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 multi-valued 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 may create unnecessary confusion and even limit 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 in that row. 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.

The FD approach revealed a constraint which previously went unnoticed, that UNIQUE(waitingspot, course) should exist. Another constraint revealed is that abbrevation for Program should be unique.

The BCNF decomposition of the FD schema confirmed that some of our tables was created with the 'right' attributes and names, while also causing some confusion with one really unintuitive table, which we had a hard time comprehending its use.

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.