Introduction

ABC University is using manual system for enrolment procedure in courses and subject in each course. Now the University requires an Online Student Enrolment System for students. Online Student Enrolment System is a system that helps the students to do their enrolment process of courses and subjects online. This system provides ease to students as well as the administration staff to perform their tasks. The student enrolment officer use this system to add or remove the courses and subjects in each course. [CITATION Lia01 \l 1033] After successful enrollment, the student can view their timetable and can pay the dues online. The system would prevent the student from enrolling into subjects that clash. The timetabling officer use this system for tasks related to subjects timetable. In this assignment, stakeholders and actors of the system has been identified. The functional and non-function requirements of the system has been discussed in this assignment. The use case of overall system has been created to get an overview of the functionality of system. The use case shows the services and actions performed by different actors.

Question 1

a) The stakeholders of the Online Student Enrolment System are:

1) **Students**
2) **Administrators**
3) **Teachers**
4) **University Account Officers.**

   In this project, Students are those who are getting education from the ABC University and they want to enroll themselves into courses and subjects. Administrators manage the courses and enrollment procedure. They are also responsible for subject timetable creation. Teachers are teaching courses to the students. The University Account Officers manage fee collection from Students.

b) The Actors in the Online Student Enrolment System are:

1) **Students**
2) **Program Directors**
3) **Student Enrolment Officers**

4) **Timetabling Officer**
5) **Database Management System**

   In this System, Students enroll themselves into Courses. Program Directors are in authority to deliver information related to course and subject which includes course description, availability and its prerequisites to the Students. Student Enrolment Officers create, edit and remove courses as well as core subjects and electives in each Course offered by the School. Timetabling Officers are responsible for the management of each subject timetables. Timetabling Officers performs creation, editing and deletion operation on the subject timetable. Database Management System holds database for Students and details of courses offered to the Students.

Question 2

Functional Requirements are the elementary facilities of the system that user particularly needs. These requirements must be integrated into the system. These requirements define the input given to system, the functionality performed and end result expected from the system. The system has to fulfill all functional requirements defined by the users. [CITATION Sof18 \l 1033]. These requirements are specially incorporated for general public. These requirements are defined by users during requirement gathering phase.

The major Functional Requirements of Online Student Enrolment System are as follows:

1) **Students view the available courses core subjects and electives**

   The system has to show all the available courses, core subjects and electives to the Students. It will help the Students to do their enrollment process.
2) **Students enroll or drop subject online**

   The system has to provide facility to the Students to enroll into their desired course and subjects in each course. The system also has to provide an option to the Students to drop the subject.
3) **Student Enrollment Officer add, change or delete the Courses and Subjects of each Course**

   The system must provide a facility to the Student Enrollment Officer to add, change and delete the Courses as well as the subjects in each course in every trimester. The courses

added to the system by the Student Enrollment Officer are shown to students for enrollment.

4) **Information related to courses and subjects**

   The system has to show detailed and update information about the courses and subjects to students. The information should include the basic description, prerequisites and the availability of course or subject.

5) **Timetable for Subjects**

   The system has to provide facility to the Timetabling Officers to create, edit or delete timetable for each subject by using this system.

6) **System prevents timetable clash between subjects**

   The system must prevent students to enroll into such subjects that clash.

7) **Online payment process**

   The system has to give ability to the Students to pay the tuition fee online. The online payment process should be safe and secure for the students.

8) **System generates customized timetable for students**

   Once the enrollment process is finished, the system has to generate customized timetable for each student. The timetable must include the class times and venue.

9) **System generates email**

   The system has to generate email to those students who have not finished their enrollment procedure by a closing date.

10) **System generates customized reports**

    The system has to generate customized reports to the Program Directors and the Student Enrolment Officers containing the information about the number of students enrolled in a particular course or subject.

11) **Student registration in fixed number of courses**

    The system has to allow student to enroll into a specific number of subject which is permitted by the Student Enrolment Officer.

Question 3

The Non-functional requirements are the quality attributes that are defined by user for the system. These requirements depict the behavior of the system in real world. [CITATION

Chu12 \l 1033] They are used to judge the quality of operations performed by system according to certain parameters. Non-functional requirements include availability, reliability etc. [CITATION Non20 \l 1033]

The Non-Functional Requirements of Online Student Enrolment System are as follows:

1) **System Availability**

   The System has to be available to the maximum number of students approximately 1000 students at a time. The system services should be available 24/7 so that students can do their enrollment process easily. If the system is not operation due to any reason, it has to notify the students that the system is unavailable. [CITATION AGu19 \l 1033]

2) **Subject Enrollment Deadline**

   Subjects' enrollment deadline should be mentioned with each subject so that students have an idea how much time they have for enrollment.

