Scope: Student Information System

Level: User Goal

Primary Actor: Lecturer

Stakeholders and Interests:

- **Department:** Department is collection of students, lecturers, and teaching assistants. Each department can have their custom configuration file. Configuration file contains information about department, lab section capacity limit, elective course limit, given courses in that department and lecturers of department.
- **Curriculum:** Curriculum determines which courses can be taken on which semester according to faculty syllabus.
- **Courses:** Courses may in type of mandatory or elective. We have several elective course types such as non-technical, faculty technical, university etc. If a course contains lab hours, it can have more than one section. Each lab section instructed by a teaching assistant. A course can have pre-requisite courses, or it can be prerequisite for another courses. If a course have a pre-requisite course, student must have succesfully pased that pre-requisite course to take that course.
- **Lecturer:** A lecturer may teach more than one course. Also they may supervise students.
- **Teaching Assistant:** Teaching assistants are instructors of lab sections. Each lab section can have only one teaching assistant, but one course can have many lab sections.
- **Student:** Student is the one who takes courses according to curriculum. They can not take course from previous semesters or coming semesters. They can select courses which has collision, but these selections not approved by their advisors.
- **Transcript:** Transcript is the document which is showing that the student's taken courses and grades from these courses and GPA of his/her.

Preconditions: Lecturer is identified and authenticated.

1. Lecturer runs the code.
2. The program creates random students.
3. For each course taken by a student, it assigns random point between 0-100. By using that grade it calculates letter grade and grade in [0, 4] format. For elective courses, it will select a random course from elective course pool. Also, for the lab sections a random section will be selected from lab sections.
4. After course registration process, system will generate an output file for each student. That file will contain student information and 2 transcripts in JSON format. First one will contain courses from previous semesters and the other one will contain all courses inluding the ones recently taken.
5. After student output files generated, system will generate an output file for department. It will contain information about which course could not be taken by how many students.

Technology and Data Variations List:

- This program will create new random students every time it runs.

Alternative Flows:

3a

If capacity of all elective courses is full student will not be able to register any elective course.

3b

If lab section capacity is full for each section student will not be able to take a lab section.

3c

If student has any collision (taken two or more courses with a same schedule, all lecture hours does not need to be the same) in his timetable, advisor won't approve registration of the second course.

3d

If course grade less than 1.5/4, student will fail from the course. And he/she can not take other courses if the failed course is a prerequisite for them.