

Lecture Transcript

Audio/Video Transcription

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Dear all, this is the video that I have been recording for the description of SE302 course. Throughout the semester you will try to put there the corresponding requirements, from this video at least, as well as the design and implementation you will handle. The project description is as follows. I would like you to submit me a desktop application that helps me create a schedule for the exam interval. You know that you will have the corresponding midterm exams in the next coming weeks. So suppose that you have a kind of fixed number of days as a kind of exam time interval and you have a fixed number of classrooms in the schools and you have a fixed number of courses. And in these courses, you have a fixed number of students registered. These fixed numbers are, by the way, available now. The Student Affairs will try to schedule the exam period. But here I give you such a kind of sample data to understand the details. For example, we have the students in the system with their IDs, say, SDD ID 001 through Here, 250 students, and here we have the sample data for the courses. We have 20 courses for the Department of Computer Engineering, you might mention it. And here we have the corresponding classrooms in the school to be assigned within the slots of the exam period for each exam. we have the corresponding number of the seats, the capacities in the classrooms. For this sample data, I suppose that each classroom contains 40 seats and hereby each course will have the number of 40 students equally registered in the corresponding example that's just a kind of sample you might use such a kind of different classrooms with different number of capacities and by the way you might use such different number of course here there are 20 courses for each course there might be different number of students registered as well so these all students and all courses are just an example. And here the Student Affairs will use basically the sample data for the classrooms with their capacities and the sample data for the course codes with their registered students. You at least need these two files. And it will be a kind of Windows application and desktop application because I am in the role of student affairs, I am your customer, I will use the system and nobody else. So that's just the kind of desktop application adequate for me. By the way, I need of course some help menus in the application. I as a student affairs, I mean authority, will import the corresponding files into the application. These files will contain at least the corresponding course codes with their registered students and the corresponding classrooms with their capacities. And the program will give the following output. An exam schedule. That's all. So, hereby, the create these files and import into your system. They don't need to manually enter these into your system. Okay, if you make them do this, okay, but not necessary. These student affairs will import these files. If they wanna change these files, okay, they will change the file and then they can re-import. So which means that these data should be created, edited, or in a way maybe removed and re-imported. So here we have the option as a student affairs authority, I have the option to change the data and re-import the file and rerun the program as well. What will be the display result? Say, for each classroom, I would like to see the corresponding exams of the courses. For each student, I would like to see the corresponding exam schedule. For each course, I would like to see the exact time for each assigned exam. And it's, of course, assigned classroom as well. For each day, I would like to see the exams in each slot. Hereby, there are two constraints at least. No two consecutive slots shall be assigned for the same student. So if I have such a number of exams in a day, there I need a break at least in between. And the next second constraint is the number of exams in a day to be assigned for a student is, at most exits. So the number of exams in a day to be assigned for a student shall not exceed two, okay? You can also add some more constraints as well. These are the necessities. So you will try to at least state the requirements at first and you will design later. By the way, if you have any questions further, of course you can ask anytime, remember. So hereby, let's say, This is the way that you would use for the exam period. Of course there might be some different alternatives. For example, you can follow a kind of greedy algorithm. There might be no solution, so you might need to release some constraints. Suppose that the number of the days for the period is 5, let's suppose, and you have four slots in a day, again exception, and you are not able to put the resolution for five days, including four slots in a day, for such a number of exams to be held. So what should you do? Then you shall either say there is no solution or which is not the best, you might put there some other slots in some days. Just an assumption to release a constraint. Or for a student you might just consider doing something as like, releasing its constraint like, no consecutive two exams will be there. Or in a way you can extend the number of days in the interval. So what you cannot change is amongst these alternatives, you cannot change the first constraint. No two consecutive slots shall be assigned for a student. And the second constraint, the number of exams in a day to be assigned for a student shall not exceed two. Okay, so you can, for example, optimization, not a must, but if you have a solution, will it be the best? No, I need a solution, but how would you optimize it? For example, you might balance, share the exams within the interval, let's say exam period, equally. Or you might try to complete the exams within the minimum number of days, another one, or one other alternative, you might use a minimum number of classrooms or a balanced number of classrooms per day, or assigning the very crowded courses or assigning the important or assigning the difficult courses to be held for their exams at the beginning or at the end of the corresponding interval. It's up to you. Okay, so in the classroom, I will welcome your any other further question as well.