3) **Data Loss**

   In case of system failure, data loss should be minimum. Data loss should be not greater than 0.01%. Student personal and important information should be protected.

4) **Maintainability**

   The system has to maintain the database of all currently offered subjects as well as the previously offered subjects. The system has to use the database of students for login into system and for payment process. The system should be developed in such a way that new functionality could be added easily. If case of any issue, it should be resolved in short period of time. [CITATION Sam \l 1033]

5) **Data Integrity**

   The system has to ensure data integrity for the ease of students. Correct and updated information about the courses and subjects should be delivered to the students by the system.

6) **Usability**

   The interface of the system should be attractive and ease to use for the students without any training. The system should be self-explanatory.

Question 4

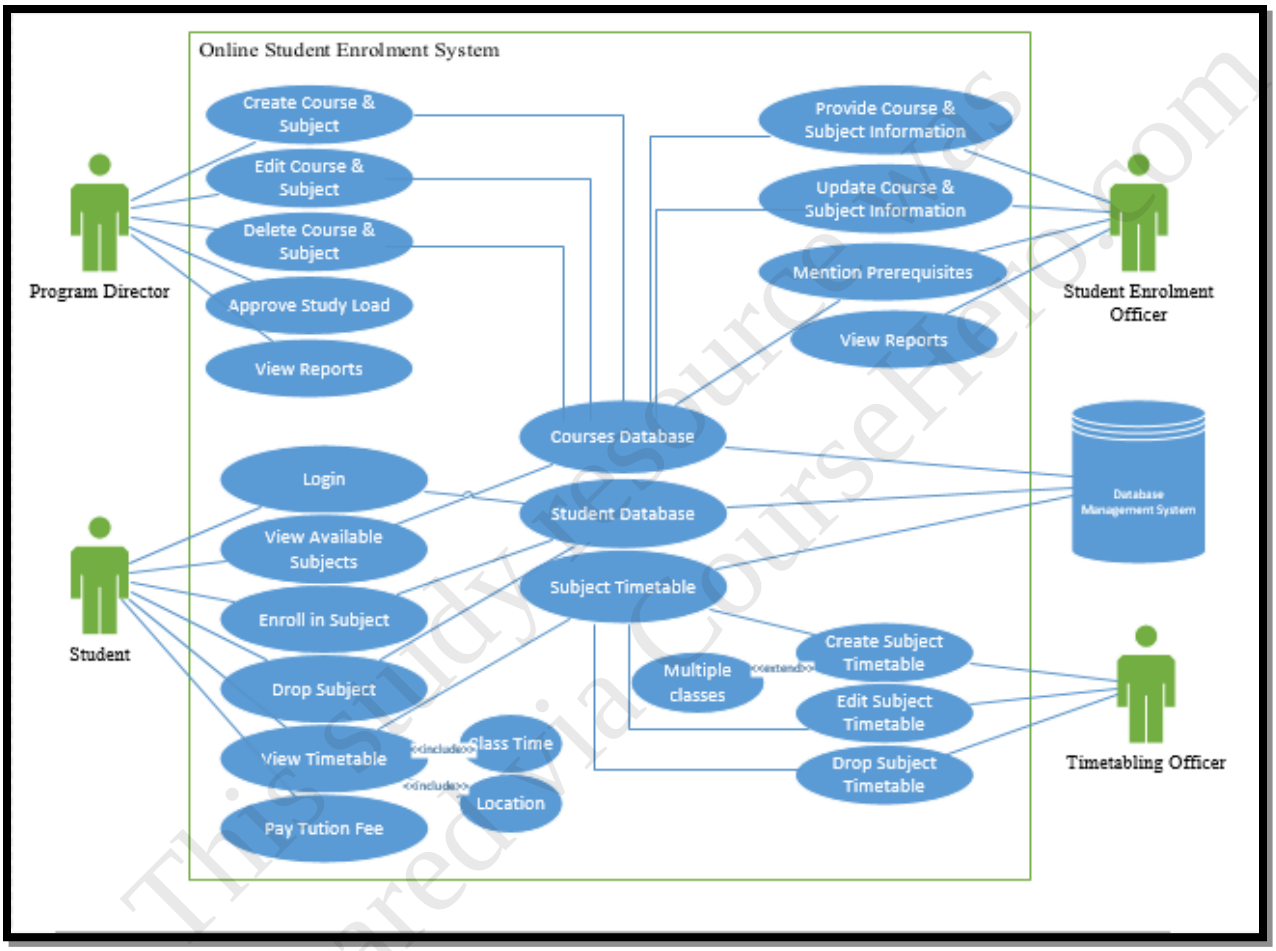

Figure 1: Use Case Diagram for Online Student Enrolment System

Use case diagram gives graphical view of functionality of the system by defining the actors and use cases. The use case diagram demonstrates the actions and services of the system.[CITATION Use \l 1033] For example the use case for Online Student Enrolment System has been

