name	
Description	Step	Actions
	1	User logs into Learning Management System

	2	User clicks Manage Unit button
	3	User clicks the unit name that the user wants to allocate
	4	User inputs the lecturer information
	5	User clicks the confirm button
	6	User logs out
Extends	--	
Includes	Login	

Table7: Allocate Lecturer use case

Name	Add Units (admin)	
Goal	Add units to the system	
Level	System	
Precondition	User at the Manage Units page	
Success Condition	The unit is added to the system	
Failure Condition	Fail to add the unit to the system	
Actors	Administrator	
Trigger	Click the Add Units button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks Manage Unit button
	3	User clicks Add Units button
	4	User input the unit information
	5	User clicks the Confirm button
	6	User logs out
Extends	--	
Includes	Login	

Table8: Add Units (admin) use case

Name	Drop Units (admin)	
Goal	Drop units from the system	
Level	System	
Precondition	User at the Manage Units page	
Success Condition	The unit is deleted from the system	
Failure Condition	Fail to delete the unit from the system	
Actors	Administrator	
Trigger	Click the Drop Units button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks Manage Unit button
	3	User clicks Drop Units button
	4	User checks the checkboxes of the units that want to delete
	5	User clicks the Confirm button
	6	User logs out
Extends	--	
Includes	Login	

Table9: Drop Units (admin) use case

Name	Enrol Students to Units	
Goal	Manually enrol students to units	
Level	System	
Precondition	User at the Manage Units page	
Success Condition	The student is enrolled to selected units	
Failure Condition	Fail to enrol student to selected units	
Actors	Administrator	
Trigger	Click the Manage Enrol button	
Description	Step	Actions

	1	User logs into Learning Management System
	2	User clicks Manage Enrol button
	3	User inputs student id to search student
	4	User selects units for the student
	5	User clicks the Confirm button
	6	User logs out
Extends	--	
Includes	Login	

Table10: Enrol Students to Units use case

Name	View Lecture Materials	
Goal	See specific lecture materials	
Level	System	
Precondition	User has a student ID and password and have enrolled in this course. User logs in.	
Success Condition	Materials of this course can be viewed by user	
Failure Condition	Materials cannot be viewed	
Actors	Students	
Trigger	User clicks the lecture material button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects lecture materials function
	4	User selects a material by name
	5	User logs out
Extends	--	
Includes	Login	

Table11: View Lecture Materials use case

Name	Edit Lecture Materials	
Goal	Edit specific lecture materials	
Level	System	
Precondition	User has a Teacher ID and password and have enrolled in this course. User logs in.	
Success Condition	Materials of this course can be edited by user	
Failure Condition	Materials can't be edited	
Actors	Teacher	
Trigger	User clicks the lecture material button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects lecture materials function
	4	User selects a material by name
	5	Specified material is displayed
	6	Select edit function
	7	User edits the name and description of the material
	8	Save and quit
	9	User logs out
Extends	--	
Includes	Login	

Table12: Edit Lecture Materials use case

Name	Delete Lecture Materials	
Goal	Delete specific lecture materials	
Level	System	
Precondition	User has a Teacher ID and password and have enrolled in this course. User logs in.	
Success Condition	The Specific material is deleted and the name is not in the name list of lecture materials.	

Failure Condition	The specific material can't be deleted	
Actors	Teachers	
Trigger	User clicks the lecture materials button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects lecture materials function
	4	User selects a material by name
	5	Specified material is displayed
	6	Select delete function
	7	User logs out
Extends	--	
Includes	Login	

Table13: Delete Lecture Materials use case

Name	Upload Lecture Materials	
Goal	Upload specific lecture materials	
Level	System	
Precondition	User has a Teacher ID and password and have enrolled in this course. User logs in.	
Success Condition	Materials of this course can be edited by user	
Failure Condition	Materials can't be edited	
Actors	Teachers	
Trigger	User clicks the lecture material button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects lecture materials function
	4	User selects "new" function



	5	User edits the name and description of the material
	6	User uploads the material
	7	Save and quit
	8	User logs out
Extends	--	
Includes	Login, Upload files	

Table14: Upload Lecture Materials use case

Name	View Unit Announcement	
Goal	See specific announcement in announcement page	
Level	System	
Precondition	User has a student ID and password and have enrolled in this course. User logs in.	
Success Condition	Announcements of this course can be viewed by user	
Failure Condition	Announcements can't be viewed	
Actors	Students	
Trigger	User clicks the announcement button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects announcement function
	4	User selects a material by name
	5	User logs out
Extends	--	
Includes	Login	

Table15: View Unit Announcement use case

Name	Edit Unit Announcement
Goal	Edit announcement materials

Level	System	
Precondition	User has a Teacher ID and password and have enrolled in this course; User logs in.	
Success Condition	Announcement can be edited by user	
Failure Condition	Announcement can't be edited	
Actors	Teachers	
Trigger	User clicks the announcement button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects announcement function
	4	User selects a material by name
	5	Specified material is displayed
	6	Select edit function
	7	User edits the name and description of the material
	8	Save and quit
	9	User logs out
Extends	--	
Includes	Login	

Table16: Edit Unit Announcement use case

Name	Delete Unit Announcement
Goal	Delete announcement materials
Level	System
Precondition	User has a Teacher ID and password and have enrolled in this course User logs in.
Success Condition	The announcement is deleted and not in the list.
Failure Condition	Announcements can't be deleted
Actors	Teachers

Trigger	User clicks the announcement button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects announcement function
	4	User selects a material by name
	5	Specified material is displayed
	6	Select delete function
	7	User logs out
Extends	--	
Includes	Login	

Table17: Delete Unit Announcement use case

Name	Upload Unit Announcement	
Goal	Upload announcement materials	
Level	System	
Precondition	User has a Teacher ID and password and have enrolled in this course. User logs in.	
Success Condition	materials of this course can be edited by user	
Failure Condition	materials can't be edited	
Actors	Teachers	
Trigger	User clicks the announcement button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects material sharing function
	3	User selects announcement function
	4	User selects new material function
	5	User edits the name and description of the material
	6	User uploads the material

	7	Save and quit
	8	User logs out
Extends	--	
Includes	Login, Upload files	

Table18: Upload Unit Announcement use case

Name	Submit Assignment	
Goal	Assignment is submitted to e-learning system	
Level	System	
Precondition	User has a Student ID and password and have enrolled in this course. User logs in.	
Success Condition	Assignment of this course can be submitted by user to system	
Failure Condition	Assignment cannot be submitted	
Actors	Students	
Trigger	User clicks the assignment button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects assignment submission function
	3	User selects the name of specific assignment
	4	User uploads the file(s)
	5	User submits the files
	6	The name of submitted files is displayed
	7	User logs out
Extends	--	
Includes	Login, Upload files	

