

CSE 400 Midterm

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I. QUESTION (20 POINTS)

Draw a high level use case diagram for an high school student tracking system in Turkey. The system includes five actors:

- Students who register the school, take courses, enter exams, etc.
- Teachers who teach students. Note that, in the high school there are math teachers, chemistry teachers, Turkish teachers, etc.
- A director who is responsible from the school. The director follows the performances of the students, teachers and staff.
- Staff who are dedicated to specific jobs in the school including security, cleaning, nursing, etc.
- Parents who are responsible from the students.

All users will be able to login the system using their mobile devices.

II. QUESTION (20 POINTS)

Describe the *TakeExam* use in detail. A student and an instructor is involved with the take exam use case. Include also exceptional cases. Write the event flows, entry conditions, exit conditions, and participating actors, etc.

III. QUESTION (20 POINTS)

Draw a sequence diagram for the *ViewStudentReportCard* use case.

IV. QUESTION (20 POINTS)

Design a class diagram for the following object model: A *School* consists of multiple *grades* (6th grade, 1st grade, etc), where a *grade* contains multiple *classes* (6-B, 1-C etc). An *teacher* can teach in multiple *classes* the same *course* and of course many teachers teach for a class. A *student* is registered to only one *class* and can take many *courses*. Assume *School*, *Grade*, *Class*, *Teacher*, *Course*, and *Student* have a name attribute and a unique identifier.

V. QUESTION (20 POINTS)

Design a relational database schema for the following object model: A *School* consists of multiple *grades* (6th grade, 1st grade, etc), where a *grade* contains multiple *classes* (6-B, 1-C etc). An *teacher* can teach in multiple *classes* the same *course* and of course many teachers teach for a class. A *student* is registered to only one *class* and can take many *courses*. Assume *School*, *Grade*, *Class*, *Teacher*, *Course*, and *Student* have a name attribute and a unique identifier.