developed.[CITATION Abd19 \l 1033] The use case contain three actors that are: Student, Program Director, Student Enrollment Officer and Timetabling Officer. The actions performed by these actors are shown in the form of use cases. The student login using student ID and password into the system. After that student can view the available courses and subjects for enrollment. The student can enroll in or drop the subject using Online Student Enrolment System. Once the student has done the enrollment process, the timetable including class timing and class location will be available to student. The student can view his/her timetable using this system and then can pay the tuition fee. [CITATION The06 \l 1033]

The system allows the Program Director of the University to create, edit and course as well as subjects in each course. Program Director has the responsibility to approve the study load which defines the minimum and maximum number of subjects in which student can enroll in.

The Student Enrollment Officer has the responsibility to provide and update the information related to courses and subjects on the system. The Student Enrollment Officer has to mention the prerequisites for the subjects if any. The Program Director and Student Enrollment Officer both can view the report containing the information about the number of students enrolled.

The Timetabling Officer has the job to create, edit and drop subject timetable using the system and make that timetable available of the system. If the subject has multiple classes, then the Timetabling Officer has to create the timetable for multiple classes. The Timetabling Officer has to avoid clash between classes. The Database Management System is containing the database of courses, students and subjects' Timetables.

Question 5

a) Use Case Description

- **Use Case Name:** The name of use case is "**View Available Subjects**"
- **ID: 01**
- **Priority:** The priority of the use case "**View Available Subjects**" is high.
- **Actor:** The actor of the use case is "Student"
- **Description:** Student has selected the available subjects option. The list of available subject for current trimester will appear. The student can view subject information as well as enroll in that selected subject.

- **Trigger:** The student selected the available subject option to view the list of available subjects for enrolment.
- **Precondition:** The student wants to see the list of available subject so he/she selects the Available Subject.
- **Normal Course:** Student logged into the system by using student id and password. After that student has the option to view available subjects offered by the department. Student click on view available subjects to get the list of offered subjects.
- **Alternative courses:** After logging into the system, the student may be directly go to the enrollment option.
- **Postconditions:** The list of available subjects for the trimester appear.
- **Exceptions:** The students fail to view the list of available subjects.

b) Use Case Description

- **Use Case Name:** The name of use case is "**Create Subject Timetable**"
- **ID: 02**
- **Priority:** The priority of the use case "**Create Subject Timetable**" is high.
- **Actor:** The actor of the use case is "**Timetabling officer**"
- **Description:** The Timetabling officer creates the subject timetable on the system. The subject many have multiple classes so the Timetabling officer shows the class timings and location in the timetable for the ease of students.
- **Trigger:** The Timetabling officer creates the subject timetable. The subject may have multiple classes, the Timetabling officer also shows the information of multiple classes of same subject in the timetable.
- **Precondition:** New subject has been created by Program Directed. The Timetabling officer has to create timetable for that subject.
- **Normal Course:** Subject has been added to system by Student Enrollment Officer. The Timetabling officer now creates a timetable for the subject that contains class timing and location. The subject may have multiple classes so timetabling officer has to develop the timetable accordingly.
- **Alternative courses:** Timetable of any subject is already present in the system. The Timetabling Officer use that timetable instead of creating new one.

- **Post-conditions:** Once the timetable is created by the Timetabling officer**,** the system can use the timetable to prevent student from enrolling into subjects that clash.
- **Exceptions:** Timetable created by the Timetabling officer for a subject has multiple classes and those classes are having a clash.

Conclusion

ABC University wants an Online Student Enrolment System for students. Online enrolment system is a system for students and administration to carry out the courses and subjects enrolment procedure. The system provides the facility to add, change or delete courses and subjects in each course. It also has functionality to create, edit or delete the timetable of subjects. Students can enroll themselves in courses and subjects in each courses online easily and then can view their timetable online and can pay tuition fee as well. Online Student Enrolment System is an efficient system that will be useful and helpful for students.

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