Table19: Submit Assignment use case

Name	Download Assignment
Goal	Set a new entrance for student to submit the specific

	assignment	
Level	System	
Precondition	User has a teacher ID and password and has enrolled in the specific course. User logs in.	
Success Condition	The specific assignment can be downloaded	
Failure Condition	The specific assignment can't be downloaded	
Actors	Students or teachers	
Trigger	User clicks the assignment button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User selects assignment download function
	3	User selects the name and SID of students
	4	User downloads the assignments of these students
	5	User logs out
Extends	--	
Includes	Login, Download files	

Table20: Download Assignment use case

Name	Upload Files	
Goal	The specific file is uploaded	
Level	System	
Precondition	User has a student/teacher/admin ID and password and a specific file in computer. User logs in.	
Success Condition	Specific file is uploaded	
Failure Condition	Specific file cannot be uploaded	
Actors	Users	
Trigger	User clicks the upload button	
Description	Step	Actions
	1	User selects upload function

	2	The file browser is open
	3	User selects the name of specific file(s)
	4	The name of specific file(s) is displayed when they upload completely
Extends	--	
Includes	--	

Table21: Upload Files use case

Name	Download Files	
Goal	The specific file is downloaded	
Level	System	
Precondition	User has a student/teacher/admin ID and password and a specific file in computer. User logs in.	
Success Condition	Specific file is downloaded	
Failure Condition	Specific file cannot be downloaded	
Actors	Users	
Trigger	User clicks the download button	
Description	Step	Actions
	1	User selects download function
	2	The file browser is open
	3	User selects the file to preserve the file(s)
	4	Notify the user when they are downloaded completely
Extends	--	
Includes	--	

Table22: Download Files use case

Name	Mark Assignment
Goal	Teacher mark unit assignments for students
Level	System

Precondition	User has logged into system	
Success Condition	Teacher marked the unit assignments for students	
Failure Condition	Fail to mark the unit assignment for students	
Actors	Teacher	
Trigger	Click the “Marking” button	
Description	Step	
	1	User logs into Learning Management System
	2	User clicks “Marking” button
	3	User selects the unit
	4	User selects the assignment
	5	User inputs the marks for students
	6	User clicks the “Submit” button
	7	User logs out
Extends	--	
Includes	Login	

Table23: Mark Assignment use case

Name	View grade	
Goal	Student view their marks of unit	
Level	System	
Precondition	User has logged into system	
Success Condition	The marks shown on the page	
Failure Condition	Fail to view the marks of units	
Actors	Student	
Trigger	Click the “My Grades” button	
Description	Step	Actions
	1	User logs into Learning Management System
	2	User clicks the “My Grades” button
	3	User selects the unit and views the marks of that unit

	4	User logs out
Extends	--	
Includes	Login	

Table24: View Grade use case

Name	Send Emails	
Goal	Send emails to students to inform the class updates	
Level	System	
Precondition	User is allocated to the unit	
Success Condition	Send emails to selected students	
Failure Condition	Fail to send emails to selected students	
Actors	Teacher	
Trigger	Click the "Send Email" button	
Description	Step	Actions
	1	User logs into the Learning Management System
	2	User clicks the “Send Email” button
	3	User selects the enrolled students that wants to inform
	4	User inputs the message that wants to send
	5	User clicks the “Send” button
	6	User logs out
Extends	--	
Includes	Login	

Table25: Send Emails use case

Name	Manage Program
Goal	Set units, credits and the number of units for the selected program
Level	System
Precondition	Administrator user logs into the system



Success Condition	Set the properties for the program	
Failure Condition	Fail to set the properties for the program	
Actors	Administrator	
Trigger	Click the "Manage Program" button	
Description	Step	Actions
	1	User logs into the Learning Management System
	2	User clicks the “Manage Program” button
	3	User selects the program that wants to set
	4	User selects the units for the selected program
	5	User sets the credit for this program that enrolled students have to complete to get the degree
	6	User sets the number of units that enrolled students can choose in a semester
	7	User clicks the “Confirm” button
	8	User logs out
Extends	--	
Includes	Login	

