TDA357 Task 2 design-report

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Comparison between ER and FD schema

A limitation of the schema provided by FD is that BCNF does not allow multivalued dependencies. Therefore the connection between for example department and branch is lost.

The FD schema is missing some key features compared to the ER one.

- There are no classifications for courses
- There is no connection between a program and its hosting department(s)
- There are no recommended or mandatory courses for programs and branches
- No prerequisite courses
- Tables which cover multiple features can cause problems

An example of a table which in certain instances become problematic in the FD schema is the CourseStatus. Instead of using separate tables for waiting and registration, it is combined. This creates information redundancy and limits some functionality. For instance, there is no way to detect if a student takes a course for a second time, as the only way to differentiate between someone who is registered for a course and someone who has completed the same course is if a grade value exists. If the student already has completed this course, grade will have a value and you cannot be sure if the student has registered for the course again.

A way to solve that the FD schema does not differentiate between a normal and limited course could be to set places in Course to null when it has unlimited spots. The same method could be used to indicate that a person isn't in the waiting-list.

The FD approach revealed a constraint which previously went unnoticed, that UNIQUE(waitingspot, course) should exist.

The BCNF decomposition of the FD schema confirmed that some of our tables was created with the 'right' attributes and names.

All of the above problems are caused by the fact that multivalued dependencies were left out when performing the analysis. No further discussion regarding which of the two schemes is the best is needed. The ER schema is far superior to the FD schema, but some minor improvements was extracted from the FD schema.

Comparison between task 1 schema and new schema

- BelongsTo(student, program, branch) is replaced by Student(ssn, name, login, program) and BelongsToBranch(studentSsn,branchName,branchProgramName)in

our schema.

It seems like the structure of both schemas are more or less the same.