Project #1: student attendance system

Background

University "Happy University" functions as an ordinary educational institution. The modern infrastructure of the university includes the provision of card readers in every lecture hall, room and laboratory. Special card readers are installed in classrooms. They allow you to read information about a student's attendance at a class and send data to the university's common database. When a student swipes his card in such a reader, the system checks whether he is enrolled in this course on schedule in this classroom. If so, class attendance information is recorded. It includes the time of entry and exit from the class. There is a card reader on each side of the door, so the system can record whether a student has entered or exited a class. If a student forgets to use their card, for example because they lost it or forgot it elsewhere, the system cannot record anything. If a student swipes his card several times in a short time, for example because he is not sure that the system has recorded him correctly, the system records only once. A student can enter and leave the classroom several times a day, for example, during a break between lessons, and the system records the time of entry and exit.

Requirements

The traditional university system requires student attendance to be maintained according to the rules of study. Currently, this process is carried out manually, which takes a lot of time.

To fully deliver classes, the academic department needs a system that can record the attendance of all students in their scheduled classes based on recorded arrival and departure times.

The academic department wants to maintain student attendance statistics and have an automatically generated list of students who are regularly absent from class. This is necessary to predict potential learning problems for such students. Also, automatic recording of attendance in the educational portal will save teachers time on this filling procedure in the portal and help prevent errors or fakes when registering attendance.

The main idea is that students themselves perform the registration of attendance, primarily with the help of a card reader, but also manually using mobile devices or a PC connected via the Internet to the educational portal.

In case a student has forgotten to use his student ID card , he should be able to record the time of his visit manually. (If he does this too often, the administration may take action or impose restrictions). Many students also want to check that the system has recorded attendance automatically.

If a student marked the entrance to the lesson, but forgot to mark the exit, the system should automatically record the time from the start of the time stamp to the end of the lesson. If the duration of one lesson is more than 1 hour, students must check in and out after a break in accordance with

the duration of the lesson.

If a student checked-out but forgot to check-in, the system records only the presence at the last lesson preceding the check-out mark.

The student should be able to manually record the special reasons for absence from classes: due to illness, if he was away, forgot to mark the entrance or exit, for other external reasons. All this will be counted and considered based on the rules of the educational institution for such reasons. Also, the university will be able to track the statistics of the absence and its reasons.

According to the rules of the university, there is a limited period for setting the reasons for the absence, which must also be supplied with supporting documents. The scanned version of the documents must be attached when fixing the reasons for the absence.

Finally, students should be able to see their own attendance status and check if it is calculated correctly.

While the basic idea is for students to record themselves, there may be situations where this is not possible, such as in the event of an extended illness or traveling to another city for a certain period. For this reason, each student may allow one other student (or\and one university employee) to act on their behalf, such as checking their status and manually recording reasons for absence from class.

The system can be used by all students and university staff who have access to the educational portal.

The traditional system requires a register to manually record attendance for students, which is time consuming. Therefore, this proposed project eliminates the need to maintain an attendance sheet.

Assumptions

About 3,000 students study at Happy University. They have special number IDs or initials (their short name) that are also part of their email address, but they may not know each other's initials (number IDs). We simplify the project in this way: all students have no more than 6 hours of classes per day and a five-day school week, sometimes classes can be provided on a Saturday. The students can register their attendance by the specific timetable (schedule). Nobody will study and work after midnight. The system knows about holidays when students are not expected to attend classes.

Your task is to develop an alpha version of the proposed system, which will be seen by the student, teacher and faculty administrator. Accounting for student attendance, generation of statistics, etc. are done by the faculty administration, and this is also part of this project.

The system runs on a web platform or mobile devices, so students and university staff can use it from home or when travelling. Please add an authentication system model before starting a dialogue with users before they log in. For alpha testing, you can use existing (or created) user data from the database so that the system should know who the user is.