Table26: Manage Program use case

### 3.3 Use Case Diagram (see in attaches)

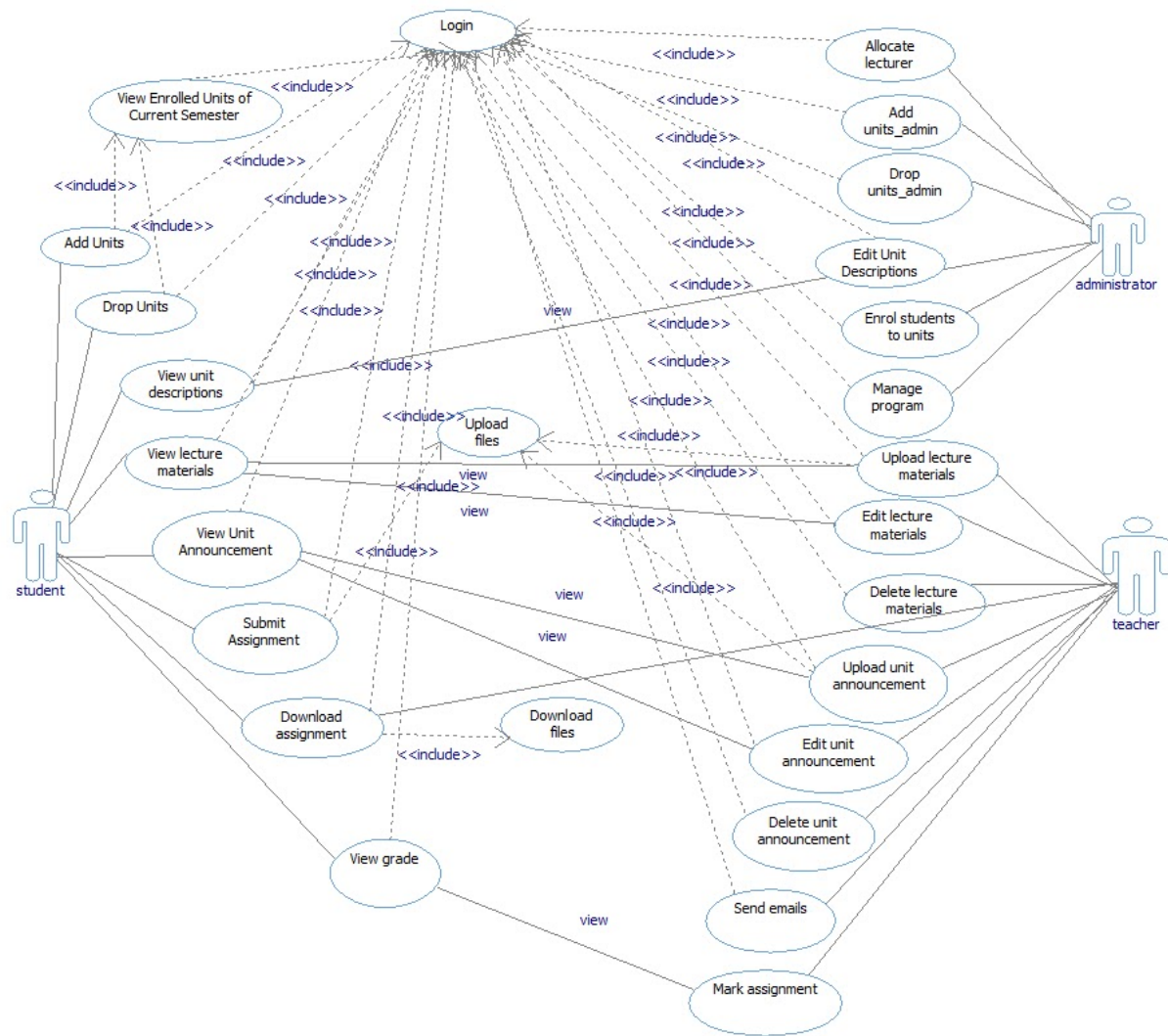


Figure2: Use Case Diagram

### 3.4 Class Diagram (see in attaches)

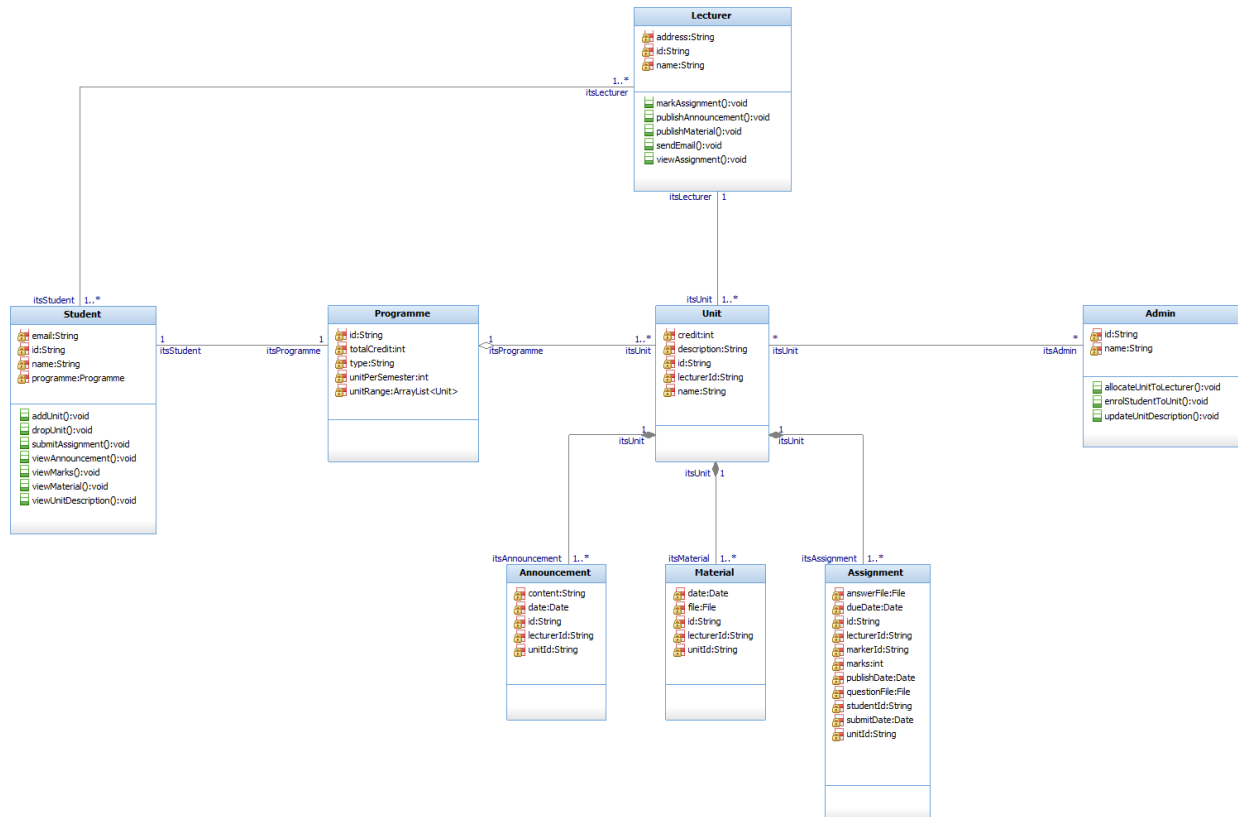


Figure3: Class Diagram

Student	
id:String	Primary key
name:String	Student's name
email:String	Student's email
programme:Programme	Programme the student enrolled
viewUnitDescription()	Students can view the description of all available units of study.
addUnit()	Students can add units of study.
dropUnit()	Students can drop units of study.
viewAnnouncement()	After enrolment of a unit of study, students can view

	announcement.
viewMaterial()	After enrolment of a unit of study, students can view teaching materials.
viewMarks()	After enrolment of a unit of study, students can view marks.
submitAssignment()	Students can submit their assignments via the system.

Table27: Student class

Lecturer	
id:String	Primary key
name:String	Lecturer's name
address:String	Lecturer's office
publishAnnouncement()	Lecturers can publish announcements via the system.
publishMaterial()	Lecturers can publish learning materials via the system.
viewAssignment()	Lecturers can view the assignments of their units.
markAssignment()	Lecturers can mark assignments in the system.
sendEmail()	Lecturers can send group/individual emails to notify enrolled students about any class updates.

Table28: Lecturer class

Admin	
id:String	Primary key

name:String	Admin's name
updateUnitDescription()	Admin can update the description of all units of study.
allocateUnitToLecturer()	Admin can allocate units of study to lecturers.
enrolStudentToUnit()	Admin can manually enrol students to units of study.

