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Course Title: Databases

Assignment 1

Exercise 1.10: Specify all the relationships among the records of the database shown in Figure 1.2

In section 1.2, the authors consider a simple example of a university database that is eventually used for maintaining information related to students, courses, section, grade_report, and prerequisite. These are stored or organized into five different files, in which each file stores same type of the data records.

Student: The student file stores data about students and gives information about student's name, students' number, class and major. This student file record has a relationship with the grade_report record.
Course: The course file stores data about courses and gives information about course name, course number, credit hours, and department. This course file record has a relationship with the section file and prerequisite file record.
Section: The section file gives information about every section of the related course. So, it is related to the course file record.
Grade_report: The grade_report file record gives information about student number, grade received within the section. Thus, it is related to both student file and section file.
Prerequisite: This file stores record of course number and prerequisite number. Hence it is related to course file.

Exercise 1.12: Cite some examples of integrity constraints that you think can apply to the database shown in Figure 1.2

Integrity constraints will make sure that, when a user modifies the database, they try not to disturb the consistency of the data. They are defined while designing the database schema.

A data value Student number inside the student record should also exist in the grade_report record file, which is known as a referential integrity constraint. This constraint is defined as an association between two valid entities inside the database.

A data entry course number in the course record should also present in the course record file, which is again a referential integrity constraint.

The data entries in the grade column of grade_report must include characters A,B,C, and D , which is known as a domain constraint. This constraint is defined as set values that are assigned to a specific attribute.

A uniqueness of the data value is specified by a key constraint such as every course number and student name must have unique number and name in course file and student file.

A few data entries must contain a designated value i.e., it should not contain NULL values (e.g. in student name), which is defined as entity integrity constraint.