Table29: Admin class

Programme	
id:String	Primary key
type:String	Type of the programme
unitRange:ArrayList<Unit>	Range of the units of study that a student can enrol
totalCredit:int	Total credits that a student has to complete to get the degree
unitPerSemester:int	Number of units a student can enrol in a semester

Table30: Programme class

Unit	
id:String	Primary key
name:String	Name of the unit of study
credit:int	Credit of the unit of study
description:String	Description of the unit of study
lecturerId:String	ID of the lecturer who teaches the unit of study

--

Table31: Unit class

Announcement	
id:String	Primary key
unitId:String	ID of the unit of study the announcement belongs to
lecturerId:String	ID of the lecturer who publishes the announcement
content:String	Content of the announcement
date:Date	Date of the announcement is published

Table32: Announcement class

Material	
id:String	Primary key
unitId:String	ID of the unit of study the material belongs to
lecturerId:String	ID of the lecturer who publishes the material
file:File	File of the material
date:Date	Date of the material is published

Table33: Material class

Assignment	
id:String	Primary key
unitId:String	ID of the unit of study the assignment belongs to
lecturerId:String	ID of the lecturer who publishes the assignment
publishDate:Date	Date of the assignment is published
questionFile:File	Question of the assignment
dueDate:Date	Due date of the assignment
studentId:String	ID of the student who submits the assignment
answerFile:File	Answer to the assignment
submitDate:Date	Date of submission
markerId:String	ID of the lecturer who marks the assignment
marks:int	Marks of the answer

Table34: Assignment class

## 4. Modeling the dynamic aspects of the system

### 4.1 State Chart Diagrams

#### 4.1.1 State Chart for Lecture Materials Management

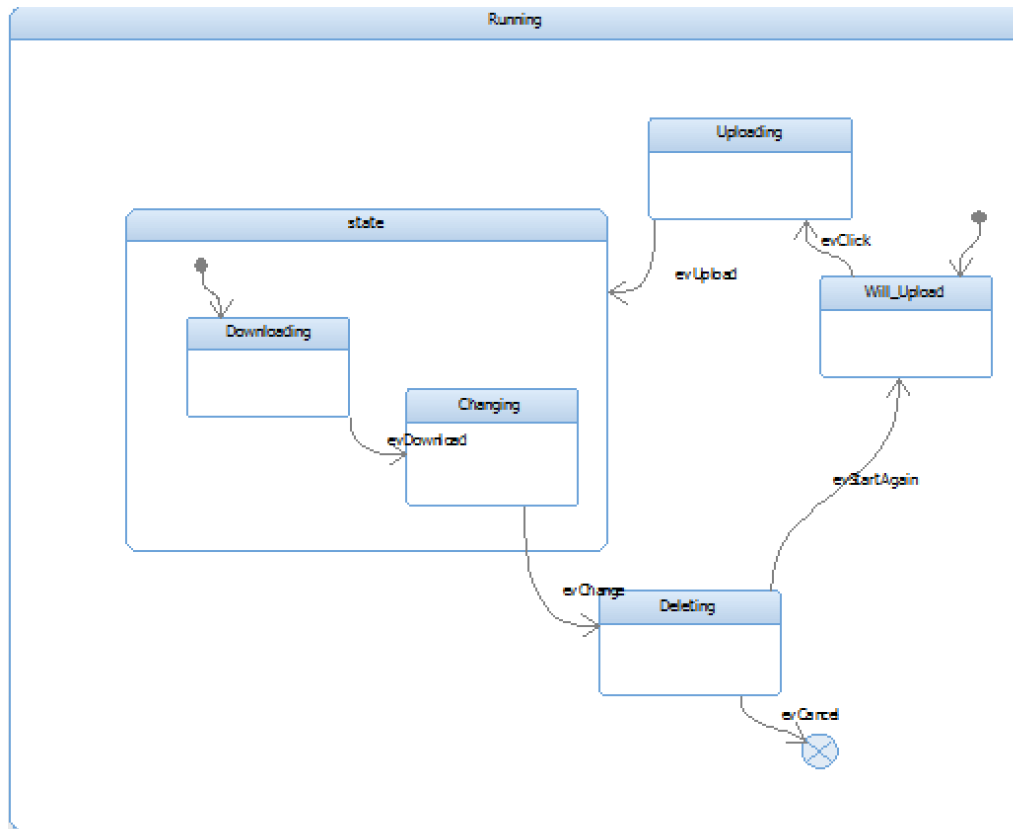


Figure4: State Chart Diagram for Lecture Materials Management

This state chart for lecture materials management is divided into four parts: will upload, uploading, downloading, changing and deleting. The first state is that lecture materials will upload to the learning management system. The second state is that Sydney students have already viewed these uploaded lecture materials through clicking the button. Then the third state should happen concurrently, that means, Sydney students should download or change these uploaded lecture materials concurrently through triggering different buttons. The last state is that Sydney students should delete these uploaded lecture materials. Then Sydney students should exit the LMS system or start these steps again.

#### 4.1.2 State Chart for Unit Management



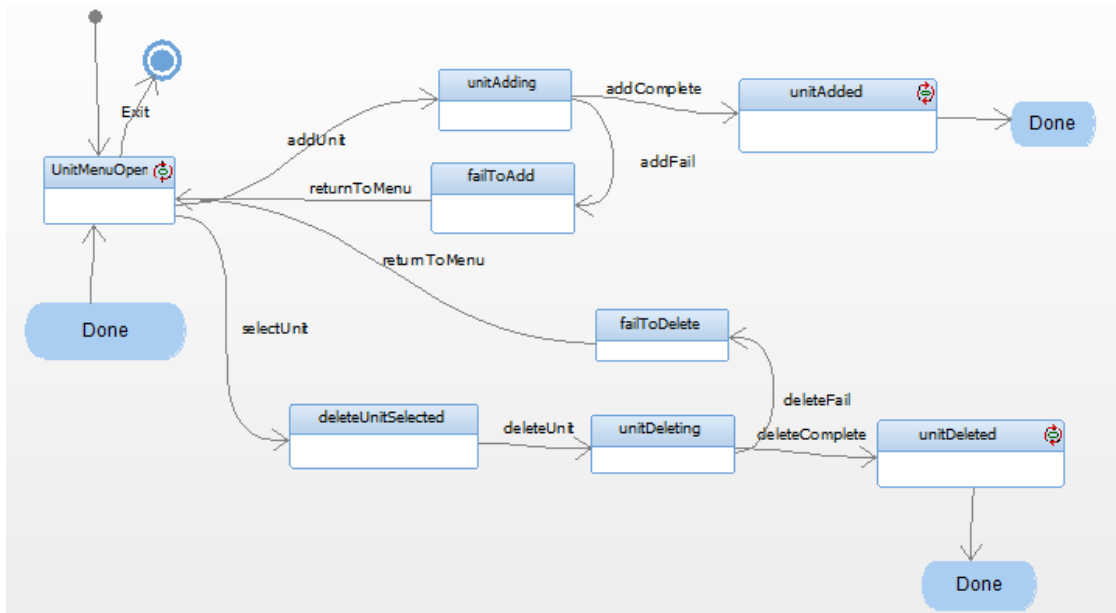


Figure5: State Chart Diagram for Unit Management

To begin with, at the UnitMenuOpen state, choosing addUnit or selectUnit trigger to transit into unitAdding state or deleteUnitSelected state. At unitAdding state, if the adding process is completed, through addComplete trigger transit into unitAdded state and then the process finish. If the adding process is failed, through addFail trigger transit into failToAdd state, and through returnToMenu state return back to UnitMenuOpen state. For delete unit process, from deleteUnitSelected state, when deleteUnit is triggered, the process will transit to unitDeleting state. If the deleting process is succeeded, the process will transit to unitDeleted state through deleteComplete trigger. If the deleting process is failed, the process will transit to failToDelete through failToDelete state and return to UnitMenuOpen state through returnToMenu state.

#### 4.1.3 State Chart for Assignment Submission

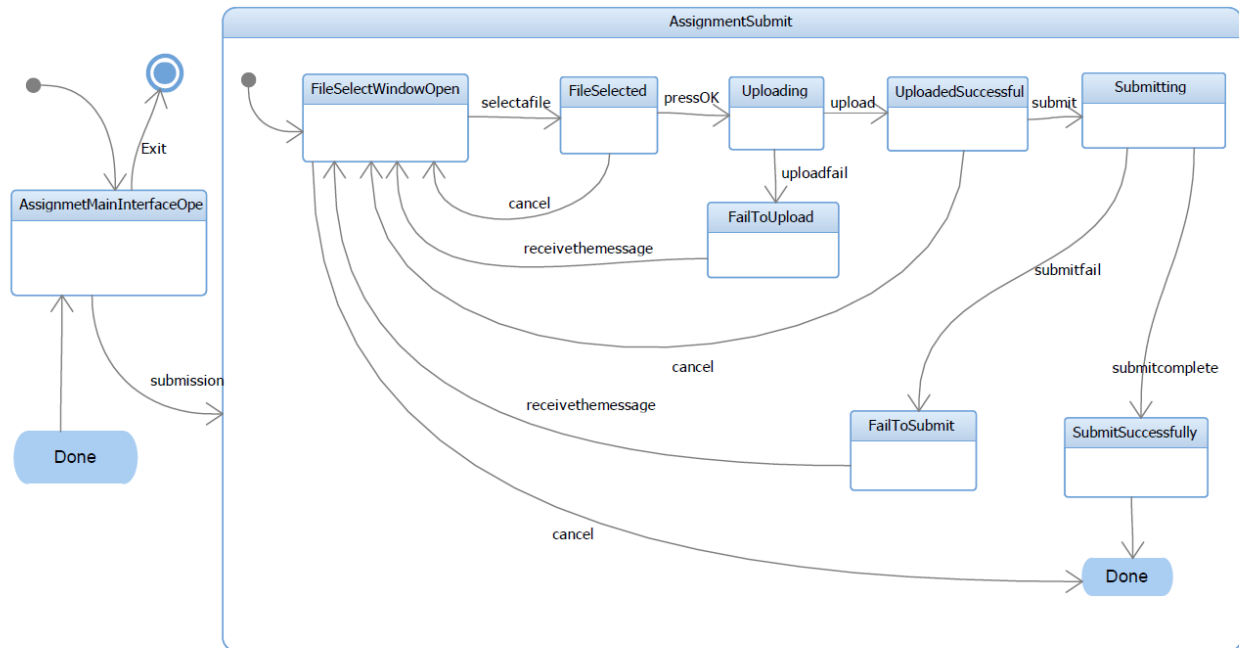


Figure6: State Chart Diagram for Assignment Submission

The state chart is for assignment submission function. Users can start with assignment main interface to enter the function by clicking submission button. After that, the state goes to assignment submit state. The first step is to open file select window for users to select the file which need to be upload. Then, the state goes to file selected. After pressing OK button by users, the system goes to uploading state and then will goes to uploaded success state. After pressing submit button by users, it is submitting and then submit successfully to jump out of assignment submit state and jump to assignment main interface open state. All interrupts in assignment submit state will lead to first state of assignment submit as shown in the chart.

#### 4.1.4 State Chart for Marking

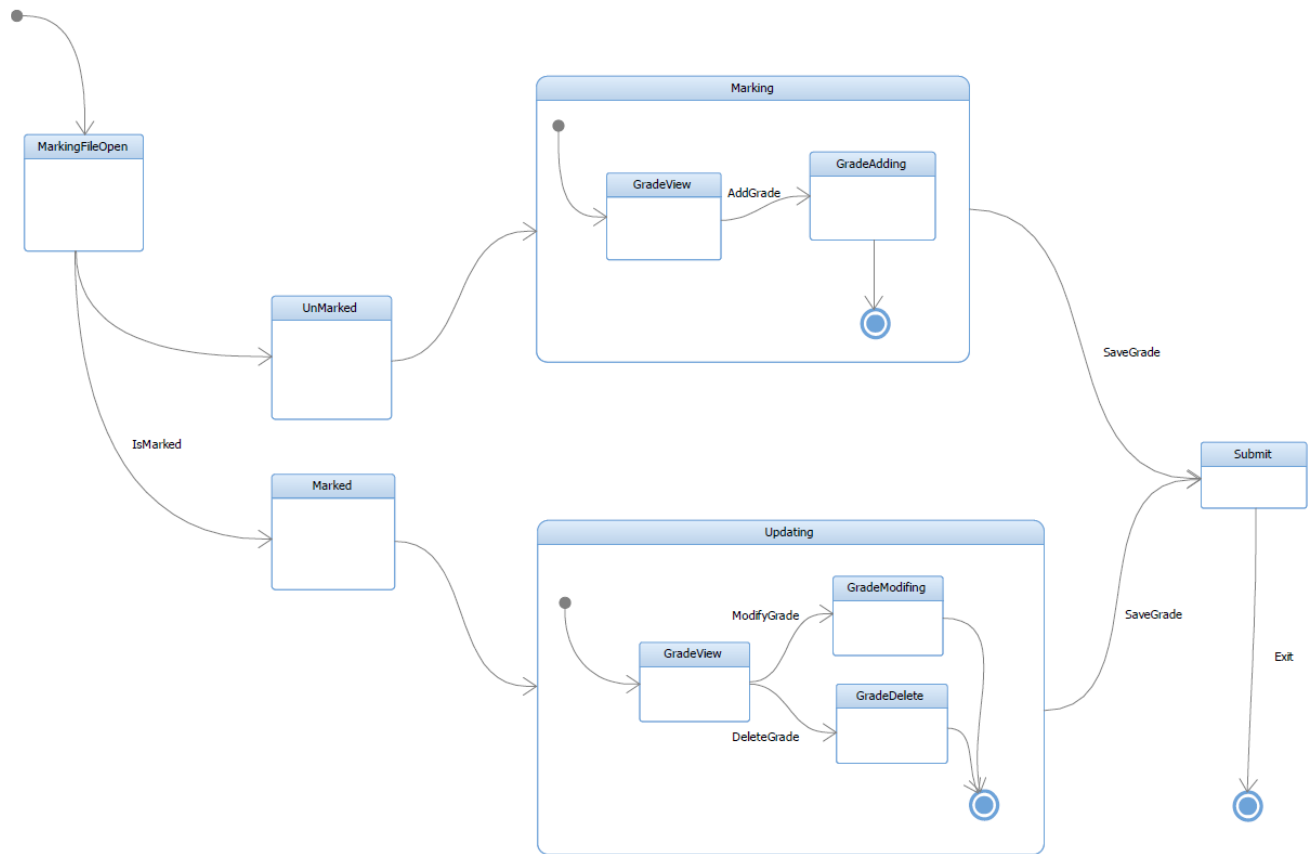


Figure7: State Chart Diagram for Marking

This state diagram describes the states of the marking operation of teachers. The first state is MarkingFileOpen. Teacher open the marking file by clicking the mark label. Then divide into unmarked state and marked state. For the Unmarked state, here we go into the marking state, follow the add grade operation and go to the GradeAdding state. For the marked state, there are two different state base on two different operations, modify and delete. Then, for both marking and updating, click save to submit the new grade into the system.

#### 4.1.5 State Chart for Manually Enrollment

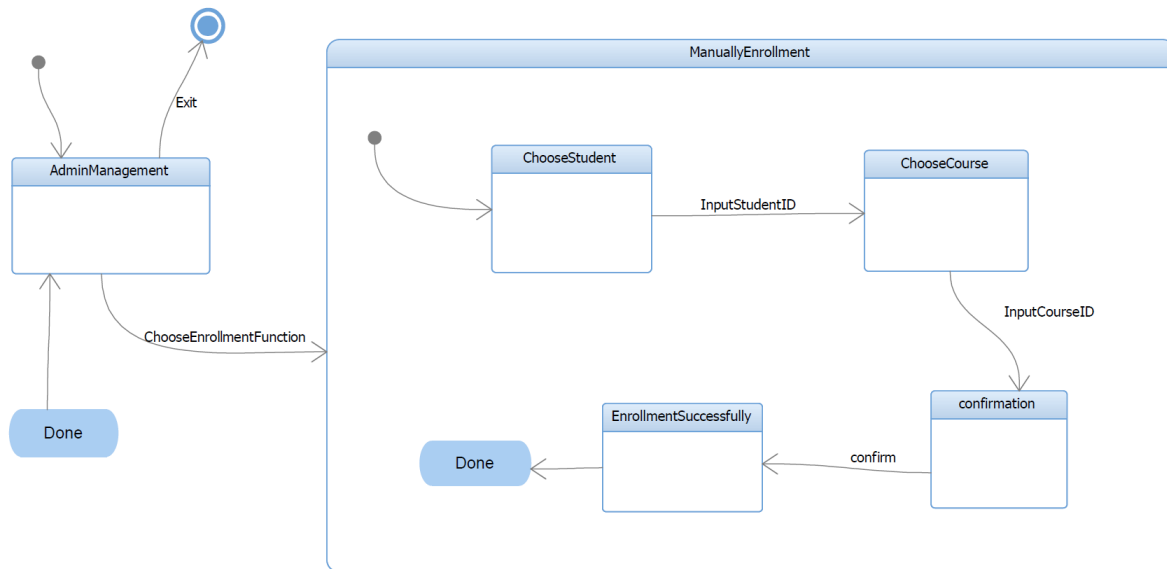


Figure8: State Chart Diagram for Manually Enrollment

The first state is admin management interface open. After clicking enrollment button by users, the manually enrollment state start. The first state in manually enrollment state is student choosing state, the user need to input StudentID to motivate it goes to course choosing state. After CourseID input by users, the confirmation state start and user need to confirm to make it goes to enrollment success state.

## 4.2 Activity Diagrams

### 4.2.1 Activity Diagram for Lecture Materials Management

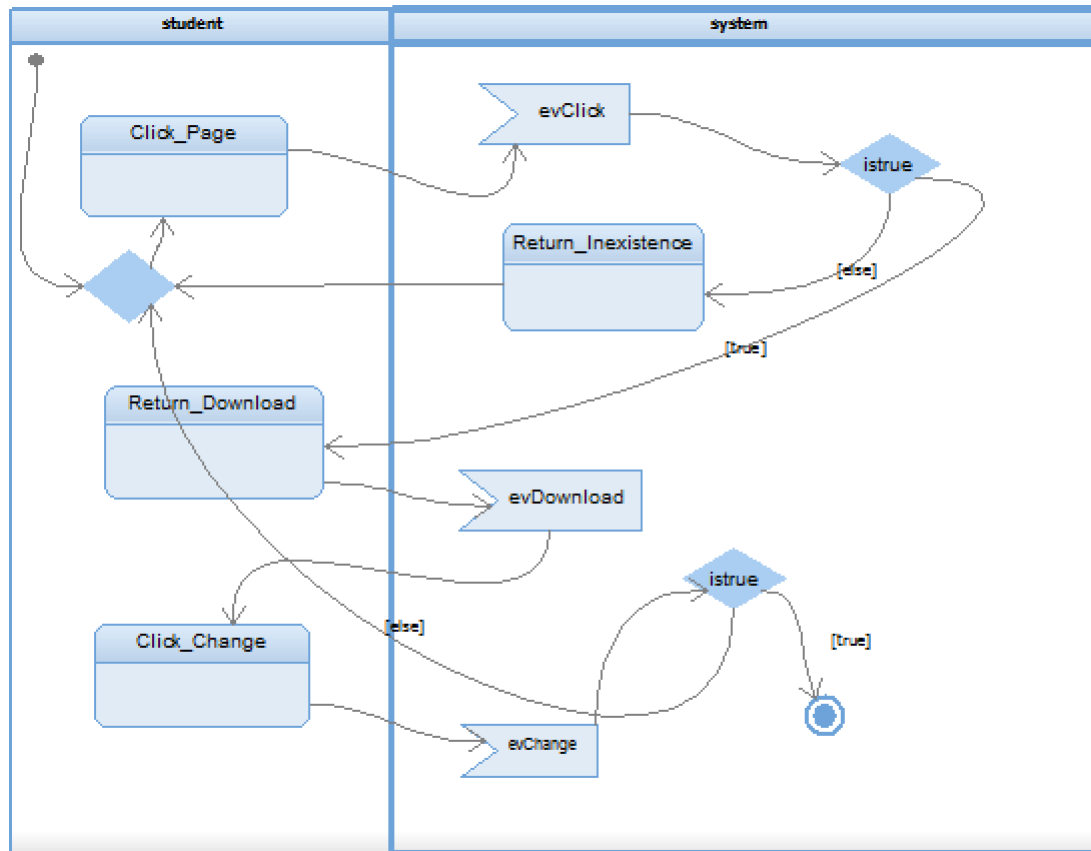


Figure9: Activity Diagram for Lecture Materials Management

This activity diagram describes the interaction for lecture materials management between Sydney students and the LMS system. The first step is that Sydney students should click page to download the uploaded lecture materials through triggering the download button, and if this trigger is true, Sydney students would download lecture materials. Then the second step is that Sydney students should change these downloaded lecture materials through triggering the change button, and if this trigger is true, Sydney students would change these downloaded lecture materials, and then Sydney students should exit the learning management system. However, if all of triggered activities are false to the system, the system would return the original stage.

### 4.2.2 Activity Diagram for Unit Management

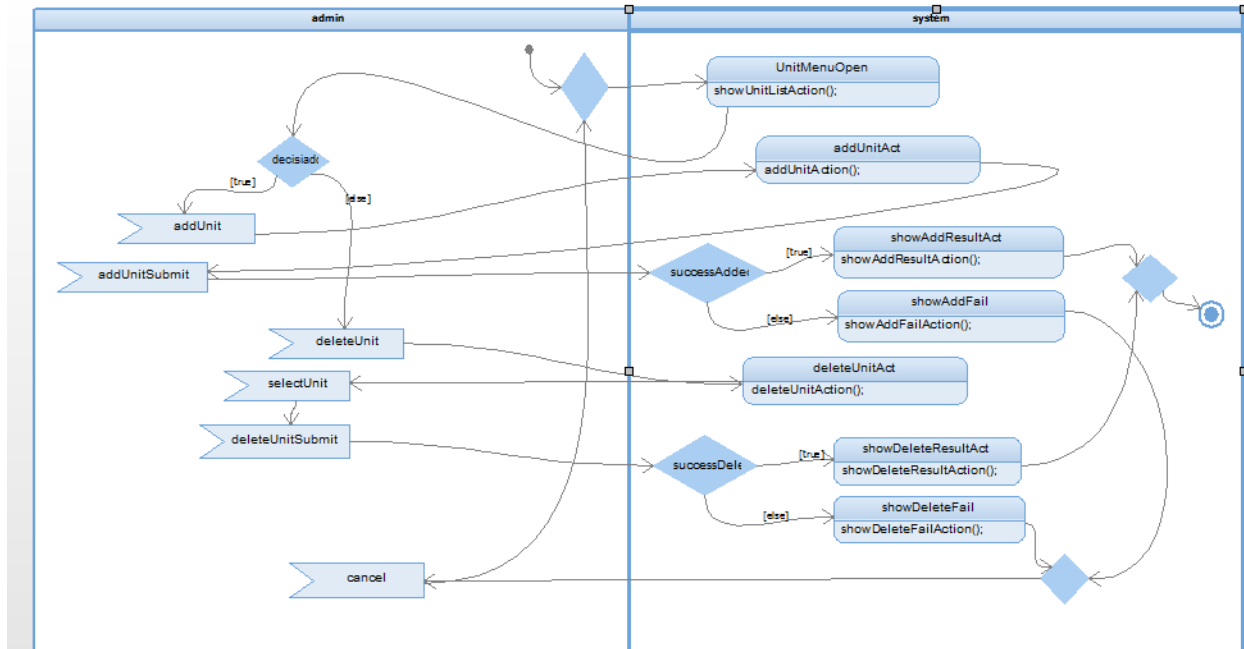


Figure10: Activity Diagram for Unit Management

First after the unitMenuOpen action, if addUnit is triggered, then addUnitAct action is processed. If addUnitSubmit is triggered, and the result is succeeded, the showAddResultAct is processed, and the process is completed. If the result is fail, the showAddFail is processed and back to the beginning.

After the unitMenuOpen action, if deleteUnit is triggered, then deleteUnit action is processed. After that, if the selectUnit and deleteUnitSubmit are triggered, and the process is successfully completed, the showDeleteResultAct will be processed and the process is completed. If the process is failed, the showDeleteFail will be processed and return to the beginning.

### 4.2.3 Activity Diagram for Assignment Submission

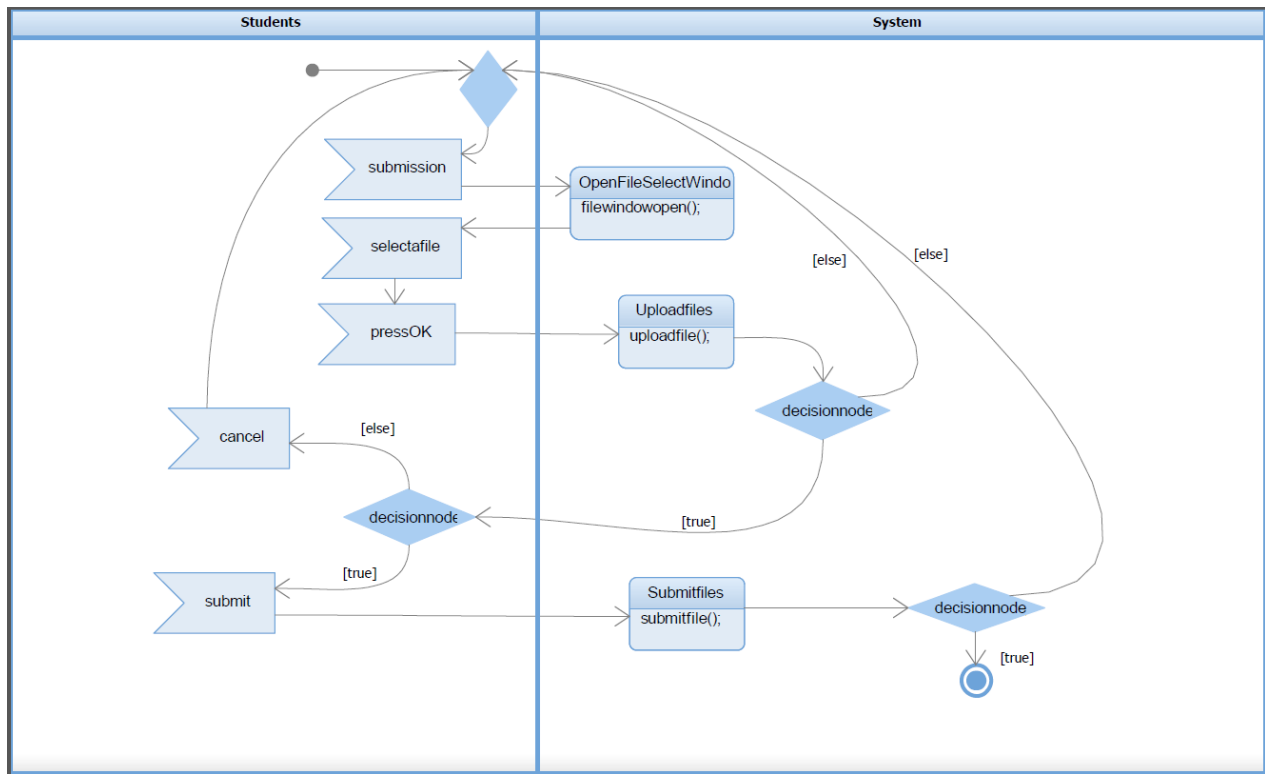


Figure11: Activity Diagram for Assignment Submission

The activity diagram is for assignment submission function. Users can start by clicking submission button. After that, the system will conduct an activity which is to open file select window for users to select the file which need to be upload. Then, users take an action to select files. After pressing OK button by users, the system will upload files. Users can press cancel button to jump to the first action or press submit button to make system goes into the activity of submission. If files are submitted successfully, the activity will be end or it will jump to beginning.

#### 4.2.4 Activity Diagram for Marking

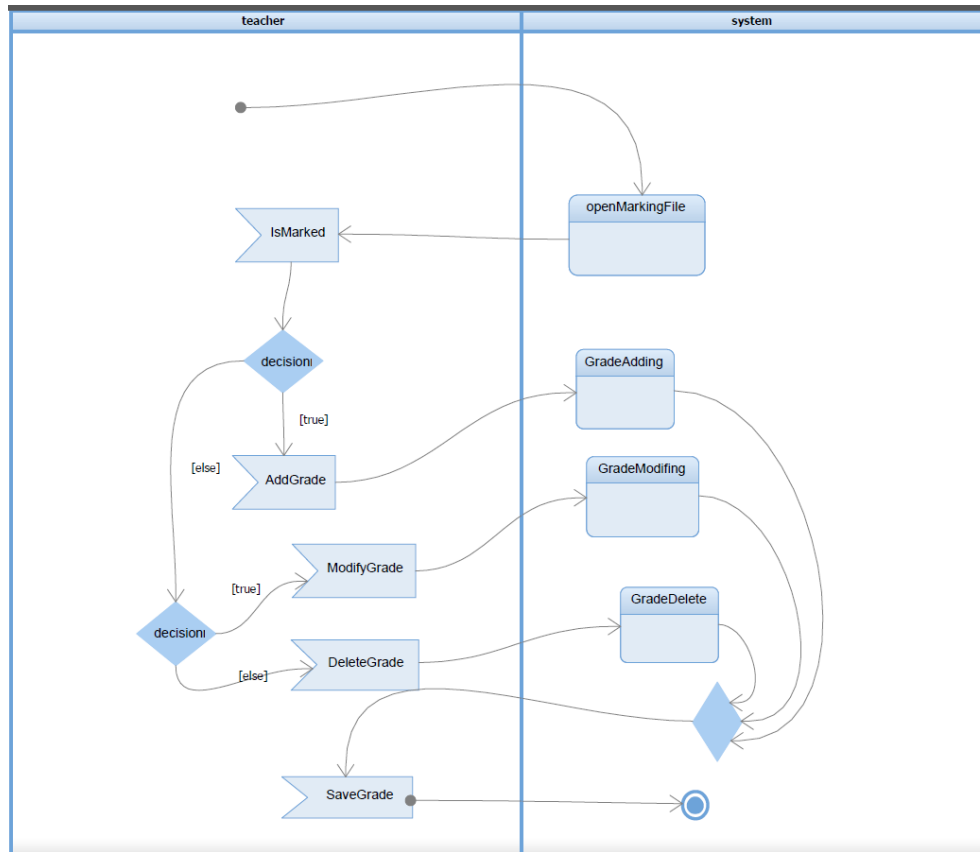


Figure12: Activity Diagram for Marking

This state diagram describes the states of the marking operation of teachers. The first state is MarkingFileOpen. Teacher open the marking file by clicking the mark label. Then divide into unmarked state and marked state. For the Unmarked state, here we go into the marking state, follow the add grade operation and go to the GradeAdding state. For the marked state, there are two different state based on two different operations, modify and delete. Then, for both marking and updating, click save to submit the new grade into the system.

#### 4.2.5 Activity Diagram for Manually Enrollment



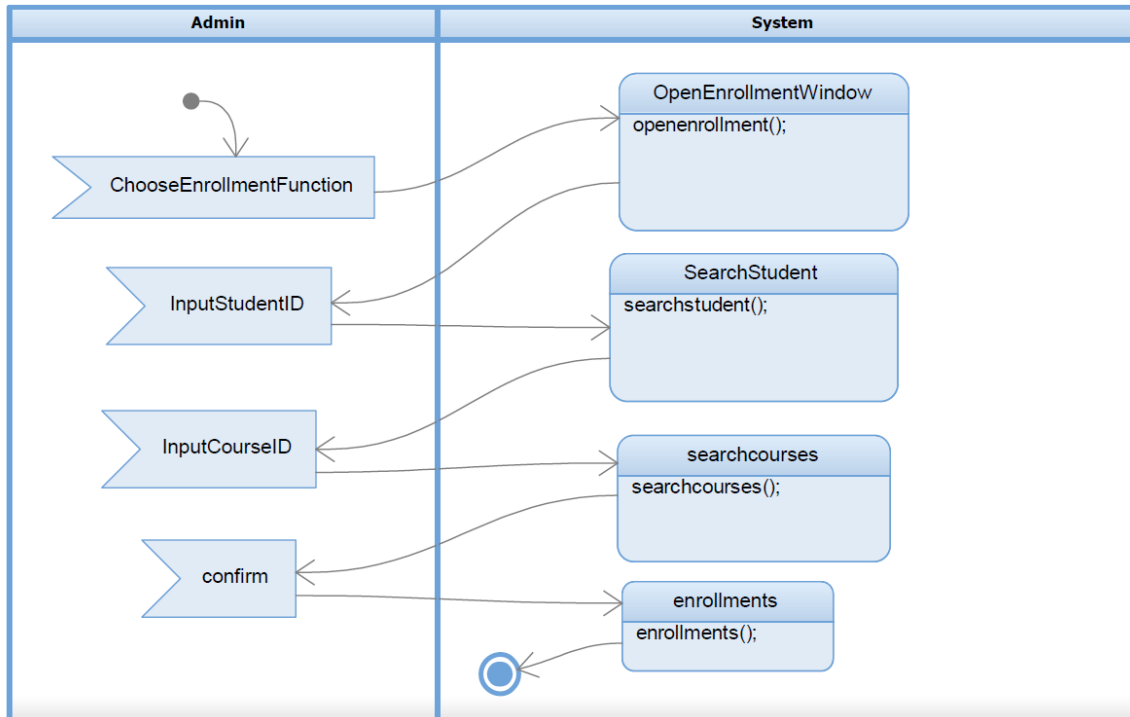


Figure13: Activity Diagram for Manually Enrollment

The first action is to choose enrollment function by users. Then system will take open enrollment function window activity. And user need to input StudentID to motivate system to search student and input CourseID to make system to search courses. Finally, user need to press confirm button to invoke enrollment operation.

## 5. Conclusion

This report introduces the design of Learning Management System' structure and functionalities through use cases, feature diagram, class diagrams, state diagrams and activity diagrams. It can help reason about the system and answer questions of the system's structure and model. It also can assist the further implementation.